



**ADVANCE MITIGATION PROGRAM
Great Valley Ecoregion Section
Regional Advance Mitigation Needs
Assessment**

ADDENDUM 1

Version 1.0

**Establishing Caltrans' Need for Advance Mitigation for Riparian
Habitat Impacts for the Great Valley Ecoregion Section,
forecast fiscal years 2023/24 to 2032/33**

California Department of Transportation – District 6

July 2026

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LIST OF ACRONYMS

Acronym	Definition
ACE	Areas of Conservation Emphasis
AMP	Advance Mitigation Program
BEI	Bank Enabling Instrument
Caltrans	California Department of Transportation
CDFW	California Department of Fish and Wildlife
CEHC	California Essential Habitat Connectivity
CESA	California Endangered Species Act
Corps	U.S. Army Corps of Engineers
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FGC	California Fish and Game Code
FWS	U.S. Fish and Wildlife Service
GAI	geographic area of interest
GIS	geographic information system
HCP	habitat conservation plan
MCA	mitigation credit agreement
NCCP	natural community conservation plan
NFWF	National Fish and Wildlife Foundation
NHDPlus	National Hydrology Dataset Plus
NMFS	National Marine Fisheries Service
PAD	Passage Assessment Database
RAMNA	Regional Advance Mitigation Needs Assessment
RCIS	regional conservation investment strategy
RipZET	Riparian Zone Estimation Tool
RWQCB	Regional Water Quality Control Board
SAMNA	Statewide Advance Mitigation Needs Assessment
SFEI	San Francisco Estuary Institute
SHC	Streets and Highways Code
SHOPP	State Highway Operation and Protection Program
SHOPP Ten- Year Book	<i>State Highway Operation & Protection Program Ten-Year Project Book</i>
SHS	State Highway System
STIP	State Transportation Improvement Program
SWAP	State Wildlife Action Plan
SWRCB	State Water Resources Control Board

1. INTRODUCTION

This Addendum forms a part of the *Great Valley Ecoregion Section Regional Advance Mitigation Needs Assessment* (“RAMNA”) undertaken by the California Department of Transportation (“Caltrans”) District 6 (Caltrans 2020). This Addendum helps to implement the RAMNA by providing more detailed information on the need for riparian habitat compensatory mitigation¹ and information on three additional species of mitigation need in the geographic area of interest (“GAI”)² over a 10-year planning horizon (Figure 1-1).

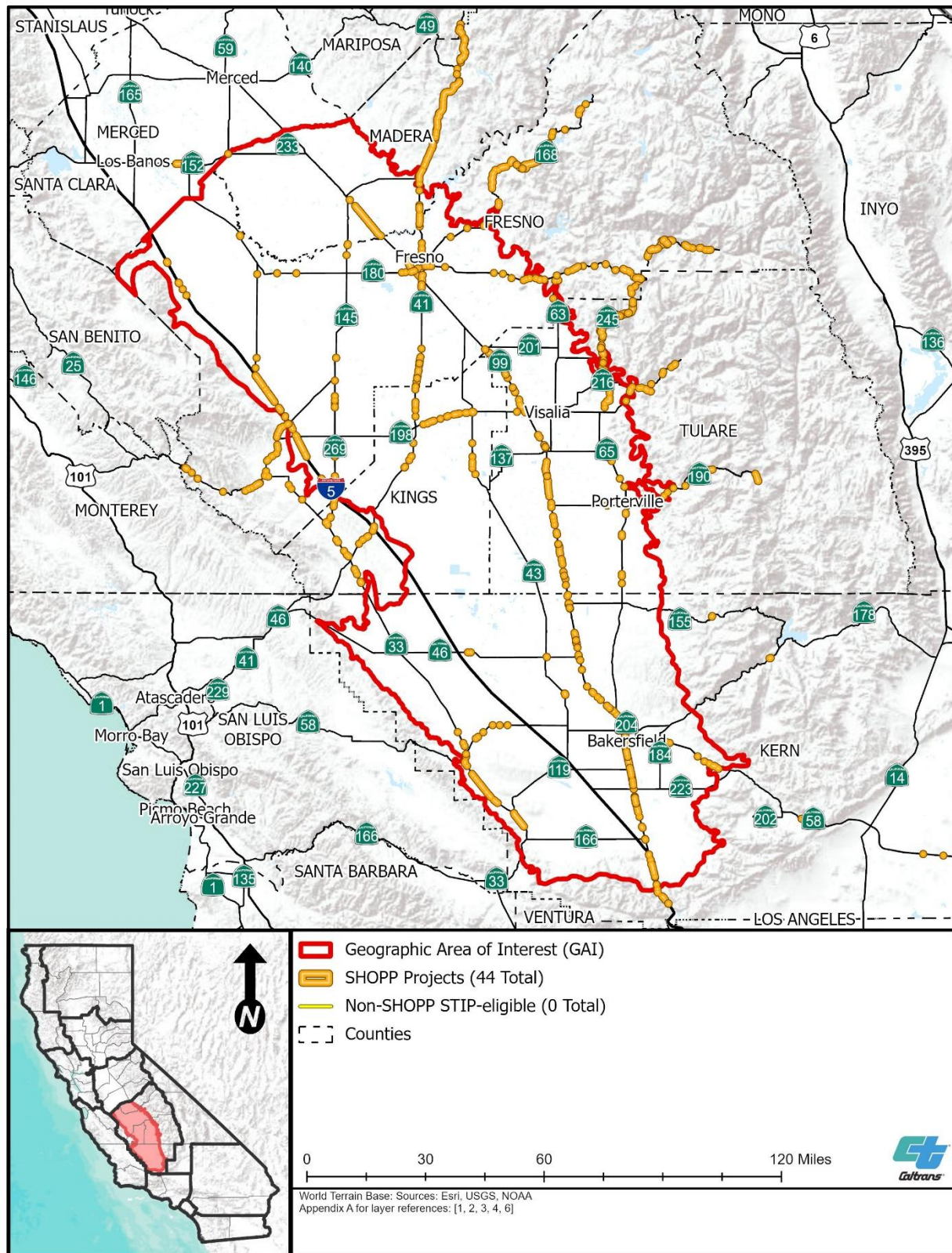
This Addendum has six attachments providing key additional and/or updated information for the RAMNA:

- Attachment A consists of the geographic information system (“GIS”) data sources used for the RAMNA, adding those introduced in this Addendum.
- Attachment B lists the transportation projects that informed this specific Addendum. The transportation project list was taken from the most recent *State Highway Operation & Protection Program Ten-Year Project Book 2023/24–2032/33* (“SHOPP Ten-Year Book”; Caltrans 2023a). Like the list in the original RAMNA, which was up to date at that time, the transportation projects in the SHOPP Ten-Year Book have not undergone the environmental and permitting process.
- Attachment C provides the RAMNA figures from Chapter 2, *Environmental Setting*, updated to show the location of the planned transportation projects listed in Attachment B, rather than the transportation projects referenced in the original RAMNA.
- Attachment D consists of new and updated RAMNA sections or subsections that discuss three additional species of mitigation need identified by Caltrans District 6: blunt-nosed leopard lizard (*Gambelia sila*), burrowing owl (*Athene cunicularia*), and western spadefoot (*Spea hammondi*). Descriptions of the additional species of mitigation need are provided, along with estimated impacts. Potential impacts on co-occurring species are also presented.
- Attachment E consists of new and updated RAMNA sections or subsections that incorporate the new statewide riparian landcover dataset (Caltrans 2023b) developed for Caltrans by the San Francisco Estuary Institute (“SFEI”) using its Riparian Zone Estimation Tool (“RipZET”) vegetation model (SFEI 2015a, 2015b).

¹ Compensatory mitigation is a mitigation strategy that is preferentially applied only after it has been determined that there will be unavoidable adverse impacts on natural resources and other efforts to minimize, rectify, and reduce the impact have been incorporated into a transportation project’s design. Traditionally, this determination occurs late in a transportation project’s development process, at which time, the compensatory mitigation action is both funded and implemented concurrently with the transportation project.

² The GAI consists of the Great Valley Ecoregion Section.

Figure 1-1. GAI Road Infrastructure



- Attachment F provides an updated version of the RAMNA’s Chapter 4, *Existing Mitigation Opportunities*, discussing any new mitigation opportunities that were established since the original document was published.

When possible, the attachments’ letter assignments are consistent with the original RAMNA. The bulk of the new analysis is provided in Attachments D, E, and F. Collectively, the new sections, subsections, and attachments in this Addendum are tools to guide advance mitigation project investments by Caltrans’ Advance Mitigation Program (“AMP”) and Caltrans District 6.

1.1 Coordination History

In August 2025, Caltrans distributed this RAMNA Addendum for review by natural resource regulatory agency partners to the *Master Process Agreement for Planning and Developing Advance Mitigation throughout California for the California Department of Transportation Advance Mitigation Program* (Caltrans et al. 2020). Table 1-1 lists the commenters and the date of their communication. All comments received were considered, addressed, and incorporated into the document, as appropriate.

Table 1-1. Comments Received by Caltrans on the RAMNA Addendum

Commenter	Date of Comment Letter
California Department of Fish and Wildlife (“CDFW”) ^a	October 13, 2025
State Water Resources Control Board	October 6, 2025
U.S. Army Corps of Engineers (“Corps”)	October 9, 2025
U.S. Fish and Wildlife Service (“FWS”)	September 29, 2025

^a SHC § 800 et seq. specifically directs Caltrans to consult with CDFW on all activities pursuant to the AMP.

1.2 Document Organization

This document has six attachments, some of which update an appendix provided with the 2020 RAMNA. Table 1-2 lists the attachments.

Table 1-2. Document Attachments

Document Component	Content
Attachments	Attachment A – GIS Sources Attachment B – Transportation Projects Planned for the GAI for Fiscal Years 2023/24 to 2032/33 Attachment C – Environmental Setting Figures Attachment D – Additional Species Advance Mitigation Needs Assessment Attachment E – Riparian Habitat Advance Mitigation Needs Assessment Attachment F – Existing Mitigation Opportunities

1.3 References

- Caltrans (California Department of Transportation). 2020. *Great Valley Ecoregion Section Regional Advance Mitigation Needs Assessment*. Version 1.0. December. <https://dot.ca.gov/programs/environmental-analysis/biology/advancemitigation>.
- . 2023a. *State Highway Operation & Protection Program Ten-Year Project Book 2023/24–2032/33*. Quarter 1, Fiscal Year 2023/24. October. Sacramento, California.
- . 2023b. Statewide Riparian Landcover Dataset. SFEI Caltrans Task 4.0 – Add Special Aquatic Features: RipZET QA/QC Report. December. Funded through Contract 43A099. Richmond, California.
- Caltrans (California Department of Transportation), CDFW (California Department of Fish and Wildlife), SWRCB (State Water Resources Control Board), Corps (U.S. Army Corps of Engineers Los Angeles District, Sacramento District, and San Francisco District), EPA (U.S. Environmental Protection Agency), FWS (U.S. Fish and Wildlife Service), NMFS (National Marine Fisheries Service), and California State Coastal Commission. 2020. *Master Process Agreement for Planning and Developing Advance Mitigation throughout California for the California Department of Transportation Advance Mitigation Program*. Signed January 24.
- SFEI (San Francisco Estuary Institute). 2015a. RipZET: The Riparian Zone Estimation Tool. Prepared by the San Francisco Estuary Institute - Wetlands Focus Area. Funded by Proposition 50 Watershed Protection Program Grant. Agreement Number: #10-429-550. Contribution #746. Richmond, California. Accessed September 13, 2024. https://www.sfei.org/sites/default/files/biblio_files/746_RipZET_Factsheet_v3_0.pdf.
- . 2015b. RipZET: User's Manual. Prepared by the San Francisco Estuary Institute – Wetlands Focus Area. Funded by Proposition 50 Watershed Protection Program Grant. Agreement Number: #10-429-550. Contribution #747. Richmond, California. https://www.sfei.org/sites/default/files/biblio_files/RipZET_User_Manual.pdf.

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ATTACHMENT A: GIS SOURCES

The RAMNA and this Addendum rely on GIS datasets and maps to convey information. Datasets are cited throughout the document. At the bottom of each map figure is a citation that lists the 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 6 RAMNA Addendum GIS Sources

ID	GIS Layer	Source	Source Date	Download Date	Website
1	State Highway Network	Caltrans	8/1/2018	10/11/2018	https://gisdata-caltrans.opendata.arcgis.com/datasets/77f2d7ba94e040a78bfbe36feb6279da_0/about
2	State Highway Operation and Protection Program ("SHOPP")	Caltrans	2023/2024 Q1	6/28/2024	Caltrans System Planning
3	State Transportation Improvement Program ("STIP")	California Transportation Commission	2023/2024 Q1	Not available	Caltrans System Planning
4	Ecoregion Section (Geographic Area of Interest)	U.S. Forest Service	1/26/2021	1/26/2021	https://data.fs.usda.gov/geodata/edw/datasets.php?xmlKeyword=Ecomap
5	Watershed Boundary Section	U.S. Geological Survey	9/26/2014	10/19/2018	https://www.usgs.gov/core-science-systems/ngp/national-hydrography
6	County Boundaries	U.S. Census Bureau	10/26/2021	8/31/2023	https://gisdata-caltrans.opendata.arcgis.com/datasets/111030d0d67e49d789080c47d9e4e618_0/about
7	California Conservation Easements	California Protected Areas Database	6/1/2024	7/24/2024	https://www.calands.org/cced/
8	California Protected Areas Holdings	California Protected Areas Database	6/1/2024	7/24/2024	https://www.calands.org/cpad/
9	Tribal Land Boundaries	U.S. Bureau of Indian Affairs	5/16/2017	10/11/2018	https://biamaps.geoplatform.gov/BIA-OpenData/Data/
10	U.S. Military Installations	U.S. Census Bureau	11/22/2023	1/12/2024	https://www2.census.gov/geo/tiger/TIGER2023/MIL/
11	Farmland Mapping and Monitoring Program	California Department of Conservation	9/22/2023	1/12/2024	https://gis.conservation.ca.gov/portal/home/group.html?id=b1494c705cb34d01acf78f4927a75b8f#overview
12	ACE Climate Resilience – Areas of Conservation Emphasis ("ACE") [ds2738]	CDFW	2/22/2018	10/17/2018	https://data.cnra.ca.gov/dataset/terrestrial-climate-change-resilience-ace-ds2738

ID	GIS Layer	Source	Source Date	Download Date	Website
13	Vegetation D06/D07/D08/D09 in Caltrans District 6 Geospatial Data for the Advance Mitigation Needs Assessment	Statewide Advance Mitigation Needs Assessment ("SAMNA")	1/1/2017	3/24/2021	https://dot.ca.gov/programs/environmental-analysis/biology/advancemitigation
14	Wetlands D06/D07/D08/D09 in Caltrans District 6 Geospatial Data for the Advance Mitigation Needs Assessment	SAMNA	1/1/2017	3/24/2021	https://dot.ca.gov/programs/environmental-analysis/biology/advancemitigation
15	FWS Critical Habitat	FWS	12/9/2022	1/5/2023	https://ecos.fws.gov/ecp/report/table/critical-habitat.html
16	Essential Connectivity Areas – California Essential Habitat Connectivity ("CEHC")	CDFW	1/1/2014	10/17/2018	https://data.ca.gov/dataset/essential-connectivity-areas-california-essential-habitat-connectivity-cehc-ds620
17	Natural Landscape Blocks – CEHC	CDFW	10/1/2017	10/17/2018	https://data.ca.gov/dataset/essential-connectivity-areas-california-essential-habitat-connectivity-cehc-ds620
18	Potential Riparian Connections – CEHC	CDFW	3/1/2010	10/17/2018	https://data.ca.gov/dataset/essential-connectivity-areas-california-essential-habitat-connectivity-cehc-ds620
19	National Flood Hazard Layer	Federal Emergency Management Agency	12/7/2021	12/7/2021	https://www.fema.gov/national-flood-hazard-layer-nfhl
20	CalWater Hydrologic Areas	California Department of Forestry and Fire Protection	11/1/2016	10/19/2018	https://frap.fire.ca.gov/mapping/gis-data/
21	Terrestrial Connectivity – ACE [ds2734]	CDFW	8/28/2019	9/25/2019	https://gis.data.ca.gov/datasets/CDFW::terrestrial-connectivity-ace-ds2734/explore?location=37.246144%2C-119.002310%2C6

ID	GIS Layer	Source	Source Date	Download Date	Website
22	State Wildlife Action Plan ("SWAP") Terrestrial Targets – 2015	CDFW	2/1/2018	10/29/2018	https://swap.wildlife.ca.gov/target-habitats/
23	Aquatic Biodiversity Summary – ACE [ds2768]	CDFW	2/22/2018	7/3/2019	https://gis.data.ca.gov/datasets/CDFW::aquatic-biodiversity-summary-ace-ds2768/explore
24	Calfish Passage Assessment Database ("PAD")	Calfish	10/3/2019	12/15/2019	https://nrm.dfg.ca.gov/pad/home
25	Terrestrial Biodiversity Summary – ACE [ds2739]	CDFW	2/24/2020	7/3/2019	https://gis.data.ca.gov/datasets/CDFW::terrestrial-biodiversity-summary-ace-ds2739/explore?location=37.271819%2C-119.270504%2C6
26	Regulatory In-lieu Fee and Bank Information Tracking System (RIBITS)	Corps	Not available	Not available	https://ribits.ops.usace.army.mil/ords/f?p=107:2:::
27	CDFW Approved Mitigation Service Areas	CDFW	2/6/2024	2/8/2024	https://data.ca.gov/dataset/cdfw-approved-mitigation-service-areas-ds2659
28	National Hydrology Dataset Plus ("NHDPlus")	U.S. Environmental Protection Agency	3/13/2019	4/29/2021	https://www.epa.gov/waterdata/get-nhdplus-national-hydrography-dataset-plus-data
29	Fire Hazard Severity Zones in State Responsibility Area	California Department of Forestry and Fire Protection	11/1/2007	6/1/2022	https://osfm.fire.ca.gov/what-we-do/community-wildfire-preparedness-and-mitigation/fire-hazard-severity-zones
30	Vernal Pools – ACE [ds2732]	CDFW	2/13/2020	1/29/2021	https://data.ca.gov/dataset/vernal-pools-ace-ds27321
31	Regional Conservation Investment Strategies ("RCISs") Draft Boundaries	CDFW	9/13/2023	9/13/2023	https://gis-california.opendata.arcgis.com/datasets/3533336fb6ff42a9a381d5dd48046bcc_0/explore?location=36.623137%2C-119.038914%2C7

ID	GIS Layer	Source	Source Date	Download Date	Website
32	Conservation Plan Boundaries, Habitat Conservation Plan (“HCP”) and Natural Community Conservation Plan (“NCCP”)	CDFW	8/27/2021	9/1/2023	https://data.ca.gov/dataset/conservation-plan-boundaries-hcp-and-nccp-ds7601
33	Conservation Opportunities – San Joaquin Valley (ds422)	CDFW	7/1/2006	10/18/2024	https://data.amerigeoss.org/dataset/conservation-opportunities-san-joaquin-valley-ds42253627
34	Wildlife Corridors – San Joaquin Valley (ds423)	CDFW	7/1/2006	10/18/2024	https://filelib.wildlife.ca.gov/Public/BDB/GIS/BIOS/metadata/DS0423.html
35	Wildlife Linkages – San Joaquin Valley (ds417)	CDFW	1/1/1999	10/18/2024	https://filelib.wildlife.ca.gov/Public/BDB/GIS/BIOS/metadata/DS0417.html
36	303(d) List for Impaired Waterbodies ^a	SWRCB	6/9/2021	5/13/2022	https://www.waterboards.ca.gov/water_issues/programs/water_quality_assessment/2018_integrated_report.html
37	ZIP Codes ^a	U.S. Postal Service	2/11/2020	3/11/2020	https://www.arcgis.com/home/item.html?id=8d2012a2016e484dafaac0451f9aea24
38	RipZET ^a	SFEI	8/1/2024	8/5/2024	https://www.sfei.org/projects/ripzet

^a Data sources were used for this RAMNA but are not shown in maps.

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ATTACHMENT B: TRANSPORTATION PROJECTS PLANNED FOR THE GAI FOR FISCAL YEARS 2023/24 TO 2032/33

To identify the list of SHOPP projects planned for the GAI, and to ensure forecasts of impacts on areas of potential riparian function are as up-to-date as possible, Caltrans consulted the SHOPP Ten-Year Book for fiscal years 2023/24 to 2032/33 (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 44 SHOPP transportation projects in the GAI that are currently in the planning and conceptual phases (Table B-1—update of Table 5-1 in the original RAMNA). Of these transportation projects, the majority are forecast to potentially affect special-status species habitat and/or aquatic resources (Caltrans 2023). The general locations of all 44 planned transportation projects are shown on the environmental setting and other figures provided in Attachment C.

References

Caltrans (California Department of Transportation). 2023. *State Highway Operation & Protection Program Ten-Year Project Book 2023/24–2032/33*. Quarter 1, Fiscal Year 2023/24. October. Sacramento, California.

Table B-1. SHOPP Transportation Projects Planned in the GAI during the Planning Period (Updated RAMNA Table 5-1)

ID Number	HUC-8	Ecoregion Section	Advertised Year	Caltrans District	County	Route ^a	Begin Mile ^a	End Mile ^a	Activity
22143	Middle San Joaquin-Lower Chowchilla	Great Valley	2025/26	6	Fresno	5	0.14	R33.201	Drainage
22902	Middle San Joaquin-Lower Chowchilla	Great Valley	2030/31	6	Fresno	99	9.74	9.74	Bridge – health
19318	Middle San Joaquin-Lower Chowchilla	Great Valley	2029/30	6	Fresno	145	34.1	R41.2	Pavement
19563	Tulare Lake Bed	Great Valley	2027/28	6	Fresno	5	0	10	Pavement
23500	Tulare Lake Bed	Great Valley	2029/30	6	Fresno	33	0.94	43.47	Drainage
22146	Tulare Lake Bed	Great Valley	2029/30	6	Fresno	41	0.11	5.68	Drainage
24536	Tulare Lake Bed	Great Valley	2031/32	6	Fresno	180	77.49	108	Pavement
24602	Tulare Lake Bed	Great Valley	2030/31	6	Fresno	180	28.532	123.886	Drainage
19554	Upper Dry	Great Valley	2027/28	6	Fresno	5	10	21	Pavement
22143	Upper Dry	Great Valley	2025/26	6	Fresno	5	0.14	R33.201	Drainage
24494	Upper Dry	Great Valley	2032/33	6	Fresno	5	21	30	Pavement
23500	Upper Dry	Great Valley	2029/30	6	Fresno	33	0.94	43.47	Drainage
19551	Upper Dry	Great Valley	2024/25	6	Fresno	41	R0.0	R6.202	Pavement
24515	Upper Dry	Great Valley	2031/32	6	Fresno	41	R21.108	R24.833	Pavement
24520	Upper Dry	Great Valley	2032/33	6	Fresno	41	R17.7	R21.108	Pavement
24574	Upper Dry	Great Valley	2032/33	6	Fresno	41	R25.787	R29.389	Drainage
19315	Upper Dry	Great Valley	2023/24	6	Fresno	99	21.2	24.4	Pavement
19318	Upper Dry	Great Valley	2029/30	6	Fresno	145	34.1	R41.2	Pavement

ID Number	HUC-8	Ecoregion Section	Advertised Year	Caltrans District	County	Route ^a	Begin Mile ^a	End Mile ^a	Activity
22174	Upper Dry	Great Valley	2028/29	6	Fresno	145	17.18	4.35	Proactive safety
19319	Upper Dry	Great Valley	2024/25	6	Fresno	168	R8.28	45.8	Drainage
21604	Upper Dry	Great Valley	2023/24	6	Fresno	180	47.3	48	Reactive safety
24602	Upper Dry	Great Valley	2030/31	6	Fresno	180	28.532	123.886	Drainage
22143	Upper Kaweah	Great Valley	2025/26	6	Fresno	5	0.14	R33.201	Drainage
24536	Upper Kaweah	Great Valley	2031/32	6	Fresno	180	77.49	108	Pavement
19331	Middle Kern-Upper Tehachapi-Grapevine	Great Valley	2024/25	6	Kern	5	4.4	10.2R	Pavement
19332	Middle Kern-Upper Tehachapi-Grapevine	Great Valley	2023/24	6	Kern	5	10.2R	15.9R	Pavement
24787	Middle Kern-Upper Tehachapi-Grapevine	Great Valley	2030/31	6	Kern	5	10.18L	15.9R	Pavement
19335	Middle Kern-Upper Tehachapi-Grapevine	Great Valley	2023/24	6	Kern	33	21.8	39.8	Drainage
19336	Middle Kern-Upper Tehachapi-Grapevine	Great Valley	2025/26	6	Kern	33	14.4	17.9	Pavement
24603	Middle Kern-Upper Tehachapi-Grapevine	Great Valley	2030/31	6	Kern	58	1.244	R129.584	Drainage
19344	Middle Kern-Upper Tehachapi-Grapevine	Great Valley	2029/30	6	Kern	99	2.94	57.29	Drainage
19345	Middle Kern-Upper Tehachapi-Grapevine	Great Valley	2026/27	6	Kern	99	21.15	24.6	Pavement
24573	Middle Kern-Upper Tehachapi-Grapevine	Great Valley	2032/33	6	Kern	99	2.877	57.289	Drainage

ID Number	HUC-8	Ecoregion Section	Advertised Year	Caltrans District	County	Route ^a	Begin Mile ^a	End Mile ^a	Activity
23447	Middle Kern-Upper Tehachapi-Grapevine	Great Valley	2026/27	6	Kern	204	5.49	5.9	Proactive safety
19335	Tulare Lake Bed	Great Valley	2023/24	6	Kern	33	21.8	39.8	Drainage
21919	Tulare Lake Bed	Great Valley	2023/24	6	Kern	43	15.6	16	Reactive safety
19574	Tulare Lake Bed	Great Valley	2025/26	6	Kern	46	33.2	46	Pavement
24535	Tulare Lake Bed	Great Valley	2031/32	6	Kern	58	27.2	31.44	Pavement
24603	Tulare Lake Bed	Great Valley	2030/31	6	Kern	58	1.244	R129.584	Drainage
19344	Tulare Lake Bed	Great Valley	2029/30	6	Kern	99	2.94	57.29	Drainage
24573	Tulare Lake Bed	Great Valley	2032/33	6	Kern	99	2.877	57.289	Drainage
23447	Tulare Lake Bed	Great Valley	2026/27	6	Kern	204	5.49	5.9	Proactive safety
19344	Upper Deer-Upper White	Great Valley	2029/30	6	Kern	99	2.94	57.29	Drainage
22902	Upper Deer-Upper White	Great Valley	2030/31	6	Kern	99	9.74	9.74	Bridge – health
24573	Upper Deer-Upper White	Great Valley	2032/33	6	Kern	99	2.877	57.289	Drainage
19346	Upper Deer-Upper White	Great Valley	2023/24	6	Kern	155	R0.0	R1.3	Pavement
20927	Upper Poso	Great Valley	2023/24	6	Kern	43	25.2	25.4	Reactive safety
19344	Upper Poso	Great Valley	2029/30	6	Kern	99	2.94	57.29	Drainage
24573	Upper Poso	Great Valley	2032/33	6	Kern	99	2.877	57.289	Drainage
23188	Tulare Lake Bed	Great Valley	2026/27	6	Kings	33	0	R48.2	Drainage
19579	Tulare Lake Bed	Great Valley	2026/27	6	Kings	198	R14.80	R21.50	Pavement

ID Number	HUC-8	Ecoregion Section	Advertised Year	Caltrans District	County	Route ^a	Begin Mile ^a	End Mile ^a	Activity
23188	Upper Dry	Great Valley	2026/27	6	Kings	33	0	R48.2	Drainage
23188	Upper Kaweah	Great Valley	2026/27	6	Kings	33	0	R48.2	Drainage
21524	Fresno River	Great Valley	2030/31	6	Madera	152	23	R40.949	Pavement
22146	Middle San Joaquin-Lower Chowchilla	Great Valley	2029/30	6	Madera	41	0.11	5.68	Drainage
24584	Middle San Joaquin-Lower Chowchilla	Great Valley	2030/31	6	Madera	41	R0.201	45.642	Drainage
22897	Middle San Joaquin-Lower Chowchilla	Great Valley	2025/26	6	Madera	99	0.1	8.1	Pavement
22902	Middle San Joaquin-Lower Chowchilla	Great Valley	2030/31	6	Madera	99	9.74	9.74	Bridge – health
21524	Fresno River	Great Valley	2030/31	6	Merced	152	23	R40.949	Pavement
22147	Tulare Lake Bed	Great Valley	2028/29	6	Tulare	65	0.17	56.12	Drainage
19367	Tulare Lake Bed	Great Valley	2023/24	6	Tulare	99	20.2	R53.939	Drainage
21768	Tulare Lake Bed	Great Valley	2023/24	6	Tulare	190	11.3	11.5	Reactive safety
22147	Upper Deer-Upper White	Great Valley	2028/29	6	Tulare	65	0.17	56.12	Drainage
19369	Upper Deer-Upper White	Great Valley	2023/24	6	Tulare	99	0	13.5	Pavement
22147	Upper Kaweah	Great Valley	2028/29	6	Tulare	65	0.17	56.12	Drainage
19367	Upper Kaweah	Great Valley	2023/24	6	Tulare	99	20.2	R53.939	Drainage
19370	Upper Kaweah	Great Valley	2023/24	6	Tulare	99	27.6	30.6	Pavement
19374	Upper Kaweah	Great Valley	2024/25	6	Tulare	245	0	33	Drainage
22147	Upper Tule	Great Valley	2028/29	6	Tulare	65	0.17	56.12	Drainage

ID Number	HUC-8	Ecoregion Section	Advertised Year	Caltrans District	County	Route ^a	Begin Mile ^a	End Mile ^a	Activity
19367	Upper Tule	Great Valley	2023/24	6	Tulare	99	20.2	R53.939	Drainage
19374	Upper Tule	Great Valley	2024/25	6	Tulare	245	0	33	Drainage

Source: Caltrans (2023)

^a 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 table row. R = right, L = left

ATTACHMENT C: ENVIRONMENTAL SETTING FIGURES

This attachment provides the figures presented in Chapter 2, *Environmental Setting*, of the original RAMNA (Caltrans 2020), updated to show the general location of the transportation projects listed in Attachment B. Information sources are described more fully in Caltrans (2020).

