



ADVANCE MITIGATION PROGRAM

Lower Sacramento Basin Regional Advance Mitigation Needs Assessment

Version 1.0

**Establishing Caltrans' Need for Advance Mitigation
for Caltrans District 3 and Surroundings
forecast fiscal years 2019/2020 to 2028/2029**

California Department of Transportation – District 3

January 2022

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CONTENTS

Executive Summary	ES-1
ES.1 Geographic Area of Interest and Resource Focus.....	ES-2
ES.2 Environmental Setting	ES-5
ES.3 Relevant Plans, Policies, and Regulations	ES-5
ES.4 Existing Mitigation Opportunities	ES-5
ES.5 Estimated Impacts	ES-6
ES.6 Benefiting Transportation Project Considerations.....	ES-7
ES.7 Conservation Goals and Objectives	ES-12
ES.8 Authorized Activity Summary.....	ES-13
ES.9 Next Steps.....	ES-15
1. Introduction	1-1
1.1 AMP Overview	1-1
1.2 Caltrans District 3 Transportation Infrastructure.....	1-6
1.3 Regulatory Framework Summary.....	1-7
1.4 SAMNA	1-10
1.5 GAI and Resource Focus	1-11
1.6 RAMNA	1-14
1.7 Coordination History.....	1-15
1.8 Document Organization	1-17
2. Environmental Setting.....	2-1
2.1 Ecoregion Sections in the GAI	2-1
2.2 Land Ownership in the GAI	2-3
2.3 Topography.....	2-6
2.4 Climate	2-6
2.5 Land Cover Types.....	2-11
2.6 Invasive Species	2-11
2.7 Special-status Species.....	2-15
2.8 Critical Habitat.....	2-16
2.9 Connectivity.....	2-22
2.10 Sub-basins	2-30
2.11 Hydrology	2-32
2.12 Flood Hazard Areas.....	2-32
2.13 Water Quality.....	2-33

2.14 Wild and Scenic Rivers.....	2-35
2.15 Aquatic Resources	2-36
3. Relevant Plans, Policies, and Regulations.....	3-1
3.1 Relationship to Goals and Objectives	3-1
4. Existing Mitigation Opportunities.....	4-1
4.1 SHOPP Advance Mitigation Credits	4-1
4.2 HCPs and NCCPs	4-1
4.3 Conservation and Mitigation Banks	4-5
4.4 In-lieu Fee Programs.....	4-11
4.5 RCISs and MCAs	4-13
5. Modeled Estimated Impacts.....	5-1
5.1 Approach.....	5-1
5.2 Estimated Aquatic Resources Impacts.....	5-14
5.3 Estimated Wildlife Impacts	5-21
6. Benefiting Transportation Project Considerations	6-1
6.1 Why Timing is Important.....	6-1
6.2 Patterns of Estimated Potential Impacts	6-3
6.3 Acceleration Priorities	6-23
7. Wildlife Resources Conservation Goals and Objectives	7-1
7.1 Approach.....	7-1
7.2 Natural Resource Regulatory Agencies with Wildlife Resources Oversight	7-2
7.3 Species of Mitigation Need.....	7-3
7.4 Regional Conservation Efforts.....	7-6
7.5 Pressures and Stressors	7-6
7.6 Multi-species Benefits	7-20
7.7 Advance Mitigation Conservation Goals and Objectives	7-22
7.8 Summary.....	7-30
8. Aquatic Resources Conservation Goals and Objectives.....	8-1
8.1 Approach.....	8-1
8.2 Natural Resource Regulatory Agencies with Aquatic Resources Oversight.....	8-2
8.3 Aquatic Resources	8-4
8.4 Regional Conservation Efforts.....	8-9
8.5 Pressures and Stressors	8-9

8.6 Multi-resource Benefits	8-19
8.7 Advance Mitigation Conservation Goals and Objectives	8-21
8.8 Summary.....	8-31
9. Assessment of Authorized Activities	9-1
9.1 Overview of Advance Mitigation Project Scope Development.....	9-1
9.2 Benefiting Transportation Project Needs Summary	9-3
9.3 Authorized Activity Summary	9-5
9.4 Next Steps.....	9-22
10. References.....	10-1

APPENDICES

Appendix A – GIS Sources

Appendix B – Land Cover Types

Appendix C – Complete SAMNA Species Results

Appendix D – Hydrologic Units

Appendix E – List of 303(d) Impaired Waters

Appendix F – Aquatic Resource Locations

Appendix G – Conservation and Mitigation Bank Service Areas

TABLES

Table ES-1. Estimated SHOPP Impacts on Terrestrial Species of Mitigation Need in the GAI	ES-8
Table ES-2. Summary of Estimated SHOPP Fish Species of Mitigation Need Impacts in the GAI	ES-9
Table ES-3. Summary of Estimated SHOPP Wetland, Non-wetland Waters, Vernal Pool, and Riparian Impacts in the GAI	ES-10
Table 1-1. Advance Mitigation Project Types	1-2
Table 1-2. Natural Resource Regulatory Agencies with Oversight over Natural Resources in the GAI	1-9
Table 1-3. Regional Transportation Interaction and Outreach Summary	1-15
Table 1-4. Comments Received by Caltrans on the RAMNA	1-16
Table 1-5. Interagency Meetings	1-16
Table 1-6. Document Organization	1-17
Table 2-1. Ecoregion Sections in the GAI	2-1
Table 2-2. Land Ownership in the GAI	2-4
Table 2-3. Land Cover Types in the GAI	2-12
Table 2-4. Number of Potentially Occurring Special-status Species, by Land Cover Type – Great Valley Ecoregion Section in the GAI	2-17
Table 2-5. Number of Potentially Occurring Special-status Species, by Land Cover Type – Northern California Interior Coast Ranges Ecoregion Section in the GAI	2-18
Table 2-6. Number of Potentially Occurring Special-status Species, by Land Cover Type – Southern Cascades Ecoregion Section in the GAI	2-18
Table 2-7. Number of Potentially Occurring Special-status Species, by Land Cover Type – Sierra Nevada Ecoregion Section in the GAI	2-19
Table 2-8. Number of Potentially Occurring Special-status Species, by Land Cover Type – Sierra Nevada Foothills Ecoregion Section in the GAI	2-21
Table 2-9. Sub-basins in the GAI	2-32
Table 2-10. Beneficial Uses in the GAI	2-35
Table 2-11. Wetland Types in the GAI	2-43
Table 2-12. Non-Wetland Types in the GAI	2-46
Table 3-1. Comprehensive Plans, Agreements, Resource Management Plans, Policies, and Regulations Relevant to the GAI	3-3
Table 4-1. SHOPP Advance Mitigation Credits	4-2
Table 4-2. Overview of HCPs and NCCPs in the GAI	4-4
Table 4-3. Overview of Conservation and Mitigation Banks in the GAI	4-6

Table 4-4. Overview of In-lieu Fee Programs in the GAI	4-11
Table 5-1. SHOPP Transportation Projects Potentially Affecting Special-status Species and Aquatic Resources in the GAI	5-3
Table 5-2. Assumed Buffer Widths, by SHOPP Transportation Project Activity	5-13
Table 5-3. Summary of Estimated SHOPP Impacts on Threatened and Endangered Fish in the GAI (acres)	5-16
Table 5-4. Summary of Estimated SHOPP Impacts on Wetlands in the GAI (acres)	5-17
Table 5-5. Summary of Estimated SHOPP Impacts on Vernal Pool Habitat in the GAI (acres)	5-18
Table 5-6. Summary of Estimated SHOPP Impacts on Non-wetland Waters in the GAI (acres)	5-19
Table 5-7. Summary of Estimated SHOPP Impacts on Riparian Habitat in the GAI (acres)	5-20
Table 5-8. Summary of Estimated SHOPP Impacts on Special-status Species Habitat in the GAI	5-21
Table 5-9. Estimated SHOPP Impacts on Terrestrial Species of Mitigation Need in the GAI	5-23
Table 5-10. Estimated SHOPP Impacts on Co-occurring Terrestrial Special- status Species: Great Valley Ecoregion Section (acres) in the GAI.....	5-24
Table 5-11. Estimated SHOPP Impacts on Co-occurring Terrestrial Special- status Species: Northern California Interior Coast Ranges in the GAI (acres)	5-32
Table 5-12. Estimated SHOPP Impacts on Co-occurring Terrestrial Special- status Species: Sierra Nevada Ecoregion Section in the GAI (acres)	5-37
Table 5-13. Estimated SHOPP Impacts on Co-occurring Terrestrial Special- status Species: Sierra Nevada Foothills Ecoregion Section in the GAI (acres)	5-42
Table 5-14. Estimated SHOPP Impacts on Co-occurring Terrestrial Special- status Species: Southern Cascades Ecoregion Section in the GAI (acres)	5-47
Table 6-1. Butte Creek: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year	6-7
Table 6-2. Honcut Headwaters-Lower Feather: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year	6-8
Table 6-3. Lower American: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year	6-9
Table 6-4. Lower Sacramento: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year	6-10

Table 6-5. North Fork American: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year	6-11
Table 6-6. Sacramento-Stone Corral: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year	6-12
Table 6-7. South Fork American: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year	6-13
Table 6-8. Thomes Creek-Sacramento River: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year	6-14
Table 6-9. Upper Bear: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year	6-15
Table 6-10. Upper Coon-Upper Auburn: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year	6-16
Table 6-11. Upper Yuba: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year	6-17
Table 6-12. Great Valley Ecoregion Section: Estimated Impacts on Species of Mitigation Need, by Transportation Project Delivery Year	6-18
Table 6-13. Northern California Interior Coast Ranges Ecoregion Section: Estimated Impacts on Species of Mitigation Need, by Transportation Project Delivery Year	6-19
Table 6-14. Sierra Nevada Ecoregion Section: Estimated Impacts on Species of Mitigation Need, by Transportation Project Delivery Year	6-20
Table 6-15. Sierra Nevada Foothills Ecoregion Section: Estimated Impacts on Species of Mitigation Need, by Transportation Project Delivery Year.....	6-21
Table 6-16. Southern Cascades Ecoregion Section: Estimated Impacts on Species of Mitigation Need, by Transportation Project Delivery Year.....	6-22
Table 7-1. Natural Resource Regulatory Agencies with Wildlife Resources Oversight	7-3
Table 7-2. Documents Identifying Areas for Species of Mitigation Need Conservation in the GAI	7-7
Table 7-3. Advance Mitigation Conservation Goals and Objectives for the Species of Mitigation Need	7-23
Table 8-1. Agencies with Jurisdiction over Aquatic Resources	8-3
Table 8-2. Named Aquatic Features in the GAI with Aquatic Resource Goals and Objectives, by HUC-8	8-5
Table 8-3. Documents Identifying Aquatic Resource Goals and Objectives in the GAI	8-11
Table 8-4. Advance Mitigation Conservation Goals and Objectives for Aquatic Resources	8-23

Table 9-1. Summary of Transportation-related Advance Mitigation Project Scope Requirements	9-2
Table 9-2. Summary of Conservation-related Advance Mitigation Project Scope Goals and Objectives	9-3
Table 9-3. Advance Mitigation Project Types	9-5
Table 9-4. Wildlife Resources Credit Options and Feasibility, January 2022	9-19
Table 9-5. Aquatic Resources Credit Options and Feasibility, January 2022	9-21

FIGURES

Figure ES-1. GAI Road Infrastructure	ES-3
Figure 1-1. Advance Mitigation Planning Phase.....	1-4
Figure 1-2. Advance Mitigation Project Delivery Phase.....	1-4
Figure 1-3. GAI Road Infrastructure	1-8
Figure 2-1. Ecoregion Sections in the GAI	2-2
Figure 2-2. Land Ownership.....	2-5
Figure 2-3. Protected Lands.....	2-7
Figure 2-4. Topography.....	2-8
Figure 2-5. Terrestrial Climate Resilience Rankings	2-10
Figure 2-6. Major Land Cover	2-14
Figure 2-7. Federally Designated Critical Habitat.....	2-23
Figure 2-8. Terrestrial Connectivity	2-26
Figure 2-9. Sierra Nevada Foothills Wildlife Connectivity.....	2-27
Figure 2-10. California Fish Passage Advisory Committee Locations	2-29
Figure 2-11. HUC-8 Sub-basins and HUs	2-31
Figure 2-12. Flood Hazard Areas	2-34
Figure 2-13. Wild and Scenic Rivers in the GAI	2-37
Figure 2-14. Aquatic Resource Features and Major Stream Systems	2-38
Figure 2-15. Vernal Pools in the GAI.....	2-41
Figure 4-1. HCPs and NCCPs.....	4-3
Figure 4-2. In-lieu Fee Programs	4-12
Figure 4-3. RCIS Areas	4-14
Figure 6-1. Timing Advance Mitigation with Transportation Project Delivery	6-2
Figure 6-2. Butte Creek: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year	6-7
Figure 6-3. Honcut Headwaters-Lower Feather: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year	6-8
Figure 6-4. Lower American: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year.....	6-9
Figure 6-5. Lower Sacramento: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year.....	6-10
Figure 6-6. North Fork American: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year.....	6-11
Figure 6-7. Sacramento-Stone Corral: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year	6-12

Figure 6-8. South Fork American: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year	6-13
Figure 6-9. Thomes Creek-Sacramento River: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year	6-14
Figure 6-10. Upper Bear: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year	6-15
Figure 6-11. Upper Coon-Upper Auburn: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year	6-16
Figure 6-12. Upper Yuba: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year	6-17
Figure 6-13. Great Valley Ecoregion Section: Estimated Impacts on Species of Mitigation Need, by Transportation Project Delivery Year	6-18
Figure 6-14. Northern California Interior Coast Ranges Ecoregion Section: Estimated Impacts on Species of Mitigation Need, by Transportation Project Delivery Year	6-19
Figure 6-15. Sierra Nevada Ecoregion Section: Estimated Impacts on Species of Mitigation Need, by Transportation Project Delivery Year	6-20
Figure 6-16. Sierra Nevada Foothills Ecoregion Section: Estimated Impacts on Species of Mitigation Need, by Transportation Project Delivery Year.....	6-21
Figure 6-17. Southern Cascades Ecoregion Section: Estimated Impacts on Species of Mitigation Need, by Transportation Project Delivery Year.....	6-22
Figure 6-18. Location of SHOPP Estimated Impacts, by Transportation Project Delivery Year, Ten-Year Book (2021, Quarter 3).....	6-25
Figure 7-1. Terrestrial Biodiversity in the GAI.....	7-21
Figure 7-2. SWAP Conservation Target Habitats	7-29
Figure 8-1. Aquatic Biodiversity of the GAI.....	8-20

LIST OF ACRONYMS

Acronym	Definition
ACE	Areas of Conservation Emphasis
AMA	Advance Mitigation Account
AMP	Advance Mitigation Program
AMP Guidelines	<i>Advance Mitigation Program Final Formal Guidelines</i>
Basin Plan	Water Quality Control Plan
BEI	Bank Enabling Instrument
BLM	Bureau of Land Management
Cal-IPC	California Invasive Plant Council
Caltrans	California Department of Transportation
CDFW	California Department of Fish and Wildlife
CEHC	California Essential Habitat Connectivity Project
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CNRA	California Natural Resources Agency
CO ₂	carbon dioxide
Corps	U.S. Army Corps of Engineers
CWA	Clean Water Act
CWHR	California Wildlife Habitat Relationships
DPS	distinct population segment
EFH	essential fish habitat
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
ESHA	environmentally sensitive habitat area
ESU	evolutionarily significant unit
FGC	California Fish and Game Code
FHWA	Federal Highway Administration
FishPAC	Fish Passage Advisory Committee
FWS	U.S. Fish and Wildlife Service
GAI	geographic area of interest
GAP	Gap Analysis Program
GIS	geographic information system

HCP	habitat conservation plan
HU	hydrologic unit
HUC	hydrologic unit code
LCP	Local Conservation Plan
MCA	mitigation credit agreement
MPO	metropolitan planning organization
NCCP	natural community conservation plan
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
RAMNA	Regional Advance Mitigation Needs Assessment
RCIS	regional conservation investment strategy
RTPA	regional transportation planning agency
RWQCB	Regional Water Quality Control Board
SAMNA	Statewide Advance Mitigation Needs Assessment
SAMNA Reporting Tool	Statewide Advance Mitigation Needs Assessment Reporting Tool
SHC	Streets and Highways Code
SHOPP	State Highway Operation and Protection Program
SHOPP Ten- Year Book	<i>State Highway Operation and Protection Program Ten-Year Project Book Fiscal Years 2019/20—2028/29</i>
SHS	State Highway System
SWRCB	State Water Resources Control Board
STIP	State Transportation Improvement Program
SWAP	State Wildlife Action Plan
USC	U.S. Code
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USGS	U.S. Geological Survey
WOTUS	waters of the U.S.

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EXECUTIVE SUMMARY

This *Lower Sacramento Basin Regional Advance Mitigation Needs Assessment* (“RAMNA”) was developed with the goal of realizing the benefits of long-range planning to help manage the risks and priorities of the California Department of Transportation (“Caltrans”) Advance Mitigation Program (“AMP”). It was developed in accordance with the AMP Final Formal Guidelines (“AMP Guidelines”)¹ and incorporates information and feedback received from outreach to the natural resource regulatory agencies,² the Federal Highway Administration, other transportation agencies, Native American tribes, interested parties, and the public. Caltrans District 3 is the lead district for this planning-level effort.

Background. In 2017, California Streets and Highways Code (“SHC”) § 800 et seq. was amended to create the AMP within Caltrans and to provide the seed capital for an Advance Mitigation Account (“AMA”), to be operated by Caltrans as a revolving account. The stated intent of the legislation was for Caltrans, through the AMP, to realize the potential of advance mitigation to “accelerate transportation project delivery” and to “protect natural resources through transportation project [compensatory] mitigation” [SHC § 800(a)]. To this end, SHC § 800.6(a) identifies 11 specific activities as authorized allowable expenditures under the AMA and provides for the AMA to be replenished under specific conditions. The 11 activities authorized by SHC § 800 et seq. consist of purchasing or establishing compensatory mitigation credits^{3,4} developed through an authorized regulatory mechanism.⁵ Upon delivery, the credits are expected to be both available and at hand for Caltrans and natural resource regulatory agencies to use as offsets to transportation project impacts. The actual finding, however, of a specific credit’s adequacy and/or suitability to offset an impact, as well as the placement of natural resource regulatory agency compensatory mitigation conditions on transportation

¹ <https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/amp-final-formal-guidelines-a11y.pdf>

² For the AMP, “natural resource regulatory agencies” refers specifically to the signatories to the 2020 *Master Process Agreement for Planning and Developing Advance Mitigation throughout California for the California Department of Transportation Advance Mitigation Program*. The signatories are California Department of Fish and Wildlife (“CDFW”); State Water Resources Control Board; U.S. Army Corps of Engineers Los Angeles, Sacramento, and San Francisco districts; U.S. Environmental Protection Agency; U.S. Fish and Wildlife Service; National Marine Fisheries Service; and California Coastal Commission.

³ 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.

⁴ Credits are the usual currency of mitigation established through an advance mitigation project; however, other values may also be established.

⁵ Authorized regulatory mechanisms include the regulatory processes to establish mitigation banks and in-lieu fee programs.

projects, is conducted in the future through each transportation project's environmental studies and permits.

Purpose. Described in the AMP Guidelines, advance mitigation planning is the AMP's process for justifying, proposing, scoping, and securing internal Caltrans AMA funding approval for advance mitigation projects. Advance mitigation planning consists of five steps. Steps 1 and 2 serve to focus the assessment (see Section ES.1, below). Step 3 is this RAMNA. Steps 4 and 5 of the AMP's advance mitigation planning process narrow down the suite of potential advance mitigation projects to a few that have a high probability of meeting the AMP's goals (see Section ES.9, below).

A RAMNA is a desktop study that consists of the best readily available information for Caltrans Districts to refer to when scoping and proposing advance mitigation projects to be funded by the AMA. The information was sensibility checked by other Caltrans functional units, natural resource regulatory agencies, and others before it was finalized. When the Caltrans AMP invests in advance mitigation projects to purchase compensatory mitigation credits, Caltrans assumes that the credits are aligned with existing natural resource regulatory agency goals and objectives. When the Caltrans AMP invests in advance mitigation projects to establish compensatory mitigation, it will aim to establish credits approved by multiple natural resource regulatory agencies. Whether purchased or established, Caltrans intends for credits to be delivered on a schedule that will revolve the AMA.

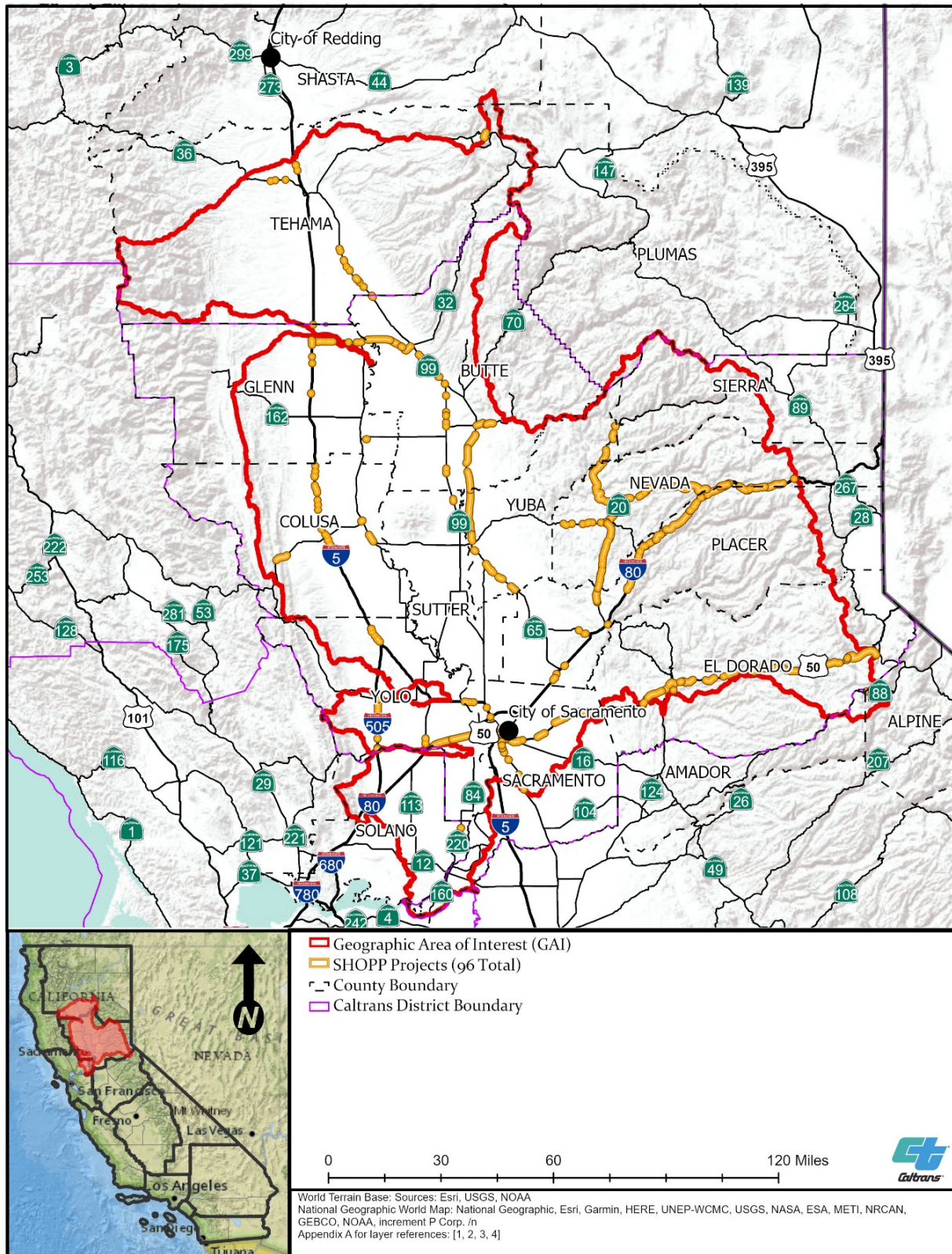
Through the RAMNA's review process, the conservation goals and objectives provided in the RAMNA were vetted with the natural resource regulatory agencies. Caltrans thinks incorporating natural resource regulatory agency goals and objectives into advance mitigation project scopes improves the chances that the compensatory mitigation credits will be (1) usable as transportation project impact offsets and (2) "protect natural resources through transportation project [compensatory] mitigation" [SHC § 800(a)]. Each chapter is briefly summarized below.

Figure ES-1 shows the geographic area of interest ("GAI") road infrastructure.

ES.1 Geographic Area of Interest and Resource Focus

Focusing this assessment improves the probability that advance mitigation projects undertaken by Caltrans will yield credits (or similar) that will be usable and comply with an appropriate established regulatory framework. Focusing the assessment also improves the chances that resultant credits will be available on a timeframe that will revolve the AMA. Hence, for advance mitigation planning, Caltrans focused the RAMNA on a specific time period, a specific area, and typical compensatory mitigation needs.

Figure ES-1. GAI Road Infrastructure



The time period assessed in this RAMNA is for fiscal years 2019/20 through 2028/29, a planning period consistent with Caltrans:

- Long-term transportation plans conceptualized in the *State Highway Operation and Protection Program Ten-Year Project Book Fiscal Years 2019/20—2028/29* (“SHOPP Ten-Year Book”; Caltrans 2021a). Transportation projects in the SHOPP Ten-Year Book have not undergone the environmental and permitting process.
- Modeled compensatory mitigation needs published in the *Statewide Advance Mitigation Needs Assessment⁶ Report Second Quarter 2019/20 Fiscal Year* (“SAMNA Report”; Caltrans 2021b). Compensatory mitigation needs in the SAMNA Report are modeled and do not reflect an environmental and permitting process.

The GAI assessed in this RAMNA consists of the Lower Sacramento Basin, which consists of 13 eight-digit hydrological unit code (“HUC-8”) subbasins. GAIs are established at a HUC-8 or ecoregion scale to define appropriate planning areas for mitigation implementation and anticipated use areas that align with natural resource regulatory agency practices (Caltrans 2019a). Caltrans District 3, in communication with other transportation agencies, selected the GAI because SAMNA model results for fiscal years 2019/20 through 2028/29 (Caltrans 2021b) indicate that investing AMP funds to implement landscape-scale mitigation in these subcoregions is likely to maximize State Highway Operation and Protection Program (“SHOPP”) and State Transportation Improvement Program (“STIP”) funded transportation project acceleration while maximizing environmental benefits.

Because the SAMNA model forecast impacts on hundreds of species’ habitats, to further focus the planning effort, Caltrans District 3 identified species for which natural resource regulatory agencies condition transportation projects and those transportation projects would most likely benefit if compensatory mitigation credits were available. These “species of mitigation need”⁷ are the California red-legged frog (*Rana draytonii*), foothill yellow-legged frog (*Rana boylei*), giant garter snake (*Thamnophis gigas*), Swainson’s hawk (*Buteo swainsoni*), valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), Central Valley spring-run and Sacramento River winter-run evolutionarily significant unit (“ESU”) Chinook salmon (*Oncorhynchus tshawytscha*), delta smelt (*Hypomesus transpacificus*), green sturgeon (*Acipenser medirostris*), longfin smelt (*Spirinchus thaleichthys*), and Central Valley distinct population segment (“DPS”) steelhead (*Oncorhynchus mykiss*). Compensatory mitigation for aquatic resources⁸ and riparian habitat was also identified as both a historical transportation project

⁶ The SAMNA Reporting Tool is a geographic information system (“GIS”) overlay model developed by Caltrans to support advance mitigation planning (Caltrans 2018).

⁷ Species of mitigation need are selected to focus the assessment.

⁸ For the purposes of this document, aquatic resources include all fish, wetlands, and non-wetland waters regulated by CDFW, U.S. Fish and Wildlife Service, California Coastal Commission, State Water Resources Control Board and Regional Water Quality Control Boards, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, and National Marine Fisheries Service.

compensatory mitigation need and an anticipated future transportation project compensatory mitigation need within the GAI.

While the GAI predominantly overlaps Caltrans District 3, a portion of it overlaps Caltrans District 2. The portions of the GAI that overlap Shasta, Plumas, and Tehama Counties are located in Caltrans District 2 (Figure ES-1).

ES.2 Environmental Setting

Information on the GAI's environmental setting is provided in Chapter 2 and its associated appendices. To develop an understanding of the GAI that is consistent with natural resource regulatory agency tools and references, geospatial data from the SAMNA Reporting Tool, CDFW's BIOS, and other readily available information are summarized and presented. Climate change resiliency, wildlife connectivity, biodiversity, and conserved lands are among the information presented. A critical habitat map is provided.

The GAI consists of approximately 12.3 million acres in northern California. It consists of the 13 HUC-8 sub-basins that make up the Lower Sacramento River Basin. It overlaps portions of the Central California Coast, Great Valley, Northern California Coast Ranges, Northern California Interior Coast Ranges, Southern Cascades, Sierra Nevada, and Sierra Nevada Foothills ecoregion sections.

ES.3 Relevant Plans, Policies, and Regulations

Compensatory mitigation is informed by regulatory requirements, regulatory mechanisms for credit establishment, and conservation. Laws, regulations, comprehensive plans, conservation plans, and land management plans that are applicable and relevant to the GAI will be consulted by Caltrans to inform both regional understanding and advance mitigation project scoping.

Caltrans identified 198 documents that may be relevant to advance mitigation planning and advance mitigation project delivery: 27 laws, guidelines, and regulations; 15 statewide and regional planning documents; 47 plans and permits and other documents focused on species of mitigation need; 37 state agency, federal agency, Native American tribal, and local government land management plans; 11 water resources plans and documents; 54 county, city, and local government general plans; and 7 nongovernmental organization conservation and management documents. A summary and links to these documents can be found in Chapter 3.

ES.4 Existing Mitigation Opportunities

For the purposes of the RAMNA, existing mitigation opportunities are potential opportunities for Caltrans to use AMA funds to purchase compensatory mitigation that was previously approved by one or more natural resource regulatory agencies. In accordance with SHC § 800.6(a), the approved credits or values eligible for purchase may have been established through a conservation bank, mitigation bank, natural community conservation plan ("NCCP"), habitat conservation plan ("HCP"), in-lieu fee

program, or mitigation credit agreement (“MCA”) developed in accordance with a CDFW-approved regional conservation investment strategy (“RCIS”).

Chapter 4 and its associated appendix present readily available information regarding existing mitigation opportunities for the GAI. In brief, Caltrans identified 3 HCPs/NCCPs where Caltrans is a participant or may be eligible to participate in, 38 pending or active conservation and mitigation banks, 2 in-lieu fee programs, 2 RCISs, and no MCAs.

Existing mitigation opportunities can also inform both regional understanding and advance mitigation project scoping because they may be expressions of resource agency conservation goals and objectives⁹ and may be suitable for concurrent transportation project mitigation.

ES.5 Estimated Impacts

Prior to developing a focused advance mitigation project scope to purchase or establish mitigation credits or values, as authorized by SHC § 800.6(a), Caltrans must determine whether it needs advance mitigation credits. Since environmental and permitting processes have not yet taken place, Caltrans must rely on estimating future SHOPP transportation project¹⁰ impacts through the SAMNA model, as well as qualitative assessments of STIP-eligible transportation project needs,¹¹ to define the range of its potential advance mitigation needs.

Chapter 5 provides transportation project impact estimates for fiscal years 2019/20 through 2028/29. In the GAI, 96 SHOPP transportation projects are in their conceptualization phase for the planning period. Many of these planned transportation improvements are not forecast to affect terrestrial or aquatic resources and many forecast impacts may be avoided during transportation project delivery. Nevertheless, the compensatory mitigation estimates presented reflect the best available information about compensatory mitigation needs at this time.

Impact estimates for the species of mitigation need are summarized in Tables ES-1 and ES-2. Since natural resource regulatory agencies routinely place species of mitigation need conditions on transportation projects, it is likely that Caltrans transportation project schedules would benefit from available credits for these species. Similarly, impact estimates for wetland and non-wetland aquatic resources are summarized in Table ES-3, as are riparian impact estimates. When Caltrans scopes advance mitigation projects to establish mitigation, Caltrans intends to center the advance mitigation projects on the

⁹ For the purposes of this RAMNA, conservation goals and objectives are a broad set of regional natural resource sustainability goals and objectives that are consistent with both regulatory requirements and conservation science.

¹⁰ Caltrans undertakes SHOPP transportation projects to address maintenance, safety, operation, and rehabilitation of the SHS; such projects do not add new capacity to the system.
<https://catc.ca.gov/programs/state-highway-operation-and-protection-program>

¹¹ Metropolitan planning organizations, regional transportation planning agencies, and other public agencies also undertake transportation projects to address non-SHOPP STIP-funded transportation improvements.

species of mitigation need, aquatic resources, and/or riparian habitat, and to address conservation benefits and values for other special-status terrestrial species and resources. It is likely that STIP-eligible transportation projects would have compensatory mitigation conditions placed on them by natural resource regulatory agencies, similar to conditions placed on SHOPP transportation projects.

ES.6 Benefiting Transportation Project Considerations

One intent of the AMP's founding legislation is for Caltrans to realize the potential of advance mitigation to accelerate transportation project delivery. At this time (January of fiscal year 2020/2021), Caltrans is almost 2 years into the SHOPP Ten-Year Book planning period. Hence, for the time period under consideration, fiscal years 2019/20 through 2028/29, Caltrans District 3 intends to prioritize purchasing or developing mitigation credits or values that are planned for the middle and end of the 10-year planning period.

Given the expected timing of mitigation need, at this time (January of fiscal year 2020/2021) credits or values that can be purchased or established by 2023/2024 (within the next 2 years) could address a subset of the impacts presented in Chapter 5. For example, mitigation credits purchased or established in 2 years could potentially address:

- 0.1 acre of wetland, 2.7 acres of non-wetland waters, 0.1 acre of fish habitat, 0 acre of vernal pool, and 0.2 acre of riparian habitat impacts in the Upper Yuba Sub-basin, potentially contributing to the acceleration of 1, 7, 0, and 3 transportation projects, respectively.
- 26.6 acres of California red-legged frog habitat and 41.2 acres of foothill yellow-legged frog habitat impacts in the Sierra Nevada Ecoregion Section, potentially contributing to the acceleration of 11 and 14 transportation projects, respectively.

Organized by species of mitigation need, aquatic resources, and riparian habitat, the complete temporal analysis of Caltrans needs is provided in Chapter 6.

It should be noted that at this time, several transportation projects have been delayed or eliminated and the timing of Caltrans needs may change. Caltrans will consider the updated transportation schedule when scoping and funding advance mitigation projects. The feasibility of addressing the needs through the SHC § 800.6(a) authorized activities is discussed in Chapter 9.

Table ES-1. Estimated SHOPP Impacts on Terrestrial Species of Mitigation Need in the GAI^{a,b}

Ecoregion Section	California Red-legged Frog: Number of Caltrans SHOPP Projects	California Red-legged Frog: Estimated Habitat Impact (acres)	Foothill Yellow-legged Frog: Number of Caltrans SHOPP Projects	Foothill Yellow-legged Frog: Estimated Habitat Impact (acres)	Giant Garter Snake: Number of Caltrans SHOPP Projects	Giant Garter Snake: Estimated Habitat Impact (acres)	Swainson' s Hawk: Number of Caltrans SHOPP Projects	Swainson' s Hawk: Estimated Habitat Impact (acres)	Valley Elderberry Longhorn Beetle: Number of Caltrans Projects	Valley Elderberry Longhorn Beetle: Estimated Habitat Impact (acres)
Great Valley	11	6.1	1	0.2	22	34.5	24	31.9	11	4.9
Northern California Interior Coast Ranges	5	11.6	5	4.2	1	3.6	1	3.6	0	0
Sierra Nevada	19	55.4	26	76.0	0	0	0	0	0	0
Sierra Nevada Foothills	15	22.5	11	21.4	1	<0.1	5	1.9	2	0.2
Southern Cascades	0	0	1	11.6	0	0	0	0	0	0

^a Special-status terrestrial plant and wildlife species evaluated through the SAMNA consisted of federal and state threatened, endangered, or sensitive species; state fully protected or rare species; or state species of special concern.

^b Transportation projects are listed in Table 5-1.

Table ES-2. Summary of Estimated SHOPP Fish Species of Mitigation Need Impacts in the GAI^{a,b,c}

Sub-basin (HUC-8) ^d	Sub-basin Number	Caltrans SHOPP Projects ^a	Chinook Salmon: Spring-run (acres)	Chinook Salmon: Winter-run (acres)	Delta Smelt ^e (acres)	Green Sturgeon: Southern DPS (acres)	Longfin Smelt (acres)	Steelhead: California Central Valley DPS (acres)
Butte Creek	18020158	2	<0.1	<0.1	Not applicable	<0.1	<0.1	<0.1
Honcut Headwaters- Lower Feather	18020159	1	<0.1	<0.1	Not applicable	<0.1	<0.1	<0.1
Lower American	18020111	3	1.3	1.3	Not applicable	1.3	<0.1	1.6
Lower Sacramento	18020163	2	0.6	0.6	1.0	0.7	0.7	0.6
North Fork American	18020128	0	0	0	Not applicable	0	0	0
Sacramento-Stone Corral	18020104	2	0.9	0.9	Not applicable	0.9	1.1	0.9
South Fork American	18020129	0	0	0	Not applicable	0	0	0
Thomes Creek- Sacramento River	18020156	0	0	0	Not applicable	0	0	0
Upper Bear	18020126	0	0	0	Not applicable	0	0	0
Upper Coon-Upper Auburn	18020161	1	1.2	1.2	Not applicable	1.2	<0.1	1.2
Upper Yuba	18020125	1	<0.1	<0.1	Not applicable	<0.1	<0.1	<0.1
Total^f	Not applicable	12^g	4.1	4.1	1.0	4.1	1.8	4.3

^a Threatened and endangered fish species habitat impacts are forecast by the SAMNA Reporting Tool.

^b Stream/river habitat impacts are provided. Stream/river habitat impacts are assumed to be representative of fish habitat impacts.

^c For sub-basins with more than one species, co-occurrence of impacts is assumed. Acreage for the largest impact is provided.

^d The SAMNA forecasts impacts for 8 of the 13 HUCs in the GAI.

^e This species showed SAMNA results outside of its known range. Impact estimates within species range are presented.

^f Totals may be different due to rounding errors.

^g Totals may not reflect numbers presented in rows above. Some SHOPP transportation projects cross more than one sub-basin; many do not affect fish.

Table ES-3. Summary of Estimated SHOPP Wetland, Non-wetland Waters, Vernal Pool, and Riparian Impacts in the GAI

Sub-basin (HUC-8) ^a	Sub-basin Number	Wetland: Number of Caltrans SHOPP Projects ^b	Wetland: Estimated Habitat Impact (acres)	Vernal Pools: Number of Caltrans SHOPP Projects ^b	Vernal Pools: Estimated Habitat Impact (acres)	Non-Wetland Waters: Number of Caltrans SHOPP Projects ^{b,c}	Non-Wetland Waters: Estimated Riparian Habitat Impact (acres) ^c	Riparian: Number of Caltrans SHOPP Projects ^{b,d}	Riparian: Estimated Habitat Impact (acres) ^d
Butte Creek	18020158	5	<0.9	3	2.5	5	<0.7	1	0.2
Honcut Headwaters- Lower Feather	18020159	9	<0.7	6	4.4	8	<2	4	2.8
Lower American	18020111	6	<1.7	3	0.9	5	<2.1	4	1.5
Lower Sacramento	18020163	5	<0.7	2	6.0	4	<1.3	2	0.6
North Fork American	18020128	4	<0.6	0	0.0	6	<2	0	0.0
Sacramento- Stone Corral	18020104	5	<1.1	3	13.2	5	<2	1	0.1
South Fork American	18020129	10	<1	0	0.0	10	<5.5	8	1.3
Thomes Creek- Sacramento River	18020156	1	<0.6	0	0.0	1	<0.3	0	0.0
Upper Bear	18020126	10	<0.8	0	0.0	10	<2.1	2	0.5

Sub-basin (HUC-8) ^a	Sub-basin Number	Wetland: Number of Caltrans SHOPP Projects ^b	Wetland: Estimated Habitat Impact (acres)	Vernal Pools: Number of Caltrans SHOPP Projects ^b	Vernal Pools: Estimated Habitat Impact (acres)	Non-Wetland Waters: Number of Caltrans SHOPP Projects ^{b,c}	Non-Wetland Waters: Estimated Riparian Habitat Impact (acres) ^c	Riparian: Number of Caltrans SHOPP Projects ^{b,d}	Riparian: Estimated Habitat Impact (acres) ^d
Upper Coon- Upper Auburn	18020161	4	<0.9	0	0.0	3	<1.6	3	2.1
Upper Yuba	18020125	7	<0.6	0	0.0	10	<3.7	3	0.2
Total^e	Not applicable	59^f	4.9	16	27.1	60^f	22.5	19^f	9.3

^a The SAMNA forecasts impacts for 11 of the 13 HUCs in the GAI.

^b Some SHOPP transportation projects, some habitats, and some HUC-8 subbasins cross more than one ecoregion.

^c "Non-wetland waters" is a general term that can apply to waters of the United States ("WOTUS"), waters of the state, or both.

^d The sum of montane riparian and valley foothill riparian habitat impacts are provided.

^e Totals may be different due to rounding errors.

^f Totals may not reflect numbers presented in rows above. Some SHOPP transportation projects cross more than one sub-basin; many are not forecast to affect wetland, non-wetland waters, or riparian habitat.

ES.7 Conservation Goals and Objectives

To increase the probability that advance mitigation project scopes promoted within and/or undertaken by Caltrans will successfully meet natural resource regulatory agency goals and objectives, this RAMNA was reviewed by these agencies and their comments and suggestions were incorporated.

Wildlife Resources Goals and Objectives

When establishing wildlife resources compensatory mitigation credits in accordance with SHC § 800.6(a), Caltrans will seek to align advance mitigation project scopes with the conservation goals and objectives of the multiple natural resource regulatory agencies that have the authority to approve wildlife resource-related credit establishment, and have the authority to approve their application to offset transportation project-related impacts. At a broad scale, Caltrans' understanding of the wildlife resources goals and objectives presented in this RAMNA encompasses protecting, preserving, and enhancing large-scale ecological processes, environmental gradients, biological diversity, and regional linkages. Informed by relevant plans, policies, and regulations, the goals and objectives presented summarize how state and federal natural resource regulatory agencies, land managers, and other interested parties have prioritized regional conservation that preserves intact habitat and provides habitat linkages and connectivity. In recognition of transportation project acceleration needs, wildlife goals and objectives place an emphasis on species of mitigation need habitats in the GAI; however, advance mitigation for the benefit of species of mitigation need is anticipated to have broader benefits for multiple special-status species that rely on the same habitats. Caltrans' understanding of natural resource regulatory agency wildlife goals gathered for this RAMNA include:

- Conserving and expanding habitat for sensitive wildlife species
- Preserving, enhancing, and increasing connectivity between blocks of habitat
- Supporting resiliency of the landscape to climate change and sea level rise
- Decreasing mortality and competition, and protecting population health of sensitive species
- Providing multi-species and multi-resource benefits

Objectives and sub-objectives are provided under each of the above goals in Chapter 7 to guide Caltrans advance mitigation project scoping toward those actions that would create the greatest functional lift for wildlife resources in the GAI. Sub-objectives capture more specific measures from conservation and land management plans that address threats to the aforementioned resources.

Aquatic Resources Goals and Objectives

When establishing aquatic resources compensatory mitigation credits in accordance with SHC § 800.6(a), Caltrans will seek to align advance mitigation project scopes with the conservation goals and objectives of the multiple natural resource regulatory agencies that have the authority to approve aquatic resource-related credit establishment and have the authority to approve their application to satisfy conditions on transportation projects.

At a broad scale, Caltrans' understanding of aquatic resources goals and objectives presented in the RAMNA encompasses restoring, maintaining, and enhancing large-scale ecological processes, environmental gradients, biological diversity, and regional linkages. Aquatic resources goals developed for this RAMNA prioritize:

- Providing for no net loss of aquatic resources area, functions, values, and conditions
- Restoring and maintaining the chemical, physical, and biological integrity of non-wetland waters
- Restoring or enhancing and expanding habitat for fish species of mitigation need
- Supporting resiliency of aquatic resources to climate change and sea level rise
- Providing multi-resource benefits

Sub-objectives are included for each goal in Chapter 8 to guide Caltrans project scoping toward those actions that would create the greatest functional lift for aquatic resources in the GAI. Sub-objectives also capture more specific measures from conservation and land management plans that address threats to the aforementioned resources.

ES.8 Authorized Activity Summary

A summary of Caltrans' need for compensatory mitigation credits in the GAI and the feasibility of each SHC § 800.6(a) authorized activity to address is provided in Chapter 9. As pointed out in Chapter 6, given the expected timing of mitigation need, at this time (January of fiscal year 2021/22) mitigation that can be purchased or established by 2023/24 (within the next 2 years) could potentially address:

- **Butte Creek Sub-basin forecast wetland and non-wetland waters impacts.** Specifically, mitigation credits purchased or established for an anticipated 0.1 acre of fish, 0.2 acre of wetland, 0.2 acre of non-wetland waters, 1.2 acres of vernal pool, and 0.2 acres of riparian habitat impact have the potential to accelerate 2 Caltrans transportation projects.
- **Honcut Headwaters-Lower Feather Sub-basin forecast wetland and non-wetland waters impacts.** Specifically, mitigation credits purchased or established for an anticipated <0.1 acre of wetland, 1.2 acres of non-wetland waters, 0.8 acre of vernal pool, and <0.1 acre of riparian habitat impact have the potential to accelerate 3 Caltrans transportation projects.
- **Lower American Sub-basin forecast wetland and non-wetland waters impacts.** Specifically, mitigation credits purchased or established for an anticipated <0.1 acre of fish, <0.1 acre of wetland, <0.1 acre of non-wetland waters, and <0.1 acre of riparian habitat impact have the potential to accelerate 1 Caltrans transportation project.
- **Lower Sacramento Sub-basin forecast wetland and non-wetland waters impacts.** Specifically, mitigation credits purchased or established for an anticipated 1.3 acre of fish, 0.2 acre of wetland, 0.5 acre of non-wetland waters,

5.3 acres of vernal pool, and <0.1 acre of riparian habitat impact have the potential to accelerate 2 Caltrans transportation projects.

- **North Fork American River Sub-basin forecast non-wetland waters impacts.** Specifically, mitigation credits purchased or established for an anticipated 0.5 acre of non-wetland waters impact have the potential to accelerate 2 Caltrans transportation projects.
- **Sacramento-Stone Corral Sub-basin forecast wetland and non-wetland waters impacts.** Specifically, mitigation credits purchased or established for an anticipated 0.2 acre of fish, 0.3 acre of wetland, 1.0 acre of non-wetland waters, and 2.2 acres of vernal pool impact have the potential to accelerate 3 Caltrans transportation projects.
- **South Fork American Sub-basin forecast wetland and non-wetland waters impacts.** Specifically, mitigation credits purchased or established for an anticipated 0.7 acre of wetland, 5.1 acres of non-wetland waters, and 0.9 acre of riparian habitat impact have the potential to accelerate 7 Caltrans transportation projects.
- **Upper Bear Sub-basin forecast wetland and non-wetland waters impacts.** Specifically, mitigation credits purchased or established for an anticipated 0.3 acre of wetland impact and 0.9 acre of non-wetland waters impact have the potential to accelerate 5 Caltrans transportation projects.
- **Upper Coon-Upper Auburn Sub-basin forecast non-wetland waters impacts.** Specifically, mitigation credits purchased or established for an anticipated 0.1 acre of non-wetland waters impact have the potential to accelerate 1 Caltrans transportation project.
- **Upper Yuba Sub-basin forecast wetland and non-wetland waters impacts.** Specifically, mitigation credits purchased or established for an anticipated 0.1 acre of wetland, 2.7 acres of non-wetland waters, and 0.1 acre of riparian habitat impact have the potential to accelerate 7 Caltrans transportation projects.
- **Great Valley, Northern California Interior Coast Ranges, Sierra Nevada, or Sierra Nevada Foothills Ecoregions forecast California red-legged frog habitat impacts.** Specifically, mitigation credits purchased or established for an anticipated 44.3 acres of California red-legged frog habitat impacts have the potential to accelerate 24 transportation projects.
- **Northern California Interior Coast Ranges, Sierra Nevada, or Sierra Nevada Foothills Ecoregions forecast foothill yellow-legged frog habitat impacts.** Specifically, mitigation credits purchased or established for an anticipated 45.0 acres of foothill yellow-legged frog impacts have the potential to accelerate 21 transportation projects.
- **Great Valley, Northern California Interior Coast Ranges, or Sierra Nevada Foothills Ecoregions forecast giant garter snake habitat impacts.** Specifically, mitigation credits purchased or established for an anticipated 19.1 acres of giant garter snake habitat impacts have the potential to accelerate 10 transportation projects.

- **Great Valley, Northern California Interior Coast Ranges, or Sierra Nevada Foothills Ecoregions forecast Swainson's hawk habitat impacts.** Specifically, mitigation credits purchased or established for an anticipated 19.5 acres of Swainson's hawk habitat impacts have the potential to accelerate 10 transportation projects.
- **Great Valley or Sierra Nevada Foothills Ecoregions forecast valley elderberry longhorn beetle habitat impacts.** Specifically, mitigation credits purchased or established for an anticipated 0.3 acre of valley elderberry longhorn beetle habitat impacts have the potential to accelerate 3 transportation projects.

All or some of these needs could form the basis for the Caltrans District to develop an advance mitigation project scope implementing one or more of the SHC § 800.6(a) authorized activities.

Broadly speaking, SHC § 800.6(a) authorized activities can be divided into two groups: (1) purchasing compensatory mitigation that has been previously established and approved by the natural resource regulatory agencies through a conservation/mitigation bank, HCP/NCCP, in-lieu fee program, or MCA; or (2) establishing and receiving approval of compensatory mitigation credits, such as establishing a mitigation bank in accordance with existing laws, policies, procedures, templates, and guidance. The time it takes to perform each authorized activity varies; however, purchasing or paying fees for compensatory mitigation credits would likely take less time than establishing compensatory mitigation credits.

Caltrans Districts will consider all feasible options when developing advance mitigation project scopes. At this time (January of fiscal year 2020/2021), purchasing credits approved through a bank or in-lieu fee instrument, or establishing new credits through a bank or in-lieu fee instrument, is likely feasible. The feasibility of each authorized activity to meet the forecast mitigation need in time to accelerate transportation projects will depend on the availability of a regulatory and administrative pathway and other conditions.

As pointed out above, when Caltrans scopes advance mitigation projects to establish mitigation, Caltrans intends to center the advance mitigation projects on the species of mitigation need, aquatic resources, and/or riparian habitat, as well as address conservation benefits and values for other special-status terrestrial species and resources. Caltrans also intends to scope credit establishment projects that align with conservation goals and objectives, address multi-resource benefits, and address overlapping jurisdictions.

ES.9 Next Steps

Caltrans Districts will use the advance mitigation options identified in the RAMNA to inform advance mitigation project scoping, which will consider needs; conservation data and plans; input received from natural resource regulatory agencies, the Federal Highway Administration, metropolitan planning organizations, regional transportation planning agencies, other public agencies that implement transportation improvements, Native

American tribes, interested parties, and the public; feasibility in consideration of mitigation need and timing; and other information presented here and that is publicly available to develop a high-level advance mitigation project scope to be included in an advance mitigation project's nomination materials. Once a nominated advance mitigation project is approved by the Caltrans Director, the Caltrans District will begin advance mitigation project delivery, which includes stakeholder engagement, project alternative analysis, coordination with natural resource regulatory agencies with the authority to approve compensatory mitigation, contracting with third parties and/or credit sponsors, and developing an agency-approved instrument and/or one or more advance mitigation project-specific interagency agreement.

As with all compensatory mitigation established through any advance mitigation process, the mitigation's suitability to address a specific transportation project's impact is determined in the future, on a case-by-case basis, when transportation project mitigation requirements are known.

1. INTRODUCTION

California's State Highway System ("SHS") relies on long-range planning documents to guide its operation and maintenance. In this *Lower Sacramento Basin Regional Advance Mitigation Needs Assessment* ("RAMNA"), the California Department of Transportation ("Caltrans") District 3 presents its forecast of natural resource compensatory mitigation¹ needs for the Lower Sacramento Basin (HUC-6) for a 10-year planning horizon. The RAMNA was developed with the goal of realizing the benefits of advance mitigation, which

- anticipates that unavoidable impacts will be identified in the future and
- consists of having compensatory mitigation available that has already been vetted and agreed upon by natural resource regulatory agencies as representing mitigation actions before transportation projects are completely designed and funded.

When compensatory mitigation actions are independent of transportation project delivery timelines, there is an opportunity to (1) improve the schedule and cost predictability of complying with natural resource regulatory agency compensatory mitigation conditions on transportation projects and (2) consolidate the anticipated compensatory mitigation from multiple transportation projects into fewer and larger mitigation actions, establishing mitigation credits that provide a greater ecological value than implementing multiple small project-by-project actions. Credits are the usual currency of advance mitigation actions.

This document is intended to be both an internal communication tool between Caltrans' Functional Units² and an external communication tool for Caltrans to communicate with the Federal Highway Administration ("FHWA"), natural resource regulatory agencies, other transportation agencies (that is, metropolitan planning organizations ["MPOs"], regional transportation planning agencies ["RTPAs"], and other public agencies that implement transportation improvements), Native American tribes, interested parties, and the public. It will be posted on the Advance Mitigation Program ("AMP") website: <http://www.dot.ca.gov/env/advancemitigation/>.

1.1 AMP Overview

In 2017, the California Streets and Highways Code ("SHC") § 800 et seq. was amended to create the AMP within Caltrans and to provide the seed capital for an Advance

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 "Functional Unit" is a general term used by Caltrans to describe its organizational structure. Caltrans functional units include, but are not limited to, transportation planning, environmental, surveys, right-of-way, real property asset management, materials, traffic, structure design, hydraulics, construction, maintenance, landscape architecture, utilities, and engineering.

Mitigation Account (“AMA”), to be operated by Caltrans as a revolving account. The stated intent of the legislation is for Caltrans, through the AMP, to realize the potential of advance mitigation to both “accelerate transportation project delivery” and “protect natural resources through transportation project [compensatory] mitigation” [SHC § 800(a)]. To this end, the legislation identifies specific activities as authorized allowable expenditures under the AMA and provides for the AMA to be replenished under specific conditions. Generally speaking, the 11 activities authorized in SHC § 800.6(a) consist of purchasing or establishing compensatory mitigation credits developed through an appropriate regulatory mechanism, which are then available for use by transportation projects to offset adverse impacts (Table 1-1). Natural resource regulatory agencies and Caltrans will determine the appropriateness of a credit’s use on a case-by-case basis, when Caltrans proposes use of the credit to satisfy a specific condition placed on a transportation project.

Table 1-1. Advance Mitigation Project Types^a

Advance Mitigation Project Type	Authorization
Caltrans pays mitigation fees or other costs or payments associated with coverage of transportation projects under an approved natural community conservation plan (“NCCP”) ^b and/or an approved habitat conservation plan (“HCP”).	SHC § 800.6(a)(2)
Caltrans purchases credits from an existing conservation bank.	SHC § 800.6(a)(1)
Caltrans purchases credits from an existing mitigation bank.	SHC § 800.6(a)(1)
Caltrans purchases credits from an existing in-lieu fee program.	SHC § 800.6(a)(1)
Caltrans purchases credits developed through a mitigation credit agreement (“MCA”), established under a California Department of Fish and Wildlife (“CDFW”)-approved regional conservation investment strategy (“RCIS”). ^c	SHC § 800.6(a)(3)(A)
Caltrans funds the establishment of a Caltrans or third-party sponsored and operated conservation bank, in accordance with applicable state and federal standards.	SHC § 800.6(a)(1)
Caltrans funds the establishment of a Caltrans or third-party sponsored and operated mitigation bank in accordance with applicable state and federal standards.	SHC § 800.6(a)(1)
Caltrans funds the establishment of a Caltrans or third-party sponsored and operated in-lieu fee program in accordance with applicable state and federal standards.	SHC § 800.6(a)(1)
Caltrans funds the implementation of conservation actions and habitat enhancement actions ^{c,d} to generate mitigation credits pursuant to an MCA ^b established under a CDFW-approved RCIS. ^c The scope may include Caltrans first entering into or funding the preparation of an MCA. ^c The scope may also include Caltrans first entering into or funding the preparation of an RCIS. ^c	SHC § 800.6(a)(3) SHC § 800.6(a)(3)(A)

Advance Mitigation Project Type	Authorization
Caltrans acquires, restores, manages, monitors, enhances, and preserves lands, waterways, aquatic resources, or fisheries, or funds the acquisition, restoration, management, monitoring, enhancement, and preservation of lands, waterways, aquatic resources, or fisheries, that would measurably advance a conservation objective specified in an RCIS if the department concludes that the action or actions could conserve or create environmental values that are appropriate to mitigate the anticipated potential impacts of planned transportation improvements.	SHC § 800.6(a)(3)(B)
When the other mitigation options (above) are not practicable, Caltrans may perform mitigation in accordance with a programmatic mitigation plan ^e pursuant to SHC § 800.9. The programmatic mitigation plan shall include, to the maximum extent practicable, the information required for an RCIS. ^c	SHC § 800.6(a)(4) SHC § 800.9

^a Caltrans intends to contract or subcontract implementation tasks when appropriate and as required.

^b When Caltrans is a permittee under the NCCP, or if Caltrans qualifies as a Participating Special Entity and the project is a covered activity in the NCCP

^c See: <https://www.wildlife.ca.gov/Conservation/Planning/Regional-Conservation>

^d Under specific conditions, fish passage and wildlife crossing structures may qualify as enhancement actions under an RCIS in accordance with California Fish and Game Code ("FGC") § 1850–1861.

^e Programmatic mitigation plans are defined in 23 U.S. Code ("USC") § 169(a) (SHC § 800.9). No more than 25 percent of the funds in the AMA may be allocated for this purpose over a 4-year period [SHC § 800.6(a)(4)].

1.1.1. AMP Guidelines

Approved at the end of 2019, the *Advance Mitigation Program Final Formal Guidelines* ("AMP Guidelines") describe how through advance mitigation planning and advance mitigation project delivery the Caltrans AMP will fulfill its intended purpose (Caltrans 2019a). As shown in Figures 1-1 and 1-2, the AMP Guidelines present a 10-step process, the first 5 of which are the advance mitigation planning phase and the next 5 are the advance mitigation project delivery phase. Implementation of each step of the planning phase improves the probability that advance mitigation projects undertaken by Caltrans in the project delivery phase will yield credits (or similar) that will be usable and comply with an appropriate established regulatory framework. The AMP Guidelines also describe how transportation projects will reimburse the AMA for advance mitigation project investments, thereby making the funds available to undertake the next advance mitigation project.

Figure 1-1. Advance Mitigation Planning Phase



Source: Caltrans (2019a)

Figure 1-2. Advance Mitigation Project Delivery Phase



Source: Caltrans (2019a)

1.1.2. Advance Mitigation Planning Phase

Caltrans advance mitigation planning starts with modeled estimates of potential impacts on more than 600 wildlife and aquatic resources and, through successive steps, focuses and refines Caltrans' need for advance mitigation in order to inform advance mitigation project scopes that will be approved by the Caltrans Director. As elaborated below, at this time, Steps 1 and 2 of the AMP's 5-step advance mitigation planning phase are complete. The RAMNA satisfies Step 3 (Figure 1-1; Caltrans 2019a) and provides the results of a regional assessment of Caltrans' advance mitigation needs in the Lower Sacramento Basin.³

Caltrans District 3 will first use the information and analysis presented in this RAMNA to inform Step 4 of the advance mitigation planning phase. Step 4 is the point in the advance mitigation planning process when Caltrans justifies, proposes, and scopes an advance mitigation project based on its needs (Caltrans 2019a). Advance mitigation project scopes informed by this RAMNA will provide enough information, at the appropriate level of detail,

³ Pursuant to SHC § 800.9, to the maximum extent practicable, the information required for an RCIS is presented in this RAMNA. During CDFW's review of an RCIS, CDFW determines whether the goals and objectives presented in the RCIS are consistent with FGC § 1852, subdivision (c)(8).

for an advance mitigation project to be nominated to the Caltrans Director for funding approval. The advance mitigation planning phase will conclude when the Caltrans Director approves a specific nominated District 3 advance mitigation project for funding (Step 5; Caltrans 2019a). Thereafter, Caltrans District 3 will use the RAMNA as a reference (Caltrans 2019a).

1.1.3. Advance Mitigation Project Delivery Phase

Steps 6 through 10 consist of the AMP's advance mitigation project delivery phase. Advance mitigation project delivery is undertaken after an advance mitigation project has been approved by the Caltrans Director and has been programmed⁴ (Caltrans 2019a; see Figure 1-2). The phase consists of implementing the authorized activities under SHC § 800.6(a), which are existing advance mitigation mechanisms or procedures under development.

1.1.4. Program Constraints

Implicit to the AMP, the AMP Guidelines, advance mitigation planning, and advance mitigation project delivery are a number of established laws, policies, and processes including, but not limited to, the following:

- Gas tax-derived funds may be used to develop only those mitigation credits or values anticipated to be needed to fulfill the mitigation requirements of transportation improvements [California Constitution, Article XIX § 2(a)].
- AMA funds are likely not sufficient to address all of Caltrans' anticipated compensatory mitigation needs.
- Long-term transportation planning is dynamic, and compensatory mitigation needs may change over a 10-year planning horizon as funding sources and transportation project lists are refined and updated.
- Advance mitigation planning does not imply an endorsement of a transportation project alternative.
- Establishing compensatory mitigation in advance of transportation project impacts does not create any presumption or guarantee that a future transportation project impact will be authorized by a natural resource regulatory agency. Avoidance and minimization considerations continue to be required.
- Establishing compensatory mitigation in advance of transportation project impacts does not create any presumption or guarantee that the advance compensatory mitigation will be considered adequate and/or suitable by a natural resource regulatory agency for a specific transportation project's impact. Appropriateness of use of advance mitigation credits developed will be assessed on a case-by-case basis. For example, using mitigation credits from a conservation bank where only

⁴ Programming refers to the process Caltrans employs to set priorities for funding advance mitigation projects at the Caltrans District and project level. Through programming, Caltrans commits revenues over a multiyear period to a specific advance mitigation project.

preservation exists would not qualify for wetland or riparian impacts at some regulatory agencies.

- Regulatory agency approvals are discretionary and often conditional; well-executed advance mitigation does not necessarily increase the likelihood of obtaining agency approval for any particular transportation project.
- The 2008 Mitigation Rule expresses a preference for advance mitigation (in several forms) but also provides flexibility for off-site and out-of-kind mitigation where important aquatic resources in a watershed area have been identified as priority areas because of the importance of such resources, widespread loss of such resources, and/or the likelihood of successful execution of mitigation at priority sites.
- Advance mitigation projects should optimize their conservation benefit in such a way that the number and types of mitigation credits (or similar) are maximized.
- Advance mitigation projects, like transportation projects and conservation projects, have financial, technical, and strategic risks and require a scope, schedule, and budget.
- Advance mitigation projects to establish credits allow for longer timelines for plant establishment, which is crucial to success.
- Transportation projects must include mitigation costs in the scoping and programming of their budgets because they are required by law to reimburse the AMA for use of mitigation produced by the AMP [SHC § 800.6(b)].
- The AMA is a revolving account. With a revolving account, reimbursed funds are reinvested into new advance mitigation projects.

The above list is not presented in any order or priority.

1.2 Caltrans District 3 Transportation Infrastructure⁵

Headquartered in Marysville, Caltrans District 3 is responsible for maintaining and operating 1,491 centerline miles in Butte, Colusa, El Dorado, Glenn, Nevada, Placer, Sacramento, Sierra, Sutter, Yolo, and Yuba Counties. The SHS roadways range from scenic two-lane highways to controlled-access freeways. State Route 99 and Interstate 5—two major north-to-south routes connecting northern and south-central California—and Interstate 80 and U.S. Highway 50—two major east-to-west routes connecting California with eastern states—traverse Caltrans District 3.

Other transportation agencies that implement transportation improvements within Caltrans District 3's boundaries (MPOs, RTPAs, and other public agencies) are the Butte County Association of Governments, Sacramento Area Council of Governments, Metropolitan Transportation Commission, Alpine County Local Transportation Commission, Amador County Transportation Commission, Butte County Association of Governments, Colusa County Transportation Commission, El Dorado County

⁵ Adapted from: <https://dot.ca.gov/caltrans-near-me/district-3/d3-popular-links/d3-about>

Transportation Commission, Glenn County Transportation Commission, Nevada County Transportation Commission, Placer County Transportation Planning Agency, and Sierra County Local Transportation Commission. The Shasta County Regional Transportation Planning Agency, Plumas County Transportation Commission, and Tehama County Transportation Commission are located in the portion of Caltrans District 2 that is within the geographic area of interest (“GAI”). The aforementioned transportation agencies are eligible for State Transportation Improvement Program (“STIP”) funding.

Figure 1-3 shows the road infrastructure in the GAI for this RAMNA.

1.3 Regulatory Framework Summary

Unavoidable adverse natural resource impacts that could result from transportation projects are defined under environmental policies, laws, and regulations including, but not limited to:

- California Environmental Quality Act (“CEQA”) (Public Resources Code § 21000 et seq.)
- National Environmental Policy Act (“NEPA”) (42 USC § 4321 et seq.)
- Federal Endangered Species Act of 1973 (“ESA”) (16 USC § 1531–1543), as amended
- California Endangered Species Act (“CESA”) (FGC § 2050 et seq.)
- Federal Clean Water Act (“CWA”), Sections 401 and 404 (33 USC § 1251–1376)
- Porter-Cologne Water Quality Control Act (California Water Code § 13000 et seq.)
- Lake and Streambed Alteration Program (FGC § 1600 et seq.)

Natural resource regulatory agencies that may need to be engaged for transportation projects that may adversely impact natural resources in the GAI are listed in Table 1-2.

Each of the natural resource regulatory agencies listed in Table 1-2 may include compensatory mitigation as a transportation project condition after it has been determined that there will be unavoidable permanent, adverse impacts and that other efforts to minimize, rectify, and reduce the impact have been incorporated in the transportation project’s design and delivery. These natural resource regulatory agencies may also recognize the use or application of a compensatory mitigation credit that was established through an instrument or other formal interagency agreement as satisfying a transportation project’s compensatory mitigation conditions. As a lead agency under CEQA and NEPA, Caltrans may also determine compensatory mitigation is required.