References

Caltrans (California Department of Transportation) 2020. *Great Valley Ecoregion Section Regional Advance Mitigation Needs Assessment*. Version 1.0. December. Sacramento, California.

Figure C-1. Ecoregion Sections (RAMNA Figure 2-1)

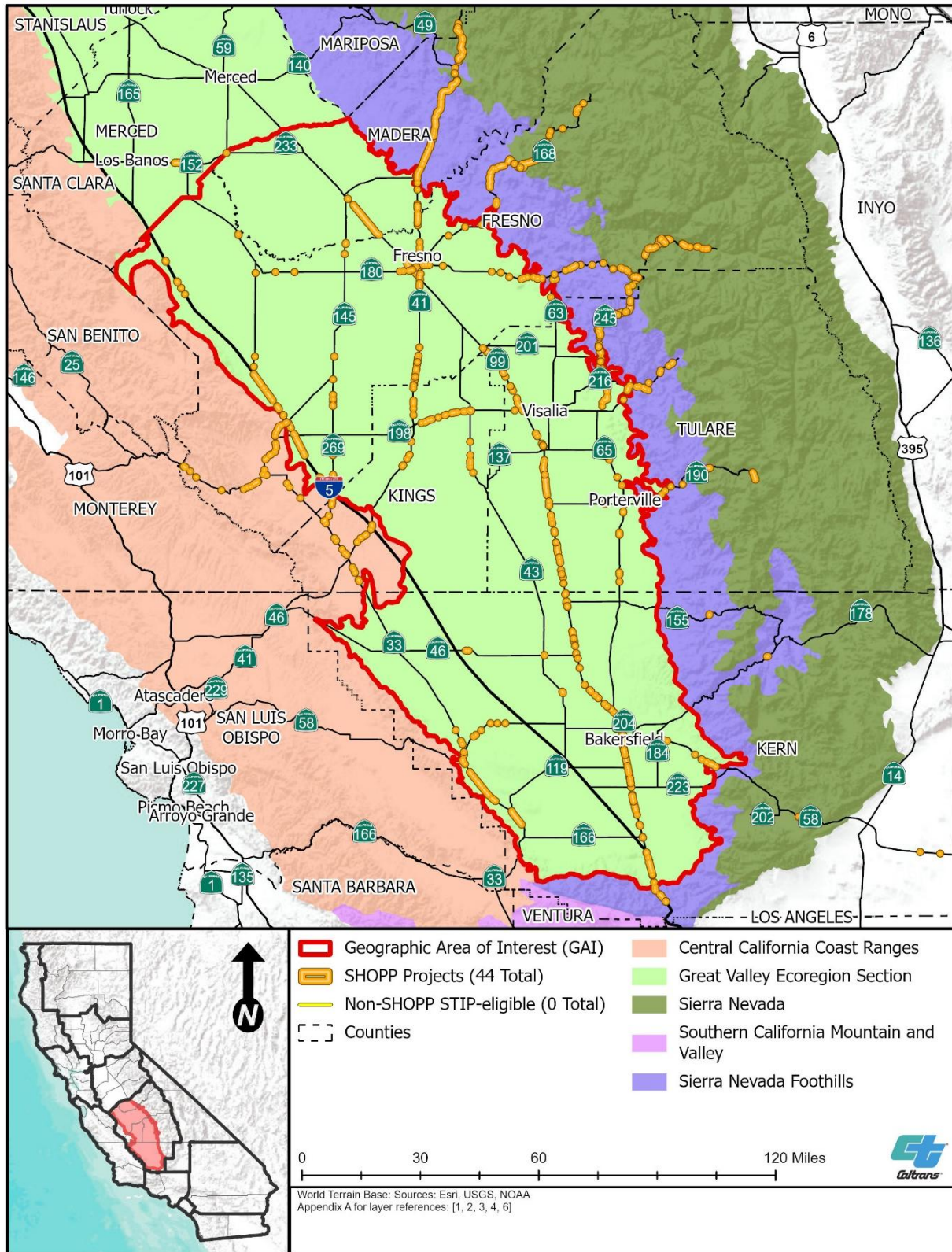


Figure C-2. Land Ownership (RAMNA Figure 2-2)

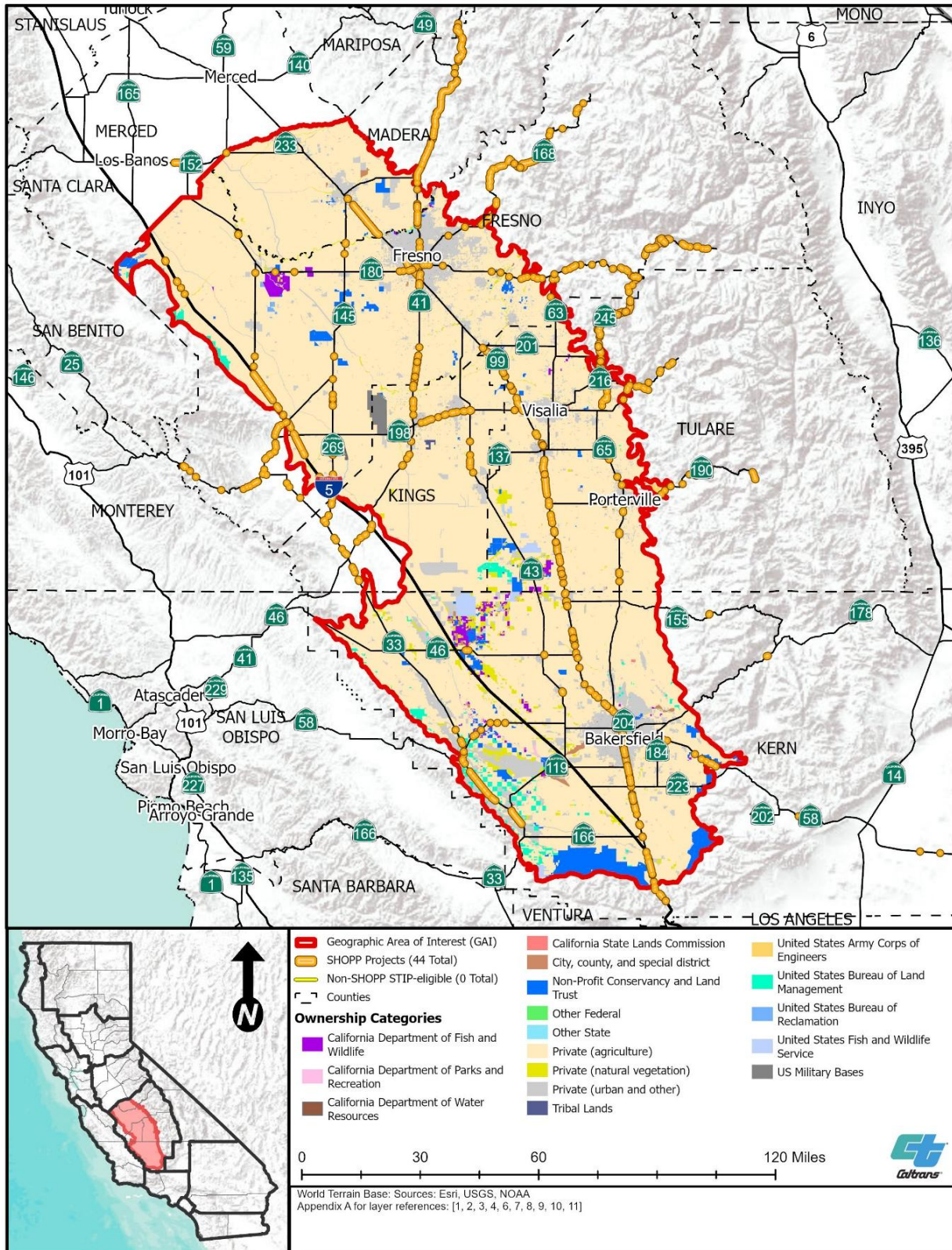


Figure C-3. Protected Lands (RAMNA Figure 2-3)

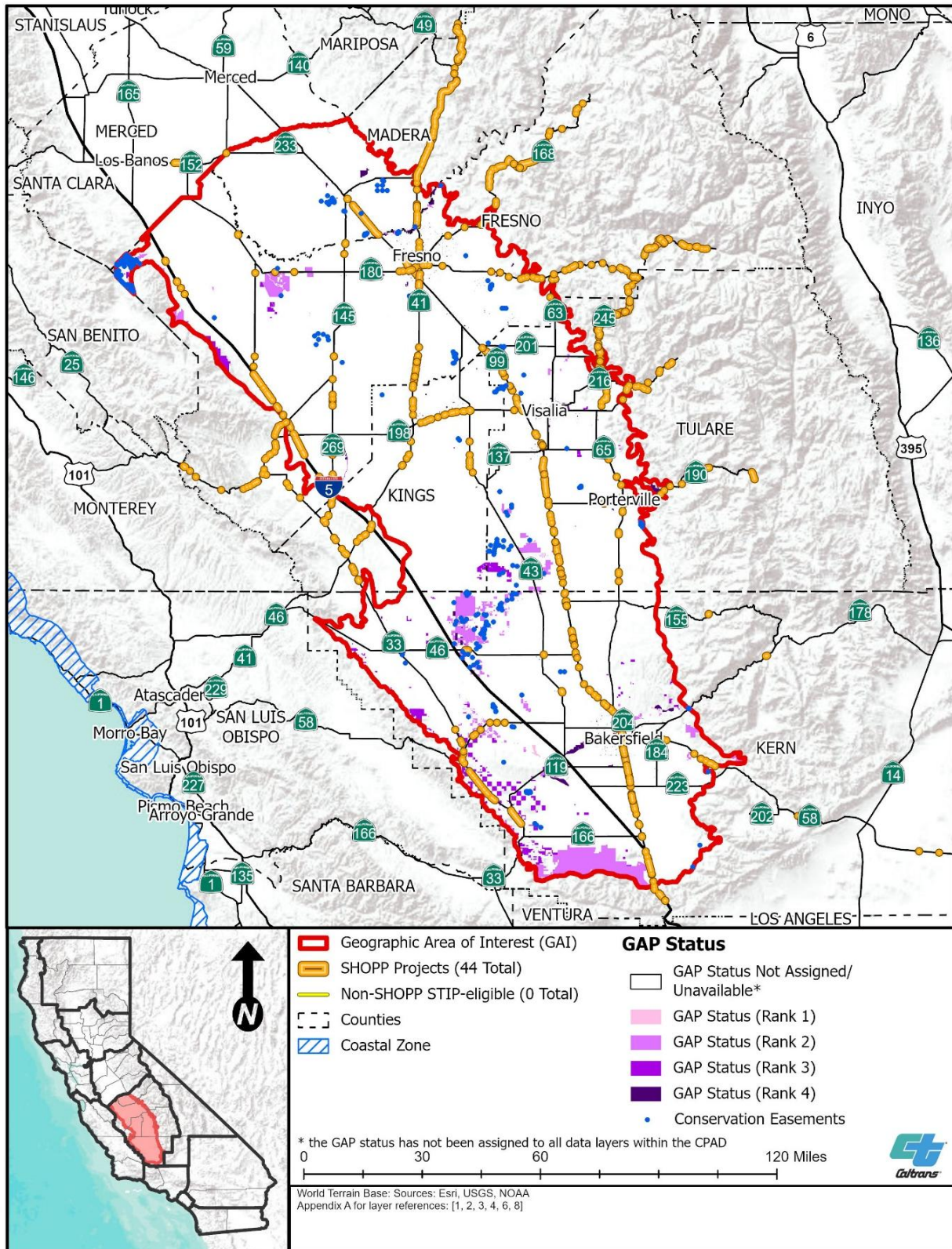


Figure C-4. Topography (RAMNA Figure 2-4)

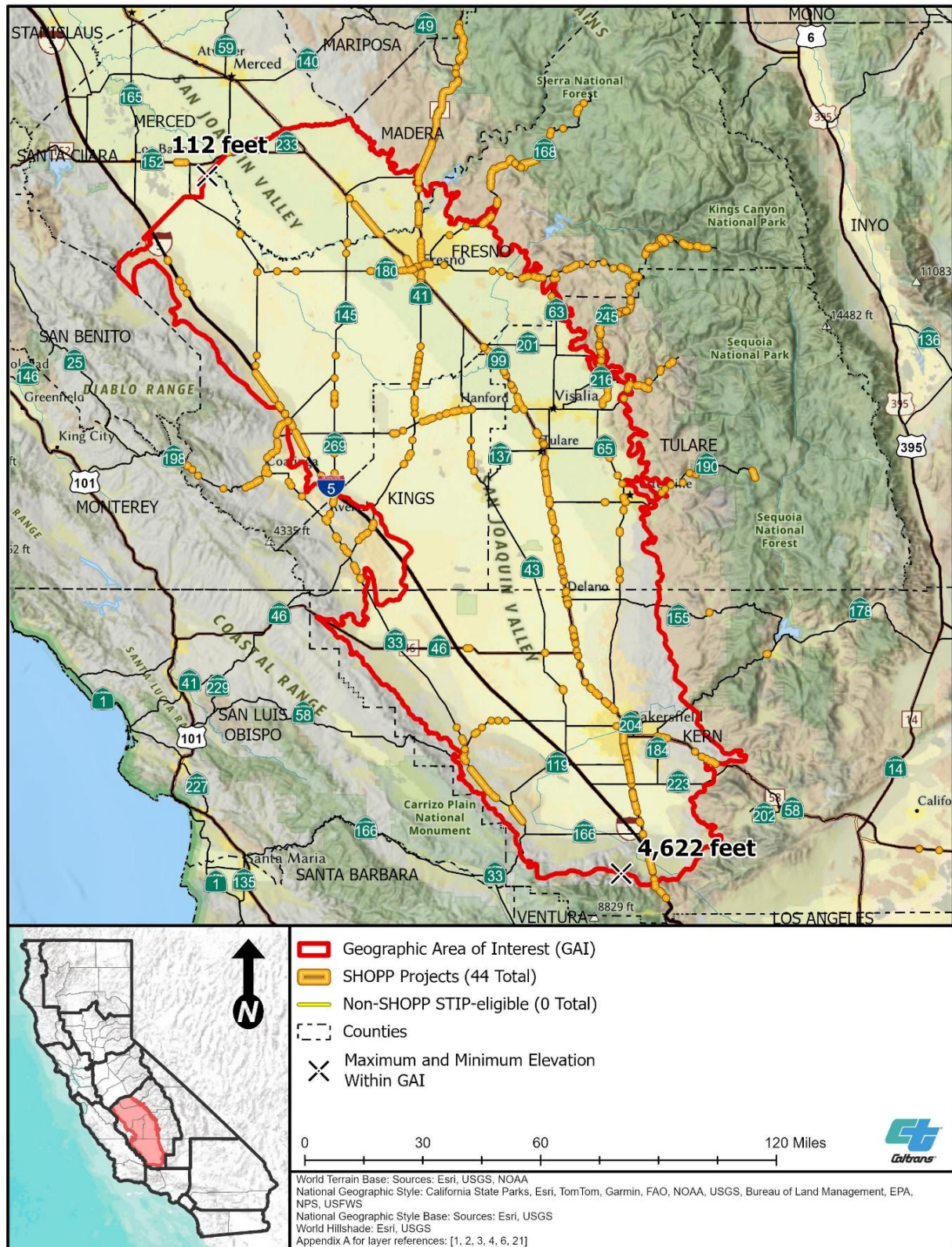


Figure C-5. Terrestrial Climate Resilience Rankings (RAMNA Figure 2-5)

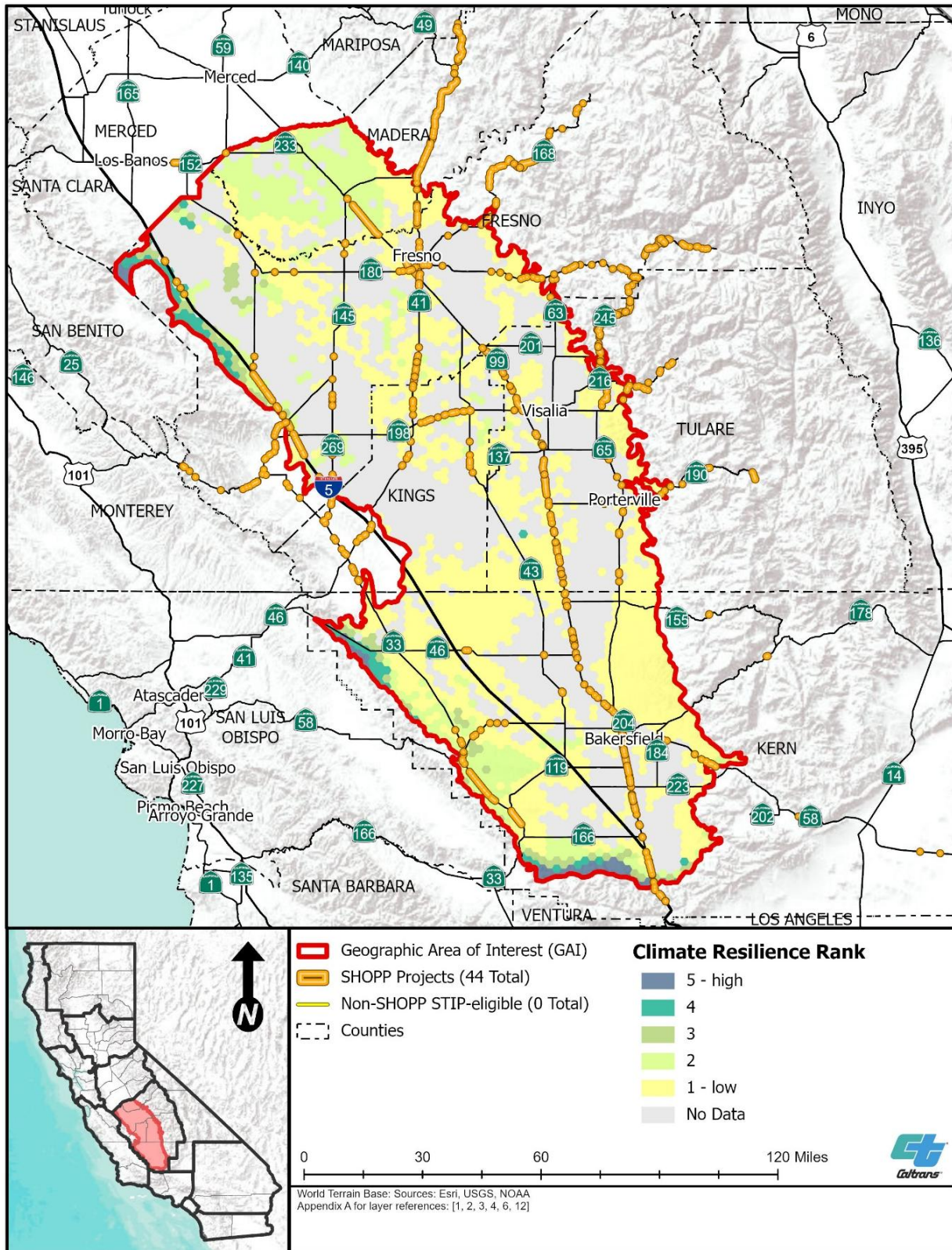


Figure C-6. Major Land Cover (RAMNA Figure 2-6)

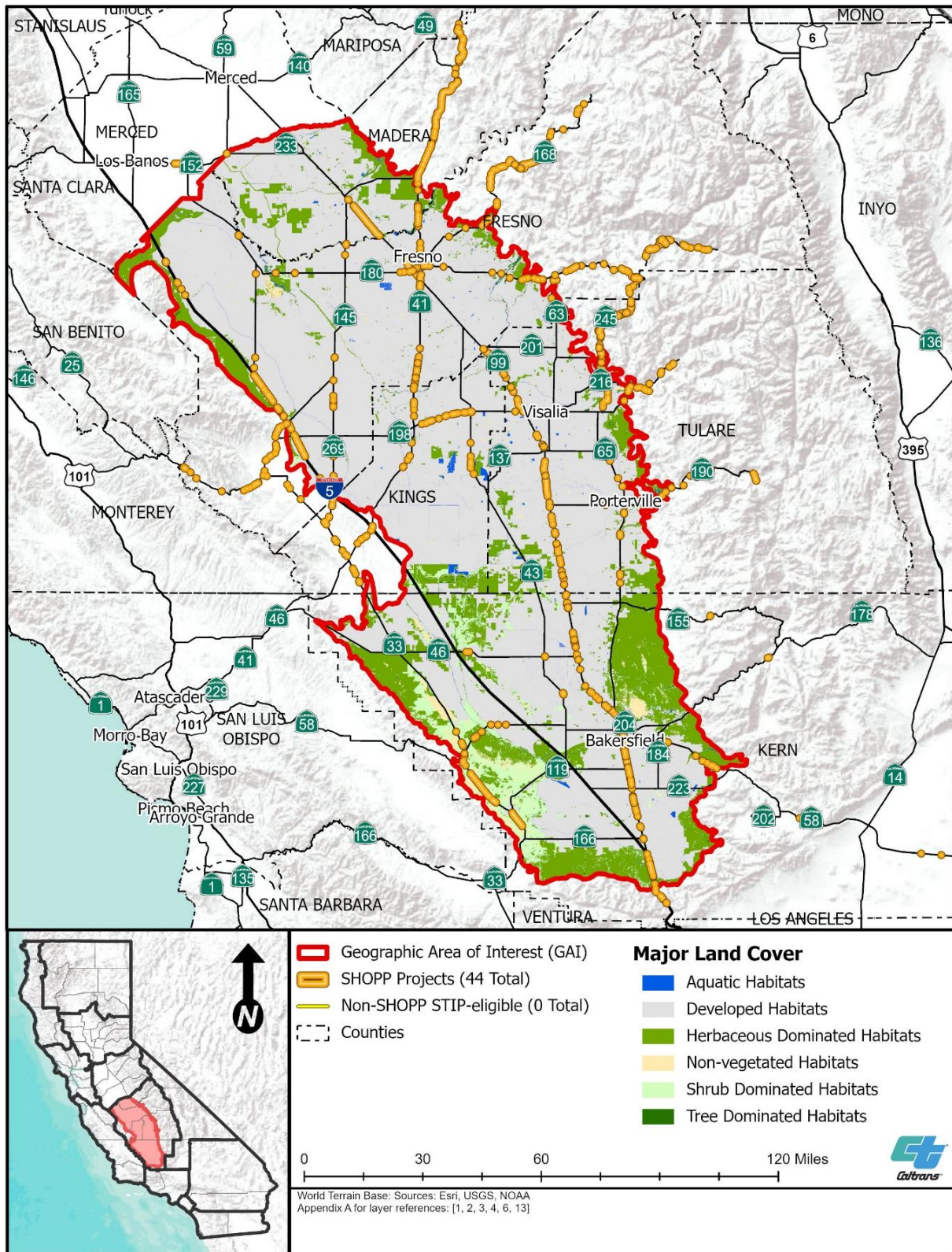


Figure C-7. Federally Designated Critical Habitat (RAMNA Figure 2-7)

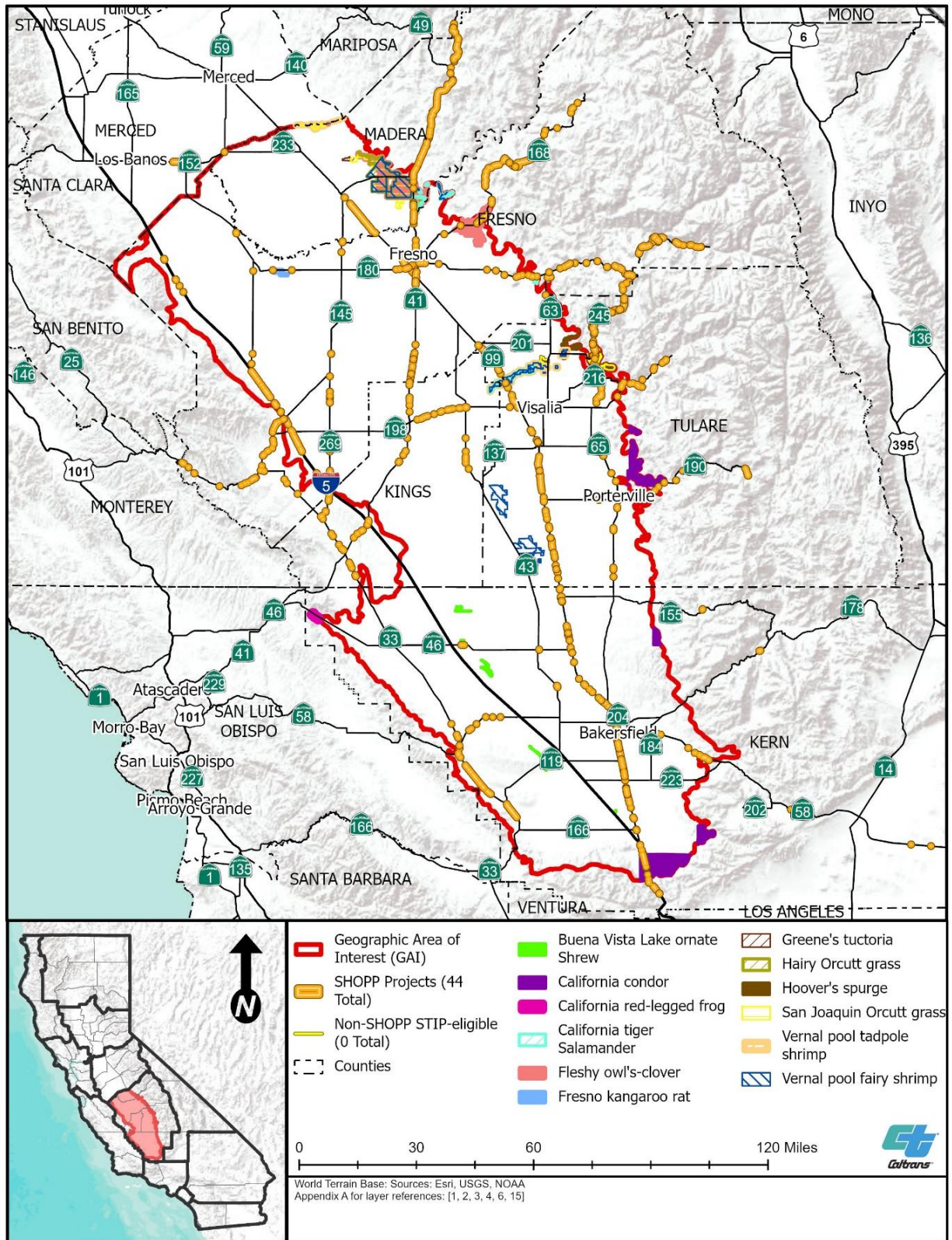


Figure C-8. Terrestrial Connectivity (RAMNA Figure 2-8)