Figure 1-3. GAI Road Infrastructure

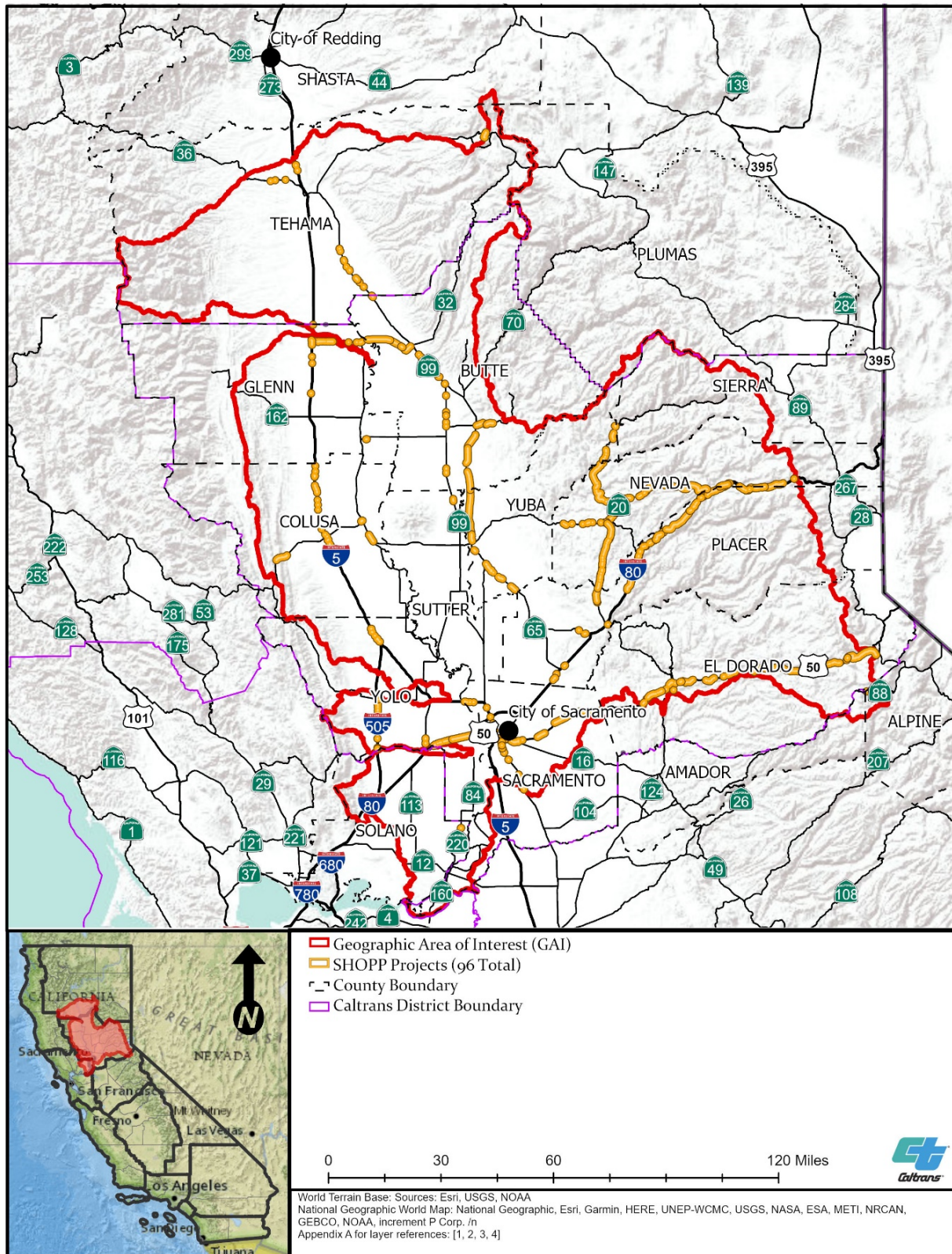


Table 1-2. Natural Resource Regulatory Agencies with Oversight over Natural Resources in the GAI

Partner	Web Address
CDFW, Northern Region	https://wildlife.ca.gov/Regions/1
CDFW, North Central Region	https://wildlife.ca.gov/regions/2
CDFW, Bay Delta Region	https://wildlife.ca.gov/regions/3
California Regional Water Quality Control Board ("RWQCB"), Central Valley	http://www.waterboards.ca.gov/centralvalley/
State Water Resources Control Board ("SWRCB")	https://www.waterboards.ca.gov/
U.S. Army Corps of Engineers ("Corps"), South Pacific Division, Sacramento District	https://www.spk.usace.army.mil/
U.S. Environmental Protection Agency ("EPA"), Region 9	http://www.epa.gov/region9/
U.S. Fish and Wildlife Service ("FWS"), Sacramento Field Office	https://www.fws.gov/sacramento/
FWS, San Francisco Bay Delta Office	https://www.fws.gov/sfbaydelta/
National Marine Fisheries Service ("NMFS") West Coast, California Coastal Office	https://www.westcoast.fisheries.noaa.gov/

Some natural resource regulatory agencies also have established regulatory frameworks for establishing compensatory mitigation. These are defined under environmental laws, regulations, policies, and guidelines including, but not limited to:

- *Conservation Bank and Mitigation Bank Applications and Fees* (FGC § 1797 et seq.)
- *Advance Mitigation and Regional Conservation Investment Strategies*, mitigation credit agreements (FGC § 1856)
- *Compensatory Mitigation for Losses of Aquatic Resources, Final Rule* (33 Code of Federal Regulations ["CFR"] Parts 230, 325, and 332 and 40 CFR Part 230)
- *Final Regional Compensatory Mitigation and Monitoring Guidelines for South Pacific Division* (Corps 2015)
- *Memorandum of Understanding Concerning Mitigation and Conservation Banking and In-Lieu Fee Programs in California* (California Natural Resources Agency ["CNRA"] et al. 2011).

As discussed previously, credits are the usual currency of mitigation established through an advance mitigation project; however, other values may also be established.

Establishing conservation banks, mitigation banks,⁶ and in-lieu fee programs requires an instrument. Existing policies and regulations prescribe what an instrument must contain and address, as well as the terms of use for the credits generated by the mitigation bank, conservation bank, or in-lieu fee program. Similarly, establishing HCPs and NCCPs requires an agreement.

1.4 SAMNA

Predicting likely future transportation project effects on natural resources takes place at the intersection of transportation planning and conservation planning. In 2020, consistent with Step 1 of the advance mitigation planning process (Figure 1-1), the AMP forecast Caltrans' statewide compensatory mitigation needs for the transportation improvements conceptualized in the *State Highway Operation and Protection Program Ten-Year Project Book Fiscal Years 2019/20—2028/29* ("SHOPP Ten-Year Book") for fiscal years 2020 to 2029 (Caltrans 2018, 2021a). The forecast was performed using the Caltrans Statewide Advance Mitigation Needs Assessment Reporting Tool ("SAMNA Reporting Tool"), a geographic information system ("GIS") overlay model developed by Caltrans to support advance mitigation planning (Caltrans 2021a). Potential impacts for all 12 Caltrans Districts were estimated. Statewide, 765 transportation projects and over 600 wildlife and aquatic resources were evaluated through the SAMNA Reporting Tool, yielding thousands of results (Caltrans 2021b). The results for Caltrans District 3 are provided in Appendix C of Caltrans 2021a.

For consistency and as appropriate, tables, figures, and information presented throughout this document, including in Chapter 2, *Environmental Setting*, are consistent with the geospatial data within the SAMNA Reporting Tool. SAMNA Reporting Tool geospatial data and model assumptions are described more fully in Caltrans 2021a. Results are presented in four different reports: terrestrial and aquatic species and subspecies, special-status fish, waters, and wetlands. The unit of measure for impacts is acres.

SAMNA Caveats: The Statewide Advance Mitigation Needs Assessment ("SAMNA") is strictly and specifically intended to be used by Caltrans to justify, propose, and scope advance mitigation projects (Caltrans 2021a). The SAMNA results:

- Are not to be used to substitute for or preempt any requirements to conduct detailed transportation project-level environmental scoping and analysis to inform the programming of individual transportation projects;
- Do not relieve Caltrans project planners from first avoiding and then minimizing impacts;
- Do not preclude the requirements under CEQA and NEPA for environmental analysis of and permitting for individual transportation projects; and

⁶ The goal of conservation banks is, typically, to offset adverse impacts on a species, while the goal of mitigation banking is to replace the exact function and values of specific wetland habitats that will be adversely affected.

- Do not constitute a commitment on the part of an individual transportation project to implement the estimated compensatory mitigation. A transportation project's actual impacts and compensatory mitigation commitments will be determined during its environmental and permitting processes.

Use of the SAMNA methods shall not support the endorsement of or any other conclusion concerning any transportation project or transportation project alternative. Use or misuse of these methods and results for any purpose other than that which is intended shall be the sole responsibility of the individuals or entities conducting or supporting that use or misuse, who shall be fully liable, therefore.

1.5 GAI and Resource Focus

Given the quantity of resources evaluated through the SAMNA, limited AMA funding, and the need for the AMP to revolve the account, Caltrans focused this analysis on a geographic area with wildlife habitats and aquatic resources where planned transportation project schedules would likely benefit from (1) having compensatory mitigation credit purchase transactions complete and/or (2) compensatory mitigation credit supplies increased.

Focusing this analysis improves the probability that advance mitigation projects undertaken by Caltrans will yield credits (or similar) that will be usable and comply with an appropriate established regulatory framework. Caltrans intends for any mitigation-related measures to support these environmental resources in the GAI to benefit other environmental resources as well.

1.5.1. GAI

As pointed out in Section 1.4, the RAMNA is designed to be consistent with SAMNA Reporting Tool geospatial data and model assumptions. One of those decisions is the areal presentation of modeled results. In consultation with the natural resource regulatory agencies, it was determined that presenting SAMNA results by HUC-8 and ecoregion, and not political boundaries, would steer advance mitigation planning toward better ecological outcomes: the 2008 Mitigation Rule specifies the HUC-8 as the basis of service areas for mitigation banks, and CDFW's State Wildlife Action Plan ("SWAP") is organized by ecoregion.

To identify a focus area, consistent with Step 2 of the advance mitigation planning process (Figure 1-1), in 2021, Caltrans District 3 subject matter specialists:

- Reviewed the entirety of Caltrans District 3's SAMNA results by HUC-8 and ecoregion (Caltrans 2021b; available on www.advancemitigation.dot.ca.gov);
- Reviewed the SAMNA results' associated future transportation project locations and activities anticipated for the State Highway Operation and Protection Program ("SHOPP") (Caltrans 2021a);
- Reviewed non-SHOPP STIP-eligible transportation improvement plans for the next 10 years;

- Observed that the portions of Caltrans District 3 located within 12 of the 13 HUC-8s in the GAI have forecast compensatory mitigation needs during the planning period;
- Observed that these HUC-8s make up the Lower Sacramento Basin (hydrological unit code [“HUC”] 180201); and
- Identified the Lower Sacramento Basin as a location where Caltrans District 3, other Caltrans Districts, and other public agencies that implement transportation improvements could benefit from advance mitigation planning—hereafter called the GAI) (Figure ES-1, Figure 1-3).

Because the HUC-6 forms an ecological boundary and not a political boundary, some portions of the GAI overlap Caltrans Districts 2, 4, and 10. In addition to Caltrans District 3, these other Caltrans Districts may choose to take the lead on an advance mitigation project that would address their needs within the GAI.

1.5.2. Species of Mitigation Need

Compensatory mitigation for species in the GAI was identified as both a historical and anticipated future transportation project compensatory mitigation need within District 3. SHOPP transportation projects have historically been conditioned by natural resource regulatory agencies for some species more routinely than others and have benefited from mitigation credits, when available.

Caltrans does not typically need compensatory mitigation credits for species where impacts can be avoided or minimized. Hence, to further focus the planning effort, Caltrans District 3 identified species that, if compensatory mitigation credits were available, transportation projects could potentially benefit. These “species of mitigation need” are:

- California red-legged frog (*Rana draytonii*), foothill yellow-legged frog (*Rana boylei*), giant garter snake (*Thamnophis gigas*), Swainson’s hawk (*Buteo swainsoni*), and valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) as terrestrial wildlife of “species of mitigation need.” California red-legged frog is federally listed as threatened. Depending on the location in the GAI, foothill yellow-legged frog is state listed as endangered, threatened, or has no status, and is a federal candidate for endangered. Giant garter snake is federally and state listed as threatened. Swainson’s hawk is state listed as threatened. Valley elderberry longhorn beetle is federally listed as threatened.
- Central Valley spring-run and Sacramento River winter-run evolutionarily significant unit (“ESU”) Chinook salmon (*Oncorhynchus tshawytscha*), delta smelt (*Hypomesus transpacificus*), green sturgeon (*Acipenser medirostris*), longfin smelt (*Spirinchus thaleichthys*), and Central Valley distinct population segment (“DPS”) steelhead as aquatic “species of mitigation need.” Central Valley ESU Chinook salmon is federally listed as threatened and state listed as endangered. The Sacramento River winter-run Chinook salmon is federally listed as threatened and state listed as endangered. Delta smelt is federally listed as threatened and state listed as endangered. Green sturgeon is federally listed as threatened and is a

state species of special concern. Longfin smelt is a federal candidate for threatened and is a state-listed threatened species. Central Valley DPS steelhead is a federally listed threatened species. Note that threatened and endangered fish species were evaluated as aquatic resources (Section 1.5.3).

These species informed the analysis of estimated impacts provided in Chapters 5 and 6, as well as the discussion in Chapter 7, *Wildlife Resources Conservation Goals and Objectives*, and Chapter 8, *Aquatic Resources Conservation Goals and Objectives*.

1.5.3. Aquatic Resources

Compensatory mitigation for aquatic resources⁷ and riparian habitat in the GAI was also identified as both a historical transportation project compensatory mitigation need and an anticipated future transportation project compensatory mitigation need within Caltrans District 3. SHOPP transportation projects have historically been conditioned by natural resource regulatory agencies for aquatic resources and have benefited from mitigation credits, when available.

The Lower Sacramento Basin consists of 13 hydrologic unit code sub-basins where compensatory mitigation for aquatic resources impacts is anticipated:

- Big Chico Creek-Sacramento River (18020157)
- Butte Creek (18020158)
- Honcut Headwaters-Lower Feather (18020159)
- Lower American (18020111)
- Lower Sacramento (18020163)
- North Fork American (18020128)
- Paynes Creek-Sacramento (18020155)
- Sacramento-Stone Corral (18020104)
- South Fork American (18020129)
- Thomes Creek-Sacramento (18020156)
- Upper Bear (18020126)
- Upper Coon-Upper Auburn (18020161)
- Upper Yuba (18020125)

These sub-basins inform the analysis of estimated threatened and endangered fish, wetland, non-wetland waters, vernal pool, and riparian impact estimates provided in Chapters 5 and 6, as well as the discussion in Chapter 8, *Aquatic Resources Conservation Goals and Objectives*. Note that threatened and endangered fish species were identified as species of mitigation need (Section 1.5.2).

⁷ For the purposes of this document, aquatic resources include all fish, wetlands, and non-wetland waters regulated by CDFW, FWS, SWRCB and RWQCBs, Corps, EPA, and NMFS.

1.6 RAMNA

This RAMNA is a planning-level document that:

- Provides a desktop analysis of relevant available information pertaining to the Lower Sacramento Basin, referred to as the GAI;
- Applies to fiscal years 2019/20 to 2028/29 (planning period), which is concurrent with the time period addressed by the SHOPP Ten-Year Book (Caltrans 2021a);
- Discusses potential compensatory mitigation conditions that may be placed on future transportation projects by the seven resource and regulatory agency signatories⁸ 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);
- Focuses on wildlife habitats and aquatic resources that have a high probability of requiring transportation project-related compensatory mitigation in the GAI and planning period;
- Documents Caltrans' forecast of potential wildlife and aquatic resource⁹ compensatory mitigation needs for the GAI and planning period, as reported by the SAMNA (Caltrans 2021a);
- Identifies information that will be important to Caltrans when scoping any of the AMP's authorized activities in the GAI, in accordance with SHC § 800.6(a), including documenting the existing compensatory mitigation supply;
- Incorporates information and feedback received from outreach to the natural resource regulatory agencies, FHWA, MPOs, RTPAs, other public agencies that implement transportation projects, Native American tribes, interested parties, and the public; and
- Analyzes Caltrans' options to meet its compensatory mitigation needs in the GAI through the AMP's authorized activities.

Because early technical assistance and communication may increase the probability that advance mitigation projects promoted within and/or undertaken by Caltrans will successfully meet the AMP's purpose, in accordance with the AMP Guidelines, Caltrans has requested that this RAMNA be reviewed by FHWA, natural resource regulatory agencies, other transportation agencies (MPOs, RTPAs, and other public agencies that implement transportation improvements), Native American tribes, interested parties, and the public. Their reviews and any information they provide will also be consulted by Caltrans when it promotes and approves specific advance mitigation projects for development and funding (Caltrans 2019a).

⁸ Natural resource regulatory signatories are CDFW; SWRCB; Corps Los Angeles, Sacramento, and San Francisco Districts; EPA; FWS; NMFS; and California Coastal Commission ("CCC").

⁹ *Aquatic resources* is defined in Section 1.5.3, footnote 7.

1.7 Coordination History

With respect to external communications, the AMP Guidelines describe three communication milestones within the advance mitigation project planning process (Caltrans 2019a). Each is summarized in the following sections.

1.7.1. MPOs, RTPAs, and Other Transportation Agencies that Implement Transportation Improvements

The AMP guidelines state that Caltrans will contact MPOs, RTPAs, and other public agencies that implement transportation projects to request specific information about their potential STIP transportation projects, to help inform the potential demand for compensatory mitigation in that area (Section 7.2 of Caltrans 2019a). District 3 Transportation Planning conducted outreach and contacted the partners listed in Table 1-3.

Table 1-3. Regional Transportation Interaction and Outreach Summary

Date	Description
September 16, 2020	Met with Sacramento Area Council of Governments to discuss STIP-eligible transportation projects and advance mitigation planning for the AMP.

1.7.2. RAMNA Review

The AMP Guidelines (Caltrans 2019a) state:

Before the RAMNA will be used to support advance mitigation project planning, Caltrans will, per 23 USC 169(a): consult with each natural resource regulatory agency with jurisdiction over the environmental resources considered in the RAMNA; make a draft of the RAMNA available for review and comment by applicable natural resource regulatory agencies, FHWA, Native American Tribes, local transportation agencies, local advance mitigation programs, local interested parties, and the public; request that, along with their review, natural resource regulatory agencies, Native American Tribes, FHWA, local transportation agencies, local advance mitigation programs, interested parties, and the public provide Caltrans any additional information relevant to and appropriate for the RAMNA; consider any comments and information received from natural resource regulatory agencies, FHWA, Native American Tribes, local transportation agencies, local advance mitigation programs, local interested parties, and the public on the draft RAMNA; and incorporate information and address such comments in the final RAMNA as appropriate.

In September 2021, Caltrans distributed this RAMNA for review by FHWA, natural resource regulatory agencies, other transportation agencies (MPOs, RTPAs, and other public agencies that implement transportation improvements), Native American tribes, interested parties, and the public. Table 1-4 lists the commenters and the date of their

communication. All comments received were considered, addressed, and incorporated into the document, as appropriate.

Table 1-4. Comments Received by Caltrans on the RAMNA

Commenter	Date of Comment Letter
CDFW ^a	November 8, 2021
FWS	November 7, 2021
SWRCB	November 8, 2021, and November 17, 2021
EPA	November 9, 2021
Corps, Sacramento District	November 5, 2021
NMFS	November 9, 2021
CCC	October 26, 2021 ^b

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

^b The GAI is outside of the coastal zone and, hence, the resources addressed by the RAMNA are not under CCC jurisdiction.

1.7.3. Interagency Meeting and Coordination

The Master Process Agreement states that prior to finalizing the RAMNA, “Caltrans will arrange and facilitate at least one ... meeting [with natural resource regulatory agencies] to discuss the RAMNA, conservation goals and objectives, overlapping agency statutory and regulatory requirements, and other relevant topics” (Section IV, Subsection A, Provision 6). In accordance with the Master Process Agreement, a meeting between Caltrans and the natural resource regulatory agencies was held within 60 days of distribution of the RAMNA. The meeting participants and meeting dates are presented in Table 1-5. The discussion has informed this document.

Table 1-5. Interagency Meetings

Meeting Participants	Meeting Date
CDFW; EPA; FWS; SWRCB; Corps, Sacramento District; NMFS	November 2, 2021
CDFW	November 17, 2021
FWS	November 30, 2021
SWRCB	November 17, 2021

1.8 Document Organization

This document is organized as shown in Table 1-6.

Table 1-6. Document Organization

Chapter	Title	Content
Chapter 1	Introduction	This chapter introduces the RAMNA, placing it in context of the AMP Guidelines, transportation network, and regulatory framework.
Chapter 2	Environmental Setting	This chapter describes the GAI analyzed in the RAMNA. It relies on geospatial data from the SAMNA Reporting Tool and other readily available information.
Chapter 3	Relevant Plans, Policies, and Regulations	This chapter briefly describes laws, regulations, comprehensive plans, conservation plans, and land management plans that are applicable and relevant to the GAI that can inform both regional understanding and advance mitigation scoping.
Chapter 4	Existing Mitigation Opportunities	This chapter summarizes the mitigation credits (or similar) currently available to Caltrans and/or pending that are applicable to the environmental resources discussed in the RAMNA and located within or in the vicinity of the GAI.
Chapter 5	Modeled Estimated Impacts	This chapter summarizes the SAMNA forecast and regional estimates of compensatory mitigation need for the GAI.
Chapter 6	Benefiting Transportation Project Considerations	This chapter summarizes relevant information about potentially benefiting transportation projects, including scheduling considerations and constraints. A time frame for the need for forecast mitigation is provided and analyzed. The potentially benefiting transportation projects' acceleration priorities are documented in this chapter.
Chapter 7	Wildlife Resources Conservation Goals and Objectives	This chapter presents Caltrans' understanding of the GAI's wildlife conservation goals and objectives, with which Caltrans seeks to align its advance mitigation projects.
Chapter 8	Aquatic Resources Conservation Goals and Objectives	This chapter presents Caltrans' understanding of the GAI's aquatic, wetland, and water resources conservation goals and objectives, with which Caltrans seeks to align its advance mitigation projects.
Chapter 9	Assessment of Authorized Activities	This chapter describes options and analyzes the feasibility of purchasing and/or establishing mitigation credits (or similar) in the GAI that have a high probability of successfully accelerating transportation project delivery and protect natural resources through transportation project mitigation.
Chapter 10	References	This chapter lists references cited in the RAMNA.

Chapter	Title	Content
Appendices	Various	Appendices supporting this document: Appendix A – GIS Sources Appendix B – Land Cover Types Appendix C –Complete SAMNA Species Results Appendix D – Hydrologic Units Appendix E – List of 303(d) Impaired Waters Appendix F – Aquatic Resource Locations Appendix G – Conservation and Mitigation Bank Service Areas

2. ENVIRONMENTAL SETTING

In this chapter, Caltrans describes the GAI in terms of vegetation, land ownership, topography, climate, land cover, invasive species, special-status species, connectivity, and aquatic resources. Aquatic resources consist of fish, wetlands, and non-wetland water resources. Intended to inform advance mitigation project scoping, this assessment relied on readily available literature and GIS sources, including the vegetation and other geospatial data layers developed for the SAMNA Reporting Tool (Caltrans 2021d). Sources used for this assessment are cited throughout the chapter, and links to GIS sources are provided in Appendix A.

On each figure, Caltrans has provided the general location of planned SHOPP transportation projects that, during the 10-year planning period addressed by this document, natural resource regulatory agencies may condition with compensatory mitigation. The GAI's road infrastructure is described in Chapter 1 and additional information about planned transportation projects is provided in Chapter 5.

2.1 Ecoregion Sections in the GAI

The GAI consists of approximately 12.3 million acres in northern California within the Lower Sacramento Basin (HUC-6), which overlaps portions of the Central California Coast, Great Valley, Northern California Coast Ranges, Northern California Interior Coast Ranges, Southern Cascades, Sierra Nevada, and Sierra Nevada Foothills ecoregion sections (Table 2-1, Figure 2-1). Ecoregion sections are defined as the largest ecological unit of the U.S. Department of Agriculture ("USDA") Forest Service ("USFS") National Hierarchical Framework of Ecological Units, which are nested within larger provinces (Cleland et al. 1997).

Table 2-1. Ecoregion Sections in the GAI

Section	Acreage ^a	Section as Percentage of GAI
Central California Coast ^b	26,140	0.2
Great Valley	4,974,152	40.6
Northern California Coast Ranges ^b	268,819	2.2
Northern California Interior Coast Ranges	1,422,061	11.6
Southern Cascades	565,248	4.6
Sierra Nevada	3,183,961	25.9
Sierra Nevada Foothills	1,843,523	15.0
Total	12,283,904	100%

Source: Caltrans 2021c

^a Numbers were rounded to the nearest whole number.

^b There are no projects in these sections.

The Central California Coast Ecoregion Section is within the larger California Coastal Chaparral Forest and Shrub Province; the Great Valley Ecoregion Section is within the larger California Dry Steppe Province; and the Northern California Coast Ranges, Northern California Interior Coast Ranges, Southern Cascades, Sierra Nevada, and Sierra Nevada Foothills ecoregion sections are within the larger Sierran Steppe – Mixed Forest – Coniferous Forest – Alpine Meadow Province (McNab et al. 2007).

2.2 Land Ownership in the GAI

The GAI spans parts of Alpine, Amador, Butte, Colusa, El Dorado, Glenn, Mendocino, Napa, Nevada, Placer, Plumas, Sacramento, Shasta, Sierra, Solano, Sutter, Tehama, Trinity, Yolo, and Yuba Counties (Figure 2-2). Most of the land in the GAI (70 percent) is privately owned and managed (Table 2-2, Figure 2-2). Federal lands, which account for 22.1 percent of land in the GAI, are administered and managed by the USDA's USFS and Natural Resources Conservation Service; the U.S. Department of Interior's Bureau of Land Management ("BLM"), FWS, and National Park Service ("NPS"); the U.S. Department of Defense's military bases; the U.S. Bureau of Reclamation; and the Corps. National park land includes Lassen Volcanic National Park and Whiskeytown National Recreational Area. USFS land includes the Lassen, Plumas, Tahoe, and El Dorado National Forests. State lands, which account for 2.8 percent of land in the GAI, include lands owned and managed by the California Department of Parks and Recreation, California Department of Water Resources, CDFW, California State Lands Commission, University of California, and other public lands. Less than 1 percent of land in the GAI is governed by counties, cities, and special districts. Other lands in the GAI, which account for 4.3 percent of the GAI, are owned or managed by Native American tribes and nonprofit conservancies and land trusts (Table 2-2, Figure 2-2).

2.2.1. Protected Lands

The California Protected Areas Database, developed by GreenInfo Network, provides an inventory of lands that are owned in fee or protected for open space purposes, throughout California, by over 1,000 public and nonprofit organizations. These protected lands are managed for the preservation of biological diversity and other natural, recreational, and cultural uses. It is important to note, however, that these data are based on best available public information at the time of development and, as such, may not represent all protected lands in California.

In the California Protected Areas Database, lands are assigned U.S. Geological Survey ("USGS") Gap Analysis Program ("GAP") status ranks that define the degree of protection for biodiversity conservation using a 1 to 4 coding system. Areas with a GAP status of 1 are managed for biodiversity; areas with a GAP status of 2 are managed for biodiversity with disturbance events suppressed; areas with a GAP status of 3 are managed for multiple uses, potentially including mining or off-road vehicle use; and areas with a GAP status of 4 have no known mandate for biodiversity protection. The method of applying these California Protected Areas Database ranks is done in collaboration with the USGS' Protected Areas Database of the U.S.

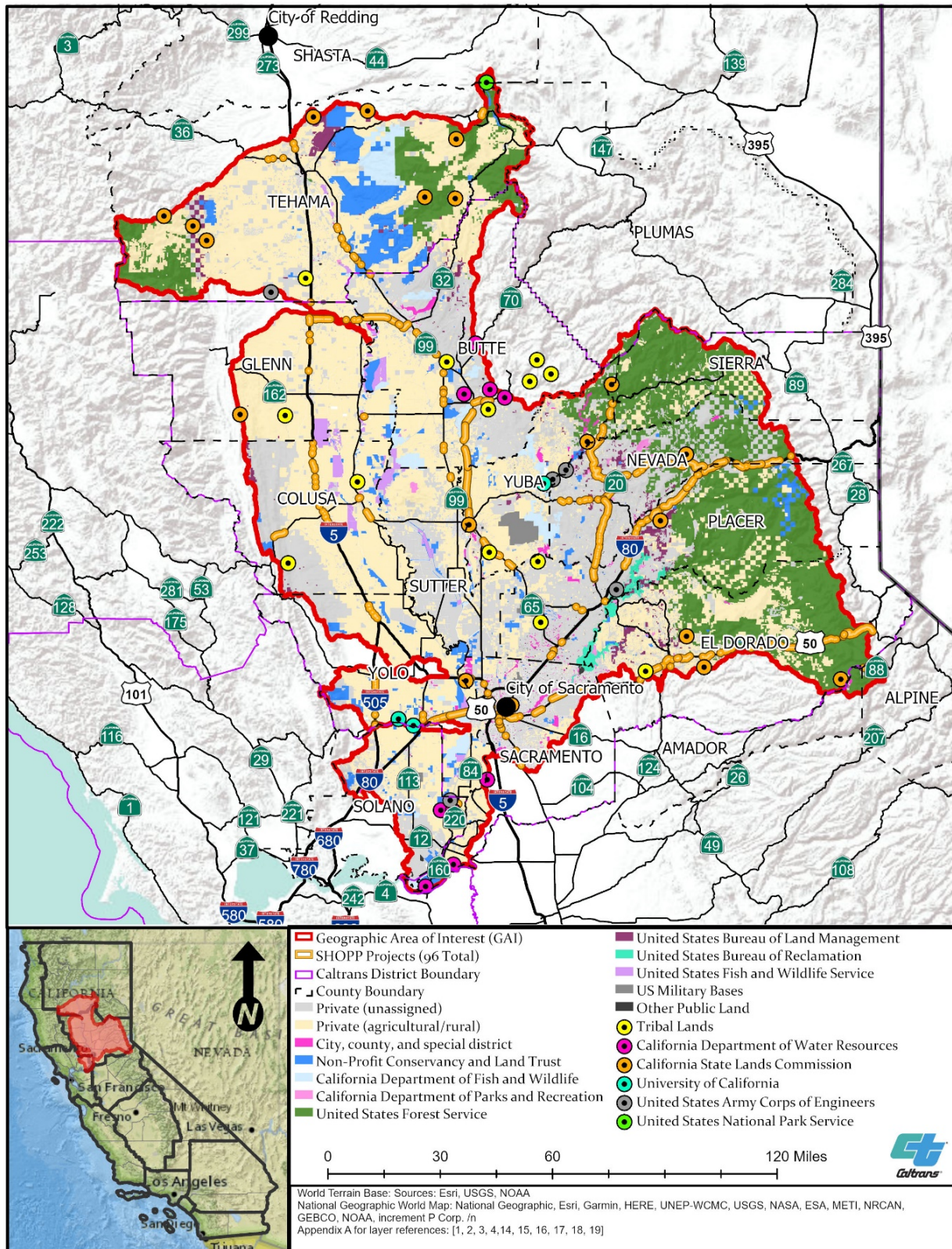
Table 2-2. Land Ownership in the GAI

Land Owner or Land Use	Number of Parcels	Total Acreage per Agency/Owner ^a	Ownership as Percentage of GAI
Private (agricultural/rural)	64,614	5,086,824	42.0
Private (unassigned)	921,388	3,427,127	28.3
USFS	6,635	2,228,462	18.4
Nonprofit conservancy and land trust	2,081	512,876	4.2
CDFW	801	255,309	2.1
BLM	1,161	172,836	1.4
FWS	440	114,782	0.9
City, county, and special district	4,847	95,017	0.8
U.S. Bureau of Reclamation	625	64,750	0.5
U.S. military bases	639	46,399	0.4
California Department of Parks and Recreation	490	25,089	0.2
Other public lands	2,059	22,630	0.2
California Department of Water Resources	71	14,224	0.1
University of California	32	12,274	0.1
NPS	36	11,719	0.1
Tribal lands	99	10,313	0.1
California State Lands Commission	29	5,467	<0.1
Corps	13	2,239	<0.1
Total	—	12,108,337	100%

Sources: Bureau of Indian Affairs; California Protected Lands Database; California Conservation Easement Database; Caltrans 2021c; U.S. Census Bureau; USDA; and California Department of Technology for land parcels

^a Numbers were rounded to the nearest whole number.

Figure 2-2. Land Ownership



Not all California Protected Areas Database lands have GAP status ranks, and some may be out of date. Nevertheless, available protected lands and their associated GAP status ranks are indicated on Figure 2-3. As Figure 2-3 shows, no GAP status 1 lands are identified in the database for the GAI, and most of the planned SHOPP transportation projects are in areas with a GAP status of 2 or with no assigned rank, with fewer projects in areas with a GAP status of 3 or 4. Lands with conservation easements are also identified in the California Protected Areas Database; many of the planned SHOPP transportation projects are proximate to conservation easements (Figure 2-3).

2.3 Topography

The 13 sub-basins that make up the GAI are primarily located within the Sacramento Valley bound by the Coastal Ranges to the west, Sacramento-San Joaquin River Delta to the south, the Sierra Nevada Mountains on the east, and the northern part of the Sacramento Valley, including the southern fork of the Sacramento River, to the north (Figure 2-4). Elevations in the GAI range from sea level to 10,053 feet above mean sea level.

2.4 Climate

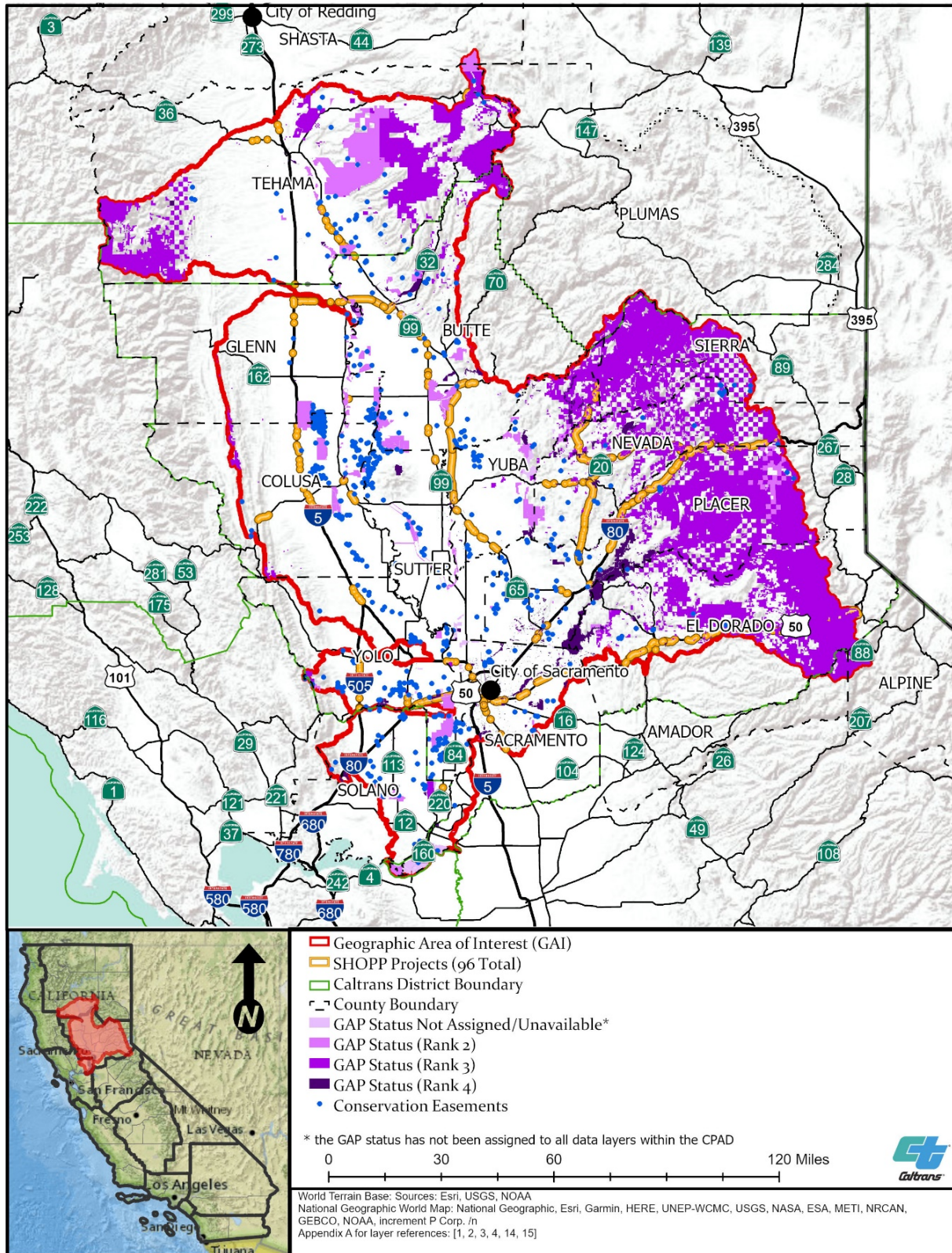
The GAI is characterized by a Mediterranean climate with cool, wet winters and hot, dry summers, with slightly warmer summers and cooler winters farther east. Average winter temperatures range from 30 to 55 degrees Fahrenheit. Average summer temperatures range from the 60 to 100 degrees Fahrenheit. Average annual precipitation ranges from 18 inches at lower elevations to over 85 inches at the highest elevations, with most precipitation occurring November through April. Snow is common at higher elevations during the winter, with snowmelt providing a major source of water during the dry summer months (Central Valley RWQCB 2018; California Department of Water Resources 2021; Regional Water Authority 2018).

In the next 30 years, the climate is expected to change. Results of Caltrans' climate vulnerability assessment are summarized in Section 2.4.1. The predicted resilience of the GAI to effects resulting from climate change are summarized in Section 2.4.2.

2.4.1. Climate Vulnerability Assessment

In 2019, Caltrans performed a statewide climate change vulnerability assessment for the SHS (Caltrans 2019b). The analysis provided in the *Caltrans Climate Change Vulnerability Assessments: District 3 Technical Report* (Caltrans 2019b) is based on global climate change data compiled by the Intergovernmental Panel on Climate Change.

Figure 2-3. Protected Lands



Caltrans applies three future emissions scenarios for greenhouse gas emission concentrations in the technical report—representative concentration pathway 2.6, which assumes global annual greenhouse gas emissions will peak in the next few years and then begin to decline substantially; representative concentration pathway 4.5, which assumes emissions will peak around 2040 and then begin to decline; and representative concentration pathway 8.5, which assumes that high emission trends continue to the end of the century—for three future 30-year periods centered on the years 2025 (2010 to 2039), 2055 (2040 to 2069), and 2085 (2070 to 2099).

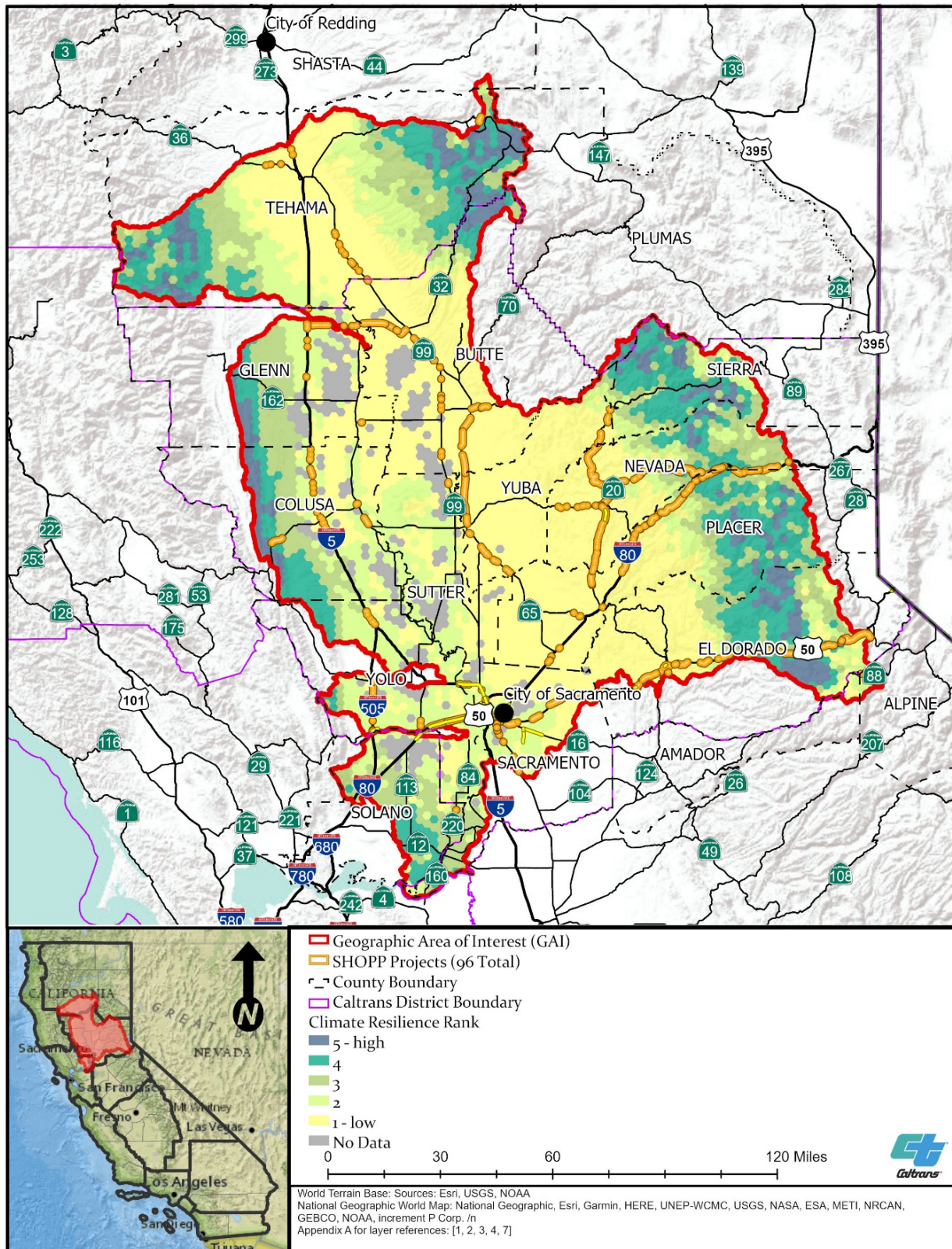
The effects of climate change in the GAI pose risks for transportation infrastructure, reliability and capacity. Transportation systems were designed for historical climate conditions; changing climatic conditions, including an increased frequency of extreme weather events, are expected to cause disruptions and damage to the SHS. Predicted climate change effects consist of projected extended periods of higher temperatures in the summer; large fluctuations in precipitation, with dry years becoming drier and wet years becoming wetter, and an increased risk of drought, wildfires, and landslides over the three time periods analyzed in the technical report (Caltrans 2019b).

2.4.2. Climate Resiliency

A climate change-resilient natural community area is a terrestrial location expected to remain stable in the face of climate change (CDFW 2018a). The predicted resilience of the GAI to effects resulting from climate change was acquired from CDFW's Areas of Conservation Emphasis ("ACE," version 3) terrestrial climate change resilience dataset. This dataset consists of the modeled probability that a given terrestrial location may function as a plant or wildlife refugium from climate change, meaning that it would be relatively buffered from the effects of climate change, conditions would likely remain suitable for plants and wildlife currently residing in the area, and ecological functions would be more likely to remain intact. The ACE dataset combines climate refugia model results from eight future climate scenarios based on different combinations of global climate models, emissions scenarios, and time horizons. The eight scenarios assessed included two potential future climates—both a hotter and drier future and a warmer and wetter future; two future carbon dioxide ("CO₂") scenarios—one with no reductions in CO₂ emissions and one with a peak in 2040 followed by a significant decline in CO₂ emissions; and two 29-year time intervals—2040 to 2069 and 2070 to 2099. Terrestrial locations were assigned climate resilience ranks ranging from 1 (low resilience or low probability that the terrestrial location will contain climate refugia) to 5 (high resilience or high probability that the terrestrial location will contain climate refugia) (CDFW 2018a).

Resiliency is an important consideration when establishing compensatory mitigation. The terrestrial climate change resilience rank from the ACE dataset (CDFW 2018a) is presented on Figure 2-5. There is a clear pattern of low resilience or no data in the central areas of the GAI, and areas with moderate to high resilience on the western and eastern edges of the GAI.

Figure 2-5. Terrestrial Climate Resilience Rankings



2.5 Land Cover Types

General land cover types are depicted on the maps provided in Appendix B. Land cover types in the GAI were extracted from the SAMNA, which developed its vegetation data layer by merging CDFW's California Wildlife Habitat Relationships ("CWHR") Vegetation Classification and Mapping Program GIS database, the USFS Classification and Assessment with LandSat of Visible Ecological Groupings, and the California Department of Forestry and Fire Protection vegetation layer (Caltrans 2021d). Based on these data, tree-dominated habitats account for the largest habitat type, encompassing 39.6 percent of the GAI, with Sierran mixed conifer the most common (Table 2-3, Appendix B). Developed and non-vegetated habitat types (barren areas) combined account for 35.9 percent of the GAI, with cropland the most common. Herbaceous-dominated habitats account for 18.9 percent of the GAI, with annual grassland the most common. Shrub-dominated habitats account for 4.3 percent of the GAI, with mixed chaparral the most common. Aquatic habitats account for 1.3 percent of the GAI, with riverine the most common. Land cover is generally shown on Figure 2-6.

2.6 Invasive Species

Both invasive plant and animal species are known to occur in the GAI. Invasive species include plants and animals that are not native to an area, typically have high growth and reproductive rates, and are able to outcompete native plants and animals, often because of a lack of natural predators or controls (FWS 2012; National Wildlife Federation 2019). Invasive species may affect native species, including special-status species, by directly competing for resources, preying on native species, introducing or spreading diseases, reducing the complexity and biodiversity of ecosystems, altering soil chemistry and water availability, and increasing wildfire potential (FWS 2005a).

Three organizations maintain invasive species databases for California. The Invasive Species Council of California maintains a list of invasive plant and animal species throughout the state of California (California Invasive Species Advisory Committee 2010). The California Department of Food and Agriculture also maintains a list of noxious weeds for California (USDA Natural Resources Conservation Service 2003). The California Invasive Plant Council ("Cal-IPC") maintains a California invasive plant inventory that categorizes nonnative plant species based on the severity of their potential ecological impacts (Cal-IPC 2021).

Table 2-3. Land Cover Types in the GAI

CWHR Habitat Type	Acres^a	Cover as Percentage of GAI^b
Tree-dominated Habitats	5,069,117	39.57
Aspen	251	<0.01
Blue Oak Woodland	880,834	6.88
Blue Oak Woodland; Blue Oak-Foothill Pine	365,337	0.59
Blue Oak Woodland; Valley Foothill Riparian	287	<0.01
Blue Oak-Foothill Pine	122,190	0.95
Closed-cone Pine-Cypress	6,483	0.05
Coastal Oak Woodland	2,386	0.02
Douglas Fir	222,126	1.73
Eastside Pine	259	<0.01
Eucalyptus	15,876	0.12
Jeffrey Pine	32,577	0.25
Juniper	1,913	0.01
Klamath Mixed Conifer	121	<0.01
Lodgepole Pine	27,616	0.22
Montane Hardwood	578,448	4.51
Montane Hardwood-Conifer	227,112	1.77
Montane Riparian	14,908	0.12
Ponderosa Pine	332,449	2.59
Red Fir	321,399	2.51
Sierran Mixed Conifer	1,518,574	11.85
Subalpine Conifer	10,260	0.08
Valley Foothill Riparian	160,092	1.25
Valley Oak Woodland	33,396	0.26
White Fir	194,223	1.52
Shrub-dominated Habitats	546,630	4.27
Alpine Dwarf-Shrub	2,217	0.02
Chamise-Redshank Chaparral	60,557	0.47
Coastal Scrub	6,915	0.05
Low Sage	29	<0.01

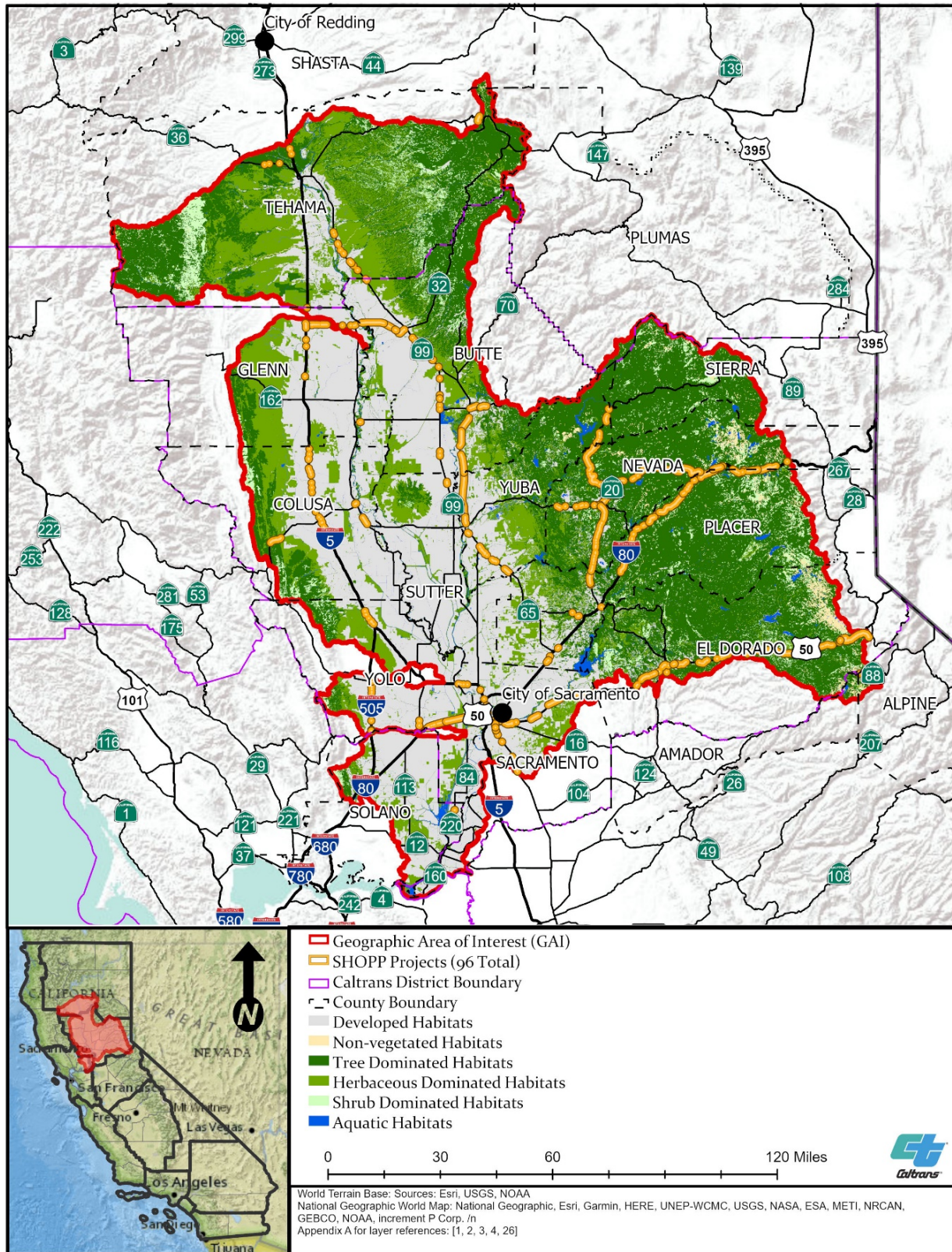
CWHR Habitat Type	Acres^a	Cover as Percentage of GAI^b
Mixed Chaparral	241,674	1.89
Montane Chaparral	233,407	1.82
Sagebrush	1,831	0.01
Herbaceous-dominated Habitats	2,426,680	18.94
Annual Grassland	2,069,306	16.15
Fresh Emergent Wetland	188,242	1.47
Pasture	111,772	0.87
Perennial Grassland	35,758	0.28
Saline Emergent Wetland	11,168	0.11
Wet Meadow	10,434	0.08
Aquatic Habitats	167,409	1.31
Lacustrine	75,316	0.59
Riverine	91,708	0.72
Riverine/Lacustrine	385	<0.01
Developed Habitats	4,435,293	34.62
Cropland	3,161,780	24.68
Deciduous Orchard	17,435	0.14
Evergreen Orchard	3,413	0.03
Irrigated Row and Field Crops	25,917	0.02
Orchard/Vineyard	1,292	0.01
Rice	406,697	3.17
Urban	795,813	6.21
Vineyard	22,846	0.18
Non-vegetated Habitats	166,769	1.30
Barren	166,769	1.30
Total	12,811,895	100%

Source: Caltrans 2021d

^a Numbers were rounded to the nearest whole number.

^b Numbers were rounded to the hundredths.

Figure 2-6. Major Land Cover^a



^a For greater detail, see Appendix B.

In the GAI, invasive plant species have been specifically identified as threats or stressors to terrestrial and aquatic biological resources (CDFW 2018b). Nonnative, invasive plant species with a high ranking by Cal-IPC are those that have the most severe ecological effects and are the most widely distributed geographically, although species with a moderate or limited ranking can also have negative local ecological effects. Invasive plant species that are identified as problematic for the ecoregion sections that overlap the GAI in the SWAP or the Cal-IPC inventory include, but are not limited to, giant reed (*Arundo donax*), tree of heaven (*Ailanthus altissima*), yellow starthistle (*Centaurea solstitialis*), spotted knapweed (*Centaurea stoebe* ssp. *micranthos*), Scotch broom (*Cytisus scoparius*), French broom (*Genista monspessulana*), medusahead (*Elymus caput-medusae*), barb goatgrass (*Aegilops triuncialis*), red brome (*Bromus rubens*), cheatgrass (*Bromus tectorum*), pampas grass (*Cortaderia selloana*), perennial pepperweed (*Lepidium latifolium*), nonnative water primroses (*Ludwigia* spp.), water hyacinth (*Eichhornia* spp.), Eurasian watermilfoil (*Myriophyllum spicatum*), Himalayan blackberry (*Rubus armeniacus*), hydrilla (*Hydrilla verticillata*), and English ivy (*Hedera helix*) (Cal-IPC 2021; CDFW 2015).

Nonnative animals that are/may be present in the GAI and that can negatively affect aquatic species include American bullfrog (*Lithobates catesbiana*), quagga mussels (*Dreissena bugensis*), zebra mussels (*Dreissena polymorpha*), New Zealand mud snail (*Potamopyrgus antipodarum*), nonnative crayfish, red-eared slider (*Trachemys scripta elegans*), Chinese mitten crab (*Eriocheir sinensis*), western mosquitofish (*Gambusia affinis*), and introduced sport and bait fish including sunfish, striped bass (*Morone saxatilis*), black crappie (*Pomoxis nigromaculatus*), bluegill (*Lepomis macrochirus*), brook trout (*Salvelinus fontinalis*), and brown trout (*Salmo trutta*) (CDFW 2015). Nonnative animals that are/may be present in the GAI and that can negatively affect terrestrial wildlife through competition, predation, or parasitism include feral pigs (*Sus scrofa*), European starlings (*Sturnus vulgaris*), and brown-headed cowbirds (*Molothrus ater*). Invasive animal species that are/may be associated with urban areas include domestic dogs (*Canis lupus familiaris*), domestic cats (*Felis catus*), raccoons (*Procyon lotor*), and American crow (*Corvus brachyrhynchos*) (CDFW 2015).

2.7 Special-status Species

Special-status species known to occur or with the potential to occur in the GAI that are anticipated to be affected were extracted from the SAMNA Reporting Tool's species-attributed vegetation data layer, which was developed using the CWHR (CDFW 2019a), the Jepson Herbarium's floristic province layer, CDFW's RareFind 5 database (CDFW 2019b), and other information (Caltrans 2021b). Special-status species in the SAMNA are those that are considered federally and/or state threatened or endangered species, state candidate threatened or endangered species, state fully protected species, state species of concern, state rare species, and federal sensitive species (which includes species that are USFS sensitive and/or BLM sensitive). The species-attributed list developed for the SAMNA Reporting Tool depends on a species having a defined geographic range or having occurrences documented in the California Natural Diversity

Database (Caltrans 2021b); although it is the best information currently available, the SAMNA Reporting Tool's species list highlights the uncertainties in this foundational information.

Threatened and endangered fish species with the potential to occur in the GAI that are anticipated to be affected are discussed in Section 2.15.2, and special-status terrestrial species are summarized below. Based on a search of the SAMNA Reporting Tool's species-attributed vegetation layer, the following numbers of non-fish special status species are known to occur or have the potential to occur in the portion of the GAI that lies within the respective ecoregions: 67 species in the Great Valley ecoregion, 45 species in the Northern California Interior Coast Ranges ecoregion, 33 species in the Southern Cascades ecoregion, 53 species in the Sierra Nevada ecoregion, and 61 species in the Sierra Nevada Foothills ecoregion. The numbers of these special-status species by habitat type are shown in Tables 2-4 through 2-8 for the five ecoregions with planned transportation projects in the GAI. Because a species may use more than one habitat, the numbers are not additive.

The complete SAMNA results by habitat type are provided in Appendix C. As described in Appendix C, for subspecies that do not have documented home ranges, the SAMNA results are provided at the species level. Also, footnotes are included for those special-status subspecies that do not have the potential to occur in the GAI. Note that although SAMNA results are suitable for advance mitigation project scoping, establishing compensatory mitigation credits approved by one or more natural resource regulatory agency requires site-specific studies.

2.8 Critical Habitat

FWS and NMFS regulate impacts on critical habitat under the ESA. The ESA (16 USC § 1531–1544) defines critical habitat for a threatened or endangered species as (i) “specific areas within the geographical area occupied by the species at the time it is listed ... on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection;” and (ii) “specific areas outside the geographical area occupied by the species at the time it is listed ... upon a determination by the Secretary that such areas are essential for the conservation of the species.”

Further, the ESA clarifies that critical habitat “shall not include the entire geographical area which can be occupied by the threatened or endangered species.” Critical habitat designations reflect a rigorous process. Before publishing the rule finalizing the critical habitat designation, FWS publishes proposals to designate critical habitat in the *Federal Register* and considers information received during the public comment period (FWS 2017a).

Table 2-4. Number of Potentially Occurring Special-status Species, by Land Cover Type – Great Valley Ecoregion Section in the GAI

Land Cover Type	Cover as Percentage of GAI	Plants	Invertebrates	Amphibians	Reptiles	Birds	Mammals
Tree-dominated Habitats	See below	See below	See below	See below	See below	See below	See below
Blue Oak – Foothill Pine	0.95	0	0	2	1	10	7
Eucalyptus	0.12	0	0	2	1	12	7
Montane Hardwood	4.51	6	0	1	0	10	9
Valley Foothill Riparian	1.25	0	1	2	2	18	7
Shrub-dominated Habitats	See below	See below	See below	See below	See below	See below	See below
Coastal Scrub	0.05	0	0	1	1	10	6
Herbaceous-dominated Habitats	See below	See below	See below	See below	See below	See below	See below
Annual Grassland	16.15	11	3	4	2	19	10
Fresh Emergent Wetland	1.47	0	2	1	1	13	2
Aquatic Habitats	See below	See below	See below	See below	See below	See below	See below
Riverine	0.72	0	0	2	1	11	4
Developed Habitats	See below	See below	See below	See below	See below	See below	See below
Urban	6.21	0	0	0	0	13	7
Non-vegetated Habitats	See below	See below	See below	See below	See below	See below	See below
Barren	1.30	0	0	0	0	9	5

Source: Caltrans (2021b)

Table 2-5. Number of Potentially Occurring Special-status Species, by Land Cover Type – Northern California Interior Coast Ranges Ecoregion Section in the GAI

Land Cover Type	Cover as Percentage of GAI	Plants	Invertebrates	Amphibians	Reptiles	Birds	Mammals
Tree-dominated Habitats	See below	See below	See below	See below	See below	See below	See below
Blue Oak Woodland	6.88	0	0	4	0	7	10
Blue Oak – Foothill Pine	0.95	0	0	2	0	7	8
Montane Hardwood	4.51	2	0	1	1	5	8
Herbaceous-dominated Habitats	See below	See below	See below	See below	See below	See below	See below
Annual Grassland	16.15	14	0	5	1	14	9

Source: Caltrans (2021b)

Table 2-6. Number of Potentially Occurring Special-status Species, by Land Cover Type – Southern Cascades Ecoregion Section in the GAI

Land Cover Type	Cover as Percentage of GAI	Plants	Invertebrates	Amphibians	Reptiles	Birds	Mammals
Tree-dominated Habitats	See below	See below	See below	See below	See below	See below	See below
Sierran Mixed Conifer	11.85	0	0	4	0	11	15
White Fir	1.52	0	0	4	0	11	15
Non-vegetated Habitats	See below	See below	See below	See below	See below	See below	See below
Barren	1.30	0	0	0	0	5	11

Source: Caltrans (2021b)

**Table 2-7. Number of Potentially Occurring Special-status Species, by Land Cover Type – Sierra Nevada
Ecoregion Section in the GAI**

Land Cover Type	Cover as Percentage of GAI	Plants	Invertebrates	Amphibians	Reptiles	Birds	Mammals
Tree-dominated Habitats	See below	See below	See below	See below	See below	See below	See below
Blue Oak Woodland	6.88	0	0	2	1	12	12
Blue Oak-Foothill Pine	0.95	0	0	2	1	10	12
Closed-Cone Pine-Cypress	0.05	0	0	2	1	4	7
Douglas-Fir	1.73	0	0	2	0	11	13
Jeffrey Pine	0.25	0	0	2	0	7	14
Lodgepole Pine	0.22	0	0	3	0	8	14
Montane Hardwood	4.51	5	0	4	0	13	12
Montane Hardwood-Conifer	1.77	1	0	4	1	11	17
Montane Riparian	0.12	0	0	5	0	13	18
Ponderosa Pine	2.59	0	0	4	1	11	16
Red Fir	2.51	0	0	2	0	8	13
Sierran Mixed Conifer	11.85	0	0	4	0	12	17
Subalpine Conifer	0.08	0	0	2	0	4	11
White Fir	1.52	0	0	3	0	12	16
Shrub-dominated Habitats	See below	See below	See below	See below	See below	See below	See below
Mixed Chaparral	1.89	5	0	2	1	9	11
Montane Chaparral	1.82	0	0	1	0	8	13
Herbaceous-dominated Habitats	See below	See below	See below	See below	See below	See below	See below
Annual Grassland	16.15	1	0	2	1	5	11

Land Cover Type	Cover as Percentage of GAI	Plants	Invertebrates	Amphibians	Reptiles	Birds	Mammals
Wet Meadow	0.08	0	0	4	0	8	13
Aquatic Habitats	See below	See below	See below	See below	See below	See below	See below
Riverine	0.72	0	0	2	0	4	6
Developed Habitats	See below	See below	See below	See below	See below	See below	See below
Urban	6.21	0	0	0	0	12	8
Non-vegetated Habitats	See below	See below	See below	See below	See below	See below	See below
Barren	1.30	0	0	0	0	8	11

Source: Caltrans (2021b)

Table 2-8. Number of Potentially Occurring Special-status Species, by Land Cover Type – Sierra Nevada Foothills Ecoregion Section in the GAI

Land Cover Type	Cover as Percentage of GAI	Plants	Invertebrates	Amphibians	Reptiles	Birds	Mammals
Tree-dominated Habitats	See below	See below	See below	See below	See below	See below	See below
Blue Oak Woodland	6.88	0	0	3	1	15	11
Montane Hardwood	4.51	5	0	3	0	14	10
Valley Foothill Riparian	1.25	0	1	2	1	14	12
Valley Oak Woodland	0.26	0	0	3	1	13	11
Shrub-dominated Habitats	See below	See below	See below	See below	See below	See below	See below
Mixed Chaparral	1.89	0	0	0	0	0	1
Herbaceous-dominated Habitats	See below	See below	See below	See below	See below	See below	See below
Annual Grassland	16.15	11	2	3	2	16	11
Pasture	0.87	0	0	0	0	3	10
Developed Habitats	See below	See below	See below	See below	See below	See below	See below
Urban	6.21	0	0	0	0	14	8

Source: Caltrans (2021b)

The GAI includes federally designated final critical habitat for 22 species (FWS 2021; NMFS 2021):

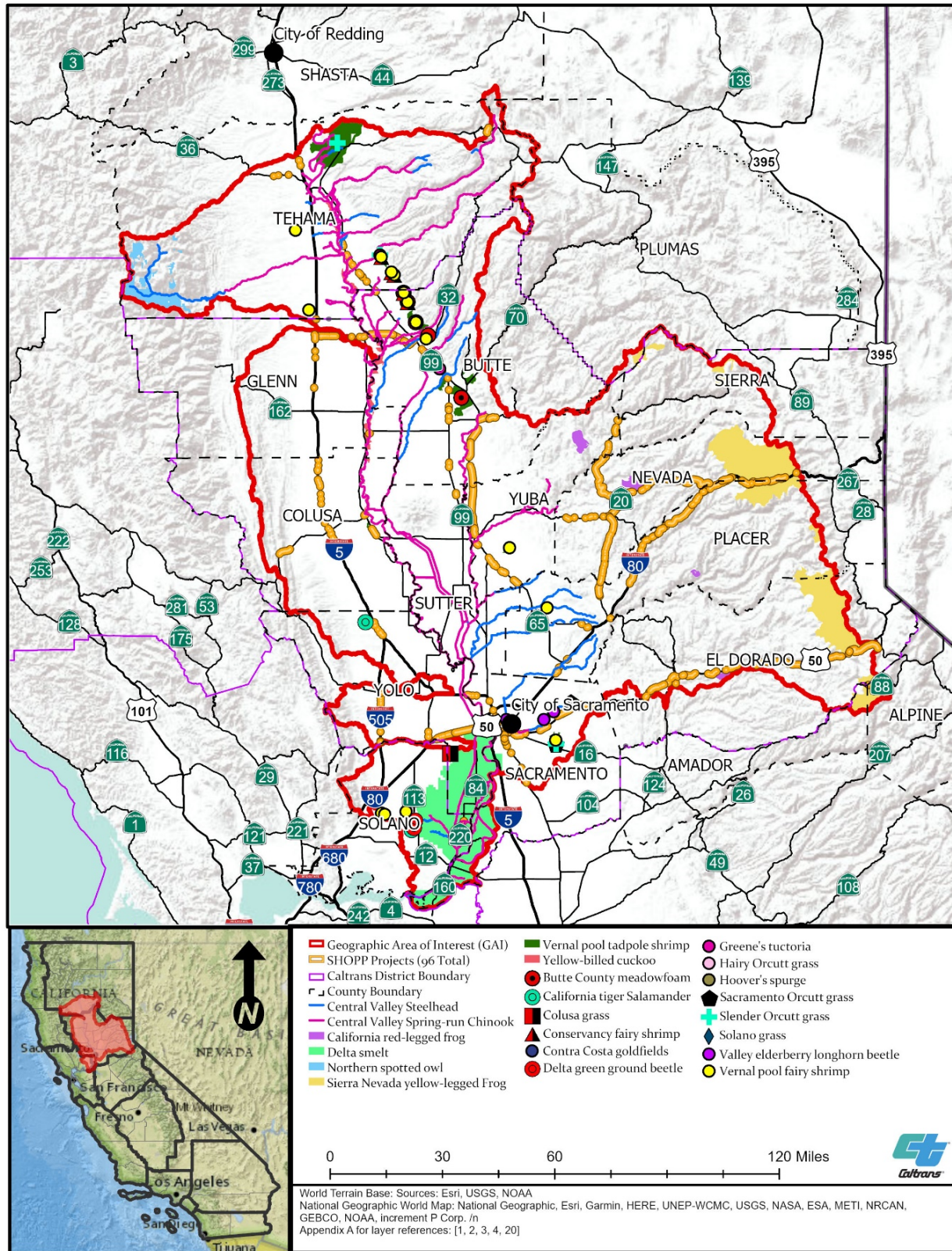
- Butte County meadowfoam (*Limnanthes floccosa* ssp. *californica*)
- California red-legged frog (*Rana draytonii*)
- California tiger salamander (*Ambystoma californiense*)
- California Central Valley Distinct Population Segment (“DPS”) steelhead (*Oncorhynchus mykiss*)
- Central Valley Evolutionarily Significant Unit (“ESU”) spring-run Chinook salmon (*Oncorhynchus tshawytscha*)
- Colusa grass (*Neostapfia colusana*)
- Conservancy fairy shrimp (*Branchinecta conservatio*)
- Contra Costa goldfields (*Lasthenia conjugens*)
- Delta green ground beetle (*Elaphrus viridis*)
- Delta smelt (*Hypomesus transpacificus*)
- Greene’s tuctoria (*Tuctoria greenei*)
- hairy Orcutt grass (*Orcuttia pilosa*)
- Hoover’s spurge (*Chamaesyce hooveri*)
- northern spotted owl (*Strix occidentalis caurina*)
- Sacramento Orcutt grass (*Orcuttia viscida*)
- slender Orcutt grass (*Orcuttia tenuis*)
- Solano grass (*Tuctoria mucronata*)
- Sierra Nevada yellow-legged frog (*Rana sierrae*)
- valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)
- vernal pool fairy shrimp (*Branchinecta lynchi*)
- vernal pool tadpole shrimp (*Lepidurus packardii*)
- yellow-billed cuckoo (*Coccyzus americanus*)

Critical habitat is an important consideration when establishing compensatory mitigation. Designated critical habitat for these species is indicated on Figure 2-7. Note that designated critical habitat represented by points on Figure 2-7 are units too small to depict at the regional level assessed in this RAMNA.

2.9 Connectivity

Roads can be barriers to special-status wildlife species movement and block migration and access to and from suitable upstream habitat for special-status fish species. Improving habitat connectivity and permeability of the SHS may provide a mechanism for maintaining biodiversity in the face of California’s human population growth and climate change (CDFW 2020).

Figure 2-7. Federally Designated Critical Habitat



2.9.1. Wildlife Movement

Caltrans identified four connectivity assessments applicable and relevant to the GAI: California Essential Habitat Connectivity (“CEHC”) Project, ACE, Sierra Nevada Foothills Wildlife Connectivity Modeling Project, and CDFW’s *Wildlife Barriers Report*. Each is briefly summarized below.

California Essential Habitat Connectivity

The CEHC Project, a statewide assessment commissioned by CDFW and Caltrans, identified large remaining blocks of intact habitat or natural landscape that support native biodiversity and modeled linkages or essential connectivity areas between them that need to be maintained, particularly as corridors for wildlife (CDFW 2018c; Spencer et al. 2010). These connectivity areas were broadly defined, focusing on ecological integrity rather than species-specific habitat needs, and also included potential riparian connections between landscape blocks. For instance, connectivity areas were selected to connect existing reserves across land that has been highly altered and fragmented by agriculture, urbanization, and roads, which typically constrain wildlife movement (Spencer et al. 2010).

CDFW’s Areas of Conservation Emphasis

CDFW’s ACE version 3 terrestrial connectivity dataset builds on the CEHC Project and includes mapped corridors or linkages and where they occur in relation to large, contiguous natural areas (Figure 2-8). It also incorporates species-specific, fine-scale linkage information developed at a regional scale, where available, and includes areas that were not evaluated by the CEHC Project. Connectivity ranks in the terrestrial connectivity dataset were assigned as follows:

- Rank 5 (irreplaceable and essential corridors) – includes channelized areas and priority species movement corridors
- Rank 4 (conservation planning linkages) – habitat connectivity linkages mapped in the CEHC and fine-scale regional connectivity studies that are based on species-specific models and represent the best connections between core natural areas
- Rank 3 (connections with implementation flexibility) – areas with connectivity importance, including core habitat areas and areas on the periphery of mapped habitat linkages
- Rank 2 (large natural habitat areas) – large blocks of natural habitat (greater than 2,000 acres) with relatively intact connectivity
- Rank 1 (limited connectivity opportunity) – areas where land use limits connectivity, including some lakes

Connectivity is an important consideration when establishing compensatory mitigation. Most of the planned SHOPP transportation projects occur in areas with a connectivity rank of 3 or 4, followed by areas with a connectivity rank of 1 or 2 and fewer planned transportation projects occurring in areas with a connectivity rank of 5 (Figure 2-8).

Sierra Nevada Foothills Wildlife Connectivity Modeling Project

The Sierra Nevada Foothills Wildlife Connectivity Modeling Project builds on the CEHC Project and includes finer-scale information on the importance of the foothills as a movement corridor for mule deer and other large mammals between the Central Valley and Sierra Nevada. It identifies core habitat areas or landscape blocks for nine focal passage species and connections between these core areas, including riparian corridors and other linkages (Figure 2-9). It also analyzed 21 “corridor dweller” species, including foothill yellow-legged frog (CDFW 2013).

CDFW’s Wildlife Barriers Report

CDFW’s 2020 *California Wildlife Barriers Report* identified priority wildlife movement barriers created by linear infrastructure across the state to help focus financial resources on improving wildlife movement (CDFW 2020). In addition to impeding wildlife movement, these barriers act as sources of mortality and affect population demographics, gene flow, resilience, and persistence of California’s wildlife. Barriers were identified using existing connectivity and road crossing studies, collared-animal movement data, roadkill observations, and professional expertise.

One priority wildlife movement barrier was identified in the GAI: Highway 36 East from Mill Creek to Chester. The target species for movement is mule deer (CDFW 2020).

2.9.2. Fish Passage

Article 3.5 of Chapter 1 of Division 1 of the SHC, also known as “Senate Bill 857” (Kuehl, Chapter 589 and Statute of 2005), prohibits the new construction or continued maintenance upgrades of SHS facilities that prevent or impede the passage of salmon and steelhead. The majority of salmon and steelhead in California are listed as either threatened or endangered, and barriers on the SHS further block fish from gaining access to upstream habitat.

SHC § 156.1 requires Caltrans to:

1. Provide an annual list of fish passage priorities for the SHS to the legislature. Fish Passage Annual Reports are available on the Caltrans Legislative Affairs website, and the most recent report is available from: <https://dot.ca.gov/programs/legislative-affairs/reports>.
2. Complete assessments of potential barriers to anadromous fish prior to commencing any transportation project using state or federal transportation funds.
3. Submit assessments to the California Fish Passage Assessment Database.
4. Construct all new transportation projects in a way that does not pose or create a barrier to fish passage.

Figure 2-8. Terrestrial Connectivity

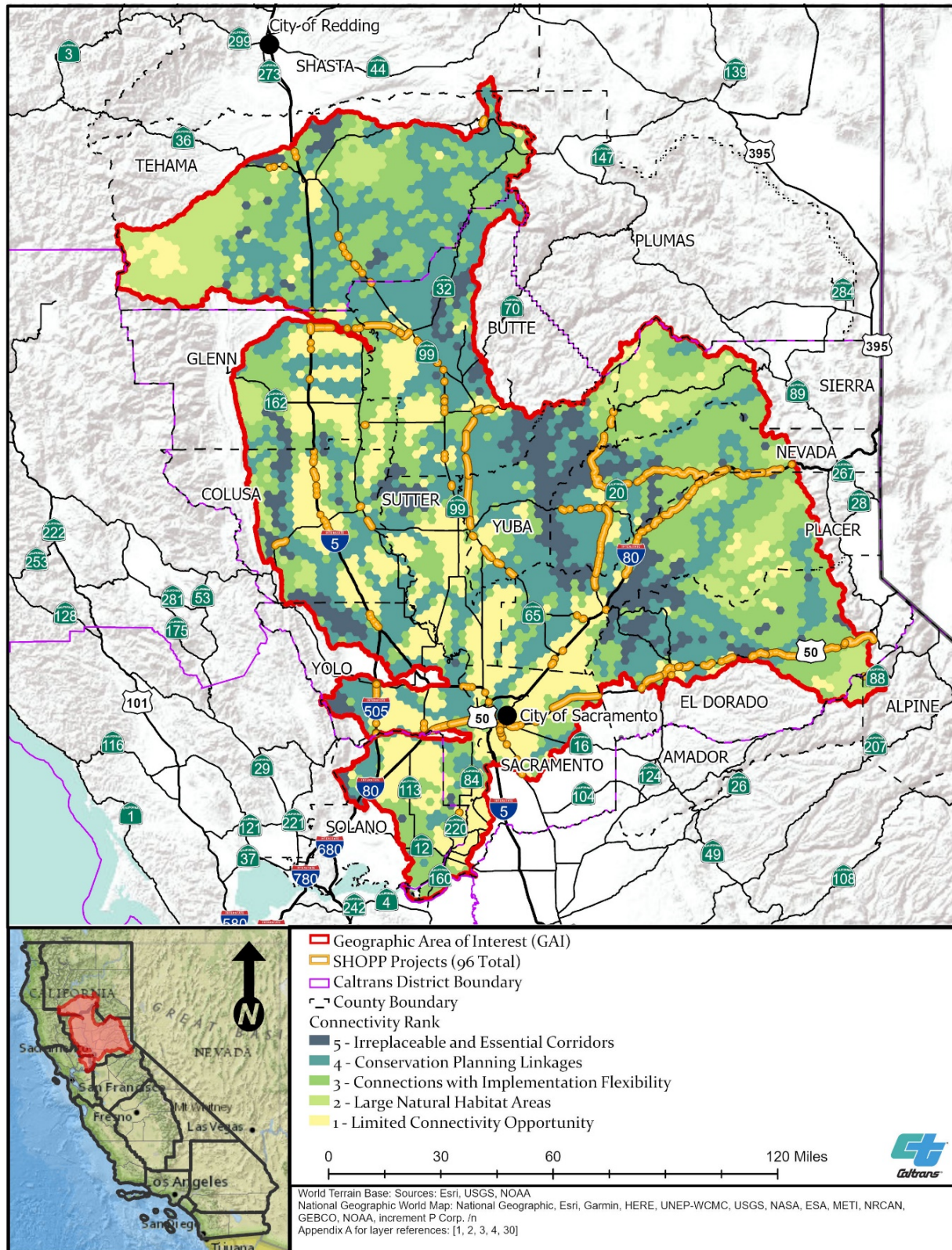
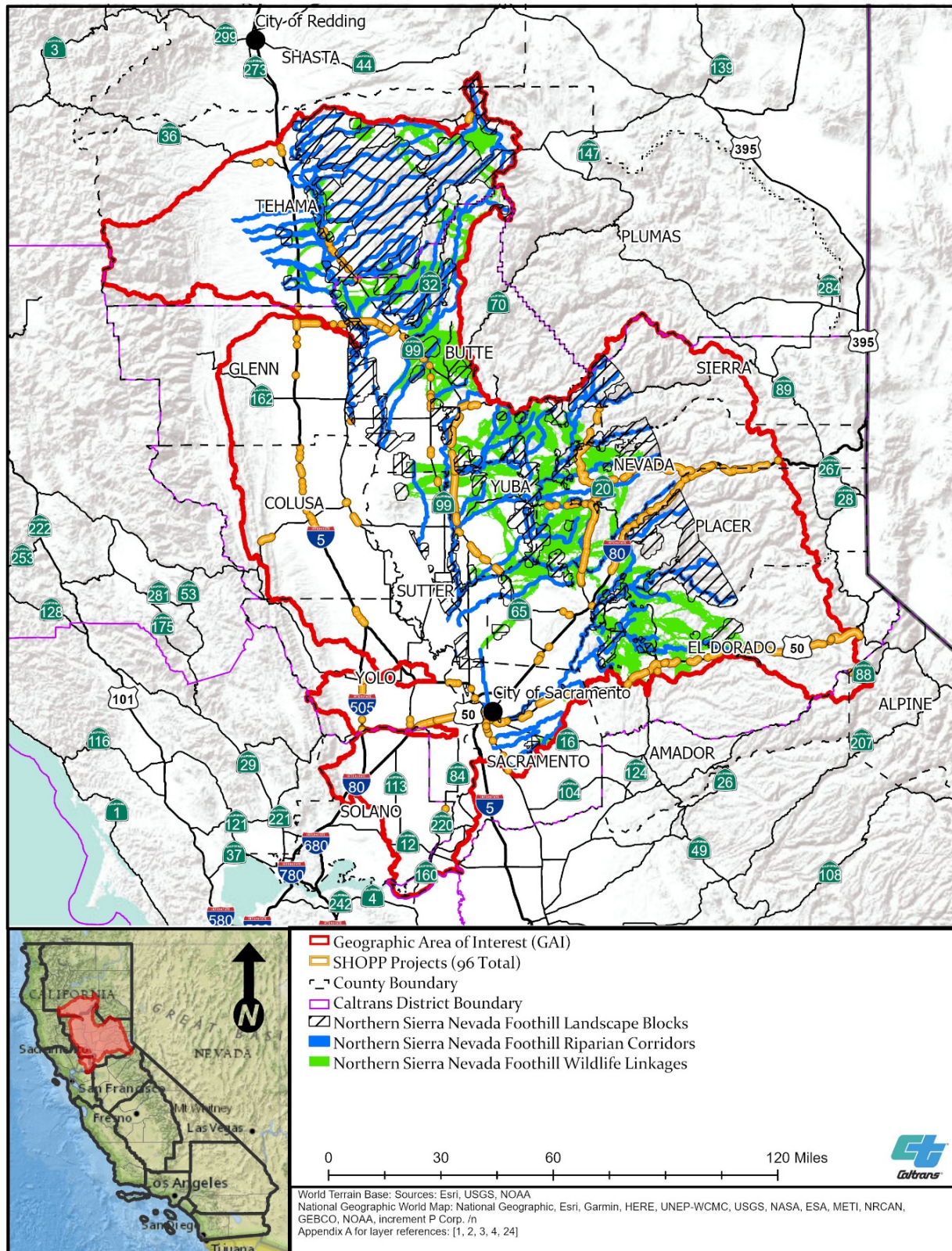


Figure 2-9. Sierra Nevada Foothills Wildlife Connectivity



The CESA and the ESA list 10 ESUs/ DPSs of salmon and steelhead as threatened or endangered. Barriers created by the SHS are known to block access to habitat for each of these species units. CDFW, in coordination with CalTrout, estimates that without increased intervention, to include habitat remediation and restoration, the following species will become extinct in California in the next 40 years:

- Three identified species' units currently listed as state and/or federally endangered: Central California Coast ESU coho salmon, Sacramento River winter-run ESU chinook salmon, and southern California DPS steelhead
- Seven identified species currently listed as state and/or federally threatened: Southern Oregon/Northern California ESU coho salmon, Central Valley spring-run ESU and California Coastal ESU chinook salmon, and Central Valley DPS, Northern California DPS, Central California Coast DPS, and South-Central California Coast DPS steelhead

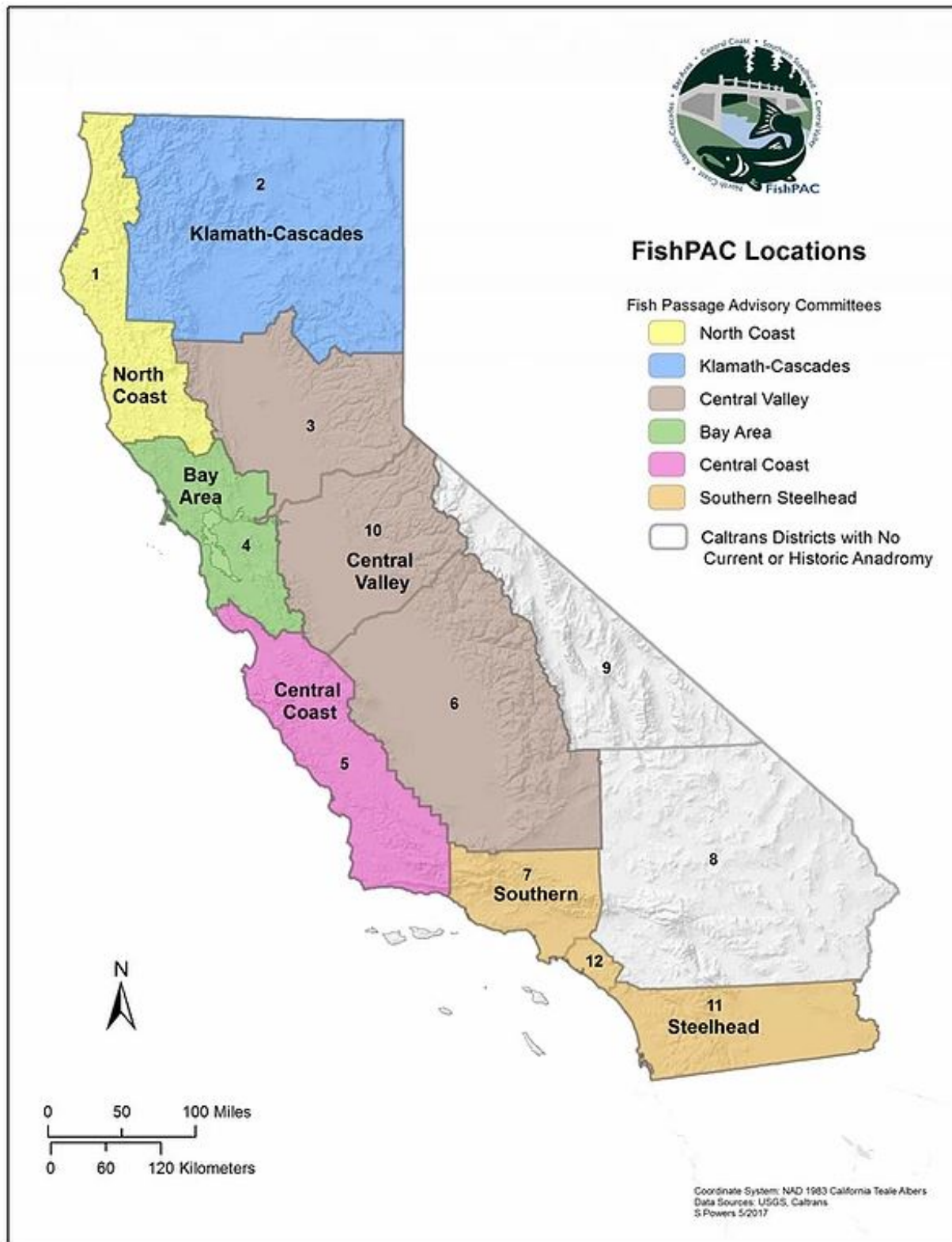
Figure 2-10 depicts the six California Fish Passage Advisory Committee ("FishPAC") locations throughout the state. The FishPAC is a partnership between Caltrans, CalTrout, CCC, CDFW, FWS, NMFS, Pacific States Marine Fisheries Commission, and other local fish passage advocates. The purpose of FishPACs is to cooperatively share science and data related to known fish barriers and to prioritize SHS locations based on high-value habitat recovery.

FishPACs support the implementation of meaningful, long-term fish passage solutions for SHS projects within each FishPAC geographic area. FishPACs recommend technical solutions, explore options for accelerated delivery of transportation projects, and identify potential funding mechanisms for both new barrier removal projects and the long-term maintenance of existing fish passage facilities for the SHS. Stream simulation designs and full-span solutions to fish passage also consider and incorporate benefits for both terrestrial and wildlife species and can also help to address sediment transport, water temperature, dissolved oxygen, and stream erosion issues.

The FishPACs help advance the desired outcomes of legislative guidance included in the SHC and promote collaborative interjurisdictional solutions. Long-term, full-span fish passage solutions are key to enhancing connectivity for both aquatic and terrestrial species in California's watersheds. Providing access to upstream habitats will help ensure fish populations can respond and adapt to climate change stressors, such as drought, wildfire, sea-level rise, changes in stream flow, and water temperature.

The FishPAC network of over 200 fish passage experts, advocates, and partners throughout the range of salmon and steelhead work collaboratively to address legacy transportation barriers with long-term solutions that facilitate both fish passage and climate resilience.

Figure 2-10. California Fish Passage Advisory Committee Locations



The FishPAC helps Caltrans advance the desired outcomes of SHC § 156 (J. Walth, Caltrans, personal communication, 2020). In the 14 years since 2006, in collaboration with FishPAC, statewide, Caltrans has partially or fully remediated 51 barriers on the SHS and identified 556 additional barriers to salmon and steelhead. Results of Caltrans' and FishPAC's efforts to locate, assess, prioritize, and remediate fish passage barriers on the SHS are documented in Fish Passage Annual Reports prepared by Caltrans and submitted to the legislature as required by SHC § 156.1.

As specified above, the FishPAC also provides SHS-related information to the Fish Passage Assessment Database, to be incorporated into its periodic updates.¹ Information regarding verified SHS fish passage barriers is available through the appropriate FishPAC.

2.10 Sub-basins

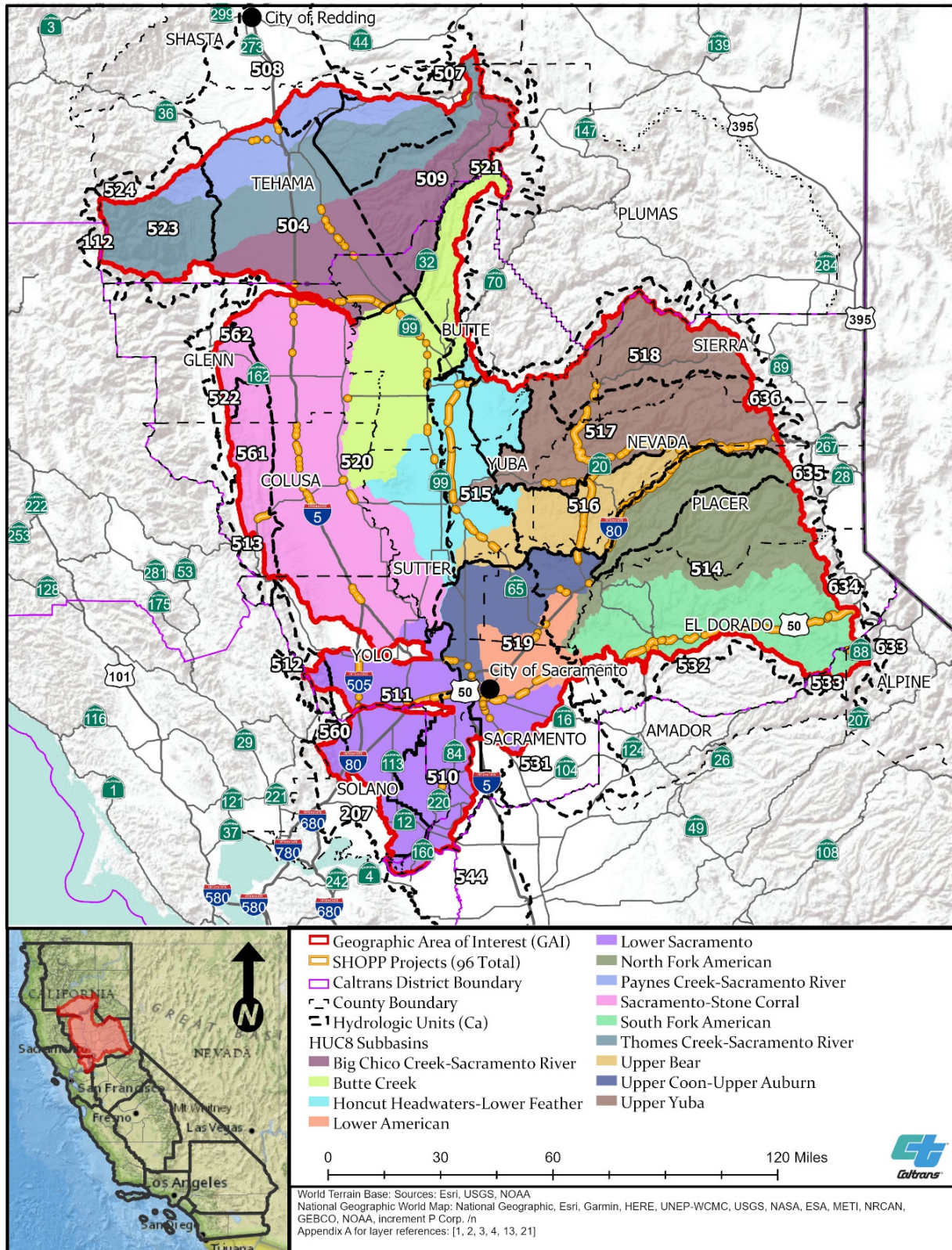
The Watershed Boundary Dataset maps the areal extent of surface water drainage in the U.S. It consists of a hierarchical system of nesting hydrologic units of various scales, each with an assigned HUC that is georeferenced to USGS topographic maps (USGS 2014). Each HUC classification consists of 2 to 12 digits. For example, 6-digit HUCs, or "HUC-6s," map to the basin level; 8-digit HUCs, or "HUC-8s," map to the sub-basin level; and 12-digit HUCs, or "HUC-12s," map to the sub-watershed level.

The SAMNA Reporting Tool expresses the landscape in terms of USGS HUC-8 sub-basins and, hence, information in this RAMNA is also presented by HUC-8 (Caltrans 2021c; USGS 2014). However, the California Department of Water Resources, SWRCB, and the RWQCBs do not necessarily use HUC-8 codes (California Department of Water Resources 2016). SWRCB and the RWQCBs also use the Calwater system (e.g., hydrologic units, or "HUs") for state-level purposes, such as assigning beneficial uses to waters. The Calwater system is a hierarchical system similar to USGS HUCs. Calwater levels begin with the division of the state into ten hydrologic regions. Each hydrologic region is progressively subdivided into five smaller, nested levels: HUs, hydrologic areas, hydrologic sub-areas, super planning watersheds, and planning watersheds.

Appendix D provides a crosswalk between the HUC-8 and HU classification systems for each HUC-8 in the GAI. The GAI overlaps 13 sub-basins that loosely correspond to 30 HUs (Appendix D). Figure 2-11 shows the overlap between sub-basins and state-level HUs in the GAI.

¹ More information about the Fish Passage Assessment Database can be found in CalFish 2018.

Figure 2-11. HUC-8 Sub-basins and HUs



2.11 Hydrology

The 13 sub-basins of the GAI drain an area of 7,188,363 acres (11,232 square miles) (Table 2-9, Figure 2-11). Described individually in Appendix D, these sub-basins include 81,925 rivers and streams that traverse 42,600 miles in the Central Valley RWQCB boundary (Table 2-9). Sub-basin acreages shown in Table 2-9 may include areas outside of the GAI.

Table 2-9. Sub-basins in the GAI

Sub-basin Name	Sub-basin Code (HUC-8)	Drainage Area (acres) ^a	Rivers and Streams (count)	Total Reach Length (miles) ^a
Big Chico Creek-Sacramento River	18020158	609,427	2,093	2,830
Butte Creek	18020158	524,577	2,318	2,406
Honcut Headwaters-Lower Feather	18020159	495,300	1,584	1,724
Lower American	18020111	187,211	321	539
Lower Sacramento	18020163	786,273	7,034	3,824
North Fork American	18020128	648,089	14,627	5,539
Paynes Creek-Sacramento River	18020155	271,113	4,588	1,796
Sacramento-Stone Corral	18020104	1,205,843	5,445	5,583
South Fork American	18020129	543,766	9,824	4,126
Thomes Creek-Sacramento River	18020156	645,690	8,347	4,033
Upper Bear	18020126	303,546	2,250	1,527
Upper Coon-Upper Auburn	18020161	277,772	1,078	1,195
Upper Yuba	18020125	860,756	22,416	7,478
Total		7,359,363	81,925	42,600

Source: California Department of Water Resources

^a Numbers were rounded to the nearest whole number.

2.12 Flood Hazard Areas

As designated by the Federal Emergency Management Agency, a Special Flood Hazard Area is the land area that is covered by the floodwaters of a 100-year base flood (Federal Emergency Management Agency 2020). In accordance with Executive Order 11988, all federally approved projects that encroach into a 100-year base floodplain must try to:

- Avoid support of incompatible floodplain development,
- Minimize the impact of highway actions that adversely affect the base floodplain,

- Restore and preserve natural and beneficial floodplain values, and
- Be consistent with the standards/criteria of the National Flood Insurance Program of the Federal Emergency Management Agency (Caltrans 2015).

Flood hazard areas in the GAI are shown on Figure 2-12. Waterbodies associated with the majority of flood hazard risk in the GAI include the Sacramento River, Feather River, American River, and Colusa Basin Drainage Canal. This information is important for scoping advance mitigation projects and transportation projects undertaken in the GAI, which will need to comply with Executive Order 11988.

2.13 Water Quality

Water quality objectives for surface waters and groundwater in the GAI are provided in the *Water Quality Control Plan for the California Regional Water Quality Control Board Central Valley Region, The Sacramento River Basin and The San Joaquin River Basin* (“Basin Plan”; Central Valley RWQCB 2018). Water quality objectives identified in the Basin Plan can be numerical or narrative. For example, the “chemical constituents” water quality objective for the protection of aquatic life and human health consists of federal water quality criteria for toxic “priority pollutants” under the California Toxics Rule (40 CFR § 131.38) and National Toxics Rule (40 CFR § 131.36). In contrast, the water quality objective for taste and odor is narrative. Undesirable tastes and odors in water are an aesthetic nuisance and can indicate the presence of other pollutants.

Surface water and groundwater beneficial uses are also identified in the Basin Plan (Central Valley RWQCB 2018). If it cannot be avoided, a waterbody’s beneficial uses may be affected by the construction, operation, and maintenance of highways and bridges. Impacts on wildlife and aquatic resources can be adverse or beneficial. An example of an adverse impact would be the introduction of a variety of pollutants, including sediments, heavy metals, hydrocarbons, and toxic substances (EPA 2005). An example of a beneficial impact would be repairs or retrofit that improve permeability or flows. Hence, this RAMNA considers beneficial uses identified for waterbodies located in the GAI relevant to the RAMNA when they support the preservation and enhancement of wildlife habitat and aquatic resources and are consistent with the AMP’s objective to protect natural resources through transportation project mitigation (Table 2-10).

Through habitat and other improvements, advance mitigation projects have the potential to contribute to compliance with the SWRCB CWA Section 303(d) List of Total Maximum Daily Load Priority Schedule. For example, fish passage projects in impaired watersheds that increase road/stream crossing capacity; improve the alignment of the crossing; or implement weirs, baffles, or other grade/velocity control devices at undersized road/stream crossings will improve sediment transport and reduce scour, thereby improving water quality. Similarly, culvert replacement projects that increase flow and capacity would also reduce scour and improve sediment transport, resulting in improved channel function and flow and improved water quality.

Table 2-10. Beneficial Uses in the GAI

Beneficial Use	Central Valley Basin Plan	Relevant to RAMNA? ^a
Agricultural supply	Applicable	No
Cold freshwater habitat	Applicable	Yes
Freshwater replenishment	Applicable	Yes
Hydropower generation	Applicable	No
Industrial process supply	Applicable	No
Industrial service supply	Applicable	No
Municipal and domestic supply	Applicable	No
Navigation	Applicable	No
Non-contact water recreation	Applicable	No
Spawning, reproduction, and/or early development	Applicable	Yes
Warm freshwater habitat	Applicable	Yes
Water contact recreation	Applicable	No
Wildlife habitat	Applicable	Yes

Source: Central Valley RWQCB 2018

^a Beneficial uses are relevant to the RAMNA when they support the preservation and enhancement of wildlife habitat and aquatic resources and are consistent with the AMP's objective to protect natural resources through transportation project mitigation.

The CWA Section 303(d) list of impaired waters includes 109 waterbodies in the GAI (SWRCB 2018). This RAMNA considers a waterbody's CWA Section 303(d) impairment designation as relevant to the RAMNA when it is indicative of a waterbody's loss of a relevant aquatic resource-related beneficial use (Table 2-10). The primary sources of these impairments are rural and agricultural land uses, mining, silvicultural activities, sewage system and septic tank system discharges, and urban runoff. These waterbodies, their impairments, and whether total maximum daily loads have been established are provided in Appendix E. A RWQCB may need to consult with CDFW or other natural resource regulatory agencies to determine whether a beneficial use may be affected by a water quality-related decision.

2.14 Wild and Scenic Rivers

The purpose of the federal Wild and Scenic Rivers Act of 1968 (16 USC Chapter 28) and the state Wild and Scenic Rivers Act of 1972 (Public Resources Code § 5093.50) is to protect and enhance the wild, scenic, and recreational values of designated rivers (National Wild and Scenic Rivers System 2021; Water Education Foundation 2021). Rivers designated under the Wild and Scenic Rivers Act are classified as wild, scenic, or recreational. Wild river areas include rivers or sections of rivers that are free of impoundments, inaccessible except by trail, and have unpolluted waters. Scenic river

areas include rivers or sections of rivers that are free of impoundments, have relatively undeveloped shorelines, and are accessible in some places by roads. Recreational river areas include rivers or sections of rivers that are readily accessible by road or railroad, have some development along shorelines, and may have impoundments or diversions.

The Lower American, North Fork American, Middle Fork Feather, and South Yuba Rivers are nationally and/or state designated wild and scenic rivers in the GAI (National Wild and Scenic Rivers System 2021; Omnibus Public Land Management Act of 2009). The locations of these nationally and/or state designated wild and scenic rivers are provided on Figure 2-13. On October 2, 1968, Congress designated the entire 77.6 miles of the Middle Fork Feather River downstream from the confluence of its tributary streams south of Beckwourth, with 32.9 miles as wild, 9.7 miles as scenic, and 35 miles as recreational (National Wild and Scenic Rivers System 2021). The Lower American and North Fork American Rivers were included in the state wild and scenic river system in 1972 when the state Act was passed (California Wilderness Coalition 2020a, 2020b). On November 10, 1978, Congress designated 38.3 miles of the North Fork American River from 0.3 mile above Heath Springs downstream to a point 1,000 feet upstream of the Colfax-Iowa Hill Bridge as wild. On January 19, 1981, Congress designated 23 miles of the Lower American River from the Nimbus Dam to its junction with the Sacramento River as recreational (National Wild and Scenic Rivers System 2021). In 1999, the California legislature added 39 miles of the South Yuba River from Lang's crossing downstream of Spaulding Dam to Englebright Reservoir to the state wild and scenic rivers system (California Wilderness Coalition 2020c). The South Yuba River is not a nationally designated wild and scenic river.

2.15 Aquatic Resources

A high-level view of major aquatic resources in the GAI is provided on Figure 2-14, and detailed maps of aquatic resources are provided in Appendix F. For the purposes of advance mitigation planning, aquatic resources in the GAI include fish, wetlands, and non-wetland waters that may be subject to CCC, Corps, EPA, RWQCB, and/or CDFW regulations, as well as special-status fish managed by CDFW, FWS, or NMFS. The CCC regulates impacts on coastal wetlands and marine and aquatic resources, and these resources receive special protections under Coastal Act Section 30230 et seq. Corps and EPA jurisdiction includes any activity that may cause a discharge of dredged or fill material into waters of the U.S. ("WOTUS"), including wetlands. Corps jurisdiction also includes any work or structure affecting navigable waters of the U.S., pursuant to Section 10 of the Rivers and Harbors Act and 33 CFR § 329, respectively. RWQCB jurisdiction includes any activity that may cause a discharge of waste to waters of the state, including wetlands.

Figure 2-13. Wild and Scenic Rivers in the GAI

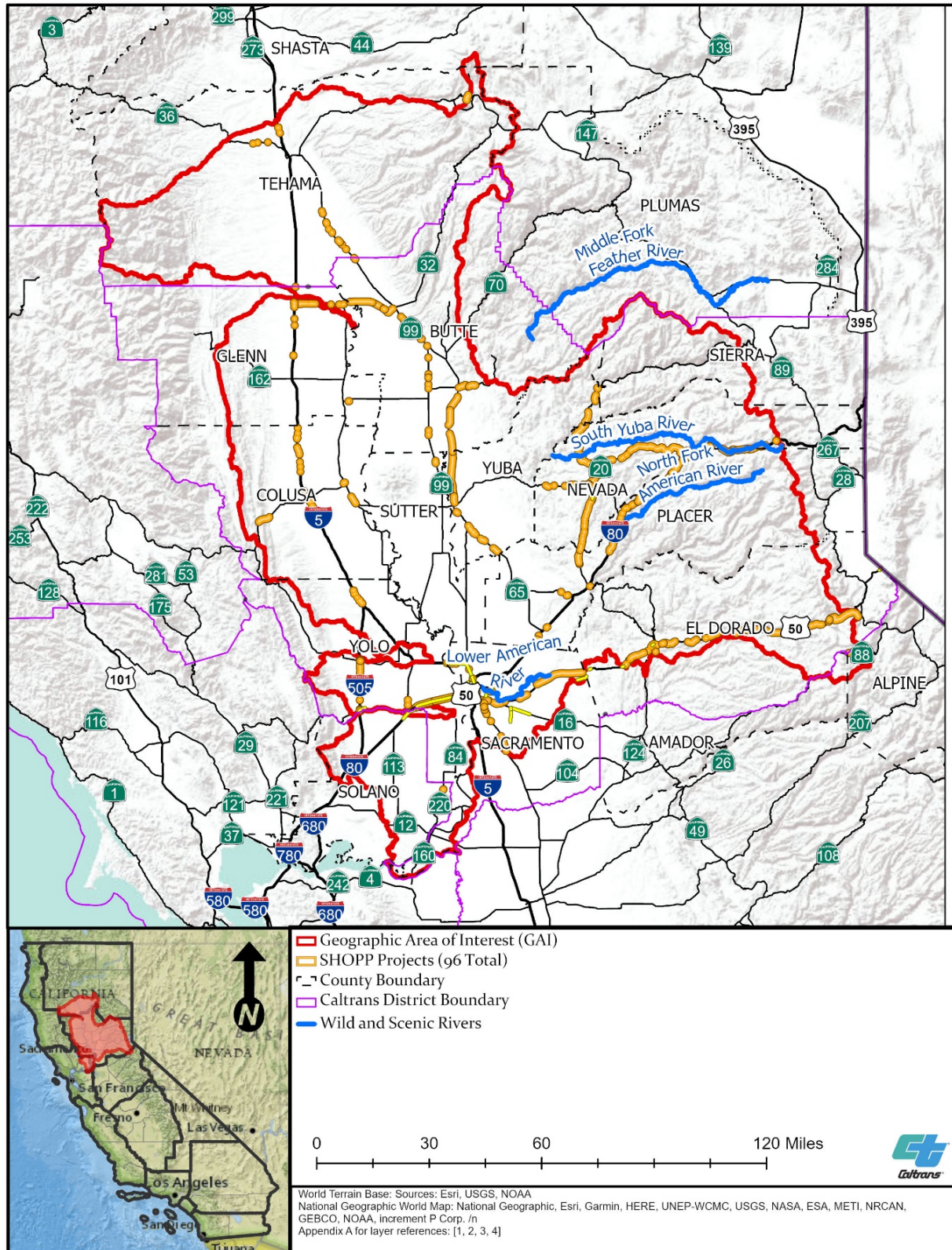
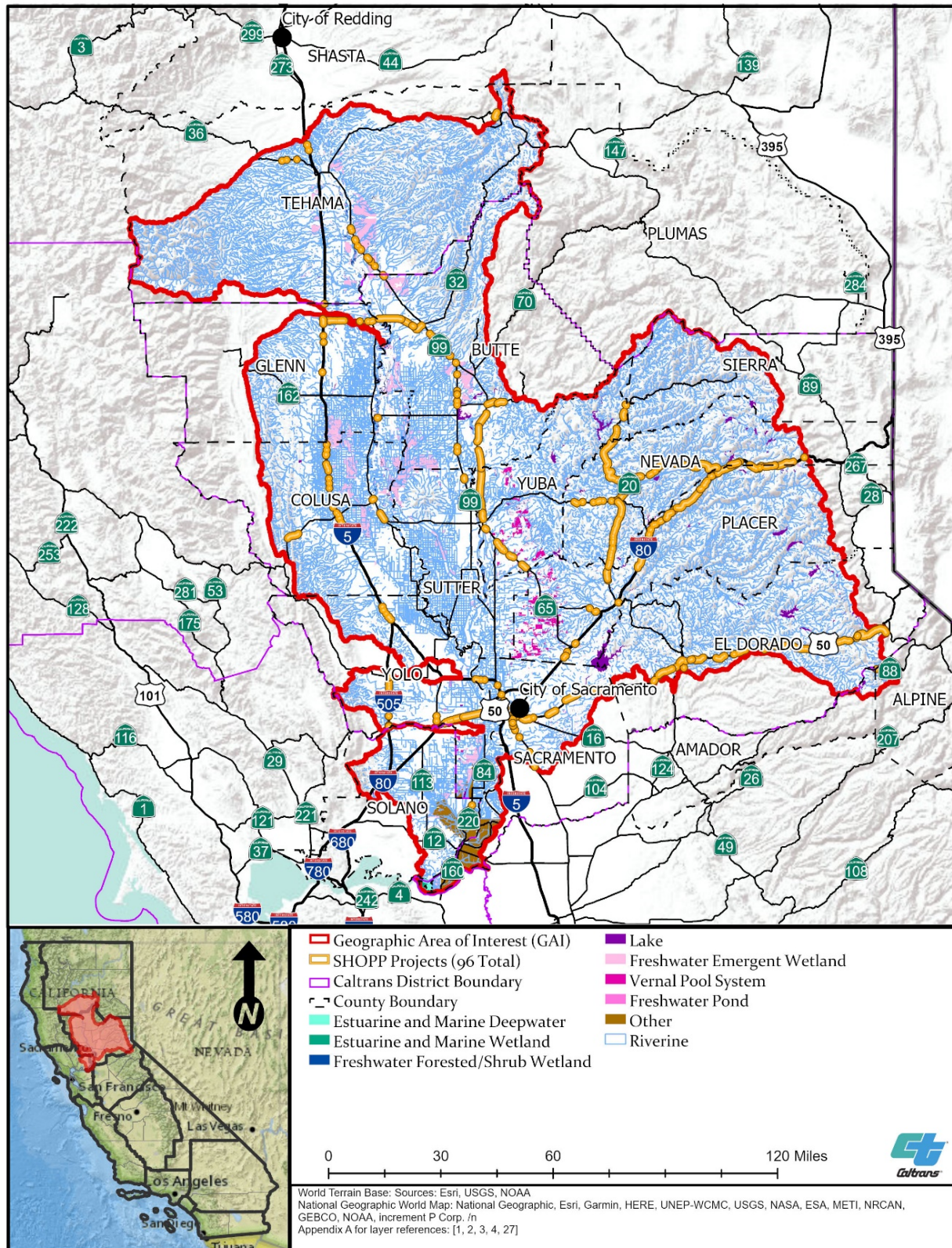


Figure 2-14. Aquatic Resource Features and Major Stream Systems^a



^a For greater detail, see Appendix F.

CDFW regulates any activity that may divert or obstruct the natural flow of a river, stream, or lake; change the bed, channel, or bank of any river, stream, or lake; use material from any river, stream, or lake;² and deposit or dispose of material into any river, stream, or lake. Effects on aquatic resources that extend to the outer limits of the riparian dripline, the outer limits of the floodplain of the aquatic resource, the top-of-bank on streams/rivers, or normal pool elevation on lakes may also be regulated by CDFW.

2.15.1. Historical Context

Historically, watercourses in the GAI flowed across natural floodplains to the Sacramento-San Joaquin River Delta and San Francisco Bay. Major rivers in the GAI, including the Sacramento, American, and Feather Rivers, were bordered by riparian forest and valley oak woodland on the higher terraces, with seasonal marshlands in surrounding low-lying areas. Over the past 150 years, the natural morphology and hydrology of rivers has been altered by urbanization, agricultural development, levee construction, channelization, and hydraulic mining. These activities led to increased sediment deposition, erosion, flood risk, and water pollution, including mercury contamination. In addition, they have resulted in the loss of almost 95 percent of riparian habitat in the region (Sacramento River Watershed Program 2021).

2.15.2. Threatened and Endangered Fish Species

Special-status terrestrial species are discussed in Section 2.8. Threatened and endangered fish species known to occur or with the potential to occur in the GAI were extracted from the SAMNA Reporting Tool's fish habitat layer, which was developed using the USGS National Hydrography Dataset and other information (Caltrans 2018, 2021g). Based on a search of the fish habitat layer, seven federally or state listed threatened or endangered fish species are known to occur or have the potential to occur in the GAI that are anticipated to be affected:

- federally and state endangered Sacramento River winter-run ESU Chinook salmon
- federally and state threatened Central Valley spring-run ESU Chinook salmon
- federally threatened and state endangered Delta smelt
- federally threatened Southern DPS green sturgeon
- federally threatened Lahontan cutthroat trout³
- federal candidate for listing and state threatened longfin smelt
- federally threatened Central Valley DPS steelhead

As described previously in Section 2.8, the GAI includes FWS- and NMFS-designated final critical habitat for Central Valley spring-run ESU Chinook salmon, Central Valley DPS steelhead, and Delta smelt. The American, Bear, Feather, Sacramento, and Yuba Rivers and the Butte, Dry, and Thomes Creeks support salmon and/or steelhead (National Oceanic and Atmospheric Administration ["NOAA"] Fisheries 2020).

² Rivers, streams, and lakes include ephemeral, intermittent, and perennial watercourses.

³ While this species shows up in SAMNA results for this District, it does not occur within the GAI.

2.15.3. Wetlands

Wetland resources information for the GAI was extracted from the SAMNA Reporting Tool, which relies on the FWS National Wetlands Inventory maps (FWS 2017b), and data from the San Francisco Estuary Institute (2018) California Aquatic Resource Inventory (Table 2-11, Appendix F; Caltrans 2021e). These data were used to estimate the extent of wetlands in the GAI; however, the data layers are largely based on aerial imagery, have not been ground-truthed, provide no information on plant species associated with mapped areas, and, hence, are relatively coarse. Although suitable for advance mitigation project scoping, site-specific wetland studies that result in more detailed mapping and classification of wetlands would be required for advance mitigation projects to establish compensatory mitigation credits.

Aquatic resource types outlined here follow the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979). The SAMNA Reporting Tool wetlands data layer is separate from the land cover types discussed previously in Section 2.5; therefore, total acreages of wetland land cover types presented in Table 2-3 may not align with those presented in Table 2-11 (Caltrans 2021e).

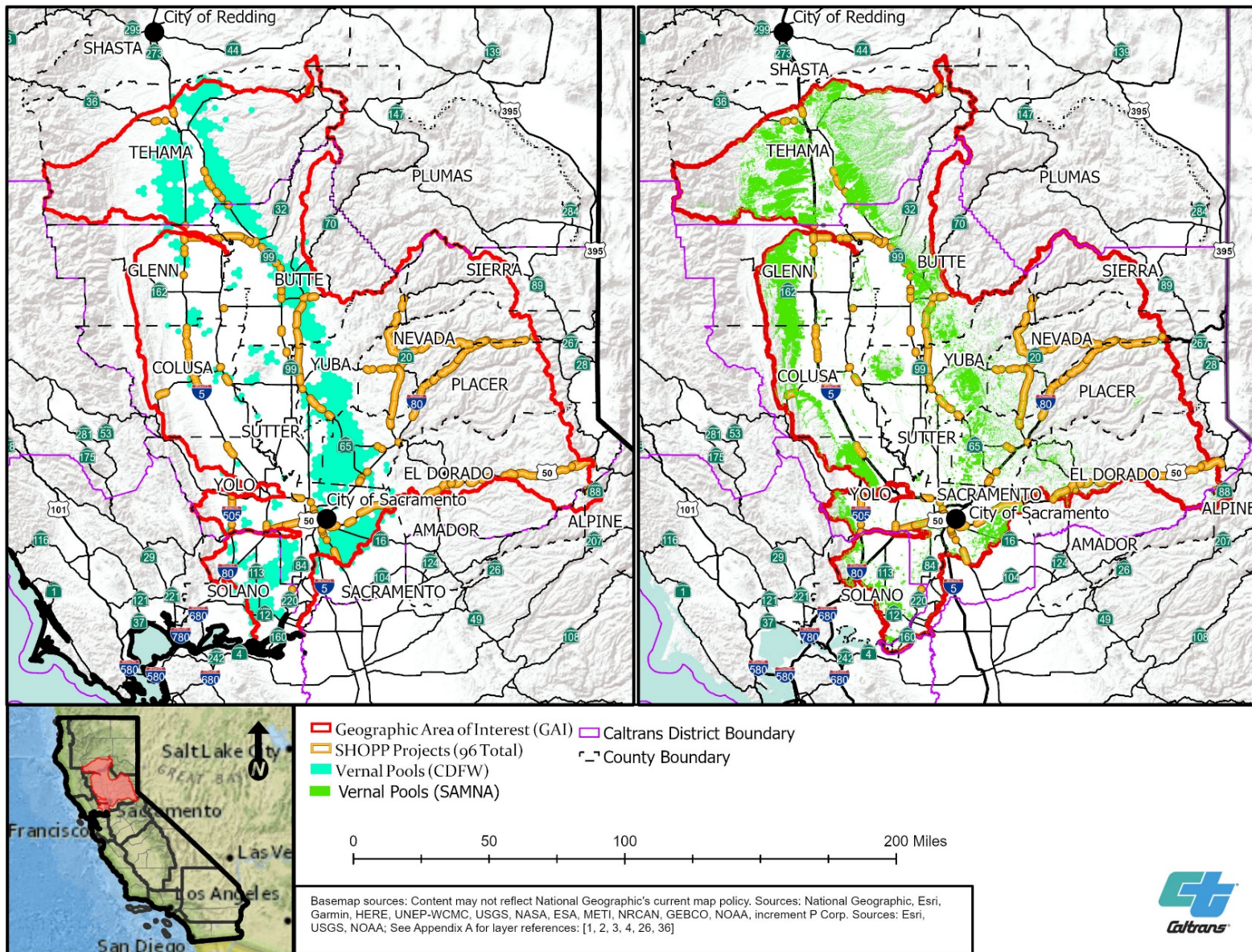
Vernal Pools

Vernal pools greater than 1 acre are mapped on Figure 2-15. While such pools are an important wetland resource in the GAI, the SAMNA Reporting Tool's wetland layer does not include vernal pools. In this case, vernal pool habitats can be inferred by proxy using species information. For example, designated critical habitat for vernal pool tadpole shrimp, vernal pool fairy shrimp, and Conservancy fairy shrimp is shown on Figure 2-7. Further, the SAMNA Reporting Tool's species-attributed vegetation data layer described in Section 2.8 includes habitat for vernal pool tadpole shrimp, vernal pool fairy shrimp, and Conservancy fairy shrimp (Appendix C) that would be indicative of vernal pools. Vernal pools mapped using CDFW's vernal pools ACE dataset [ds2738] are shown on the left side of Figure 2-15, and the California Natural Diversity Database occurrence of vernal pool invertebrate species and a 4-mile buffer mapped with the SAMNA Reporting Tool are shown on the right side of Figure 2-15.

2.15.4. Non-wetland Waters

Other, non-wetland water resources information for the GAI was extracted from the SAMNA Reporting Tool, which relies on the USGS National Hydrography Dataset (Table 2-12, Appendix F; Caltrans 2021f). Although suitable for advance mitigation project scoping, site-specific studies that result in more detailed mapping and classification of other, non-wetland aquatic resources would be required for advance mitigation projects to establish compensatory mitigation credits. Similar to the wetlands data, the waters data layer is separate from the land cover types discussed previously in Section 2.5; therefore, total acreages of water land cover types presented in Table 2-3 may not align with those presented in Table 2-12 (Caltrans 2021f).

Figure 2-15. Vernal Pools in the GAI



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Table 2-11. Wetland Types in the GAI

Type	Big Chico Creek- Sacramento River 18020157	Butte Creek 18020158	Honcut Headwaters- Lower Feather 18020159	Lower American 18020111	Lower Sacramento 18020163	North Fork American 18020128	Paynes Creek- Sacramento River 18020155	Sacramento- Stone Corral 18020104	South Fork American 18020129	Thomes Creek- Sacramento River 18020156	Upper Bear 18020126	Upper Coon- Upper Auburn 18020161	Upper Yuba 18020125	Total
Depressional	Not mapped	958.7	6,545.6	779.8	8,364.2	183.1	Not mapped	5,784.2	343.2	Not mapped	2,059.5	3,541.1	380.2	28,939.6
Depressional Forested	Not mapped	48.3	51.7	<0.01	20.4	<0.01	Not mapped	17.0	0.3	Not mapped	9.2	1.4	<0.01	148.3
Depressional Natural	Not mapped	1.4	533.9	220.5	3,409.5	62.6	Not mapped	51.2	13.0	Not mapped	199.9	305.5	261.7	5,059.3
Depressional Natural Non- vegetated	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	0.6	Not mapped	Not mapped	0.4	Not mapped	Not mapped	Not mapped	Not mapped	1.0
Depressional Natural Vegetated	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	0.6	Not mapped	Not mapped	0.04	Not mapped	Not mapped	Not mapped	Not mapped	0.6
Depressional Perennial	Not mapped	246.9	169.2	2.1	6.7	2.3	Not mapped	132.0	1.6	Not mapped	4.9	Not mapped	8.0	573.7
Depressional Perennial Natural Emergent	2.8	7.5	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	<0.01	<0.01	4.5	Not mapped	Not mapped	<0.01	14.9
Depressional Perennial Natural Non-Vegetated	6.2	17.5	0.5	Not mapped	Not mapped	Not mapped	Not mapped	9.0	Not mapped	7.4	Not mapped	Not mapped	<0.01	40.5
Depressional Perennial Natural Vegetated	0.1	9.5	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	4.7	Not mapped	<0.01	<0.01	Not mapped	<0.01	14.3
Depressional Perennial Non- vegetated	42.1	11.7	62.0	Not mapped	Not mapped	Not mapped	143.2	12.7	Not mapped	68.0	749.1	Not mapped	362.9	1,451.8
Depressional Perennial Unnatural	Not mapped	Not mapped	Not mapped	59.5	Not mapped	2.6	Not mapped	Not mapped	Not mapped	Not mapped	66.5	283.6	Not mapped	412.2
Depressional Perennial Unnatural Emergent	<0.01	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	4.2	Not mapped	1.0	<0.01	Not mapped	Not mapped	5.2
Depressional Perennial Unnatural Non-vegetated	64.3	80.4	7.8	Not mapped	Not mapped	Not mapped	18.5	72.7	Not mapped	78.0	<0.01	Not mapped	<0.01	321.7
Depressional Perennial Unnatural Vegetated	1.8	20.2	<0.01	Not mapped	Not mapped	Not mapped	<0.01	26.1	Not mapped	10.5	Not mapped	Not mapped	<0.01	58.7

Type	Big Chico Creek- Sacramento River 18020157	Butte Creek 18020158	Honcut Headwaters- Lower Feather 18020159	Lower American 18020111	Lower Sacramento 18020163	North Fork American 18020128	Paynes Creek- Sacramento River 18020155	Sacramento- Stone Corral 18020104	South Fork American 18020129	Thomes Creek- Sacramento River 18020156	Upper Bear 18020126	Upper Coon- Upper Auburn 18020161	Upper Yuba 18020125	Total
Depressional Restoration	Not mapped	Not mapped	Not mapped	Not mapped	19.3	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	19.3
Depressional Seasonal	25.0	2.4	50.3	93.0	651.5	4.0	13.6	7.1	Not mapped	22.8	35.0	358.4	1.9	1,264.9
Depressional Seasonal Natural Emergent	151.5	819.2	0.4	Not mapped	Not mapped	Not mapped	0.5	396.1	0.7	453.4	<0.01	Not mapped	<0.01	1,821.7
Depressional Seasonal Natural Forested	429.0	158.8	0.1	Not mapped	Not mapped	Not mapped	14.7	179.8	Not mapped	175.5	<0.01	Not mapped	<0.01	957.8
Depressional Seasonal Natural Non-Vegetated	3.2	9.0	Not mapped	Not mapped	Not mapped	Not mapped	0.4	3.6	Not mapped	0.7	Not mapped	Not mapped	Not mapped	16.8
Depressional Seasonal Natural Shrub-Scrub	60.2	50.7	0.1	Not mapped	Not mapped	Not mapped	15.5	28.8	3.0	27.2	<0.01	Not mapped	0.1	185.5
Depressional Seasonal Unnatural Emergent	36.9	994.7	11.8	Not mapped	Not mapped	Not mapped	<0.01	1,662.3	Not mapped	3.5	<0.01	Not mapped	<0.01	2,709.2
Depressional Seasonal Unnatural Forested	4.2	111.6	0.4	Not mapped	Not mapped	Not mapped	Not mapped	10.8	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	127.1
Depressional Seasonal Unnatural Non-vegetated	0.01	1.2	Not mapped	Not mapped	Not mapped	Not mapped	13.6	4.5	Not mapped	4.9	<0.01	Not mapped	Not mapped	10.6
Depressional Seasonal Unnatural Shrub-Scrub	4.3	8.2	0.1	Not mapped	Not mapped	Not mapped	<0.01	5.3	Not mapped	0.6	<0.01	Not mapped	<0.01	18.5
Depressional Unnatural	Not mapped	Not mapped	0.9	24.2	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	28.4	Not mapped	53.5
Depressional Unnatural Non- vegetated	6.4	13.6	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	23.2	Not mapped	0.1	Not mapped	Not mapped	Not mapped	43.3
Depressional Unnatural Shrub- Scrub	Not mapped	0.2	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	0.2
Estuarine and Marine Deepwater	Not mapped	Not mapped	Not mapped	Not mapped	2,980.0	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	2,980.0

Type	Big Chico Creek- Sacramento River 18020157	Butte Creek 18020158	Honcut Headwaters- Lower Feather 18020159	Lower American 18020111	Lower Sacramento 18020163	North Fork American 18020128	Paynes Creek- Sacramento River 18020155	Sacramento- Stone Corral 18020104	South Fork American 18020129	Thomes Creek- Sacramento River 18020156	Upper Bear 18020126	Upper Coon- Upper Auburn 18020161	Upper Yuba 18020125	Total
Estuarine and Marine Wetland	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	14.0	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	2,107.3
Freshwater Emergent Wetland	36,201.9	53,618.6	6,301.8	892.8	15,891.2	1,035.7	1,010.9	39,320.2	1,823.4	17,948.1	1,368.3	Not mapped	2,081.3	179,461.8
Freshwater Forested/Shrub Wetland	7,475.1	6,780.9	5,407.3	1,321.9	1,284.7	3,962.7	1,326.4	10,085.4	3,002.6	5,572.1	1,598.9	1,967.6	5,481.8	54,141.5
Individual Vernal Pool	700.1	Not mapped	4,690.6	200.7	1,189.8	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	296.6	841.5	Not mapped	6,777.6
Other	Not mapped	Not mapped	Not mapped	Not mapped	37,429.7	1.2	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	37,430.9
Slope	Not mapped	Not mapped	60.3	1.0	0.5	5.4	Not mapped	0.1	2.1	Not mapped	24.3	0.4	Not mapped	94.9
Slope Natural	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	1.7	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	1.7
Slope Natural Forested	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	4.0	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	4.0
Slope Natural Wet Meadow Herbaceous	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	3.9	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	3.9
Vernal Pool System	Not mapped	Not mapped	5,728.9	2,916.5	271.0	Not mapped	Not mapped	0.1	Not mapped	Not mapped	4,976.7	14,888.4	335.1	29,116.6
Total ^a	44,515	63,971	29,624	6,512	73,612	5,270	2,544	57,855	5,190	24,378	11,389	22,616	8,914	356,391

Source: Caltrans (2021e)
^a Rounded to the nearest whole number.

Table 2-12. Non-Wetland Types in the GAI

Type	Big Chico Creek- Sacramento River 18020157	Butte Creek 18020158	Honcut Headwaters- Lower Feather 18020159	Lower American 18020111	Lower Sacramento 18020163	North Fork American 18020128	Paynes Creek- Sacramento River 18020155	Sacramento- Stone Corral 18020104	South Fork American 18020129	Thomes Creek- Sacramento River 18020156	Upper Bear 18020126	Upper Coon- Upper Auburn 18020161	Upper Yuba 18020125	Total
Freshwater Pond	700.1	875.9	1,307.8	958.1	2,109.9	713.3	399.5	1,838.8	1,076.2	688.2	871.7	1,003.8	1,403.9	13,947.1
Lacustrine	Not mapped	10.2	1,163.7	230.5	314.2	732.8	Not mapped	59.5	606.4	Not mapped	Not mapped	Not mapped	<0.01	4,327.0
Lacustrine Natural Non-vegetated	0.2	1.4	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	3.3	<0.01	Not mapped	Not mapped	Not mapped	<0.01	4.9
Lacustrine Natural Vegetated	0.03	1.0	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	7.1	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	8.1
Lacustrine Unnatural	Not mapped	Not mapped	19.3	29.3	49.8	0.3	Not mapped	6.4	Not mapped	Not mapped	7.0	23.5	0.2	135.7
Lacustrine Unnatural Non-vegetated	<0.01	12.2	3.8	Not mapped	Not mapped	Not mapped	Not mapped	11.5	Not mapped	Not mapped	<0.01	Not mapped	<0.01	27.5
Lake	128.9	659.5	3,915.6	579.8	1,346.5	11,993.5	49.5	507.2	10,737.8	32.4	2,630.0	186.6	12,696.1	45,463.3
Riverine	7,522.7	6,021.1	8,506.0	1,884.8	11,305.4	6,540.5	3,262.8	20,679.6	4,456.7	8,881.5	3,351.7	3,458.8	8,451.1	94,322.5
Riverine Tidal Low Gradient	Not mapped	Not mapped	Not mapped	Not mapped	0.6	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	Not mapped	0.6
Riverine Unnatural	Not mapped	36.8	224.2	7.3	106.1	0.9	Not mapped	46.8	0.8	Not mapped	13.2	88.8	Not mapped	524.8
Total ^a	8,352	7,618	15,140	3,690	15,232	19,981	3,712	23,160	16,878	9,602	7,120	5,030	23,246	158,761

Source: Caltrans (2021f)
^a Rounded to the nearest whole number.

3. RELEVANT PLANS, POLICIES, AND REGULATIONS

This chapter summarizes the references applicable to the GAI that, when relevant, Caltrans will consult when conceptualizing advance mitigation projects. The table is organized by subject: laws and regulations, statewide and regional resource management plans, plans and permits focused on the species of mitigation need, resource agency land management plans (separated by agency), water resources plans and documents, county and city general plans, and other organization conservation and management documents. HCPs, NCCPs, and RCIS documents are discussed separately in Chapter 4 because they represent or support current compensatory mitigation credit purchase opportunities for Caltrans. Table 3-1 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 of relevant documents, policies, and regulations in Table 3-1 is not exhaustive. Additional relevant resources may be consulted by Caltrans as advance mitigation planning is conceptualized. When conducting advance mitigation project scoping, Caltrans will check to determine whether it has the most up-to-date version of a particular reference.

3.1 Relationship to Goals and Objectives

As pointed out in Chapter 1, the GAI for this RAMNA was selected by Caltrans District 3 based on the SAMNA results and other information. Caltrans District 3 specifically identified compensatory mitigation for the California red-legged frog, Central Valley spring-run and Sacramento River winter-run ESUs of Chinook salmon, delta smelt, foothill yellow-legged frog, giant garter snake, Southern DPS green sturgeon, longfin smelt,

riparian habitat, Central Valley DPS steelhead, Swainson's hawk, valley elderberry longhorn beetle, and aquatic resources as historical and anticipated mitigation needs. Hence, Table 3-1 emphasizes documents related to the specified wildlife and aquatic resources, which, in turn, form the basis for the goals and objectives presented in Chapters 7 and 8. As much as practicable, however, Caltrans intends for any compensatory mitigation established in the GAI to support these specific wildlife and aquatic resources to benefit other wildlife and aquatic resources as well.