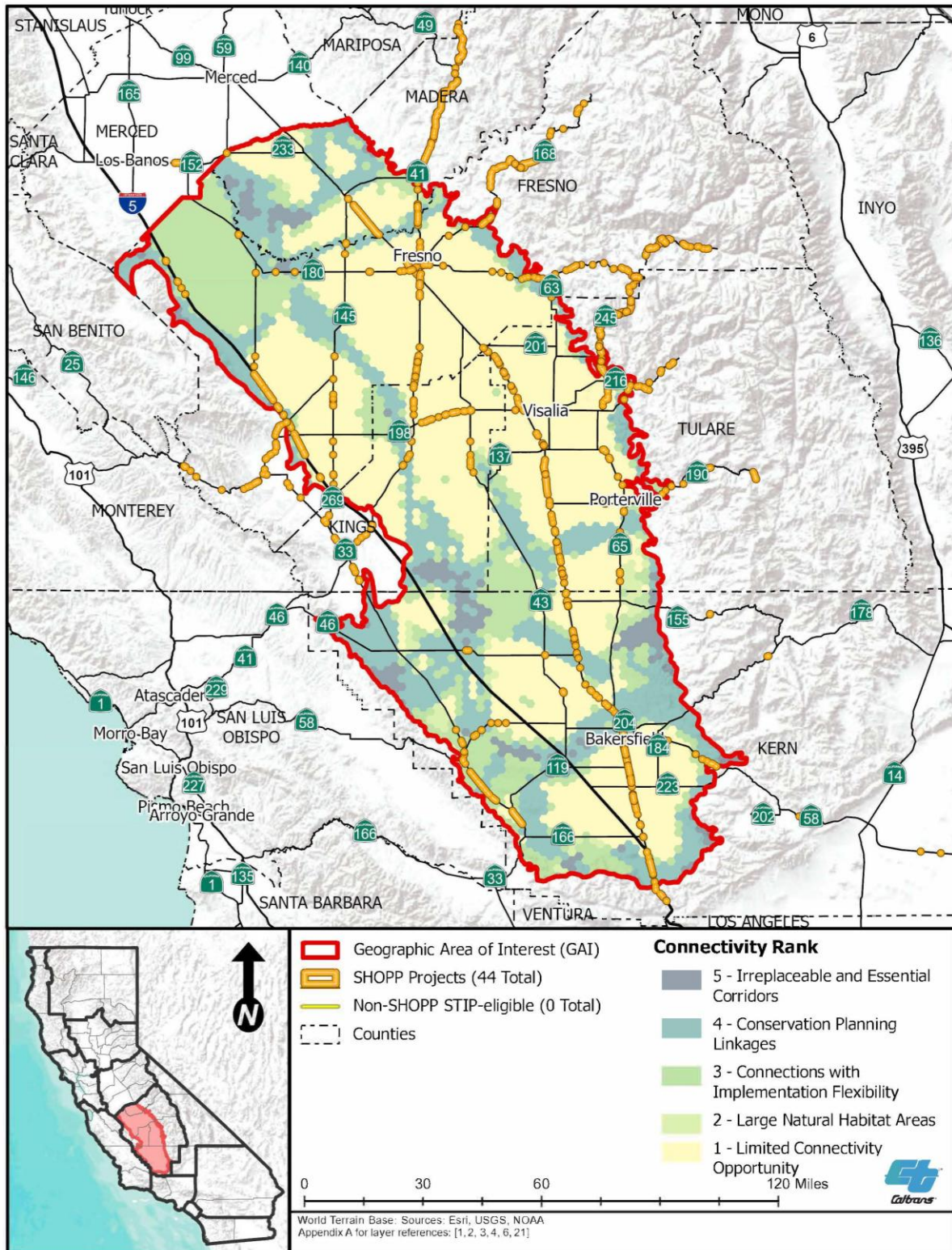


Figure C-9. San Joaquin Valley Wildlife Linkages, Corridors, and Conservation Opportunities (RAMNA Figure 2-9)

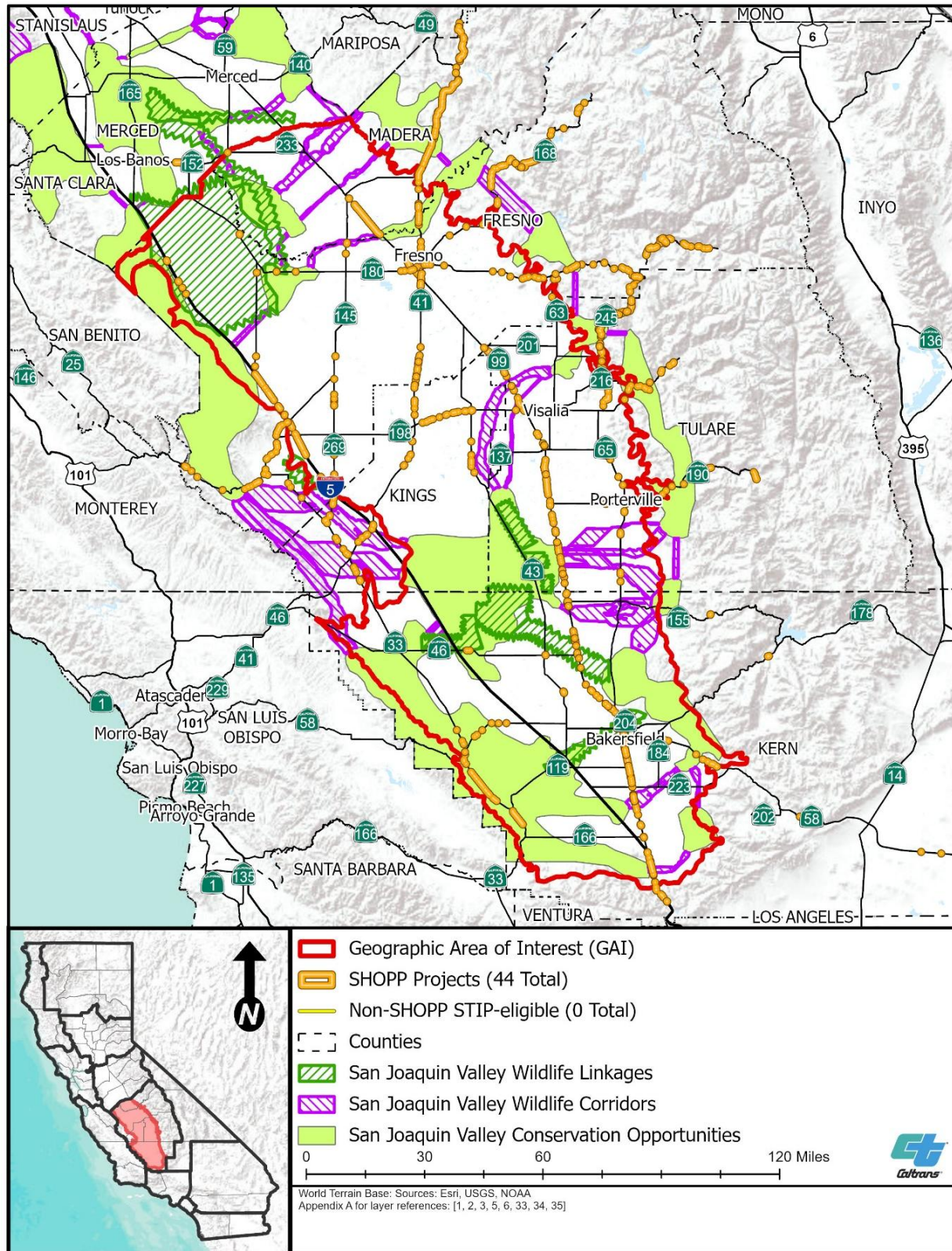


Figure C-10. HUC-8 Sub-basins and HUs (RAMNA Figure 2-10)

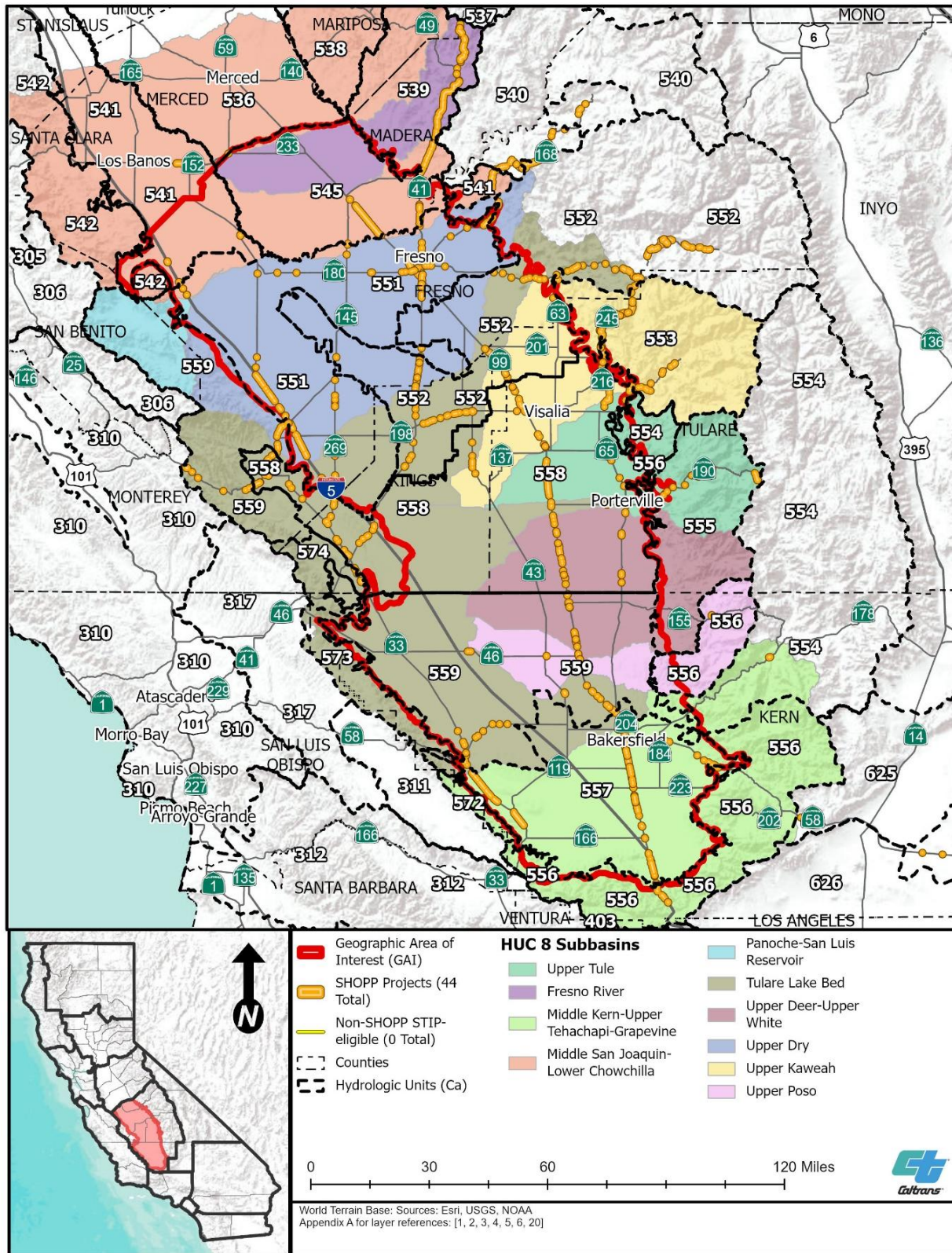


Figure C-11. Flood Hazard Areas (RAMNA Figure 2-11)

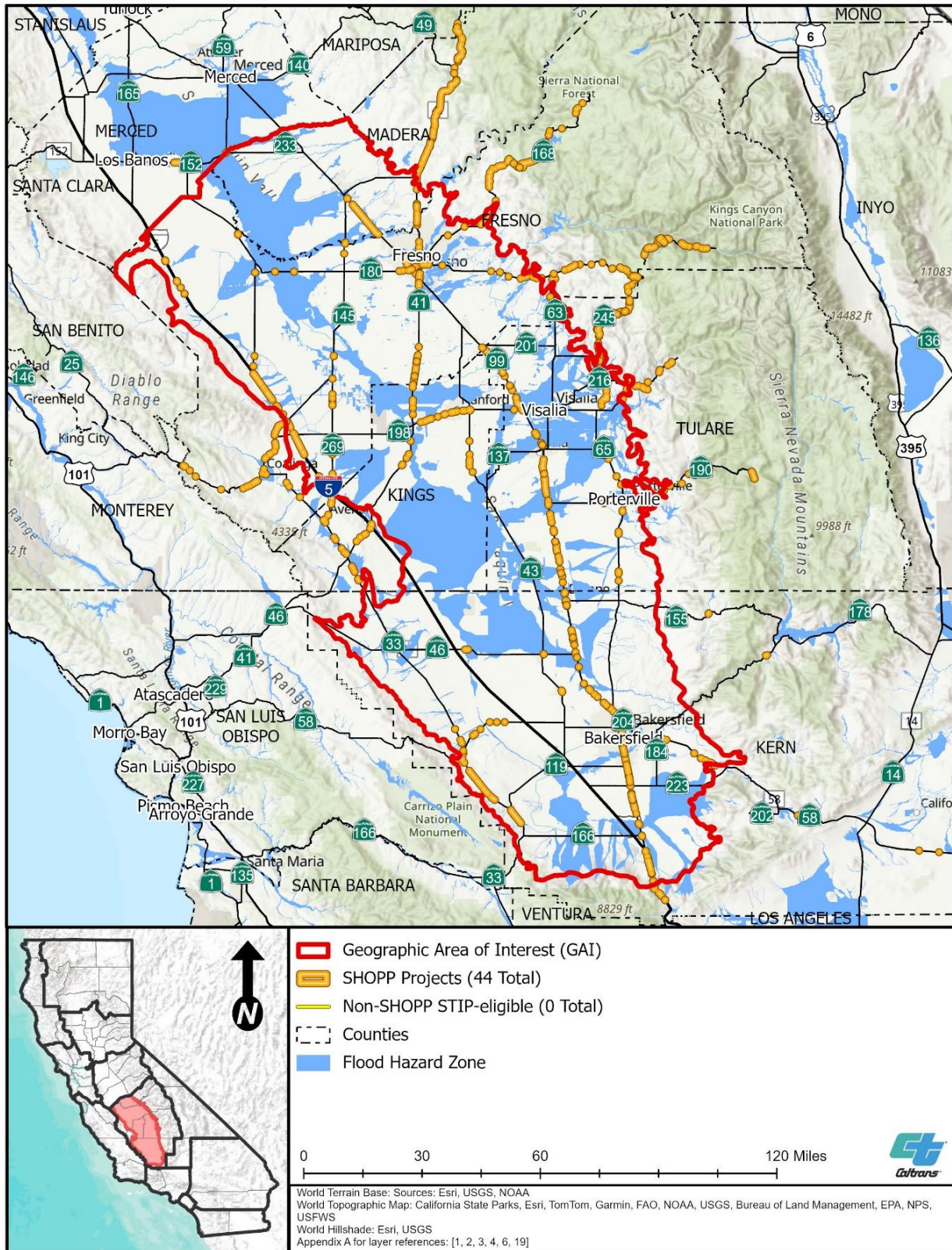


Figure C-12. Aquatic Resource Features and Major Stream Systems (RAMNA Figure 2-12)

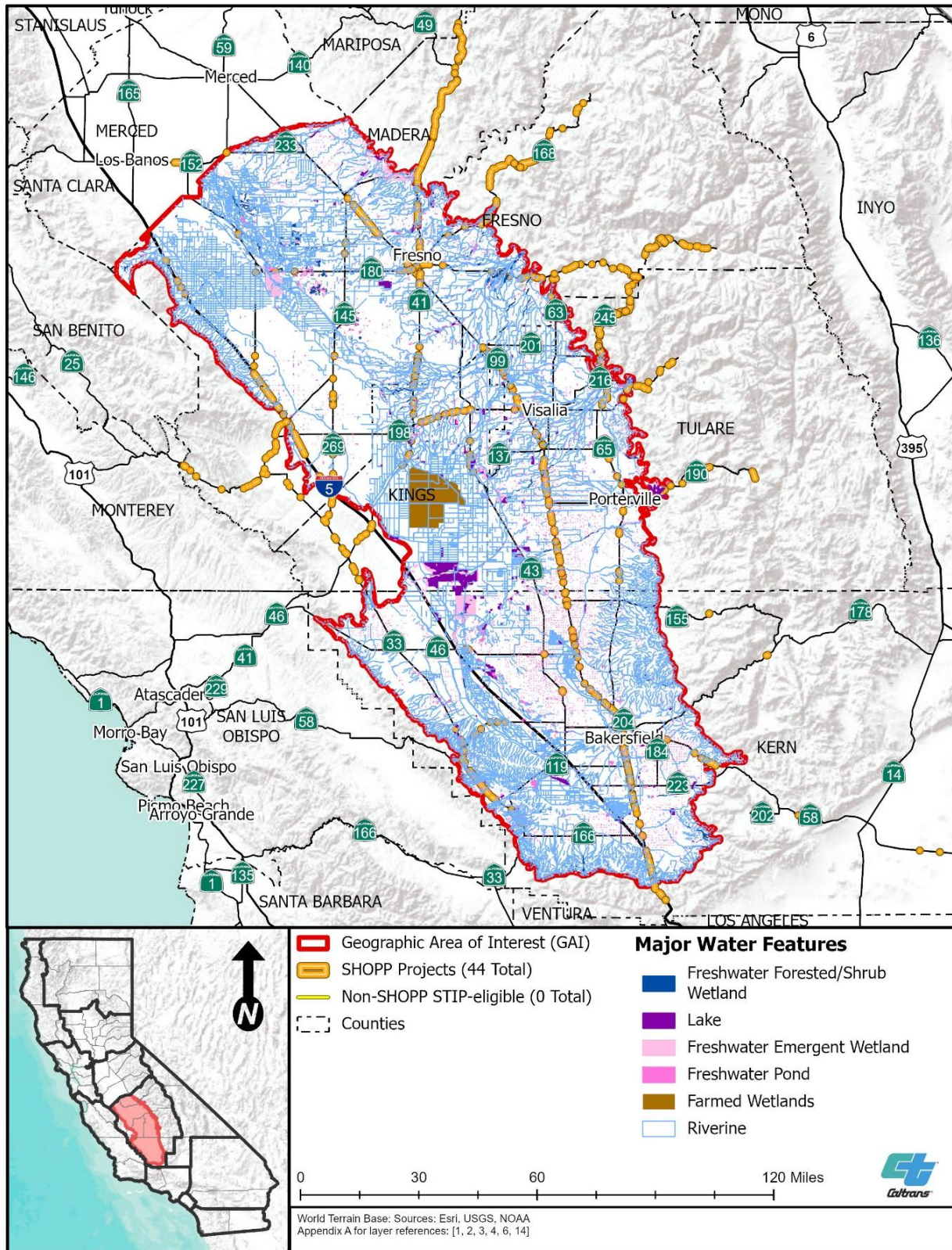
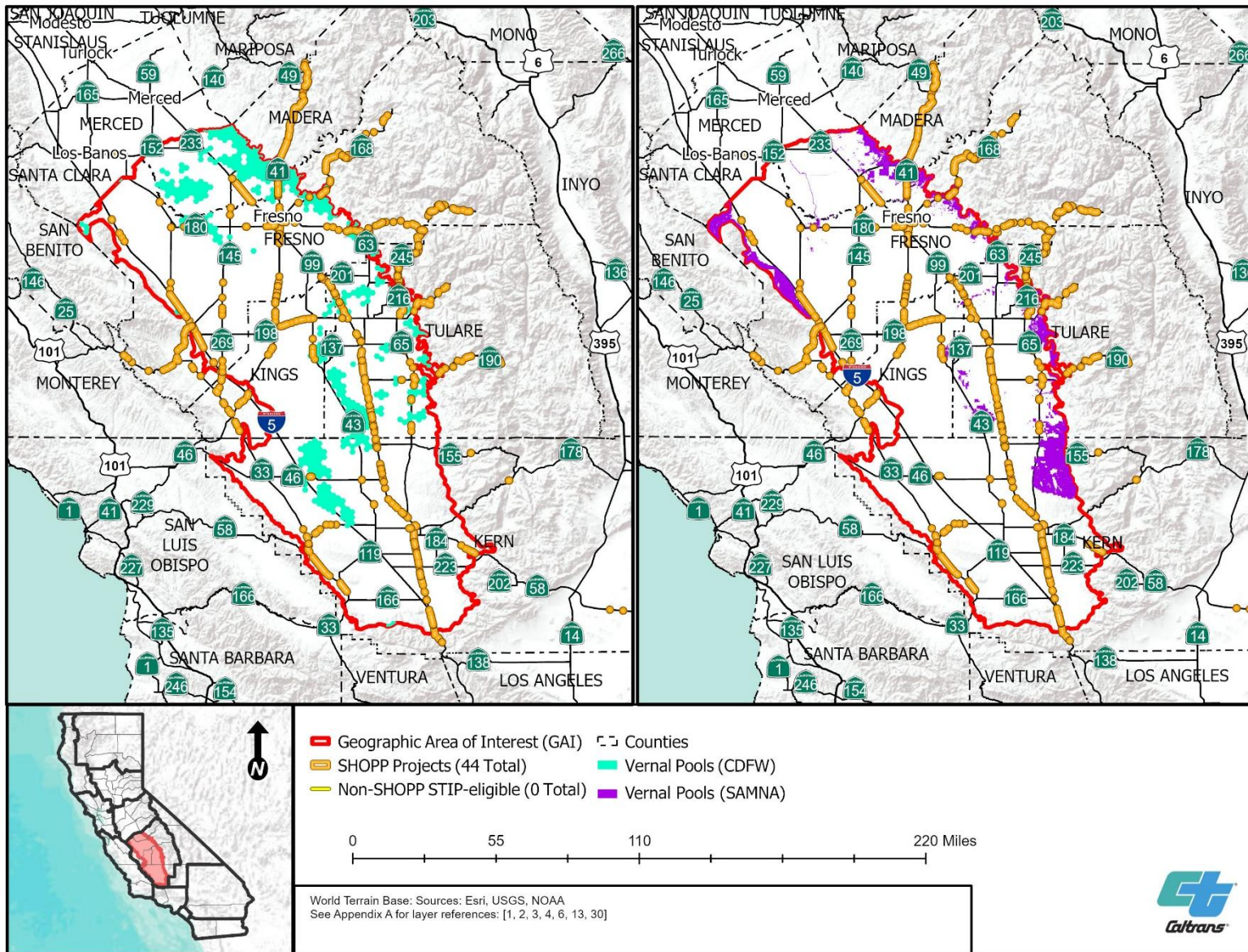


Figure C-13. Vernal Pools in the GAI (RAMNA Figure 2-13)



ATTACHMENT D: ADDITIONAL SPECIES ADVANCE MITIGATION NEEDS ASSESSMENT

The original RAMNA (Caltrans 2020) addressed four species of mitigation need: California tiger salamander (*Ambystoma californiense*), San Joaquin kit fox (*Vulpes macrotis mutica*), giant kangaroo rat (*Dipodomys ingens*), and two subspecies of San Joaquin kangaroo rat (*Dipodomys nitratooides*)—Fresno kangaroo rat (*D. nitratooides exilis*) and Tipton kangaroo rat (*D. nitratooides nitratooides*).

This RAMNA Addendum discusses three additional species of mitigation need: burrowing owl (*Athene cunicularia*), blunt-nosed leopard lizard (*Gambelia sila*), and western spadefoot (*Spea hammondi*). This attachment provides updated RAMNA chapters and sections that address the additional species of mitigation need, as follows:

- *GAI and Resource Focus*, an updated Section 1.5 that describes the three additional species of mitigation need.
- *Relevant Plans, Policies, and Regulations*, an updated Chapter 3 that provides plans and permits focused on the additional species of mitigation need.
- *Estimated Wildlife Impacts*, an updated Section 5.2 in the *Modeled Estimated Impacts* chapter that provides the impacts estimated for the additional species of mitigation need in the GAI.
- *Patterns of Estimated Potential Impacts*, an updated Section 6.2 in the *Benefiting Transportation Project Considerations* chapter that displays the temporal patterns of estimated potential impacts for the additional species of mitigation need.
- *Species of Mitigation Need*, an updated Section 7.3 in the *Wildlife Resources Conservation Goals and Objectives* chapter that describes the additional species of mitigation need, including their conservation status and habitat needs.
- *Regional Conservation Efforts*, an updated Section 7.4 in the *Wildlife Resources Conservation Goals and Objectives* chapter that lists documents identifying areas for species of mitigation need conservation.
- *Pressures and Stressors*, an updated Section 7.5 in the *Wildlife Resources Conservation Goals and Objectives* chapter that describes how the three additional species of mitigation need are affected by habitat loss, fragmentation, and degradation; invasive species; disease and predation; climate change, drought, and wildfire; and contaminants.
- *Advance Mitigation Conservation Goals and Objectives*, an updated Section 7.7 in the *Wildlife Resources Conservation Goals and Objectives* chapter that describes how the additional species of mitigation need would benefit from the five established wildlife resources goals and associated objectives and sub-objectives.
- *Benefiting Transportation Project Needs Summary*, an updated Section 9.2 in the *Assessment of Authorized Activities* chapter that describes mitigation that could be purchased within the next 2 years to potentially address mitigation for impacts on the additional species of mitigation need.

GAI and Resource Focus (RAMNA Updated Section 1.5)

As noted in the original RAMNA (Caltrans 2020), compensatory mitigation for wildlife resources in the GAI was specifically identified as both a historical transportation project compensatory mitigation need and an anticipated future transportation project compensatory mitigation need within District 6. Hence, to further focus the planning effort, District 6 has identified three additional species of mitigation need: burrowing owl (state candidate endangered, state species of special concern), blunt-nosed leopard lizard (federal endangered, state endangered), and western spadefoot (federal proposed threatened, state species of special concern).

Relevant Plans, Policies, and Regulations (RAMNA Updated Chapter 3)

Table D-1 provides information on plans and permits focused on the additional species of mitigation need. The table provides the following information for each reference identified:

- Reference document title
- Status:
 - Final: The reference is completed.
 - Draft: The reference is not complete, and changes may occur when it is finalized.
 - In progress: A formal draft version has not been completed, and the document is being written.
 - In litigation: The reference is subject to at least one lawsuit and is not being revised.
 - Updated periodically: The reference is updated with new information on a somewhat frequent basis.
 - Not publicly available: The reference is known to exist but does not appear to be publicly available.
- Spatial data – whether a map is provided with the document
- Reference purpose – a summary of information relevant to advance mitigation planning and/or a summary of reference intent
- Link – where the reference can be found
- Date – when the reference was published or last updated

The list in Table D-1 is not exhaustive. Additional relevant resources may be consulted by Caltrans as advance mitigation planning progresses, advance mitigation project scopes are conceptualized, and advance mitigation projects are implemented.

Table D-1. Planning Documents Relevant to the Additional Species of Mitigation Need in the GAI (RAMNA Updated Table 3-1)

Title	Status	Spatial Data	Reference Purpose	Link	Date
Special-status Taxa^a Documents	See below	See below	See below	See below	See below
Petition Evaluation for Western Burrowing Owl (<i>Athene cunicularia hypugaea</i>)	Final	Yes	CDFW's formal review of the species condition during consideration for listing under the CESA.	https://fgc.ca.gov/CESA#wbo	8/1/2024
Staff Report on Burrowing Owl Mitigation	Final	No	CDFW's report updating mitigation guidelines for impacts on burrowing owl.	https://wildlife.ca.gov/Conservation/Survey-Protocols#377281284-birds	3/1/2012
Burrowing Owl Survey Protocol and Mitigation Guidelines	Final	No	Survey protocol of the California Burrowing Owl Consortium, accepted by CDFW, for burrowing owl, also with mitigation guidelines.	https://wildlife.ca.gov/Conservation/Survey-Protocols#377281284-birds	4/1/1993
Incidental Take Permit for Burrowing Owl	Final	No	CDFW's list of incidental take permits issued for burrowing owl from its publicly available document search website. There are 2 documents listed in the search in 2025	https://nrm.dfg.ca.gov/documents/docviewer.aspx	9/11/2025 (latest document)

Title	Status	Spatial Data	Reference Purpose	Link	Date
Recovery Plan for Upland Species of the San Joaquin Valley	Final	No	FWS recovery plan for species in the San Joaquin Valley, including blunt-nosed leopard lizard. Recovery criteria for this species includes: ▪ Determine appropriate habitat management and compatible land uses. ▪ Conduct range-wide surveys of known and potential habitat for presence and abundance of blunt-nosed leopard lizards. ▪ Protect additional habitat in key portions of their range: areas of highest priority to target for protection are natural and agricultural lands in various parts of Fresno, Kern, Madera, and San Benito Counties. ▪ Gather additional data on population responses to environmental variation at representative sites in the extant geographic range. ▪ Design and implement a range-wide population monitoring program. ▪ Protect additional habitat in the following areas (all are of equal priority): natural and retired agricultural lands in various parts of Kern and Tulare Counties.	https://ecos.fws.gov/ecp/species/625	9/30/1998
Blunt-nosed leopard lizard 5-Year Review	Final	No	FWS's most recent formal review of the species condition.	https://ecos.fws.gov/ecp/species/625	7/2/2026
Species Status Assessment for the Blunt-nosed Leopard, Version 1.0	Final	No	Species status assessment completed for the blunt-nosed leopard lizard.	https://ecos.fws.gov/ecp/species/625	7/15/2020
Blunt-nosed leopard lizard Critical Habitat Designation	Final	No	Critical habitat has not been designated for this species.	https://ecos.fws.gov/ecp/species/625	NA

Title	Status	Spatial Data	Reference Purpose	Link	Date
Blunt-nosed leopard lizard Biological Opinion	Final	No	FWS' list of the 12 most recent biological opinions that have been used for blunt-nosed leopard lizard, of which 11 occur within the GAI.	https://ecos.fws.gov/ecp/species/625	5/10/2021 (latest document)
Survey Protocol for the Blunt-nosed Leopard Lizard	Final	No	CDFW's protocol for surveying for blunt-nosed leopard lizard.	https://wildlife.ca.gov/Conservation/Survey-Protocols#377281283-reptiles	10/1/2019
Incidental Take Permit for Blunt-nosed leopard lizard	Final	No	CDFW's list of incidental take permits issued for blunt-nosed leopard lizard from its publicly available document search website. There are 3 documents listed in the search.	https://nrm.dfg.ca.gov/documents/docviewer.aspx	10/4/2024 (latest document)
Species Status Assessment Report for Western Spadefoot	Final	No	FWS' formal review of western spadefoot to assess the species' condition while it is being considered for listing under the FESA.	https://ecos.fws.gov/ecp/species/5425	9/29/2023
California Amphibian and Reptile Species of Special Concern	Final	Yes	CDFW's summary of information on the species' condition.	https://wildlife.ca.gov/Conservation/SSC/Amphibians-Reptiles	6/21/2016

^a Consistent with the Caltrans SAMNA and the original RAMNA Chapter 4, *Existing Mitigation Opportunities*, for the purposes of this document, special-status species are defined as federally and State of California threatened, endangered, or sensitive species; state fully protected or rare species; and state species of special concern.