Table 3-1. Comprehensive Plans, Agreements, Resource Management Plans, Policies, and Regulations Relevant to the GAI

Title	Status	Spatial Data	Reference Purpose	Link	Date
State Laws, Guidelines, and Regulations	See below	See below	See below	See below	See below
Barriers to Fish Passage SHC § 156	Final	No	<p>Article 3.5 of Chapter 1 of Division 1 of the SHC, also known as Senate Bill 857 (Kuehl, Chapter 589 and Statute of 2005), prohibits new construction or continued maintenance upgrades of SHS facilities to prevent or impede the passage of salmon and steelhead, the majority of which are listed as either threatened or endangered in California, and requires Caltrans to do the following:</p> <ul style="list-style-type: none"> • Provide an annual list of fish passage priorities for the SHS to the legislature. • Complete assessments of potential barriers to anadromous fish prior to commencing any transportation project using state or federal transportation funds. • Submit assessments to the Fish Passage Assessment Database. • Construct all new transportation projects in a way that does not pose or create a barrier to fish passage. <p>Caltrans collaborates with the FishPAC to identify passage priority locations for the SHS. The FishPAC is a partnership between CDFW, NMFS, FWS, CCC, CalTrout, Pacific States Marine Fisheries Commission, other local fish passage advocates, and Caltrans.</p>	https://leginfo.ca.gov/faces/codes_displaySection.xhtml?sectionNum=156.&lawCode=SHC	1/1/2006 (effective date)
California Fish and Game Commission Wetlands Resources Policy	Updated periodically	No	California Fish and Game Commissions policy to seek to provide for the protection, preservation, restoration, enhancement, and expansion of wetland habitat in California.	https://fgc.ca.gov/About/Policies/Miscellaneous#Wetlands	8/18/2005 (last amended)
California Water Boards 2010 Update to Strategic Plan 2008–2012	Final	No	Update to strategic plan from the SWRCB and RWQCBs. Goals include implementing strategies to fully support beneficial uses for all water bodies listed in the 2006 report, improve and protect groundwater quality, increase sustainable local water supplies available for meeting beneficial uses by 1,725,000 acre-feet per year, comprehensively address water quality protection and restoration, improve transparency and accountability within the Water Boards, enhance consistency across the Water Boards, and ensure that the Water Boards have access to information and expertise.	https://www.waterboards.ca.gov/water_issues/hot_topics/strategic_plan/docs/2010/final_strategic_plan_update_report_062310.pdf	6/1/2010
Caltrans Fish Passage Annual Legislative Report	Final	No	<p>Report identifies priority fish passage barriers on the SHS. Priorities are determined through FishPAC collaboration and are based on the following:</p> <ul style="list-style-type: none"> • Species diversity – listed threatened and endangered salmon and steelhead species currently or historically present in the watershed; • Habitat – Suitable habitat quality and quantity above each crossing, relative to recovery of threatened and endangered species; and • Best professional knowledge – Professional, discretionary value for science-based information known to fisheries and engineering subject matter experts. <p>Subject matter experts include CDFW, NMFS, FWS, CCC, CalTrout, Pacific States Marine Fisheries Commission, other local fish passage advocates, and Caltrans.</p>	https://dot.ca.gov/programs/legislative-affairs/reports	10/1/2019 (most recent)
CESA	Updated periodically (by California legislature)	No	CESA prohibits the take of any species of wildlife designated by the California Fish and Game Commission as an endangered, threatened, or candidate species. CDFW may authorize the take of any such species by permit if the conditions set forth in Fish and Game Code § 2081, subdivisions (b) and (c), are met. (See California Code of Regulations, Title 14, § 783.4).	https://www.wildlife.ca.gov/Conservation/CESA	9/10/2018 (last amended)
Executive Order W-59-93	Final	No	Governor of California's directive for a no net loss policy on the quantity, quality, and permanence of wetland acreages and values.	https://www.waterboards.ca.gov/water_issues/programs/cwa401/docs/wrapp2008/executive_order_w59_93.pdf	8/23/1993

Title	Status	Spatial Data	Reference Purpose	Link	Date
Native Plant Protection Act	Final	No	Enacted in 1977, the Act allows the California Fish and Game Commission to designate plants as rare or endangered. There are 64 species, subspecies, and varieties of plants that are protected as rare under the Native Plant Protection Act. The Act prohibits take of endangered or rare native plants, but includes some exceptions for agricultural and nursery operations and emergencies, and after properly notifying CDFW for vegetation removal from canals, roads, and other sites; changes in land use; and in certain other situations.	https://leginfo.ca.gov/faces/codes_disp layText.xhtml?division=2.&chapter=10.&lawCode =FGC	1/1/1977
Porter-Cologne Water Quality Control Act	Updated periodically (by California legislature)	No	Law that governs water quality in California, establishing the nine RWQCBs and their jurisdiction to protect California's surface water and groundwater through water quality objectives and the beneficial uses of water as outlined in a project's waste discharge requirements.	https://www.waterboards.ca.gov/laws_regulations/docs/portercologne.pdf	1/1/2019 (last amended)
State Board Resolution No. 68-16	Final	No	Policy for maintaining high water quality.	https://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/1968/rs68_016.pdf	10/28/1968
State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State	Final	No	Implemented by the SWRCB. Creates a State of California wetland definition, a framework for determining jurisdiction of state wetlands, wetland delineation procedures, and application procedures for discharges of dredge and fill material to waters of the state.	https://www.waterboards.ca.gov/water_issues/programs/cwa401/wrapp.html	5/28/2020 (effective date)
Streambed Alteration Program FGC § 1602	Updated periodically (by California legislature)	No	Implemented by CDFW. Regulates activities that may substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake. CDFW jurisdiction extends to top-of-bank of the outer extent of riparian habitat, if present.	https://www.wildlife.ca.gov/conservation/lsa	6/27/2017 (last amended)
Water Quality Control Plan for the Central Valley Region	Updated periodically	Yes	Implemented by Central Valley Basin RWQCB. Establishes general and site-specific water quality standards and objectives in the Sacramento River Basin.	https://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/#basinplans	5/24/2018 (last revision)
Federal Laws, Guidelines, and Regulations	See below	See below	See below	See below	See below
2008 Final Compensatory Mitigation Rule	Final	No	Corps' ruling to establish standards and criteria for the use of all types of compensatory mitigation, including on- and off-site permittee-responsible mitigation, mitigation banks, and in-lieu fee mitigation to offset unavoidable impacts on WOTUS.	https://www.govinfo.gov/content/pkg/CFR-2012-title33-vol3/xml/CFR-2012-title33-vol3-part332.xml	7/9/2008
303(d) List of Impaired Water Bodies	Updated periodically	No	EPA and the SWRCB's listing of regulated impaired water bodies.	https://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2014_2016.shtml	4/11/2018 (last updated)
40 CFR § 131.12 California Antidegradation Policy	Final	No	Implemented by the SWRCB. Required by federal law, the Antidegradation Policy applies to the disposal of waste to high-quality surface water and groundwater.	https://www.waterboards.ca.gov/plans_policies/antidegradation.html	8/21/2015 (last amended)
Corps Regulatory Guidance Letter 18-01	Final	No	Corps' guidance document on determining compensatory mitigation credits for the removal of obsolete dams and other structures from rivers and streams.	https://usace.contentdm.oclc.org/utis/getfile/collection/p16021coll9/id/1473	9/25/2018
CWA	Updated periodically (by Congress)	No	Authorized by EPA and delegated to the Corps and the SWRCB, the CWA establishes the basic structure for regulating discharges of pollutants into WOTUS and regulating quality standards for surface waters.	https://www.law.cornell.edu/uscode/text/33/1344	2/4/1987 (last amended)
CWA § 401	Updated periodically (by Congress)	No	Implemented by EPA and SWRCB. Regulates discharge of pollutants into WOTUS.	https://www.law.cornell.edu/uscode/text/33/1341	12/27/1977 (last amended)

Title	Status	Spatial Data	Reference Purpose	Link	Date
CWA § 402 National Pollutant Discharge Elimination System MS4 Permit	Updated periodically (by Congress)	No	Implemented by EPA and SWRCB. Regulates discharge of stormwater from municipal sources that is a conveyance or system of conveyances and is: <ul style="list-style-type: none"> owned by a state, city, town, village, or other public entity that discharges to waters of the U.S.; designed or used to collect or convey stormwater (e.g., storm drains, pipes, ditches); not a combined sewer; and not part of a sewage treatment plant or publicly owned treatment works. 	https://www.epa.gov/npdes/stormwater-discharges-municipal-sources	1/19/2019 (last amended)
CWA § 404	Updated periodically (by Congress)	No	Implemented by EPA and the Corps. Regulates discharge of dredge or fill material into WOTUS.	https://www.epa.gov/cwa-404/section-404-permit-program	11/6/1986 (last amended)
ESA	Updated periodically (by Congress)	No	Authorizes FWS and NMFS to protect federally listed threatened and endangered species.	https://www.fws.gov/endangered/laws-policies/	11/24/2003 (last amended)
Executive Order 11990, Protection of Wetlands	Final	No	Aims to minimize the destruction, loss, or degradation of wetlands and preserve and enhance the natural and beneficial values of wetlands.	https://www.epa.gov/cwa-404/protection-wetlands-executive-order-11990	3/24/1977
Final 2015 Regional Compensatory Mitigation and Monitoring Guidelines for South Pacific Division	Final	No	Corps' guidelines for mitigation and monitoring in the South Pacific Division, including California.	https://www.spd.usace.army.mil/portals/13/docs/regulatory/mitigation/mitmon.pdf	12/19/2014 (last amended)
National Wetlands Mitigation Action Plan	Final	No	EPA and Corps comprehensive, interagency document to further achievement of the goal of no net loss of wetlands and to set forth the no net loss policy.	https://www.epa.gov/cwa-404/national-wetlands-mitigation-action-plan	12/26/2002
The Navigable Waters Protection Rule	In progress	No	The navigable waters protection rule, dated April 21, 2020, has been vacated by the court and implementation has been halted. Rulemakings to revise the rule are currently in progress.	https://www.epa.gov/nwpr/final-rule-navigable-waters-protection-rule	6/9/2021 (announcement of rulemaking process)
Section 10 of the Rivers and Harbors Appropriation Act of 1899	Updated periodically (by Congress)	No	Authorizes the Corps to protect navigable WOTUS by requiring a permit for construction of any structure over a navigable WOTUS. A Section 10 permit is required if the structure or work affects the course, location, or condition of the water body. The law applies to any dredging or disposal of dredged materials, excavation, filling, rechannelization, or any other modification of a navigable WOTUS.	https://www.epa.gov/cwa-404/section-10-rivers-and-harbors-appropriation-act-1899	7/26/1947 (last amended)
Section 14 of the Rivers and Harbors Appropriation Act of 1899	Updated periodically (by Congress)	No	Implemented by EPA and the Corps. Regulates the temporary occupation or use of any sea wall, bulkhead, jetty, dike, levee, wharf, pier or other work built by the United States.	https://www.poa.usace.army.mil/Portals/34/docs/regulatory/Section%2014.pdf#:~:text=Section%2014%20of%20the%20Rivers%20and%20Harbors%20Act,or%20other%20work%20built%20by%20the%20United%20States.	10/23/2018 (last amended)
Wild and Scenic Rivers Act	Final	Yes	Reserves certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations. All federal agencies must seek to avoid or mitigate actions that would adversely affect National River Inventory river segments.	https://www.law.cornell.edu/uscode/text/16/chapter-28	12/19/2014 (last amended)
Statewide and Regional Resource Planning Documents	See below	See below	See below	See below	See below
A Climate Change Vulnerability Assessment of California's Terrestrial Vegetation	Final	Yes	CDFW's document to assess the climate vulnerability of terrestrial vegetation.	https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=116208&inline	1/1/2016

Title	Status	Spatial Data	Reference Purpose	Link	Date
A Strategy for California @ 50 Million – Supporting California’s Climate Change Goals	Final	Yes	Planning report from the California Governor’s Office that focuses on sustainability efforts across California in response to climate change.	http://opr.ca.gov/docs/EGPR_Nov_2015.pdf	11/1/2015
ACE Connectivity Project Version 3.0	Updated periodically	Yes	A CDFW effort to analyze large amounts of map-based data to inform decisions around goals such as biodiversity conservation, habitat connectivity, and climate change resiliency.	https://wildlife.ca.gov/Data/Analysis/ACE	7/10/2019 (last updated)
California Biodiversity Initiative	Final	No	A CNRA, California Department of Food and Agriculture, and Governor’s Office of Planning and Research high-level planning document. Provides a roadmap to secure California’s biodiversity future.	https://californiabiodiversityinitiative.org/pdf/california-biodiversity-action-plan.pdf	9/2018
California Essential Habitat Connectivity Project	Final	Yes	CDFW and Caltrans assessment to identify large remaining blocks of intact habitat or natural landscape and model linkages between them that need to be maintained, particularly as corridors for wildlife.	https://www.wildlife.ca.gov/conservation/planning/connectivity/CEHC	2/1/2010
California Water Action Plan 2016 Update	Final	No	Calls for action to restore key mountain meadow habitat, manage headwaters, restore coastal watersheds, and enhance water flows in streams statewide.	http://resources.ca.gov/docs/california_water_action_plan/Final_California_Water_Action_Plan.pdf	2016
California Watershed Assessment Manual Volume I	Final	No	Provides guidance for conducting a watershed assessment in California.	http://www.cwam.ucdavis.edu/Manual_chapters.htm	5/1/2005
California Wildlife Barriers: 2020 Priority Wildlife Movement Barrier Locations by Region	Final	Yes	CDFW’s priority wildlife movement barriers across the state. This document is focused on large wild mammal game species; however, some priorities would benefit special-status species such as big-horn sheep.	http://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=178511	3/1/2020
Caltrans Adaptation Strategies Report: District 3	Final	No	Caltrans initiated a major agency-wide effort to adapt its infrastructure so that it can withstand future conditions. The effort began by determining which assets are most likely to be adversely affected by climate change in each Caltrans district.	https://dot.ca.gov/programs/transportation-planning/2020-adapation-priorities-reports	12/1/2020
Caltrans Climate Change Vulnerability Assessment, District 3 Technical Report	Final	No	Caltrans assessment of climate change vulnerabilities for Caltrans District 3.	https://dot.ca.gov/programs/transportation-planning/2019-climate-change-vulnerability-assessments	10/1/2019
Large Mammal-Vehicle Collision Hot Spot Analyses, California, USA	Final	Yes	Western Transportation Institute’s report documenting the methods and results of hot-spot analyses of large wild mammal-vehicle collisions in California, with an emphasis on mule deer. These analyses identified the road sections that had the highest concentration of deer-vehicle crashes and mule deer carcasses. Special-status species were not addressed.	https://westerntransportationinstitute.org/wp-content/uploads/2019/09/4W6693_Huijser-and-Begley-FINAL-Report-Caltrans-Statewide-20190913-reduced-image-size.pdf	9/13/2019
Safeguarding California Plan: 2018 Update	Final	No	A conservation plan by CNRA. Includes goals to strengthen the climate adaptation component of conservation planning efforts, enhance habitat connectivity, protect climate refugia through strategic acquisition and protection activities, increase restoration and enhancement activities to increase climate resiliency of natural and working lands, increase biodiversity monitoring efforts, continue incorporating climate considerations into state investment decision processes, and provide educational opportunities to the public and state agency staff regarding climate impacts and adaptation options.	http://resources.ca.gov/docs/climate/safeguarding/update2018/safeguarding-california-plan-2018-update.pdf	1/1/2018
SWAP	Updated periodically (5-year intervals)	Yes	CDFW’s plan for protection of species of greatest conservation need, in addition to habitats and other wildlife in California.	https://www.wildlife.ca.gov/SWAP/Final	9/1/2015
SWAP Transportation Companion Plan	Final	Yes	CDFW’s companion document to SWAP for protection of species specific to transportation project planning.	https://wildlife.ca.gov/SWAP/Final/Companion-Plans	12/1/2016
SWAP Water Management Companion Plan	Final	Yes	CDFW’s companion document to SWAP to recommend water management practices throughout the state of California.	https://wildlife.ca.gov/SWAP/Final/Companion-Plans	12/1/2016

Title	Status	Spatial Data	Reference Purpose	Link	Date
Special-Status Taxa^a Documents	See below	See below	See below	See below	See below
Recovery Plan for the California Red-legged Frog	Final	Yes	<p>FWS' recovery plan for California red-legged frog. The recovery criteria that must be achieved before delisting can occur are:</p> <ul style="list-style-type: none"> All suitable habitats in Core Areas (4 out of 35 of which are in the GAI) are protected in perpetuity and the ecological integrity of these areas is not threatened. Existing populations throughout the range are stable, and they are geographically distributed in a manner that allows for the continued existence of viable metapopulations despite subpopulation fluctuations. There is successful reestablishment in portions of its historic range such that at least one reestablished population is stable/increasing in each core area where frogs are currently absent. The amount of additional habitat needed for population connectivity, recolonization, and dispersal has been determined, protected, and managed for the California red-legged frog. 	https://ecos.fws.gov/ecp/species/2891	5/28/2002
California Red-legged Frog 5-Year Review	Updated periodically	N/A	FWS has not completed a formal 5-year review of this species.	https://ecos.fws.gov/ecp/species/2891	Not applicable
California Red-legged Frog Designation of Critical Habitat	Final	Yes	FWS' designation of critical habitat for the California red-legged frog.	https://www.govinfo.gov/content/pkg/FR-2010-03-17/pdf/2010-4656.pdf#page=2	3/17/2010
California Red-legged Frog Biological Opinions	Updated periodically	No	FWS' list of the 231 most recent biological opinions that have been used for California red-legged frog, of which 11 were for projects in the GAI.	https://ecos.fws.gov/ecp/species/2891	9/15/2020 (latest document)
Report to the Fish and Game Commission. A Status Review of the Foothill Yellow-Legged Frog (<i>Rana boylei</i>) in California	Final	Yes	CDFWs report to the California Fish and Game Commission on the status of foothill yellow-legged frog for consideration in determining whether to list any clade of the species under CESA.	https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=174663&inline	9/20/2019
California Fish and Game Commission Notice of Findings for Foothill Yellow-Legged Frog (<i>Rana boylei</i>)	Final	No	California Fish and Game Commissions' notice formally listing five clades of foothill yellow-legged frog under CESA.	https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=177905&inline	3/10/2020
Considerations for Conserving the Foothill Yellow-Legged Frog	Final	No	CDFW's document reviewing foothill yellow-legged frog and ways to avoid and/or minimize project impacts.	https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=157562&inline	5/14/2018
Incidental Take Permits for Foothill Yellow-Legged Frog	Periodically updated	No	CDFW's list of incidental take permits issued for foothill yellow-legged frog. Since 2017, 10 permits have been issued, along with one amendment.	https://nrm.dfg.ca.gov/documents/docviewer.aspx	10/29/2018 (latest document)
Recovery Plan for the Giant Garter Snake	Final	Yes	<p>FWS' recovery plan for giant garter snake. The following recovery units occur in the GAI: Butte Basin, Colusa Basin, Sutter Basin, American Basin, Yolo Basin, Cosumnes-Mokelumne Basin, and Delta Basin. Includes the following requirements for delisting:</p> <ul style="list-style-type: none"> Have protected habitat at specific and general locations and acreage amounts detailed in Section D.1.A of the plan. Specific locations in the plan include: Little Chico Creek, Butte Creek, Cherokee Canal, Glenn Colusa Canal, Ridge Cut Slough, Sutter Bypass, Tisdale Bypass, and Yolo Bypass. Eradicate or significantly reduce nonnative water snakes (<i>Nerodia</i> sp.), largemouth bass (<i>Micropterus salmoides</i>), catfish, crayfish, and nonnative bullfrogs throughout the historic range of giant garter snake. 	https://ecos.fws.gov/ecp/species/4482	9/28/2017
Giant Garter Snake 5-Year Review	Periodically updated	Yes	FWS' most recent 5-year review of this species.	https://ecos.fws.gov/ecp/species/4482	6/10/2020 (last updated)

Title	Status	Spatial Data	Reference Purpose	Link	Date
Giant Garter Snake Designation of Critical Habitat	Not applicable	No	Critical habitat has not been designated for this species.	https://ecos.fws.gov/ecp/species/4482	Not applicable
Giant Garter Snake Biological Opinions	Periodically updated	No	FWS' list of the 66 most recent biological opinions that have been used for giant garter snake, of which 52 were for projects in the GAI.	https://ecos.fws.gov/ecp/species/4482	10/29/2020 (latest document)
Programmatic Consultation with the U.S. Army Corps of Engineers 404 Permitted Projects with Relatively Small Effects on the Giant Garter Snake within Butte, Colusa, Glenn, Fresno, Merced, Sacramento, San Joaquin, Solano, Stanislaus, Sutter and Yolo Counties, California, Appendix A, Guidelines for Restoration and/or Replacement of Giant Garter Snake Habitat	Final	No	FWS' guidelines for restoration and replacement of habitat for giant garter snake.	https://www.fws.gov/sacramento/es/Survey-Protocols-Guidelines/Documents/ggs%20appendix%20a.pdf	Unknown (document has no date and parent link is undated)
California Wildlife Habitat Relationships System, Giant Garter Snake	Periodically updated	No	CDFW's formal summary of ecological and biological information about giant garter snake.	https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=3457&inline=1	11/1/2014 (last updated)
Incidental Take Permits for Giant Garter Snake	Periodically updated	No	CDFW's list of incidental take permits issued for giant garter snake. Since 2012, 25 permits have been issued, along with 15 amendments.	https://nrm.dfg.ca.gov/documents/docviewer.aspx	8/30/2019 (latest document)
Recovery Plan for the Valley Elderberry Longhorn Beetle	Final	Yes	FWS' recovery plan for valley elderberry longhorn beetle. All three management units for the valley elderberry longhorn beetle occur in the GAI and all of the HUC-8s of the GAI are included in a management unit of the plan. Includes the following requirements for delisting: <ul style="list-style-type: none"> ▪ Maintain occupancy in at least 80% of the HUC-8s that occur in the management units. ▪ Protect and manage a system of connected habitat patches along each river or major drainage in each HUC-8, at least two of which need to show long-term population viability and be able to survive precipitation extremes. The number and location of patches are detailed in Table 1 of the document. ▪ Control or eradicate Argentine ants in each mitigation bank that supports valley elderberry longhorn beetle. 	https://ecos.fws.gov/ecp/species/7850	10/4/2019 (recently revised)
Valley Elderberry Longhorn Beetle 5-Year Review	Periodically updated	Yes	FWS' most recent 5-year review of this species.	https://ecos.fws.gov/ecp/species/7850	9/26/2006
Valley Elderberry Longhorn Beetle Designation of Critical Habitat	Final	Yes	FWS' document describing critical habitat for this species.	https://ecos.fws.gov/ecp/species/7850	8/8/1980
Valley Elderberry Longhorn Beetle Biological Opinions	Periodically updated	No	FWS' list of the 70 most recent biological opinions that have been used for valley elderberry longhorn beetle, of which 39 were for projects in the GAI.	https://ecos.fws.gov/ecp/species/7850	1/4/2021 (latest document)
Status Review: Swainson's Hawk (<i>Buteo swainsoni</i>) in California	Periodically updated	No	CDFW's most recent status review of Swainson's hawk.	https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=133622&inline	4/11/2016
Staff Report Regarding Mitigation for Impacts to Swainson's Hawks (<i>Buteo swainsoni</i>) in the Central Valley of California	Final	No	CDFW's report on mitigation strategies and options for Swainson's hawk.	https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=83992&inline	11/8/1994

Title	Status	Spatial Data	Reference Purpose	Link	Date
Incidental Take Permits for Swainson's Hawk	Periodically updated	No	CDFW's list of incidental take permits issued for Swainson's hawk. Since 2009, 18 permits have been issued, along with 37 amendments and 1 revision.	https://nrm.dfg.ca.gov/documents/docviewer.aspx	10/2/2020 (latest document)
Recovery Plan for the Southern Distinct Population Segment of North American Green Sturgeon (<i>Acipenser medirostris</i>)	Final	Yes	NMFS' recovery plan for the Southern DPS of green sturgeon plan. The recovery criteria that must be achieved before delisting can occur are: <ul style="list-style-type: none"> ▪ Census population remains at or above 3,000 for 3 generations (or at least 813 spawners for approximately 66 years). In addition, the effective population size must be at least 500 individuals in any given year and each annual spawning run must be comprised of a combined total, from all spawning locations, of at least 500 adult fish in any given year. ▪ Successful spawning in at least two rivers within their historical range, determined by the annual presence of larvae for at least 20 years. ▪ A net positive trend in juvenile and subadult abundance is observed over the course of at least 20 years. ▪ Population is characterized by a broad distribution of size classes representing multiple cohorts that are stable over the long term (20 years or more). 	https://www.fisheries.noaa.gov/species/green-sturgeon#conservation-management	8/8/2018
Southern DPS of the North American Green Sturgeon 5-Year Review	Updated periodically	Yes	NMFS' most recent review of the condition of this species population segment.	https://www.fisheries.noaa.gov/species/green-sturgeon#conservation-management	8/11/2015
Critical Habitat Designation for Southern DPS of North American Green Sturgeon	Final	Yes	NMFS' designation of critical habitat for the Southern DPS green sturgeon.	https://www.fisheries.noaa.gov/species/green-sturgeon#conservation-management	10/9/2009
Green Sturgeon Biological Opinions	Updated periodically	No	NMFS' list of the 89 biological opinions that have been used for green sturgeon in California, 49 of which occur in the GAI.	https://repository.library.noaa.gov/	3/15/2021 (latest document)
Recovery Plan for the Sacramento-San Joaquin Delta Native Fishes	Final	No	FWS' recovery plan for the Sacramento-San Joaquin Delta native fishes. Although not listed under the ESA, and not a specific target for recovery in this plan, longfin smelt is included in this recovery plan with goals for population improvement as a requirement for delisting of other species. The goals for longfin smelt in this plan are: <ul style="list-style-type: none"> ▪ Longfin smelt must be captured in all recovery zones in 5 of 10 years, in two recovery zones for an additional year, and at least one recovery zone for 3 of the 4 remaining years, with no failure to meet site criteria in consecutive years. ▪ Longfin smelt abundance must be equal to or greater than the predicted abundance for 5 of 10 years. 	https://ecos.fws.gov/ecp/species/321	11/26/1996
Review of Domestic Species that are Candidates for Listing as Endangered or Threatened; Annual Notification of Findings on Resubmitted Petitions; Annual Description of Progress on Listing Actions	Updated periodically	No	<i>Federal Register</i> listing with FWS' most recent status review of longfin smelt, which is currently a candidate for listing under the ESA.	https://www.govinfo.gov/content/pkg/FR-2020-11-16/pdf/2020-24198.pdf#page=1	11/16/2020 (most recent update)
Department of Fish and Game Report to the Fish and Game Commission: A Status Review of the Longfin Smelt (<i>Spirinchus thaleichthys</i>) in California	Final	No	CDFW's formal review of the species' condition.	https://wildlife.ca.gov/Conservation/Fishes/Longfin-Smelt (not downloadable from this link but available in archive)	1/23/2009
Incidental Take Permits for Longfin Smelt	Updated periodically	No	CDFW's list of incidental take permits issued for longfin smelt. Since 2010, 7 permits have been issued, along with 7 amendments.	https://nrm.dfg.ca.gov/documents/docviewer.aspx	6/2/2021 (latest document)

Title	Status	Spatial Data	Reference Purpose	Link	Date
Recovery Plan for the Evolutionarily Significant Units of Sacramento River Winter-run Chinook Salmon and Central Valley Spring-run Chinook Salmon and the Distinct Population Segment of California Central Valley Steelhead	Final	Yes	NMFS' recovery plan for the Central Valley DPS of steelhead. The recovery criteria that must be achieved before delisting can occur are based on a complex formula of population levels in different diversity groups that are explained in detail in Section 4.0 of the recovery plan.	https://www.fisheries.noaa.gov/resource/document/recovery-plan-evolutionarily-significant-units-sacramento-river-winter-run	7/1/2014
Central Valley Recovery Domain 5-Year Review: Summary and Evaluation California Central Valley Steelhead Distinct Population Segment	Updated periodically	Yes	NMFS' most recent formal review of the species' DPS condition.	https://www.fisheries.noaa.gov/west-coast/endangered-species-conservation/california-central-valley-steelhead	5/5/2016
Critical Habitat Designation for Steelhead	Final	Yes	NMFS' designation of critical habitat for the steelhead.	https://www.fisheries.noaa.gov/resource/map/steelhead-trout-critical-habitat-map	8/13/2018
Steelhead Biological Opinions	Updated periodically	No	A total of 101 biological opinions have been issued for steelhead since 2016. Thirty-seven of these have been issued for a project in the GAI.	https://repository.library.noaa.gov/	6/23/2021 (latest document)
Steelhead Restoration and Management Plan for California	Final	Yes	CDFW restoration and management plan for steelhead throughout the state. There are separate management objectives for three designated management areas, of which the Central Valley management area occurs in the GAI. This plan includes stream-specific recommendations pertaining to the American, Sacramento, and Yuba Rivers and the Antelope, Butte, Clear, Cottonwood, Deer, and Mill Creeks.	https://www.google.com/url?client=internal-element-cse&cx=003744124407919529812:v2-t3gqht48&q=https://nrm.dfg.ca.gov/FileHandler.ashx%3FDocumentID%3D3490&sa=U&ved=2ahUKEwj1156Uz_fmAhXSHc0KHcG_CfY4ChAWMAB6BAgGEAE&usg=AOvVaw1GUboKPeGb7OoSOIk_c7IH7	2/1/1996
Recovery Plan for the Sacramento-San Joaquin Delta Native Fishes	Final	Yes	FWS' recovery plan for Delta smelt. The recovery criteria that must be achieved before delisting can occur are: <ul style="list-style-type: none">▪ Catching Delta smelt in all recovery zones for 2 out of 5 years, in at least two zones in one of the remaining 3 years, and at least one zone for the remaining 2 years.▪ Delta smelt numbers of total catch must equal or exceed 239 for 2 out of 5 years, and not fall below 84 for more than 2 years in a row.▪ These criteria can be achieved independently but must be based on data collected by CDFW during the Fall Midwater Trawl Survey in September and October.	https://ecos.fws.gov/ecp/species/321	11/26/1996
Delta Smelt 5-Year Review	Updated periodically		FWS' most recent formal review of the species condition.	https://ecos.fws.gov/ecp/species/321	9/13/2010
Critical Habitat Designation for Delta Smelt	Final	Yes	FWS' designation of critical habitat for this species.	https://ecos.fws.gov/ecp/species/321	12/19/1994
Delta Smelt Biological Opinions	Updated periodically	No	A total of 43 biological opinions have been issued for Delta smelt since 2012. Twenty-two of these have been issued for a project in the GAI.	https://ecos.fws.gov/ecp/species/321	11/9/2021 (latest document)
Delta Smelt Resiliency Strategy	Final	No	CDFW's management plan to improve the condition of Delta smelt.	https://wildlife.ca.gov/Conservation/Fishes/Delta-Smelt	7/1/2016
Incidental Take Permits for Delta Smelt	Updated periodically	No	CDFW's list of incidental take permits issued for Delta smelt. Since 2010, 14 permits have been issued, along with 6 amendments.	https://nrm.dfg.ca.gov/documents/docviewer.aspx	6/2/2021 (latest document)

Title	Status	Spatial Data	Reference Purpose	Link	Date
Recovery Plan for the Evolutionarily Significant Units of Sacramento River Winter-run Chinook Salmon and Central Valley Spring-run Chinook Salmon and the Distinct Population Segment of California Central Valley Steelhead	Final	Yes	NMFS' recovery plan for the Sacramento River winter-run and Central Valley spring-run ESUs of Chinook salmon. The recovery criteria that must be achieved before delisting can occur are based on a complex formula of population levels in different diversity groups that are explained in detail in Section 4.0 of the recovery plan.	https://www.fisheries.noaa.gov/resource/document/recovery-plan-evolutionarily-significant-units-sacramento-river-winter-run	7/1/2014
Central Valley Spring-run ESU Chinook Salmon 5-Year Review	Updated periodically	Yes	NMFS' most recent formal review of the species' ESU condition.	https://www.fisheries.noaa.gov/resource/document/5-year-review-summary-and-evaluation-central-valley-spring-run-chinook-salmon	4/13/2016
Critical Habitat Designation for Central Valley Spring-run ESU Chinook Salmon	Final	No	NMFS' designation of critical habitat for this ESU of Chinook salmon.	https://www.fisheries.noaa.gov/west-coast/endangered-species-conservation/central-valley-spring-run-chinook-salmon	9/2/2005
A Status Review of the Spring-Run Chinook Salmon (<i>Oncorhynchus tshawytscha</i>) in the Sacramento River Drainage	Final	No	CDFW's formal review of the species' ESU condition.	https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=3518&inline	6/1/1998
5-Year Status Review: Summary and Evaluation of Sacramento River Winter-run Chinook Salmon ESU	Updated periodically	Yes	NMFS' most recent formal review of the species' ESU condition.	https://www.fisheries.noaa.gov/resource/document/5-year-status-review-summary-and-evaluation-sacramento-river-winter-run-chinook	12/12/2016
Critical Habitat Designation for Sacramento River Winter-run ESU	Final	No	NMFS' designation of critical habitat for this ESU of Chinook salmon.	https://www.fisheries.noaa.gov/west-coast/endangered-species-conservation/sacramento-river-winter-run-chinook-salmon	6/16/1993
Chinook Salmon Biological Opinions	Updated periodically	No	A total of 67 biological opinions have been issued for Chinook salmon since 2016. Thirty-one of these have been issued for a project in the GAI.	https://repository.library.noaa.gov/	5/17/2021 (latest document)
Incidental Take Permits for Chinook Salmon	Updated periodically	No	CDFW's list of incidental take permits issued for Chinook salmon. Since 2010, 24 permits have been issued, along with 10 amendments.	https://nrm.dfg.ca.gov/documents/docviewer.aspx	6/2/2021 (latest document)
Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon	Final	Yes	FWS' recovery plan for vernal pool species in California and Oregon, which includes 25 plants, 7 invertebrates, and 1 amphibian, for 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, 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 and preferential transition from intensive agriculture to grazing near western spadefoot toad conservation areas. Sixteen regions are identified in this plan, along with 41 core areas.	https://www.fws.gov/sacramento/es/Recovery-Planning/Vernal-Pool/	12/15/2005
State Land Management Plans	See below	See below	See below	See below	See below
General Planning Handbook for California State Parks	Final	Yes	California State Parks' guidelines for general plan development, which requires an inventory of known natural resources and general guidelines to comply with federal and state laws. Thirty state park entities occur in the GAI. Those with specific information pertinent to Chapters 7 and 8 of this RAMNA are listed below.	http://www.parks.ca.gov/pages/21299/files/planning_handbook_april_2010.pdf	4/1/2010

Title	Status	Spatial Data	Reference Purpose	Link	Date
Auburn State Recreation Area Preliminary General Plan and Auburn Project Lands Draft Resource Management Plan	Draft	Yes	California State Parks' and U.S. Bureau of Reclamation's plan for the State Recreation Area. Foothill yellow-legged frog is known to occur in the State Recreation Area. Includes a general goal to restore native habitats. Includes a specific goal to restore the boat-in campground area of the Lake Clementine Management Zone, if it is relocated, to native habitat.	https://www.parks.ca.gov/?page_id=24325	7/1/2019
Bidwell-Sacramento River State Park General Plan & Environmental Impact Report	Final	Yes	Management plan for the park. Swainson's hawk is known to occur in the park. General goals include restoration of sensitive habitat communities, which consist of wetlands, valley oak woodlands, and riparian woodland communities.	https://www.parks.ca.gov/?page_id=22600	3/3/2006
Final Environmental Impact Report Bidwell-Sacramento River State Park Habitat Restoration and Outdoor Recreation Facilities Development Project	Final	Yes	California State Parks' and The Nature Conservancy's plan for conducting habitat restoration at two parcels of Bidwell-Sacramento River State Park. Chinook salmon and steelhead are known to occur in the state park.	https://www.parks.ca.gov/?page_id=22600	9/17/2008
Brannan Island State Recreation Area General Plan	Final	No	Management plan for the State Recreation Area. Includes a goal to implement wildlife habitat enhancement along the portion of the Sacramento River the park intersects, and along the Three Mile Slough shoreline. This State Recreation Area is co-managed with the Franks Tract State Recreation Area; however, that State Recreation Area is outside of the GAI. Chinook salmon, steelhead, and green sturgeon are known to occur in the state recreation area.	https://www.parks.ca.gov/?page_id=21299	11/1/1987
California Indian Heritage Center Final General Plan and Environmental Impact Report	Final	Yes	Management plan for the park. Swainson's hawk and valley elderberry longhorn beetle are known to occur in the park. Includes a general goal to restore sensitive habitats in the park, including riparian woodland, wetlands, and elderberry habitat. Identifies a specific goal to restore the perimeter of the pond	https://www.parks.ca.gov/?page_id=21299	7/8/2011
Clay Pit State Vehicular Recreation Area Final General Plan	Final	Yes	Management plan for the State Vehicular Recreation Area. Swainson's hawks are known to occur here as transients.	https://www.parks.ca.gov/?page_id=21299	6/1/2012
Colusa Sacramento River State Recreation Area Final General Plan and Program Environmental Impact Report	Final	Yes	Management plan for the State Recreation Area. Swainson's hawks are known to occur here as transients. Includes a general goal to enhance habitat values of the State Recreation Area including wetlands, valley oak woodlands, and riparian woodlands, particularly in the Restoration Recreation Management Zone and Riparian Recreation Management Zone. Chinook salmon, steelhead, and green sturgeon are known to occur in the state recreation area.	https://www.parks.ca.gov/?page_id=21299	4/29/2016
Folsom Lake State Recreation Area and Folsom Powerhouse State Historic Park General Plan/Resource Management Plan	Final	Yes	California State Parks' and U.S. Bureau of Reclamation's plan for the State Recreation Area. Includes a general goal to restore native plant communities at the State Recreation Area, which include freshwater marsh, seasonal wetlands, vernal pools, riparian woodlands, and oak woodland savannahs. Avery's pond is identified as a site for restoration if deemed appropriate with existing cultural features.	https://www.parks.ca.gov/?page_id=21299	6/1/2010
Final General Plan Prairie City State Vehicular Recreation Area	Final	Yes	Management plan for the State Vehicular Recreation Area. Swainson's hawks are known to nest in the State Vehicular Recreation Area.	https://www.parks.ca.gov/?page_id=21299	9/1/2016
North Table Mountain Ecological Reserve Land Management Plan	Final	No	CDFW's management plan for the reserve.	https://wildlife.ca.gov/Lands/Planning/North-Table-Mountain-ER	12/1/2006

Title	Status	Spatial Data	Reference Purpose	Link	Date
Comprehensive Management Plan for the Sacramento River Wildlife Area	Final	No	CDFW's management plan for the reserve. Includes a general goal to contribute to the Sacramento River Conservation Area by reestablishing a continuous riparian ecosystem along the Sacramento River from Red Bluff to Chico, and reestablishing riparian vegetation along the Sacramento River from Chico to Verona. An additional goal is to create, enhance, and/or restore habitat for special-status species known to occur or with the potential to occur including valley elderberry longhorn beetle, giant garter snake, and Swainson's hawk. Chinook salmon, steelhead, and green sturgeon are known to occur in the wildlife area.	https://wildlife.ca.gov/Lands/Planning/Sacramento-River-WA	2/1/2004
Upper Butte Basin Wildlife Area Final Land Management Plan	Final	Yes	<p>CDFW's management plan for the reserve. Valley elderberry longhorn beetle has been observed at the Howard Slough Unit, giant garter snake is known to occur at the Llano Seco and Howard Slough Units, and Swainson's hawk is known to nest at the Little Dry Creek and Howard Slough Units. The plan identifies giant reed, perennial pepperweed, water primrose, and Himalayan blackberry as removal priorities in the reserve. The plan identifies the following goals:</p> <ul style="list-style-type: none"> ▪ Enhance and/or restore wetland habitats, particularly in fields 107, 110, 119, 125, 214, 225, 226, 302, and 309. ▪ Connect and expand existing riparian habitat at Butte Creek, Howard Slough, Little Dry Creek, and Little Butte Creek such that there is continuous riparian habitat in the area of greater than 13 miles from the Gridley-Colusa Highway to the north end of Howard Slough. ▪ Enhance riverine and lacustrine habitats in the reserve, particularly on Butte Creek. ▪ Enhance grassland habitats to encourage grasshopper populations for the benefit of Swainson's hawk. 	https://wildlife.ca.gov/Lands/Planning/Upper-Butte-Basin-WA	5/1/2012
Yolo Bypass Wildlife Area Land Management Plan	Final	Yes	<p>CDFW's management plan for the Yolo Bypass Wildlife Area, of which the Parker Unit, areas around Putah Creek, and northern half of the Los Rios Unit are outside of the GAI. Giant garter snake is known to occur in the area and Swainson's hawk is known to nest in the area. Steelhead, Chinook salmon, and delta smelt are also known to occur in the wildlife area. Identifies a number of priorities and opportunities for enhancement and/or restoration, including:</p> <ul style="list-style-type: none"> ▪ General enhancement and/or restoration of all wetlands, vernal pools, and riparian communities as well as adjacent grasslands. ▪ General enhancement of grassland habitats focused on encouraging grasshopper populations for the benefit of Swainson's hawk. ▪ Specific restoration of the tidal marsh adjacent to the East Toe Drain below Lisbon Weir. ▪ Minimization of mercury methylation in the area. ▪ Control of perennial pepperweed in the entire area. 	https://wildlife.ca.gov/Lands/Planning/Yolo-Bypass-WA	6/1/2008

Title	Status	Spatial Data	Reference Purpose	Link	Date
FWS Land Management Plans	See below	See below	See below	See below	See below
Butte Sink, Willow Creek-Lurline, and North Valley Wildlife Management Areas Final Comprehensive Conservation Plan and Environmental Assessment	Final	Yes	<p>FWS' conservation plan that covers the Butte Sink, North Central Valley, and Willow Creek-Lurline Wildlife Management Areas, all of which occur in the GAI. Giant garter snake, Chinook salmon, and steelhead are known to occur in all of these Wildlife Management Areas. Includes goals to:</p> <ul style="list-style-type: none"> Enhance 1,000 acres of wetlands and associated upland and riparian habitats on an annual basis. Restore up to 12,535 acres of managed wetlands and associated upland and riparian habitats on easement lands in the North Central Valley and Willow Creek-Lurline Areas. Restore up to 3,321 acres of wetlands and associated upland and riparian habitats on fee-title lands, and in particular convert 15 acres of grasslands in Tract 4 of the Llano Seco Unit to seasonal wetland. Generally reduce total cover of nonnative species in vernal pools and surrounding annual grassland habitat, and restore these habitats with particular attention for species covered in the <i>Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon</i>. Restore 200 acres of irrigated pasture to perennial grassland/oak savannah habitat, in part for the benefit of Swainson's hawk, on Tract 2 of the Llano Seco Unit, and annually enhance 300 acres of existing perennial grassland/oak savannah habitat. Restore and enhance 30 acres of riparian habitat on Tract 1 of the Butte Sink Unit. 	https://www.fws.gov/refuge/ButteSink/CCP/WildlifeManagementAreas.html	4/4/2020
Sacramento, Delevan, Colusa, and Sutter National Wildlife Refuges Final Comprehensive Conservation Plan and Environmental Assessment	Final	Yes	<p>FWS' conservation plan for the Sacramento, Delevan, Colusa, and Sutter National Wildlife Refuges, all of which occur in the GAI. Swainson's hawk is known to inhabit all of these refuges as well as giant garter snake, except for Delevan. Includes goals to:</p> <ul style="list-style-type: none"> Enhance 4,021 acres of vernal pool/alkali meadow habitat, with specific components of 32 acres on Tract 24.12 and 60 acres on Tract 26 at Colusa as well as 73 acres on Tract 1.1 at Delevan. Enhance 581 acres of riparian habitat, with a specific component of 5 acres at Powell Slough and Tract 14 of Colusa, and general preference for restoration at Colusa. 	https://www.fws.gov/refuge/Sacramento/CCP/SacramentoNWRComplex.html	3/17/2009
Sacramento River National Wildlife Refuge Final Comprehensive Conservation Plan	Final	Yes	<p>FWS' conservation plan for the Sacramento River National Wildlife Refuge. The refuge is known to have occurrences of valley elderberry longhorn beetle, giant garter snake, steelhead, green sturgeon, Chinook salmon, and Swainson's hawk. Includes goals to:</p> <ul style="list-style-type: none"> Restore 3,255 acres of riparian vegetation and upland habitats with the following habitat types as targets: Great Valley Willow Scrub, Great Valley Cottonwood Forest, Great Valley Mixed Riparian Forest, Great Valley Valley Oak Riparian Forest, Valley Oak Savannah, Elderberry Savanna, and Grassland, Herbland, and Wetland. Specific acreages and areas of restoration are detailed in Table 9 of the document. Target the following refuge units for invasive species control: Pine Creek, Phelan Island, Capay, La Barranta, Drumheller Slough, Flynn, and Rio Vista. 	https://www.fws.gov/refuge/SacramentoRiver/CCP/SacramentoRiverNWR.html	6/1/2005
Stone Lakes National Wildlife Refuge Comprehensive Conservation Plan	Final	Yes	<p>FWS' conservation plan for Stone Lakes National Wildlife Refuge. The refuge is known to have occurrences of Swainson's hawk, Chinook salmon, steelhead (specifically known in Dry Creek), and giant garter snake. Includes goals to:</p> <ul style="list-style-type: none"> Establish 65 acres of valley foothill riparian and oak woodland habitat by restoring and expanding cottonwood riparian forest habitat along the south arm of North Stone Lake, expanding the riparian zone to a range of 150 to 400 feet wide along the Sacramento Drainage Canal, and removing perennial pepperweed in riparian areas. Enhance 50 acres of seasonal and permanent wetlands in the South Stone Lake Unit. Maintain 715 acres of deep-water aquatic habitats for giant garter snake. 	https://www.fws.gov/refuge/Stone_Lakes/what_we_do/planning.html	1/5/2007

Title	Status	Spatial Data	Reference Purpose	Link	Date
U.S. Military Land Management Plans	See below	See below	See below	See below	See below
U.S. Air Force Integrated Natural Resources Management Plan Beale Air Force Base & Lincoln Receiver Site	Draft	Yes	U.S. Air Force management plan for the Beale Air Force Base. Includes goals to restore and create wetland habitats on the base. Swainson's hawk, Chinook salmon, and steelhead are known to occur on the base.	https://www.beale.af.mil/Library/Units/Environmental-Information/	1/1/2018
U.S. Bureau of Indian Affairs Land Management Plans	See below	See below	See below	See below	See below
Not applicable	Not applicable	No	None of the seven indigenous communities that occur in the GAI have a land management plan that is publicly available.	Not applicable	Not applicable
Shingle Springs Rancheria Environmental Department	In progress	No	The Environmental Department of the Shingle Springs Rancheria Tribal Government includes goals for conducting stream and plant restoration on Rancheria lands; however, this appears to be a department policy and not a feature of a management plan.	https://www.shinglespringsrancheria.com/departments/	Not applicable
USFS Land Management Plans	See below	See below	See below	See below	See below
Ecological Restoration Implementation Plan	Final	Yes	USFS' internal restoration plan, which includes general strategies focused on increasing collaboration with other organizations, completion of land management plans, and forest-specific goals.	https://www.fs.usda.gov/detail/lassen/landmanagement/?cid=stelprdb5411635	1/1/2013
El Dorado National Forest Land and Resource Management Plan	Final	No	USFS' management plan for the El Dorado National Forest.	https://www.fs.usda.gov/detail/eldorado/landmanagement/planning/?cid=fseprd528612	1/1/1988
Lassen National Forest Land and Resource Management Plan	Final	No	USFS' management plan for the Lassen National Forest. Spring-run ESU Chinook salmon and steelhead trout inhabit Deer, Mill, and Antelope Creeks. Lower reaches of Mill Creek contain small populations of steelhead and spring-run ESU Chinook salmon.	https://www.fs.usda.gov/main/lassen/landmanagement/planning	1/1/1992
Mendocino National Forest Land and Resource Management Plan	Final	No	USFS' management plan for the Mendocino National Forest. Includes a general goal to improve aquatic habitats in the forest. Identifies key watersheds; however, none are in the GAI.	https://www.fs.usda.gov/detailfull/mendocino/landmanagement/planning/?cid=fsbdev3_004518&width=full	2/1/1995
Plumas National Forest Land and Resource Management Plan	Final	No	USFS' management plan for the Plumas National Forest. Includes goals to enhance Lost Creek and the Feather River for trout habitat, and Canyon Creek and Slate Creek to improve water quality.	https://www.fs.usda.gov/main/plumas/landmanagement/planning	1/1/1988
Sierra Nevada Forest Plan Amendment Final Supplemental Environmental Impact Statement	Final	No	USFS' plan for forest management in each of the National Forests of the Sierra Nevada Mountains. Those in the GAI include El Dorado, Lassen, Plumas, and Tahoe National Forests.	https://www.fs.usda.gov/detail/r5/landmanagement/planning/?cid=STELPRDB5349922	1/1/2004
Tahoe National Forest Land and Resource Management Plan Environmental Impact Statement	Final	No	USFS' management plan for the Tahoe National Forest.	https://www.fs.usda.gov/main/tahoe/landmanagement/planning	1/1/1990
BLM Land Management Plans	See below	See below	See below	See below	See below
Eagle Lake Field Office Proposed Resource Management Plan and Final Environmental Impact Statement	Final	Yes	BLM's resource management plan for the Eagle Lake Field Office. Includes a goal to improve 35 miles of perennial or intermittent streams and 33 acres of riparian/wetland areas in the management area.	https://eplanning.blm.gov/eplanning-ui/project/69341/570	5/1/2007

Title	Status	Spatial Data	Reference Purpose	Link	Date
Northwest California Integrated Resource Management Plan	In progress	Not applicable	BLM's currently developing resource management plan covering the Redding and Arcata Field Offices. Note: This document has been superseded by fire recovery efforts and the project might ultimately be abandoned. Additionally, only the Redding Field Office has lands in the GAI.	https://www.blm.gov/programs/planning-and-nepa/plans-in-development/california/northwest-california-integrated-rmp	In progress
Proposed Redding Resource Management Plan and Final Environmental Impact Statement	Final	No	BLM's resource management plan for the Redding Field Office. Includes goals to enhance stream habitat around Mule Mountain for the benefit of anadromous salmonid habitat, enhance Paynes Creek, the Sacramento River, and Butte Creek.	https://eplanning.blm.gov/eplanning-ui/project/75497/570	7/1/1992
Ukiah Resource Management Plan	Final	Yes	BLM's resource management plan for the Ukiah Field Office. Includes general goals to enhance aquatic habitats and remove exotic species from 272 miles of streams. Includes specific goals to enhance Cement and Cedar Creeks, as well as remove nonnative species like tamarix and giant reed from Bear Creek.	https://eplanning.blm.gov/eplanning-ui/project/79315/570	9/1/2006
NPS Land Management Plans	See below	See below	See below	See below	See below
Nationwide Rivers Inventory	Final	Yes	Listing of Nationwide River Inventory river segments that are potential candidates for inclusion in the National Wild and Scenic River System. Listed national river segments in the GAI include the American River and Surprise Canyon Creek.	https://www.nps.gov/subjects/rivers/nationwide-rivers-inventory.htm	12/21/2017
Lassen Volcanic National Park General Management Plan	Final	No	NPS' general management plan for Lassen Volcanic National Park.	https://home.nps.gov/lavo/learn/management/upload/gmp_section2_the_plan.pdf	1/1/2002
Local Government Land Management Plans	See below	See below	See below	See below	See below
American River Parkway Natural Resource Management Plan	Draft	No	Sacramento County's management plan for the park, which occurs along the American River from the Folsom Dam to the confluence with the Sacramento River. Valley elderberry longhorn beetle is known to occur in the park. Includes a general goal to improve habitat in the park, along with specific goals related to habitat restoration. These restoration goals cumulatively include: <ul style="list-style-type: none"> ▪ 182 acres of riparian habitat ▪ 33 acres of elderberry habitat ▪ 124 acres of woodland habitat ▪ conducting annual projects to enhance salmonid habitat 	https://regionalparks.sacounty.net/Parks/Pages/NaturalResourcesManagement.aspx	3/1/2021
Dry Creek Parkway Recreation Master Plan	Final	No	Sacramento County's management plan for the park. Includes a general goal to enhance and/or restore habitat in the park and establishes a 175-foot buffer zone from the top of riparian banks or 40 feet away from the edge of riparian vegetation, whichever is greater. Steelhead is known to occur in the park.	https://regionalparks.sacounty.net/Parks/RegionalParksDetails/Pages/DryCreekParkway.aspx	12/1/2003
Hidden Falls Regional Park Vegetation, Fuels and Range Management Plan	Final	No	Placer County's management plan for the park. Identifies Himalayan blackberry as a priority for invasive species control.	https://www.placer.ca.gov/6106/Hidden-Falls-Regional-Park	1/1/2007
Parks & Open Space Master Plan Yolo County, California	Final	No	Yolo County's master plan for all county parks and open space preserves in the county. Includes recommendations to conduct riparian habitat restoration at the Clarksburg River Access Site, 1.5 miles south of Clarksburg, as well as to enhance oak woodland habitat at the Helvetia Oak Grove.	https://www.yolocounty.org/government/general-government-departments/parks/reports-publications/yolo-county-parks-open-space-master-plan	1/1/2006

Title	Status	Spatial Data	Reference Purpose	Link	Date
Water Resources Plans and Documents	See below	See below	See below	See below	See below
American River Basin Integrated Regional Water Management Plan	Updated periodically	Yes	Regional Water Authority's management plan for the plan area, which includes portions of the Lower American, Lower Sacramento, Upper Bear, and Upper Coon-Upper Auburn HUC-8s. Includes general goals to improve riparian habitat and reduce invasive species.	https://rwah2o.org/programs/integrated-regional-water-management/american-river-basin-irwmp-2018-update/	5/1/2018
Central Valley Flood Protection Plan 2017 Update	Updated periodically (every 5 years)	Yes	California Department of Water Resources' plan to reduce flood risk in the Central Valley. Includes goals to use levee setbacks to provide habitat restoration in addition to flood protection, and to increase participation in the Central Valley Habitat Exchange to purchase land from farmers in flood zones and restore them to a natural ecosystem.	https://water.ca.gov/Programs/Flood-Management/Flood-Planning-and-Studies/Conservation-Strategy	8/1/2017
Central Valley Project Integrated Resource Plan Final Report	Final	Yes	U.S. Bureau of Reclamation's plan for the water supply of the Central Valley.	https://www.usbr.gov/mp/ssjbasinstudy/docs.html	11/1/2014
Colusa Basin Watershed Management Plan	Final	Yes	Colusa County Resource Conservation District's management plan for the Colusa Basin Watershed, which mostly corresponds to the Sacramento-Stone Corral HUC-8. Includes goals to restore wetland and stream habitats, particularly in floodprone areas; improve water quality, particularly with respect to pesticide, herbicide, salinity, and nitrates; and remove target invasive species that include giant reed, tamarisk, perennial pepperweed, tree of heaven, and nonnative water primroses (<i>Ludwigia</i> sp.).	https://www.sacramentoriver.org/forum/lib/library/docs/Colusa_Basin_Watershed_Management_Plan_(2012).pdf	12/1/2012
Integrated Regional Water Management Plan Cosumnes American Bear Yuba Watersheds, California	Draft	Yes	Water management plan primarily developed by the Nevada and El Dorado Irrigation Districts as well as the Placer and El Dorado County Water Agencies for the plan area, which includes portions of the North Fork American, South Fork American, Upper Bear, Upper Coon-Upper Auburn, and Upper Yuba HUC-8s. Includes goals to restore the natural sediment regime in at least three river reaches, enhance and/or restore at least 4 miles of streams, remove trout and bullfrogs in 18 acres of high mountain lakes where foothill yellow-legged frogs can recolonize, create 1 acre of pond habitat by 2025 where existing California red-legged frogs reside downstream and can colonize the new habitat, and treat at least 50 acres of riparian habitat for nonnative plant species.	http://cabyregion.org/mdocs-posts/2021-caby-plan-update/	1/1/2021 (last updated)
Sacramento County Watershed Management Plan	Final	No	Sacramento County's assessment of watershed conditions in the County.	https://waterresources.saccounty.net/scwa/DocumentsDraftHazardMitigationPlan2011/Appendix%20G%20-%20WatManPlan.pdf	8/1/2011
Sacramento Valley Integrated Regional Water Management Plan	Final	Yes	Northern California Water Associations' management plan for the Sacramento Valley.	https://norcalwater.org/efficient-water-management/efficient-water-management-regional-sustainability/regional-planning/irwmp/	12/5/2006
Tehama West Watershed Management Plan	Final	No	Tehama County Resource Conservation Districts' management plan for the plan area, which consists of all areas of the GAI in Tehama County west of the Sacramento River. Includes goals for improving Blue Tent, Dibble, Elder, Red Bank, and Reeds Creeks for sediment loads, restoring riparian habitats, and prioritizing the removal of giant reed and tamarisk from the plan area.	https://tehamacountyr cd.specialdistrict.org/natural-resource-management-publications	8/1/2008
Tehama East Watershed Management Plan	Final	No	Tehama County Resource Conservation Districts' management plan for the plan area, which includes all of the Antelope Creek, Paynes Creek, Pine Creek, and Toomes Creek HUC-10s as well as portions of the Deer Creek, Dibble Creek-Sacramento River, Jewett Creek-Sacramento River, and Oat Creek-Sacramento River HUC 10s. The plan identifies road crossings at the headwaters of Antelope, Dye, and Salt Creeks, as well as the braided channel in the lowland areas of Antelope Creek, as target areas for water quality improvement projects. The plan also calls for restoration of riparian habitat generally and removal of giant reed and tamarisk specifically.	https://tehamacountyr cd.specialdistrict.org/natural-resource-management-publications	4/1/2010

Title	Status	Spatial Data	Reference Purpose	Link	Date
Westside Sacramento Integrated Regional Water Management Plan Update	Updated periodically	Yes	Regional water management groups' water management plan for the West Sacramento region. The regional water management group consists of Lake County Watershed Protection District, Napa County Flood Control and Water Conservation District, Colusa County Resource Conservation District, Solano County Water Agency, and the Water Resource Association of Yolo County. In the GAI, the plan area consists of the portion of the GAI in Solano and Yolo Counties. Goals include improving the form and function of degraded natural channels, improving water quality, and eliminating New Zealand mud snails (<i>Potamopyrgus antipodarum</i>) from Putah Creek.	https://www.westsideirwm.com/irwm-plan/	1/1/2019
Yuba County Integrated Water Management Plan	Updated periodically	Yes	Yuba Water Groups' management plan for Yuba County.	http://yubairwmp.org/	12/1/2019
County General Plans	See below	See below	See below	See below	See below
Butte County General Plan 2030	Updated periodically	Yes	General plan for Butte County. Includes a requirement to have a 100-foot buffer on each side of all riparian corridors, creeks, and streams for the benefit of wildlife. Butte and Big Chico Creeks contain spring-run ESU Chinook salmon and steelhead. Little Butte and Dry Creeks contain steelhead.	https://www.buttecounty.net/dds/Planning/General-Plan/Chapters	11/5/2019 (last updated)
2004 El Dorado County General Plan	Updated periodically	Yes	General plan for El Dorado County. Requires a minimum setback of 100 feet from all perennial streams, rivers, lakes, and 50 feet from intermittent streams and wetlands. Requires mitigation ratios for different habitat types, including aquatic types. Includes a land use designation for open space and natural resources.	https://www.edcgov.us/Government/planning/pages/adopted_general_plan.aspx	12/10/2019 (last amended)
Glenn County General Plan	Final	No	General plan for Glenn County. Includes a land use designation for open space.	https://www.countyofglenn.net/resources/plans/glenn-county-general-plan	6/1/1993
Napa County General Plan	Final	No	General plan for Napa County. The California red-legged frog is known to occur in the county's watersheds. Requires mitigation for impacts on sensitive biotic communities and habitats of limited distribution by preserving similar habitats at a ratio of 2:1 or greater in Napa County. Includes a land use designation for open space, which includes watersheds.	https://www.countyofnapa.org/1760/General-Plan	6/1/2008
Nevada County General Plan	Updated periodically	Yes	General plan for Nevada County. Requires variable setbacks and buffers of development from riparian areas and sensitive habitats. Includes a land use designation for open space.	https://www.mynevadacounty.com/1065/General-Plan	1/1/2020 (last updated)
Placer County General Plan	Updated periodically	Yes	General plan for Placer County. Requires a minimum 100-foot setback from the centerline of perennial streams, 50-foot setback from the centerline of intermittent streams, and 50-foot setback from the edge of sensitive habitats, including riparian zones, wetlands, old growth woodlands, and the habitat of special status, threatened, or endangered species. Includes a land use designation for greenbelt/open space.	https://www.placer.ca.gov/2977/Placer-County-General-Plan	5/21/2013 (last updated)
Plumas County General Plan 2035	Final	Yes	General plan for Plumas County. California red-legged frog is known to occupy areas of the County. Includes a land use designation for open space and significant wetlands.	https://www.plumascounty.us/2116/Plumas-County-General-Plan	12/17/2013
Sacramento County General Plan of 2005–2030	Updated periodically	Yes	General plan for Sacramento County. The valley elderberry longhorn beetle, giant garter snake, Chinook salmon, steelhead, green sturgeon, and Swainson's hawk are known to occur in the County. Requires a minimum functional setback of 100 feet from the outside edge of stream banks, 50 feet of transitional setback from functional setback along stream corridors, and another 50 feet of extended setback from the transitional setback for recreational uses along stream corridors. Includes policies for the enhancement of Laguna Creek Parkway. Includes a land use designation for natural preserve.	https://planning.saccounty.net/PlansandProjectsIn-Progress/Pages/GeneralPlan.aspx	11/9/2011 (last amended)

Title	Status	Spatial Data	Reference Purpose	Link	Date
Shasta County General Plan	Updated periodically	No	General plan for Shasta County. The foothill yellow-legged frog, valley elderberry longhorn beetle, and Swainson's hawk are known to occur in the County. Encourages efforts to restore the Middle Creek drainage basin, Clear Creek watershed basin, Battle Creek, Cow Creek, and other Sacramento River tributary watersheds. No land use designations for conservation.	https://www.co.shasta.ca.us/index/drm/planning/general-plan	9/1/2004 (last amended)
Sierra County General Plan 2012	Final	No	General plan for Sierra County. Requires a 50-foot setback from intermittent streams and wetlands and a 100-foot setback from perennial streams. Includes a land use designation for open space and forest.	https://sierracounty.ca.gov/260/General-Plan	10/1/1996
Solano County General Plan	Final	Yes	General plan for Solano County. The California red-legged frog, giant garter snake, delta smelt, and Swainson's hawk are known to occur in the County. Includes policies and goals for the enhancement of Suisun Marsh and surrounding upland areas. Includes land use designations for natural resources, including water bodies and courses and marshes.	https://www.solanocounty.com/depts/rm/planning/general_plan.asp	11/1/2008
Sutter County General Plan	Updated periodically	Yes	General plan for Sutter County. The valley elderberry longhorn beetle, giant garter snake, and Swainson's hawk are known to occur in the County. Includes a land use designation for open space.	https://www.suttercounty.org/government/county-departments/development-services/planning-services/general-plan	11/1/2019 (last amended)
Tehama County General Plan Update 2009–2029	Final	Yes	General plan for Tehama County. Includes goals and policies for the restoration of oak woodlands. Includes a land use designation for conservation, including habitat resource, resource lands, and water.	https://www.co.tehama.ca.us/government/departments/planning-department/	3/1/2009
2030 Countywide General Plan Yolo County	Final	Yes	General plan for Yolo County. The valley elderberry longhorn beetle, foothill yellow-legged frog, giant garter snake, and Swainson's hawk are known to occur in the County. Requires a minimum setback of 100 feet from the top of banks for wetland and aquatic features. Includes a land use designation for open space. Includes a general goal to restore and/or enhance watersheds for the benefit of Chinook salmon and steelhead.	https://www.yolocounty.org/government/general-government-departments/county-administrator/general-plan/adopted-general-plan	11/10/2009
Yuba County 2030 General Plan	Final	Yes	General plan for Yuba County. Requires setbacks ranging from 33 to 150 feet in width from wetland and riparian areas. Includes a land use designation for natural resources.	https://www.yuba.org/departments/community_development/planning_department/general_plan.php	6/7/2011
City General Plans	See below	See below	See below	See below	See below
City of Auburn General Plan	Updated periodically	No	General plan for Auburn. Includes a land use designation for open space & conservation.	https://www.auburn.ca.gov/399/Planning	2/10/2014 (last updated)
City of Biggs General Plan	Final	Yes	General plan for Biggs. Species of concern in the city include giant garter snake and Swainson's hawk. There is no land use designation for conservation.	http://buttelafco.org/resources/master-documents/city-biggs-2030-general-plan-january-2014	1/1/2014
Chico 2030 General Plan	Updated periodically	Yes	General plan for Chico. The valley elderberry longhorn beetle, Swainson's hawk, and giant garter snake are known to occur in the city. Contains policies and actions to remove nonnative species and plant native species in Bidwell Park and other city greenways. Requires a minimum 25-foot development setback from the top of creek banks. Includes a land use designation for public and open space.	https://chico.ca.us/post/chico-2030-general-plan	3/1/2017 (last amended)
Citrus Heights General Plan	Updated periodically	Yes	General plan for Citrus Heights. Includes a land use designation for open space.	https://www.citrusheights.net/202/General-Plan	8/11/2011
City of Colfax General Plan 2020	Final	No	General plan for Colfax. Includes zoning designations for open space.	https://colfax-ca.gov/government/planning/colfax-planning-documents/	9/22/1998

Title	Status	Spatial Data	Reference Purpose	Link	Date
City of Colusa General Plan	Final	Yes	General plan for Colusa. The valley elderberry longhorn beetle and Swainson's hawk species are known to occur in the city. Includes a land use designation for parks/recreation/open space.	https://www.cityofcolusa.com/home/government/departments/planning/	10/30/2007
City of Corning 2014–2034 General Plan	Final	Yes	General plan for Corning. Requires a protective buffer of indeterminate size from creeks and wetlands, including vernal pools. There is no land use designation for conservation.	https://www.corning.org/Planning_Consultant.html	9/15/2015
City of Davis General Plan	Updated periodically	No	General plan for Davis. Includes land use designations for natural habitat areas and creeks, sloughs, channels.	https://www.cityofdavis.org/city-hall/community-development-and-sustainability/planning-and-zoning/general-plan	1/1/2007 (last amended)
Dixon 1993 General Plan	Update in progress	No	General plan for Dixon. Swainson's hawk have been observed in the city. Includes a land use designation for parks.	https://www.cityofdixon.us/departments/CommunityDevelopment/GeneralPlan	4/27/2010 (last amended)
Elk Grove General Plan	Updated periodically	Yes	General plan for Elk Grove. Requires buffer zones of at least 50 feet from designated natural streams, including Deer Creek, Elk Grove Creek, Laguna Creek and its tributaries, Morrison Creek, Strawberry Creek, and White House Creek. Includes land use designations for parks & open space and resource management & conservation.	http://www.elkgrovecity.org/city_hall/departments_divisions/city_manager/strategic_planning_and_innovation/general_plan/documents	2/27/2019
City of Fairfield General Plan	Updated periodically	Yes	General plan for Fairfield. The plan promotes the enhancement of seasonal creeks and other drainage courses into Suisun Marsh. Includes a land use designation for open space and conservation.	http://www.fairfield.ca.gov/gov/depts/community-development/planning_division/general_plan.asp	2/1/2015 (last amended)
City of Folsom General Plan	Final	Yes	General plan for Folsom. The valley elderberry longhorn beetle and Swainson's hawk are known to occur in the city. Includes a land use designation for open space.	https://www.folsom.ca.us/community/planning/general_plan/2035_general_plan.asp	8/28/2018
City of Grass Valley 2020 General Plan	Updated periodically		General plan for Grass Valley. Includes a land designation for open space.	https://www.cityofgrassvalley.com/post/general-plan-housing-element	9/23/2014 (last updated)
City of Gridley 2030 General Plan	Updated periodically	Yes	General plan for Gridley. Includes a land designation for open space.	http://gridley.ca.us/documents-forms/	10/19/2009
City of Isleton General Plan 2000	Update in progress	No	General plan for Isleton. Swainson's hawk, valley elderberry longhorn beetle, and giant garter snake are known to occur in the city. Includes a land designation for open space.	https://cityofisleton.com/city-ordinances/	9/13/2000
City of Lincoln General Plan	Final	Yes	General plan for Lincoln. Swainson's hawk and giant garter snake are known to occur in the city. Includes a land designation for open space.	http://www.lincolncalifornia.gov/city-hall/departments-divisions/community-development/planning/general-plan-2050	3/1/2008
City of Live Oak 2030 General Plan	Final	No	General plan for Live Oak. Swainson's hawk, giant garter snake, and valley elderberry longhorn beetle are known to occur in the city. Requires buffers 25 feet or more between riparian habitat and new development. Includes a land designation for open land.	https://www.liveoakcity.org/departments/planning-department/city-of-live-oak-2030-general-plan-and-environmental-impact-report/-folder-72	Not available
Town of Loomis General Plan	Update in progress	No	General plan for Loomis. Requires a setback of no more than 100 feet from the outermost extent of riparian vegetation or outside of the 100-year floodplain. Requires the replacement of degraded or destroyed wetlands at ratios between 1:1 to 4:1, based on the biotic value of the wetland. There is no land use designation for conservation.	https://loomis.ca.gov/general-plan/	7/31/2001
City of Marysville General Plan	Final	Yes	General Plan for Marysville. Includes land designations for enhanced open space and natural open space.	https://www.marysville.ca.us/copy-of-planning-zoning-building	8/1/1985
General Plan 1980–2000 Nevada City, California	Final	No	General plan for Nevada City. Includes a land designation for open space preserve.	https://www.nevadacityca.gov/pview.aspx?id=20707&catid=0	3/24/1986

Title	Status	Spatial Data	Reference Purpose	Link	Date
City of Orland General Plan	Final	Yes	General plan for Orland. The valley elderberry longhorn beetle and Swainson's hawk are known to occur in the city. Includes a land designation for open space/resource conservation.	http://www.cityoforland.com/govt/dept/planning/for ms.asp	2/21/2012
Oroville 2030 General Plan	Final	Yes	General plan for Oroville. Requires that development maintain a minimum 100-foot buffer on each side of all riparian corridors, creeks, and streams. Promotes the removal or relocation of levees on the west side of the Feather River as a means to enhance habitat in and around the Oroville Wildlife Refuge. Includes land designations for environmental conservation/safety, resource management, and state water project.	https://www.cityoforoville.org/services/planning-development-services-department/planning-division/planning-documents	3/31/2015
Town of Paradise 1994 General Plan	Final	Yes	General plan for Paradise. Includes a zoning designation for resource conservation.	https://www.townofparadise.com/planning/page/to wn-paradise-general-plan	11/27/1979
City of Placerville General Plan	Updated periodically	No	General plan for Placerville. Includes a land use designation for open space.	https://www.cityofplacerville.org/planning-division-city-of-placerville-guides-plans-and-reports	10/1/2016 (last amended)
Rancho Cordova General Plan	Updated periodically	Yes	General plan for Rancho Cordova. Requires the conservation of Swainson's hawk habitat, including the establishment of a Swainson's Hawk Ordinance where loss of habitat will be mitigated by permanent protection of equivalent or better existing habitat conditions. Also, requires a buffer of indeterminant size between development and creek corridors or preserves. Includes a land designation for parks & open space and natural resources.	https://www.cityofranchocordova.org/i-want-to-/learn-about/general-plan	6/26/2006
City of Red Bluff General Plan	Final	No	General plan for Red Bluff. The valley elderberry longhorn beetle, California red-legged frog, and Swainson's hawk are known to occur in the city. Includes a land use designation for greenway, floodplain, and hillslope.	http://www.cityofredbluff.org/citydepartments/planning/	11/16/1993
Rio Vista General Plan 2001	Final	No	General plan for Rio Vista. Requires 100-foot setbacks from the edge of perennial streams and 50-foot setbacks from the edge of intermittent streams and sensitive habitats, including riparian zones, wetlands, and habitats of rare, threatened, and endangered species. Includes a land use designation for parks/open space.	https://www.riovistacity.com/general-plan/	7/18/2002
City of Rocklin General Plan	Final	No	General plan for Rocklin. Includes a land use designation for recreation/conservation.	https://www.rocklin.ca.us/post/general-plan	10/1/2012
City of Roseville General Plan 2035	Final	No	General plan for Roseville. The valley elderberry longhorn beetle and Swainson's hawk are known to occur in the city. Includes a land use designation for open space.	https://www.roseville.ca.us/government/departments/development_services/planning/general_plan_development_guidelines	8/5/2020
Sacramento 2035 General Plan	Final	Yes	General plan for Sacramento. The valley elderberry longhorn beetle, giant garter snake, and Swainson's hawk are known to occur in the city. Includes a land use designation for open space.	http://www.cityofsacramento.org/Community-Development/Resources/Online-Library/2035--General-Plan	3/3/2015
City of Tehama General Plan	Not applicable	Not applicable	A general plan for Tehama does not appear to be publicly available on the City's website.	Not applicable	Not applicable
City of Vacaville General Plan	Final	Yes	General plan for Vacaville. The valley elderberry longhorn beetle, foothill yellow-legged frog, and Swainson's hawk are known to occur in the city and its immediate vicinity. Includes policies to create wildlife movement corridors in the designated Vacaville-Fairfield Greenbelt area, including creek corridors and utility easements. Requires new development to mitigate impacts to oak woodland and oak savanna habitats by preserving similar habitat at a 3:1 ratio. Includes a land use designation for public open space.	https://www.ci.vacaville.ca.us/government/community-development/advanced-planning/adopted-plans/general-plan/general-plan-documents	8/11/2015
City of West Sacramento General Plan 2035 Policy Document	Final	Yes	General plan for West Sacramento. The valley elderberry longhorn beetle and Swainson's hawk are known to occur in the city. Requires a setback or buffer of 100 feet or more between significant habitat areas and new development. Includes a land use designation for open space.	https://www.cityofwestsacramento.org/government/departments/community-development/planning-division/general-plan-2035	11/16/2016

Title	Status	Spatial Data	Reference Purpose	Link	Date
City of Wheatland General Plan Policy Document	Final	No	General plan for Wheatland. Includes a land use designation for parks.	http://www.wheatland.ca.gov/departments/commu-nity-development/	7/11/2006
Williams 2010 General Plan	Final	No	General plan for Williams. Includes a land use designation for parks and open space.	https://www.cityofwilliams.org/departments/plann-ing/general_plan.php#revize_document_center_rz56	5/1/2012
City of Willows General Plan	Final	No	General plan for Willows. Includes a land use designation for open space.	https://www.codepublishing.com/CA/Willows/html/WillowsGP/WillowsGP.html	3/10/1981
City of Winters General Plan Policy Document	Final	No	General plan for Winters. Swainson's hawk and valley elderberry longhorn beetle are known to occur in the city. Requires the setback of development of at least 100 feet from the top of bank for Putah Creek and at least 50 feet from the top of bank for Dry Creek. There is no land use designation for conservation.	http://www.cityofwinters.org/city-of-winters-general-plan/	5/19/1992
General Plan Update 2035 City of Woodland	Final	Yes	General plan for Woodland. Swainson's hawk is known to occur in the city. Includes a land use designation for open space and flood study area.	https://www.cityofwoodland.org/1000/Documents	5/16/2017
Yuba City General Plan	Final	Yes	General plan for Yuba City. Includes a land use designation for greenways and parks, recreation & open space.	https://www.yubacity.net/city_hall/departments/development_services/planning/plans/general_plan	4/8/2004
Other Conservation and Management Documents	See below	See below	See below	See below	See below
Bay Area Greenprint and Mitigation Wizard	Updated periodically	Yes	The Bay Area Greenprint overlaps the southwestern portion of the GAI. The Bay Area Greenprint is a tool that reveals the multiple benefits of natural and agricultural lands, empowering users to inform land use decisions with better data. The Bay Area Greenprint identifies, maps, and measures the values that natural resources contribute to the ecosystem, the economy, and the local and regional community. Included in the Bay Area Greenprint is a mitigation wizard, which is a tool to find the predicted impacts on species that might require mitigation, and then suggests where protection or restoration projects should be located.	https://www.bayareagreenprint.org/	9/8/2020 (date of latest document inclusion)
California EcoAtlas	Updated periodically (nearly daily)	Yes	Statewide database tracking the extent and condition of wetlands in California, managed by the San Francisco Estuary Institute.	https://www.ecoatlas.org/	10/9/2020
Critical Linkages: Bay Area & Beyond	Updated periodically	Yes	Regional effort by Science & Collaboration for Connected Wildlands to identify 14 landscape connections for wildlife migration in the San Francisco Bay and Central Coast regions.	http://www.scwildlands.org/	2013
Demonstrating the California Wetland Status and Trends Program: A Probabilistic Approach for Estimating Statewide Aquatic Resource Extent, Distribution and Change Over Time	Final	No	A report from the Southern California Coastal Water Research Project describing a pilot study that is tracking wetland conditions statewide.	https://www.sccwrp.org/publications/	4/1/2015
North Yuba River Watershed Restoration Plan	In progress	Not applicable	South Yuba River Citizens League restoration plan for the North Yuba Watershed.	https://yubariver.org/nyfp-restoration-plan/	Not applicable

Title	Status	Spatial Data	Reference Purpose	Link	Date
Sacramento River Watershed Program	Updated periodically (nearly continuously)	Yes	An organization that conducts numerous restoration programs, and creates numerous restoration documents, in the Sacramento River HUC-4 (1802). These documents include watershed assessments, management plans, and specific study reports.	https://sacriver.org/	Updated nearly continuously
Sierra Nevada Conservancy Annual Report	Updated periodically (annually)	No	Annual report of the Sierra Nevada Conservancy describing actions to restore and enhance the Sierra Nevada.	https://sierranevada.ca.gov/wp-content/uploads/sites/326/2021/03/AnnualReport2020.pdf	1/1/2021

^a Consistent with the Caltrans SAMNA and Chapter 4, 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; State species of special concern; or California Rare Plant Rank 1 and 2 species.

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4. EXISTING MITIGATION OPPORTUNITIES

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 MCAs. RCISs, which are a prerequisite to MCAs, are also discussed. Caltrans begins the chapter by describing the advance mitigation credits already held by District 3.

4.1 SHOPP Advance Mitigation Credits

The 2016 SHOPP, with California Transportation Commission approval, released the first funds used to program Caltrans advance mitigation projects in several Caltrans Districts. The projects were programmed against the \$40 million reserve created in the 2016 SHOPP for advance mitigation project delivery. Thirteen pilot advance mitigation projects were programmed in the SHOPP and their delivery is underway. Two such projects may inform Caltrans District 3's advance mitigation planning:

- 03-1H520 Habitat Advance Mitigation: Giant Garter Snake and Swainson's Hawk Habitat Mitigation
- 03-2H140 Habitat Advance Mitigation: Wetland, Vernal Pool, Riparian Habitat Advance Mitigation

Both advance mitigation projects are credit purchases from multiple banks (Table 4-1).

4.2 HCPs and NCCPs

HCPs¹ and NCCPs² define covered activities that consist of specific projects and actions that may have adverse effects on covered species and natural communities. The adverse effects associated with the covered activities are estimated, and incidental take permits are issued by FWS and/or CDFW. Once the HCP, NCCP, or HCP/NCCP is adopted and the incidental take permit(s) 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 provides early documentation of compliance with CESA and 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.

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 FGC

Table 4-1. SHOPP Advance Mitigation Credits

Bank Where Credits Were Purchased	Credit Purchase Year	Signatories ^a	Service Area	Credit Type and Quantity
Colusa Basin Mitigation Bank, Sutter Basin Conservation Bank, Muzzy Ranch Conservation Bank	2019, 2021	CDFW and/or FWS	Glenn, Colusa, Sutter, Yuba, Placer, Yolo, Tehama, Solano, San Joaquin, Contra Costa, Napa, Butte, and Sacramento Counties at various locations	22.35 giant garter snake credits 7 giant garter snake credits 6 Swainson's hawk foraging habitat credits
Colusa Basin Mitigation Bank, Elsie Gridley Conservation Bank, Cosumnes Floodplain Mitigation Bank, Bullock Bend Mitigation Bank, and one out to bid	2020	National Oceanic and Atmospheric Administration ("NOAA"), EPA, FWS, CDFW, and/or Corps	Tehama, Glenn, Butte, Yuba, Colusa, Sutter, Yolo, Placer, Sacramento, Yolo, Solano, El Dorado, Amador, Contra Costa, and San Joaquin Counties	1.5 seasonal wetland credits 2.23 preserved marsh credits 0.61 vernal pool reestablishment credits 0.9 floodplain mosaic wetland credits 0.4–0.59 seasonal marsh/wetland creation credits 6.0 riparian credits (salmonid riverine/Swainson's hawk nesting buffer restored) credits

^a Signatories in **bold** 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).

Caltrans identified the following active and/or pending HCPs, NCCPs and HCP/NCCPs in the GAI that apply to transportation-related activities, that Caltrans may be able to use to meet its compensatory mitigation needs, and that may offer Caltrans the opportunity to participate in pre-transfer mitigation purchases, as authorized in SHC § 800.6(a)(2):

- Butte Regional Conservation Plan HCP/NCCP
- Western Placer County HCP/NCCP
- Yolo County HCP/NCCP

Figure 4-1 depicts the locations of the above-listed HCP/NCCPs. Table 4-2 summarizes the signatories, status or date of the plan, plan area, participating transportation agency, covered species, and covered natural communities. Multiple project-specific HCPs in the GAI were not included in Table 4-2 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 were not road infrastructure-related and could not be adapted to road infrastructure, or they did not provide take coverage that would be usable for Caltrans projects.

Figure 4-1. HCPs and NCCPs

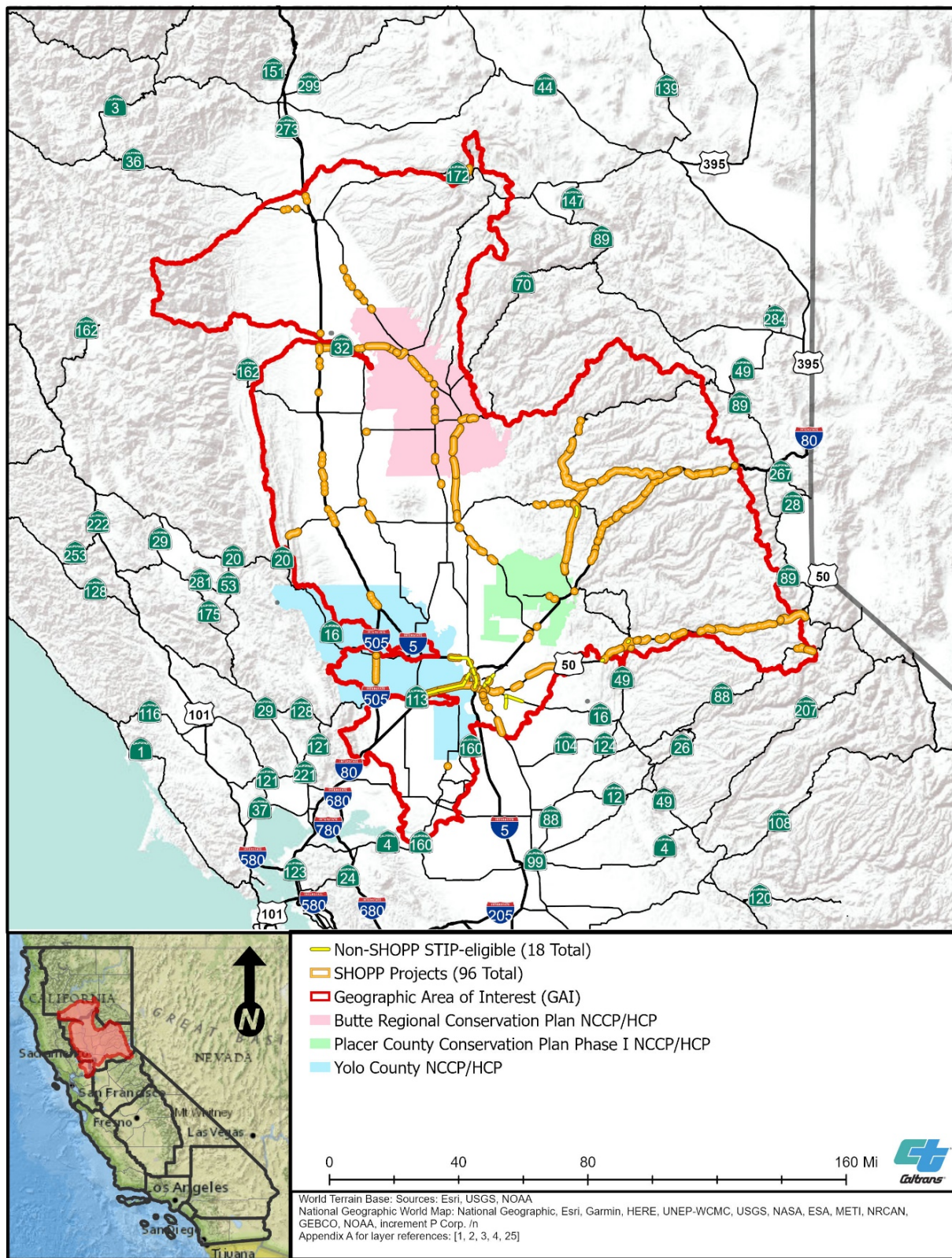


Table 4-2. Overview of HCPs and NCCPs in the GAI^{a,b}

Name	Signatories ^c	Date	Area (acres)	Participating Transportation Agencies	Covered Species	Covered Natural Communities
Butte Regional Conservation Plan (NCCP/HCP)	FWS, CDFW, NMFS, Corps	Drafted 2019, pending agency approval	564,270	Caltrans	Swainson's hawk, giant garter snake, valley elderberry longhorn beetle, foothill yellow-legged frog, and 15 other wildlife and 6 plant species. In addition to the covered species, 20 other wildlife species were designated "Local Concern Species."	Oak woodland and savanna, grassland, riparian, wetland, aquatic, and agriculture
Western Placer County HCP/NCCP	FWS, CDFW, NMFS	2021	420,309	South Placer Regional Transportation Authority	Swainson's hawk, giant garter snake, valley elderberry longhorn beetle, foothill yellow-legged frog, California red-legged frog, and nine other wildlife species.	Vernal pool complex, grassland, aquatic/wetland complex, riverine/riparian complex, valley oak woodland, oak woodland, rice agriculture
Yolo County HCP/NCCP	FWS, CDFW	2019	654,723	Yolo County	Swainson's hawk, giant garter snake, valley elderberry longhorn beetle, and eight other wildlife and one plant species.	Cultivated lands, grassland, shrubland and scrub, woodland and forest, riparian and wetlands

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

<https://ecos.fws.gov/ecp0/conservationPlan/region/summary?region=8&type=HCP>

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

^b This table lists HCPs and NCCPs that may be applied to Caltrans' mitigation needs.

^c Signatories in **bold** 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).

Three prominent planning documents in the region, the South Sacramento HCP, the Natomas Basin HCP, and the Solano HCP, were omitted for these reasons. In addition, when Caltrans and/or RTPAs are not signatories or participating special entities in any of the NCCPs listed in Table 4-2, their participation and coverage under any NCCP or HCP/NCCP is at the discretion of the implementing entity/plan manager.

4.3 Conservation and Mitigation Banks

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 38 active or pending conservation and/or mitigation banks with service areas that overlap all or part of the GAI. Information on the agency approvals, the types of credits available, and brief descriptions of each bank are provided in Table 4-3. 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, as listed in Table 4-3.

Figures showing conservation and mitigation bank service areas that are publicly available for aquatic resources and the species of mitigation need in the GAI are included in Appendix G.

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

Name	Year Approved	Current Status	Signatories^b	Area (acres)	Credit Types
Antonio Mountain Ranch Mitigation Bank	2018	Active – credits available	FWS, CDFW, Corps	797.9	Swainson's hawk foraging habitat, tricolored blackbird foraging habitat, vernal pool fairy shrimp, intermittent stream, perennial stream, vernal pools and seasonal wetlands
Big Gun Conservation Bank	2010	Active – credits available	FWS	47.81	California red-legged frog
Blackburn Vernal Pool Conservation Bank	2007	Active – credits available	FWS	631	Vernal pool fairy shrimp
Bryte Ranch Conservation Bank	2002	Active – credits available	FWS, CDFW	589	Swainson's hawk foraging habitat, burrowing owl foraging habitat, vernal pool fairy shrimp, vernal pool tadpole shrimp
Bullock Bend Mitigation Bank	2016	Active – credits available	FWS, CDFW, Corps, EPA, NMFS	119.65	Swainson's hawk nesting buffer; Central Valley steelhead; Chinook salmon – Central Valley spring run, fall/late fall run, and winter run; riverine riparian; floodplain riparian
Burke Ranch Conservation Bank	2007	Active – credits available	FWS, CDFW	964.14	California tiger salamander, Swainson's hawk foraging habitat, burrowing owl foraging habitat, vernal pool preservation, playa pool preservation, playa wetlands preservation
Campbell Ranch Conservation Bank	2005	Active – credits available	FWS	160	Vernal pool fairy shrimp, vernal pool tadpole shrimp
Clay Station Mitigation Bank	1999	Active – credits available	FWS, CDFW, Corps, EPA	405	Seasonal wetlands/marsh, vernal pool establishment
Colusa Basin Mitigation Bank	2014	Active – credits available	FWS, CDFW, Corps, EPA	162.78	Giant garter snake, seasonal wetland

Name	Year Approved	Current Status	Signatories ^b	Area (acres)	Credit Types
Cosumnes Floodplain Mitigation Bank	2008	Sold out	CDFW, Corps, NMFS, EPA	472	Floodplain mosaic wetlands, floodplain riparian habitat, shaded riverine aquatic habitats
Daley Ranch Vernal Pool Conservation Bank	2007	Active – credits available	FWS	665	Vernal pool preservation
Dolan Ranch Conservation Bank	1999	Active – credits available	FWS, CDFW	252	Swainson’s hawk, burrowing owl, vernal pool tadpole shrimp, vernal pool fairy shrimp, vernal pool creation, vernal pool preservation—giant garter snake credits sold out
Dove Ridge Conservation Bank	2003	Active – credits available	FWS	2,400	Vernal pool fairy shrimp, vernal pool tadpole shrimp, Butte County meadowfoam (sold out)
Elsie Gridley Mitigation Bank	2006	Active – credits available	FWS, CDFW, Corps	1,815	Swainson’s hawk foraging habitat, valley elderberry longhorn beetle, California tiger salamander upland, burrowing owl foraging habitat, tricolored blackbird, northern harrier, vernal pool fairy shrimp, vernal pool tadpole shrimp, vernal pools, vernal pool creation, perennial wetlands, seasonal wetland creation, freshwater emergent marsh – riparian wetlands (sold out)
Fitzgerald Ranch Conservation Bank	1999	Active – credits available	FWS	808	California tiger salamander, vernal pool fairy shrimp
Goldfields Conservation Bank	2008	Active – credits available	FWS	152	Vernal pool tadpole shrimp, Contra Costa goldfields
Hamilton Ranch Conservation Bank	2019	Active – credits available	FWS	393.7	Vernal pool fairy shrimp, vernal pool tadpole shrimp, Conservancy fairy shrimp, Hoover’s spurge, slender Orcutt grass

Name	Year Approved	Current Status	Signatories ^b	Area (acres)	Credit Types
Laguna Terrace East Conservation Bank	2008	Active – credits available	FWS	200	Swainson's hawk ^c , vernal pool preservation (sold out)
Liberty Island Conservation Bank	2010	Active – credits available	FWS, CDFW, NMFS	186	Chinook salmon, Central Valley steelhead, delta smelt, longfin smelt, tule marsh shaded riverine aquatic habitat
Locust Road Mitigation Bank	2012	Active – credits available	FWS, Corps	75	Wetlands/WOTUS, vernal pool fairy shrimp, vernal pool creation, Swainson's hawk (sold out), seasonal wetlands (sold out)
Meridian Ranch Mitigation Bank	2013	Active – credits available	FWS, CDFW, Corps, EPA	377.63	Swainson's hawk foraging habitat preservation, vernal pool establishment and vernal pool preservation (includes vernal pool fairy shrimp and vernal pool tadpole shrimp)
Muzzy Ranch Conservation Bank	2008	Active – credits available	FWS, CDFW	1,391	Swainson's hawk and other raptor foraging habitat, California tiger salamander, burrowing owl nesting and foraging habitat, vernal pool branchiopods, Delta green ground beetle (anticipated), San Joaquin Valley Orcutt grass.
Nicolaus Ranch VELB Conservation Bank	2016	Active – credits available	FWS	42	Valley elderberry longhorn beetle
Noonan Ranch Conservation Bank	2009	Active – credits available	FWS	189	California tiger salamander, vernal pool fairy shrimp, Contra Costa goldfields, riparian preservation
North Bay Highlands Conservation Bank	2014	Active – credits available	FWS	609	California red-legged frog

Name	Year Approved	Current Status	Signatories ^b	Area (acres)	Credit Types
North Suisun Mitigation Bank	2008	Active – credits available	FWS, CDFW, Corps, EPA	627	California tiger salamander, vernal pool fairy shrimp, vernal pool tadpole shrimp, San Joaquin Valley Orcutt grass, Contra Costa goldfields, vernal pool creation (sold out)
Oursan Ridge Conservation Bank	2017	Active – credits available	FWS, CDFW	430	California red-legged frog, Alameda whipsnake
Ridge Cut Giant Garter Snake Conservation Bank	2010	Active – credits available	FWS	186	Giant garter snake
Ridge Top Ranch Wildlife Conservation Bank	2014	Active – credits available	FWS	745	California red-legged frog, Callippe silverspot butterfly
River Ranch VELB Conservation Bank	2005	Active – credits available	FWS	211	Valley elderberry longhorn beetle
River Ranch Wetlands Mitigation Bank	2010	Active – credits available	CDFW, Corps, EPA	114	Wetland/WOTUS, riparian
Stillwater Plains Mitigation Bank	2000	Active – credits available	FWS, CDFW, Corps, EPA	834	Valley elderberry longhorn beetle, Boggs Lake hedge-hyssop, vernal pool creation, vernal pool preservation, vernal swale, emergent marsh, constructed channel, oak woodland
Sunrise Douglas Mitigation Bank	2008	Active – credits available	FWS, CDFW	482	Vernal pool ecosystem preservation, vernal pool fairy shrimp, vernal pool tadpole shrimp, Sacramento Orcutt grass, slender Orcutt grass
Sutter Basin Conservation Bank	2008	Active – credits available	FWS, CDFW	429.14	Giant garter snake

Name	Year Approved	Current Status	Signatories ^b	Area (acres)	Credit Types
Toad Hill Ranch Mitigation Bank	2010	Active – credits available	FWS, Corps, EPA	1,630	Vernal pool creation, vernal pool preservation, seasonal wetland (sold out)
Van Vleck Mitigation Bank	2009	Active – credits available	FWS, CDFW, Corps, EPA	775	Swainson's hawk, vernal pool preservation, vernal pool creation
Western Placer Schools Conservation Bank	2006	Active – credits available	FWS	122	Vernal pool ecosystem preservation, vernal pool fairy shrimp, vernal pool tadpole shrimp
White Rock Road Properties – Scott Road Conservation Bank	2019	Active – credits available	FWS	191	Vernal pool preservation

^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:.....>

<https://www.fws.gov/sacramento/es/Conservation-Banking/Banks/In-Area/>

^b Signatories in **bold** 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 Laguna Terrace East Conservation Bank – Swainson's hawk mitigation available in Sacramento County on a case-by-case basis as approved by the CEQA lead.

4.4 In-lieu Fee Programs

Compensatory mitigation can also be accomplished through participation in an in-lieu fee program, which is an agreement between a natural resource regulatory agency or agencies 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.

There are three active in-lieu fee programs with service areas that overlap the GAI: the Sacramento District California ILF Program, the Western Placer County ILF Program, and the South Sacramento ILF Program. The Sacramento District California ILF Program’s instrument has been amended to include pre-transfer credit purchases and, if its instrument is amended, the Western Placer County ILF Program may also provide a credit opportunity for Caltrans (Table 4-4, Figure 4-2). However, the South Sacramento ILF Program is associated with the South Sacramento HCP, which does not include transportation projects as covered activities, and is therefore not likely to be usable by Caltrans.

Table 4-4. Overview of In-lieu Fee Programs in the GAI^a

Name	Year Approved	Signatories ^b	Instrument Includes Pre-transfer Credit Purchases?	Location	Credit Types
Sacramento District California ILF Program	2014	Corps, EPA, NMFS, RWQCB, NFWF	Yes	Corps Sacramento District Boundary (entire)	<ul style="list-style-type: none"> ▪ Aquatic resource ▪ Vernal pool
Western Placer County ILF Program	2020	Corps, EPA, RWQCB, Placer County	No	Placer County	<ul style="list-style-type: none"> ▪ Riparian establishment ▪ Vernal pool ▪ Vernal pool complex

Note: NFWF = National Fish and Wildlife Foundation

^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 Signatories in **bold** 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).

4.5 RCISs and MCAs

Assembly Bill 2087 established CDFW's RCIS Program in 2016 (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, with respect to the SHS, create credits that may be used as compensatory mitigation to offset impacts identified under CESA and the Lake and Streambed Alteration Program. It is important to note that MCAs are not permits like HCPs and NCCPs (Section 4.2). MCA advance mitigation credits are analogous to conservation and mitigation bank credits (Section 4.3). In other words, unlike an HCP and NCCP, RCISs and MCAs do not result in the issuance of incidental take permits for covered activities.

Some conservation or enhancement actions, because of their size, type, or location, would not be suitable for establishing mitigation credits through CDFW's mitigation and conservation banking program. Implementing actions on public land—such as installing wildlife crossings or removing fish passage barriers—are examples of potential enhancement actions that may establish CDFW-approved credits under an MCA and not a BEI (CDFW 2019c).

4.5.1. RCISs

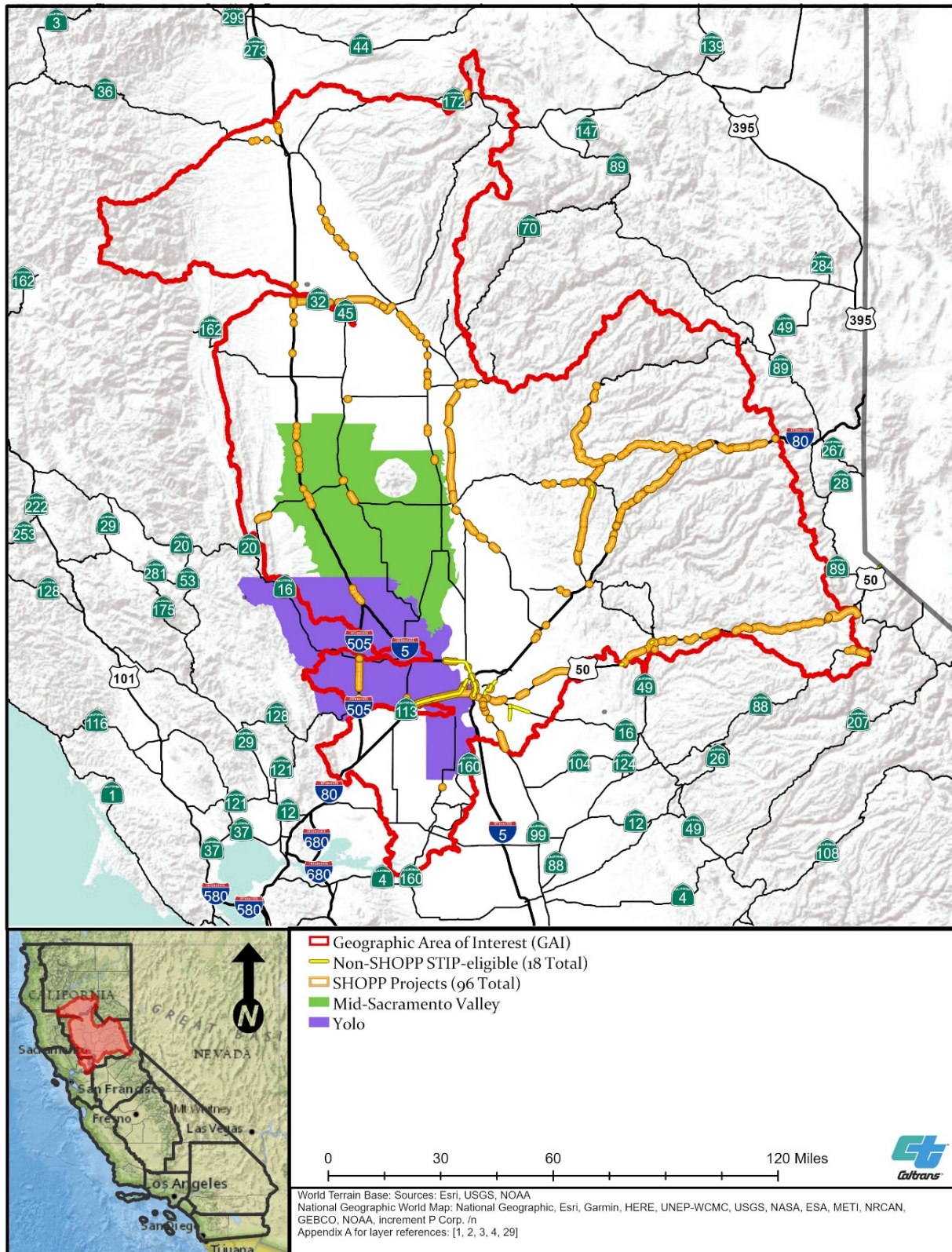
Caltrans identified the following approved RCISs with service areas that overlap the GAI (Figure 4-3):

- Mid-Sacramento Valley RCIS
- Yolo RCIS/LCP

Mid-Sacramento Valley RCIS

The Mid-Sacramento Valley RCIS was finalized in December 2020 (ICF 2020b). Reclamation District 108 is the proponent. It covers approximately 635,626 acres in Sutter and Colusa Counties and is entirely within the GAI. The Mid-Sacramento Valley RCIS analyzes 12 focal species, all of which are wildlife species. The following RCIS focal species are also species of mitigation need in this RAMNA: Swainson's hawk, giant garter snake, and valley elderberry longhorn beetle. The RCIS includes several goals and objectives related to acquiring, preserving, and maintaining natural habitats, enhancing and maintaining wildlife movement corridors, and incentivizing agricultural practices that are beneficial to the species of mitigation need, such as rice farming for giant garter snake and low-growing crops for Swainson's hawk foraging habitat. Climate change is addressed for each of the species of mitigation need, along with several other resources identified in the RCIS. Transportation infrastructure in the RCIS area is owned and operated by Caltrans District 3, Sutter and Colusa Counties, and several individual cities. Caltrans District 3 was a member of the Mid-Sacramento Valley RCIS steering committee (ICF 2020b).

Figure 4-3. RCIS Areas



Yolo RCIS/Local Conservation Plan

The Yolo RCIS/Local Conservation Plan (“LCP”) was finalized in October 2020 (ICF 2020a). Yolo Habitat Conservancy and the California Department of Water Resources are the proponents. The RCIS covers the entirety of Yolo County, totaling 653,549 acres, and overlaps the southern part of the GAI. The document contains both an RCIS and LCP, which overlap significantly but retain certain elements that are distinct from one another. The RCIS portion of the document addresses 41 focal species (8 plants and 32 animals), while the LCP portion addresses those same 41 species plus an additional 102 species (47 plants and 55 animals) as either “Group 2 Conservation Species” or “Group 3 Conservation Species.”

The following RCIS focal species are also species of mitigation need in this RAMNA: giant garter snake, Swainson’s hawk, and valley elderberry longhorn beetle; foothill yellow-legged frog is considered a Group 2 Conservation Species under the LCP. Conservation goals for valley elderberry longhorn beetle generally include identifying and protecting occupied habitat and establishing elderberry host plants, where possible. Conservation goals for giant garter snake include the protection of approximately 700 acres within the species’ modeled habitat, and the maintenance of connectivity between the Willow Slough/Yolo Bypass and Colusa Basin subpopulations. Conservation goals for Swainson’s hawk include the protection of 2,872 acres of habitat that is currently not protected, maintaining crop types that support foraging, and ensuring that there is at least one suitable nest tree per 10 acres of cultivated land. Several active and proposed transportation projects, including STIP and SHOPP projects, are identified and accounted for in the RCIS (ICF 2020a).

4.5.2. Mitigation Credit Agreements

As discussed previously, MCAs are developed when and where an RCIS is approved by CDFW and, with respect to the SHS, 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 the California FGC § 1856. At this time, practical instructions and guidance for establishing MCAs are currently being developed by CDFW³ and no MCAs or MCA credits are available. The recent completion of the Mid-Sacramento RCIS and the Yolo RCIS/LCP allows for future opportunities for Caltrans to enter into MCAs with CDFW in either of these RCIS areas. Once an MCA has been approved by CDFW, mitigation credits may be created through the agreement that could be applied to Caltrans transportation projects.

Wildlife Crossing and Aquatic Corridor Enhancements

One potential benefit of the RCIS and MCA process is that it may provide a mechanism to generate compensatory mitigation credits by improving permeability of the SHS through wildlife crossings and aquatic corridor enhancements. Through an MCA developed under an RCIS, CDFW would be authorized to recognize CESA and Lake and

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

Streambed Alteration credits established through wildlife crossing and aquatic corridor construction made separate from and distinct from a specific transportation project. Connectivity information for the GAI is summarized in Section 2.9.

5. MODELED ESTIMATED IMPACTS

In this chapter, Caltrans documents the potential compensatory mitigation needs in the GAI for fiscal years 2019/20 to 2028/29. Needs were based on estimated potential compensatory mitigation requirements of Caltrans' anticipated SHOPP transportation projects and regional and local STIP-eligible transportation projects. Because the assessment is intended to inform advance mitigation project scoping, the impact estimates used to forecast compensatory mitigation needs do not distinguish between permanent or temporary impacts. Actual transportation project impacts, and natural resource regulatory agency compensatory mitigation conditions on transportation projects, will be determined in the future through each transportation project's environmental studies and permits.

In the sections below, Caltrans:

- Describes its approach to, and major assumptions, when estimating transportation-related compensatory mitigation needs in the GAI;
- Identifies transportation projects that could potentially benefit from advance mitigation planning¹ for the 10-year planning period (summarized in Tables 5-1 and 5-2).
- Provides its estimate of potential aquatic resource impacts for the next 10 years from the transportation projects; and
- Provides its estimate of potential impacts on wildlife resources from transportation projects for the next 10 years coincident with habitat for the species of mitigation need.

As described in Section 1.5, to focus the assessment, Caltrans District 3 identified species of mitigation need, for which results are provided below. Species of mitigation need are species for which a high probability of compensatory mitigation need is anticipated. Both fish species and terrestrial species were identified as species of mitigation need. As discussed further in Chapter 9, during advance mitigation project scoping, consideration will also be given to additional special-status species that the SAMNA identified as co-occurring with the species of mitigation need, because they could potentially be affected by the same habitat impacts that affect the species of mitigation need.

5.1 Approach

Transportation projects eligible to use advance mitigation credits funded by the AMA may only be SHOPP or STIP transportation projects (SHC § 800.7; Caltrans 2019a). Hence, the compensatory mitigation needs for wildlife and aquatic resources in the GAI are based on Caltrans' anticipated SHOPP transportation project impacts and Caltrans, regional, and local STIP-eligible transportation project impacts. At this time:

¹ Benefiting transportation projects are transportation projects whose delivery schedules benefit from advance mitigation credits.

- SHOPP transportation project needs are forecast quantitatively through the SAMNA model developed for the AMP.
- STIP-eligible needs are assessed qualitatively, through Caltrans District, MPO, RTPA, and other transportation agency coordination.

All estimates assume permanent losses, although it is likely that in many cases, some of the effects of a transportation project may be avoided, may be temporary, or may not result in a full loss.

5.1.1. SHOPP Needs Assessment

SHOPP impacts were forecast through the SAMNA. The SAMNA consists of an intersection of assumed transportation project footprints with natural resource layers developed for the SAMNA. Briefly described in Section 1.4, more detailed SAMNA information is provided in the *Advanced Mitigation Needs Assessment GIS Tool Report for California Department of Transportation* (Caltrans 2018).

To identify the list of SHOPP projects planned for the GAI, Caltrans consulted the SHOPP Ten-Year Book for fiscal years 2019/20 to 2028/29 (Caltrans 2021a). 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 96 SHOPP transportation projects in the GAI that are currently in the planning and conceptual phases (Table 5-1). The general locations of all 96 planned transportation projects are shown on most of the maps in this document.

Each transportation project's potential impact was defined using a buffer from the edge of pavement. Different buffer widths were used depending on the transportation project's activity. Table 5-2 provides the range of buffers relevant to the transportation projects listed in the SHOPP Ten-Year Book for this GAI, which are extracted from Table 1 of Caltrans 2021a. Many transportation projects include multiple activities. In those cases, the largest buffer was assigned to the transportation project for the potential impact analysis (Table 5-1).

Table 5-1. SHOPP Transportation Projects Potentially Affecting Special-status Species and Aquatic Resources in the GAI

Sub-basin (HUC-8)	Advertised Year	SHOPP Project ID	Caltrans District	County	Route	Begin Mile ^a	End Mile ^a	Ecoregion Section	Activity
Big Chico Creek-Sacramento River	2021/22	15816	2	Tehama	99	9.14	9.15	Great Valley	Bridge rail
Big Chico Creek-Sacramento River	2019/20	17714	3	Butte	32	7.6	7.9	Great Valley	Roundabouts
Big Chico Creek-Sacramento River	2023/24	19182	2	Tehama	99	0	12.5	Great Valley	Headwall, endwall
Big Chico Creek-Sacramento River	2021/22	21443	3	Butte	32	0.3	5	Great Valley	Cure-in-place line culvert
Big Chico Creek-Sacramento River	2023/24	21484	2	Tehama	99	4.2	4.8	Great Valley	Roundabouts
Big Chico Creek-Sacramento River, Butte Creek	2019/20	9247	3	Butte	99	13.25	45.92	Great Valley	Bridge rail
Big Chico Creek-Sacramento River, Sacramento-Stone Corral	2025/26	16926	3	Glenn	32	0	10.9	Great Valley	Replace/install culverts
Big Chico Creek-Sacramento River, Sacramento-Stone Corral	2025/26	21266	3	Glenn	5	R20.0	R28.8	Great Valley	Replace/install culverts

Sub-basin (HUC-8)	Advertised Year	SHOPP Project ID	Caltrans District	County	Route	Begin Mile ^a	End Mile ^a	Ecoregion Section	Activity
Butte Creek	2019/20	16293	3	Butte	99	14.9	15.7	Great Valley	Bridge replacement, new construction
Butte Creek	2022/23	16917	3	Butte	32	5	10.2L/R	Great Valley	Cure-in-place line culvert
Butte Creek	2027/28	20843	3	Butte	99	22.6	R30.3	Great Valley, Sierra Nevada Foothills	Replace/install culverts
Butte Creek, Honcut Headwaters- Lower Feather	2023/24	16915	3	Butte	99	R3.1	5	Great Valley	Replace/install culverts
Butte Creek, Sacramento- Stone Corral	2020/21	9258	3	Glenn	162	76.3	78.6	Great Valley	Bridge replacement new construction
Honcut Headwaters- Lower Feather	2019/20	14007	3	Butte, Yuba	70	16.2	25.8	Great Valley	Extend existing culvert
Honcut Headwaters- Lower Feather	2022/23	15830	3	Yuba	70	R11.2	13.5	Great Valley	Bridge rail
Honcut Headwaters- Lower Feather	2021/22	16336	3	Yuba	70	14.8	15.7	Great Valley	Replace/install culverts
Honcut Headwaters- Lower Feather	2024/25	16387	3	Butte	162	15.6	18.4	Great Valley	Replace/install culverts
Honcut Headwaters- Lower Feather	2019/20	17716	3	Butte	162	18.4	19.85	Great Valley, Sierra Nevada Foothills	Replace/install culverts

Sub-basin (HUC-8)	Advertised Year	SHOPP Project ID	Caltrans District	County	Route	Begin Mile ^a	End Mile ^a	Ecoregion Section	Activity
Honcut Headwaters- Lower Feather	2019/20	18010	3	Sutter	99	40	40.5	Great Valley	Improved highway geometry
Honcut Headwaters- Lower Feather	2019/20	20679	3	Butte	70	8.8	12.1	Great Valley	Replace/install culverts
Honcut Headwaters- Lower Feather	2019/20	20683	3	Butte	70	5.6	8.8	Great Valley	Replace/install culverts
Honcut Headwaters- Lower Feather	2021/22	20723	3	Butte, Yuba	70	0	3.8	Great Valley	Replace/install culverts
Honcut Headwaters- Lower Feather, Upper Bear	2025/26	21943	3	Yuba	65	4	R9.38	Great Valley	Replace/install culverts
Lower American	2020/21	16358	3	Sacramento	50	12	23.2	Great Valley, Sierra Nevada Foothills	Shoulders – new and widening
Lower American	2019/20	16389	3	Placer	80	2.81	2.81	Great Valley	Bridge replacement, new construction
Lower American	2027/28	20566	3	Placer	80	0	7.1	Great Valley, Sierra Nevada Foothills	Cure-in-place line culvert
Lower American, Lower Sacramento	2021/22	13289	3	Sacramento	51	2.61	2.97	Great Valley	Bridge rail

Sub-basin (HUC-8)	Advertised Year	SHOPP Project ID	Caltrans District	County	Route	Begin Mile ^a	End Mile ^a	Ecoregion Section	Activity
Lower American, Lower Sacramento	2020/21	17116	3	Sacramento	50	R7.7	R9.5	Great Valley	Replace/install culverts
Lower American, Lower Sacramento, Upper Coon- Upper Auburn	2021/22	19807	3	Sacramento	5	22.1	25.1	Great Valley	Bridge replacement, new construction
Lower American, Upper Cook- Upper Auburn	2025/26	16363	3	Sacramento	5	25.4	34.6	Great Valley	Replace/install culverts
Lower Sacramento	2019/20	9111	4	Solano	84	12.1	12.2	Great Valley	Bridge replacement, new construction
Lower Sacramento	2028/29	11365	3	Yolo	80	0	4.4	Great Valley	Replace/install culverts
Lower Sacramento	2019/20	13648	3	Sacra- mento	50	L0.6	R5.3	Great Valley	Bridge rail
Lower Sacramento	2023/24	16390	3	Yolo	50	0	2.5	Great Valley	Bridge rail
Lower Sacramento	2026/27	16953	3	Sacramento	5	23.59	23.59	Great Valley	Bridge rail
Lower Sacramento	2028/29	18156	3	Sacramento	50	R0.3	R0.8	Great Valley	Bridge rail
Lower Sacramento	2022/23	19757	3	Sacramento	99	12.7	16	Great Valley	Replace/install culverts
Lower Sacramento	2025/26	20399	3	Sacramento	99	21.6	R24.285	Great Valley	Bridge rail

Sub-basin (HUC-8)	Advertised Year	SHOPP Project ID	Caltrans District	County	Route	Begin Mile ^a	End Mile ^a	Ecoregion Section	Activity
Lower Sacramento	2019/20	20879	3	Sacramento	99	21.9	23.6	Great Valley	Bridge rail
Lower Sacramento	2026/27	21969	3	Yolo	16	31.84	31.84	Great Valley	Bridge rail
Lower Sacramento	2020/21	21983	3	Sacramento, Yolo	99	19.74	19.74	Great Valley	Improved highway geometry
Lower Sacramento, Upper Cache	2026/27	21263	3	Yolo	505	0	R22.3	Great Valley	Slip line culvert
Lower Sacramento, Upper Coon- Upper Auburn	2019/20	9221	3	Yolo, Sacramento	80	R11.31	R11.31	Great Valley	Bridge rail
North Fork American	2019/20	17216	3	Placer	49	2.22	2.35	Sierra Nevada Foothills	Improved highway geometry
North Fork American	2022/23	18435	3	Placer	80	42.7	49.3R	Sierra Nevada	Bridge replacement, new construction
North Fork American, Upper Bear	2019/20	9292	3	Placer	80	31.5	38.5	Sierra Nevada	Slip line culvert
North Fork American, Upper Bear	2020/21	16940	3	Placer	80	38.3	41.5	Sierra Nevada	Cure-in-place line culvert
North Fork American, Upper Bear	2024/25	16941	3	Placer	80	28.8	49.3	Sierra Nevada	Replace/install culverts
North Fork American, Upper Bear	2022/23	18428	3	Placer	80	R26.5	28.8	Sierra Nevada	Bridge replacement, new construction

Sub-basin (HUC-8)	Advertised Year	SHOPP Project ID	Caltrans District	County	Route	Begin Mile ^a	End Mile ^a	Ecoregion Section	Activity
North Fork American, Upper Bear, Upper Yuba	2024/25	20567	3	Nevada, Placer	80	49.3	68.5	Sierra Nevada	Replace/install culverts
North Fork American, Upper Yuba	2019/20	9220	3	Placer	80	46.3	R63.5	Sierra Nevada	Bridge replacement, new construction
North Fork American, Upper Yuba	2027/28	18437	3	Nevada, Placer	80	R58.2	R58.712	Sierra Nevada	Truck climbing lane
Paynes Creek- Sacramento River	2019/20	16686	2	Tehama	36	2.6	37.1	Northern California Interior Coast Ranges	Replace/install culverts
Paynes Creek- Sacramento River	2022/23	19218	2	Tehama	36	20	39.7	Northern California Interior Coast Ranges	Abandon/remove culvert
Paynes Creek- Sacramento River	2026/27	19441	2	Tehama	5	33.3	33.3	Northern California Interior Coast Ranges	Water and wastewater treatment at SRRA
Paynes Creek- Sacramento River	2025/26	21813	2	Tehama	36	12.8	12.8	Northern California Interior Coast Ranges	Water and wastewater treatment at SRRA
Sacramento- Stone Corral	2019/20	11321	3	Glenn	5	R14.6	R14.6	Great Valley	Water and wastewater treatment at SRRA
Sacramento- Stone Corral	2021/22	13604	3	Colusa	20	34.8	36.5	Great Valley	Widen shoulders

Sub-basin (HUC-8)	Advertised Year	SHOPP Project ID	Caltrans District	County	Route	Begin Mile ^a	End Mile ^a	Ecoregion Section	Activity
Sacramento- Stone Corral	2026/27	16365	3	Colusa	5	R16.6	R34.4	Great Valley	Cure-in-place line culvert
Sacramento- Stone Corral	2023/24	17717	3	Colusa	20	9.3	12.4	Northern California Interior Coast Ranges	Replace/install culverts
Sacramento- Stone Corral	2024/25	20498	3	Colusa	20	30.4	31.9	Great Valley	Cure-in-place line culvert
Sacramento- Stone Corral	2028/29	21267	3	Yolo	5	R22.8	27	Great Valley	Replace/install culverts
South Fork American	2020/21	9298	10	Alpine	88	0.28	2.56	Sierra Nevada	Replace/install culverts
South Fork American	2019/20	9299	10	Alpine	4	4.77	16.72	Sierra Nevada	Replace/install culverts
South Fork American	2027/28	13330	3	El Dorado	49	9	14	Sierra Nevada Foothills	Bridge rail
South Fork American	2021/22	13700	3	El Dorado	50	2.7	R13.7	Sierra Nevada Foothills	Replace/install culverts
South Fork American	2021/22	13701	3	El Dorado	50	R13.7	23	Sierra Nevada Foothills	Replace/install culverts
South Fork American	2025/26	15994	3	El Dorado	50	18.7	21.9	Sierra Nevada, Sierra Nevada Foothills	Slip line culvert
South Fork American	2027/28	18420	3	El Dorado	50	58	75.5	Sierra Nevada	Cure-in-place line culvert
South Fork American	2026/27	20401	3	El Dorado	50	4.9	R14.0	Sierra Nevada Foothills	Replace/install culverts

Sub-basin (HUC-8)	Advertised Year	SHOPP Project ID	Caltrans District	County	Route	Begin Mile ^a	End Mile ^a	Ecoregion Section	Activity
South Fork American	2019/20	20878	3	El Dorado	50	R28.5	R31.2	Sierra Nevada	Bridge replacement, new construction
South Fork American	2024/25	21145	3	El Dorado	50	75.4	80.44	Sierra Nevada	Cure-in-place line culvert
South Fork American	2019/20	21328	3	El Dorado	50	18.5	22.5	Sierra Nevada Foothills	Cure-in-place line culvert
South Fork American	2024/25	21931	3	El Dorado	50	39.7	58.7	Sierra Nevada	Cure-in-place line culvert
South Fork American	2028/29	21965	3	El Dorado	50	28.8	39.7	Sierra Nevada	Replace/install culverts
Thomes Creek- Sacramento River	2019/20	17325	2	Tehama	36	87.8	89.1	Southern Cascades	Improved highway geometry
Upper Bear	2022/23	16337	3	Yuba	65	R0.52	1.77	Great Valley	Replace/install culverts
Upper Bear	2020/21	16784	3	Nevada	20	36.8	37	Sierra Nevada	Replace/install culverts
Upper Bear	2020/21	17718	3	Nevada	20	37.1	39.8	Sierra Nevada	Extend existing culvert
Upper Bear	2025/26	17729	3	Nevada	49	10.8	R13.3	Sierra Nevada	Cure-in-place line culvert
Upper Bear	2019/20	20055	3	Nevada	49	1.5	2.6	Sierra Nevada Foothills	Widen shoulders
Upper Bear	2028/29	21966	3	Nevada, Placer	49	0	R14.48	Sierra Nevada	Replace/install culverts

Sub-basin (HUC-8)	Advertised Year	SHOPP Project ID	Caltrans District	County	Route	Begin Mile ^a	End Mile ^a	Ecoregion Section	Activity
Upper Bear, Upper Coon- Upper Auburn	2020/21	16289	3	Nevada, Placer	49	0	7.5	Sierra Nevada Foothills	Replace/install culverts
Upper Bear, Upper Coon- Upper Auburn, Upper Yuba	2020/21	16781	3	Nevada, Placer	20	VAR	VAR	Sierra Nevada, Sierra Nevada Foothills	Turn pockets
Upper Bear, Upper Yuba	2023/24	15996	3	Nevada	20	R12.2	20	Sierra Nevada	Replace/install culverts
Upper Bear, Upper Yuba	2024/25	21932	3	Nevada	20	20	46.119	Sierra Nevada	Replace/install culverts
Upper Bear, Upper Yuba	2027/28	21961	3	Nevada	20	0	R12.2	Sierra Nevada, Sierra Nevada Foothills	Replace/install culverts
Upper Coon- Upper Auburn	2021/22	21162	3	Placer	49	R8.7	R10.6	Sierra Nevada Foothills	Roundabouts
Upper Yuba	2022/23	13311	3	Nevada	80	R58.7L	R60.2	Sierra Nevada	Bridge replacement, new construction
Upper Yuba	2020/21	13605	3	Nevada	20	29.7	30.9	Sierra Nevada	Replace/install culverts
Upper Yuba	2022/23	16364	3	Nevada, Placer	80	0	R2.7L/R	Sierra Nevada	Truck climbing lane
Upper Yuba	2020/21	16783	3	Nevada	20	28	32.4	Sierra Nevada	Replace/install culverts
Upper Yuba	2028/29	18436	3	Placer	80	R64.2	R66.3	Sierra Nevada	Truck climbing lane
Upper Yuba	2028/29	20534	3	Nevada	49	15	R32.61	Sierra Nevada	Replace/install culverts

Sub-basin (HUC-8)	Advertised Year	SHOPP Project ID	Caltrans District	County	Route	Begin Mile ^a	End Mile ^a	Ecoregion Section	Activity
Upper Yuba	2027/28	21272	3	Yuba	49	R0.0	9.3	Sierra Nevada	Replace/install culverts
Upper Yuba	2026/27	21278	3	Nevada	80	R2.7	13.1	Sierra Nevada	Replace/install culverts

Source: Caltrans (2021a)

Note: SRRA = Safety Roadside Rest Area

^a R = right, L = left

Table 5-2. Assumed Buffer Widths, by SHOPP Transportation Project Activity

Activity	Buffer Distance (feet)
Abandon/remove culvert	20
Bridge rail	20
Bridge replacement/new construction	40
Cure-in-place line culvert	20
Extend existing culvert	20
Headwall/Endwall	20
Improved highway geometry	40
Replace/install culverts	20
Roundabouts	40
Shoulders – new and widening	15
Slip line culvert	20
Truck climbing lane	20
Turn pockets	15
Widen shoulders	15

Source: Caltrans (2019b), Table 1

SAMNA Model Results. The AMP developed the SAMNA strictly and specifically for Caltrans' use in advance mitigation planning—that is, when Caltrans is justifying, proposing, and scoping advance mitigation projects (Caltrans 2019a, 2021b). The SAMNA model, its foundation, and assumptions are described in the *Statewide Advance Mitigation Needs Assessment Report* (Caltrans 2021b).

The SAMNA's impact estimates from District 3's planned transportation projects anticipated between fiscal years 2019/20 and 2028/29 are provided in the *Statewide Advance Mitigation Needs Assessment Report* (Caltrans 2021b). All results are provided in acres. Specific to this assessment, SAMNA results estimating impacts on aquatic resources can be found in Section 5.2. The SAMNA results estimating impacts on special-status wildlife species are summarized in Section 5.3 and are provided for all habitats and species in Appendix C.

5.1.2. Non-SHOPP STIP-eligible Needs Assessment

At this time, STIP-eligible needs are assessed qualitatively, through coordination between the District, MPOs, RTPAs, and other public agencies that implement transportation improvements. Obtaining a reliable list of STIP transportation projects within the 10-year planning horizon is problematic. It is never known which transportation projects will be funded through the STIP until the funds are voted on by the California Transportation

Commission, at which point the transportation projects are well past their planning and conceptualization phases and entering their delivery phases.

Because of this timing, funded STIP projects will likely need compensatory mitigation before the AMP can deliver the needed mitigation. AMP planning, therefore, must glean a list of transportation projects from the broader set of non-SHOPP transportation projects that may or may not receive STIP funding, such as STIP-eligible transportation projects. Additionally, the STIP is currently receiving very little funding in favor of the “fix-it-first” philosophy of the Road Repair and Accountability Act of 2017, although there is a backlog of transportation projects that potentially need these funds.

To address the dynamic nature of the non-SHOPP STIP-eligible list, it was necessary to identify transportation projects that will be (1) reasonably certain to occur in the same 10-year time frame as the SHOPP projects used in the SAMNA and (2) highly likely to receive STIP funding. To that end, the AMP consulted the Caltrans Division of Transportation Planning’s Multimodal Operations, Non-SHOPP, Transportation Equity Report database, using the criteria that a transportation project would have to be in a fiscally constrained² regional transportation plan, with a Ready to List³ year identified as occurring in the 10-year planning horizon. The list would be further refined through consultation with the Caltrans Districts and their regional and local transportation partners (see Table 1-3 of this document for the consultation summary). However, no planned STIP-eligible transportation projects were identified within the GAI for fiscal years 2019/20 to 2028/29.

Non-SHOPP STIP-eligible Potential Impacts. Because no planned STIP-eligible transportation projects were identified within the GAI for fiscal years 2019/20 to 2028/29, no impacts are estimated. Nevertheless, if non-SHOPP STIP-eligible projects and their activities were identified, their potential impacts were could be assessed qualitatively. Qualitative analysis consisted of assessing the identified non-SHOPP STIP-eligible projects in the context of the landscape in which they occur and their proximity to SHOPP projects.

5.2 Estimated Aquatic Resources Impacts

The quantitative results provided in this document are pursuant to the SAMNA model. Specific aquatic resource impacts will be assessed as part of each transportation project’s environmental studies. Below, estimated aquatic resource impacts are presented for the HUC-8 sub-basins that make up the GAI and that may potentially experience impacts on aquatic resources. Aquatic resources impacts are categorized as potential impacts on threatened and endangered fish, wetlands, and non-wetland waters. Vernal pools and

² Transportation project funding is reasonably assured.

³ Transportation project schedule is reasonably assured. Ready to List is a named milestone within the Caltrans project delivery process. It is the point when a complete package is ready for contractors to bid on and a transportation project has been approved to be advertised to bid for construction.

riparian habitat are also discussed. Refer to Appendix F for a series of maps depicting the location and extent of wetlands and non-wetland waters in the GAI.

5.2.1. Estimated Impacts on Aquatic Species of Mitigation Need Habitat

Threatened and endangered fish species forecasted to be impacted during the planning period were identified as species of mitigation need. Using the methods described in Section 5.1.1, impacts on fish habitat were estimated for the 96 transportation projects listed in Table 5-1. Of the 96 SHOPP transportation projects evaluated, 12 would result in impacts on approximately 19.4 acres of threatened and endangered fish habitat (Table 5-3; Caltrans 2021b). For example, two transportation projects are anticipated to affect 0.6 acre of chinook salmon spring-run habitat, 0.6 acre of chinook salmon winter-run habitat, 1 acre of delta smelt habitat, 0.7 acre of green sturgeon habitat, 0.7 acre of longfin smelt habitat, and 0.6 acre of steelhead habitat in the Lower Sacramento sub-basin. The SAMNA model also included impact results for Lahontan cutthroat trout. However, this species does not occur in the GAI, is not considered a species of mitigation need, and these results were removed. Similarly, only results for delta smelt within its known range are presented.

5.2.2. Estimated Impacts on Wetlands

Using the methods described in Section 5.1.1, impacts on wetlands were estimated for the 96 transportation projects listed in Table 5-1. Table 5-4 summarizes the estimated impacts in relation to the number of planned SHOPP transportation projects in the GAI. Of the 96 SHOPP transportation projects evaluated, 36 would result in impacts on 4.9 acres of wetland habitat in the GAI (Caltrans 2021b). For example, 0.7 acre of impacts would affect wetlands in the Sacramento-Stone Corral sub-basin from two transportation projects, of which 0.4 acre is an impact on freshwater emergent wetlands, 0.3 acre is an impact on freshwater forested/shrub wetlands, and <0.1 acre is an impact on depressional seasonal habitat.

Note the SAMNA's wetland layers provide output that appears similar to its terrestrial output, in that the results are provided in terms of wetland habitat. Wetland forecasts based on the SAMNA's wetland layer, however, are considered more certain than wetland habitat forecasts based on the SAMNA's terrestrial habitat layers; hence, the wetland estimates below are based solely on the SAMNA's wetland data layer (Caltrans 2021b).

Estimated Impacts on Vernal Pools

The SAMNA does not directly estimate vernal pool impacts, but vernal pool impacts can be estimated by proxy using the SAMNA vernal pool crustacean habitat impact forecast from the SAMNA's terrestrial layer. Critical habitat in the GAI for two vernal pool species, Conservancy fairy shrimp and vernal pool fairy shrimp, is shown on Figure 2-7, and available vernal pool location information is shown in Figure 2-15.

Table 5-3. Summary of Estimated SHOPP Impacts on Threatened and Endangered Fish in the GAI (acres)^{a,b,c}

Sub-basin (HUC-8)	Sub-basin Number	Number of Transportation Projects	Chinook Salmon: Spring-run	Chinook Salmon: Winter-run	Delta Smelt ^d	Green Sturgeon: Southern DPS	Lahontan Cutthroat Trout ^e	Longfin Smelt	Steelhead: California Central Valley DPS
Butte Creek	18020158	2	<0.1	<0.1	Not applicable	<0.1	Not applicable	<0.1	<0.1
Honcut Headwaters- Lower Feather	18020159	1	<0.1	<0.1	Not applicable	<0.1	Not applicable	<0.1	<0.1
Lower American	18020111	3	1.3	1.3	Not applicable	1.3	Not applicable	<0.1	1.6
Lower Sacramento	18020163	2	0.6	0.6	1.0	0.7	Not applicable	0.7	0.6
Sacramento -Stone Corral	18020104	2	0.9	0.9	Not applicable	0.9	Not applicable	1.1	0.9
Upper Coon-Upper Auburn	18020161	1	1.2	1.2	Not applicable	1.2	Not applicable	<0.1	1.2
Upper Yuba	18020125	1	<0.1	<0.1	Not applicable	<0.1	Not applicable	<0.1	<0.1
Total^f		12^g	4.1	4.1	1.0	4.1	—	1.8	4.3

^a Threatened and endangered fish species habitat impacts are forecast by the SAMNA Reporting Tool.

^b Stream/river habitat impacts are provided. Stream/river habitat impacts are assumed to be representative of fish habitat impacts.

^c For sub-basins with more than one species, co-occurrence of impacts is assumed. Acreage for the largest impact is provided.

^d This species showed SAMNA results outside of its known range. The results outside of this species' range have been removed.

^e This species does not occur in the GAI and its results have been removed

^f Totals may be different on account of rounding errors.

^g Totals do not reflect numbers presented in rows above. Some SHOPP transportation projects cross more than one sub-basin; many do not affect fish.

Table 5-4. Summary of Estimated SHOPP Impacts on Wetlands in the GAI (acres)^{a,b}

Sub-basin (HUC-8)	Sub-basin Number	Number of Transportation Projects	Depres- sional	Depres- sional Natural	Depres- sional Seasonal	Freshwater Emergent Wetland	Freshwater Forested/ Shrub Wetland	Freshwater Pond	Total
Butte Creek	18020158	4	0.0	0.0	0.0	0.2	0.3	<0.1	0.4
Honcut Headwaters- Lower Feather	18020159	5	0.1	0.0	0.0	<0.1	0.2	0.0	0.4
Lower American	18020111	5	<0.1	0.0	0.0	0.1	1.2	0.0	1.3
Lower Sacramento	18020163	3	0.0	0.2	0.0	0.1	0.1	0.0	0.3
North Fork American	18020128	2	0.0	0.0	0.0	0.1	<0.1	0.0	0.1
Sacramento- Stone Corral	18020104	2	0.0	0.0	0.0	0.4	0.3	0.0	0.7
South Fork American	18020129	7	0.0	0.0	0.0	0.2	0.4	0.1	0.7
Upper Bear	18020126	6	0.1	0.0	0.0	0.1	0.3	0.0	0.5
Upper Coon- Upper Auburn	18020161	3	0.0	0.0	<0.1	0.4	0.1	0.0	0.5
Upper Yuba	18020125	2	0.0	0.0	0.0	0.1	<0.1	0.0	0.1
Total^c	Not applicable	36^d	0.3	0.2	<0.1	1.6	2.8	0.1	4.9

^a The SAMNA forecasts impacts on wetlands for 10 of the 13 HUCs in the GAI.

^b Some SHOPP transportation projects, some habitats, and some HUC-8 subbasins cross more than one ecoregion.

^c Totals may be different on account of rounding errors.

^d Totals may not reflect numbers presented in rows above. Some SHOPP transportation projects cross more than one sub-basin; many are not forecast to affect wetlands.

Usually Caltrans avoids vernal pools; however, a number of planned SHOPP transportation projects are proximate to the areas displayed. Hence, using the methods described in Section 5.1.1, impacts on vernal pool crustacean habitat for the 96 transportation projects listed in Table 5-1 are described in Table 5-5 and estimated to be:

- 0.9 acre of Conservancy pool fairy shrimp habitat impact from 2 SHOPP transportation projects;
- 10.8 acres of vernal pool fairy shrimp habitat impacts from 15 SHOPP transportation projects; and
- 15.4 acres of vernal pool tadpole shrimp habitat impact from 15 SHOPP transportation project; the estimated longhorn fairy shrimp habitat impact co-occurs with vernal pool fairy shrimp habitat.

It is worth pointing out that vernal pools mapped with the SAMNA Reporting Tool are based on the California Natural Diversity Database occurrence of vernal pool invertebrate species and a 4-mile buffer (Figure 2-15, right-hand side; Caltrans 2021b). Hence, the 27 acres of annual grasslands total acreage were crosswalked to vernal pools by virtue of being within 4 miles of a listed vernal pool invertebrate database occurrence.

Table 5-5. Summary of Estimated SHOPP Impacts on Vernal Pool Habitat in the GAI (acres)^{a,b}

Sub-basin (HUC-8)	Sub-basin Number	Number of Transportation Projects	Conservancy Fairy Shrimp	Vernal Pool Fairy Shrimp	Vernal Pool Tadpole Shrimp
Butte Creek	18020158	3	0.0	0.9	1.6
Honcut Headwaters-Lower Feather	18020159	6	0.0	1.8	2.6
Lower American	18020111	3	0.0	0.4	0.5
Lower Sacramento	18020163	2	0.1	1.9	4.0
Sacramento-Stone Corral	18020104	3	0.8	5.7	6.7
Total^c	Not applicable	16^d	0.9	10.8	15.4

^a The SAMNA forecasts impacts on vernal pools for 5 of the 13 HUCs in the GAI.

^b Some SHOPP transportation projects, some habitats, and some HUC-8 subbasins cross more than one ecoregion.