Estimated Wildlife Impacts (RAMNA Updated Section 5.2)

Species of mitigation need are species for whom a high probability of mitigation need is anticipated. Using the methods described in RAMNA Section 5.1.1, impacts on the species of mitigation need were estimated for the transportation projects listed in Attachment B, Table B-1, *Transportation Projects Planned in the GAI during the Planning Period*. Forecast impacts on all seven species of mitigation need are provided in Table D-2, and each new species of mitigation need is discussed briefly in the subsections below. Of the 44 SHOPP transportation projects evaluated, 35 transportation projects are forecast to affect 101 acres of species of mitigation need habitat within the GAI during the planning period (see Table D-2).

Blunt-nosed Leopard Lizard

This species was chosen as a species of mitigation need because of its status and the ongoing need for compensatory mitigation for transportation projects within the GAI. Blunt-nosed leopard lizard is a federal and state-listed endangered reptile species that occurs in scrub habitats.

Using the methods described in Section 5.1.1 of the original RAMNA, impacts on blunt-nosed leopard lizard and its habitat were estimated for the transportation projects that may affect wildlife. Of the 44 SHOPP transportation projects evaluated, 17 are forecast to affect 25.3 acres of blunt-nosed leopard lizard habitat within the GAI (Table D-2; Caltrans 2024).

Burrowing Owl

This species was chosen as a species of mitigation need because of its status and the ongoing need for compensatory mitigation for transportation projects within the GAI. Burrowing owl is a state candidate endangered bird species and state species of special concern that occurs in a variety of habitats, including coastal sage scrub, Great Basin grassland and scrub, desert scrub, and valley and foothill grasslands.

Using the methods described in Section 5.1.1 of the original RAMNA, impacts on burrowing owl and its habitat were estimated for the transportation projects that may affect wildlife. Of the 44 SHOPP transportation projects evaluated, 26 are forecast to affect 28.6 acres of burrowing owl habitat within the GAI (Table D-2; Caltrans 2024).

Western Spadefoot

This species was chosen as a species of mitigation need because of its status and the ongoing need for compensatory mitigation for transportation projects within the GAI. Western spadefoot is a proposed federally threatened amphibian species and state species of special concern that occurs in woodland, coastal sage scrub, valley and foothill grasslands, vernal pools, and other wetland habitats.

Using the methods described in Section 5.1.1 of the original RAMNA, impacts on western spadefoot and its habitat were estimated for the transportation projects that may affect

wildlife. Of the 44 SHOPP transportation projects evaluated, 35 are forecast to affect 99.5 acres of western spadefoot habitat within the GAI (Table D-2; Caltrans 2024).

Table D-2. Estimated SHOPP Impacts on Species of Mitigation Need in the GAI (RAMNA New Table)

Species of Mitigation Need	Number of Caltrans SHOPP Projects ^a	Estimated Habitat Impact (acres)
Blunt-nosed leopard lizard	17	25.3
Burrowing owl	26	28.6
California tiger salamander ^b	14	7.9
Fresno kangaroo rat ^b	21	27.0
Giant kangaroo rat ^b	11	18.5
San Joaquin kit fox ^b	24	25.1
Western spadefoot	35	99.5
Total	35^c	99.5^d

Source: Caltrans (2024)

^a Transportation projects are listed in Attachment B.

^b For life history and other information, see Caltrans (2020).

^c Totals may not reflect numbers presented in the rows above. Some transportation projects are forecast to impact the same habitat. Some species use the same habitat.

^d 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. The total acreage of each habitat type affected listed in the top row represents the largest number in each column, not the sum of the numbers.

Potential Co-benefitting Species

The species of mitigation need co-occur with other protected plant, invertebrate, amphibian, reptile, bird, and mammal species. By procuring or establishing advance mitigation credits for one or more of the species of mitigation need, Caltrans District 6 will also benefit multiple special-status species that occur in and utilize the same habitats, including the state candidate endangered Crotch's bumble bee (*Bombus crotchii*).

Using the methods described in Section 5.1.1 of the original RAMNA, the SAMNA forecast impacts on an additional 126 special-status terrestrial species that potentially use the same habitats as the species of mitigation need in the Great Valley Ecoregion Section, 109 of which occur in the GAI. (Table D-3).

Patterns of Estimated Potential Impacts (RAMNA Updated Section 6.2)

Initial estimated impact patterns for the additional species of mitigation need are based on the SHOPP transportation project information provided in Attachment B, *Transportation Projects Planned for the GAI during the Planning Period*.

- As shown in Table D-4 and in Figure D-1, when the SHOPP transportation projects identified previously have their forecast species of mitigation need impacts examined relative to their expected advertising date, the compensatory mitigation needs are spread throughout the 10-year planning period, as described below:
 - Compensatory mitigation needs for impacts on blunt-nosed leopard lizard and its habitat are concentrated in fiscal year 2025/26, with lesser impacts in fiscal years 2023/24 and 2030/31, and minimal impacts in fiscal years 2024/25, 2026/27, 2027/28, 2029/30, and 2032/33.
 - Compensatory mitigation needs for impacts on burrowing owl and its habitat are concentrated in fiscal year 2025/26, with lesser impacts in fiscal years 2023/24 and 2030/31, and with minimal impacts spread throughout the rest of the transportation planning period.
 - Compensatory mitigation needs for impacts on California tiger salamander and its habitat are concentrated in fiscal years 2025/26, with minimal impacts spread throughout fiscal years 2024/25 through 2032/33.
 - Compensatory mitigation needs for impacts on Fresno kangaroo rat and its habitat are concentrated in fiscal year 2025/26, with lesser impacts in fiscal year 2023/24 and 2030/31, and minimal impacts spread throughout the rest of the transportation planning period.
 - Compensatory mitigation needs for impacts on giant kangaroo rat and its habitat are concentrated in fiscal year 2025/26, with minimal impacts in fiscal years 2023/24, 2024/25, 2027/28, 2029/30, 2030/31, and 2032/33.
 - Compensatory mitigation needs for impacts on San Joaquin kit fox and its habitat are concentrated fiscal year 2025/26, with lesser impacts in fiscal years 2023/24 and 2030/31, and minimal impacts spread throughout the rest of the transportation planning period.
 - Compensatory mitigation needs for impacts on western spadefoot and its habitat are concentrated in fiscal year 2025/26, with less impacts in fiscal years 2023/24, 2024/25, 2026/27, 2029/30, 2030/31, and 2032/33, and with minimal impacts in fiscal years 2027/28, 2028/29, and 2031/32.
- Figure E-3 in Attachment E, *Riparian Habitat Advance Mitigation Needs Assessment*, shows the location of SHOPP project estimated impacts within the GAI, by transportation project delivery year.

Table D-3. Estimated SHOPP Impacts on Species of Mitigation Need and Co-occurring Species Habitat (RAMNA New Table)

Common Name	Species Name	Status	Akali Desert Scrub	Annual Grassland	Barren	Blue Oak-Foothill Pine	Deciduous Orchard	Fresh Emergent Wetland	Irrigated Row and Field Crops	Pasture	Riverine	Valley Foothill Riparian
Not applicable	Not applicable	Total	13.49	13.62	0.99	0.02	45.65	0.06	26.00	0.34	0.68	0.11
Species of Mitigation Need	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below
Blunt-nosed leopard lizard	<i>Gambelia sila</i>	FE, SE, SFP	13.5	10.8	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Burrowing owl	<i>Athene cunicularia</i>	SC, SSC	13.5	13.6	1.0	<0.1	0.0	0.0	0.0	0.3	0.0	0.1
California tiger salamander ^a	<i>Ambystoma californiense</i>	FT	0.0	7.8	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	<0.1
Fresno kangaroo rat ^b	<i>Dipodomys nitratoides</i>	FE, SE	13.5	12.2	1.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Giant kangaroo rat	<i>Dipodomys ingens</i>	FE, SE	13.2	4.3	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
San Joaquin kit fox	<i>Vulpes macrotis mutica</i>	FE, ST	13.5	10.2	1.0	0.0	0.0	0.0	0.0	0.3	0.0	0.1
Western spadefoot ^c	<i>Spea hammondi</i>	FT	13.5	13.6	0.0	<0.1	45.7	0.1	26.0	0.0	0.7	0.0
Plant	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below
Bakersfield cactus	<i>Opuntia basilaris</i> var. <i>treleasei</i>	FE, SE	0.0	13.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Boggs Lake hedge-hyssop	<i>Gratiola heterosepala</i>	FS, SE	0.0	13.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Braunton's milk-vetch	<i>Astragalus brauntonii</i>	FE	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
California jewelflower	<i>Caulanthus californicus</i>	FE, SE	0.0	13.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
California Orcutt grass	<i>Orcuttia californica</i>	FE, SE	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chinese Camp brodiaea	<i>Brodiaea pallida</i>	FT, SE	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Colusa grass	<i>Neostapfia colusana</i>	FT, SE	0.0	13.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Conejo buckwheat	<i>Eriogonum crocatum</i>	SR	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Conejo dudleya	<i>Dudleya parva</i>	FT	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Congdon's lewisia	<i>Lewisia congdonii</i>	FS, SR	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Congdon's woolly sunflower	<i>Eriophyllum congdonii</i>	FS, SR	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dwarf goldenstar	<i>Bloomeria humilis</i>	FS, SR	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Greene's tuctoria	<i>Tuctoria greenei</i>	FE, SR	0.0	13.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hairy Orcutt grass	<i>Orcuttia pilosa</i>	FE, SE	0.0	13.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hartweg's golden sunburst	<i>Pseudobahia bahiifolia</i>	FE, SE	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hoover's spurge	<i>Euphorbia hooveri</i>	FT	0.0	13.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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Kaweah brodiaea	<i>Brodiaea insignis</i>	FS, SE	0.0	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Keck's checkerbloom	<i>Sidalcea keckii</i>	FE	0.0	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kern mallow	<i>Eremalche parryi</i> ssp. <i>kernensis</i>	FE	0.0	13.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lyon's pentachaeta	<i>Pentachaeta lyonii</i>	FE, SE	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Palmate-bracted bird's-beak	<i>Chloropyron palmatum</i>	FE, SE	0.0	13.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red Hills vervain	<i>Verbena californica</i>	FT, ST	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Roderick's fritillary	<i>Fritillaria roderickii</i>	SE	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
San Benito evening-primrose	<i>Camissonia benitensis</i>	None	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
San Fernando Valley spineflower	<i>Chorizanthe parryi</i> var. <i>fernandina</i>	FS, SE	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
San Joaquin adobe sunburst	<i>Pseudobahia peirsonii</i>	FT, SE	0.0	13.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
San Joaquin Valley Orcutt grass	<i>Orcuttia inaequalis</i>	FT, SE	0.0	13.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
San Joaquin woollythreads	<i>Monolopia congdonii</i>	FE	0.0	13.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Spreading navarretia	<i>Navarretia fossalis</i>	FT	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Springville clarkia	<i>Clarkia springvillensis</i>	FT, SE	0.0	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Striped adobe-lily	<i>Fritillaria striata</i>	FS, ST	0.0	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Succulent owl's-clover	<i>Castilleja campestris</i> var. <i>succulenta</i>	FT, SE	0.0	13.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Invertebrates	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below
Longhorn fairy shrimp	<i>Branchinecta longiantenna</i>	FE	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vernal pool fairy shrimp	<i>Branchinecta lynchi</i>	FT	0.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vernal pool tadpole shrimp	<i>Lepidurus packardi</i>	FE	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Amphibians	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	<i>Taricha torosa</i>	SSC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
California red-legged frog	<i>Rana draytonii</i>	FT, SSC	0.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ensatina ^d	<i>Ensatina eschscholtzii</i>	FS	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	<0.1

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Foothill yellow-legged frog ^e	<i>Rana boylei</i>	FE, FT	0.0	4.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	<0.1
Reptiles	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below
Coast horned lizard ^f	<i>Phrynosoma blainvillii</i>	FS, SSC	13.5	13.6	0.0	<0.1	0.0	0.0	26.0	0.0	0.0	0.1
Northern California legless lizard ^g	<i>Anniella pulchra</i>	SSC	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.1
San Joaquin Coachwhip ^h	<i>Masticophis flagellum ruddocki</i>	SSC	13.5	12.2	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.1
Common gartersnake ⁱ	<i>Thamnophis sirtalis</i>	SSC	0.0	13.6	0.0	<0.1	45.7	0.1	26.0	0.3	0.0	0.1
Desert night lizard	<i>Xantusia vigilis</i>	FS, SSC	0.0	2.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Giant gartersnake	<i>Thamnophis gigas</i>	FT, ST	0.0	7.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0
Ring-necked snake	<i>Diadophis punctatus</i>	FS, SSC	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Striped racer ^j	<i>Coluber lateralis</i>	None	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	<0.1
Two-striped gartersnake	<i>Thamnophis hammondi</i>	FS, SSC	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Western patch-nosed snake	<i>Salvadora hexalepis</i>	SSC	12.2	3.4	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Western skink ^k	<i>Plestiodon skiltonianus</i>	FS	0.0	1.1	0.0	0.0	0.0	0.0	4.2	0.0	0.0	0.0
Birds	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below
Bald eagle	<i>Haliaeetus leucocephalus</i>	FS, SE, SFP, SFS	0.0	13.6	1.0	<0.1	0.0	0.1	0.0	0.0	0.7	0.1
Bell's sparrow ^l	<i>Artemisiospiza belli</i>	FT, SSC	13.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bewick's wren ^m	<i>Thryomanes bewickii</i>	SSC	0.0	0.0	0.0	<0.1	45.7	0.0	0.0	0.0	0.0	0.1
Black tern	<i>Chlidonias niger</i>	SSC	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
California condor	<i>Gymnogyps californianus</i>	FE, SE, SFS, SFP	0.0	2.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
California quail ⁿ	<i>Callipepla californica</i>	SSC	13.5	13.6	0.0	<0.1	45.7	0.0	0.0	0.0	0.0	0.1
California towhee ^o	<i>Melospiza crissalis</i>	None	0.0	0.0	0.0	<0.1	34.7	0.0	0.0	0.0	0.0	<0.1
Common yellowthroat ^p	<i>Geothlypis trichas</i>	SSC	0.0	13.6	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
Golden eagle	<i>Aquila chrysaetos</i>	FS, SFS, SFP	13.5	13.6	1.0	<0.1	0.0	0.1	0.0	0.3	0.0	0.1
Grasshopper sparrow	<i>Ammodramus savannarum</i>	SSC	0.0	10.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Greater white-fronted goose ^q	<i>Anser albifrons</i>	SSC	0.0	13.6	0.0	0.0	0.0	0.1	26.0	0.0	0.7	0.0

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Hutton's vireo ^r	<i>Vireo huttoni</i>	SSC	0.0	0.0	0.0	<0.1	2.3	0.0	0.0	0.0	0.0	<0.1
Least bittern	<i>Ixobrychus exilis</i>	SSC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Loggerhead shrike	<i>Lanius ludovicianus</i>	SSC	13.5	13.6	1.0	<0.1	45.7	0.0	0.0	0.0	0.0	0.1
Long-eared owl	<i>Asio otus</i>	SSC	0.0	3.5	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	<0.1
Marsh wren ^s	<i>Cistothorus palustris</i>	SSC	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	<0.1
Mountain plover	<i>Charadrius montanus</i>	FS, SSC	0.0	2.4	0.0	0.0	0.0	0.0	8.6	0.0	0.0	0.0
Northern harrier	<i>Circus cyaneus</i>	SSC	13.5	13.6	1.0	<0.1	45.7	0.1	0.0	0.0	0.7	0.1
Oregon vesper sparrow	<i>Poocetes gramineus affinis</i>	SSC	0.0	5.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0
Redhead	<i>Aythya americana</i>	SSC	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0
Red-winged blackbird ^t	<i>Agelaius phoeniceus</i>	SSC	0.0	13.6	0.0	0.0	45.7	0.1	26.0	0.0	0.0	0.1
Rufous-crowned sparrow ^u	<i>Aimophila ruficeps</i>	SSC	0.0	2.3	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	<0.1
San Joaquin Le Conte's thrasher	<i>Toxostoma lecontei macmillanorum</i>	FS, SSC	12.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lesser sandhill crane ^v	<i>Antigone canadensis canadensis</i>	SSC	0.0	13.6	0.0	0.0	0.0	0.1	26.0	0.0	0.0	0.1
Savannah sparrow ^w	<i>Passerculus sandwichensis</i>	SE, SSC	13.5	13.6	0.0	<0.1	45.7	0.0	0.0	0.3	0.0	0.1
Short-eared owl	<i>Asio flammeus</i>	SSC	13.5	13.6	0.0	<0.1	0.0	0.1	26.0	0.0	0.0	0.1
Song sparrow ^x	<i>Melospiza melodia</i>	SSC	0.0	13.6	0.0	<0.1	45.7	0.1	0.0	0.0	0.7	0.1
Spotted towhee ^y	<i>Pipilo maculatus</i>	SSC	0.0	0.0	0.0	<0.1	45.7	0.0	0.0	0.0	0.0	0.1
Swainson's hawk	<i>Buteo swainsoni</i>	FS, ST	0.0	13.3	0.0	<0.1	0.0	0.0	0.0	0.3	0.0	0.1
Tricolored blackbird	<i>Agelaius tricolor</i>	FS, ST, SSC	0.0	13.6	0.0	0.0	45.7	0.1	26.0	0.0	0.0	0.1
White-tailed kite	<i>Elanus leucurus</i>	FS, SFP	13.5	13.6	1.0	<0.1	45.7	0.1	26.0	0.0	0.0	0.1
Yellow warbler	<i>Setophaga petechia</i>	SSC	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	<0.1
Yellow-breasted chat	<i>Icteria virens</i>	SSC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1
Yellow-headed blackbird	<i>Xanthocephalus xanthocephalus</i>	SSC	0.0	13.6	0.0	0.0	0.0	0.1	0.0	0.3	0.0	0.0
Mammals	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	13.5	13.6	1.0	<0.1	45.7	0.0	26.0	0.3	0.0	0.1
Big-eared woodrat	<i>Neotoma macrotis</i>	FS, SSC	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	<0.1
Broad-footed mole ^z	<i>Scapanus latimanus</i>	SSC	0.0	3.5	0.0	<0.1	0.0	0.0	4.2	0.0	0.0	<0.1

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Brush rabbit ^{aa}	<i>Sylvilagus bachmani</i>	FE, SE	11.6	3.5	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	<0.1
California pocket mouse ^{bb}	<i>Chaetodipus californicus</i>	SSC	0.0	3.5	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0
California vole	<i>Microtus californicus</i>	FE, FS, SE, SSC	13.5	13.6	0.0	<0.1	45.7	0.1	26.0	0.3	0.0	0.1
Deer mouse ^{cc}	<i>Peromyscus maniculatus</i>	SSC	13.5	13.6	1.0	<0.1	45.7	0.1	26.0	0.3	0.0	0.1
Desert woodrat ^{dd}	<i>Neotoma lepida</i>	SSC	11.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fringed myotis	<i>Myotis thysanodes</i>	FS	0.0	3.9	0.9	0.0	0.0	0.0	3.3	0.0	0.0	0.0
Heermann's kangaroo rat ^{ee}	<i>Dipodomys heermanni</i>	None	13.5	13.6	0.0	<0.1	0.0	0.0	0.0	0.3	0.0	0.0
Long-eared myotis	<i>Myotis evotis</i>	FS	0.2	0.0	0.0	0.0	<0.1	0.0	0.1	0.0	0.0	0.0
Mountain lion ^{ff}	<i>Puma concolor</i>	SSC	0.0	3.6	0.0	0.0	0.0	0.0	0.0	0.3	0.0	<0.1
Nelson's antelope ground squirrel	<i>Ammospermophilus nelsoni</i>	FS, ST	13.5	6.6	1.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Northern river otter ^{gg}	<i>Lontra canadensis</i>	SSC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Buena Vista Lake ornate shrew ^{hh}	<i>Sorex ornatus relictus</i>	FE, SSC	0.0	13.6	0.0	<0.1	0.0	0.1	0.0	0.0	0.0	0.1
Pallid bat	<i>Antrozous pallidus</i>	FS, SSC	13.5	13.6	1.0	<0.1	45.7	0.0	26.0	0.3	0.7	0.1
Red fox ⁱⁱ	<i>Vulpes vulpes</i>	SE/ST	0.0	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ringtail	<i>Bassariscus astutus</i>	SFP	11.7	5.3	0.6	<0.1	0.0	0.0	5.3	0.0	0.0	<0.1
San Joaquin pocket mouse	<i>Perognathus inornatus</i>	FS	0.0	13.3	1.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Small-footed myotis	<i>Myotis ciliolabrum</i>	FS	11.7	4.0	0.0	<0.1	0.3	0.0	2.0	0.0	0.0	<0.1
Tulare grasshopper mouse ^{jj}	<i>Onychomys torridus tularensis</i>	SSC	13.5	8.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Spotted bat	<i>Euderma maculatum</i>	FS, SSC	0.0	2.6	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	<0.1
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	FS, SSC	13.5	13.6	1.0	<0.1	45.7	0.0	26.0	0.3	0.7	0.1
Western mastiff bat	<i>Eumops perotis</i>	FS, SSC	13.5	12.6	1.0	<0.1	43.1	0.1	19.2	0.3	0.0	0.1
Western red bat	<i>Lasiurus blossevillei</i>	SSC	0.0	13.6	0.0	<0.1	0.0	0.1	0.0	0.3	0.7	0.1
Western spotted skunk ^{kk}	<i>Spilogale gracilis</i>	SSC	13.5	13.6	0.0	<0.1	45.7	0.0	26.0	0.3	0.0	0.1
Yuma myotis	<i>Myotis yumanensis</i>	FS	13.5	13.6	0.0	<0.1	45.7	0.1	26.0	0.3	0.7	0.1

Source: Caltrans (2024)
Notes: FE = federal endangered, FS = federal sensitive (USFS and/or BLM sensitive), FT = federal threatened, SE = state endangered, SFP = state fully protected, SFS = state fire sensitive, SR = state rare, SSC = species of special concern (CDFW), ST = state threatened
^a California tiger salamander: Only the Central California DPS occurs in the GAI.
^b Impacts to Fresno kangaroo rat are inclusive of Tipton kangaroo rat and short-nosed kangaroo rat.
^c Western spadefoot: Only the Northern DPS (proposed federal threatened) occurs in the GAI.

^d Ensatina: Only the Sierra Nevada subspecies (*Ensatina eschscholtzii platensis*) has the potential to occur in the DPS.

^e Foothill yellow-legged frog: Only the Central Coast DPS (federal endangered) and South Sierra DPS (federal threatened) occur in the GAI.

^f Coast horned lizard: Common name has been updated from Blainville's horned lizard.

^g Northern California legless lizard: Common name has been updated from California legless lizard.

^h San Joaquin Coachwhip: Common name has been updated from Coachwhip, and scientific name has been updated from *Coluber flagellum*.

ⁱ Common gartersnake: Only the San Francisco and South Coast subspecies are special-status, and it does not occur in the GAI.

^j Striped racer: Only the Alameda subspecies is special-status, and it does not occur in the GAI.

^k Western skink: Only the Coronado subspecies (*Plestiodon skiltonianus interparietalis*) is special-status, and it does not occur in the GAI.

^l Bell's sparrow: Only the San Clemente subspecies is special-status, and it does not occur in the GAI.

^m Bewick's swren: Only the San Clemente subspecies is special-status, and it does not occur in the GAI.

ⁿ California quail: Only the Catalina subspecies (*Callipepla californica catalinensis*) is special-status, and it does not occur in the GAI.

^o California towhee: Only the Inyo subspecies is special-status, and it does not occur in the GAI.

^p Common yellowthroat: Only the San Francisco/saltmarsh subspecies is special-status, and it does not occur in the GAI.

^q Greater white-fronted goose: Only the Tule subspecies is special-status, and it does not occur in the GAI.

^r Hutton's vireo: Only the Catalina subspecies is special-status, and it does not occur in the GAI.

^s Marsh wren: Only the Clark's subspecies (*Cistothorus palustris clarkae*) is special-status, and it does not occur in the GAI.

^t Red-winged blackbird: Only the Kern subspecies (*Agelaius phoeniceus aciculatus*) is special-status and occurs in the GAI.

^u Rufous-crowned sparrow: Only the Santa Cruz Island subspecies is special-status, and it does not occur in the GAI.

^v Lesser sandhill crane: Common name has been updated from Sandhill crane, and scientific name has been updated from *Grus canadensis*.

^w Savannah sparrow: Only the Belding's and large-billed subspecies are special-status, and it does not occur in the GAI.

^x Song sparrow: There are five subspecies that are special-status, none of which occur in the GAI.

^y Spotted towhee: Only the San Clemente subspecies is special status, and it does not occur in the GAI.

^z Broad-footed mole: Only the Alameda Island subspecies is special-status, and it does not occur in the GAI.

^{aa} Brush rabbit: Only the riparian subspecies is special-status in San Joaquin and Stanislaus Counties, and it does not occur in the GAI.

^{bb} California pocket mouse: Only the Dulzura subspecies from south San Bernardino is special-status, and it does not occur in the GAI.

^{cc} Deer mouse: Only the Channel Islands subspecies is special-status, and it does not occur in the GAI.

^{dd} Desert woodrat: Only the San Diego subspecies is special-status, and it does not occur in the GAI.

^{ee} Heermann's kangaroo rat: Only the Morro Bay subspecies is special-status, and it does not occur in the GAI.

^{ff} Mountain lion: Only the Yuma subspecies is special-status, and it does not occur in the GAI.

^{gg} Northern river otter: Only the southwestern subspecies is special-status, and it does not occur in the GAI.

^{hh} Buena Vista Lake ornate shrew: Common name has been updated from ornate shrew, and scientific name has been updated from *Sorex ornatus relictus*.

ⁱⁱ Red fox: Only the Sierra Nevada red fox DPS occurs in the GAI.

^{jj} Tulare grasshopper mouse: Common name has been updated from southern grasshopper mouse, and scientific name has been updated from *Onychomys torridus*.

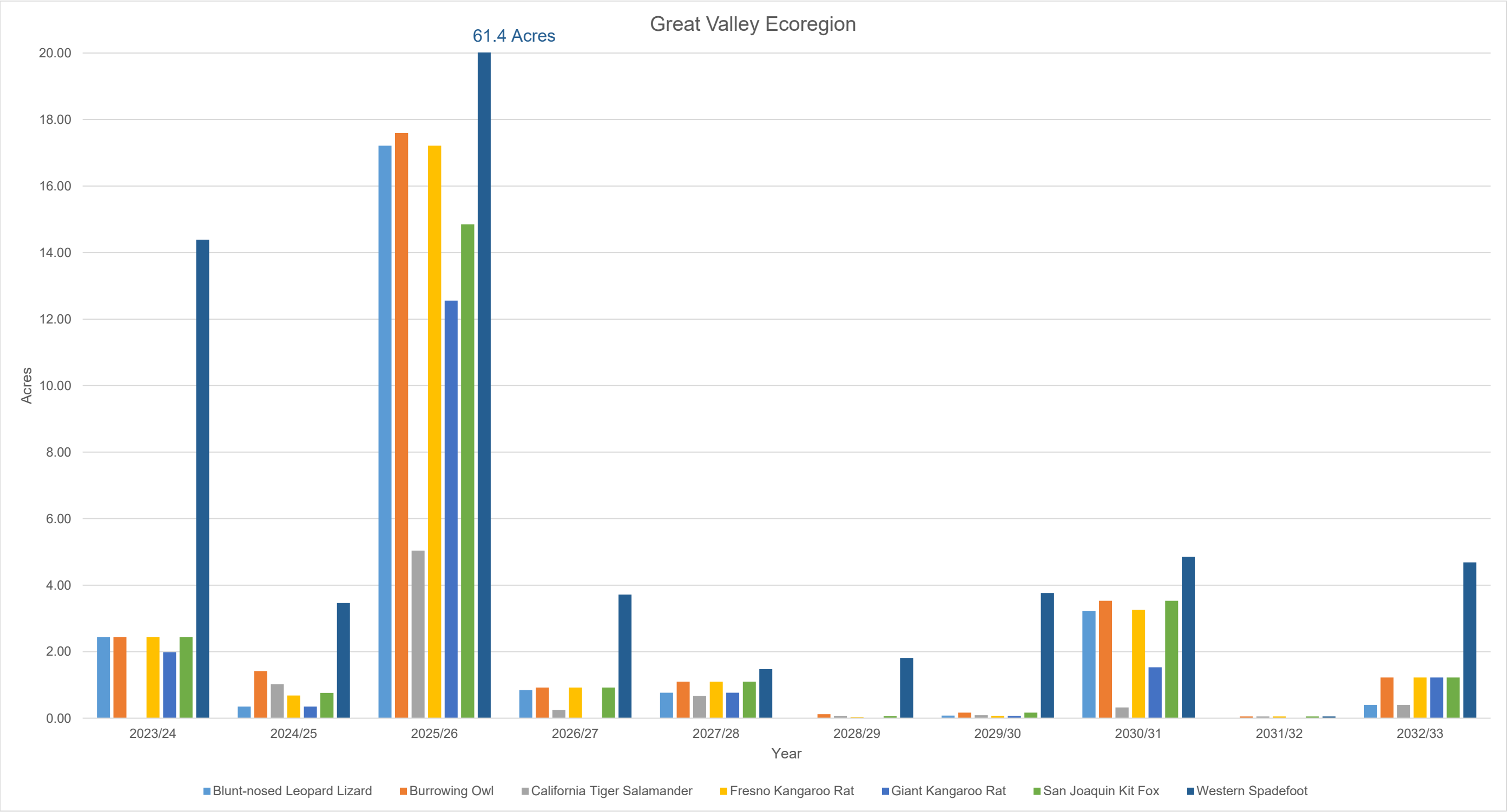
^{kk} Western spotted skunk: Only the Channel Islands subspecies is special-status, and it does not occur in the GAI.

Table D-4. Estimated Impacts on Species of Mitigation Need in the GAI, by Transportation Project Delivery Year (RAMNA New Table)

Expected Adver- tisement Year	Blunt-nosed Leopard Lizard: Number of Caltrans SHOPP Projects ^a	Blunt-nosed Leopard Lizard: Estimated Habitat Impact (acres) ^b	Burrowing Owl: Number of Caltrans SHOPP Projects ^a	Burrowing Owl: Estimated Habitat Impact (acres) ^b	California Tiger Salamander: Number of Caltrans SHOPP Projects ^a	California Tiger Salamander: Estimated Habitat Impact (acres) ^b	Fresno Kangaroo Rat: Number of Caltrans SHOPP Projects ^a	Fresno Kangaroo Rat: Estimated Habitat Impact (acres) ^b	Giant Kangaroo Rat: Number of Caltrans SHOPP Projects ^a	Giant Kangaroo Rat: Estimated Habitat Impact (acres) ^b	San Joaquin Kit Fox: Number of Caltrans SHOPP Projects ^a	San Joaquin Kit Fox: Estimated Habitat Impact (acres) ^b	Western Spadefoot: Number of Caltrans SHOPP Projects ^a	Western Spadefoot: Estimated Habitat Impact (acres) ^b
2023/24	4	2.4	4	2.4	0	0.0	4	2.4	2	2.0	4	2.4	8	14.4
2024/25	1	0.3	4	1.4	3	1.0	3	0.7	1	0.3	3	0.8	4	3.5
2025/26	3	17.2	4	17.6	2	5.0	3	17.2	2	12.6	3	14.9	4	61.3
2026/27	2	0.8	2	0.9	1	0.3	2	0.9	0	0.0	2	0.9	2	3.7
2027/28	1	0.8	1	1.1	1	0.7	1	1.1	1	0.8	1	1.1	2	1.5
2028/29	0	0.0	1	0.1	1	0.1	1	<0.1	0	0.0	1	0.1	2	1.8
2029/30	2	0.1	3	0.2	2	0.1	1	0.1	1	0.1	3	0.2	4	3.8
2030/31	3	3.2	5	3.5	2	0.3	4	3.3	3	1.5	5	3.5	5	4.9
2031/32	0	0.0	1	0.1	1	0.1	1	0.1	0	0.0	1	0.1	1	0.1
2032/33	1	0.4	1	1.2	1	0.4	1	1.2	1	1.2	1	1.2	3	4.7
Total^b	17	25.3	26	28.6	14	7.9	21	27.0	11	18.5	24	25.1	35	99.5

^a Transportation projects are listed in Attachment B.
^b Totals may be different on account of rounding.

Figure D-1. Estimated Impacts on Species of Mitigation Need in the GAI, by Transportation Project Delivery Year (RAMNA New Figure)



Species of Mitigation Need (RAMNA Updated Section 7.3)

The additional species of mitigation need identified for the GAI are burrowing owl, blunt-nosed leopard lizard, and western spadefoot. Each species is briefly described below.

Blunt-nosed Leopard Lizard

Blunt-nosed leopard lizard is a relatively large lizard that is part of the iguana family and is a federal and state endangered species. These lizards have long tails, powerful hind limbs, and short, blunt snouts. They are yellowish to dark brown with rows of dark spots across their backs.

Blunt-nosed leopard lizards are endemic to California and live on the southern San Joaquin Valley floor and surrounding foothills in south central California. Historically, they lived in arid lands throughout much of the San Joaquin Valley and adjacent foothills, ranging from Stanislaus County in the north to the Tehachapi Mountains in the south, and in the Carrizo Plain and Cuyama Valley. Widespread agricultural development of the San Joaquin Valley has reduced their habitat to 15 percent of their historical range. Today, small populations of blunt-nosed leopard lizards are found on parcels of undeveloped land scattered from Merced County in the north to Santa Barbara and Ventura Counties in the south (FWS 2025a).

The preferred habitat of blunt-nosed leopard lizards includes alkali sink scrub, saltbush scrub, ephedra scrub, and grasslands (Germano and Williams 2005; Montanucci 1965; Service 1998; Tollestrup 1976; Richmond et al. 2017). Blunt-nosed leopard lizards also prefer low density herbaceous vegetation; slopes, areas of low topographic relief; and soils with lower clay content and more alkaline and moderately saline soils (Stewart et al. 2016; FWS 2023). Shrubs provide thermal facilitation and shelter from predators (FWS 2023).

Blunt-nosed leopard lizards use burrows for seasonal brumation (period of dormancy) and during the active season, as shelter overnight or during the day from predators and temperature extremes, and for nesting. Burrows are usually occupied or abandoned kangaroo rat tunnels or other rodent/small mammal burrows, including abandoned ground squirrel tunnels, abandoned badger dens, gopher burrows, or kit fox burrows (Montanucci 1965; Tennant 2020). In areas with low mammal burrow density, the lizards construct shallow, simple tunnels in banks of soil or under exposed rocks (Montanucci 1965; FWS 2023).

Threats to blunt-nosed leopard lizards include fragmentation and development (including agricultural, energy, housing, and infrastructure); habitat modification by non-native plants; inappropriate grazing levels; above- or below-average precipitation; pesticide use; small population size; and climate change (FWS 2020). Blunt-nosed leopard lizard can be killed directly from automobile traffic. Roads surround and often bisect remaining fragments of habitat, increasing the risks of mortality by vehicles. The blunt-nosed leopard lizard's preference for open areas, such as roads, makes them especially vulnerable to

mortality from vehicle strikes, which is supported by individual observations of roadkill blunt-nosed leopard lizards (FWS 2020).

Burrowing Owl

Burrowing owl is a candidate for listing as state threatened or endangered and is a state species of special concern that lives in wide open, sparsely vegetated areas such as prairies, deserts, grasslands, and agricultural fields (Zeiner et al. 1999). Burrowing owls nest underground, often in small colonies. In areas with loose, friable soils, they will sometimes dig their own burrows, but most often they take over the burrows of fossorial mammals such as California ground squirrels (*Otospermophilus beecheyi*) and American badgers (*Taxidea taxus*). They are crepuscular, foraging most actively at dawn and dusk, and are often active during daylight hours. Burrowing owls prey mostly on small mammals and large insects. They forage by ambushing their prey from a low perch such as a mound, shrub, or fencepost, or by hovering and stooping on prey. Burrowing owl habitats also include shrublands and human-altered landscapes (e.g., agricultural lands, golf courses, cattle pastures), in addition to the habitat types listed (CDFW 2024).

Burrowing owls have a very wide range that extends from the southern tip of South America to Canada and includes many subspecies. Burrowing owls in South America, northern Mexico, Florida, the Caribbean, and the southwestern U.S. are mostly permanent residents, while those that nest further north migrate after the breeding season as far south as Mexico and Central America for the winter months.

Burrowing owl populations have been declining for many years, primarily because of habitat loss caused by urbanization, and reduction or elimination of their primary burrow excavators, ground squirrels, from grazing and agricultural lands (CDFW 2024). Declines have been particularly sharp in Florida, the Dakotas, and California. Urbanization and other land conversions have increasingly relegated burrowing owls to marginally suitable habitat including vacant lots, road medians, and airports, causing mortality due to vehicle collisions and other anthropogenic causes (CDFW 2024). The species is considered vulnerable or imperiled in almost all U.S. states in its range. Burrowing owls are protected under the Migratory Bird Treaty Act and considered by FWS to be a bird of conservation need (FWS 2025b).

Western Spadefoot

Western spadefoot is an amphibian species that has been proposed for listing as federally threatened. While often called a toad, western spadefoots are not true toads. Western spadefoots have smooth, olive-colored skin, with variable light-colored stripes or dark spots on their dorsal sides. Western spadefoots dig underground burrows using a powerful, sharp-edged spade on each hind foot and live in these burrows for 8 to 10 months of the year. Nocturnal and almost completely terrestrial, western spadefoots come out of their burrows to breed and forage in nearby vernal pools, ponds, and creeks.

FWS has determined that western spadefoot consists of two genetically and geographically distinct population segments (“DPSs”) and is seeking public comment on

its proposal to list both DPSs as threatened under the Endangered Species Act (“ESA”). Critical habitat for the species will be proposed at a later date (FWS 2023).

Regional Conservation Efforts (RAMNA Updated Section 7.4)

Table D-5 presents planning documents relevant to the additional species of mitigation need in the GAI. These plans include measures to address specific known, ongoing threats to individuals and populations, which are incorporated into and/or inform the advance mitigation conservation goals and objectives discussed later in this attachment.

Table D-5. Additional Documents Identifying Areas for Species of Mitigation Need Conservation in the GAI (RAMNA Table 7-2)

Document	Reference	Information Identified
Special-status Species and Sensitive Habitat Documents	See below	See below
Recovery Plan for Upland Species of the San Joaquin Valley	FWS 1998	Blunt-nosed leopard lizard Recovery Action 6. Protect additional habitat for blunt-nosed leopard lizards in the following areas: ▪ Natural and retired agricultural lands around Pixley National Wildlife Refuge, Tulare County, with an objective of expanding and connecting the Refuge units with each other and with the Allensworth Ecological Reserve. ▪ Natural land in and around Elk Hills Naval Petroleum Reserves in California and Lokern Natural Area with the objective of expanding and connecting existing lands with conservation programs. ▪ Natural and retired agricultural lands in the Semitropic Ridge Natural Area, Kern County, with the objective of expanding and connecting existing reserves and refuges.
Blunt-nosed Leopard Lizard 5-Year Review	FWS 2010	The 2010 5-year review identifies recommendations for future actions, including preferred locations for protection, management plans for those locations, and density requirements. The review identified “no change needed” to the listing and that recommendations for downlisting and delisting were to remain the same.
Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon	FWS 2005	FWS recovery plan for vernal pool species in California and Oregon, which includes a total of 33 species. In general, recovery criteria center on habitat protection and adaptive habitat management, which includes developing management plans, conducting status surveys, and finding populations to be at least maintaining their population if not increasing, conducting research, and having additional public outreach and participation. Some species-specific criteria exist, such as seed banking for plants. Sixteen regions are identified in this plan, along with 41 core areas.

Pressures and Stressors (RAMNA Updated Section 7.5)

The following subsections describe pressures and stressors for the additional species of mitigation need.

Habitat Loss, Fragmentation, and Degradation

Urbanization and other anthropogenic factors such as roads, agriculture, construction, and development activities have led to the loss and degradation of existing habitat for all the species of mitigation need.

Habitat loss and degradation from rapid urbanization of farmland in the Central Valley presents a significant threat to burrowing owls in California. Urban and suburban development, industrial energy production, and certain agricultural practices all result in the eradication of small mammals, including ground squirrel colonies, thereby reducing available nesting habitat for burrowing owls. Additionally, passive relocation of burrowing owls ahead of development, whereby owls are evicted from burrows using one-way doors and displaced without monitoring or follow-up, often leads to predation of owls and population isolation (CDFW 2024).

Widespread development of the San Joaquin Valley has reduced the current distribution of blunt-nosed leopard lizard to less than 15 percent of its historic range (Germano and Williams 1992; Jennings 1995). Conversion of natural grassland and scrub habitats for agricultural purposes, housing development, and oil and gas exploration are the most critical threats to blunt-nosed leopard lizard in the San Joaquin Valley (FWS 2010). Fragmentation and encroachment into vernal pool habitats as a result of urbanization and agricultural conversion have resulted in smaller areas of unmanaged vernal pool habitat, further degrading and altering habitat used by western spadefoot (FWS 2023). In California's Central Valley, 75 percent of vernal pools have been lost and, in southern California, more than 80 percent of western spadefoot habitat has been lost to development (Center for Biological Diversity 2023).

Invasive Species

Construction projects and associated ongoing maintenance activities have the potential to introduce and/or spread nonnative, invasive species. When invasive, nonnative species enter an ecosystem, they can disrupt the natural balance, resulting in a reduction of biodiversity, degradation of habitats, alteration of native genetic diversity, shifting of habitat type, and further threats to already endangered or threatened natural resources. Invasive species are considered a threat to all the species of mitigation need. Specifically, nonnative plants and grasses that disrupt native habitat are known to negatively affect both burrowing owl (CDFW 2024) and blunt-nosed leopard lizard. Introduced grasses and herbs often create an impenetrable thicket for small ground-dwelling vertebrates. Dense herbaceous cover that results from introduced and invasive species can inhibit the movement of blunt-nosed leopard lizards (Germano et al. 2001; Germano and Williams 2005). Invasive vegetation can degrade vernal pool habitat by intruding into the ponded

areas or by shortening the hydroperiod of the pools, which can negatively affect western spadefoots (FWS 2023).

Disease and Predation

Disease is considered a threat to most of the species of mitigation need. Burrowing owl is affected by avian diseases such as West Nile virus (University of California, Davis 2025). Disease is not considered a significant threat to blunt-nosed leopard lizard populations, but endoparasites (nematodes) and ectoparasites (mites and harvest mites) have been reported in the species (FWS 2010). Individual western spadefoots have tested positive for chytrid fungus (*Batrachochytrium dendrobatidis*), but widespread mortality from this disease has not been recorded (FWS 2023).

Burrowing owls face the threat of predation from larger owls, hawks, foxes, weasels, badgers, and coyotes. As cited above, habitat loss from development and the associated practice of passive relocation often leaves burrowing owls more susceptible to predation (CDFW 2024). The addition of fence posts, utility poles, and other elevated structures that predators can hunt from in grassland and scrub habitats increases the risk of predation on blunt-nosed leopard lizards (FWS 2010). Natural predation is not known to be occurring at a higher frequency on western spadefoot populations because of human-induced causes. However, nonnative crayfish (*Procambarus clarkia*), mosquitofish (*Gambusia affinis*), African clawed frogs (*Xenopus laevis*), and bullfrogs (*Lithobates catesbeianus*) have been introduced in the range of western spadefoot and now present a new predation threat to them (FWS 2023).

Climate Change, Drought, and Wildfire

While little is known regarding specific direct effects of climate change on the species of mitigation need or their habitat, predictions can be made based on observation and modeling. Recent modeling has shown a range of warming statewide from 1.99 to 4.56 degrees Celsius, and between a 22.8 percent decrease and a 22.9 percent increase in precipitation for the period between 2070 and 2099 (Stewart et al. 2016).

All three species may be affected by climate change through a change in precipitation and seasonal temperature changes. Drought likely has cascading ecological effects that negatively influence food abundance for burrowing owls, resulting in delays in the ability of individuals to meet energetic demands required for migration (Porro et al. 2020). Blunt-nosed leopard lizard populations have been shown to drastically decline during consecutive years of drought or above-average precipitation and are, therefore, sensitive to any drastic changes in precipitation (Germano et al. 1994; Germano et al. 2004; Germano and Williams 2005; Williams 2006). Changes in hydroperiods brought about by drought may reduce the ability for western spadefoots to reproduce and for their larvae to develop.

Vegetation changes that reduce habitat suitability for all the species of mitigation need are often the result of increased wildfire frequencies, leading to type conversions of habitats over time (for example, native grassland or shrub/scrub to nonnative grassland).

Wildfires may alter the hydrology of an area, making it more or less suitable for spadefoot aquatic breeding habitat during the wet season (FWS 2023).

Essential habitat connectivity within the GAI, including large remaining blocks of intact habitat or natural landscape, are shown on Figure C-8 in Attachment C, *Environmental Setting Figures*. These areas are expected to provide opportunities for the species of mitigation need to respond to climate change stress by preserving large blocks of habitat and linkage areas that will allow migration toward more suitable habitat as the climate changes, and by providing protection for the ecological processes that support key habitat.

Contaminants

The application of insecticides and rodenticides reduces both the number of insects and rodents available as prey for burrowing owls, and the number of burrows for secondary use by blunt-nosed leopard lizards (FWS 2010). Contaminants from road materials, leaks, and spills could contaminate the water in vernal pools. However, there is currently no evidence that chemical contaminants are affecting western spadefoots (FWS 2023).

Advance Mitigation Conservation Goals and Objectives (RAMNA Updated Section 7.7)

The conservation goals and objectives provided in the original RAMNA also apply to the additional species of mitigation need, as follows:

- Blunt-nosed leopard lizard:
 - Goal WILD-1, Objective WILD-1.1
 - Goal WILD-2, Objective WILD-2.1
 - Goal WILD-3, Objective WILD-3.1
 - Goal WILD-4, Objective WILD-4.1
 - Goal WILD-4, Objective WILD-4.2
 - Goal WILD-4, Objective WILD-4.3
 - Goal WILD-5, Objective WILD-5.1
- Burrowing owl:
 - Goal WILD-1, Objective WILD-1.1
 - Goal WILD-2, Objective WILD-2.1
 - Goal WILD-3, Objective WILD-3.1
 - Goal WILD-4, Objective WILD-4.1
 - Goal WILD-4, Objective WILD-4.2
 - Goal WILD-4, Objective WILD-4.3
 - Goal WILD-5, Objective WILD-5.1
- Western spadefoot:
 - Goal WILD-1, Objective WILD-1.1

- Goal WILD-2, Objective WILD-2.1
- Goal WILD-3, Objective WILD-3.1
- Goal WILD-4, Objective WILD-4.1
- Goal WILD-4, Objective WILD-4.2
- Goal WILD-4, Objective WILD-4.3
- Goal WILD-5, Objective WILD-5.1

Benefiting Transportation Project Needs Summary (RAMNA Updated Section 9.2)

At this time (July of fiscal year 2026/27), mitigation for the additional species of mitigation need that can be purchased or established by fiscal year 2028/29 (within the next 2 years) could potentially address mitigation for impacts on approximately:

- 18.3 acres of blunt-nosed leopard lizard habitat impacts in the Great Valley Ecoregion Section, potentially contributing to the acceleration of 6 transportation projects.
- 19.9 acres of burrowing owl habitat impacts in the Great Valley Ecoregion Section, potentially contributing to the acceleration of 10 transportation projects.
- 6.3 acres of California tiger salamander habitat impacts in the Great Valley Ecoregion Section, potentially contributing to the acceleration of 6 transportation projects.
- 18.8 acres of Fresno kangaroo rat habitat impacts in the Great Valley Ecoregion Section, potentially contributing to the acceleration of 8 transportation projects.
- 12.9 acres of giant kangaroo rat habitat impacts in the Great Valley Ecoregion Section, potentially contributing to the acceleration of 3 transportation projects.
- 16.6 acres of San Joaquin kit fox habitat impacts in the Great Valley Ecoregion Section, potentially contributing to the acceleration of 8 transportation projects.
- 68.5 acres of western spadefoot habitat impacts in the Great Valley Ecoregion Section, potentially contributing to the acceleration of 10 transportation projects.

All or some of these needs could form the basis for Caltrans District 6 to develop an advance mitigation project scope.

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ATTACHMENT E: RIPARIAN HABITAT ADVANCE MITIGATION NEEDS ASSESSMENT

This attachment provides new and updated RAMNA chapters, sections, or subsections that incorporate a new statewide riparian landcover dataset developed for Caltrans by SFEI (Caltrans 2023) and that discusses additional planning documents pertaining to riparian habitat. They are:

- *Riparian Landcover Dataset*, a new subsection (Subsection 1.4.1) under the SAMNA description in the *Introduction* chapter, that describes the new riparian landcover dataset that became available after the initial RAMNA was finalized.
- *Riparian Habitat*, a new section (Section 2.16) in the *Environmental Setting* chapter, that provides a brief narrative description of riparian habitat in the Great Valley Ecoregion Section in California—that is, the GAI.
- *Relevant Plans, Policies, and Regulations*, an updated chapter (Chapter 3) that describes additional planning documents pertaining to riparian habitat in the GAI.
- *Estimated Impacts on Areas of Potential Riparian Function*, a new section (Section 5.4) in the *Modeled Estimated Impacts* chapter, that provides estimates of impacts on areas of potential riparian function for the GAI and planning period using the new statewide riparian landcover dataset.
- *Patterns of Estimated Impacts on Areas of Potential Riparian Function*, a new subsection (Subsection 6.2.1) in the *Benefiting Transportation Project Considerations* chapter that displays the temporal patterns of estimated impacts on areas of potential riparian function for the planning period.
- *Regional Conservation Efforts*, an updated section (Section 8.4) that discusses additional planning documents that identify key habitats, specific designated waters, or areas for aquatic resource enhancement and restoration.

Chapter 8, *Aquatic Resources Conservation Goals and Objectives*, includes natural resource regulatory agency goals and objectives for riparian habitat. Since the original RAMNA was published, one new regional conservation investment strategy (“RCIS”) has been completed (Kaweah Groundwater Subbasin RCIS) and one new RCIS (San Joaquin Basin RCIS) is being developed in the GAI. Table E-5 later in this attachment and Attachment F, *Existing Mitigation Opportunities*, provide information about the two RCISs. Both RCISs would be expected to support the conservation goals and objectives discussed in Chapter 8 of the original RAMNA.

Riparian Landcover Dataset (RAMNA New Subsection 1.4.1)

RipZET is a Microsoft Excel and GIS-based decision support tool developed by SFEI to estimate the extent of riparian areas based on the concept of “functional riparian width.” According to this concept, various riparian functions can extend different distances from their adjacent surface waters, depending on local topographic slope, vegetation, and position along a drainage network. More information about the science behind RipZET can be found in SFEI (2015a).

Since 2015, RipZET has been used in smaller and more regional studies across California and has been refined a number of times by SFEI. However, in 2023, SFEI developed a larger-scale statewide riparian landcover dataset for Caltrans to assist with advance mitigation planning (Caltrans 2023). For this statewide product, SFEI used readily available data that were appropriate for the larger scale of the analysis (Caltrans 2023). For example, SFEI used elevation data that are less detailed than recommended in SFEI (2015b) because high-resolution statewide data are not available—SFEI used 5-meter NextMAP data, not the recommended 0.5-meter LiDAR data. More information regarding the inputs to the statewide landcover dataset can be found in Caltrans (2023). Further, it was not feasible to perform the field verification step used for the smaller-scale efforts. More information regarding the process and computations within RipZET’s modules can be found in SFEI (2015b).

Whether the statewide riparian landcover dataset developed for Caltrans improves forecasts of Caltrans riparian-related mitigation needs is currently unknown. Statewide outputs are not regarded as riparian maps *per se* because they do not depict actual boundaries based on field observations. Instead, they represent modeled areas where riparian functions are likely to be supported based on hillslope and vegetation processes (Caltrans 2023). Hence, the modeled impacts presented in this RAMNA Addendum using the statewide riparian landcover dataset layer are better understood to be forecast impacts on areas of potential riparian function, more so than on riparian habitat itself, and are likely more extensive than actual impacts to riparian habitat or to the vegetation associated with the bed and bank of streams or lakes. For transportation project environmental studies and permits, the extent of potential impacts on fish and wildlife resources associated with modification of the bed and bank of wetland and non-wetland water resources will ultimately be determined by biologists in the field.

Riparian Habitat (RAMNA New Section 2.16)

Riparian habitat is generally associated with waterways and natural floodplains and is an important ecological resource. Riparian habitat may provide essential corridors/linkages from different biotic regions within the GAI. A large riparian resource includes the rivers and tributaries within the Kings River Basin, whose waterways provide passages from the Sierra Nevada to the foothills and central valley floor (Kings Basin Water Authority 2018). Vegetation within riparian habitat is generally dense with overstories consisting of willows and Fremont or black cottonwoods, valley oaks, California sycamore, and Oregon ash. Dense overstories provide essential habitat for a

variety of birds including egrets, herons, osprey, ducks, and bald eagles. Riparian understories may also include willows and herbaceous plants of honeysuckle or elderberry that provide habitat for smaller sparrows and warblers or rodents and deer (Provost & Pritchard Consulting Group 2018). Within the Tulare Lake Basin, riparian vegetation types include riparian woodland, riparian scrub savannah, and a relict cottonwood-willow riparian corridor in the northern portion of the basin (Provost & Pritchard Consulting Group 2020).

Relevant Plans, Policies, and Regulations (RAMNA Updated Chapter 3)

Table E-1 provides information on additional plans and permits focused on riparian habitat. The table provides the following information for each reference identified:

- reference document title
- status:
 - final: The reference is completed.
 - draft: The reference is not complete, and changes may occur when it is finalized.
 - in progress: A formal draft version has not been completed, and the document is being written.
 - in litigation: The reference is subject to at least one lawsuit and is not being revised.
 - updated periodically: The reference is updated with new information on a somewhat frequent basis.
 - not publicly available: The reference is known to exist but does not appear to be publicly available.
- spatial data – whether a map is provided with the document
- reference purpose – a summary of information relevant to advance mitigation planning and/or a summary of reference intent
- link – where the reference can be found
- date – when the reference was published or last updated

The list in Table E-1 is not exhaustive. Additional relevant resources may be consulted by Caltrans as advance mitigation planning progresses, advance mitigation project scopes are conceptualized, and advance mitigation projects are implemented.

Table E-1. Planning Documents Relevant to Riparian Habitat in the GAI (Updated RAMNA Table 3-1)

Title	Status	Spatial Data	Reference Purpose	Link	Date
Central Valley Joint Venture 2020 Implementation Plan	Updated periodically	Yes	Central Valley Joint Venture's implementation plan to establish additional riparian habitat and general population objectives for major groups of birds in the Central Valley. The San Joaquin and Tulare regions of the plan overlap with the GAI. The document includes short- and long-term goals related to the amount of riparian vegetation in the plan area.	https://www.centralvalleyjointventure.org/our-science/implementation-plans/	1/1/2020 (last updated)
Hopper Mountain, Bitter Creek, and Blue Ridge National Wildlife Refuges Final Comprehensive Conservation Plan	Final	Yes	FWS' management plan covering three national wildlife refuges, of which the Bitter Creek National Wildlife Refuge occurs within the GAI. The Comprehensive Conservation Plan includes various goals pertaining to restoring and enhancing riparian habitat.	https://www.fws.gov/hmnwrc-comprehensive-conservation-plan-ccp	9/30/2013
Kaweah River Basin Integrated Regional Water Management Plan	Final	Yes	Kaweah River Basin Regional Water Management Group's plan for the Kaweah River Basin, which includes objectives related to water quality, groundwater management, water supply, and ecosystem restoration. The Kaweah River flows through the GAI.	https://kdwcd.com/integrated-regional-water-management	7/1/2018
Lost Lake Park Master Plan	Final	Yes	Fresno County's plan for the management of Lost Lake Park. The plan includes goals related to restoring the San Joaquin floodplain and riparian corridors in the park.	https://www.fresnocountyca.gov/Departments/Public-Works-and-Planning/divisions-of-public-works-and-planning/resources-and-parks-division/parks/lost-lake-recreation-area	4/18/2011

Estimated Impacts on Areas of Potential Riparian Function (RAMNA New Section 5.4)

Potential impacts on areas of potential riparian function were estimated using the statewide riparian landcover dataset developed for Caltrans by SFEI (Caltrans 2023). The analysis consisted of an intersection of assumed transportation project footprints for the 44 transportation projects listed in Attachment B, *Transportation Projects Planned for the GAI during the Planning Period*, with the riparian landcover dataset. Given uncertainties in the dataset, results are shown in two ways, based on slope and based on vegetation. Vegetation polygon features used for the analysis are consistent with the SAMNA. Of the 44 SHOPP transportation projects evaluated, 31 projects are forecast to affect 0.59 to 16.71 acres of areas of potential riparian function in the GAI during the planning period (see Table E-2).

Table E-2. Summary of Estimated SHOPP Impacts on Areas of Potential Riparian Function in the GAI (RAMNA New Table)

Sub-basin Name	Sub-basin Code (HUC-8)	Caltrans SHOPP Transportation Projects (count)	Slope-based Estimate (acres) ^a	Vegetation Process-based Estimate (acres) ^a
Fresno River	18040007	1	0.00	0.05
Middle Kern-Upper Tehachapi-Grapevine	18030003	10	0.57	4.04
Middle San Joaquin-Lower Chowchilla	18040001	4	0.00	2.03
Tulare Lake Bed	18030012	8	0.00	0.88
Upper Deer-Upper White	18030005	4	0.00	1.95
Upper Dry	18030009	11	0.02	7.07
Upper Kaweah	18030007	2	0.00	0.27
Upper Tule	18030006	3	0.00	0.42
Total	Not applicable	31^b	0.59	16.71

^a Vegetation polygon features used for the analysis are consistent with the SAMNA.

^b Total does not reflect numbers presented in rows above. Some SHOPP transportation projects cross more than one sub-basin.