^c Totals may be different on account of rounding errors.

^d Totals may not reflect numbers presented in rows above. Some SHOPP transportation projects cross more than one sub-basin; many are not forecast to affect vernal pool habitat.

5.2.3. Estimated Impacts on Non-wetland Waters

Using the methods described in Section 5.1.1, impacts on non-wetland waters were estimated for the 96 transportation projects listed in Table 5-1. Of the 96 SHOPP transportation projects evaluated, 60 would result in impacts on 22.5 acres of non-wetland waters in the GAI (Caltrans 2021b). Table 5-6 summarizes the estimated impacts in relation to the number of planned SHOPP transportation projects in the GAI. For example, five transportation projects are forecast to have a total of 1.9 acres of impact in the Sacramento-Stone Corral sub-basin, including 0.4 acre of impact on canal/ditch habitat, 1.5 acres of impact on stream/river habitat, and <0.1 acre of impact on lake/pond habitat.

Table 5-6. Summary of Estimated SHOPP Impacts on Non-wetland Waters in the GAI (acres)^{a,b}

Sub-basin (HUC-8)	Sub-basin Number	Number of Transportation Projects	Canal/Ditch	Lake/Pond	Stream/River	Total
Butte Creek	18020158	5	0.3	0.0	0.3	0.7
Honcut Headwaters-Lower Feather	18020159	8	0.4	0.0	1.5	2.0
Lower American	18020111	5	0.4	<0.1	1.6	2.1
Lower Sacramento	18020163	4	0.4	0.0	0.8	1.2
North Fork American	18020128	6	0.1	0.0	1.9	2.0
Sacramento-Stone Corral	18020104	5	0.4	<0.1	1.5	2.0
South Fork American	18020129	10	<0.1	0.0	5.4	5.5
Thomes Creek-Sacramento River	18020156	1	0.0	0.0	0.2	0.3
Upper Bear	18020126	10	0.5	0.0	1.5	2.0
Upper Coon-Upper Auburn	18020161	3	0.2	0.0	1.3	1.4
Upper Yuba	18020125	10	<0.1	0.0	3.6	3.6
Total^c	Not applicable	60^d	2.7	0.2	19.6	22.5

^a The SAMNA forecasts impacts for 11 of the 13 HUCs in the GAI.

^b Some SHOPP transportation projects, some habitats, and some HUC-8 subbasins cross more than one ecoregion.

^c Totals may be different on account of rounding errors.

^d Totals may not reflect numbers presented in rows above. Some SHOPP transportation projects cross more than one sub-basin; many are not forecast to affect non-wetland waters.

5.2.4. Estimated Impacts on Riparian Habitat

The SAMNA does not directly estimate riparian impacts through its aquatic resource layers, but riparian impacts can be estimated by proxy using the SAMNA montane riparian and valley foothill riparian forecasts from the SAMNA's terrestrial layer. Using the methods described in Section 5.1.1, the SAMNA estimated that 9.3 acres of riparian habitat may be affected by 19 Caltrans SHOPP transportation projects in the GAI (Table 5-7). For example, 8 transportation projects are forecast to have a total of 2.6 acres of impact in the South Fork American sub-basin, including 0.1 acre of impact on montane riparian habitat and 1.2 acres of impact on valley foothill riparian habitat (Caltrans 2021b).

Table 5-7. Summary of Estimated SHOPP Impacts on Riparian Habitat in the GAI (acres)^{a,b}

Sub-basin (HUC-8)	Sub-basin Number	Number of Transportation Projects	Montane Riparian	Valley Foothill Riparian	Total ^c
Butte Creek	18020158	1	0.0	0.2	0.2
Honcut Headwaters-Lower Feather	18020159	4	0.0	2.8	2.8
Lower American	18020111	4	0.0	1.5	1.5
Lower Sacramento	18020163	2	0.0	0.6	0.6
North Fork American	18020128	0	0.0	0.0	0.0
Sacramento-Stone Corral	18020104	1	0.0	0.1	0.1
South Fork American	18020129	8	0.1	1.2	1.3
Thomes Creek-Sacramento River	18020156	0	0.0	0.0	0.0
Upper Bear	18020126	2	0.0	0.5	0.5
Upper Coon-Upper Auburn	18020161	3	0.0	2.1	2.1
Upper Yuba	18020125	3	0.2	0.0	0.2
Total^d	Not applicable	19^e	0.2	9.0	9.3

^a The SAMNA forecasts impacts for 11 of the 13 HUCs in the GAI.

^b Some SHOPP transportation projects, some habitats, and some HUC-8 subbasins cross more than one ecoregion.

^c The sum of montane riparian and valley foothill riparian habitat impacts is provided.

^d Totals may be different on account of rounding errors.

^e Totals may not reflect numbers presented in rows above. Some SHOPP transportation projects cross more than one sub-basin; many are not forecast to affect riparian habitat.

5.3 Estimated Wildlife Impacts

The quantitative results given in this document are pursuant to the SAMNA model. Specific wildlife resource impacts will be assessed as part of each transportation project's environmental studies. The complete results of the SAMNA, inclusive of the 96 transportation projects planned in the GAI and listed in Table 5-1 that may affect special-status plant and wildlife species, are provided in Appendix C.

The special-status terrestrial plant and wildlife species evaluated through the SAMNA consisted of federal and state threatened, endangered, or sensitive species; state fully protected or rare species; or state species of special concern.

5.3.1. Great Valley Ecoregion Section

Based on a search of the species-attributed vegetation layer, 67 special-status terrestrial species are known to occur or have the potential to occur in the portion of the GAI that lies within the Great Valley Ecoregion Section (Section 2.7, Appendix C; Caltrans 2021b). Using the methods described in Section 5.1.1, the SAMNA analysis determined that 24 SHOPP transportation projects could potentially affect 8 habitat types, which could support up to 65 special-status species (Table 5-8).

Table 5-8. Summary of Estimated SHOPP Impacts on Special-status Species Habitat in the GAI

Ecoregion Section	Number of Caltrans SHOPP Projects	Number of Habitats	Special-status Species ^a	Estimated Total Habitat Impact (acres)
Great Valley	24 ^b	8	65	37.0
Northern California Interior Coast Ranges	5 ^b	5	39	11.4
Sierra Nevada	32 ^b	22	52	283.6
Sierra Nevada Foothills	17 ^b	8	61	62.6
Southern Cascades	1 ^b	3	33	12.9

^a Special-status terrestrial plant and wildlife species evaluated through the SAMNA consisted of federal and state threatened, endangered, or sensitive species; state fully protected or rare species; or state species of special concern.

^b Transportation projects are listed in Table 5-1.

Species of mitigation need are species for whom a high probability of compensatory mitigation need is anticipated. The species of mitigation need, identified in Section 1.5, were included in the analysis, and each is discussed briefly in the subsections below: California red-legged frog, foothill yellow-legged frog, giant garter snake, Swainson's hawk, and valley elderberry longhorn beetle. Although the estimated special-status wildlife impacts provided are focused on the compensatory mitigation needs identified by the District, consideration was also given to the other species that the SAMNA model indicates may use the same habitat as the species of mitigation need.

California Red-legged Frog

Using the methods described in Section 5.1.1, impacts on the California red-legged frog and its habitat were estimated for the transportation projects that may affect wildlife (listed in Table 5-1). The SAMNA estimated that 6.1 acres of California red-legged frog habitat may be affected by 10 Caltrans SHOPP projects planned for the Great Valley Ecoregion Section (Caltrans 2021b). Results are summarized in Table 5-9.

Foothill Yellow-legged Frog

Using the methods described in Section 5.1.1, impacts on the foothill yellow-legged frog and its habitat were estimated for the transportation projects that may affect wildlife (listed in Table 5-1). The SAMNA estimated that 0.2 acre of foothill yellow-legged frog habitat may be affected by 1 Caltrans SHOPP project planned for the Great Valley Ecoregion Section (Caltrans 2021b). Results are summarized in Table 5-9.

Giant Garter Snake

Using the methods described in Section 5.1.1, impacts on the giant garter snake and its habitat were estimated for the transportation projects that may affect wildlife (listed in Table 5-1). The SAMNA estimated that 34.5 acres of giant garter snake habitat may be affected by 22 Caltrans SHOPP projects planned for the Great Valley Ecoregion Section (Caltrans 2021b). Results are summarized in Table 5-9.

Swainson's Hawk

Using the methods described in Section 5.1.1, impacts on the Swainson's hawk and its habitat were estimated for the transportation projects that may affect wildlife (Table 5-1). The SAMNA estimated that 289.1 acres of Swainson's hawk habitat may be affected by 43 Caltrans SHOPP transportation projects planned for the Great Valley Ecoregion Section (Caltrans 2021b). Results are summarized in Table 5-9.

Valley Elderberry Longhorn Beetle

Impacts on the valley elderberry longhorn beetle and its habitat were estimated for the transportation projects that may affect wildlife (listed in Table 5-1). The SAMNA estimated that 4.9 acres of valley elderberry longhorn beetle habitat may be affected by 11 Caltrans SHOPP transportation projects planned for the Great Valley Ecoregion Section (Caltrans 2021b). Results are summarized in Table 5-9.

Other Special-status Species

The special-status terrestrial species evaluated through the SAMNA consisted of federal and state threatened, endangered, or sensitive species; state fully protected or rare species; or state species of special concern (Caltrans 2021b). The above-listed species of mitigation need co-occur with other protected plant, invertebrate, amphibian, reptile, bird, and mammal species in the Great Valley Ecoregion Section in nine habitats. Using the methods described in Section 5.1.1, the SAMNA forecast impacts on an additional 62 special-status terrestrial species that potentially use the same habitats as the species of mitigation need in the Great Valley Ecoregion Section (Table 5-10).

Table 5-9. Estimated SHOPP Impacts on Terrestrial Species of Mitigation Need in the GAI

Ecoregion Section	California Red-legged Frog: Number of Caltrans SHOPP Projects ^a	California Red-legged Frog: Estimated Habitat Impact (acres)	Foothill Yellow-legged Frog: Number of Caltrans SHOPP Projects ^a	Foothill Yellow-legged Frog: Estimated Habitat Impact (acres)	Giant Garter Snake: Number of Caltrans SHOPP Projects ^a	Giant Garter Snake: Estimated Habitat Impact (acres)	Swainson' s Hawk: Number of Caltrans SHOPP Projects ^a	Swainson' s Hawk: Estimated Habitat Impact (acres)	Valley Elderberry Longhorn Beetle: Number of Caltrans Projects ^a	Valley Elderberry Longhorn Beetle: Estimated Habitat Impact (acres)
Great Valley	11	6.1	1	0.2	22	34.5	24	31.9	11	4.9
Northern California Interior Coast Ranges	5	11.6	5	4.2	1	3.6	1	3.6	0	0
Sierra Nevada	19	55.4	26	76.0	0	0	0	0	0	0
Sierra Nevada Foothills	15	22.5	11	21.4	1	<0.1	5	1.9	2	0.2
Southern Cascades	0	0	1	11.6	0	0	0	0	0	0

^a Transportation projects are listed in Table 5-1.

**Table 5-10. Estimated SHOPP Impacts on Co-occurring Terrestrial Special-status Species: Great Valley
Ecoregion Section (acres) in the GAI**

Common Name	Species Name	Status	Annual Grassland	Barren	Blue Oak Foothill Pine	Eucalyptus	Fresh Emergent Wetland	Montane Hardwood	Riverine	Valley Foothill Riparian
Not applicable	Not applicable	Total	24.3	0.2	0.1	0.1	1.4	1.8	3.7	5.4
Species of Mitigation Need	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below
California red- legged frog	<i>Rana draytonii</i>	FT, SSC	3.7	0.0	0.0	0.0	0.0	0.8	0.3	1.3
Foothill yellow- legged frog	<i>Rana boylei</i>	FS, SE	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Giant garter snake	<i>Thamnophis gigas</i>	FT, ST	24.1	0.0	0.0	0.0	1.4	0.0	3.7	5.4
Swainson's hawk	<i>Buteo swainsoni</i>	FS, ST	24.3	0.2	0.1	0.1	0.0	1.8	0.0	5.4
Valley elderberry longhorn beetle	<i>Desmocerus californicus dimorphus</i>	FT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.9
Invertebrates	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below
Conservancy fairy shrimp	<i>Branchinecta conservatio</i>	FE	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
vernal pool fairy shrimp	<i>Branchinecta lynchi</i>	FT	9.1	0.0	0.0	0.0	1.4	0.0	0.0	0.0
vernal pool tadpole shrimp	<i>Lepidurus packardii</i>	FE	13.4	0.0	0.0	0.0	1.4	0.0	0.0	0.0

Common Name	Species Name	Status	Annual Grassland	Barren	Blue Oak Foothill Pine	Eucalyptus	Fresh Emergent Wetland	Montane Hardwood	Riverine	Valley Foothill Riparian
Amphibians	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below
California tiger salamander	<i>Ambystoma californiense</i>	FT, ST	14.5	0.0	0.1	0.1	0.0	0.0	0.0	1.1
western spadefoot	<i>Spea hammondi</i>	FS, SSC	24.3	0.0	0.1	0.1	1.4	0.0	3.7	0.0
Reptiles	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below
Coast [Blainville's] horned lizard	<i>Phrynosoma blainvillii</i>	FS, SSC	24.3	0.0	0.1	0.1	0.0	0.0	0.0	5.4
Birds	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below
tricolored blackbird	<i>Agelaius tricolor</i>	FS, ST, SSC	24.3	0.0	0.0	0.1	1.4	0.0	0.0	5.4
grasshopper sparrow	<i>Ammodramus savannarum</i>	SSC	24.3	0.0	0.0	0.1	0.0	0.0	0.0	0.0
tule greater white-fronted goose	<i>Anser albifrons elgasi</i>	SSC	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
golden eagle	<i>Aquila chrysaetos</i>	FS, SFP, SFS	24.3	0.2	0.1	0.1	1.4	1.8	0.0	5.4
short-eared owl	<i>Asio flammeus</i>	SSC	24.3	0.0	0.1	0.1	1.4	0.0	0.0	5.4
long-eared owl	<i>Asio otus</i>	SSC	16.4	0.0	0.0	0.0	0.0	0.2	0.0	4.7
burrowing owl	<i>Athene cunicularia</i>	FS, SSC	24.3	0.2	0.1	0.1	0.0	0.0	0.0	5.4
redhead	<i>Aythya americana</i>	SSC	0.0	0.0	0.0	0.0	1.4	0.0	3.6	0.0

Common Name	Species Name	Status	Annual Grassland	Barren	Blue Oak Foothill Pine	Eucalyptus	Fresh Emergent Wetland	Montane Hardwood	Riverine	Valley Foothill Riparian
Barrow's goldeneye	<i>Bucephala islandica</i>	SSC	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
mountain plover	<i>Charadrius montanus</i>	FS, SSC	15.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0
black tern	<i>Chlidonias niger</i>	SSC	0.0	0.0	0.0	0.0	1.4	0.0	0.0	0.0
northern harrier	<i>Circus hudsonius [cyaneus]</i>	SSC	24.3	0.2	0.1	0.1	1.4	1.8	3.7	5.4
yellow-billed cuckoo	<i>Coccyzus americanus occidentalis</i>	FT, FS, SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
white-tailed kite	<i>Elanus leucurus</i>	FS, SFP	24.3	0.2	0.1	0.1	1.4	0.0	0.0	5.4
peregrine falcon	<i>Falco peregrinus anatum</i>	FS, SFP, SFS	24.3	0.2	0.1	0.1	1.4	1.8	3.7	5.4
lesser sandhill crane	<i>Antigone [Grus] canadensis canadensis</i>	SSC	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
bald eagle	<i>Haliaeetus leucocephalus</i>	FS, SE, SFP, SFS	24.3	0.2	0.1	0.1	1.4	1.8	3.7	5.4
yellow-breasted chat	<i>Icteria virens</i>	SSC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9
least bittern	<i>Ixobrychus exilis</i>	SSC	0.0	0.0	0.0	0.0	1.4	0.0	2.4	0.0
loggerhead shrike	<i>Lanius ludovicianus</i>	SSC	24.3	0.2	0.1	0.1	0.0	1.8	0.0	5.4
black rail	<i>Laterallus jamaicensis coturniculus</i>	FS, ST, SFP	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0

Common Name	Species Name	Status	Annual Grassland	Barren	Blue Oak Foothill Pine	Eucalyptus	Fresh Emergent Wetland	Montane Hardwood	Riverine	Valley Foothill Riparian
Modesto song sparrow	<i>Melospiza melodia mailliardi</i>	SSC	23.8	0.0	0.1	0.1	1.4	1.8	3.6	5.3
Oregon vesper sparrow	<i>Pooecetes gramineus affinis</i>	SSC	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
purple martin	<i>Progne subis</i>	SSC	9.0	0.0	0.0	0.0	0.0	0.0	2.7	1.7
bank swallow	<i>Riparia riparia</i>	FS, ST	8.5	0.0	0.0	0.0	1.4	0.0	2.7	4.3
yellow warbler	<i>Setophaga petechia</i>	SSC	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.1
California spotted owl	<i>Strix occidentalis occidentalis</i>	FS, SSC	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0
yellow-headed blackbird	<i>Xanthocephalus xanthocephalus</i>	SSC	24.3	0.0	0.0	0.0	1.4	0.0	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
pallid bat	<i>Antrozous pallidus</i>	FS, SSC	24.3	0.2	0.1	0.1	0.0	1.8	3.7	5.4
ringtail	<i>Bassariscus astutus</i>	SFP	24.3	0.2	0.1	0.1	0.0	1.8	0.0	5.4
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	FS, SSC	24.3	0.2	0.1	0.1	0.0	1.8	3.7	5.4
California kangaroo rat	<i>Dipodomys californicus</i>	SSC	1.5	0.0	0.0	0.1	0.0	0.2	0.0	0.0
spotted bat	<i>Euderma maculatum</i>	FS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
western mastiff bat	<i>Eumops perotis</i>	FS	4.0	0.0	0.1	0.0	0.0	1.7	0.0	3.1

Common Name	Species Name	Status	Annual Grassland	Barren	Blue Oak Foothill Pine	Eucalyptus	Fresh Emergent Wetland	Montane Hardwood	Riverine	Valley Foothill Riparian
western red bat	<i>Lasiurus blossevillei</i>	SSC	24.3	0.0	0.1	0.1	1.4	1.8	3.7	5.4
small-footed myotis	<i>Myotis ciliolabrum</i>	FS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yuma myotis	<i>Myotis yumanensis</i>	FS	24.3	0.0	0.1	0.1	1.4	1.8	3.7	5.4
San Joaquin pocket mouse	<i>Perognathus inornatus</i>	FS	20.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0
mountain lion	<i>Puma concolor</i>	ST	0.2	0.0	0.0	0.0	0.0	0.2	0.0	0.0
American badger	<i>Taxidea taxus</i>	SSC	24.3	0.2	0.1	0.1	0.0	1.8	0.0	5.4
Plants	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below
Stebbins' morning- glory	<i>Calystegia stebbinsii</i>	FE, SE	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0
Pine Hill ceanothus	<i>Ceanothus roderickii</i>	FE, SR	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0
palmate-bracted bird's-beak	<i>Chloropyron palmatum</i>	FT, SE	24.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hoover's spurge	<i>Euphorbia hooveri</i>	FT	24.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pine Hill flannelbush	<i>Fremontodendron decumbens</i>	FE, SR	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0
El Dorado bedstraw	<i>Galium californicum ssp. sierrae</i>	FE, SR	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0
Boggs Lake hedge-hyssop	<i>Gratiola heterosepala</i>	SE	24.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Common Name	Species Name	Status	Annual Grassland	Barren	Blue Oak Foothill Pine	Eucalyptus	Fresh Emergent Wetland	Montane Hardwood	Riverine	Valley Foothill Riparian
Contra Costa goldfields	<i>Lasthenia conjugens</i>	FE	24.3	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Butte County meadowfoam	<i>Limnanthes floccosa</i> ssp. <i>californica</i>	FE, SE	24.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Colusa grass	<i>Neostapfia colusana</i>	FT, SE	24.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
hairy Orcutt grass	<i>Orcuttia pilosa</i>	FE, SE	24.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
slender Orcutt grass	<i>Orcuttia tenuis</i>	FT, SE	24.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sacramento Orcutt grass	<i>Orcuttia viscida</i>	FE, SE	24.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Layne's ragwort	<i>Packera layneae</i>	FT, SR	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0
Greene's tuctoria	<i>Tuctoria greenei</i>	FE, SR	24.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crampton's tuctoria or Solano grass	<i>Tuctoria mucronata</i>	FE, SE	24.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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

5.3.2. Northern California Interior Coast Ranges

Based on a search of the species-attributed vegetation layer, 60 special-status terrestrial species are known to occur or have the potential to occur in the portion of the GAI that lies within the Northern California Interior Coast Ranges Ecoregion Section (Section 2.7, Appendix C; Caltrans 2021b). Using the methods described in Section 5.1.1, the SAMNA analysis determined that five SHOPP transportation projects could potentially affect five habitat types, which could support up to 39 special-status species (Table 5-8).

Species of mitigation need are species for whom a high probability of mitigation need is anticipated. The wildlife species of mitigation need, identified in Section 1.5, were included in the analysis, and each is discussed briefly in the subsections below: California red-legged frog, foothill yellow-legged frog, giant garter snake, Swainson's hawk, and valley elderberry longhorn beetle. Although the estimated special-status wildlife impacts provided are focused on the mitigation needs identified by the Caltrans District, consideration was also given to the other species that the SAMNA model indicates may also use the same habitat as the species of mitigation need.

California Red-legged Frog

Using the methods described in Section 5.1.1, impacts on the California red-legged frog and its habitat were estimated for the transportation projects that may affect wildlife (listed in Table 5-1). The SAMNA estimated that 11.6 acres of California red-legged frog habitat may be affected by 5 Caltrans SHOPP projects (Caltrans 2021b). Results are summarized in Table 5-9.

Foothill Yellow-legged Frog

Using these same methods, impacts on the foothill yellow-legged frog and its habitat were estimated for the transportation projects that may affect wildlife (listed in Table 5-1). The SAMNA estimated that 4.2 acres of foothill yellow-legged frog habitat may be affected by 5 Caltrans SHOPP projects (Caltrans 2021b). Results are summarized in Table 5-9.

Giant Garter Snake

Similarly, impacts on the giant garter snake and its habitat were estimated for the transportation projects that may affect wildlife (listed in Table 5-1). The SAMNA estimated that 3.6 acres of giant garter snake habitat may be affected by 1 Caltrans SHOPP project (Caltrans 2021b). Results are summarized in Table 5-9.

Swainson's Hawk

Impacts on the Swainson's hawk and its habitat were estimated for the transportation projects that may affect wildlife (listed in Table 5-1). The SAMNA estimated that 3.6 acres of Swainson's hawk habitat may be affected by 1 Caltrans SHOPP project (Caltrans 2021b). Results are summarized in Table 5-9.

Valley Elderberry Longhorn Beetle

Impacts on the valley elderberry longhorn beetle and its habitat were estimated for the transportation projects that may affect wildlife (listed in Table 5-1). The SAMNA estimated

that no valley elderberry longhorn beetle habitat is anticipated to be affected by Caltrans SHOPP projects (Caltrans 2021b). Results are summarized in Table 5-9.

Other Special-status Species

The special-status terrestrial species evaluated through the SAMNA consisted of federal and state threatened, endangered, or sensitive species; state fully protected or rare species; or state species of special concern (Caltrans 2021b). The above-listed species of mitigation need co-occur with other protected plant, invertebrates, amphibian, reptile, bird, and mammal species in four Northern California Interior Coast Ranges habitats. Using the methods described in Section 5.1.1, the SAMNA forecast impacts on an additional 36 special-status terrestrial species that potentially use the same habitats as the species of mitigation need in the Northern California Coast Interior Ranges Ecoregion Section (Table 5-11).

5.3.1. Sierra Nevada Ecoregion Section: Estimated Wildlife Impacts

Based on a search of the species-attributed vegetation layer, 53 special-status terrestrial species are known to occur or have the potential to occur in the portion of the GAI that lies within the Sierra Nevada Ecoregion Section (Section 2.7, Appendix C; Caltrans 2021b). Using the methods described in Section 5.1.1, the SAMNA analysis determined that 32 SHOPP transportation projects could potentially affect 22 habitat types, which could support up to 52 special-status species (Table 5-8).

Species of mitigation need are species for whom a high probability of compensatory mitigation need is anticipated. The species of mitigation need, identified in Section 1.5, were included in the analysis, and each is discussed briefly in the subsections below: California red-legged frog, foothill yellow-legged frog, giant garter snake, Swainson's hawk, and valley elderberry longhorn beetle. Although the estimated special-status wildlife impacts provided are focused on the compensatory mitigation needs identified by the Caltrans District, consideration was also given to the other species that the SAMNA model indicates may use the same habitat as the species of mitigation need.

California Red-legged Frog

Using the methods described in Section 5.1.1, impacts on the California red-legged frog and its habitat were estimated for the transportation projects that may affect wildlife (listed in Table 5-1). The SAMNA estimated that 55.4 acres of California red-legged frog habitat may be affected by 19 Caltrans SHOPP projects planned for the Sierra Nevada Ecoregion Section (Caltrans 2021b). Results are summarized in Table 5-9.

Foothill Yellow-legged Frog

Using the methods described in Section 5.1.1, impacts on the foothill yellow-legged frog and its habitat were estimated for the transportation projects that may affect wildlife (listed in Table 5-1). The SAMNA estimated that 76 acres of foothill yellow-legged frog habitat may be affected by 26 Caltrans SHOPP projects planned for the Sierra Nevada Ecoregion Section (Caltrans 2021b). Results are summarized in Table 5-9.

Table 5-11. Estimated SHOPP Impacts on Co-occurring Terrestrial Special-status Species: Northern California Interior Coast Ranges in the GAI (acres)

Common Name	Species Name	Status	Annual Grassland	Blue Oak Woodland	Blue Oak-Foothill Pine	Montane Hardwood
Not applicable	Not applicable	Total	24.5	0.1	0.2	0.1
Species of Mitigation Need	See below	See below	See below	See below	See below	See below
California red-legged frog	<i>Rana draytonii</i>	FT, SSC	6.3	3.8	1.1	0.0
Foothill yellow-legged frog	<i>Rana boylei</i>	FS, SSC	3.3	0.8	0.0	0.0
giant gartersnake	<i>Thamnophis gigas</i>	FT, ST	3.6	0.0	0.0	0.0
Swainson's hawk	<i>Buteo swainsoni</i>	FS, ST	3.6	0.1	0.0	0.1
Valley elderberry longhorn beetle	<i>Desmocerus californicus dimorphus</i>	FT	0.0	0.0	0.0	0.0
Invertebrates	See below	See below	See below	See below	See below	See below
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Amphibians	See below	See below	See below	See below	See below	See below
California tiger salamander	<i>Ambystoma californiense</i>	FT, ST	0.0	0.0	0.0	0.1
western spadefoot	<i>Spea hammondi</i>	FS, SSC	6.3	3.8	1.1	0.0
Reptiles	See below	See below	See below	See below	See below	See below
Coast [Blainville's] horned lizard	<i>Phrynosoma blainvillii</i>	FS, SSC	0.0	0.0	0.0	0.0
Birds	See below	See below	See below	See below	See below	See below
tricolored blackbird	<i>Agelaius tricolor</i>	FS, ST	6.3	0.0	0.0	0.0
grasshopper sparrow	<i>Ammodramus savannarum</i>	SSC	6.3	0.0	0.0	0.0
golden eagle	<i>Aquila chrysaetos</i>	FS, SFP, SFS	6.3	3.8	1.1	0.4
short-eared owl	<i>Asio flammeus</i>	SSC	0.0	2.3	0.0	0.0
burrowing owl	<i>Athene cunicularia</i>	FS, SSC	6.3	3.8	1.1	0.0
Barrow's goldeneye	<i>Bucephala islandica</i>	SSC	0.0	0.0	0.0	0.0

Common Name	Species Name	Status	Annual Grassland	Blue Oak Woodland	Blue Oak-Foothill Pine	Montane Hardwood
northern harrier	<i>Circus hudsonius [cyaneus]</i>	SSC	6.3	3.8	1.1	0.4
white-tailed kite	<i>Elanus leucurus</i>	FS, SFP	6.3	3.8	1.1	0.0
peregrine falcon	<i>Falco peregrinus anatum</i>	FS, SFP, SFS	6.3	3.8	1.1	0.4
bald eagle	<i>Haliaeetus leucocephalus</i>	FS, SE, SFP, SFS	6.3	3.8	1.1	0.4
loggerhead shrike	<i>Lanius ludovicianus</i>	SSC	6.3	3.8	1.1	0.4
bank swallow	<i>Riparia riparia</i>	FS, ST	1.0	0.0	0.0	0.0
yellow-headed blackbird	<i>Xanthocephalus xanthocephalus</i>	SSC	3.6	0.0	0.0	0.0
Mammals	See below	See below	See below	See below	See below	See below
pallid bat	<i>Antrozous pallidus</i>	FS, SSC	6.3	3.8	1.1	0.4
ringtail	<i>Bassariscus astutus</i>	SFP	6.3	3.8	1.1	0.4
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	FS, SSC	6.3	3.8	1.1	0.4
western red bat	<i>Lasiurus blossevillei</i>	SSC	6.3	3.8	1.1	0.4
Yuma myotis	<i>Myotis yumanensis</i>	FS	6.3	3.8	1.1	0.4
San Joaquin pocket mouse	<i>Perognathus inornatus</i>	FS	5.3	3.0	0.0	0.0
mountain lion	<i>Puma concolor</i>	ST	6.3	3.8	1.1	0.4
American badger	<i>Taxidea taxus</i>	SSC	6.3	3.8	1.1	0.4
Plants	See below	See below	See below	See below	See below	See below
Indian Valley brodiaea	<i>Brodiaea rosea</i>	SE	6.3	0.0	0.0	0.4
palmate-bracted bird's-beak	<i>Chloropyron palmatum</i>	FE, SE	3.6	0.0	0.0	0.0
Hoover's spurge	<i>Euphorbia hooveri</i>	FT	3.6	0.0	0.0	0.0
Boggs Lake hedge-hyssop	<i>Gratiola heterosepala</i>	SE	6.3	0.0	0.0	0.0
Contra Costa goldfields	<i>Lasthenia conjugens</i>	FE	3.6	0.0	0.0	0.0

Common Name	Species Name	Status	Annual Grassland	Blue Oak Woodland	Blue Oak- Foothill Pine	Montane Hardwood
Butte County meadowfoam	<i>Limnanthes floccosa</i> ssp. <i>californica</i>	FE, SE	3.6	0.0	0.0	0.0
Colusa grass	<i>Neostapfia colusana</i>	FT, SE	3.6	0.0	0.0	0.0
hairy Orcutt grass	<i>Orcuttia pilosa</i>	FE, SE	3.6	0.0	0.0	0.0
slender Orcutt grass	<i>Orcuttia tenuis</i>	FT, SE	6.3	0.0	0.0	0.0
Sacramento Orcutt grass	<i>Orcuttia viscida</i>	FE, SE	3.6	0.0	0.0	0.0
Keck's checkerbloom	<i>Sidalcea keckii</i>	FE	6.3	0.0	0.0	0.4
two-fork clover	<i>Trifolium amoenum</i>	FE	6.3	0.0	0.0	0.0
Greene's tuctoria	<i>Tuctoria greenei</i>	FE, SR	3.6	0.0	0.0	0.0
Crampton's tuctoria or solano grass	<i>Tuctoria mucronata</i>	FE, SE	3.6	0.0	0.0	0.0

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

Giant Garter Snake

Using the methods described in Section 5.1.1, impacts on the giant garter snake and its habitat were estimated for the transportation projects that may affect wildlife (listed in Table 5-1). The SAMNA estimated that no giant garter snake habitat is anticipated to be affected by Caltrans SHOPP projects planned for the Sierra Nevada Ecoregion Section (Caltrans 2021b). Results are summarized in Table 5-9.

Swainson's Hawk

Using the methods described in Section 5.1.1, impacts on the Swainson's hawk and its habitat were estimated for the transportation projects that may affect wildlife (listed in Table 5-1). The SAMNA estimated that no Swainson's hawk habitat is anticipated to be affected by Caltrans SHOPP projects planned for the Sierra Nevada Ecoregion Section (Caltrans 2021b). Results are summarized in Table 5-9.

Valley Elderberry Longhorn Beetle

Using the methods described in Section 5.1.1, impacts on the valley elderberry longhorn beetle and its habitat were estimated for the transportation projects that may affect wildlife (listed in Table 5-1). The SAMNA estimated that no valley elderberry longhorn beetle is anticipated to be affected by Caltrans SHOPP transportation projects planned for the Sierra Nevada Ecoregion Section (Caltrans 2021b). Results are summarized in Table 5-9.

Other Special-status Species

The special-status terrestrial species evaluated through the SAMNA consisted of federal and state threatened, endangered, or sensitive species; state fully protected or rare species; or state species of special concern (Caltrans 2021b). The above-listed species of mitigation need co-occur with other protected plant, invertebrate, amphibian, reptile, bird, and mammal species in the Sierra Nevada Ecoregion Section in 17 habitats. Using the methods described in Section 5.1.1, the SAMNA forecast impacts on an additional 51 special-status terrestrial species that potentially use the same habitats as the species of mitigation need in the Sierra Nevada Ecoregion Section (Table 5-12).

5.3.1. Sierra Nevada Foothills Ecoregion Section

Based on a search of the species-attributed vegetation layer, 61 special-status terrestrial species are known to occur or have the potential to occur in the portion of the GAI that lies within the Great Valley Ecoregion Section (Section 2.7, Appendix C; Caltrans 2021b). Using the methods described in Section 5.1.1, the SAMNA analysis determined that 17 SHOPP transportation projects could potentially affect 10 habitat types, which could support up to 61 special-status species (Table 5-8).

Species of mitigation need are species for whom a high probability of compensatory mitigation need is anticipated. The species of mitigation need, identified in Section 1.5, were included in the analysis, and each is discussed briefly in the subsections below: California red-legged frog, foothill yellow-legged frog, giant garter snake, Swainson's hawk, and valley elderberry longhorn beetle. Although the estimated special-status wildlife impacts provided are focused on the compensatory mitigation needs identified by

the Caltrans District, consideration was also given to the other species that the SAMNA model indicates may use the same habitat as the species of mitigation need.

California Red-legged Frog

Using the methods described in Section 5.1.1, impacts on the California red-legged frog and its habitat were estimated for the transportation projects that may affect wildlife (listed in Table 5-1). The SAMNA estimated that 22.5 acres of California red-legged frog habitat may be affected by 15 Caltrans SHOPP projects planned for the Sierra Nevada Foothills Ecoregion Section (Caltrans 2021b). Results are summarized in Table 5-9.

Foothill Yellow-legged Frog

Using the methods described in Section 5.1.1, impacts on the foothill yellow-legged frog and its habitat were estimated for the transportation projects that may affect wildlife (listed in Table 5-1). The SAMNA estimated that 21.4 acres of foothill yellow-legged frog habitat may be affected by 11 Caltrans SHOPP projects planned for the Sierra Nevada Foothills Ecoregion Section (Caltrans 2021b). Results are summarized in Table 5-9.

Giant Garter Snake

Using the methods described in Section 5.1.1, impacts on the giant garter snake and its habitat were estimated for the transportation projects that may affect wildlife (listed in Table 5-1). The SAMNA estimated that <0.1 acre of giant garter snake habitat may be affected by 1 Caltrans SHOPP project planned for Sierra Nevada Foothills Ecoregion Section (Caltrans 2021b). Results are summarized in Table 5-9.

Swainson's Hawk

Using the methods described in Section 5.1.1, impacts on the Swainson's hawk and its habitat were estimated for the transportation projects that may affect wildlife (listed in Table 5-1). The SAMNA estimated that 1.9 acres of Swainson's hawk habitat may be affected by 5 Caltrans SHOPP projects planned for Sierra Nevada Foothills Ecoregion Section (Caltrans 2021b). Results are summarized in Table 5-9.

Valley Elderberry Longhorn Beetle

Using the methods described in Section 5.1.1, impacts on the valley elderberry longhorn beetle and its habitat were estimated for the transportation projects that may affect wildlife (listed in Table 5-1). The SAMNA estimated that 0.2 acre of valley elderberry longhorn beetle habitat may be affected by 2 Caltrans SHOPP transportation projects planned for Sierra Nevada Foothills Ecoregion Section (Caltrans 2021b). Results are summarized in Table 5-9.

Table 5-12. Estimated SHOPP Impacts on Co-occurring Terrestrial Special-status Species: Sierra Nevada Ecoregion Section in the GAI (acres)

Common Name	Species Name	Status	Annual Grassland	Barren	Blue Oak Woodland	Blue Oak- Foothill Pine	Closed-Cone Pine-Cypress	Douglas-Fir	Jeffrey Pine	Mixed Chaparral	Montane Chaparral	Montane Hardwood	Montane Hardwood- Conifer	Montane Riparian	Ponderosa Pine	Red Fir	Riverine	Sierran Mixed Conifer	White Fir
Not applicable	Not applicable	Total	3.3	25.6	0.3	0.1	1.2	6.6	0.1	4.1	8.4	13.3	16.5	0.2	14.5	18.1	0.1	32.6	4.3
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	See below	See below	See below	See below	See below	See below	See below
California red- legged frog	<i>Rana draytonii</i>	FT, SSC	2.7	0.0	0.3	0.1	1.2	6.6	0.0	4.1	0.0	12.8	14.2	0.1	13.2	0.0	0.0	0.0	0.0
foothill yellow- legged frog	<i>Rana boylei</i>	FS, SE	3.3	0.0	0.3	0.1	1.2	6.6	0.0	4.1	0.6	13.1	15.7	0.2	14.1	0.0	0.1	15.8	0.9
Giant garter snake	<i>Thamnophis gigas</i>	FT, ST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Swainson's hawk	<i>Buteo swainsoni</i>	FS, ST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Valley elderberry longhorn beetle	<i>Desmocerus californicus dimorphus</i>	FT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	See below	See below	See below	See below	See below	See below	See below
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
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	See below	See below	See below	See below	See below	See below	See below
long-toed salamander	<i>Ambystoma macrodictylum</i>	FE, SE, SFP	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	0.9	0.1	0.3	18.1	0.0	18.1	3.7
Yosemite toad	<i>Anaxyrus canorus</i>	FT, FS, SSC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
northern leopard frog	<i>Lithobates pipiens</i>	SSC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0
Sierra Nevada yellow-legged frog	<i>Rana sierrae</i>	FE, FS, ST	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	6.5	8.0	0.2	4.0	18.1	0.1	32.3	4.3
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	See below	See below	See below	See below	See below	See below	See below
Coast [Blainville's] horned lizard	<i>Phrynosoma blainvillii</i>	FS, SSC	2.0	0.0	0.3	0.1	1.2	0.0	0.0	3.9	0.0	0.0	12.0	0.0	11.6	0.0	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	See below	See below	See below	See below	See below	See below	See below
northern goshawk	<i>Accipiter gentilis</i>	FS, SSC, SFS	0.0	0.0	0.3	0.1	0.0	6.6	0.1	4.1	8.4	13.3	16.5	0.2	14.5	18.1	0.0	32.6	4.3
tricolored blackbird	<i>Agelaius tricolor</i>	FS, ST, SSC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Common Name	Species Name	Status	Annual Grassland	Barren	Blue Oak Woodland	Blue Oak- Foothill Pine	Closed-Cone Pine-Cypress	Douglas-Fir	Jeffrey Pine	Mixed Chaparral	Montane Chaparral	Montane Hardwood	Montane Hardwood- Conifer	Montane Riparian	Ponderosa Pine	Red Fir	Riverine	Sierran Mixed Conifer	White Fir
golden eagle	<i>Aquila chrysaetos</i>	FS, SFP, SFS	3.3	25.6	0.3	0.1	0.0	6.6	0.1	4.1	8.4	13.3	16.5	0.2	14.5	18.1	0.0	32.6	4.3
short-eared owl	<i>Asio flammeus</i>	SSC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
long-eared owl	<i>Asio otus</i>	SSC	3.3	0.0	0.3	0.1	0.0	0.0	0.0	4.1	8.4	13.3	16.5	0.2	14.5	0.0	0.0	32.5	4.3
burrowing owl	<i>Athene cunicularia</i>	FS, SSC	0.0	0.1	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vaux's swift	<i>Chaetura vauxi</i>	SSC	0.0	0.0	0.0	0.1	1.2	6.6	0.1	4.1	4.1	13.3	16.5	0.2	14.5	8.3	0.1	32.6	4.3
northern harrier	<i>Circus hudsonius [cyaneus]</i>	SSC	0.0	0.1	<0.1	0.0	0.0	0.7	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
olive-sided flycatcher	<i>Contopus cooperi</i>	SSC	0.0	0.0	0.0	0.1	0.0	6.6	0.1	4.1	0.0	13.3	16.5	0.2	14.5	18.1	0.0	32.5	4.3
black swift	<i>Cypseloides niger</i>	SSC	0.0	1.3	<0.1	0.0	0.0	1.1	0.1	0.1	1.9	0.7	1.2	0.1	0.2	0.0	0.0	10.6	0.1
white-tailed kite	<i>Elanus leucurus</i>	FS, SFP	0.0	0.1	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
willow flycatcher	<i>Empidonax traillii</i>	FS, SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.0	0.0	0.0	0.0	0.0	0.0
peregrine falcon	<i>Falco peregrinus</i>	FS, SFP, SFS	3.3	25.6	0.3	0.1	1.2	6.6	0.1	4.1	8.4	13.3	16.5	0.2	14.5	18.1	0.1	32.5	4.3
bald eagle	<i>Haliaeetus leucocephalus</i>	FS, SE, SFP, SFS	3.3	25.6	0.2	0.1	0.0	6.6	0.1	4.1	8.4	13.3	16.5	0.2	14.5	18.1	0.1	32.5	4.3
harlequin duck	<i>Histrionicus histrionicus</i>	SSC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
loggerhead shrike	<i>Lanius ludovicianus</i>	SSC	0.0	0.1	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
purple martin	<i>Progne subis</i>	SSC	2.7	0.0	0.3	0.1	1.2	6.6	0.0	0.0	0.0	12.9	15.0	0.1	13.2	0.0	0.0	11.3	0.9
yellow warbler	<i>Setophaga petechia</i>	SSC	0.0	0.0	0.3	0.1	1.2	6.6	0.0	4.1	0.5	13.3	16.0	0.2	14.5	0.0	0.0	15.6	0.9
great gray owl	<i>Strix nebulosa</i>	FS, SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.9	0.0	32.5	4.3
California spotted owl	<i>Strix occidentalis occidentalis</i>	FS, SSC	0.0	0.0	0.0	0.1	0.0	6.6	0.0	0.0	0.0	13.3	16.4	0.2	14.5	16.5	0.0	31.7	4.3
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	See below	See below	See below	See below	See below	See below	See below
pallid bat	<i>Antrozous pallidus</i>	FS, SSC	3.3	25.6	0.3	0.1	0.0	6.6	0.1	4.1	8.4	13.3	16.5	0.2	14.5	18.1	0.1	32.5	4.3
mountain beaver	<i>Aplodontia rufa</i>	SSC	0.0	0.0	0.0	0.0	0.0	3.8	0.1	0.0	0.0	6.1	6.9	0.1	4.1	18.1	0.0	32.1	4.3

Common Name	Species Name	Status	Annual Grassland	Barren	Blue Oak Woodland	Blue Oak- Foothill Pine	Closed-Cone Pine-Cypress	Douglas-Fir	Jeffrey Pine	Mixed Chaparral	Montane Chaparral	Montane Hardwood	Montane Hardwood- Conifer	Montane Riparian	Ponderosa Pine	Red Fir	Riverine	Sierran Mixed Conifer	White Fir
ringtail	<i>Bassariscus astutus</i>	SFP	3.3	25.6	0.3	0.1	1.2	6.6	0.1	4.1	8.4	13.3	16.5	0.2	14.5	0.0	0.0	32.5	4.3
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	FS, SSC	3.3	4.8	0.3	0.1	0.0	6.6	0.1	4.1	2.8	13.3	16.5	0.2	14.5	0.0	0.1	23.6	4.1
spotted bat	<i>Euderma maculatum</i>	FS	3.3	0.0	0.3	0.1	0.0	0.0	0.1	0.0	8.4	0.0	16.5	0.2	14.5	0.0	0.1	32.5	4.3
western mastiff bat	<i>Eumops perotis</i>	FS	2.3	0.7	0.3	0.1	1.2	0.0	0.0	4.0	0.0	9.6	12.4	0.1	12.9	0.0	0.0	0.0	0.0
wolverine	<i>Gulo gulo</i>	FS, ST, FP	0.0	23.6	0.0	0.0	0.0	0.0	0.1	0.0	8.0	0.0	0.9	0.1	0.0	18.1	0.0	18.6	3.5
western red bat	<i>Lasiurus blossevillei</i>	SSC	2.7	0.0	0.3	0.1	0.0	6.6	0.0	4.1	0.1	10.2	13.6	0.1	13.2	0.0	0.0	6.6	0.0
snowshoe hare	<i>Lepus americanus</i>	SSC	0.0	0.0	0.0	0.0	0.0	0.7	0.1	0.0	0.0	0.0	0.0	0.1	0.0	18.1	0.0	30.5	4.3
white-tailed jackrabbit	<i>Lepus townsendii</i>	SSC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.5	0.0	0.0	0.0
Pacific marten	<i>Martes caurina</i>	FS	0.0	25.1	0.0	0.0	0.0	4.6	0.1	0.0	0.0	0.0	7.6	0.2	4.5	18.1	0.0	32.5	4.3
small-footed myotis	<i>Myotis ciliolabrum</i>	FS	3.2	0.8	0.3	0.1	0.0	0.0	0.0	4.1	0.1	12.1	13.9	0.2	13.9	0.0	0.0	11.9	0.7
long-eared myotis	<i>Myotis evotis</i>	FS	0.0	25.1	0.1	0.1	1.2	5.2	0.1	0.5	8.4	8.2	8.3	0.2	5.9	18.1	0.1	32.5	4.3
fringed myotis	<i>Myotis thysanodes</i>	FS	3.3	25.6	0.3	0.1	1.2	6.6	0.1	4.1	8.4	13.3	16.5	0.2	14.5	18.1	0.1	32.5	4.3
Yuma myotis	<i>Myotis yumanensis</i>	FS	3.3	0.0	0.3	0.1	1.2	6.6	0.1	4.1	8.4	13.3	16.5	0.2	14.5	18.1	0.1	32.5	4.3
fisher	<i>Pekania pennanti</i>	FS, SSC	0.0	0.0	0.0	0.0	0.0	5.8	0.1	0.0	0.0	0.0	12.2	0.2	14.4	18.1	0.0	32.5	4.3
mountain lion	<i>Puma concolor</i>	ST	3.3	0.0	0.3	0.1	1.2	6.6	0.1	4.1	8.4	13.3	16.5	0.2	14.5	18.1	0.0	32.5	4.3
American badger	<i>Taxidea taxus</i>	SSC	3.3	25.6	0.3	0.1	1.2	6.6	0.1	4.1	8.4	13.3	16.5	0.2	14.5	18.1	0.0	32.5	4.3
Sierra Nevada red fox	<i>Vulpes vulpes necator</i>	FE, ST, SFS	0.00	22.3	0.0	0.0	0.0	0.0	0.0	0.0	6.0	0.0	0.7	0.0	0.3	18.1	0.0	13.3	3.4
Plants	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below
Stebbins' morning-glory	<i>Calystegia stebbinsii</i>	FE, SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	0.0	4.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pine Hill ceanothus	<i>Ceanothus roderickii</i>	FE, SR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	0.0	4.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pine Hill flannelbush	<i>Fremontodendron decumbens</i>	FE, SR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	0.0	4.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
El Dorado bedstraw	<i>Galium californicum</i> ssp. <i>sierrae</i>	FE, SR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	0.0	4.3	7.23	0.0	0.0	0.0	0.0	0.0	0.0

Common Name	Species Name	Status	Annual Grassland	Barren	Blue Oak Woodland	Blue Oak- Foothill Pine	Closed-Cone Pine-Cypress	Douglas-Fir	Jeffrey Pine	Mixed Chaparral	Montane Chaparral	Montane Hardwood	Montane Hardwood- Conifer	Montane Riparian	Ponderosa Pine	Red Fir	Riverine	Sierran Mixed Conifer	White Fir
Boggs Lake hedge- hyssop	<i>Gratiola heterosepala</i>	SE	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Layne's ragwort	<i>Packera layneae</i>	FT, SR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	0.0	4.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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

Other Special-status Species

The special-status terrestrial species evaluated through the SAMNA consisted of federal and state threatened, endangered, or sensitive species; state fully protected or rare species; or state species of special concern (Caltrans 2021b). The above-listed species of mitigation need co-occur with other protected plant, invertebrate, amphibian, reptile, bird, and mammal species in the Sierra Nevada Foothills Ecoregion Section in six habitats. Using the methods described in Section 5.1.1, the SAMNA forecast impacts on an additional 56 special-status terrestrial species that potentially use the same habitats as the species of mitigation need in the GAI (Table 5-13).

5.3.1. Southern Cascades Ecoregion Section

Based on a search of the species-attributed vegetation layer, 33 special-status terrestrial species are known to occur or have the potential to occur in the portion of the GAI that lies within the Southern Cascades Ecoregion Section (Section 2.7, Appendix C; Caltrans 2021b). Using the methods described in Section 5.1.1, the SAMNA analysis determined that one SHOPP transportation project could potentially affect 3 habitat types, which could support up to 33 special-status species (Table 5-8).

Species of mitigation need are species for whom a high probability of compensatory mitigation need is anticipated. The species of mitigation need, identified in Section 1.5, were included in the analysis, and each is discussed briefly in the subsections below: California red-legged frog, foothill yellow-legged frog, giant garter snake, Swainson's hawk, and valley elderberry longhorn beetle. Although the estimated special-status wildlife impacts provided are focused on the compensatory mitigation needs identified by the Caltrans District, consideration was also given to other species that the SAMNA model indicates may use the same habitat as the species of mitigation need.

California Red-legged Frog

Using the methods described in Section 5.1.1, impacts on the California red-legged frog and its habitat were estimated for the transportation projects that may affect wildlife (listed in Table 5-1). The SAMNA estimated that no impacts to California red-legged frog will occur in the Southern Cascades Ecoregion Section (Caltrans 2021b). Results are summarized in Table 5-9.

Foothill Yellow-legged Frog

Using the methods described in Section 5.1.1, impacts on the foothill yellow-legged frog and its habitat were estimated for the transportation projects that may affect wildlife (listed in Table 5-1). The SAMNA estimated that 11.6 acres of foothill yellow-legged frog habitat may be affected by 1 Caltrans SHOPP projects planned for the Southern Cascades Ecoregion Section (Caltrans 2021b). Results are summarized in Table 5-9.

Table 5-13. Estimated SHOPP Impacts on Co-occurring Terrestrial Special-status Species: Sierra Nevada Foothills Ecoregion Section in the GAI (acres)

Common Name	Species Name	Status	Annual Grassland	Blue Oak Woodland	Montane Hardwood	Valley Foothill Riparian	Valley Oak Woodland
Not applicable	Not applicable	Total	11.5	2.2	2.8	3.6	2.4
Species of Mitigation Need	See below	See below	See below	See below	See below	See below	See below
California red-legged frog	<i>Rana draytonii</i>	FT, SSC	11.5	2.2	2.8	3.6	2.4
foothill yellow-legged frog	<i>Rana boylei</i>	FS, SE	10.8	1.8	2.8	3.6	2.4
Giant garter snake	<i>Thamnophis gigas</i>	FT, ST	0.0	0.0	0.0	0.0	0.0
Swainson's hawk	<i>Buteo swainsoni</i>	FS, ST	<0.1	0.4	<0.1	0.0	0.0
Valley elderberry longhorn beetle	<i>Desmocerus californicus dimorphus</i>	FT	0.0	0.0	0.0	0.2	0.0
Invertebrates	See below	See below	See below	See below	See below	See below	See below
vernal pool fairy shrimp	<i>Branchinecta lynchi</i>	FT	0.3	0.0	0.0	0.0	0.0
vernal pool tadpole shrimp	<i>Lepidurus packardii</i>	FE	0.6	0.0	0.0	0.0	0.0
Amphibians	See below	See below	See below	See below	See below	See below	See below
Sierra Nevada yellow-legged frog	<i>Rana sierrae</i>	FE, FS, ST	0.0	0.0	<0.1	0.0	0.0
western spadefoot	<i>Spea hammondi</i>	FS, SSC	0.8	0.4	0.0	0.0	0.1
Reptiles	See below	See below	See below	See below	See below	See below	See below
Coast [Blainville's] horned lizard	<i>Phrynosoma blainvillii</i>	FS, SSC	11.5	2.2	0.0	3.6	2.4
Birds	See below	See below	See below	See below	See below	See below	See below
northern goshawk	<i>Accipiter gentilis</i>	FS, SSC, SFS	0.0	0.3	0.5	0.3	0.3

Common Name	Species Name	Status	Annual Grassland	Blue Oak Woodland	Montane Hardwood	Valley Foothill Riparian	Valley Oak Woodland
tricolored blackbird	<i>Agelaius tricolor</i>	FS, ST	11.5	0.0	0.0	3.6	0.0
grasshopper sparrow	<i>Ammodramus savannarum</i>	SSC	11.5	0.0	0.0	0.0	0.0
golden eagle	<i>Aquila chrysaetos</i>	FS, SFP, SFS	11.5	2.2	2.8	3.6	2.4
short-eared owl	<i>Asio flammeus</i>	SSC	11.5	2.2	0.0	3.6	2.4
long-eared owl	<i>Asio otus</i>	SSC	11.5	2.2	2.8	3.6	2.4
burrowing owl	<i>Athene cunicularia</i>	FS, SSC	11.5	2.2	0.0	3.6	2.4
Vaux's swift	<i>Chaetura vauxi</i>	SSC	0.0	0.0	<0.1	0.0	0.0
northern harrier	<i>Circus hudsonius [cyaneus]^d</i>	SSC	11.5	2.2	2.8	3.6	2.4
olive-sided flycatcher	<i>Contopus cooperi</i>	SSC	0.0	0.0	<0.1	0.0	0.0
white-tailed kite	<i>Elanus leucurus</i>	FS, SFP	11.4	2.2	0.0	3.6	2.4
peregrine falcon	<i>Falco peregrinus</i>	FS, SFP, SFS	11.4	2.2	0.0	3.6	2.4
lesser sandhill crane	<i>Antigone [Grus] canadensis canadensis^d</i>	SSC	0.6	0.0	0.0	0.0	0.0
bald eagle	<i>Haliaeetus leucocephalus</i>	FS, SE, SFP SFS	11.5	2.2	2.8	3.6	2.4
yellow-breasted chat	<i>Icteria virens</i>	SSC	0.0	0.0	0.0	3.6	0.0
loggerhead shrike	<i>Lanius ludovicianus</i>	SSC	11.5	2.2	2.8	3.6	2.4
Modesto song sparrow	<i>Melospiza melodia mailliardi</i>	SSC	0.0	0.1	<0.1	0.0	0.0
Oregon vesper sparrow	<i>Poecetes gramineus affinis</i>	SSC	10.3	2.0	0.0	0.0	2.2
purple martin	<i>Progne subis</i>	SSC	1.3	0.9	1.7	0.0	0.8
bank swallow	<i>Riparia riparia</i>	FS, ST	0.0	0.0	0.0	0.0	0.0
yellow warbler	<i>Setophaga petechia</i>	SSC	0.0	2.2	2.8	3.6	2.4

Common Name	Species Name	Status	Annual Grassland	Blue Oak Woodland	Montane Hardwood	Valley Foothill Riparian	Valley Oak Woodland
California spotted owl	<i>Strix occidentalis occidentalis</i>	FS, SSC	0.0	0.0	2.8	3.4	0.0
yellow-headed blackbird	<i>Xanthocephalus xanthocephalus</i>	SSC	<0.1	0.0	0.0	0.0	0.0
Mammals	See below	See below	See below	See below	See below	See below	See below
pallid bat	<i>Antrozous pallidus</i>	FS, SSC	11.5	2.2	2.8	3.6	2.4
ringtail	<i>Bassariscus astutus</i>	SFP	11.5	2.2	2.8	3.6	2.4
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	FS, SSC	11.5	2.2	2.8	3.6	2.4
spotted bat	<i>Euderma maculatum</i>	FS	10.7	1.8	0.0	3.6	2.4
western mastiff bat	<i>Eumops perotis</i>	FS	11.5	2.2	2.8	3.6	2.4
western red bat	<i>Lasiurus blossevillei</i>	SSC	11.5	2.2	2.8	3.6	2.4
small-footed myotis	<i>Myotis ciliolabrum</i>	FS	11.1	1.8	2.8	3.4	2.2
long-eared myotis	<i>Myotis evotis</i>	FS	0.0	0.0	0.0	0.3	0.0
fringed myotis	<i>Myotis thysanodes</i>	FS	1.7	1.2	2.5	1.6	1.1
Yuma myotis	<i>Myotis yumanensis</i>	FS	11.5	2.	2.8	3.6	2.4
mountain lion	<i>Puma concolor</i>	ST	11.5	2.2	2.8	3.6	2.4
American badger	<i>Taxidea taxus</i>	SSC	11.5	2.2	2.8	3.6	2.4
Plants	See below	See below	See below	See below	See below	See below	See below
Stebbins' morning-glory	<i>Calystegia stebbinsii</i>	FE, SE	0.0	0.0	2.8	0.0	0.0
Pine Hill ceanothus	<i>Ceanothus roderickii</i>	FE, SR	0.0	0.0	2.8	0.0	0.0
palmate-bracted bird's-beak	<i>Chloropyron palmatum</i>	FT, SE	0.6	0.0	0.0	0.0	0.0
Hoover's spurge	<i>Euphorbia hooveri</i>	FT	0.6	0.0	0.0	0.0	0.0

Common Name	Species Name	Status	Annual Grassland	Blue Oak Woodland	Montane Hardwood	Valley Foothill Riparian	Valley Oak Woodland
Pine Hill flannelbush	<i>Fremontodendron decumbens</i>	FE, SR	0.0	0.0	2.8	0.0	0.0
El Dorado bedstraw	<i>Galium californicum</i> ssp. <i>sierrae</i>	FE, SR	0.0	0.0	2.8	0.0	0.0
Boggs Lake hedge-hyssop	<i>Gratiola heterosepala</i>	SE	11.5	0.0	0.0	0.0	0.0
Contra Costa goldfields	<i>Lasthenia conjugens</i>	FE	0.6	0.0	0.0	0.0	0.0
Butte County meadowfoam	<i>Limnanthes floccosa</i> ssp. <i>californica</i>	FE, SE	0.6	0.0	0.0	0.0	0.0
Colusa grass	<i>Neostapfia colusana</i>	FT, SE	0.6	0.0	0.0	0.0	0.0
hairy Orcutt grass	<i>Orcuttia pilosa</i>	FE, SE	0.6	0.0	0.0	0.0	0.0
slender Orcutt grass	<i>Orcuttia tenuis</i>	FT, SE	0.6	0.0	0.0	0.0	0.0
Sacramento Orcutt grass	<i>Orcuttia viscida</i>	FE, SE	0.6	0.0	0.0	0.0	0.0
Layne's ragwort	<i>Packera layneae</i>	FT, SR	0.0	0.0	2.8	0.0	0.0
Greene's tuctoria	<i>Tuctoria greenei</i>	FE, SR	0.6	0.0	0.0	0.0	0.0
Crampton's tuctoria or Solano grass	<i>Tuctoria mucronata</i>	FE, SE	0.6	0.0	0.0	0.0	0.0

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

Giant Garter Snake

Using the methods described in Section 5.1.1, impacts on the giant garter snake and its habitat were estimated for the transportation projects that may affect wildlife (listed in Table 5-1). The SAMNA estimated that no impacts to giant garter snake will occur in the Southern Cascades Ecoregion Section (Caltrans 2021b). Results are summarized in Table 5-9.

Swainson's Hawk

Using the methods described in Section 5.1.1, impacts on the Swainson's hawk and its habitat were estimated for the transportation projects that may affect wildlife (listed in Table 5-1). The SAMNA estimated that no impacts to Swainson's hawk will occur in the Southern Cascades Ecoregion Section (Caltrans 2021b). Results are summarized in Table 5-9.

Valley Elderberry Longhorn Beetle

Using the methods described in Section 5.1.1, impacts on the valley elderberry longhorn beetle and its habitat were estimated for the transportation projects that may affect wildlife (listed in Table 5-1). The SAMNA estimated that no impacts to valley elderberry longhorn beetle will occur in the Southern Cascades Ecoregion Section (Caltrans 2021b). Results are summarized in Table 5-9.

Other Special-status Species

The special-status terrestrial species evaluated through the SAMNA consisted of federal and state threatened, endangered, or sensitive species; state fully protected or rare species; or state species of special concern (Caltrans 2021b). The above-listed species of mitigation need co-occur with other protected plant, invertebrate, amphibian, reptile, bird, and mammal species in the Southern Cascades Ecoregion Section in three habitats. Using the methods described in Section 5.1.1, the SAMNA forecast impacts on an additional 28 special-status terrestrial species that potentially use the same habitats as the species of mitigation need in the GAI (Table 5-14).

Table 5-14. Estimated SHOPP Impacts on Co-occurring Terrestrial Special-status Species: Southern Cascades Ecoregion Section in the GAI (acres)

Common Name	Species Name	Status	Barren	Sierran Mixed Conifer	White Fir
Not applicable	Not applicable	Total	1.5	9.2	2.3
Species of Mitigation Need	See below	See below	See below	See below	See below
California red-legged frog	<i>Rana draytonii</i>	FT, SSC	0.0	0.0	0.0
foothill yellow-legged frog	<i>Rana boylei</i>	FS, SE	0.0	9.2	2.3
Giant garter snake	<i>Thamnophis gigas</i>	FT, ST	0.0	0.0	0.0
Swainson's hawk	<i>Buteo swainsoni</i>	FS, ST	0.0	0.0	0.0
Valley elderberry longhorn beetle	<i>Desmocerus californicus dimorphus</i>	FT	0.0	0.0	0.0
Amphibians	See below	See below	See below	See below	See below
long-toed salamander	<i>Ambystoma macrodactylum</i>	FE, SE, SFP	0.0	9.2	2.3
northern leopard frog	<i>Lithobates pipiens</i>	SSC	0.0	9.2	2.3
Cascades frog	<i>Rana cascadae</i>	FS, SCE, SSC	0.0	9.2	2.3
Birds	See below	See below	See below	See below	See below
northern goshawk	<i>Accipiter gentilis</i>	FS, SSC, SFS	0.0	9.2	2.3
golden eagle	<i>Aquila chrysaetos</i>	FS, SFP, SFS	1.5	9.2	2.3
long-eared owl	<i>Asio otus</i>	SSC	0.0	9.2	2.3
burrowing owl	<i>Athene cunicularia</i>	FS, SSC	1.5	0.0	0.0
Vaux's swift	<i>Chaetura vauxi</i>	SSC	0.0	9.2	2.3
olive-sided flycatcher	<i>Contopus cooperi</i>	SSC	0.0	9.2	2.3
peregrine falcon	<i>Falco peregrinus</i>	FS, SFP, SFS	1.5	9.2	2.3
bald eagle	<i>Haliaeetus leucocephalus</i>	FS, SE, SFP, SFS	1.5	9.2	2.3
American white pelican	<i>Pelecanus erythrorhynchos</i>	SSC	1.5	0.0	0.0
purple martin	<i>Progne subis</i>	SSC	0.0	9.2	2.3
yellow warbler	<i>Setophaga petechia</i>	SSC	0.0	9.2	2.3

Common Name	Species Name	Status	Barren	Sierran Mixed Conifer	White Fir
great gray owl	<i>Strix nebulosa</i>	FS, SE	0.0	9.2	2.3
California spotted owl	<i>Strix occidentalis occidentalis</i>	FS, SSC	0.0	9.2	2.3
Mammals	See below	See below	See below	See below	See below
pallid bat	<i>Antrozous pallidus</i>	FS, SSC	1.5	9.2	2.3
ringtail	<i>Bassariscus astutus</i>	SFP	1.5	9.2	2.3
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	FS, SSC	1.5	9.2	2.3
spotted bat	<i>Euderma maculatum</i>	FS	0.0	9.2	2.3
western mastiff bat	<i>Eumops perotis</i>	FS	1.5	0.0	0.0
wolverine	<i>Gulo gulo</i>	FS, ST, SFP	1.5	9.2	2.3
snowshoe hare	<i>Lepus americanus</i>	SSC	0.0	9.2	2.3
Pacific marten	<i>Martes caurina</i>	FS	1.5	9.2	2.3
small-footed myotis	<i>Myotis ciliolabrum</i>	FS	1.5	9.2	2.3
long-eared myotis	<i>Myotis evotis</i>	FS	1.5	9.2	2.3
fringed myotis	<i>Myotis thysanodes</i>	FS	1.5	9.2	2.3
Yuma myotis	<i>Myotis yumanensis</i>	FS	0.0	9.2	2.3
fisher	<i>Pekania pennanti</i>	FS, SSC	0.0	9.2	2.3
mountain lion	<i>Puma concolor</i>	ST	0.0	9.2	2.3
American badger	<i>Taxidea taxus</i>	SSC	1.5	9.2	2.3
Sierra Nevada red fox	<i>Vulpes vulpes necator</i>	FE, ST, SFS	1.5	9.2	2.3

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

6. BENEFITING TRANSPORTATION PROJECT CONSIDERATIONS

Benefiting transportation projects have delivery schedules that would likely benefit from advance mitigation credits. Potentially benefiting transportation projects were identified in Chapter 5 for advance mitigation planning to guide advance mitigation project scoping. Actual benefiting transportation projects will be determined in the future. Caltrans and relevant natural resource regulatory agencies shall evaluate the appropriateness of using advance mitigation credits on a case-by-case basis as part of each future transportation project's permitting and technical assistance processes.