Patterns of Estimated Impacts on Areas of Potential Riparian Function (RAMNA New Subsection 6.2.1)

As shown in Tables E-3 and E-4 and Figures E-1 and E-2, when the SHOPP transportation projects identified in Attachment B have their forecast impacts on areas of potential riparian habitat examined relative to their expected advertising date, the compensatory mitigation needs are spread throughout the 10-year planning period:

- Areas of potential riparian function within the Fresno River Sub-basin have minimal impacts in fiscal year 2030/31.
- Areas of potential riparian function within the Middle Kern-Upper Tehachapi-Grapevine Sub-basin have the largest impacts in fiscal year 2026/27, with lesser impacts in fiscal years 2025/26, 2029/30, and 2030/31, and minor impacts in fiscal years 2023/24, 2024/25, and 2032/33.
- Areas of potential riparian function within the Middle San Joaquin-Lower Chowchilla Sub-basin have the largest impacts in fiscal year 2030/31, with lesser impacts in fiscal year 2025/26.
- Areas of potential riparian function within the Tulare Lake Bed Sub-basin have the largest impacts in fiscal year 2026/27, with minor impacts in fiscal years 2023/24, 2025/26, 2030/31, and 2031/32.
- Areas of potential riparian function within the Upper Deer-Upper White Sub-basin have the largest impacts in fiscal year 2023/24, with minor impacts in fiscal years 2028/29, 2029/30, and 2032/33.
- Areas of potential riparian function within the Upper Dry Sub-basin have the largest impacts in fiscal years 2023/24 and 2032/33, with lesser impacts in fiscal years 2027/28 and 2030/31, and minor impacts in fiscal years 2024/25, 2026/27, and 2028/29.
- Areas of potential riparian function within the Upper Kaweah Sub-basin have the largest impacts in fiscal year 2028/29, with minor impacts in fiscal years 2024/25.
- Areas of potential riparian function within the Upper Tule Sub-basin have the largest impacts in fiscal year 2023/24, lesser impacts in fiscal year 2028/29, and minor impacts in fiscal year 2024/25.
- No impacts on areas of potential riparian function are forecast for the Panoche-San Luis Reservoir and Upper Poso Sub-basins.

Spatially, these transportation projects are distributed throughout the GAI (Figure E-3).

Table E-3. Estimated Impacts on Slope-based Areas of Riparian Function in the GAI, by Transportation Project Delivery Year (RAMNA New Table)

Expected Adver- tisement Year	Fresno River Caltrans SHOPP Projects (count) ^a	Fresno River (acres) ^b	Middle Kern-Upper Tehachapi- Grapevine Caltrans SHOPP Projects (count) ^a	Middle Kern- Upper Tehachapi- Grapevine (acres) ^b	Middle San Joaquin- Lower Chowchilla Caltrans SHOPP Projects (count) ^a	Middle San Joaquin- Lower Chowchilla (acres) ^b	Tulare Lake Bed Caltrans SHOPP Projects (count) ^a	Tulare Lake Bed (acres) ^b	Upper Deer- Upper White Caltrans SHOPP Projects (count) ^a	Upper Deer- Upper White (acres) ^b	Upper Dry Caltrans SHOPP Projects (count) ^a	Upper Dry (acres) ^b	Upper Kaweah Caltrans SHOPP Projects (count) ^a	Upper Kaweah (acres) ^b	Upper Tule Caltrans SHOPP Projects (count) ^a	Upper Tule (acres) ^b
2023/24	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
2024/25	0	0.00	1	0.17	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
2025/26	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
2026/27	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
2027/28	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	0.02	0	0.00	0	0.00
2028/29	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
2029/30	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
2030/31	0	0.00	2	0.40	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
2031/32	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
2032/33	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Total	0	0.00	3	0.57	0	0.00	0	0.00	0	0.00	1	0.02	0	0.00	0	0.00

^a Totals do not reflect numbers presented in rows below. Some SHOPP transportation projects cross more than one sub-basin.
^b Numbers were rounded.

Figure E-1. Estimated Impacts on Slope-based Areas of Potential Riparian Function in the GAI, by Transportation Project Delivery Year (acres) (RAMNA New Figure)

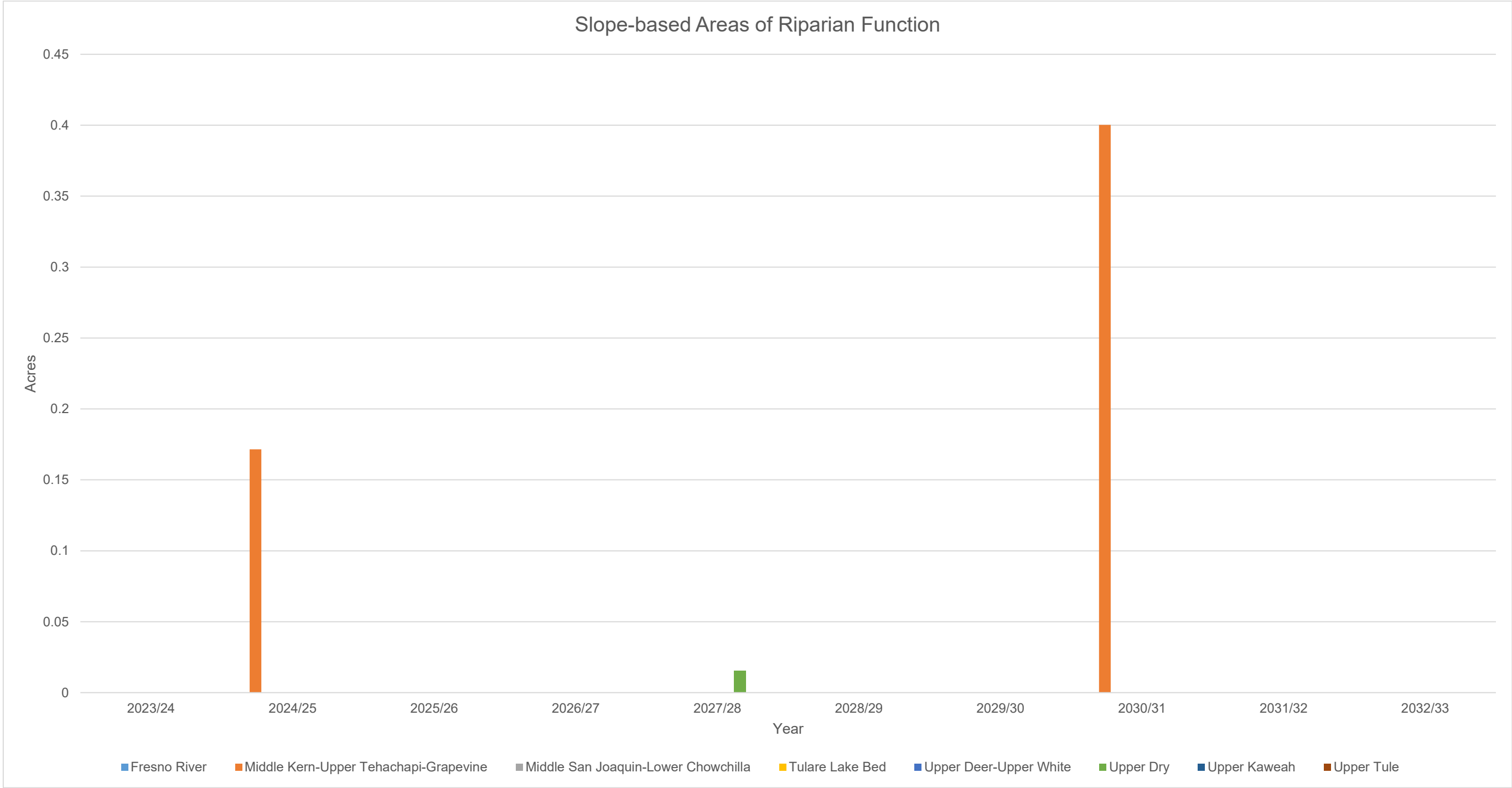


Table E-4. Estimated Impacts on Vegetation-based Areas of Riparian Function in the GAI, by Transportation Project Delivery Year (RAMNA New Table)

Expected Adver- tisement Year	Fresno River Caltrans SHOPP Projects (count) ^a	Fresno River (acres) ^b	Middle Kern-Upper Tehachapi- Grapevine Caltrans SHOPP Projects (count) ^a	Middle Kern- Upper Tehachapi- Grapevine (acres) ^b	Middle San Joaquin- Lower Chowchilla Caltrans SHOPP Projects (count) ^a	Middle San Joaquin- Lower Chowchilla (acres) ^b	Tulare Lake Bed Caltrans SHOPP Projects (count) ^a	Tulare Lake Bed (acres) ^b	Upper Deer- Upper White Caltrans SHOPP Projects (count) ^a	Upper Deer- Upper White (acres) ^b	Upper Dry Caltrans SHOPP Projects (count) ^a	Upper Dry (acres) ^b	Upper Kaweah Caltrans SHOPP Projects (count) ^a	Upper Kaweah (acres) ^b	Upper Tule Caltrans SHOPP Projects (count) ^a	Upper Tule (acres) ^b
2023/24	0	0.00	2	0.24	0	0.00	2	0.10	1	1.89	2	5.40	0	0.00	1	0.28
2024/25	0	0.00	1	0.02	0	0.00	0	0.00	0	0.00	2	0.13	1	0.01	1	0.02
2025/26	0	0.00	1	0.91	1	0.88	1	0.01	0	0.00	0	0.00	0	0.00	0	0.00
2026/27	0	0.00	2	1.63	0	0.00	2	0.73	0	0.00	1	0.08	0	0.00	0	0.00
2027/28	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	0.32	0	0.00	0	0.00
2028/29	0	0.00	0	0.00	0	0.00	0	0.00	1	0.01	1	0.01	1	0.27	1	0.12
2029/30	0	0.00	1	0.45	0	0.00	0	0.00	1	<0.01	0	0.00	0	0.00	0	0.00
2030/31	1	0.05	2	0.52	3	1.15	2	0.04	0	0.00	1	0.42	0	0.00	0	0.00
2031/32	0	0.00	0	0.00	0	0.00	1	0.01	0	0.00	0	0.00	0	0.00	0	0.00
2032/33	0	0.00	1	0.27	0	0.00	0	0.00	1	0.06	3	0.72	0	0.00	0	0.00
Total	1	0.05	10	4.04	4	2.03	8	0.88	4	1.95	11	7.07	1	0.27	3	0.42

^a Totals do not reflect numbers presented in rows below. Some SHOPP transportation projects cross more than one sub-basin.
^b Numbers were rounded.

Figure E-2. Estimated Impacts on Vegetation-based Areas of Potential Riparian Function in the GAI, by Transportation Project Delivery Year (acres) (RAMNA New Figure)

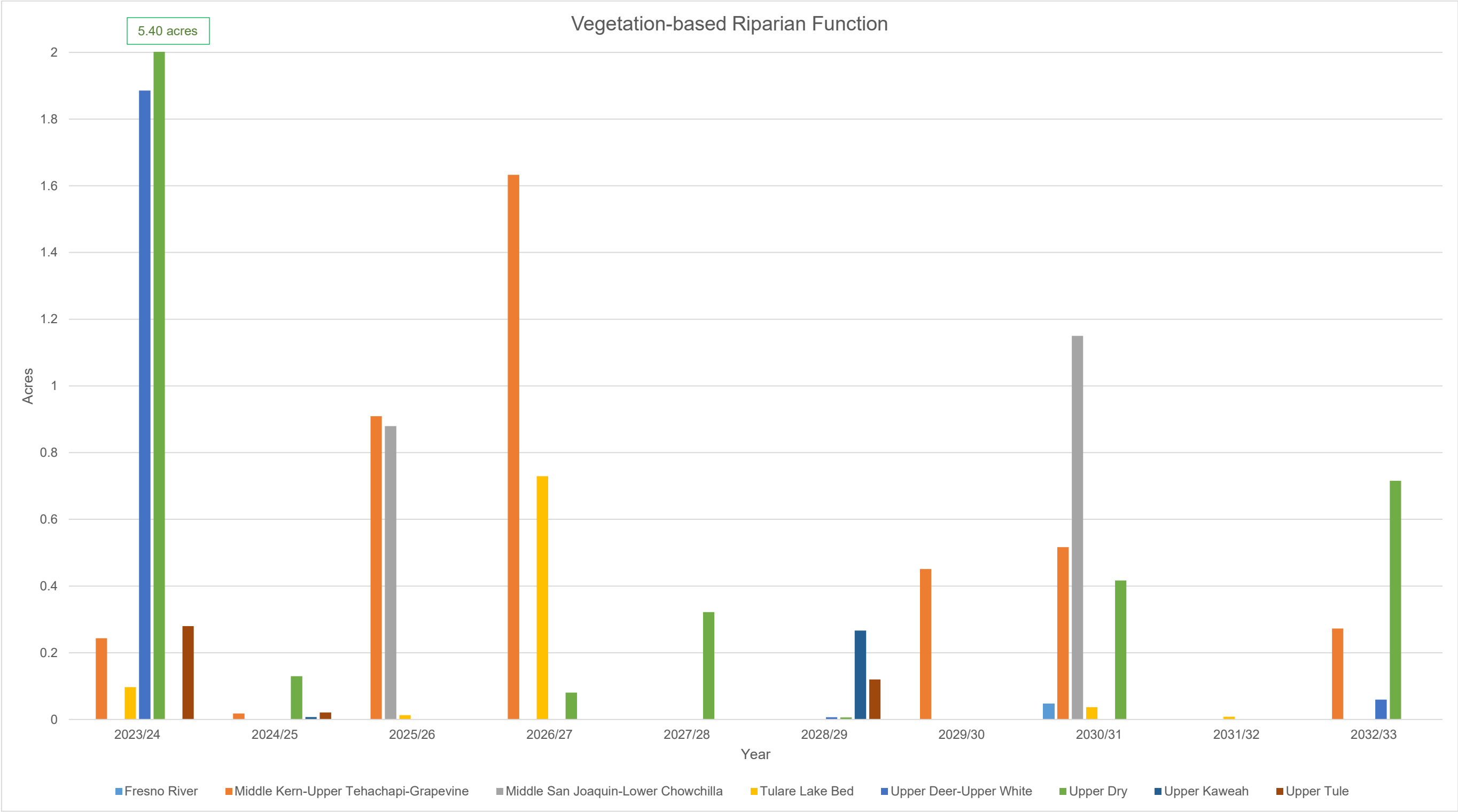
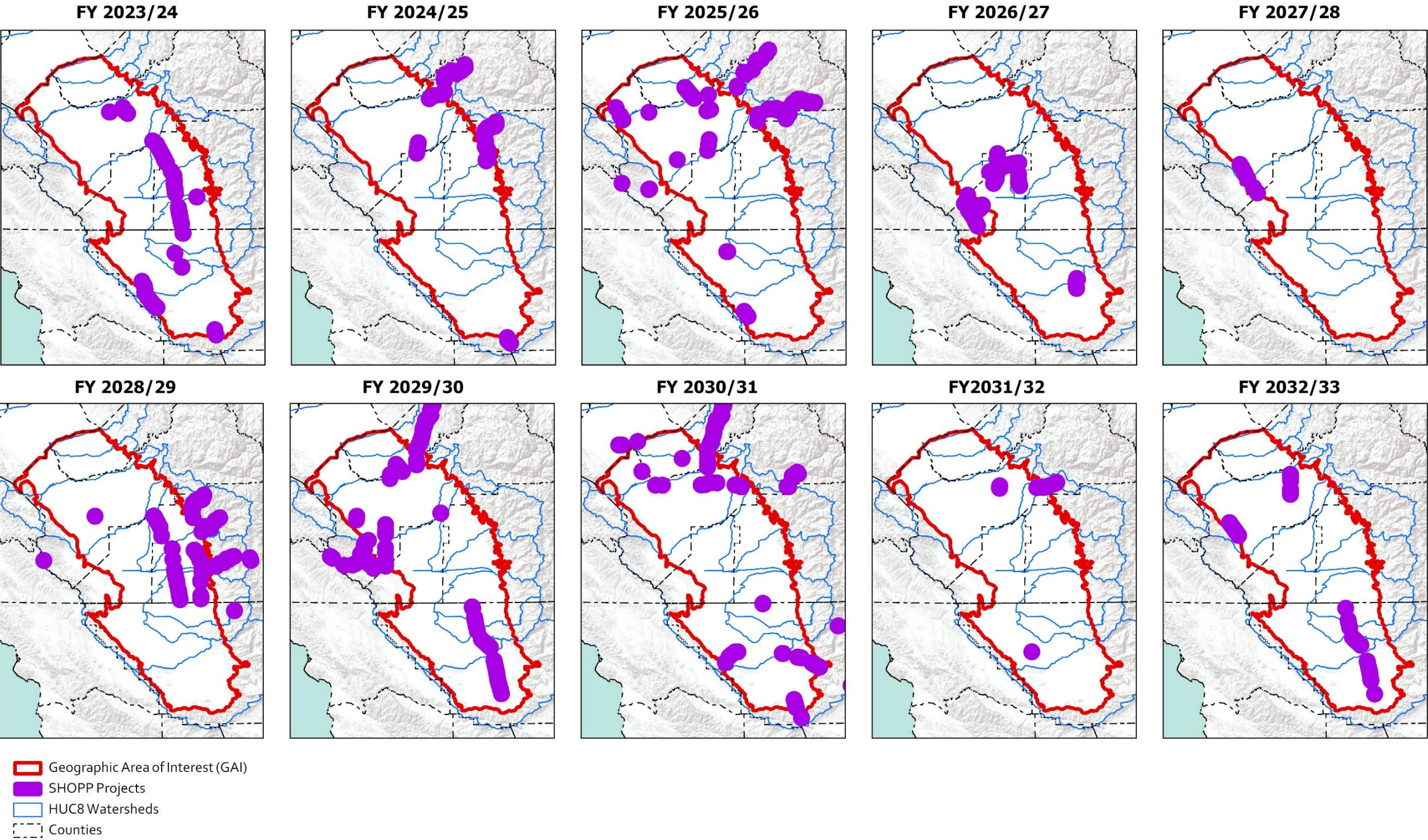


Figure E-3. Location of SHOPP Estimated Impacts, by Transportation Project Delivery Year (RAMNA Figure 6-4)



Sources: Esri, USGS, NOAA, USGS

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Regional Conservation Efforts (Updated RAMNA Section 8.4)

References relevant to scoping advance mitigation projects in the Caltrans District 6 GAI are listed in Chapters 3 and 4 of the original RAMNA. Of these documents, several identify key habitats, specific designated waters, or areas for aquatic resource enhancement and restoration. Documents relevant to riparian habitat are identified in Table E-5.

Table E-5. Documents Identifying Aquatic Resource Goals and Objectives in the GAI (RAMNA Updated Table 8-2)

Document	Reference	Information Identified
Conservation and Land Management Documents	See below	See below
Central Valley Joint Venture 2020 Implementation Plan	Central Valley Joint Venture 2020	The implementation plan aims to establish habitat and population objectives for major groups of birds in the Central Valley. It provides specific goals to: - Have 108,626 acres of riparian vegetation in the San Joaquin region and 108,626 acres of riparian vegetation in the Tulare region long-term (100 years). - Have an additional 8,368 acres of riparian vegetation in the San Joaquin region and an additional 9,273 acres of riparian vegetation in the Tulare region short-term (10 years).
Hopper Mountain, Bitter Creek, and Blue Ridge National Wildlife Refuges Final Comprehensive Conservation Plan and Environmental Assessment	FWS 2013	FWS' management plan covering three national wildlife refuges, of which the Bitter Creek National Wildlife Refuge occurs within the GAI. Goals pertaining to the Bitter Creek National Wildlife Refuge relevant to riparian habitat include: - Restore natural spring flow in three subwatersheds within the six watersheds on Bitter Creek National Wildlife Refuge to support native plants and wildlife within 5 years of the plan's approval. - Reduce and modify water control structures to restore natural flows and eliminate diversion of water. - Require exclusionary fencing to protect riparian areas and wetlands prior to implementation of prescribed grazing in adjacent areas. - Remove invasive saltcedar within 5 years of the plan's approval and selectively replant with native riparian species.
Kaweah Groundwater Subbasin RCIS	ICF 2022	The RCIS aims to provide strategies for repurposing agricultural land to new uses that require considerably less or no water and for creating multi-benefit groundwater recharge projects with habitat and groundwater sustainability benefits. It provides conservation goals, objectives, and actions for riparian habitats.
Kaweah River Basin Integrated Regional Water Management Plan	Kaweah Delta Water Conservation District 2018	The plan aims to provide objectives and strategies for groundwater management and ecosystem restoration. With these objectives and strategies are goals to improve existing riparian habitat and develop new riparian habitat along the Kaweah River Delta corridor.

Document	Reference	Information Identified
Lost Lake Park Master Plan	Fresno County 2011	The master plan is a long-term plan that outlines goals to enhance the park's natural resources and facilities. It includes goals to: ▪ Plant approximately 10,000 native riparian and shade trees. ▪ Protect and restore riparian and riverine habitat. ▪ Restore the San Joaquin River floodplain to the greatest extent possible and plant riparian vegetation throughout.
San Joaquin Basin RCIS (in development)	San Joaquin Valley RCIS Steering Committee 2024	The RCIS is proposed to increase habitat connectivity and quality, streamline multi-benefit project funding and implementation, and provide community benefits. It intends to support an integrated landscape that supports flood control, wildlife habitat, high-quality agricultural land, and sustainable water resource management. A list of focal species is not yet available.

References

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- Kaweah Delta Water Conservation District. 2018. “Kaweah River Basin Integrated Regional Water Management Plan.” Accessed on January 17, 2025. <https://kdwcd.com/integrated-regional-water-management>.

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Provost & Pritchard Consulting Group. 2018. "Southern Sierra Integrated Regional Water Management Plan." Revised November 2018. Accessed July 20, 2026. <https://www.tularebasinwatershedpartnership.org/southern-sierra-irwm>.

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San Joaquin Valley Regional Conservation Investment Strategy Steering Committee. 2024. "San Joaquin Valley Regional Conservation Investment Strategy." Accessed October 21, 2024. <https://sjvrcis.org/>.

SFEI (San Francisco Estuary Institute). 2015a. RipZET: The Riparian Zone Estimation Tool. Prepared by the San Francisco Estuary Institute - Wetlands Focus Area. Funded by Proposition 50 Watershed Protection Program Grant. Agreement Number: #10-429-550. Contribution #746. Richmond, California.

———. 2015b. RipZET: User's Manual. Prepared by the San Francisco Estuary Institute – Wetlands Focus Area. Funded by Proposition 50 Watershed Protection Program Grant. Agreement Number: #10-429-550. Contribution #747. Richmond, California.

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ATTACHMENT F: EXISTING MITIGATION OPPORTUNITIES

This attachment provides an updated version of RAMNA Chapter 4, *Existing Mitigation Opportunities*.

Existing Mitigation Opportunities (RAMNA Chapter 4)

Streets and Highway Code (“SHC”) § 800.6(a)-authorized advance mitigation project types include purchasing credits and paying fees associated with existing mitigation sources. This chapter summarizes the mitigation credits and values currently available to Caltrans and/or pending through existing HCPs, NCCPs, mitigation and conservation banks, in-lieu fee programs, and mitigation credit agreements (“MCAs”). RCISs, which are a prerequisite to MCAs, are also discussed.

SHOPP Advance Mitigation Credits (RAMNA Section 4.1)

The 2016 SHOPP, with California Transportation Commission approval, released the first funds used to program Caltrans advance mitigation projects in several Districts. The projects were programmed against the \$40 million reserve created in the 2016 SHOPP for advance mitigation project delivery. Thirteen advance mitigation projects were programmed in the SHOPP and are underway; one is a conservation bank under development within Caltrans District 6:

- Bloss Ranch Conservation Bank (working title, in progress)

Table F-1 provides a brief description and available information. The Bloss Ranch Conservation Bank is intended to supply California tiger salamander conservation credits (3 aquatic and 88 terrestrial acres) for use by transportation-related projects delivered under Caltrans’ SHOPP. Contracted credits are expected to be available starting in 2022 (first release), with contract completion by 2027. Credits generated in excess of the Caltrans contract will be made available by the contractor on the open market. Additional credit types proposed by the contractor, such as San Joaquin kit fox and vernal pool credits, and the credit release schedule are pending Interagency Review Team approval. The contractor has submitted the final prospectus to the Interagency Review Team. As of July 2026, information regarding approval of the Bloss Ranch Conservation Bank is not publicly available.

Table F-1. SHOPP Advance Mitigation Credits (RAMNA Table 4-1)

Name	Year Approved	Signatories ^a	Area (acres)	Service Area	Credit Types
Bloss Ranch Conservation Bank (working title)	In progress	CDFW, FWS	7,300	Proposed within a portion of Central California tiger salamander range (approximately between the cities of Madera, Galt, and Dublin)	Caltrans dedicated: 3 aquatic California tiger salamander credits 88 upland California tiger salamander credits

^a All agencies listed are also signatories to the *Master Process Agreement for Planning and Developing Advance Mitigation Throughout California for the California Department of Transportation* (Caltrans et al. 2020).

HCPs and NCCPs (RAMNA Section 4.2)

HCPs¹ and NCCPs² define covered activities that consist of specific projects and actions that may have adverse effects on covered species and natural communities. FWS and/or CDFW estimate adverse effects associated with the covered activities and issue incidental take permits. Once the HCP, NCCP, or HCP/NCCP is adopted and the incidental take permits are issued, signatories and Participating Special Entities, where applicable, can request take authorization for project-related effects on covered species. Participation in an adopted HCP, NCCP, or HCP/NCCP streamlines permit processes by eliminating the need to obtain project-specific incidental take permits from FWS and/or CDFW and providing early documentation of compliance with the California Endangered Species Act (“CESA”) and federal Endangered Species Act (“ESA”).

When Caltrans is not an NCCP permittee, under specific conditions and with signatory agency approval, Caltrans may be able to qualify as a Participating Special Entity under the plan, gaining some of the NCCP permittee’s privileges; however, not all NCCPs have a Participating Special Entity clause.

Caltrans identified the following active HCP/NCCP within the GAI that applies to transportation-related activities and that Caltrans may be able to use to meet its mitigation needs within the GAI:

- Kern Water Bank HCP/NCCP

Figure F-1 depicts the location of the above-listed HCP/NCCP. Table F-2 summarizes the signatories, status, area, transportation agency permittees, covered species, and covered communities.

¹ Pursuant to Section 10 of the federal ESA or consultations under Section 7 of the federal ESA.

² Pursuant to Section 2835 of the California Fish and Game Code (“FGC”).

Figure F-1. HCPs and NCCPs (RAMNA Figure 4-1)

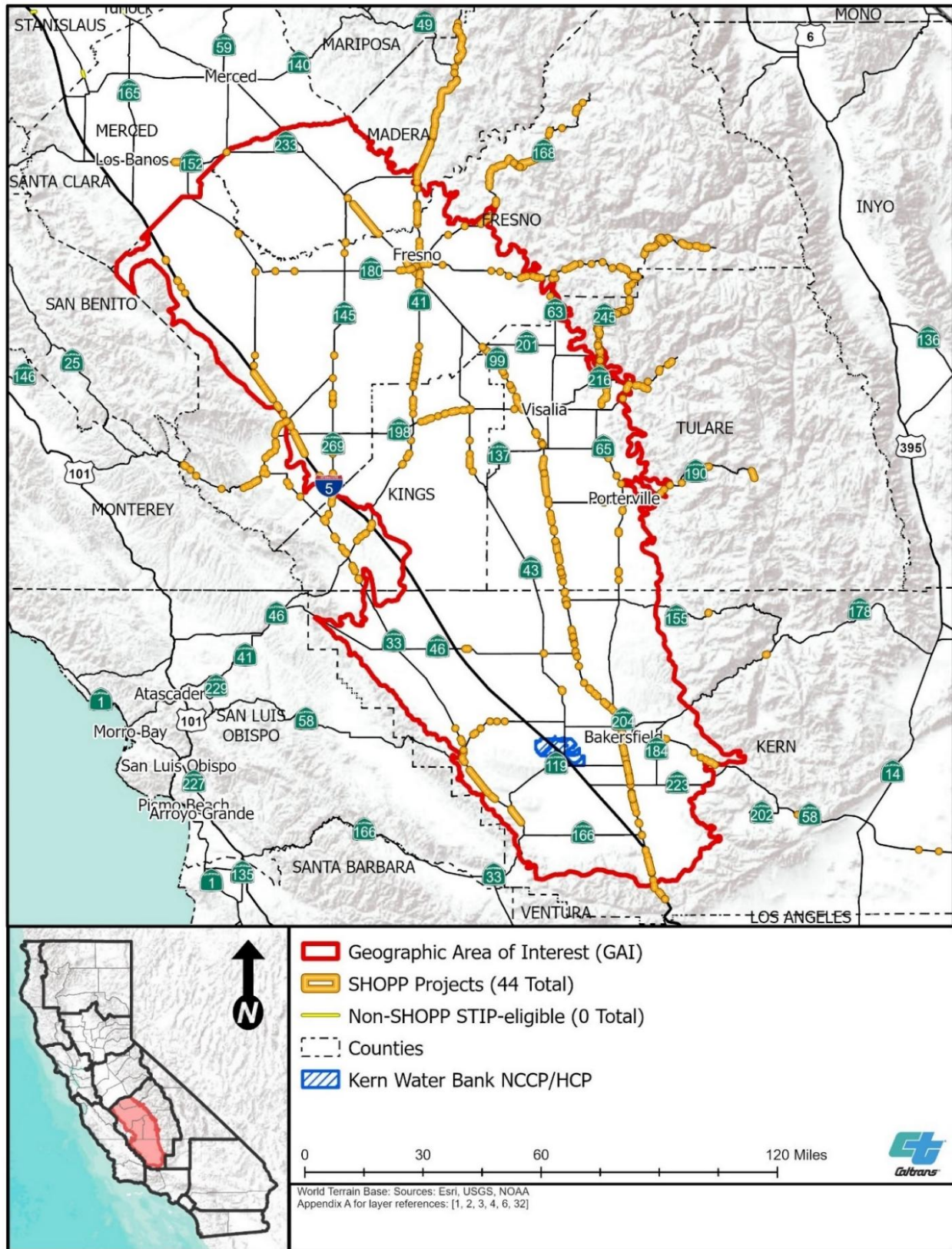


Table F-2. Overview of HCPs and NCCPs in the GAI^a (RAMNA Table 4-2)

Name	Signatories ^b	Date	Area (acres)	Participating Transportation Agencies	Covered Species	Covered Natural Communities
Kern Water Bank HCP/NCCP	FWS ^a , CDFW ^a , Kern Water Bank Authority	1997	19,900	None	California tiger salamander, San Joaquin kit fox ^c , giant kangaroo rat, Tipton kangaroo rat, and 61 other species	3

^a Up-to-date information on HCPs and NCCPs can be found at the following websites:

<https://ecos.fws.gov/ecp/report/conservation-plans-region-summary?region=8&type=HCP>

<https://wildlife.ca.gov/conservation/planning/nccp>

^b Agencies are signatories to the *Master Process Agreement for Planning and Developing Advance Mitigation Throughout California for the California Department of Transportation* (Caltrans et al. 2020).

^c CDFW typically only approves the purchase of San Joaquin Kit Fox credits at the Kern Water Bank HCP/NCCP.

Multiple project-specific HCPs in the GAI were not included in Table F-2 because they were determined to not be a viable mitigation option for Caltrans. For example, they applied to a non-Caltrans single user, covered activities that were not road infrastructure-related, or could not be adapted to be applicable to road infrastructure. In addition, when Caltrans and/or regional public transportation agencies are not currently signatories or Participating Special Entities in any of the NCCPs listed in Table F-2, their participation and coverage under any NCCP is at the discretion of the implementing entity/plan manager.

The GAI overlaps with the service area of the Metropolitan Bakersfield HCP, which reached the end of its permit term and expired in February 2022. Rather than amending this plan, a new Bakersfield Regional HCP is being drafted to address several important components now required by federal regulations that were not within the previous document. These new additions will include outlining biological goals and objectives, a monitoring and adaptive management plan, and “no surprises” assurances. The service area for this new Bakersfield HCP is expected to be very similar to the existing Metropolitan Bakersfield HCP. However, no information about the status of new HCP is currently available.

The GAI also overlaps with the proposed service area of the Kern County Valley Floor HCP. However, this HCP has been in draft form since 2006, and it is uncertain whether or when it will be finalized.

Conservation and Mitigation Banks (RAMNA Section 4.3)

A conservation or mitigation bank is privately or publicly owned land managed for its natural resource values. In exchange for permanently protecting, managing, and monitoring the land, the bank sponsor is allowed to sell or transfer habitat and/or aquatic resource credits to permittees who—after all appropriate and practicable avoidance and minimization has been performed—need to satisfy legal requirements and compensate for their project’s unavoidable natural resource impacts. Conservation banks generally protect threatened and endangered species habitat, while mitigation banks generally protect, restore, create, and/or enhance aquatic resources. The legal document for the establishment, operation, and use of a conservation bank or mitigation bank is a Bank Enabling Instrument (“BEI”).

Caltrans identified 15 active or pending conservation and/or mitigation banks with service areas that overlap all or part of the GAI. Information on the agency approvals and types of credits available are provided in Table F-3. Several of these conservation and mitigation banks do not provide credits for the species of mitigation need identified in this RAMNA; however, credits for other listed species or habitats are available. Information on the resource and regulatory agency approvals, the types of credits available, and brief descriptions of each bank are provided in Table F-3. The location and extent of the service areas associated with the aforementioned banks are depicted on Figures F-2 to F-9.

There are additional conservation and/or mitigation banks with service areas that are partially within the GAI but do not overlap any state highways within the GAI. These banks were omitted from Table F-3 because they would not be usable by Caltrans for fulfilling mitigation requirements.

Table F-3. Overview of Conservation and Mitigation Banks in the GAI^a (RAMNA Table 4-3)

Name	Year Approved	Current Status	Signatories ^b	Bank Location (County) ^c	Instrument Includes Pre-transfer Credit Sales?	Area (acres)	Credit Types
Alkali Sink Conservation Bank	2016	Active – credits available	FWS, CDFW	Fresno	No	943.43	San Joaquin kit fox, burrowing owl, Swainson's hawk, vernal pool fairy shrimp, and longhorn fairy shrimp ^d
Big Gun Conservation Bank	2010	Active – credits available	FWS	Placer	No	48	California red-legged frog
Cayetano Creek Mitigation Bank	2023	Active – credits available	FWS, Corps	Contra Costa and Alameda	No	101.25	California tiger salamander, San Joaquin kit fox, burrowing owl, California red-legged frog, Congdon's tarplant, seasonal wetland, riparian woodland
Deadman Creek Conservation Bank	2007	Active – credits available	FWS	Merced	No	684	California tiger salamander, San Joaquin kit fox, vernal pool preservation
Drayer Ranch Conservation Bank	2006	Active – credits available	FWS	Merced	No	254	California tiger salamander, San Joaquin kit fox, Greene's tuctoria, San Joaquin Orcutt grass, succulent owl's clover, vernal pool fairy shrimp, and vernal pool tadpole shrimp
Grasslands Mitigation Bank	2015	Active – credits available	Corps, EPA, FWS, CDFW	Merced	No	281	Giant garter snake (<i>Thamnophis gigas</i>) and seasonal wetlands
Great Valley Conservation Bank at Flynn Ranch	2007	Active – credits available	FWS	Merced	No	1,067	California tiger salamander, San Joaquin kit fox, vernal pool fairy shrimp, vernal pool tadpole shrimp

Name	Year Approved	Current Status	Signatories ^b	Bank Location (County) ^c	Instrument Includes Pre-transfer Credit Sales?	Area (acres)	Credit Types
Kennedy Table Conservation Bank	2004	Active – credits available	FWS	Madera	No	600	Succulent owl's clover, vernal pool fairy shrimp, and vernal pool preservation
Kern Water Bank Authority Conservation Bank	1997	Active – credits available	FWS, CDFW	Kern	No	3,267	San Joaquin kit fox, Tipton kangaroo rat, Swainson's hawk, bald eagle, bank swallow, willow flycatcher
Kreyenhagen Hills Conservation Bank	2005	Active – credits available	FWS	Fresno	No	1,295	San Joaquin kit fox
Piedra Azul Conservation Bank	2022	Active – credits available	FWS, CDFW	Merced	Yes	2,418	California tiger salamander, San Joaquin kit fox (sold out as of October 2025), Swainson's hawk, burrowing owl, and California red-legged frog
Sand Creek Conservation Bank	2007	Active – credits available	FWS	Tulare	No	498	San Joaquin kit fox, California tiger salamander, vernal pool preservation
Sparling Ranch Conservation Bank	2017	Active – credits available	FWS, CDFW	Santa Clara and San Benito	No	2,002	California tiger salamander and California red-legged frog
Vieira Ranch Conservation Bank	2026	Active – credits available	FWS, CDFW	Alameda	Yes	680	California tiger salamander, San Joaquin kit fox, California red-legged frog

Name	Year Approved	Current Status	Signatories ^b	Bank Location (County) ^c	Instrument Includes Pre-transfer Credit Sales?	Area (acres)	Credit Types
Vieira-Sandy Mush Road Conservation Bank	2002	Active – credits available	FWS	Merced	No	333	California tiger salamander, San Joaquin kit fox, conservancy fairy shrimp, vernal pool fairy shrimp, and vernal pool tadpole shrimp

^a Up-to-date information on approved conservation and mitigation banks, including available credits, can be found at the following websites:

<https://www.wildlife.ca.gov/Conservation/Planning/Banking/Approved-Banks>

<https://ribits.ops.usace.army.mil/ords/f?p=107:2:.....>

^b All agencies listed are also signatories to the *Master Process Agreement for Planning and Developing Advance Mitigation Throughout California for the California Department of Transportation* (Caltrans et al. 2020).

^c Bank service area boundaries may extend well outside of the county where the bank itself is located.

^d Per CDFW, as of October 2025, only 0.01 longhorn fairy shrimp credits are available at this bank.

Figure F-2. Conservation and Mitigation Bank Service Areas – Part 1 (RAMNA Figure 4-2)

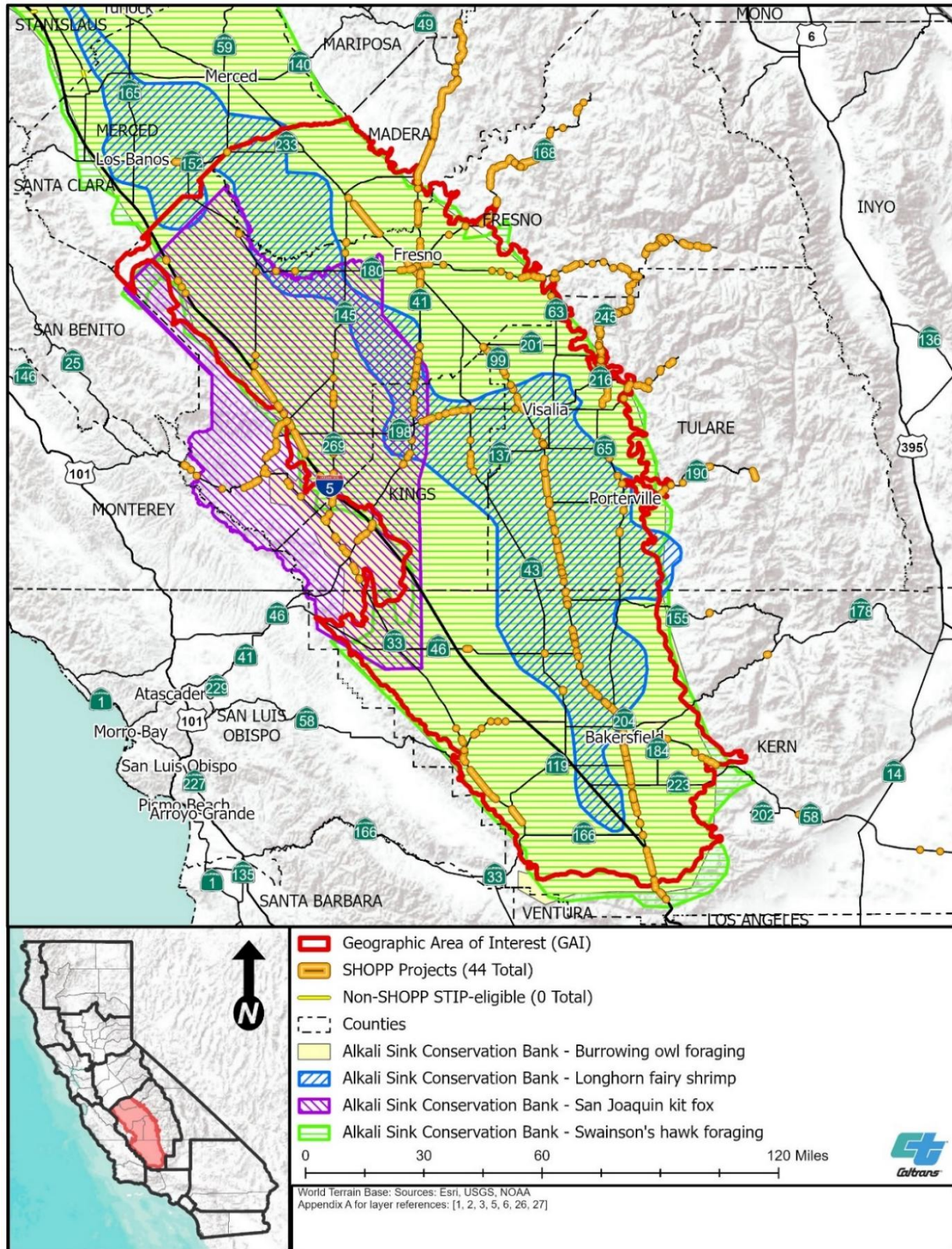


Figure F-3. Conservation and Mitigation Bank Service Areas – Part 2 (RAMNA Figure 4-3)

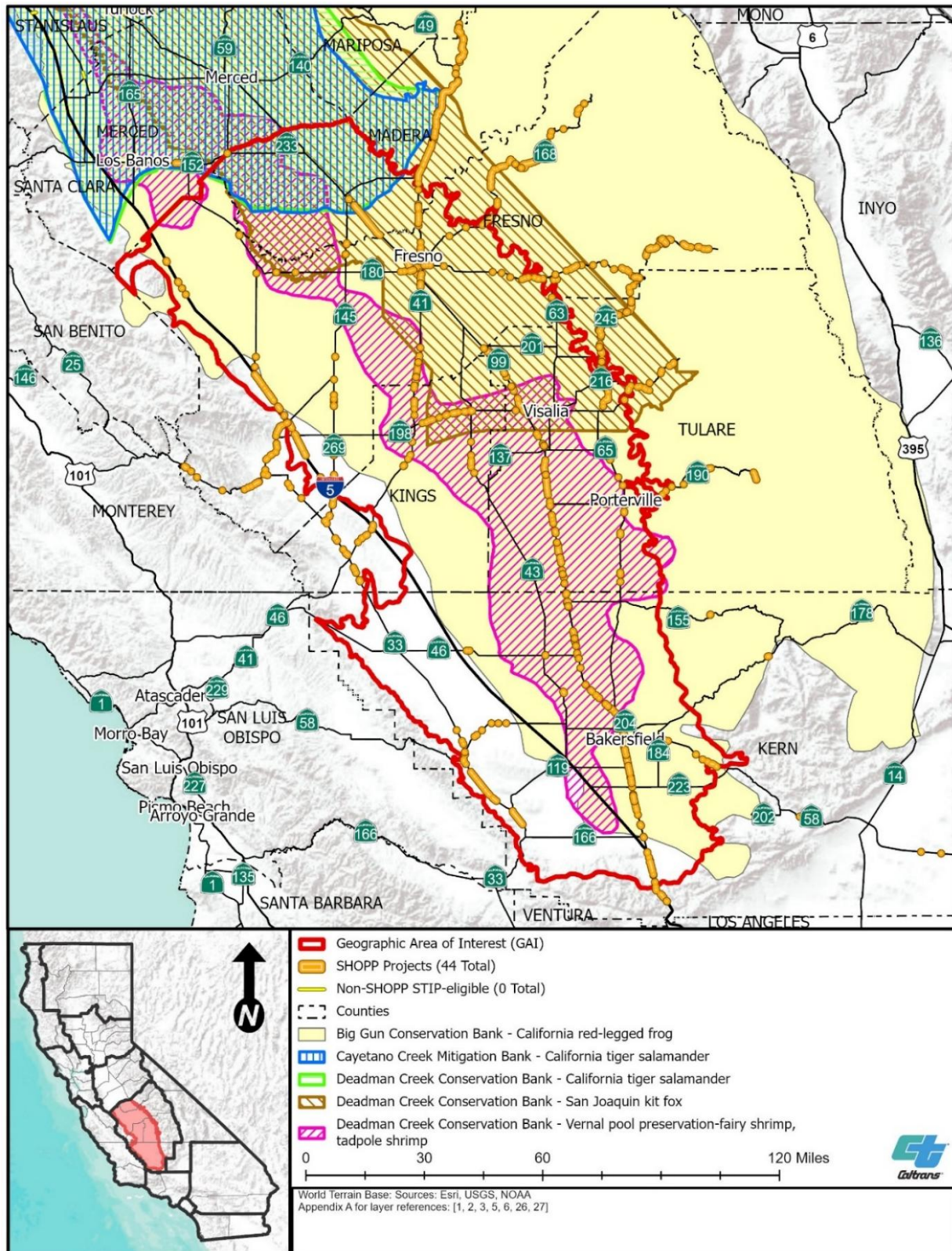


Figure F-4. Conservation and Mitigation Bank Service Areas – Part 3 (RAMNA Figure 4-4)

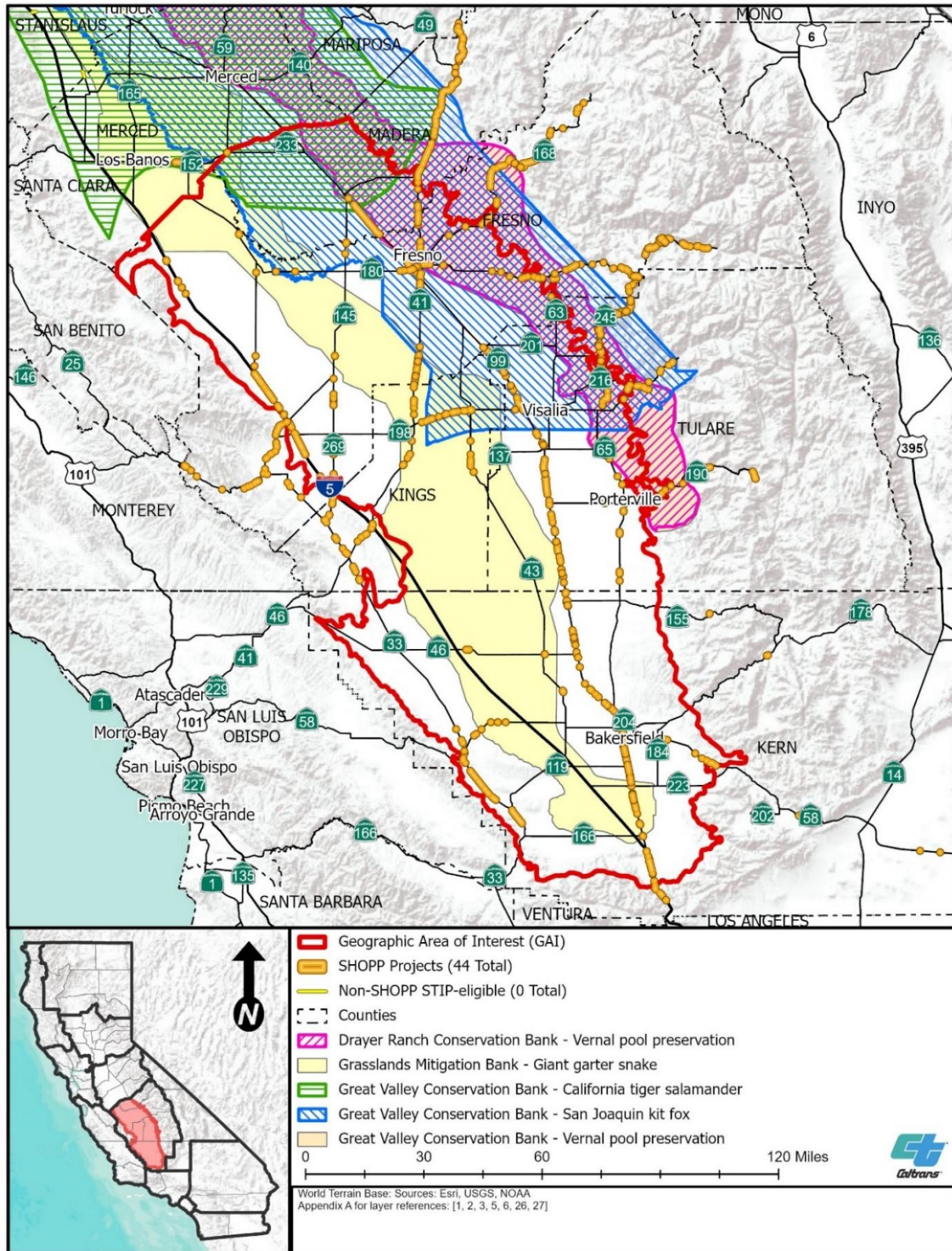


Figure F-5. Conservation and Mitigation Bank Service Areas – Part 4 (RAMNA Figure 4-5)

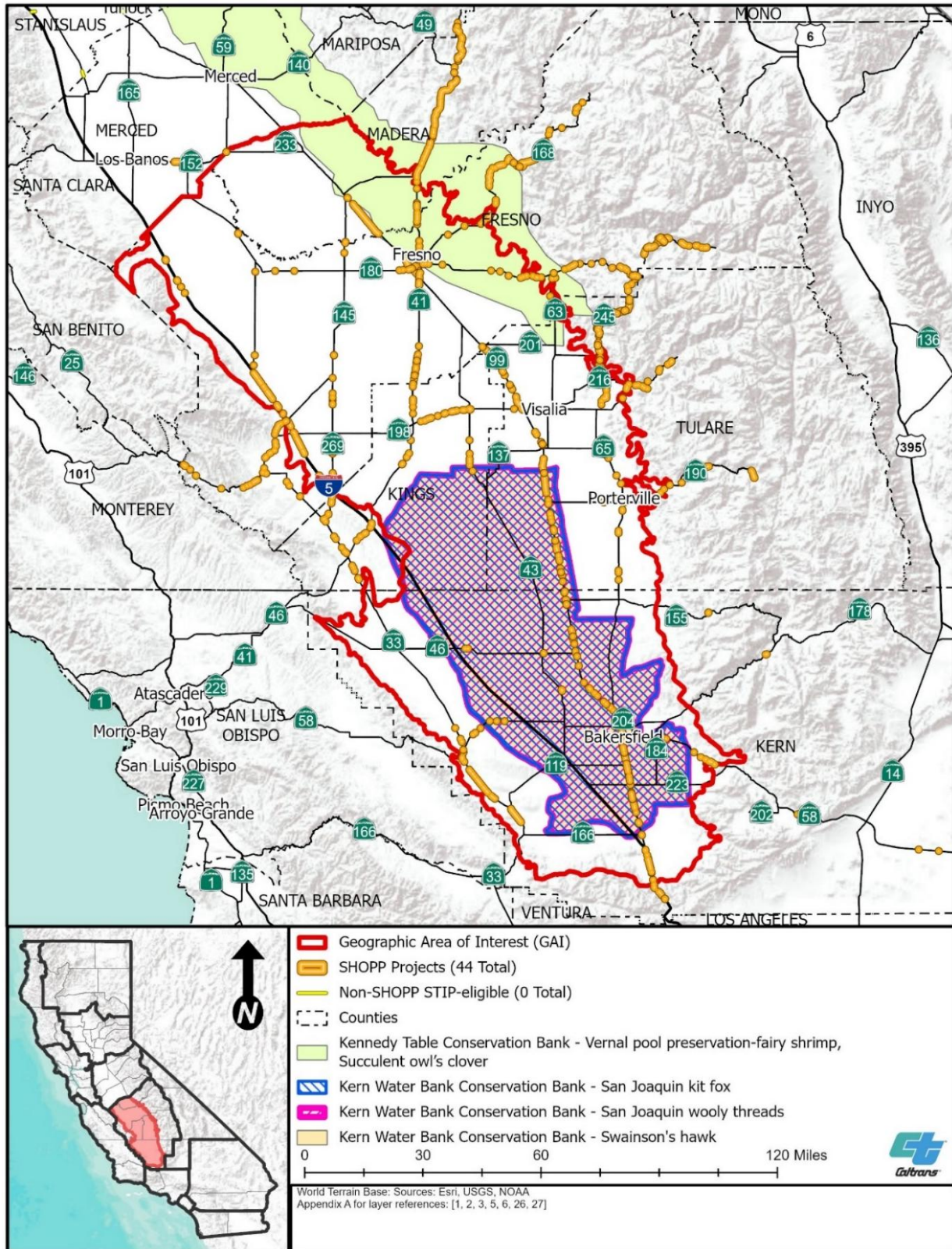


Figure F-6. Conservation and Mitigation Bank Service Areas – Part 5 (RAMNA Figure 4-6)

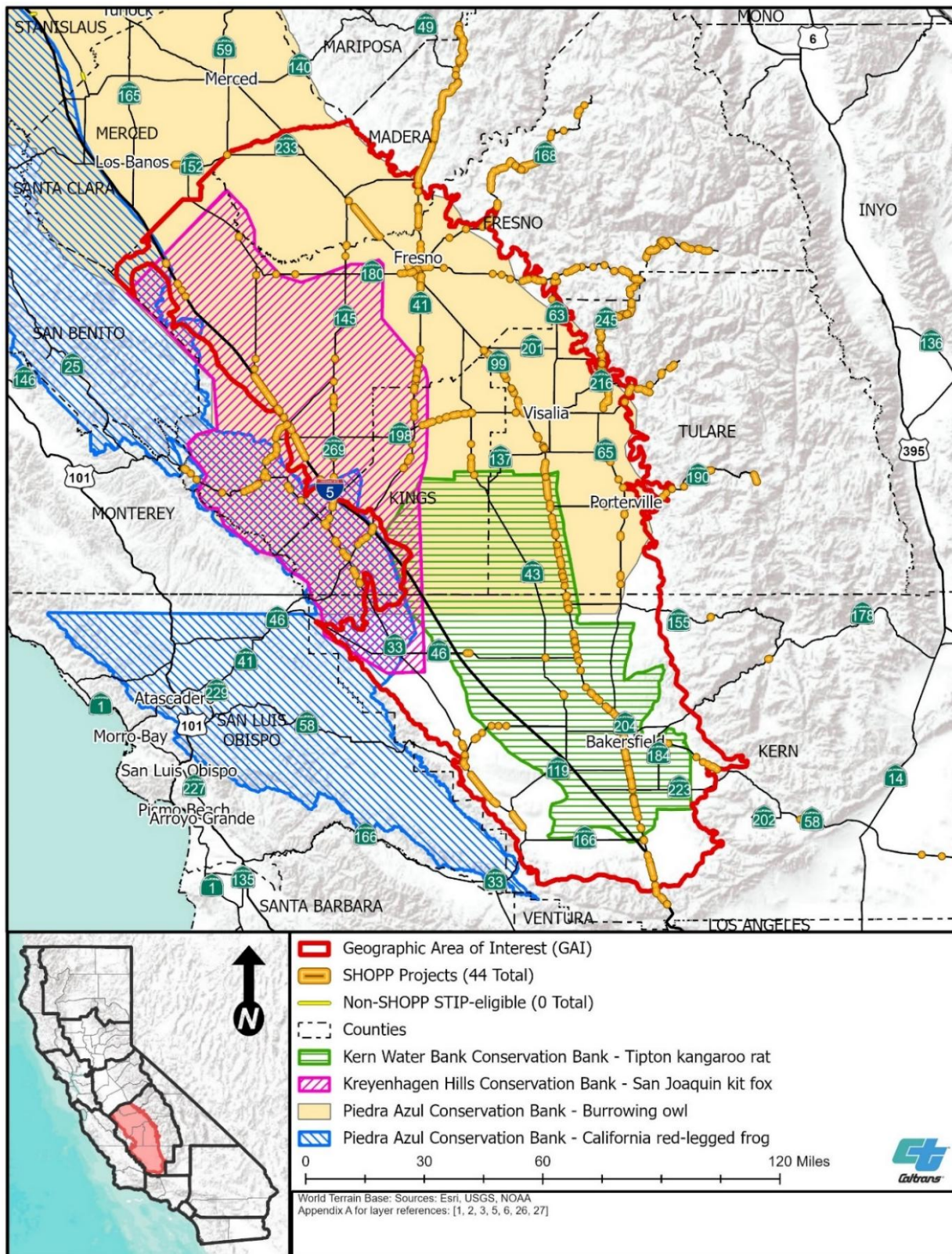


Figure F-7. Conservation and Mitigation Bank Service Areas – Part 6 (RAMNA Figure 4-7)