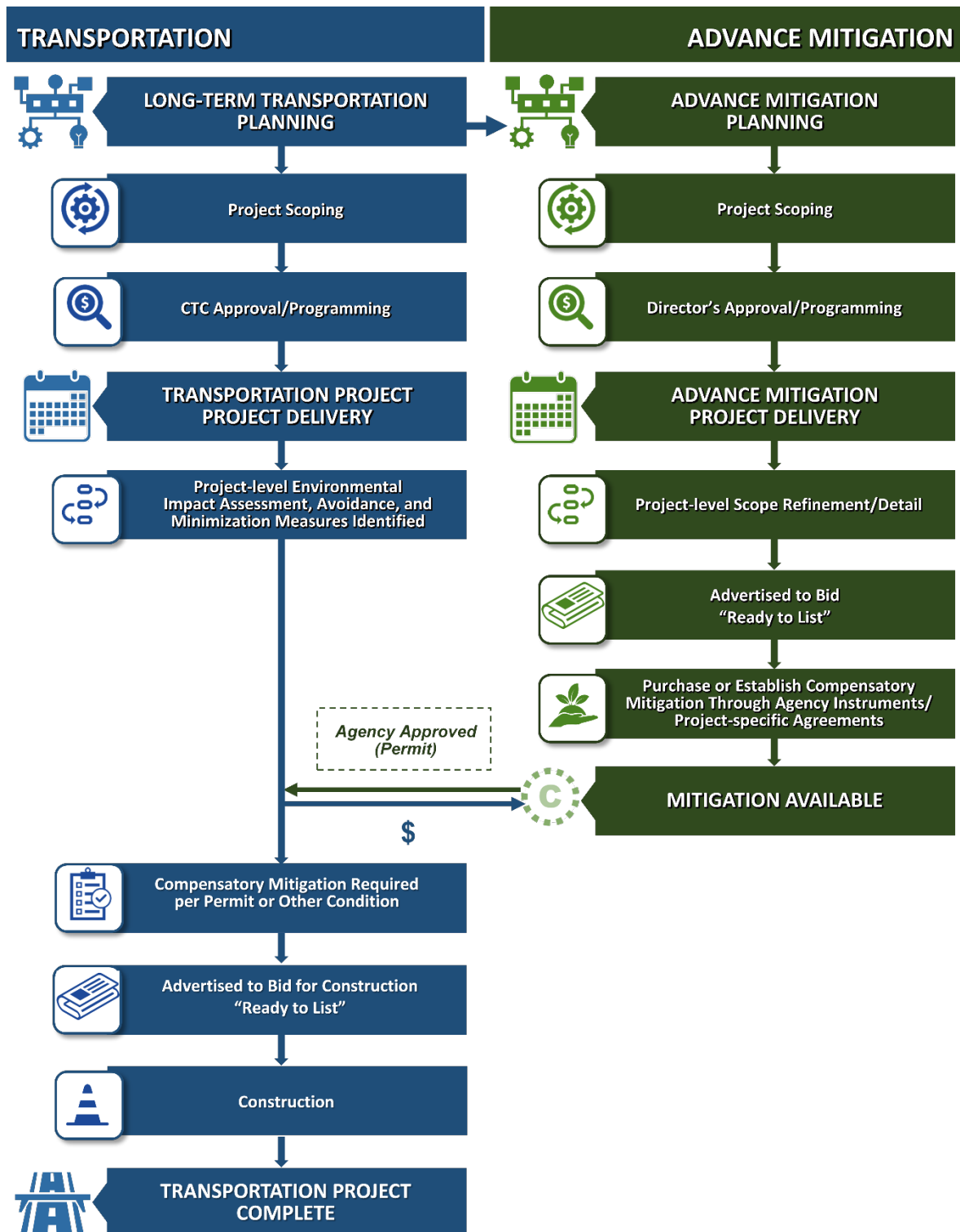
In this chapter, Caltrans summarizes the scheduling considerations and constraints of potential benefiting transportation projects in order to inform advance mitigation project schedules. A time frame for the forecast advance mitigation needs is provided and analyzed. The potentially benefiting transportation projects' acceleration priorities are documented in this chapter.

6.1 Why Timing is Important

Broadly speaking, an advance mitigation project is a SHC § 800.6(a) authorized activity that consists of (1) purchasing compensatory mitigation that has been previously approved by the natural resource regulatory agencies through a conservation bank, mitigation bank, HCP/NCCP, or in-lieu fee program; or (2) establishing and receiving approval of compensatory mitigation credits, such as establishing a mitigation bank in accordance with existing laws, policies, procedures, templates, and guidance (see Table 1-1). Elaborated upon in Chapter 9, the time it takes to deliver each authorized activity varies; however, purchasing compensatory mitigation credits would likely take less time than establishing compensatory mitigation credits.

Caltrans transportation projects must have permits and compensatory mitigation lined up before advertising and selecting a contractor to bid upon and perform a transportation project (Figure 6-1). Hence, for advance mitigation project scoping, the Caltrans District's nomination of a specific advance mitigation project type will be contingent, in part, on the anticipated timing of the potentially benefiting transportation project impacts. This is because, to benefit transportation projects as intended, the compensatory mitigation purchased or established through an advance mitigation project will need to be available to meet actual transportation project permit conditions established through an environmental study and document process undertaken prior to the transportation project incurring impacts (Figure 6-1).

Figure 6-1. Timing Advance Mitigation with Transportation Project Delivery



The date when a Caltrans potential transportation project is expected to be Ready to List¹ is an appropriate estimate for identifying when a Caltrans advance mitigation project will need to deliver compensatory mitigation to a potential benefiting transportation project.

6.2 Patterns of Estimated Potential Impacts

Given that the planning horizon for this assessment covers the 2019/2020 through 2028/2029 fiscal years, and that some of the transportation projects may have already gone to bid, it is necessary to consider which transportation projects:

- would need to acquire compensatory mitigation before the AMP can deliver, and hence the AMP cannot feasibly supply compensatory mitigation credits on the required schedule;
- would need compensatory mitigation delivered in a nearer time frame, which may favor seeking already existing credits as an AMP advance mitigation project scope; and
- would need compensatory mitigation farther out in time and, if so, whether there is time to establish new compensatory mitigation.

Initial estimated impact patterns are based on the planned SHOPP transportation project information provided in Table 5-1.

- As shown in Tables 6-1 through 6-11 and Figures 6-2 through 6-12, when the SHOPP transportation projects identified previously have their aquatic resource 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 in the Butte Creek Sub-basin are limited to the fiscal years 2019/20, 2022/23, 2023/24, and 2027/28.
 - Compensatory mitigation needs in the Honcut Headwaters-Lower Feather River Sub-basin are focused on fiscal years 2019/20, 2021/22, and 2024/25, with smaller impacts throughout in fiscal years 2023/24 and 2025/26.
 - Compensatory mitigation needs in the Lower American Sub-basin are clustered in the beginning of the 10-year planning period, with the greatest impacts during the 2021/22 fiscal year.
 - Compensatory mitigation needs in the Lower Sacramento Sub-basin are generally focused in the 2019/20, 2022/23, and 2023/24 fiscal years, with smaller impacts during fiscal years 2021/22 and 2026/27.

¹ Ready to List is a named milestone within the Caltrans project delivery process. It is the point when a complete package is ready for contractors to bid on and a transportation project has been approved to be advertised to bid for construction.

- Compensatory mitigation needs in the North Fork American Sub-basin are spread throughout the 10-year planning period. However, the greatest impacts occur during the 2022/23 fiscal year.
 - Compensatory mitigation needs in the Sacramento-Stone Corral Sub-basin are focused in the fiscal years 2020/21, 2021/22 and 2026/27, with smaller needs spread throughout the 10-year planning period.
 - Compensatory mitigation needs in the South Fork American Sub-basin are generally clustered in the latter half of the 10-year planning period, with the greatest needs during the 2027/28 fiscal year.
 - Compensatory mitigation needs in the Thomes Creek-Sacramento River Sub-basin are limited to the 2019/20 fiscal year.
 - Compensatory mitigation needs in the Upper Bear Sub-basin are spread throughout the 10-year planning period.
 - Compensatory mitigation needs in the Upper Coon-Upper Auburn Sub-basin are focused in the 2019/20 fiscal year, with smaller needs spread throughout the 10-year planning period.
 - Compensatory mitigation needs in the Upper Yuba Sub-basin are focused in the middle and end of the 10-year planning period.
- As shown in Table 6-12 and Figure 6-13, 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 clustered in the beginning to middle of the 10-year planning horizon for the Great Valley Ecoregion Section, with the greatest impact acreage for giant garter snake and Swainson's hawk.
 - As shown in Table 6-13 and in Figure 6-14, 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 clustered in the middle of the 10-year planning period for the Northern California Interior Coast Ranges Ecoregion Section, with the greatest anticipated impacts during the 2023/24 fiscal year.
 - As shown in Table 6-14 and in Figure 6-15, 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 for the Sierra Nevada Ecoregion Section, with the greatest anticipated impacts during the 2022/23 fiscal year, and additional impacts during most other years. Only California red-legged frog and foothill yellow-legged frog are anticipated to be affected by these transportation projects.

- As shown in Table 6-15 and in Figure 6-16, 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 clustered in the beginning and the end of the 10-year planning period for the Sierra Nevada Foothills Ecoregion Section, with the greatest anticipated impacts during the 2021/22 fiscal year and focused solely on California red-legged frog.
- As shown in Table 6-16 and in Figure 6-17, 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 focused solely on the 2019/20 fiscal year for the Southern Cascades Ecoregion Section, and are focused solely on foothill yellow-legged frog

Spatially, these transportation projects are distributed throughout the GAI (Figure 6-18).

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Table 6-1. Butte Creek: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year

Expected Advertisement Year	Fish: Number of Transportation Projects	Fish: Estimated Potential Impacts (acres)	Wetland: Number of Transportation Projects	Wetland: Estimated Potential Impacts (acres)	Water: Number of Transportation Projects	Water: Estimated Potential Impacts (acres)	Vernal Pool: Number of Transportation Projects	Vernal Pool: Estimated Potential Impacts (acres)	Riparian: Number of Transportation Projects	Riparian: Estimated Potential Impacts (acres)	% of Total Mitigation Need ^a
2019/20	0	0.0	2	0.3	2	0.3	2	1.3	0	0.0	50.0
2020/21	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	50.0
2021/22	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	50.0
2022/23	1	<0.1	1	<0.1	1	<0.1	0	0.0	0	0.0	50.0
2023/24	0	0.0	0	0.0	1	<0.1	0	0.0	0	0.0	50.0
2024/25	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	50.0
2025/26	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	50.0
2026/27	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	50.0
2027/28	1	0.1	1	0.2	1	0.2	1	1.2	1	0.2	100
2028/29	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	100
Total	2	0.1	4	0.4	5	0.6	3	2.5	1	0.2	100%

^a Indicative of the timing of mitigation need. $[\sum \text{impacts (year)} \div \sum \text{total impacts}] * 100$

Figure 6-2. Butte Creek: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year

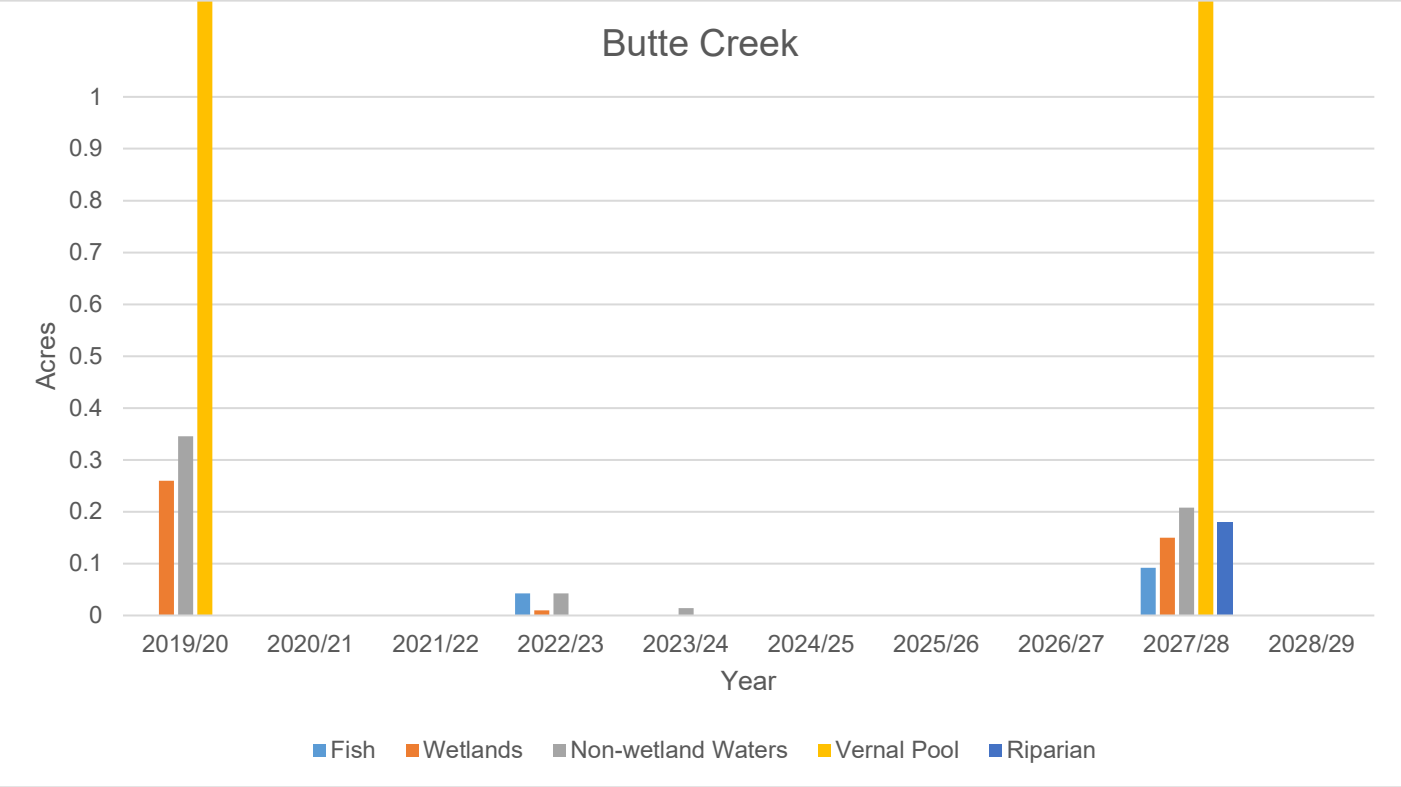


Table 6-2. Honcut Headwaters-Lower Feather: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year

Expected Advertisement Year	Fish: Number of Transportation Projects	Fish: Estimated Potential Impacts (acres)	Wetland: Number of Transportation Projects	Wetland: Estimated Potential Impacts (acres)	Water: Number of Transportation Projects	Water: Estimated Potential Impacts (acres)	Vernal Pool: Number of Transportation Projects	Vernal Pool: Estimated Potential Impacts (acres)	Riparian: Number of Transportation Projects	Riparian: Estimated Potential Impacts (acres)	% of Total Mitigation Need ^a
2019/20	0	0.0	1	0.2	3	0.6	2	2.5	1	1.4	48.0
2020/21	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	48.0
2021/22	1	0.3	2	0.1	2	0.1	2	1.1	2	1.4	78.6
2022/23	0	0.0	0	<0.1	0	0.0	0	0.0	0	0.0	78.6
2023/24	0	0.0	0	0.0	1	<0.1	0	0.0	0	0.0	78.6
2024/25	0	0.0	1	<0.1	1	1.1	1	0.6	0	0.0	95.9
2025/26	0	0.0	1	<0.1	1	0.1	1	0.2	1	<0.1	100
2026/27	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	100
2027/28	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	100
2028/29	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	100
Total	1	0.3	5	0.4	8	1.9	6	4.4	4	2.8	100%

^a Indicative of the timing of mitigation need. $[\sum \text{impacts (year)} \div \sum \text{total impacts}] * 100$

Figure 6-3. Honcut Headwaters-Lower Feather: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year

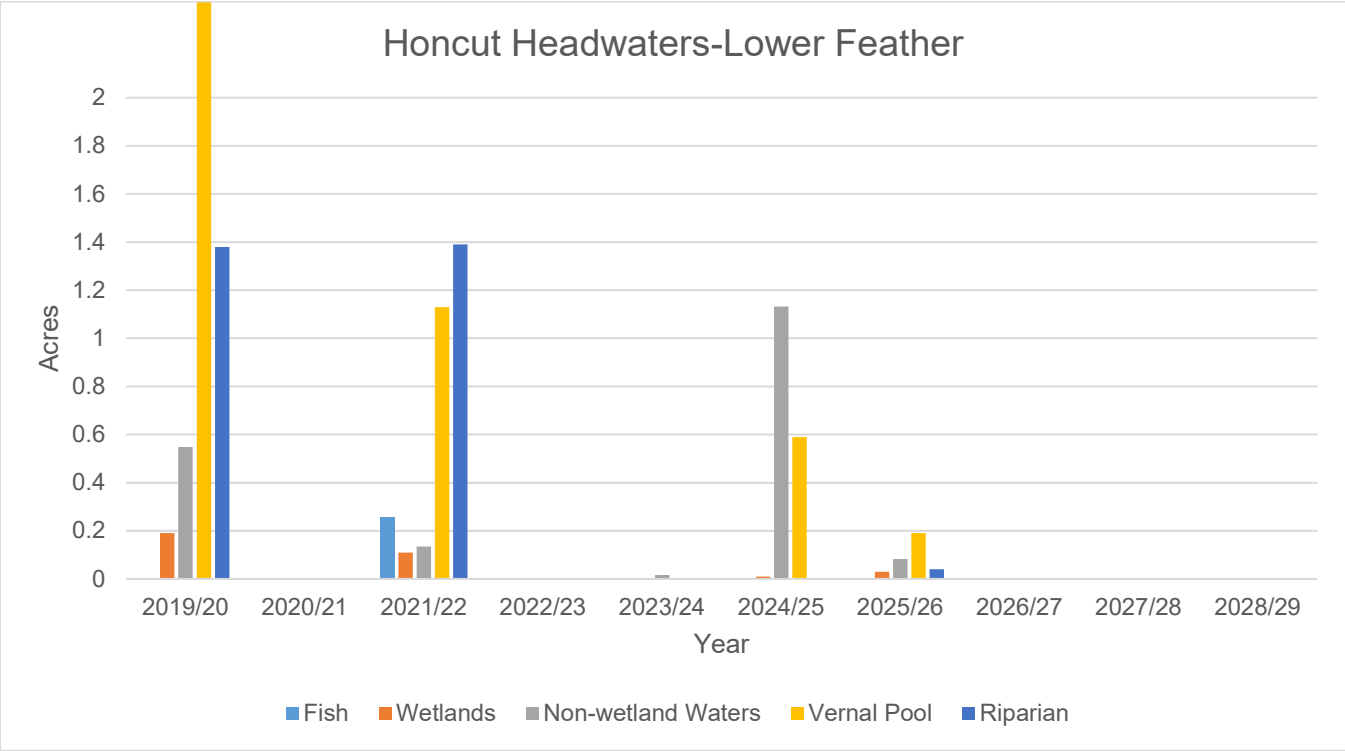


Table 6-3. Lower American: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year

Expected Advertisement Year	Fish: Number of Transportation Projects	Fish: Estimated Potential Impacts (acres)	Wetland: Number of Transportation Projects	Wetland: Estimated Potential Impacts (acres)	Water: Number of Transportation Projects	Water: Estimated Potential Impacts (acres)	Vernal Pool: Number of Transportation Projects	Vernal Pool: Estimated Potential Impacts (acres)	Riparian: Number of Transportation Projects	Riparian: Estimated Potential Impacts (acres)	% of Total Mitigation Need ^a
2019/20	0	0.0	1	<0.1	0	0.0	0	0.0	0	0.0	<0.1
2020/21	0	0.0	1	0.1	2	0.5	1	0.7	1	0.1	11.1
2021/22	2	6.8	2	1.2	2	1.5	2	0.2	2	1.4	99.2
2022/23	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	99.2
2023/24	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	99.2
2024/25	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	99.2
2025/26	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	99.2
2026/27	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	99.2
2027/28	1	<0.1	1	<0.1	1	<0.1	0	0.0	1	<0.1	100
2028/29	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	100
Total	3	6.8	5	1.3	5	2.1	3	0.9	4	1.5	100%

^a Indicative of the timing of mitigation need. $[\sum \text{impacts (year)} \div \sum \text{total impacts}] * 100$

Figure 6-4. Lower American: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year

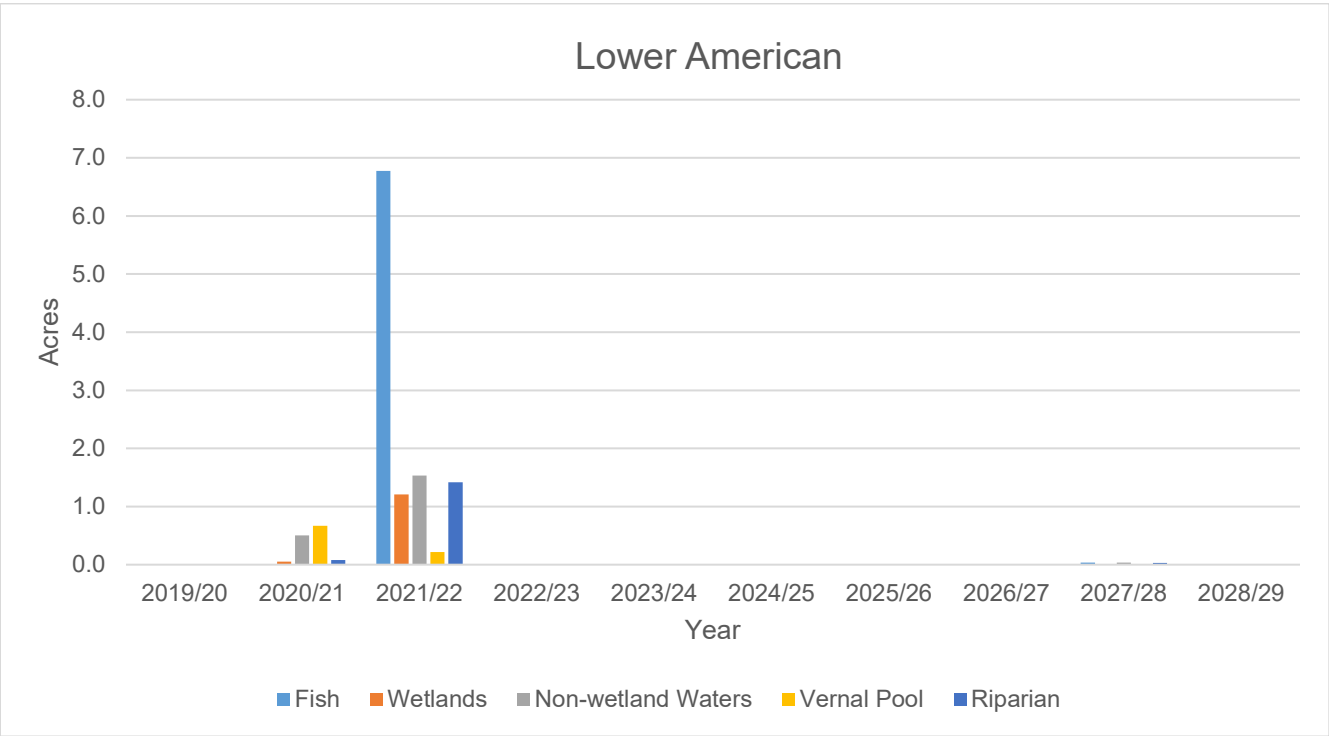


Table 6-4. Lower Sacramento: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year

Expected Advertisement Year	Fish: Number of Transportation Projects	Fish: Estimated Potential Impacts (acres)	Wetland: Number of Transportation Projects	Wetland: Estimated Potential Impacts (acres)	Water: Number of Transportation Projects	Water: Estimated Potential Impacts (acres)	Vernal Pool: Number of Transportation Projects	Vernal Pool: Estimated Potential Impacts (acres)	Riparian: Number of Transportation Projects	Riparian: Estimated Potential Impacts (acres)	% of Total Mitigation Need ^a
2019/20	1	2.8	1	0.1	1	0.5	0	0.0	1	0.6	32.8
2020/21	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	32.8
2021/22	0	0.0	0	0.0	0	0.0	1	0.7	0	0.0	38.5
2022/23	0	0.0	1	<0.1	1	0.2	0	0.0	0	0.0	40.1
2023/24	1	1.3	0	0.0	1	0.5	1	5.3	1	<0.1	98.3
2024/25	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	98.3
2025/26	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	98.3
2026/27	0	0.0	1	0.2	1	<0.1	0	0.0	0	0.0	100
2027/28	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	100
2028/29	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	100
Total	2	4.1	3	0.3	4	1.2	2	6.0	2	0.6	100%

^a Indicative of the timing of mitigation need. $[\sum \text{impacts (year)} \div \sum \text{total impacts}] * 100$

Figure 6-5. Lower Sacramento: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year

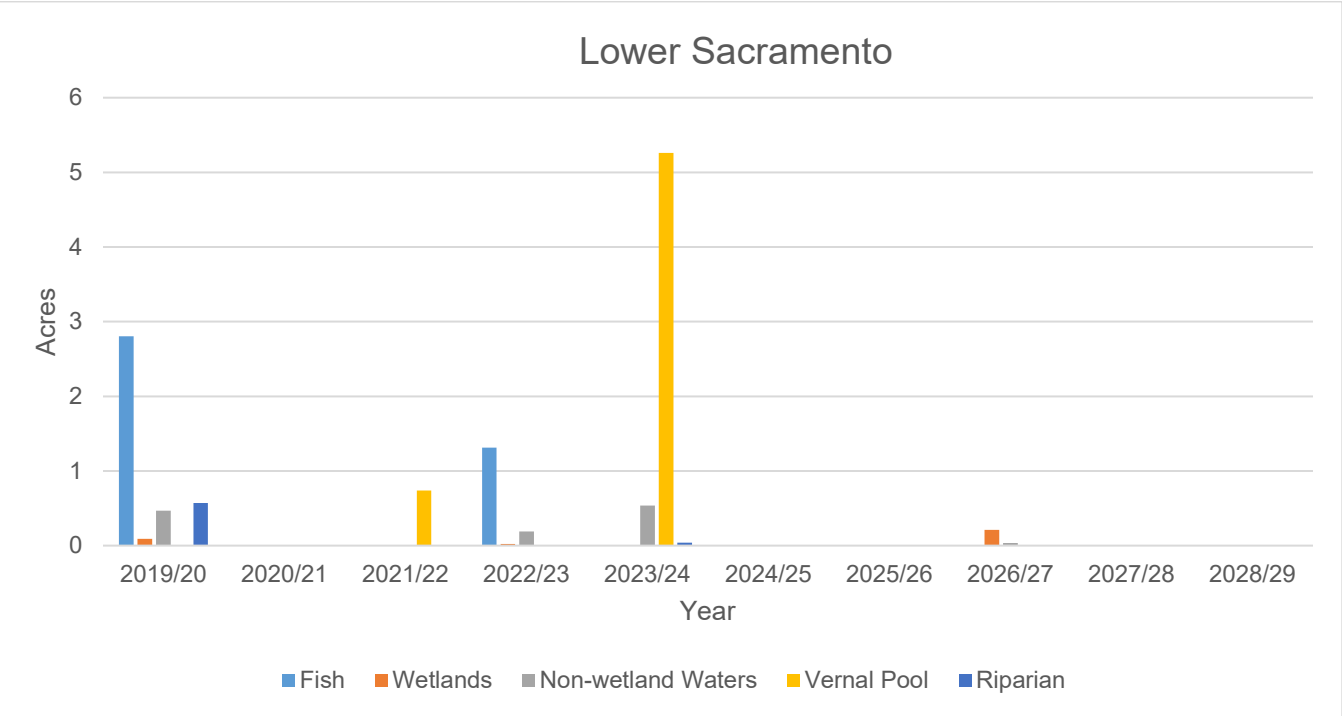


Table 6-5. North Fork American: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year

Expected Advertisement Year	Fish: Number of Transportation Projects	Fish: Estimated Potential Impacts (acres)	Wetland: Number of Transportation Projects	Wetland: Estimated Potential Impacts (acres)	Water: Number of Transportation Projects	Water: Estimated Potential Impacts (acres)	Vernal Pool: Number of Transportation Projects	Vernal Pool: Estimated Potential Impacts (acres)	Riparian: Number of Transportation Projects	Riparian: Estimated Potential Impacts (acres)	% of Total Mitigation Need ^a
2019/20	0	0.0	1	0.1	1	0.2	0	0.0	0	0.0	14.3
2020/21	0	0.0	0	0.0	1	<0.1	0	0.0	0	0.0	14.3
2021/22	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	14.3
2022/23	0	0.0	1	<0.1	2	1.3	0	0.0	0	0.0	82.2
2023/24	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	82.2
2024/25	0	0.0	0	0.0	1	0.2	0	0.0	0	0.0	89.3
2025/26	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	89.3
2026/27	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	89.3
2027/28	0	0.0	0	0.0	1	0.3	0	0.0	0	0.0	100
2028/29	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	100
Total	0	0.0	2	0.1	6	2.0	0	0.0	0	0.0	100%

^a Indicative of the timing of mitigation need. $[\sum \text{impacts (year)} \div \sum \text{total impacts}] * 100$

Figure 6-6. North Fork American: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year

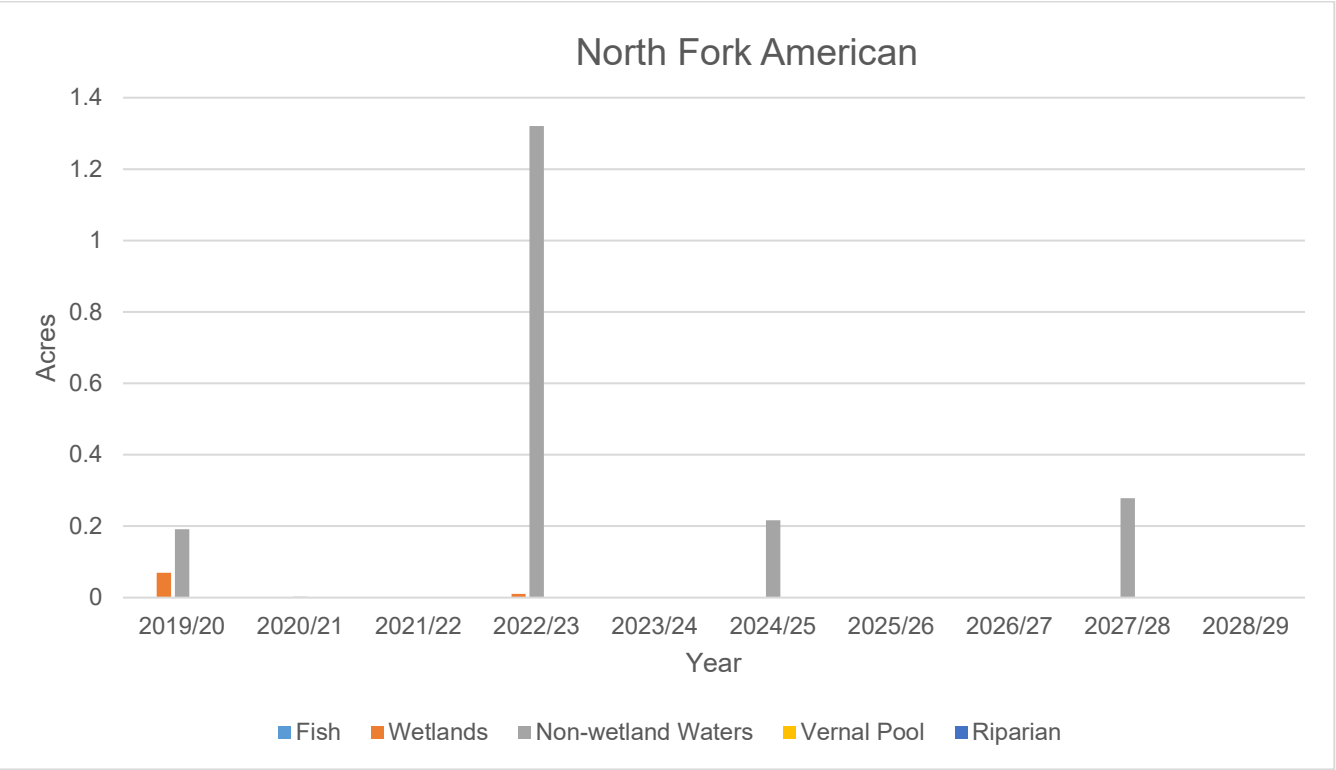


Table 6-6. Sacramento-Stone Corral: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year

Expected Advertisement Year	Fish: Number of Transportation Projects	Fish: Estimated Potential Impacts (acres)	Wetland: Number of Transportation Projects	Wetland: Estimated Potential Impacts (acres)	Water: Number of Transportation Projects	Water: Estimated Potential Impacts (acres)	Vernal Pool: Number of Transportation Projects	Vernal Pool: Estimated Potential Impacts (acres)	Riparian: Number of Transportation Projects	Riparian: Estimated Potential Impacts (acres)	% of Total Mitigation Need ^a
2019/20	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0
2020/21	1	4.7	0	0.0	1	0.9	0	0.0	1	0.1	27.4
2021/22	0	0.0	1	0.4	0	0.0	1	11.1	0	0.0	82.4
2022/23	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	82.4
2023/24	0	0.0	1	0.3	1	0.5	0	0.0	0	0.0	86.2
2024/25	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	86.2
2025/26	1	0.2	0	0.0	1	0.2	1	0.2	0	0.0	89.1
2026/27	0	0.0	0	0.0	1	0.3	1	2.0	0	0.0	99.9
2027/28	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	99.9
2028/29	0	0.0	0	0.0	1	<0.1	0	0.0	0	0.0	100
Total	2	4.9	2	0.7	5	1.9	3	13.2	1	0.1	100%

^a Indicative of the timing of mitigation need. $[\sum \text{impacts (year)} \div \sum \text{total impacts}] * 100$

Figure 6-7. Sacramento-Stone Corral: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year

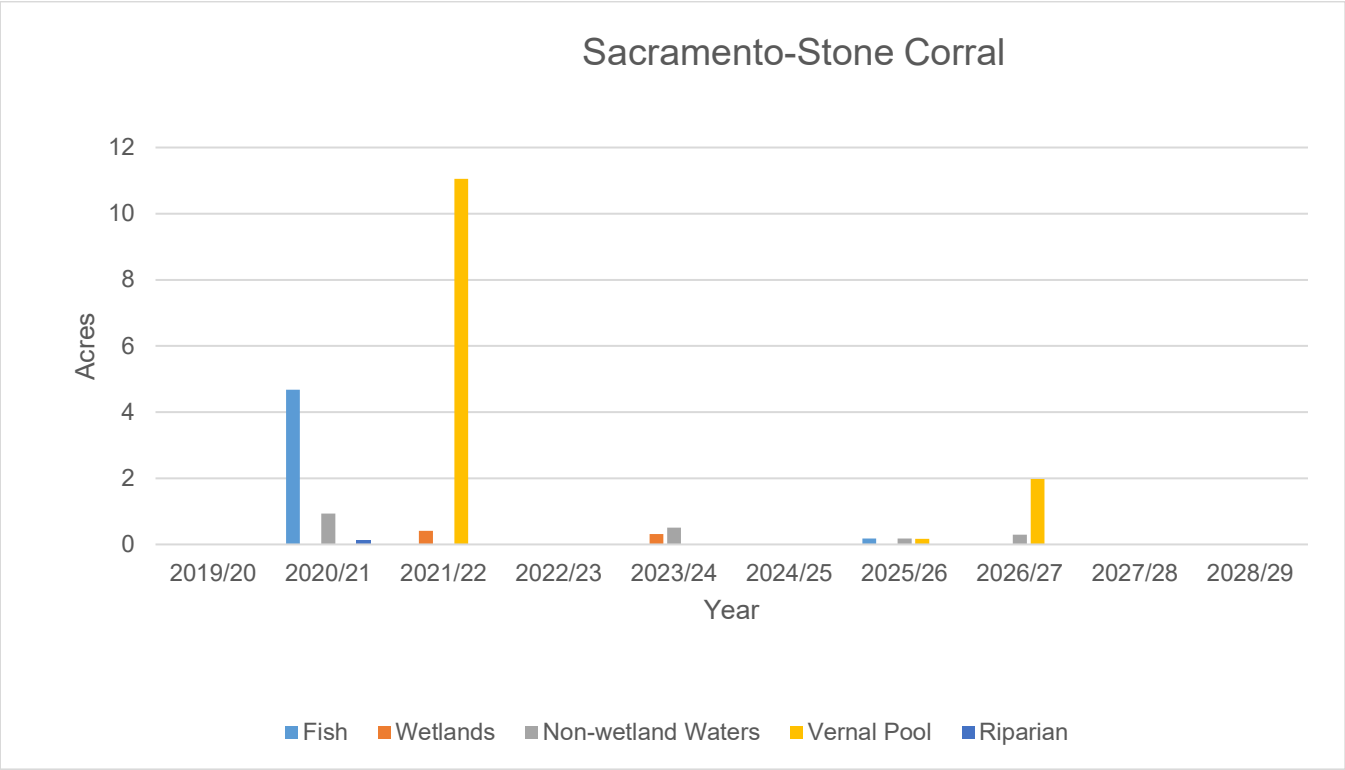


Table 6-7. South Fork American: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year

Expected Advertisement Year	Fish: Number of Transportation Projects	Fish: Estimated Potential Impacts (acres)	Wetland: Number of Transportation Projects	Wetland: Estimated Potential Impacts (acres)	Water: Number of Transportation Projects	Water: Estimated Potential Impacts (acres)	Vernal Pool: Number of Transportation Projects	Vernal Pool: Estimated Potential Impacts (acres)	Riparian: Number of Transportation Projects	Riparian: Estimated Potential Impacts (acres)	% of Total Mitigation Need ^a
2019/20	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
2020/21	0	0.0	0	0.0	1	<0.1	0	0.0	0	0.0	0
2021/22	0	0.0	2	<0.1	2	0.5	0	0.0	2	0.4	12.0
2022/23	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	12.0
2023/24	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	12.0
2024/25	0	0.0	2	<0.1	2	1.3	0	0.0	2	0.1	30.7
2025/26	0	0.0	0	0.0	1	0.2	0	0.0	0	0.0	33.4
2026/27	0	0.0	1	0.1	1	0.3	0	0.0	1	0.5	45.4
2027/28	0	0.0	2	0.6	2	2.9	0	0.0	2	0.3	96.1
2028/29	0	0.0	0	0.0	1	0.4	0	0.0	1	<0.1	100
Total	0	0.0	7	0.7	10	5.5	0	0.0	8	1.3	100%

^a Indicative of the timing of mitigation need. $[\sum \text{impacts (year)} \div \sum \text{total impacts}] * 100$

Figure 6-8. South Fork American: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year

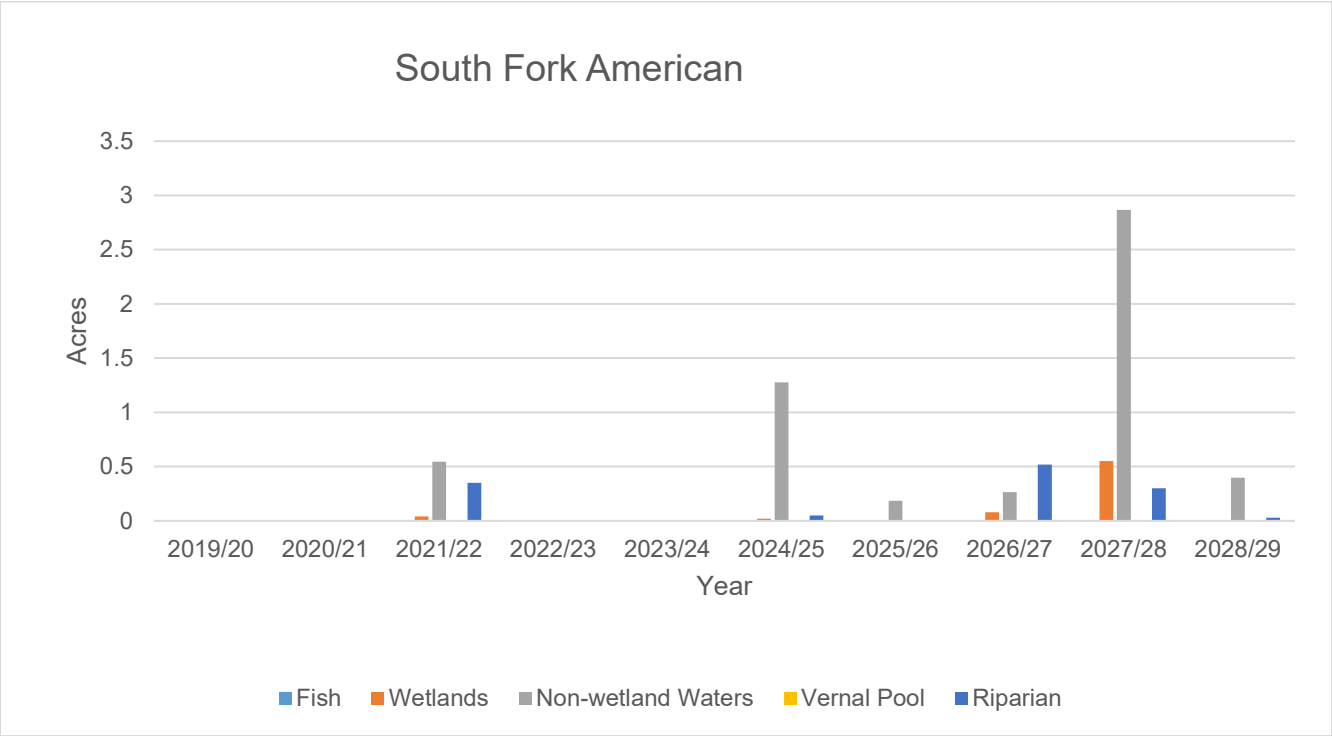


Table 6-8. Thomes Creek-Sacramento River: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year

Expected Advertisement Year	Fish: Number of Transportation Projects	Fish: Estimated Potential Impacts (acres)	Wetland: Number of Transportation Projects	Wetland: Estimated Potential Impacts (acres)	Water: Number of Transportation Projects	Water: Estimated Potential Impacts (acres)	Vernal Pool: Number of transportation Projects	Vernal Pool: Estimated Potential Impacts (acres)	Riparian: Number of Transportation Projects	Riparian: Estimated Potential Impacts (acres)	% of Total Mitigation Need ^a
2019/20	0	0.0	0	0.0	1	0.2	0	0.0	0	0.0	100
2020/21	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	100
2021/22	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	100
2022/23	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	100
2023/24	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	100
2024/25	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	100
2025/26	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	100
2026/27	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	100
2027/28	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	100
2028/29	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	100
Total	0	0.0	0	0.0	1	0.2	0	0.0	0	0.0	100%

^a Indicative of the timing of mitigation need. $[\sum \text{impacts (year)} \div \sum \text{total impacts}] * 100$

Figure 6-9. Thomes Creek-Sacramento River: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year

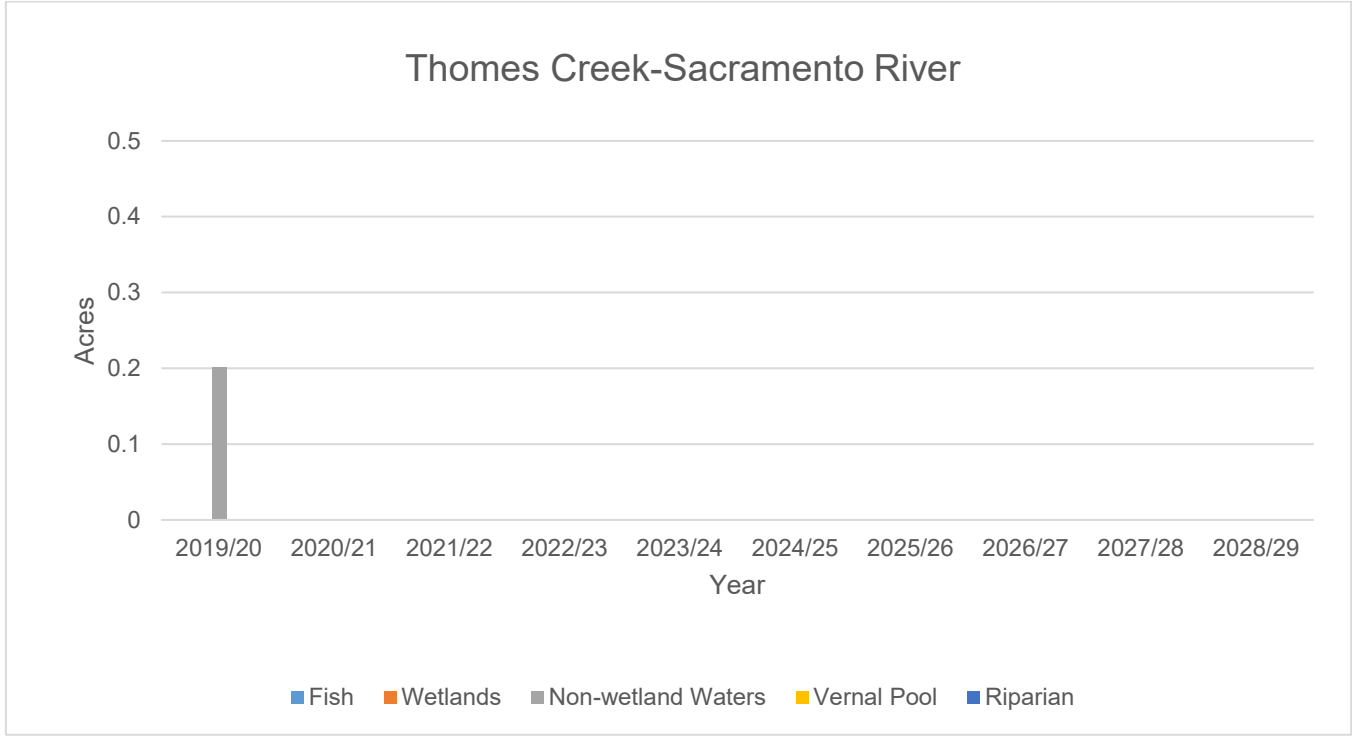


Table 6-9. Upper Bear: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year

Expected Advertisement Year	Fish: Number of Transportation Projects	Fish: Estimated Potential Impacts (acres)	Wetland: Number of Transportation Projects	Wetland: Estimated Potential Impacts (acres)	Water: Number of Transportation Projects	Water: Estimated Potential Impacts (acres)	Vernal Pool: Number of Transportation Projects	Vernal Pool: Estimated Potential Impacts (acres)	Riparian: Number of Transportation Projects	Riparian: Estimated Potential Impacts (acres)	% of Total Mitigation Need ^a
2019/20	0	0.0	1	0.1	1	0.1	0	0.0	1	0.5	24.1
2020/21	0	0.0	1	0.2	3	0.5	0	0.0	1	<0.1	48.2
2021/22	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	48.2
2022/23	0	0.0	0	0.0	1	0.5	0	0.0	0	0.0	65.4
2023/24	0	0.0	0	<0.1	1	0.1	0	0.0	0	0.0	68.8
2024/25	0	0.0	0	0.0	1	0.1	0	0.0	0	0.0	72.2
2025/26	0	0.0	1	0.1	1	0.2	0	0.0	0	0.0	82.5
2026/27	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	82.5
2027/28	0	0.0	1	<0.1	1	<0.1	0	0.0	0	0.0	82.5
2028/29	0	0.0	1	<0.1	1	0.5	0	0.0	0	0.0	100
Total	0	0.0	6	0.4	10	2.0	0	0.0	0	0.5	100%

^a Indicative of the timing of mitigation need. $[\sum \text{impacts (year)} \div \sum \text{total impacts}] * 100$

Figure 6-10. Upper Bear: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year

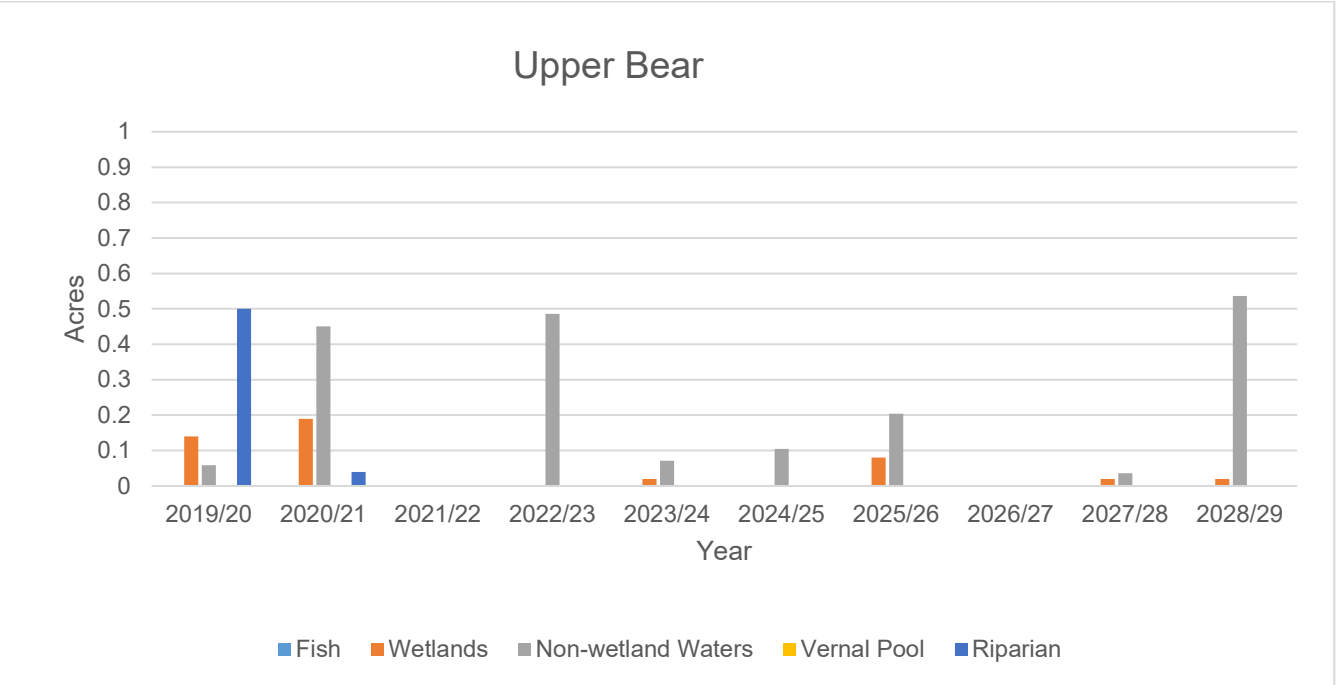


Table 6-10. Upper Coon-Upper Auburn: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year

Expected Advertisement Year	Fish: Number of Transportation Projects	Fish: Estimated Potential Impacts (acres)	Wetland: Number of Transportation Projects	Wetland: Estimated Potential Impacts (acres)	Water: Number of Transportation Projects	Water: Estimated Potential Impacts (acres)	Vernal Pool: Number of Transportation Projects	Vernal Pool: Estimated Potential Impacts (acres)	Riparian: Number of Transportation Projects	Riparian: Estimated Potential Impacts (acres)	% of Total Mitigation Need ^a
2019/20	1	5.8	1	<0.1	1	1.3	0	0.0	1	0.2	74.5
2020/21	0	0.0	1	<0.1	0	0.0	0	0.0	1	0.2	76.5
2021/22	0	0.0	1	0.5	1	0.1	0	0.0	1	1.7	99.0
2022/23	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	99.0
2023/24	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	99.0
2024/25	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	99.0
2025/26	0	0.0	0	0.0	1	0.1	0	0.0	0	0.0	100
2026/27	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	100
2027/28	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	100
2028/29	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	100
Total	1	5.8	3	0.5	3	1.4	0	0.0	3	2.1	100%

^a Indicative of the timing of mitigation need. $[\sum \text{impacts (year)} \div \sum \text{total impacts}] * 100$

Figure 6-11. Upper Coon-Upper Auburn: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year

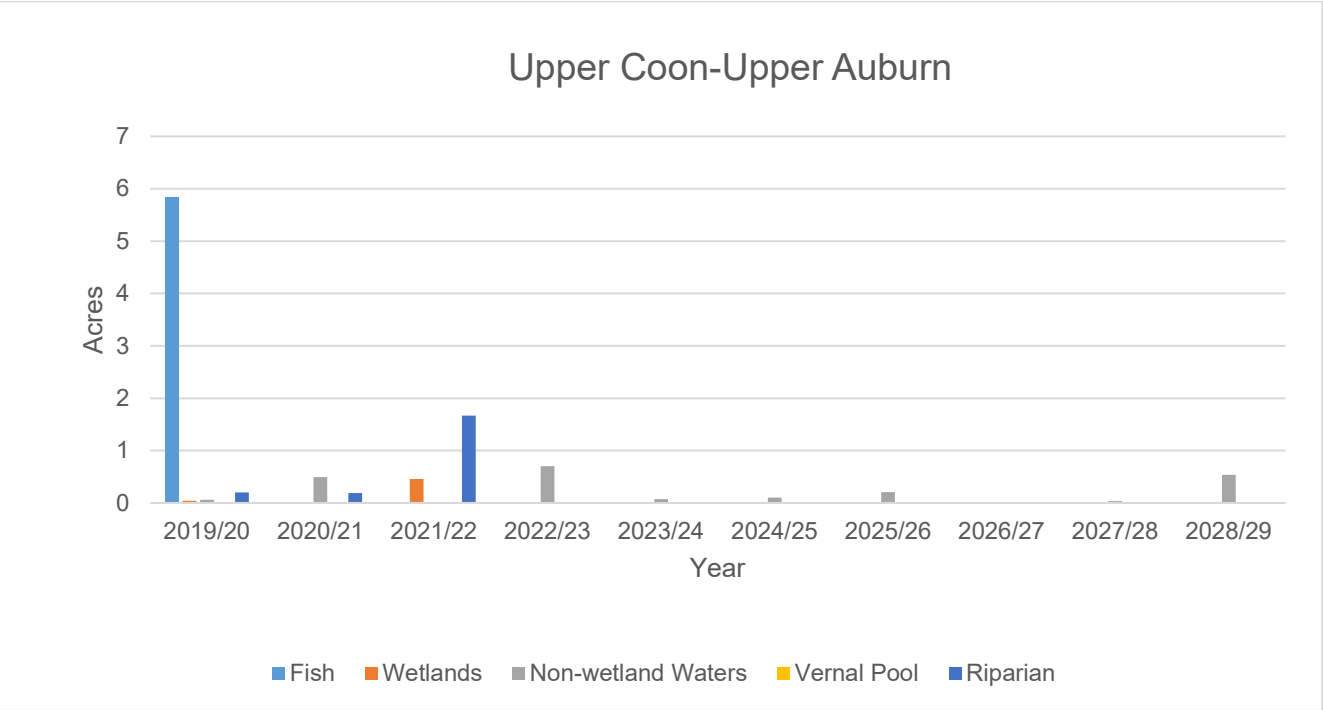


Table 6-11. Upper Yuba: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year

Expected Advertisement Year	Fish: Number of Transportation Projects	Fish: Estimated Potential Impacts (acres)	Wetland: Number of Transportation Projects	Wetland: Estimated Potential Impacts (acres)	Water: Number of Transportation Projects	Water: Estimated Potential Impacts (acres)	Vernal Pool: Number of Transportation Projects	Vernal Pool: Estimated Potential Impacts (acres)	Riparian: Number of Transportation Projects	Riparian: Estimated Potential Impacts (acres)	% of Total Mitigation Need ^a
2019/20	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
2020/21	0	0.0	0	0.0	1	<0.1	0	0.0	0	0.0	25.0
2021/22	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	25.0
2022/23	0	0.0	1	<0.1	2	0.9	0	0.0	0	0.0	47.5
2023/24	0	0.0	0	0.0	1	<0.1	0	0.0	0	0.0	47.5
2024/25	0	0.0	0	0.0	2	0.9	0	0.0	1	0.1	72.5
2025/26	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	72.5
2026/27	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	72.5
2027/28	0	0.0	1	0.1	2	0.3	0	0.0	1	<0.1	82.5
2028/29	1	0.1	0	0.0	2	1.5	0	0.0	1	0.1	100
Total	1	0.1	1	0.1	10	3.6	0	0.0	3	0.2	100%

^a Indicative of the timing of mitigation need. $[\sum \text{impacts (year)} \div \sum \text{total impacts}] * 100$

Figure 6-12. Upper Yuba: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year

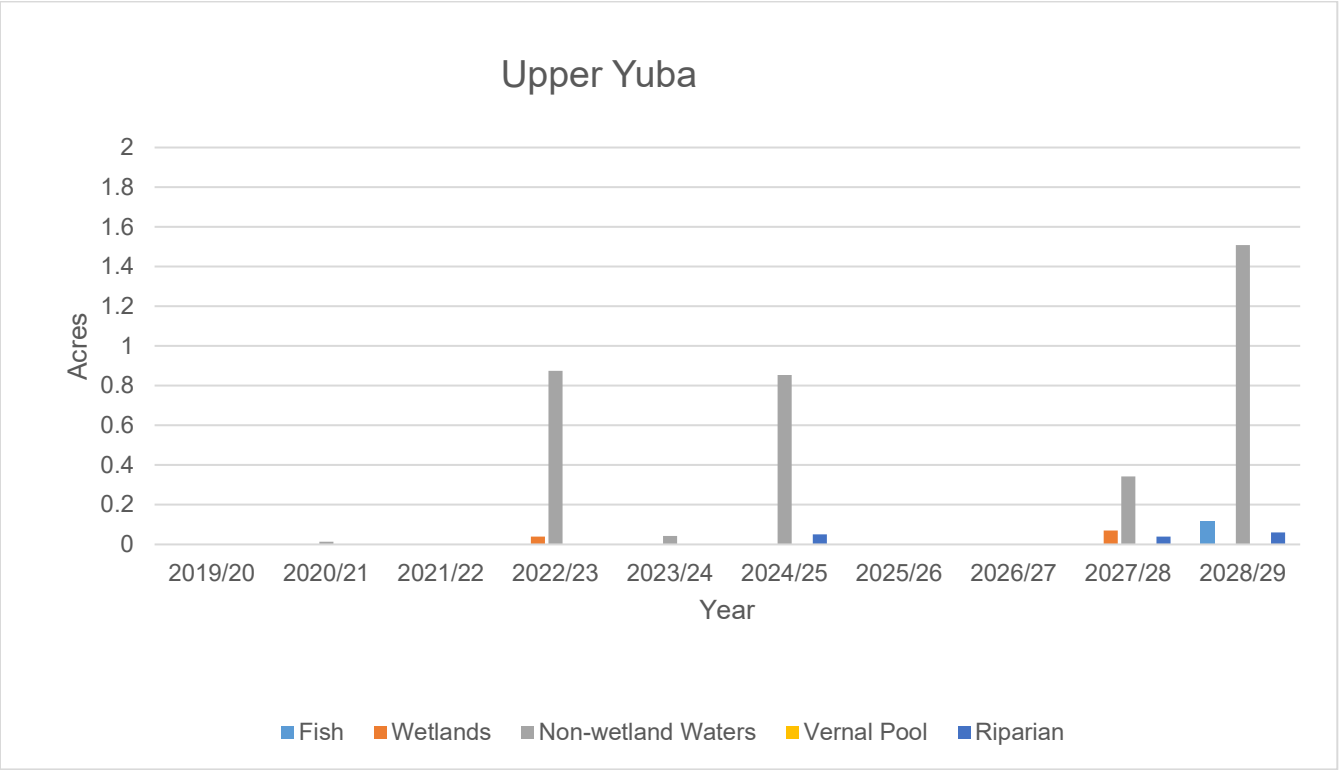


Table 6-12. Great Valley Ecoregion Section: Estimated Impacts on Species of Mitigation Need, by Transportation Project Delivery Year

Expected Advertisement Year	California Red-legged Frog: Number of Transportation Projects	California Red-legged Frog: Estimated Potential Impacts (acres)	Foothill Yellow-legged Frog: Number of Transportation Projects	Foothill Yellow-legged Frog: Estimated Potential Impacts (acres)	Giant Garter Snake: Number of Transportation Projects	Giant Garter Snake: Estimated Potential Impacts (acres)	Swainson's Hawk: Number of Transportation Projects	Swainson's Hawk: Estimated Potential Impacts (acres)	Valley Elderberry Longhorn Beetle: Number of Transportation Projects	Valley Elderberry Longhorn Beetle: Estimated Potential Impacts (acres)	% of Total Mitigation Need ^a
2019/20	6	3.2	1	0.2	7	6.8	8	5.7	2	1.6	22.6
2020/21	0	0.0	0	0.0	2	1.3	2	1.6	2	0.2	26.5
2021/22	1	1.2	0	0.0	5	10.9	5	8.8	4	2.8	57.0
2022/23	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	57.0
2023/24	0	0.0	0	0.0	1	12.7	1	12.8	1	<0.1	89.9
2024/25	1	0.3	0	0.0	1	0.3	1	0.3	0	0.0	90.7
2025/26	0	0.0	0	0.0	2	0.2	3	0.3	1	<0.1	91.3
2026/27	1	1.0	0	0.0	1	1.3	1	1.3	0	0.0	95.9
2027/28	1	0.3	0	0.0	1	0.5	1	0.5	1	0.2	97.8
2028/29	1	0.1	0	0.0	2	0.6	2	0.7	0	0.0	100
Total	11	6.1	1	0.2	22	34.5	24	31.9	11	4.9	100%

^a Indicative of the timing of mitigation need. $[\sum \text{impacts (year)} \div \sum \text{total impacts}] * 100$

Figure 6-13. Great Valley Ecoregion Section: Estimated Impacts on Species of Mitigation Need, by Transportation Project Delivery Year

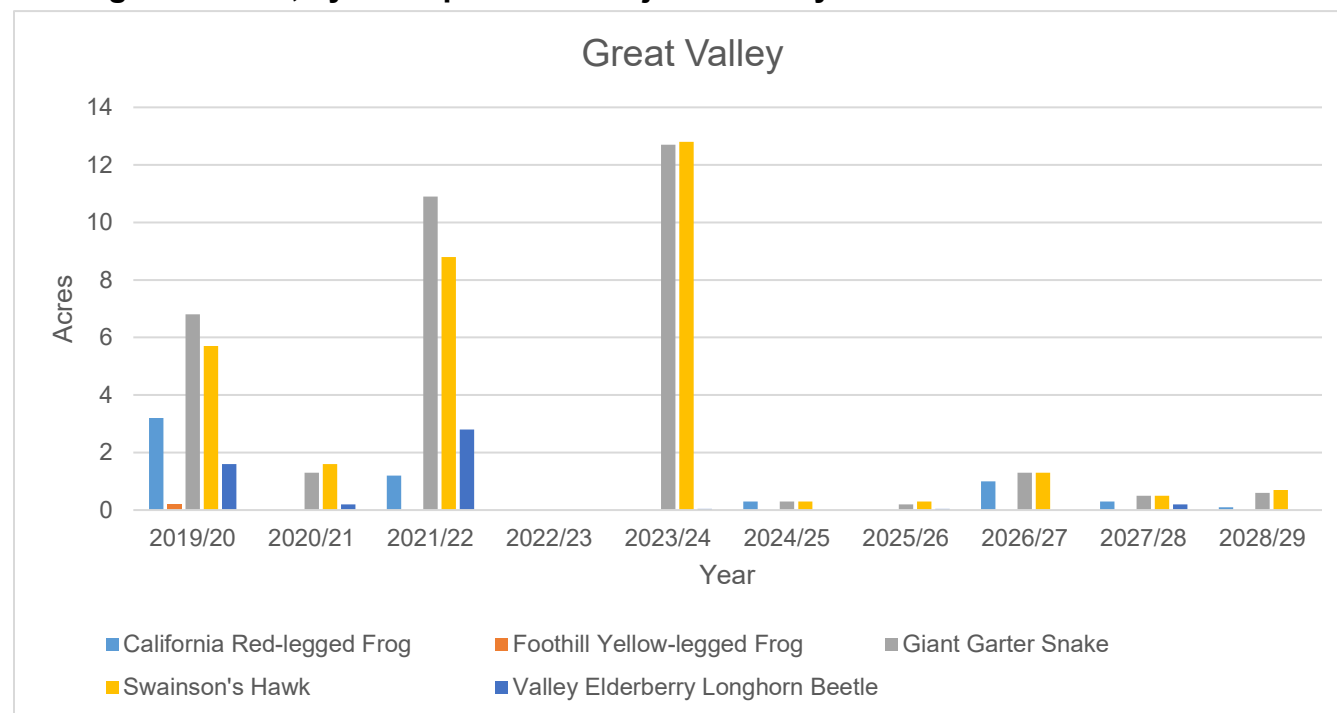


Table 6-13. Northern California Interior Coast Ranges Ecoregion Section: Estimated Impacts on Species of Mitigation Need, by Transportation Project Delivery Year

Expected Advertisement Year	California Red-legged Frog: Number of Transportation Projects	California Red-legged Frog: Estimated Potential Impacts (acres)	Foothill Yellow-legged Frog: Number of Transportation Projects	Foothill Yellow-legged Frog: Estimated Potential Impacts (acres)	Giant Garter Snake: Number of Transportation Projects	Giant Garter Snake: Estimated Potential Impacts (acres)	Swainson's Hawk: Number of Transportation Projects	Swainson's Hawk: Estimated Potential Impacts (acres)	Valley Elderberry Longhorn Beetle: Number of Transportation Projects	Valley Elderberry Longhorn Beetle: Estimated Potential Impacts (acres)	% of Total Mitigation Need ^a
2019/20	1	0.1	1	0.1	0	0.0	0	0.0	0	0.0	1.0
2020/21	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1.0
2021/22	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1.0
2022/23	1	0.3	1	0.3	0	0.0	0	0.0	0	0.0	4.1
2023/24	1	9.8	1	2.3	1	3.6	1	3.6	0	0.0	85.0
2024/25	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	85.0
2025/26	1	1.0	1	1.0	0	0.0	0	0.0	0	0.0	95.3
2026/27	1	0.5	1	0.5	0	0.0	0	0.0	0	0.0	100
2027/28	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	100
2028/29	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	100
Total	5	11.6	5	4.2	1	3.6	1	3.6	0	0.0	100%

^a Indicative of the timing of mitigation need. $[\sum \text{impacts (year)} \div \sum \text{total impacts}] * 100$

Figure 6-14. Northern California Interior Coast Ranges Ecoregion Section: Estimated Impacts on Species of Mitigation Need, by Transportation Project Delivery Year

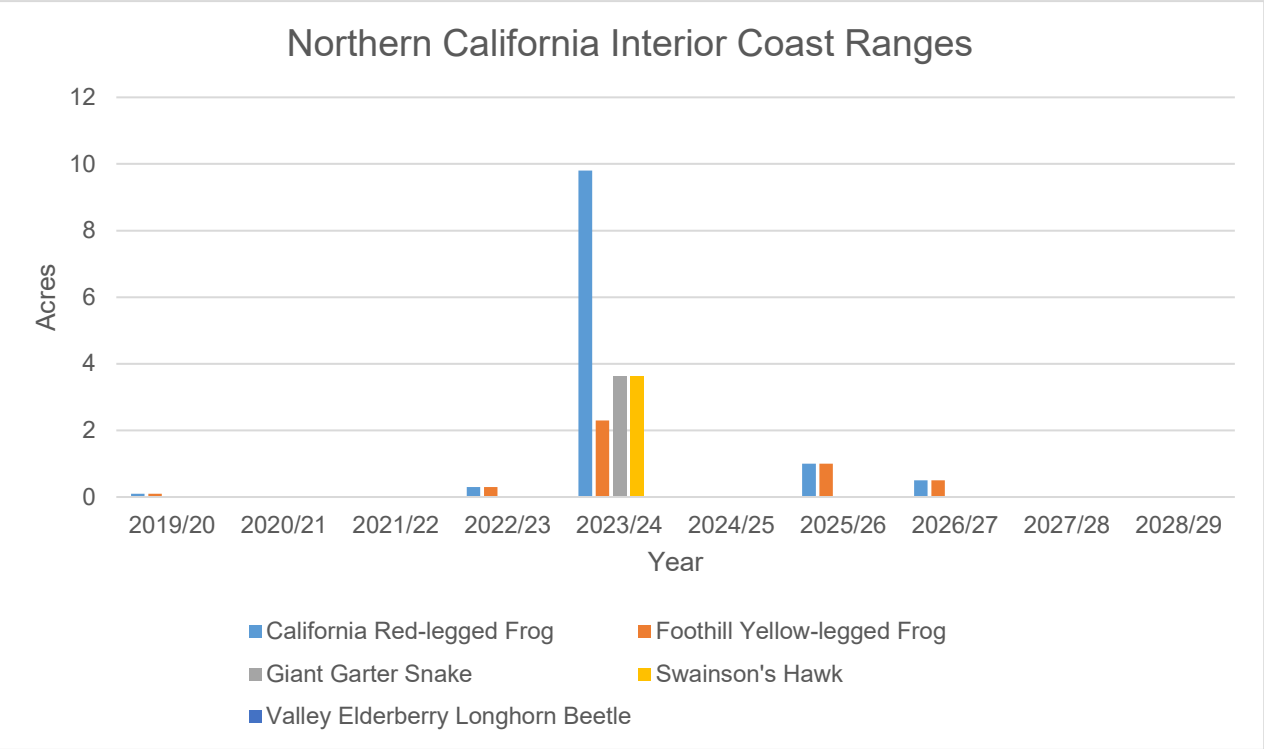


Table 6-14. Sierra Nevada Ecoregion Section: Estimated Impacts on Species of Mitigation Need, by Transportation Project Delivery Year