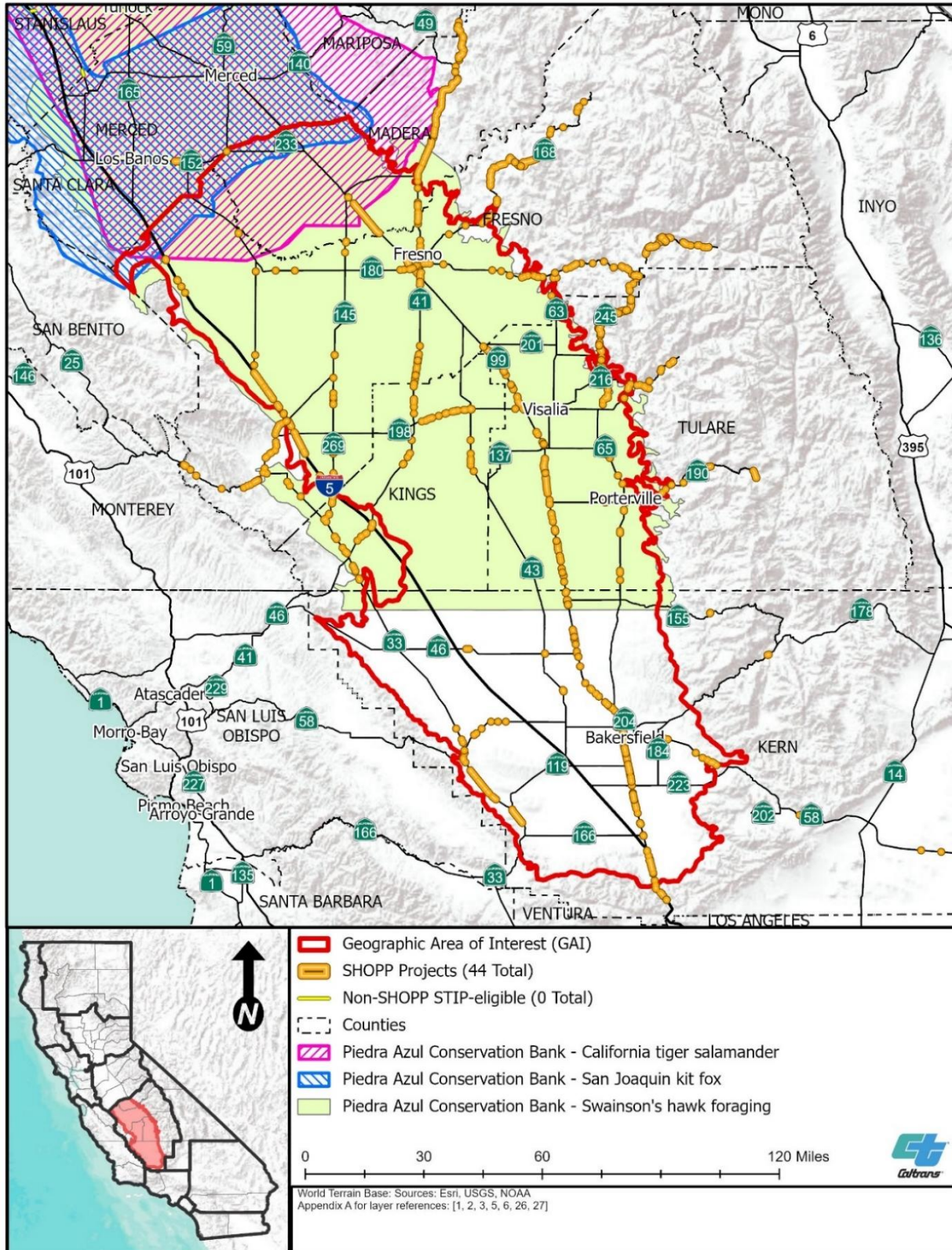


Figure F-8. Conservation and Mitigation Bank Service Areas – Part 7 (RAMNA Figure 4-8)

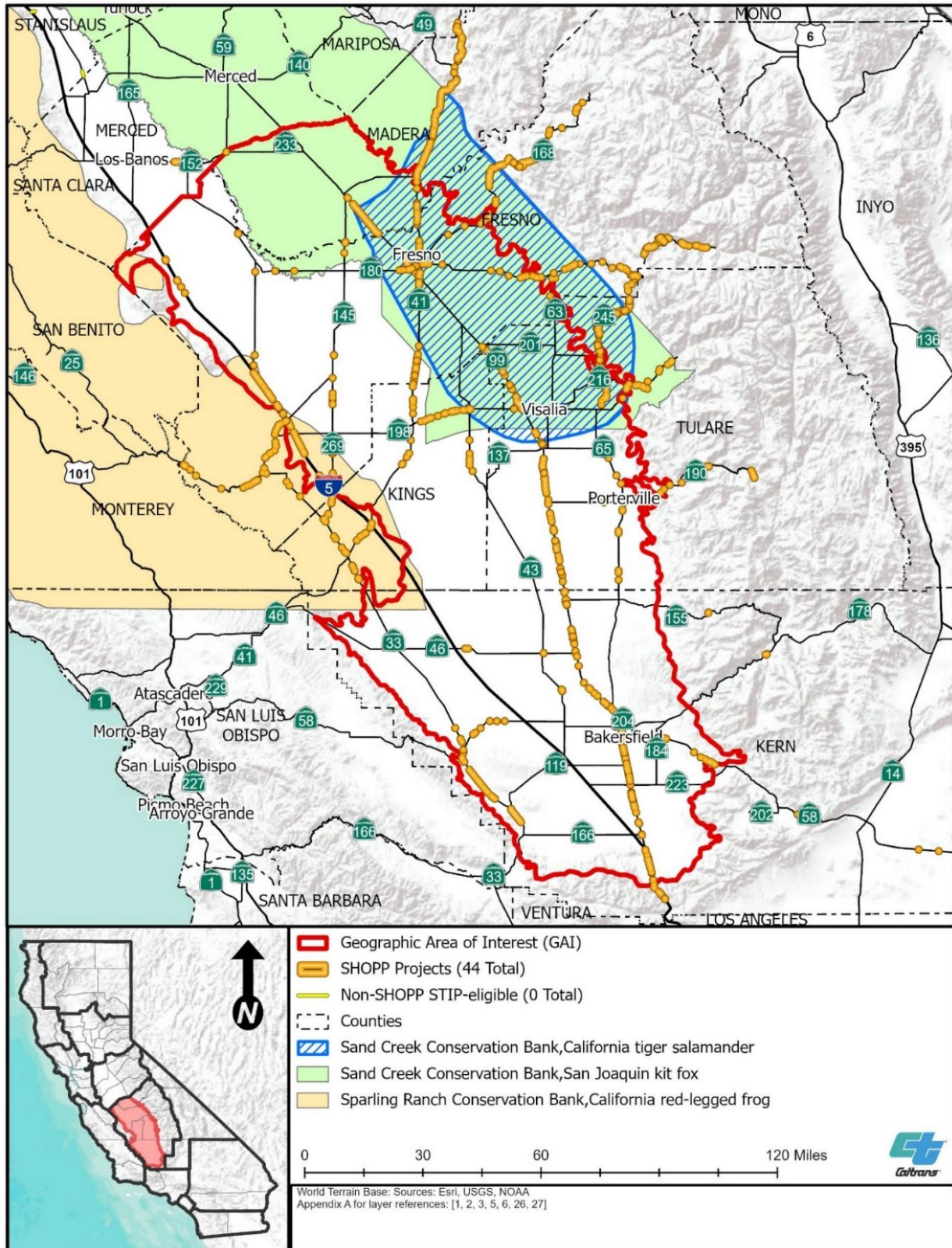
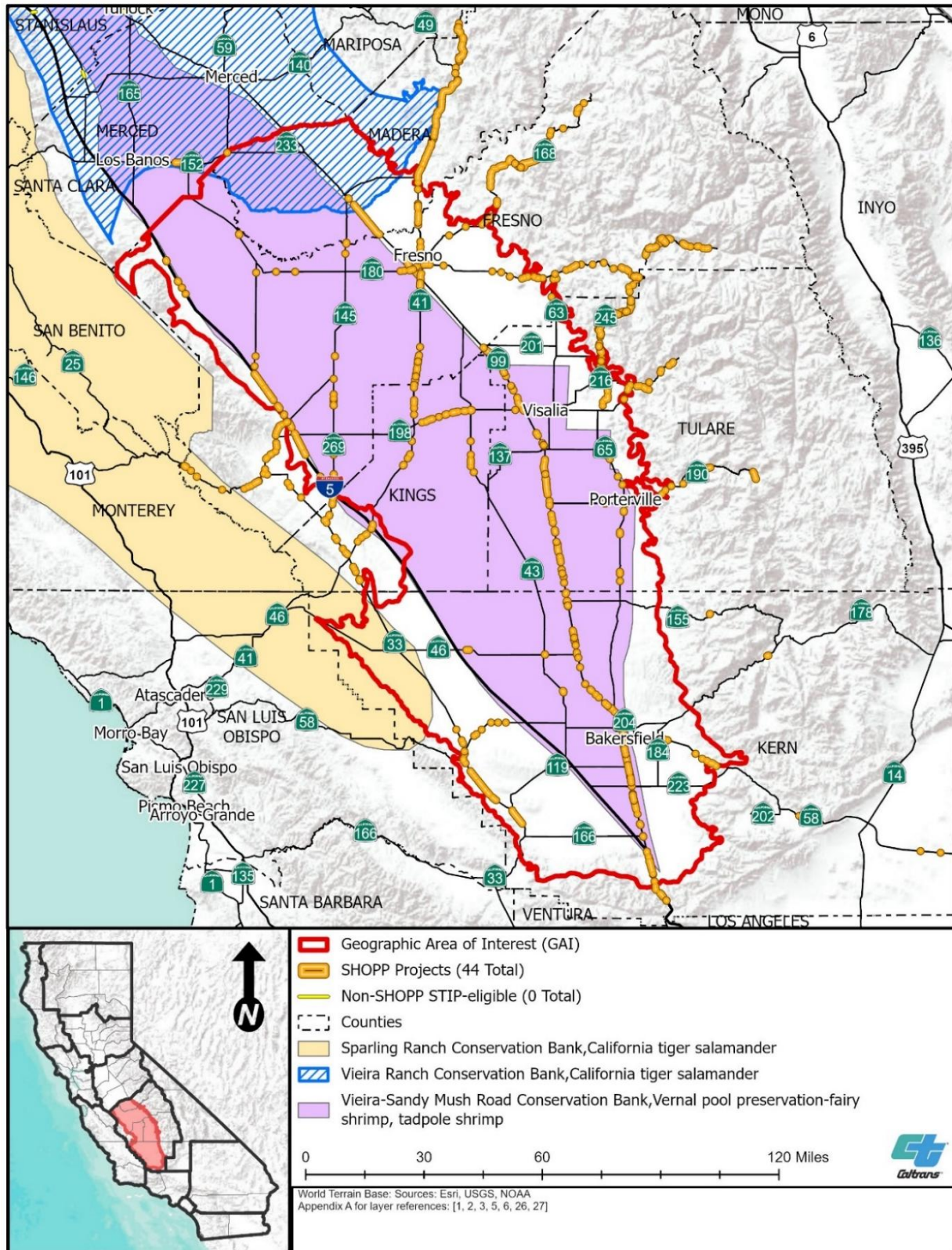


Figure F-9. Conservation and Mitigation Bank Service Areas – Part 8 (RAMNA Figure 4-9)



In-lieu Fee Programs (RAMNA Section 4.4)

Compensatory mitigation can also be accomplished through participation in an in-lieu fee program, which is an agreement between a natural resource regulatory agency and a single in-lieu fee sponsor. In-lieu fee mitigation occurs when a permittee provides funds to an in-lieu fee sponsor instead of either completing permittee-responsible mitigation or purchasing credits from a conservation or mitigation bank. An in-lieu fee sponsor can include entities such as public agencies or nonprofit organizations, and the fees are used to plan, build, and maintain a mitigation site. This method is similar to purchasing mitigation credits, in that the mitigation is usually conducted “off site.” Often, the mitigation occurs after the permitted impacts.

One active in-lieu fee program has a service area that overlaps the GAI: the National Fish and Wildlife Foundation (“NFWF”) Sacramento District California ILF Program (Table F-4, Figures F-10 and F-11). This in-lieu fee program has eight separate service areas for different resources in different regions under its jurisdiction that overlap the GAI, as shown on Figures F-10 and F-11.

Table F-4. In-lieu Fee Programs within the GAI^a (RAMNA Table 4-4)

Name	Year Approved	Signatories	Instrument Includes Pre-transfer Credit Purchases?	Location	Credit Types
NFWF Sacramento District California ILF Program	2014	Corps ^b , EPA ^b , NMFS ^b , Water Boards ^b , NFWF	Yes	Multiple service areas within the Corps Sacramento District boundary (entire)	▪ Kaweah-Tule – aquatic resources ▪ Kern – aquatic resources ▪ King – aquatic resources ▪ San Joaquin – aquatic resources ▪ Central Coast – vernal pools ▪ San Joaquin Valley – vernal pools ▪ Southern Sierra Foothills – vernal pools ▪ All other vernal pool areas

^a Up-to-date information on approved in-lieu fee programs, including available credits, can be found at:

<https://ribits.ops.usace.army.mil/ords/f?p=107:47:13453394859366::NO>

^b Agencies are also signatories to the *Master Process Agreement for Planning and Developing Advance Mitigation Throughout California for the California Department of Transportation* (Caltrans et al. 2020).

Figure F-10. Sacramento District California In-lieu Fee Program Aquatic Service Areas (RAMNA Figure 4-10)

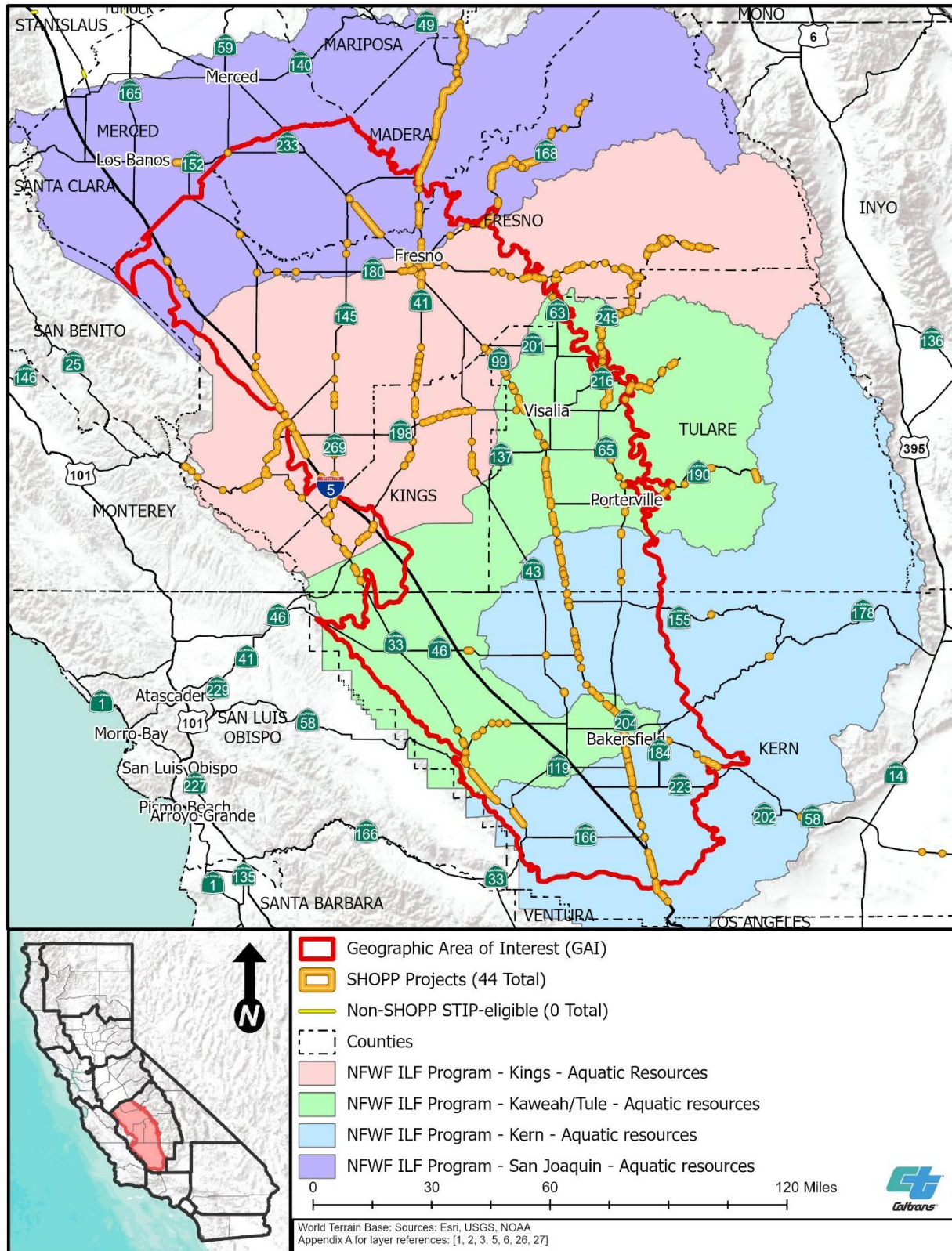
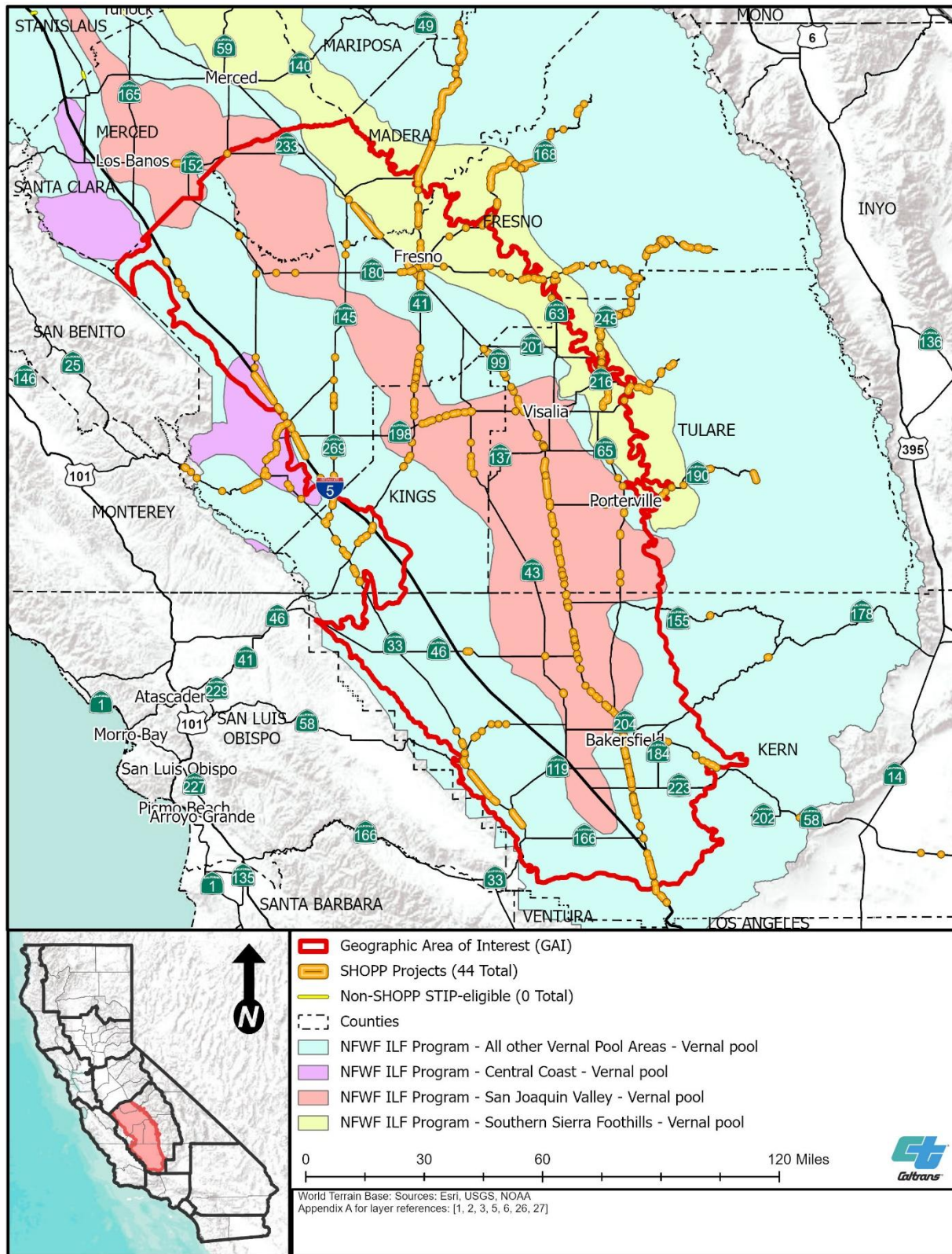


Figure F-11. Sacramento District California In-lieu Fee Program Vernal Pool Service Areas (RAMNA Figure 4-11)



RCISs and MCAs (RAMNA Section 4.5)

Assembly Bill 2087 established CDFW's RCIS Program in 2016 (California Fish and Game Code ["FGC"] Chapter 9, § 1850 et seq.), which created a voluntary framework for governments and other entities to strategically plan for conservation investments in their areas, including investments performed for compensatory mitigation. To promote the conservation quality of compensatory mitigation investments, the RCIS Program provides an advance mitigation tool that can be applied to resources subject to regulations implemented by CDFW. MCAs are developed when and where an RCIS is approved by CDFW and contains the elements described in FGC § 1856(b). Then, with respect to the State Highway System ("SHS"), a useful MCA would create credits that may be used as compensatory mitigation to offset impacts identified under CESA and the Lake and Streambed Alteration Program.

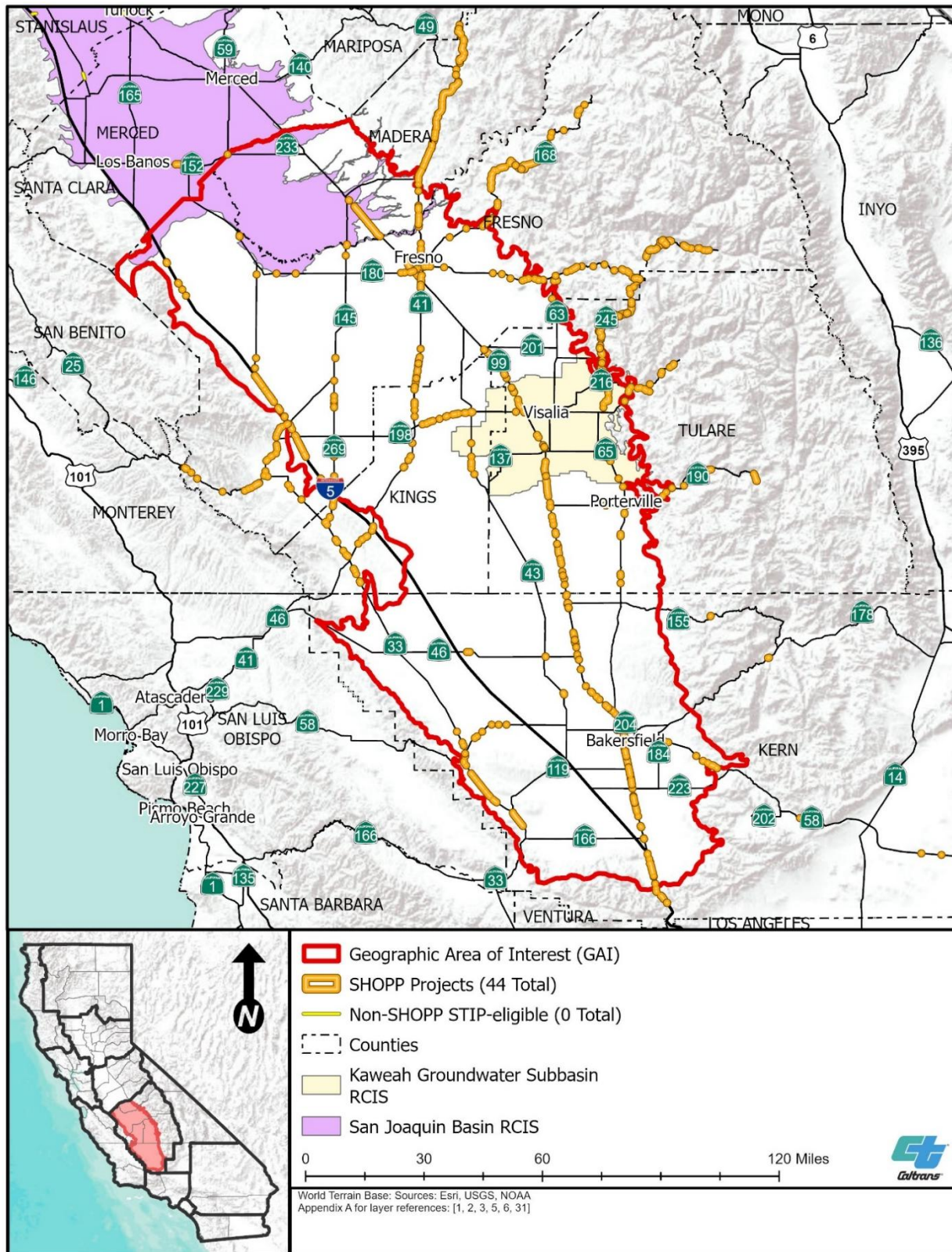
An MCA has numerous required elements, many of which parallel the requirements of a mitigation bank. These required elements can be found in FGC § 1856, and additional guidance is available in *Regional Conservation Investment Strategies Program Guidelines* (CDFW 2023). It is important to note that MCAs are not permits such as HCPs and NCCPs. MCA advance mitigation credits are analogous to conservation and mitigation bank credits. In other words, unlike an HCP and NCCP, RCISs and MCAs do not result in the issuance of incidental take permits for covered activities.

RCISs (RAMNA Subsection 4.5.1)

Caltrans identified the following RCISs with service areas that overlap part of the GAI (Figure F-12):

- Kaweah Groundwater Subbasin RCIS
- San Joaquin Valley RCIS

Figure F-12. RCIS Areas in the GAI (RAMNA Figure 4-12)



Kaweah Groundwater Subbasin RCIS

The Kaweah Groundwater Subbasin RCIS was finalized and approved by CDFW in 2022. It covers approximately 475,935 acres in Tulare County including almost all of the Kaweah Subbasin, near Visalia. The East Kaweah Groundwater Sustainability Agency is the proponent. The RCIS analyzes 15 focal species, including 12 wildlife species and 3 plant species whose conservation needs may be addressed through the RCIS. In addition, 11 “non-focal species” (5 wildlife species and 6 plant species) are identified that have conservation needs similar to the focal species and may benefit from conservation actions and habitat enhancement included in the RCIS. Three of the species of mitigation need identified in the original District 6 RAMNA from 2020 are also focal species in the RCIS, including California tiger salamander, San Joaquin kit fox, and Tipton kangaroo rat. Conservation goals and objectives included in the RCIS encourage multi-benefit restoration projects and discuss the effects of climate change on all of the focal species. The RCIS also analyzes the effects of solar energy development and conversion of agricultural land on the focal species. The RCIS identifies Caltrans and the Tulare County Association of Governments as the major transportation agencies in the RCIS area. Caltrans was on the steering committee and took an active role in developing the Kaweah Subbasin RCIS, and was the document’s formal State Agency Sponsor. The 2020 District 6 RAMNA is specifically referenced in the RCIS, as is the potential for the purchase of advance mitigation credits through an MCA (ICF 2022).

San Joaquin Valley RCIS

The San Joaquin Valley RCIS (formerly referred to as the San Joaquin Basin RCIS) was approved by CDFW in October 2025. It covers the northern San Joaquin Valley primarily within San Joaquin, Stanislaus, Merced, and Madera Counties, along with small portions of Tuolumne and Fresno Counties. The RCIS is defined by landscape features, including the streams, floodplains, alluvial fans, and terraces associated with the San Joaquin River system between Friant Dam and the Sacramento-San Joaquin Delta (Environmental Science Associates 2025). Focal species selected for the RCIS include steelhead (California Central Valley DPS), Chinook salmon (Central Valley spring-run ESU and Central Valley fall-run ESU), white sturgeon, CTS (Central California DPS), giant garter snake, riparian brush rabbit, San Joaquin kit fox, western red bat, Swainson’s hawk, tri-colored blackbird, monarch butterfly, valley elderberry longhorn beetle, and Delta button-celery.

Mitigation Credit Agreements (RAMNA Subsection 4.5.2)

As discussed previously, MCAs are developed when and where an RCIS is approved by CDFW, contains the elements described in FGC § 1856(b), and is consistent with the additional guidance available in *Regional Conservation Investment Strategies Program Guidelines* (CDFW 2023).³

³ <https://wildlife.ca.gov/Conservation/Planning/Regional-Conservation>

Although no MCAs have been developed and no credits are available at this time, the Kaweah Groundwater Subbasin and San Joaquin Basin RCISs may provide opportunities for an entity to enter into an MCA with CDFW within the RCIS areas. Once the CESA and/or the Lake and Streambed Alteration Program MCA credits are available, they may be eligible to be used to offset transportation project impacts.

Wildlife Crossing and Aquatic Corridor Enhancements

In 2022, FGC § 1955 et seq. authorized CDFW to approve compensatory mitigation credits for a “wildlife connectivity action” through its banking or RCIS programs. Therefore, when wildlife crossings and aquatic corridor enhancements improve the permeability of the SHS, through a BEI or MCA developed under an RCIS, CDFW is authorized to recognize CESA and Lake and Streambed Alteration credits for construction made separate and distinct from a specific transportation project. CDFW has drafted *Wildlife Connectivity Advance Mitigation Guidelines* (CDFW 2024) that are intended to assist with the process.

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- Caltrans (California Department of Transportation). 2020. *Great Valley Ecoregion Section Regional Advance Mitigation Needs Assessment*. Version 1.0. December. <https://dot.ca.gov/programs/environmental-analysis/biology/advancemitigation>.
- Caltrans (California Department of Transportation), CDFW (California Department of Fish and Wildlife), SWRCB (State Water Resources Control Board), Corps (U.S. Army Corps of Engineers Los Angeles District, Sacramento District, and San Francisco District), EPA (U.S. Environmental Protection Agency), FWS (U.S. Fish and Wildlife Service), NMFS (National Marine Fisheries Service), and California State Coastal Commission. 2020. *Master Process Agreement for Planning and Developing Advance Mitigation Throughout California for the California Department of Transportation*. Signed January 24.
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- Environmental Science Associates. 2025. “Final San Joaquin Valley Regional Conservation Investment Strategy”. August. <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=228203&inline>
- ICF. 2022. “Final Kaweah Groundwater Subbasin Regional Conservation Investment Strategy.” August. (ICF 376.20). <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=206014>.

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