Expected Advertisement Year	California Red-legged Frog: Number of Transportation Projects	California Red-legged Frog: Estimated Potential Impacts (acres)	Foothill Yellow-legged Frog: Number of Transportation Projects	Foothill Yellow-legged Frog: Estimated Potential Impacts (acres)	Giant Garter Snake: Number of Transportation Projects	Giant Garter Snake: Estimated Potential Impacts (acres)	Swainson's Hawk: Number of Transportation Projects	Swainson's Hawk: Estimated Potential Impacts (acres)	Valley Elderberry Longhorn Beetle: Number of Transportation Projects	Valley Elderberry Longhorn Beetle: Estimated Potential Impacts (acres)	% of Total Mitigation Need ^a
2019/20	3	3.3	3	3.3	0	0.0	0	0.0	0	0.0	5.0
2020/21	3	2.5	6	6.4	0	0.0	0	0.0	0	0.0	11.8
2021/22	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	11.8
2022/23	2	23.0	3	25.2	0	0.0	0	0.0	0	0.0	48.5
2023/24	1	0.2	1	0.2	0	0.0	0	0.0	0	0.0	48.8
2024/25	3	3.4	5	15.0	0	0.0	0	0.0	0	0.0	62.8
2025/26	2	10.6	2	10.6	0	0.0	0	0.0	0	0.0	78.9
2026/27	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	78.9
2027/28	2	1.4	3	2.5	0	0.0	0	0.0	0	0.0	81.9
2028/29	3	11.0	3	12.9	0	0.0	0	0.0	0	0.0	100
Total	19	55.4	26	76.0	0	0.0	0	0.0	0	0.0	100%

^a Indicative of the timing of mitigation need. $[\sum \text{impacts (year)} \div \sum \text{total impacts}] * 100$

Figure 6-15. Sierra Nevada Ecoregion Section: Estimated Impacts on Species of Mitigation Need, by Transportation Project Delivery Year

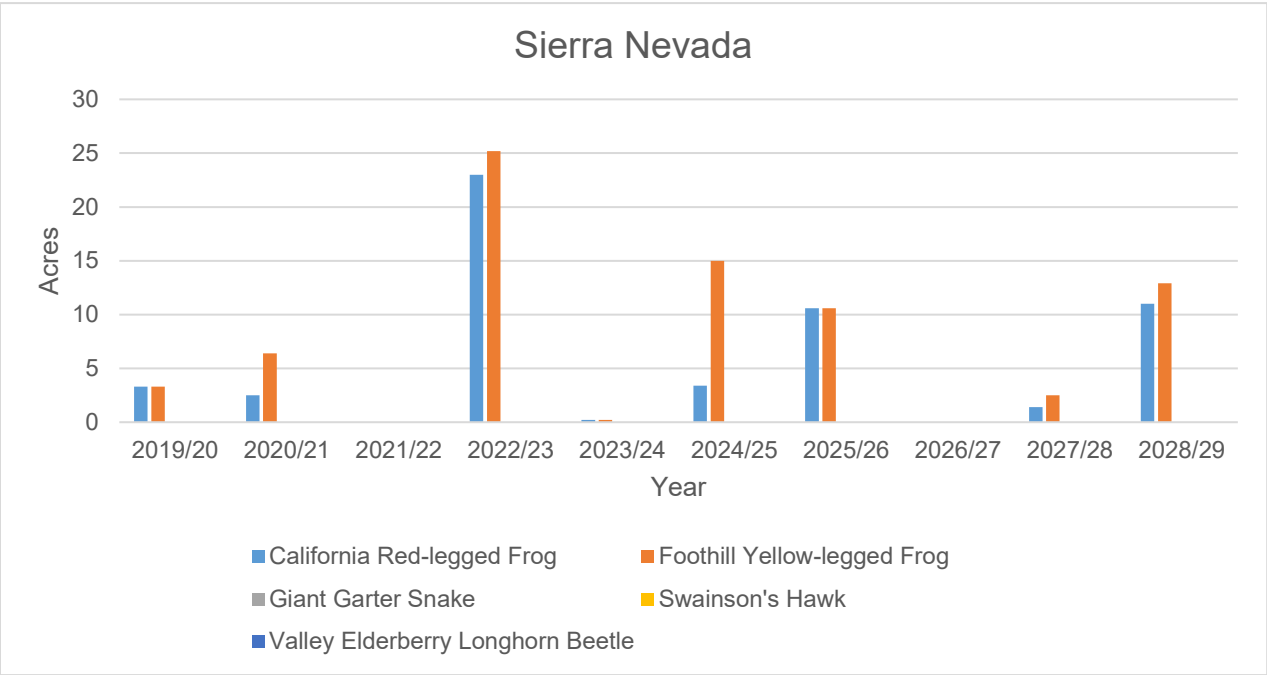


Table 6-15. Sierra Nevada Foothills Ecoregion Section: Estimated Impacts on Species of Mitigation Need, by Transportation Project Delivery Year

Expected Advertisement Year	California Red-legged Frog: Number of Transportation Projects	California Red-legged Frog: Estimated Potential Impacts (acres)	Foothill Yellow-legged Frog: Number of Transportation Projects	Foothill Yellow-legged Frog: Estimated Potential Impacts (acres)	Giant Garter Snake: Number of Transportation Projects	Giant Garter Snake: Estimated Potential Impacts (acres)	Swainson's Hawk: Number of Transportation Projects	Swainson's Hawk: Estimated Potential Impacts (acres)	Valley Elderberry Longhorn Beetle: Number of Transportation Projects	Valley Elderberry Longhorn Beetle: Estimated Potential Impacts (acres)	% of Total Mitigation Need ^a
2019/20	3	2.6	0	0.0	0	0.0	0	0.0	0	0.0	11.6
2020/21	3	2.5	0	0.0	0	0.0	0	0.0	0	0.0	22.7
2021/22	3	12.7	0	0.0	0	0.0	0	0.0	0	0.0	79.1
2022/23	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	79.1
2023/24	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	79.1
2024/25	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	79.1
2025/26	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	79.1
2026/27	1	0.9	0	0.0	0	0.0	0	0.0	0	0.0	83.1
2027/28	4	1.9	0	0.0	0	0.0	0	0.0	0	0.0	91.5
2028/29	1	1.8	0	0.0	0	0.0	0	0.0	0	0.0	100
Total	15	22.5	0	0.0	0	0.0	0	0.0	0	0.0	100%

^a Indicative of the timing of mitigation need. $[\sum \text{impacts (year)} \div \sum \text{total impacts}] * 100$

Figure 6-16. Sierra Nevada Foothills Ecoregion Section: Estimated Impacts on Species of Mitigation Need, by Transportation Project Delivery Year

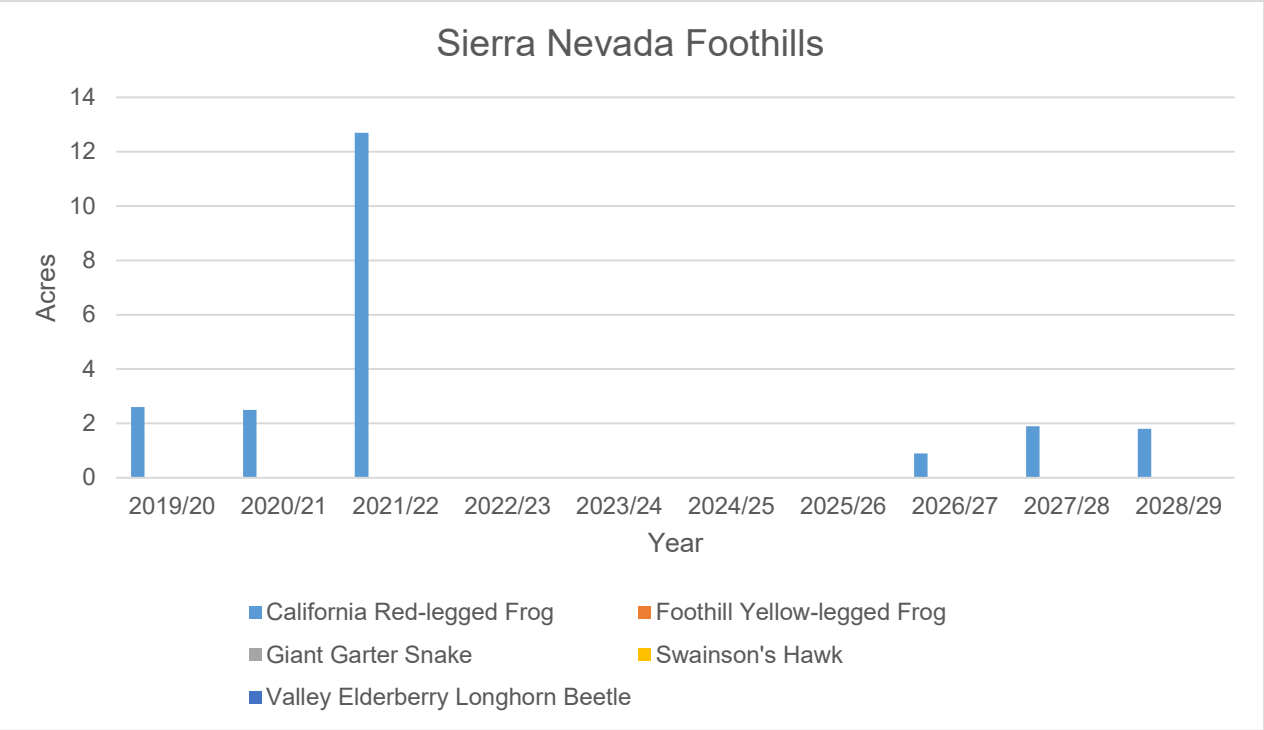
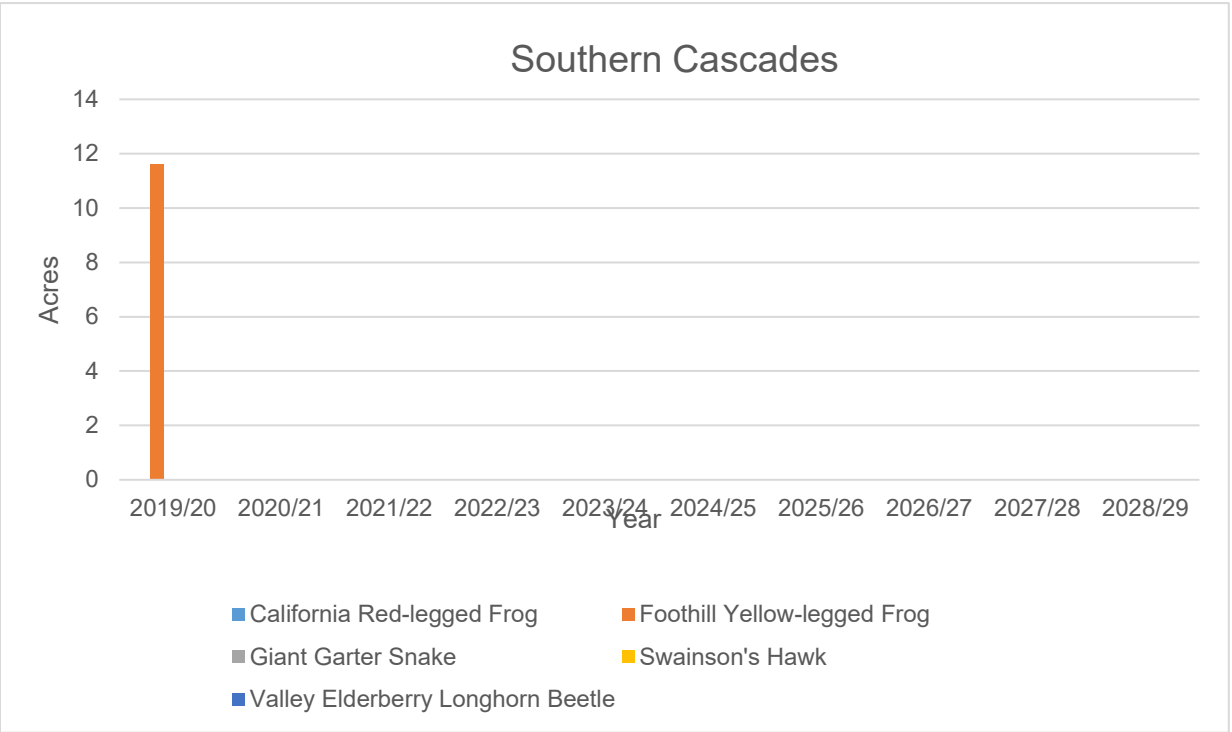


Table 6-16. Southern Cascades Ecoregion Section: Estimated Impacts on Species of Mitigation Need, by Transportation Project Delivery Year

Expected Advertisement Year	California Red-legged Frog: Number of Transportation Projects	California Red-legged Frog: Estimated Potential Impacts (acres)	Foothill Yellow-legged Frog: Number of Transportation Projects	Foothill Yellow-legged Frog: Estimated Potential Impacts (acres)	Giant Garter Snake: Number of Transportation Projects	Giant Garter Snake: Estimated Potential Impacts (acres)	Swainson's Hawk: Number of Transportation Projects	Swainson's Hawk: Estimated Potential Impacts (acres)	Valley Elderberry Longhorn Beetle: Number of Transportation Projects	Valley Elderberry Longhorn Beetle: Estimated Potential Impacts (acres)	% of Total Mitigation Need ^a
2019/20	0	0.0	1	11.6	0	0.0	0	0.0	0	0.0	11.6
2020/21	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	22.7
2021/22	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	79.1
2022/23	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	79.1
2023/24	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	79.1
2024/25	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	79.1
2025/26	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	79.1
2026/27	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	83.1
2027/28	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	91.5
2028/29	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	100
Total	0	0.0	1	11.6	0	0.0	0	0.0	0	0.0	100%

^a Indicative of the timing of mitigation need. $[\sum \text{impacts (year)} \div \sum \text{total impacts}] * 100$

Figure 6-17. Southern Cascades Ecoregion Section: Estimated Impacts on Species of Mitigation Need, by Transportation Project Delivery Year



6.3 Acceleration Priorities

Caltrans' transportation project sequence prioritization reflects the information provided in the 2019/20 to 2028/29 (Quarter 2) SHOPP Ten-Year Book and is based on meeting the Caltrans District's needs and performance targets while financially balancing the Caltrans District's accounts (Table 5-1). As a result of the dynamic nature of transportation planning, since the 2019/20 to 2028/29 (Quarter 2) SHOPP Ten-Year Book was published, delivery schedules associated with 30 transportation projects have changed, including some that have been excluded, and 86 transportation projects have been added.

Based on the current SHOPP Ten-Year Book (2021, Quarter 3), the following transportation projects will be delayed:

- SHOPP Project ID 17714 will be delayed from 2019/20 to 2020/21.
- SHOPP Project ID 20843 will be delayed from 2027/28 to 2031/32.
- SHOPP Project ID 14007 will be delayed from 2019/20 to 2021/22.
- SHOPP Project ID 16336 will be delayed from 2021/22 to 2023/24.
- SHOPP Project ID 17716 will be delayed from 2019/20 to 2020/21.
- SHOPP Project ID 21983 will be delayed from 2020/21 to 2021/22.
- SHOPP Project ID 17216 will be delayed from 2019/20 to 2021/22.
- SHOPP Project ID 09111 will be delayed from 2019/20 to 2021/22.
- SHOPP Project ID 21983 will be delayed from 2020/21 to 2022/23.
- SHOPP Project ID 17216 will be delayed from 2019/20 to 2021/22.
- SHOPP Project ID 21813 will be delayed from 2025/26 to 2028/29.
- SHOPP Project ID 17717 will be delayed from 2023/24 to 2025/26.
- SHOPP Project ID 20498 will be delayed from 2024/25 to 2028/29.
- SHOPP Project ID 21145 will be delayed from 2024/25 to 2026/27.
- SHOPP Project ID 21278 will be delayed from 2026/27 to 2030/31.

Additionally, at this time, the following transportation projects will be accelerated:

- SHOPP Project ID 15830 will be accelerated from 2022/23 to 2021/22.
- SHOPP Project ID 11365 will be accelerated from 2028/29 to 2027/28.
- SHOPP Project ID 16390 will be accelerated from 2022/23 to 2022/23.
- SHOPP Project ID 19441 will be accelerated from 2026/27 to 2021/22.
- SHOPP Project ID 21267 will be accelerated from 2028/29 to 2027/28.
- SHOPP Project ID 15996 will be accelerated from 2023/24 to 2022/23.

Further, the following transportation projects have been excluded :

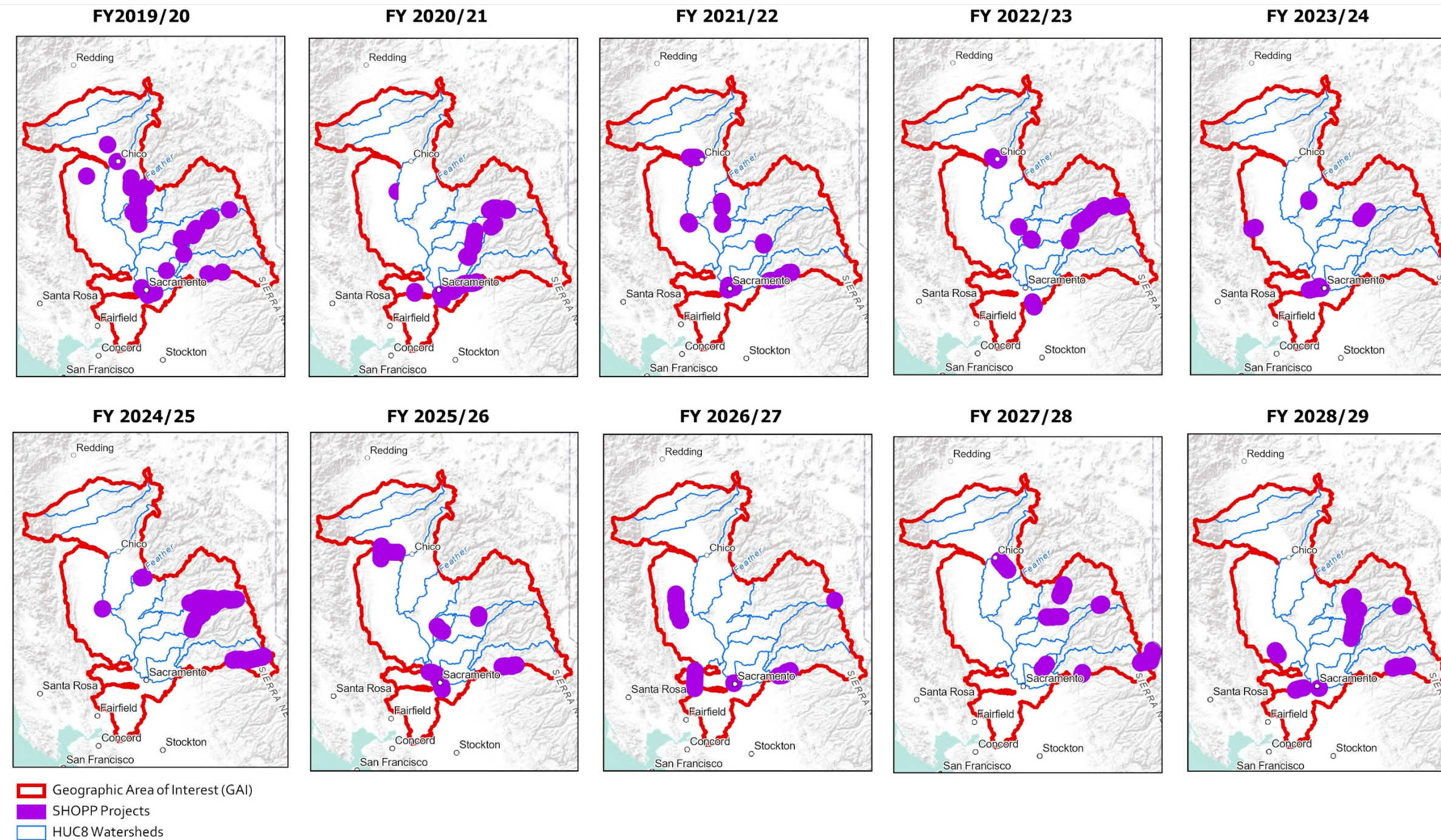
- SHOPP Project IDs 18010, 20679, 20683, 13648, 18156, 16365, 13330, 21328, and 17325

Last, the following projects have been added to the most current Ten-Year Book (2021, Quarter 3):

- SHOPP Project IDs 16789, 17030, 21627, 21796, 21899, 21901, 21914, 21924, 22005, 22270, 22398, 22508, 22532, 17878, 19808, 20573, 21505, 19046, 19047, 20486, 20649, 20799, 21797, 22148, 22399, 13599, 13840, 16925, 21286, 22357, 13473, 16297, 16404, 16761, 16916, 17862, 19413, 20056, 21276, 21962, 22545, 15715, 16376, 16920, 17026, 20400, 20875, 20982, 20994, 21405, 21900, 9259, 9301, 14046, 14047, 15866, 16362, 16563, 16779, 16936, 18257, 18448, 18745, 19270, 20560, 20974, 21252, 21288, 21907, 21951, 21974, 22052, 22128, 22535, 22474, 13750, 15714, 16921, 18105, 21263, 21354, 20461, 20576, 22088, and 22269.

The most current Ten-Year Book (2021, Quarter 3) planned delivery schedule is depicted in Figure 6-18. Transportation projects with estimated impacts are shown for each year. The number of additional transportation projects, without estimated impacts, is provided in each triangle.

Figure 6-18. Location of SHOPP Estimated Impacts, by Transportation Project Delivery Year, Ten-Year Book (2021, Quarter 3)



California State Parks, Esri, HERE, Garmin, FAO, NOAA, USGS, Bureau of Land Management, EPA, NPS, Sources: Esri, USGS, NOAA

Note: SHOPP transportation projects are listed in Table 5-1, with delivery dates modified as described in text.

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7. WILDLIFE RESOURCES CONSERVATION GOALS AND OBJECTIVES

Caltrans' primary objective for wildlife resources is to avoid and minimize all impacts on special-status species from Caltrans transportation projects in the GAI. However, when avoidance and minimization are insufficient or infeasible, compensatory mitigation may be used to offset impacts. Credits or values established through SHC § 800.6(a)-authorized advance mitigation projects offer the unique opportunity to consolidate needed compensatory mitigation. This consolidation helps to provide strategically placed and environmentally sound enhanced, restored, or created habitat and an improved environmental outcome that may not be available through the usual transportation project-by-project approach to compensatory mitigation.

Caltrans seeks to align its advance mitigation projects with natural resource regulatory agencies' goals and objectives, and thus contribute to an improved environmental outcome within the GAI. With this in mind, this chapter presents Caltrans' understanding of natural resource regulatory agencies' regional conservation goals and objectives and how they can be applied to advance mitigation projects undertaken in the GAI to offset forecast impacts on wildlife resources from SHOPP and STIP-eligible transportation projects.

The goals and objectives assembled for this chapter are intended to guide Caltrans advance mitigation project scoping decisions toward those choices that provide the greatest environmental benefit available through the advance mitigation planning and delivery processes. Such projects undertaken by Caltrans should contribute to wildlife resource protection and enhancement and should yield compensatory mitigation usable by future transportation projects, as specified in SHC § 800¹. Compensatory mitigation usable by future transportation projects should be expressed in standard units or terms recognized by the natural resource regulatory agencies.

Information presented in this chapter is for advance mitigation project scoping purposes only. Transportation projects must still go through environmental and permitting processes and must demonstrate avoidance and minimization efforts prior to compensation.

7.1 Approach

For the purposes of this RAMNA, conservation goals and objectives are a broad set of regional natural resource sustainability goals and objectives that are consistent with both

¹ Pursuant to SHC § 800.9, to the maximum extent practicable, the information required for an RCIS is presented in this RAMNA. During CDFW's review of an RCIS, CDFW determines whether the goals and objectives presented in the RCIS are consistent with FGC § 1852, subdivision (c)(8).

regulatory requirements and conservation science. To determine the wildlife resource conservation goals and objectives applicable to the GAI, Caltrans:

- First, in Section 7.2, identifies the natural resource regulatory agencies with the authority to condition transportation projects with wildlife resource-related compensatory mitigation in the GAI.
- Then, in Section 7.3, summarizes the life history information for the five wildlife species of mitigation need chosen to focus the assessment, as identified in Section 1.5.
- Next, in Sections 7.4, 7.5, and 7.6, for the species of mitigation need, identifies:
 - Federal and state binding and non-binding regional conservation and land management plans
 - Current and projected pressures and stressors for which there is a potential transportation nexus
 - Opportunities to enhance the conservation benefits through advance mitigation projects
 - Opportunities to benefit other special-status and native wildlife species through advance mitigation
- Last, analyzes the aforementioned information in relation to the transportation-related activities that could potentially affect the species of mitigation need, and the potential range of compensatory mitigation that could satisfy a future transportation project condition associated with the activities.

The result of this analysis is a framework of conservation goals and objectives for use in advance mitigation project scoping (Section 7.7).

7.2 Natural Resource Regulatory Agencies with Wildlife Resources Oversight

Table 7-1 lists the natural resource regulatory agencies with the authority to condition transportation projects delivered in the GAI with wildlife resource-related compensatory mitigation. The aquatic resources used by wildlife, such as streams, wetlands, and non-wetland waters, are also regulated by other natural resource regulatory agencies. This RAMNA identifies goals and objectives for aquatic resources, including fish species, separately in Chapter 8.

Table 7-1. Natural Resource Regulatory Agencies with Wildlife Resources Oversight

Agency ^a	Summary
CDFW – Region 1, Northern, Region 2, North Central, Region 3, Bay Delta, and Habitat Conservation Planning Branch	CDFW oversees the conservation, protection, and management of fish, wildlife, native plants, and the habitats necessary for biologically sustainable populations of those species in California. CDFW's Environmental Review and Permitting, Conservation and Mitigation Banking, NCCP, and RCIS programs implement sections of the FGC, Title 14 of the California Code of Regulations, and Public Resources Code § 21000, et seq. These programs help fulfill CDFW's mission to manage California's diverse fish, wildlife, and plant resources, and the habitats upon which they depend, for their ecological values. CDFW issues permits and agreements to project proponents under its authorities including incidental take permits and consistency determinations under CESA, Lake and Streambed Alteration Agreements, approvals of conservation and mitigation banks, approvals of MCAs and RCISs, and NCCP permits. NCCP permits can authorize the take of fully protected species.
FWS	FWS regulates all federally protected wildlife species and critical habitats and requires consultation and coordination to be in compliance with the ESA. FWS authorities, including its role in mitigation, are codified under multiple statutes that address management and conservation of natural resources from many perspectives, including, but not limited to, the effects of land, water, and energy development on fish, wildlife, plants, and their habitats. FWS approves HCPs to address impacts on federally protected species, for projects lacking a federal nexus, under ESA Section 10(a)1(B). For projects with a federal nexus and potential impacts on federally protected species, FWS issues biological opinions under Section 7 of the ESA.
NMFS	NMFS has jurisdiction over all federally protected fish and wildlife marine species and critical habitats and requires consultation and coordination to be in compliance with the ESA. Similar to FWS, NMFS manages wildlife and fisheries resources in the marine and estuarine environment. NMFS issues biological opinions under Section 7 of the ESA for projects that may affect federally listed species managed by the agency. In addition, NMFS manages marine mammals under the Marine Mammal Protection Act, with the exception of sea otters, which are managed by FWS. NMFS is also responsible for addressing impacts on essential fish habitat ("EFH") under the Magnuson-Stevens Fishery Conservation and Management Act.

^a In addition to the agencies listed above, the Water Boards may exert jurisdiction over species to the extent that WILD/RARE/WARM/COLD/SPWN beneficial uses exist and would be affected by a project.

7.3 Species of Mitigation Need

An overview of wildlife resources is provided in Chapter 2. As described in Section 1.5, species of mitigation need were selected to focus the planning effort and improve the probability that advance mitigation projects undertaken by Caltrans will yield credits (or similar) that will be usable during the planning period. To this end, the terrestrial species of mitigation need identified for the GAI are California red-legged frog, foothill yellow-legged frog, giant garter snake, Swainson's hawk, and valley elderberry longhorn beetle. Each species is briefly described below.

7.3.1. California Red-legged Frog

California red-legged frog is a federally threatened amphibian species and a California species of special concern that has been extirpated from 70 percent of its historical range. Most California red-legged frog occurrences have been recorded below 3,500 feet; however, they can be found from sea level up to elevations of 5,200 feet (FWS 2002). Eight Recovery Units were established by the Recovery Plan for the California red-legged frog. The GAI falls within the Sierra Nevada Foothills and Central Valley and North Coast Range Foothills and Western Sacramento River Valley California red-legged frog Recovery Units (FWS 2002).

Typical aquatic breeding habitat for California red-legged frog includes slow-moving streams and pools within streams and human-made ponds that can sustain all aquatic life stages. These areas must hold water for at least 20 weeks during the year, which is the minimum amount of time needed for breeding and tadpole development and metamorphosis (FWS 2010; Hayes and Jennings 1988). Aquatic habitat need not be present every year, because the frog can live 8 to 10 years in the wild (FWS 2010). Non-breeding aquatic and riparian habitat includes springs, seeps, moist cracks within dried ponds, and vegetated areas growing within the floodplains of rivers and streams. These areas do not hold enough water for frog breeding but provide the space needed for foraging and cover to sustain individuals and are particularly important during drought periods and for dispersal to other breeding habitats (Alvarez 2004; FWS 2010). Upland habitats are also important because they buffer aquatic habitats from degradation and provide space for foraging, sheltering, dispersal, and avoiding predation (FWS 2010). Upland habitat consists of areas where California red-legged frog can seek shelter such as under boulders, rocks, animal burrows, fallen logs, and agricultural debris such as watering troughs and haystacks (FWS 2010; Jennings and Hayes 1994).

7.3.2. Foothill Yellow-legged Frog

The GAI falls within the range of four foothill yellow-legged frog clades: (1) the Northwest/North Coast clade, (2) the North Feather River and Upper Feather River Watershed clade, (3) the Northeast/Northern Sierra clade, and (4) the East/Southern Sierra clade. Of these, the East/Southern Sierra clade is state-listed as endangered, the Feather River and Northeast/Northern Sierra clades are state-listed as threatened, and the Northwest/North Coast clade is a California species of special concern (CDFW 2019d). The entire species is under review for federal listing as well. Typical habitat for this species includes shallow, flowing water in streams and rivers containing cobble-sized substrate (Jennings and Hayes 1994). Breeding and oviposition (egg laying) occur along the margins of relatively shallow and wide portions of the channel. Metamorphosed individuals use a variety of aquatic habitat types including pools, riffles, and glides (Thompson et al. 2016). This stream-dwelling frog species occurs in California from the Oregon border along the Coast Ranges to the San Gabriel Mountains in Southern California, and along the foothills of the western side of the Sierra Nevada south to the edge of the Tehachapi Mountains (Stebbins and McGinnis 2012).

7.3.3. Giant Garter Snake

Giant garter snake is a federal and state threatened reptile species. They are endemic to California, and formerly ranged throughout much of the Central Valley from as far north as Chico to as far south as Bakersfield. However, the species is now considered extirpated from much of its historical range including Stanislaus County and everywhere south of Fresno (Stebbins and McGinnis 2012).

Typical habitat for this species includes perennial aquatic habitat such as freshwater marshes and sloughs for foraging, bankside basking areas with nearby emergent vegetation for cover, and upland refugia such as small mammal burrows for extended periods of inactivity. In the absence of their natural habitat, giant garter snakes frequently occupy flooded rice fields, irrigation canals, and ditches that simulate their preferred habitat and that have connectivity to upland refugia (FWS 2017c).

Giant garter snakes begin mating shortly after emerging from their overwintering sites. Females bear live young from July through September, and most giant garter snakes have returned to underground refugia by October (Stebbins and McGinnis 2012).

7.3.4. Swainson's Hawk

Swainson's hawk is a state threatened bird species that nests throughout much of western North America, with an isolated breeding population in California's Central Valley from Shasta County south to Kern County (CDFW 2016c). They are primarily a neotropical migrant species, with most birds spending the winter months in Latin America as far south as Argentina, then returning to California to nest in March and early April. A few individuals remain in California over winter, mostly in the Sacramento-San Joaquin River Delta (CDFW 2019a).

Swainson's hawks nest in mature cottonwood-willow riparian woodland, oak savanna, and in large, isolated trees in or on the periphery of agricultural fields. Historically, Swainson's hawks foraged primarily in grasslands and open shrublands in the Central Valley. However, as those habitats have been converted for urban development and agricultural production, Swainson's hawks have increasingly foraged in agricultural fields, especially alfalfa and row crops, and some have taken to nesting in urban areas with agricultural fields nearby, such as in the cities of Davis and Sacramento (England et al. 1995). Orchards and vineyards provide little to no value as foraging habitat for Swainson's hawks because the dense structure of the vegetation incumbers their ability to stoop on prey. Swainson's hawks mainly prey on small mammals, especially California vole (*Microtus californicus*), as well as a variety of small birds and insects. They are largely monogamous, forming strong pair bonds, and they also exhibit strong site fidelity, often returning to the same nest tree for many successive seasons (CDFW 2016c).

7.3.5. Valley Elderberry Longhorn Beetle

Valley elderberry longhorn beetle is a federally threatened insect species that is endemic to California, occurring in much of the Central Valley from southern Shasta County to

northern Fresno County, including the valley floor and lower foothills up to approximately 500 feet in elevation (FWS 2017d).

Valley elderberry longhorn beetles are entirely dependent on their host plant, elderberry (*Sambucus* spp.), upon which they spend their entire life cycle, most of it developing within the pith of the elderberry stems. Adults are only active on the surface of the shrubs for a 1- to 3-week window between March and July, typically coinciding with the elderberry blooming period (FWS 2017d). During this time, they mate, the females lay their eggs on the leaves of the shrub, then when the larvae hatch they bore into an elderberry stem where they feed and pupate—a process that can take as long as 2 years (Talley et al. 2006). When pupation is complete, the adult beetle emerges from an exit hole it had previously created in the stem. These exit holes are the most readily observed evidence of the presence of the species.

Valley elderberry longhorn beetles most often occupy elderberry shrubs within riparian woodland habitats, although they are sometimes found in elderberry shrubs that are not associated with riparian corridors in habitats such as valley oak woodland and annual grassland (FWS 2017d).

7.4 Regional Conservation Efforts

Caltrans' understanding of natural resource regulatory agency conservation goals and objectives is that they are generally designed to protect existing populations and habitat, and include acquiring, protecting, restoring, and/or enhancing habitat and linkages. Several conservation and land management plans listed in Table 3-1, relevant to the species of mitigation need, identify key habitats or designate specific lands or areas to protect for conservation of the species of mitigation need in the GAI. These conservation and land management plans are presented in Table 7-2.

The conservation and land management 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 compiled below. Caltrans may also use this information during advance mitigation project scoping to help compensatory mitigation efforts in the GAI align with the goals and objectives of natural resource regulatory agencies that approve mitigation.

7.5 Pressures and Stressors

Pressures and stressors refer to environmental trends or physical, chemical, or biological factors or conditions that affect the species of mitigation need or its habitat. According to the SWAP (CDFW 2015), a pressure is defined as “an anthropogenic (human-induced) or natural driver that could result in changing the ecological conditions of the target. Pressures can be positive or negative depending on intensity, timing, and duration. Negative or positive, the influence of a pressure to the target is likely to be significant.” Additionally, stress is defined in the SWAP as “[a] degraded ecological condition of a target that resulted directly or indirectly from negative impacts of pressures (e.g., habitat fragmentation)” (CDFW 2015).

Table 7-2. Documents Identifying Areas for Species of Mitigation Need Conservation in the GAI

Document	Reference	Areas of Important Habitat
Special-status Taxa Documents	See below	See below
<i>Recovery Plan for the California Red-legged Frog (Rana aurora draytonii)</i>	FWS 2002	Identifies California red-legged frog Recovery Units and their respective Core Areas, including those wholly or partially in the GAI: <ul style="list-style-type: none"> ▪ Sierra Nevada Foothills and Central Valley Recovery Unit: <ul style="list-style-type: none"> ○ Feather River Core Area ○ Yuba River – South Fork Feather River Core Area ○ Traverse Creek/Middle Fork American River/Rubicon Core Area ▪ North Coast Range Foothills and Western Sacramento River Valley Recovery Unit: <ul style="list-style-type: none"> ○ Cottonwood Creek Core Area
<i>Revised Designation of Critical Habitat for the California Red-legged Frog</i>	FWS 2010	Identifies critical habitat for the California red-legged frog.
<i>A Status Review of the Foothill Yellow-legged Frog (Rana boylei) in California</i>	CDFW 2019d	Identifies six foothill yellow-legged frog clades, including the following that occur within the GAI: <ul style="list-style-type: none"> ▪ Feather River Clade ▪ Northeast/Northern Sierra Clade ▪ East/Southern Sierra Clade ▪ Northwest/North Coast Clade
<i>Recovery Plan for the Giant Garter Snake (Thamnophis gigas)</i>	FWS 2017c	Identifies giant garter snake Recovery Units, including those wholly or partially within the GAI: <ul style="list-style-type: none"> ▪ Colusa Basin Recovery Unit ▪ Butte Basin Recovery Unit ▪ Sutter Basin Recovery Unit ▪ American Basin Recovery Unit ▪ Yolo Basin Recovery Unit ▪ Cosumnes-Mokelumne Basin Recovery Unit ▪ Delta Basin Recovery Unit
<i>Giant Garter Snake 5-Year Review</i>	FWS 2020	Identifies protected lands that have known occurrences of giant garter snake.

Document	Reference	Areas of Important Habitat
<i>Five Year Status Review for Swainson's Hawk (Buteo swainsoni)</i>	CDFW 2016c	Identifies breeding range and status of the species within the GAI.
<i>Revised Recovery Plan for Valley Elderberry Longhorn Beetle</i>	FWS 2019b	Identifies valley elderberry longhorn beetle Management Units, including those wholly or partially in the GAI: <ul style="list-style-type: none"> ▪ Sacramento River Management Unit ▪ Putah Creek Management Unit ▪ San Joaquin River Management Unit
<i>Valley Elderberry Longhorn Beetle 5-Year Review</i>	FWS 2006	Identifies the range and status of the species within the GAI.
<i>Valley Elderberry Longhorn Beetle Designation of Critical Habitat</i>	FWS 1980	Identifies critical habitat for the valley elderberry longhorn beetle.
Conservation and Land Management Documents	See below	See below
<i>American River Parkway Natural Resources Management Plan</i>	Sacramento County and Sacramento County Regional Parks 2021	Valley elderberry longhorn beetle is known to occur along the parkway, and critical habitat for the species is designated within the parkway boundaries. Includes a general goal to improve habitat along the parkway, along with specific goals related to habitat restoration. These restoration goals cumulatively include: <ul style="list-style-type: none"> ▪ 182 acres of riparian habitat ▪ 33 acres of elderberry habitat ▪ 124 acres of woodland habitat
<i>Auburn State Recreation Area Preliminary General Plan and Auburn Project Lands Draft Resource Management Plan</i>	California State Parks and U.S. Bureau of Reclamation 2019	California State Parks' and U.S. Bureau of Reclamation's plan for the State Recreation Area. Foothill yellow-legged frog is known to occur in the State Recreation Area. Four riparian areas within the State Recreation Area are considered to be important for the movement of foothill yellow-legged frogs, including North Fork American River, Middle Fork American River, Todd Creek, and Canyon Creek. Includes a general goal to restore native habitats and remove invasive species

Document	Reference	Areas of Important Habitat
<i>Beale Air Force Base Integrated Natural Resources Management Plan</i>	U.S. Air Force 2019	Management plan for Beale Air Force Base. Includes goals to restore and create wetland habitats on the base. Swainson's hawk is known to occur on the base, and valley elderberry longhorn beetle exit holes have been observed in elderberry plants in previously restored areas.
<i>Butte Sink, Willow Creek-Lurline, and North Valley Wildlife Management Areas Final Comprehensive Conservation Plan and Environmental Assessment</i>	FWS 2019a	<p>FWS' conservation plan that covers the Butte Sink, North Central Valley, and Willow Creek-Lurline Wildlife Management Areas, all of which occur in the GAI. Valley elderberry longhorn beetle, giant garter snake, and Swainson's hawk are all known to occur on one or more of these Management Area. Includes goals to:</p> <ul style="list-style-type: none"> ▪ Enhance 1,000 acres of wetlands and associated upland and riparian habitats on an annual basis. ▪ Restore up to 12,535 acres of managed wetlands and associated upland and riparian habitats on easement lands in the North Central Valley and Willow Creek-Lurline Areas. ▪ Restore up to 3,321 acres of wetlands and associated upland and riparian habitats on fee-title lands, and in particular convert 15 acres of grasslands in Tract 4 of the Llano Seco Unit to seasonal wetland. ▪ Restore 200 acres of irrigated pasture to perennial grassland/oak savannah habitat in part for the benefit of Swainson's hawk, on Tract 2 of the Llano Seco Unit, and annually enhance 300 acres of existing perennial grassland/oak savannah habitat. ▪ Restore and enhance 30 acres of riparian habitat on Tract 1 of the Butte Sink Unit.

Document	Reference	Areas of Important Habitat
<i>California Essential Habitat Connectivity Project</i>	Spencer et al. 2010	<p>Identifies Natural Landscape Blocks and Essential Connectivity Areas in a set of defined ecoregions. The GAI overlaps four of these ecoregions:</p> <ul style="list-style-type: none"> ▪ Central Valley Ecoregion: <ul style="list-style-type: none"> ○ Notes that there are very few opportunities for upland connectivity in the Central Valley Ecoregion because of habitat conversion for agricultural and urban uses. Most connectivity opportunities are confined to riparian and riverine areas. ▪ Modoc Plateau Ecoregion: <ul style="list-style-type: none"> ○ Identifies connectivity between existing high-integrity forest habitats in the mountain regions as a conservation priority for this ecoregion. ▪ North Coast Ecoregion: <ul style="list-style-type: none"> ○ Identifies connectivity between existing high-integrity forest habitats as a conservation priority for this ecoregion. ▪ Sierra Nevada Ecoregion: <ul style="list-style-type: none"> ○ Prioritizes broad north-to-south linkages over the entire ecoregion. Notes that a north-to-south connection across Interstate 80 at the Bear River is an imperiled wildlife linkage.
<i>California Indian Heritage Center Final General Plan and Environmental Impact Report</i>	California State Parks 2011	<p>Management plan for the park. Swainson's hawk and valley elderberry longhorn beetle are known to occur in the park. Includes a general goal to restore sensitive habitats in the park, including riparian woodland, wetlands, and elderberry habitat.</p>
<i>Colusa Basin Watershed Management Plan</i>	Colusa County Resource Conservation District 2012	<p>Watershed has known populations of valley elderberry longhorn beetle, giant garter snake, and Swainson's hawk. Includes a general restoration goal to increase acreage of freshwater wetland habitat in the watershed by 2 percent each year beginning in 2016. Primarily focused on landowner incentive programs.</p>
<i>Cosumnes, American, Bear, and Yuba River Integrated Regional Water Management Plan</i>	Cosumnes, American, Bear, and Yuba River Regional Water Management Group 2021	<p>Identifies California red-legged frogs and foothill yellow-legged frogs as present in the watershed, and identifies the following management actions:</p> <ul style="list-style-type: none"> ▪ For foothill yellow-legged frogs, remove trout and bullfrogs in 18 acres of high mountain lakes at locations where these frogs can recolonize. ▪ For California red-legged frogs, create 1 acre of pond habitat by 2025 where existing California red-legged frogs reside downstream and have the potential to colonize the new pond habitat.

Document	Reference	Areas of Important Habitat
<i>Mid-Sacramento Valley Regional Conservation Investment Strategy</i>	ICF 2020b	<ul style="list-style-type: none"> ▪ Includes conservation objectives to increase the amount of protected habitat for valley elderberry longhorn beetle, giant garter snake, and Swainson's hawk by 5 percent within the RCIS area. ▪ Includes a conservation objective to improve habitat conditions in areas with known high densities of giant garter snake, such as the Sutter Bypass and Colusa Basin Drainage Canal. ▪ Includes a conservation objective to ensure that there is at least one suitable nest tree or clump of nest trees for every 10 acres of Swainson's hawk foraging habitat.
<i>Placer County Conservation Program Western Placer County HCP/NCCP</i>	Placer County 2020	<p>Plan area is entirely within the GAI and all five species of mitigation need are considered covered species under the plan. The following plan goals and objectives apply to the species of mitigation need in the plan area:</p> <ul style="list-style-type: none"> ▪ California red-legged frog: <ul style="list-style-type: none"> ○ Protect at least 4 acres of occupied California red-legged frog habitat in Plan Area B5, Big Gun. Protect 1,168 acres of aquatic and 12,484 acres of upland habitat; restore and create 1,241 acres of aquatic and 160 acres of upland habitat in the Foothills. ▪ Foothill yellow-legged frog: <ul style="list-style-type: none"> ○ Protect 6 miles of streams with 83 acres of riparian vegetation. Restore at least 83 additional acres in the Foothills as foraging and movement habitat. ▪ Giant garter snake: <ul style="list-style-type: none"> ○ Protect and manage at least 2,000 acres of rice lands with the necessary perennial water supply in the western portion of the Valley RAA as habitat. Fresh emergent marsh with sufficient water supply can serve in lieu of rice. ▪ Swainson's hawk: <ul style="list-style-type: none"> ○ Protect at least four active Swainson's hawk nest trees distributed within at least 2,964 acres of suitable Swainson's hawk foraging habitat in the reserve system. Protect at least 20 isolated trees with the potential to be used as nesting sites. Maintain or increase prey availability and improve foraging habitat. ▪ Valley elderberry longhorn beetle: <ul style="list-style-type: none"> ○ Plant elderberry shrubs and associated riparian species within the restored riparian natural community sufficient to offset loss of valley elderberry longhorn beetle and consistent with FWS standards.

Document	Reference	Areas of Important Habitat
<i>Sacramento, Delevan, Colusa, and Sutter National Wildlife Refuges Final Comprehensive Conservation Plan and Environmental Assessment</i>	FWS 2009	<p>FWS' conservation plan for the Sacramento, Delevan, Colusa, and Sutter National Wildlife Refuges, all of which occur in the GAI. Swainson's hawk is known to inhabit all of these refuges as well as giant garter snake, except for Delevan. Includes goals to:</p> <ul style="list-style-type: none"> ▪ Enhance 4,021 acres of vernal pool/alkali meadow habitat, with specific components of 32 acres on Tract 24.12 and 60 acres on Tract 26 at Colusa as well as 73 acres on Tract 1.1 at Delevan. ▪ Enhance 581 acres of riparian habitat, with a specific component of 5 acres at Powell Slough and Tract 14 of Colusa, and a general preference for restoration at Colusa.
<i>Sacramento River National Wildlife Refuge Final Comprehensive Conservation Plan</i>	FWS 2005b	<p>FWS' conservation plan for the Sacramento River National Wildlife Refuge. The refuge is known to have occurrences of valley elderberry longhorn beetle, giant garter snake, and Swainson's hawk. Includes goals to:</p> <ul style="list-style-type: none"> ▪ Restore 3,255 acres of riparian vegetation and upland habitats with the following habitat types as targets: Great Valley Willow Scrub, Great Valley Cottonwood Forest, Great Valley Mixed Riparian Forest, Great Valley Oak Riparian Forest, Valley Oak Savannah, Elderberry Savanna, and Grassland, Herbland, and Wetland. Specific acreages and areas of restoration are detailed in Table 9 of the document. ▪ Target the following refuge units for invasive species control: Pine Creek, Phelan Island, Capay, La Barranta, Drumheller Slough, Flynn, and Rio Vista.
<i>Stone Lakes National Wildlife Refuge Comprehensive Conservation Plan</i>	FWS 2007	<p>FWS' conservation plan for Stone Lakes National Wildlife Refuge. The refuge is known to have occurrences of Swainson's hawk and giant garter snake. Includes goals to:</p> <ul style="list-style-type: none"> ▪ Establish 65 acres of valley foothill riparian and oak woodland habitat by restoring and expanding cottonwood riparian forest habitat along the south arm of North Stone Lake, expanding the riparian zone to a range of 150 to 400 feet wide along the Sacramento Drainage Canal, and removing perennial pepperweed in riparian areas. ▪ Enhance 50 acres of seasonal and permanent wetlands in the South Stone Lake Unit. ▪ Maintain 715 acres of deep-water aquatic habitats for giant garter snake.

Document	Reference	Areas of Important Habitat
<i>SWAP</i>	CDFW 2015	<p>The GAI overlaps three of the SWAP's defined geographic provinces:</p> <ul style="list-style-type: none"> ▪ Central Valley and Sierra Nevada Province: <ul style="list-style-type: none"> ○ In the Central Valley and Sierra Nevada Province, all of the species of mitigation need (valley elderberry longhorn beetle, California red-legged frog, foothill yellow-legged frog, giant garter snake, and Swainson's hawk) are considered Species of Greatest Conservation Need. ▪ North Coast and Klamath Province: <ul style="list-style-type: none"> ○ In the North Coast and Klamath Province, California red-legged frog and foothill yellow-legged frog are considered Species of Greatest Conservation Need. ▪ Cascades and Modoc Plateau Province: <ul style="list-style-type: none"> ○ In the Cascades and Modoc Plateau Province, foothill yellow-legged frog is considered a Species of Greatest Conservation Need. ▪ The SWAP defines a broad target of increasing the acreage of specific vegetation types and habitats available to focal species by 5 percent over their 2015 levels by 2025.
<i>Ukiah Resource Management Plan</i>	BLM 2006	<p>BLM's resource management plan for the area within the Ukiah Field Office's jurisdiction. Includes a general goal to inventory valley elderberry longhorn beetle populations and implement management actions consistent with the species' FWS Recovery Plan.</p>
<i>Upper Butte Basin Wildlife Area Final Land Management Plan</i>	California Department of Fish and Game 2012	<p>CDFW's management plan for the reserve. Valley elderberry longhorn beetle has been observed at the Howard Slough Unit, giant garter snake is known to occur at the Llano Seco and Howard Slough Units, and Swainson's hawk is known to nest at the Little Dry Creek and Howard Slough Units. Includes goals to:</p> <ul style="list-style-type: none"> ▪ Manage Field 212 as habitat for giant garter snake. ▪ Manage Field 220 as habitat for valley elderberry longhorn beetle. ▪ Enhance grassland habitats to encourage grasshopper populations for the benefit of Swainson's hawk.
<i>Yolo Bypass Wildlife Area Land Management Plan</i>	California Department of Fish and Game 2008	<p>CDFW's management plan for the Yolo Bypass Wildlife Area, of which the Parker Unit, areas around Putah Creek, and northern half of the Los Rios Unit are outside of the GAI. Giant garter snake is known to occur in the area and Swainson's hawk is known to nest in the area. Includes numerous general goals related to habitat enhancement for wildlife. Identifies the following specifically for Swainson's hawk:</p> <ul style="list-style-type: none"> ▪ General enhancement of grassland habitats focused on encouraging grasshopper populations for the benefit of Swainson's hawk.

Document	Reference	Areas of Important Habitat
<i>Yolo HCP/NCCP Volume 1</i>	Yolo Habitat Conservancy 2018	<p>Plan area overlaps much of the GAI and three of the five species of mitigation need are considered covered species under the plan. The following plan goals and objectives apply to the species of mitigation need in the plan area:</p> <ul style="list-style-type: none"> ▪ Giant garter snake: <ul style="list-style-type: none"> ○ Protect and manage 2,800 acres of protected rice land in modeled giant garter snake habitat. Suitable emergent marsh can be substituted for rice land. ○ Protect and manage 1,160 acres of upland natural communities to provide active-season upland movement habitat and at least 2,315 acres to provide overwintering habitat for giant garter snake. ○ Protect, restore, and manage 500 acres of fresh emergent wetland natural community, at least 420 acres of the lacustrine/riverine natural community, restored fresh emergent wetland, and restored lacustrine and riverine natural community to conserve giant garter snake. Ensure at least 80% of the aquatic habitat is perennial, and the remainder provides aquatic habitat for the giant garter snake during the active season at least through July of each summer. ▪ Swainson's hawk: <ul style="list-style-type: none"> ○ Protect and manage 4,430 acres of grassland natural community to ensure that it provides Swainson's hawk foraging habitat. ○ Protect and maintain at least 20 unprotected Swainson's hawk nest trees (active within the last 5 years at the time tree is protected) within the reserve system. ○ In addition to restoration of riparian natural community, establish trees suitable for Swainson's hawk nesting (native trees at least 20 feet in height) within the cultivated lands to meet a density of at least one tree per 10 acres. ▪ Valley elderberry longhorn beetle: <ul style="list-style-type: none"> ○ Within the 1,600 acres of protected valley foothill riparian natural community, prioritize protection of populations of valley elderberry longhorn beetle along Lower Cache Creek and Lower Putah Creek and Sacramento River, and adjacent lands to provide for valley elderberry longhorn beetle population expansion. ○ Within the restored valley foothill riparian natural community, establish elderberry shrubs and associated riparian plant species, and prioritize lands adjacent to existing populations to provide for population expansion.

Document	Reference	Areas of Important Habitat
<i>Yolo Regional Conservation Investment Strategy/Local Conservation Plan</i>	ICF 2020a	<p>Valley elderberry longhorn beetle:</p> <ul style="list-style-type: none"> Conservation objective to protect 10 elderberry shrubs and successfully establish 30 more in at least 1.2 acres of protected riparian areas. <p>Giant garter snake:</p> <ul style="list-style-type: none"> Conservation objective to protect and manage at least 280 acres of rice agricultural land, 232 acres of upland natural communities, 100 acres of fresh emergent wetland, and 84 acres of lacustrine/riverine habitat in modeled giant garter snake habitat. Identifies planning units 11 (Willow Slough Basin), 12 (Colusa Basin), 13 (Colusa Basin Plains), and 18 (South Yolo Bypass) as priority conservation areas for the species. <p>Swainson's hawk:</p> <ul style="list-style-type: none"> Conservation objective to protect at least 2,872 acres of currently unprotected Swainson's hawk habitat. Maintain a minimum density of at least one suitable nesting tree per 10 acres of foraging habitat. Identifies priority planning units for Swainson's hawk conservation actions as 5 (Dunnigan Hills), 10 (Hungry Hollow Basin), 11 (Willow Slough Basin), 13 (Colusa Basin Plain), 15 (South Yolo Basin), and 16 (Yolo Basin Plains).
Various County and City General Plans	See below	See below
<i>Rancho Cordova General Plan</i>	City of Rancho Cordova 2006	<p>Identifies valley elderberry longhorn beetle and Swainson's hawk as occurring within the city planning area:</p> <ul style="list-style-type: none"> Requires the conservation of Swainson's hawk habitat, including the establishment of a Swainson's Hawk Ordinance, where loss of habitat will be mitigated by permanent protection of equivalent or better existing habitat conditions. Includes a measure requiring mitigation of impacts on any special-status species in coordination with CDFW and FWS to ensure that projects do not contribute to the decline of the affected species populations in the region to the extent that their decline would affect the viability of the regional population.
<i>Sacramento County General Plan</i>	Sacramento County 2010	Includes a policy to protect non-oak native trees in riparian areas that are used by Swainson's hawks.
<i>Yolo County General Plan</i>	Yolo County 2009	Includes a policy that projects that would affect Swainson's hawk foraging habitat participate in the <i>Agreement Regarding Mitigation for Impacts to Swainson's Hawk Foraging Habitat in Yolo County</i> entered into by CDFW and the Yolo County HCP/NCCP Joint Powers Agency or satisfy other subsequent adopted mitigation requirements consistent with applicable local, state, and federal requirements.

The *Recovery Plan for the California Red-legged Frog* (FWS 2002), *A Status Review of the Foothill Yellow-legged Frog (Rana boylei) in California* (CDFW 2019d), the *Recovery Plan for the Giant Garter Snake* (FWS 2017c), the *Five Year Status Review for Swainson's Hawk* (CDFW 2016c), and the *Revised Recovery Plan for Valley Elderberry Longhorn Beetle* (FWS 2019b) refer to these pressures and stressors as threats.

The plans included in Table 7-2 identify multiple pressures and stressors contributing to the decline of the species of mitigation need within their ranges. These pressures and stressors were evaluated in relation to the types of effects that could result from transportation projects funded through SHOPP and STIP and could benefit from in-kind compensatory mitigation purchased or established through an advance mitigation project.

7.5.1. Habitat Loss, Fragmentation, and Degradation

Urbanization and other anthropogenic factors such as roads, poor grazing practices, and habitat invasion by nonnative species have led to the loss and degradation of existing habitat for all species of mitigation need. Additionally, roads and urbanization have resulted in habitat fragmentation and a decrease in connectivity between habitats that support species of mitigation need populations, as well as increased mortality of the species from vehicle strikes. Roads and highways hinder the movement of California red-legged frogs, foothill yellow-legged frogs, and giant garter snakes, and are considered permanent physical barriers leading to increased habitat fragmentation and isolation of populations (CDFW 2019d; FWS 2002, 2020). Artificial light pollution from urban and roadway illumination can affect wildlife by causing spatial disorientation, disruption in circadian rhythms, and alteration to natural foraging, breeding, and migration activity, which can negatively affect populations (Bliss-Ketchum et al. 2016). Roads near aquatic habitats that are poorly constructed or inadequately maintained may lead to increased erosion, sedimentation, and petrochemical runoff, negatively affecting amphibian populations (CDFW 2019d) including California red-legged frog and foothill yellow-legged frog. Culverts under roads may provide some connectivity for various species, but if not constructed properly they also can impede dispersal and trap some species such as foothill yellow-legged frog (CDFW 2019d).

Conversion of agricultural fields to urbanization is seen as a significant threat to Swainson's hawks, which extensively utilize farm fields as foraging habitat. Swainson's hawks frequently use lone trees along roadsides near suitable foraging areas for nesting, and loss of these types of trees due to road maintenance activities would negatively affect breeding habitat availability for the species (CDFW 2016c).

Conversion of riparian areas and isolation of remaining habitat patches are considered to be significant ongoing threats to valley elderberry longhorn beetle. Because the species has limited dispersal capabilities, roads and highways are believed to be major barriers constraining the species' ability to move between areas of suitable habitat (FWS 2019b).

7.5.2. Invasive Species

Transportation projects and associated ongoing maintenance activities have the potential to introduce and/or spread nonnative, invasive species. When invasive, nonnative

species enter an ecosystem it may result in a reduction of biodiversity, degradation of habitat, alteration of native genetic diversity, shifting of habitat types, and further threats to already endangered or threatened natural resources.

Introduced fish, crayfish, and bullfrogs are known to predate all life stages of California red-legged frog (FWS 2002) and foothill yellow-legged frog (CDFW 2019d). The effects of invasive plant species on habitat values for the species of mitigation need are not fully understood, although species such as giant reed (*Arundo donax*) and cape ivy (*Delairea odorata*) may alter the structure of native riparian habitat and decrease available surface water for California red-legged frog (FWS 2002).

Introduced fish, crayfish, and bullfrogs are also known to predate and compete with giant garter snakes. In addition, giant garter snakes face competition from introduced water snakes (*Nerodia* sp.), which have recently established populations in some Central Valley waterways (FWS 2017c). Invasive plant species such as water hyacinth (*Eichornia* sp.) and water-primrose (*Ludwigia* sp.) may have both negative and positive effects on giant garter snakes, choking out open water and thereby reducing edge habitats that are preferred as foraging areas, while simultaneously providing them with cover for basking and predator avoidance (FWS 2020).

Invasive species are not thought to be a significant threat to Swainson's hawks. In fact, they have been documented using nonnative eucalyptus trees as nesting habitat (CDFW 2016c).

Valley elderberry longhorn beetles may be negatively affected by Argentine ants (*Linepithema humile*), a widespread invasive species, which have been documented predated the beetle's eggs and larvae. Argentine ants are known to occur in several areas occupied by valley elderberry longhorn beetles (FWS 2019b). Impacts from invasive plant species are largely unknown, although the increasing prevalence of nonnative plants in California ecosystems is expected to have negative impacts on native elderberry populations, which are the beetle's obligate host plants (FWS 2014).

7.5.3. Disease and Predation

California red-legged frogs and foothill yellow-legged frogs may be affected by chytridiomycosis, a disease caused by a fungal pathogen called chytrid. Although the effects of chytrid on California red-legged frogs and foothill yellow-legged frogs are not well understood, it is known to have caused mass mortality and population declines in other amphibian species (CDFW 2019d; FWS 2002). Giant garter snakes may be susceptible to snake fungal disease, an emerging disease caused by the fungal pathogen *Ophidiomyces ophidiicola*. This disease has only recently been documented in California and may be spread by invasive water snakes (*Nerodia* sp.) (FWS 2020). Swainson's hawks have been documented suffering mortality from West Nile virus, although relatively few cases have been confirmed and the disease has not been implicated in any population declines (CDFW 2016c). Disease is not thought to be a significant threat to valley elderberry longhorn beetles.

Predation is considered a major threat to several of the species of mitigation need in the GAI. As noted above, California red-legged frogs, foothill yellow-legged frogs, and giant garter snakes are all susceptible to predation from invasive species including bullfrogs, crayfish, and nonnative fish (CDFW 2019d; FWS 2002, 2017c). Valley elderberry longhorn beetles face predation risks from invasive Argentine ants, which may prey on eggs and larvae (FWS 2019b), as mentioned above. Predation is not thought to be threat to Swainson's hawks.

7.5.4. Climate Change, Drought, and Sea-level Rise

Section 2.4 provided a brief overview of the GAI's climate and available planning-level predictions for climate change and sea-level rise for the region. In the next 30 years, the climate is expected to change. Expected changes include extended periods of higher temperatures and more frequent heat waves in the summer; large fluctuations in precipitation, with dry years becoming drier and wet years becoming wetter; and an increased risk of drought, wildfires, and landslides (Caltrans 2019b).

Large populations of California red-legged frog can survive stochastic events such as fires, floods, or drought; however, many populations are small and isolated because of habitat loss and other stressors. These smaller and more vulnerable populations are in danger of extirpation because of climate change. Shorter hydroperiods in aquatic habitats during droughts have the potential to prevent successful reproduction by not allowing sufficient time for larval metamorphosis. Local extirpations could occur if extended periods of drought prevent successful reproduction for several sequential years. However, differing life history traits of invasive species such as bullfrogs may be more affected by drought, thus providing a beneficial scenario for the survival of California red-legged frog that may subsist (FWS 2002).

Increased variability and changes in the type, magnitude, and timing of precipitation suggested by climate change models will result in more variable and extreme flows in river systems that support foothill yellow-legged frog (CDFW 2019d). This has the potential to increase the likelihood of egg mass scouring and tadpole stranding. The magnitude and nature of these effects will vary regionally and locally based on several underlying factors. For example, given the projected increase in temperatures, a correlating reduction in seasonal snowpack is expected. Such a reduction could disrupt the timing and duration of peak stream flows, which could result in increased sedimentation and other negative effects on foothill yellow-legged frog breeding habitat. Foothill yellow-legged frog populations within the GAI associated with stream and river systems of the Sierra Nevada foothills would be particularly susceptible to this type of climate change effect. Furthermore, the northern Sierra (Feather, Yuba, and American River watersheds) is expected to experience more severe impacts from the reduction in snowmelt than southern parts of the foothill yellow-legged frog's range (CDFW 2019d).

Potential effects of climate change on giant garter snake remain under-studied, although longer and more extreme droughts will likely have negative impacts on the species because of its highly aquatic nature. Less available water will decrease habitat availability

and suitability, and has the potential to exacerbate other pressures and stressors affecting giant garter snake populations (FWS 2020).

The more extreme weather events predicted by climate change models may affect Swainson's hawks through increased winter flooding potentially affecting riparian habitats, and sea-level rise inundating low-lying nesting and foraging habitats, especially in the low-lying Delta portions of the GAI. Decreased water availability also has the potential to incentivize the Central Valley agriculture industry to shift away from crops providing suitable foraging habitat such as alfalfa to crops that require less water but are lower-quality foraging habitats. A widespread shift away from low-growing crops to taller-stature crops and trees would likely cause significant impacts on Swainson's hawk populations because they require shorter vegetation for effective foraging (CDFW 2016c).

Potential impacts on valley elderberry longhorn beetles from climate change are difficult to predict and quantify. However, available models broadly indicate that climate change will have negative effects on available habitat for the species throughout its range (FWS 2014).

Essential habitat connectivity in the GAI, including large remaining blocks of intact habitat or natural landscape, is shown on Figure 2-8. 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. The terrestrial climate change resilience rank from the ACE dataset (CDFW 2018a) is presented on Figure 2-5. Climate resilience is low throughout the floor of the Central Valley, with much of area having a rank of only 1, 2, or having no data. It is in these low-elevation locations that impacts from climate change are expected to be the most severe in the GAI. Projected climate resilience increases with elevation on the mountainous eastern and western edges of the GAI, reaching rankings of 4 or 5 near the highest peaks.

7.5.5. Contaminants

Pesticides, herbicides, mineral fertilizers, industrial chemicals, and airborne pollutants are known to have negative effects on amphibians. California-red legged frog is especially affected by aqueous pesticides because of the many life stages that take place within aquatic environments (FWS 2002). Foothill yellow-legged frogs are also highly susceptible to toxicity from herbicides and pesticides (CDFW 2019d). Contaminants are not thought to be a significant threat to giant garter snakes (FWS 2017c).

Mass mortality of Swainson's hawks due to organophosphate and carbamide pesticide toxicity has been documented near agricultural fields in Argentina, which is the southern extent of the species' migratory range. Such mass mortality events have not been documented in California, although this does demonstrate that pesticides can have severe impacts if not regulated properly (CDFW 2016c). Anticoagulant rodenticides are widely used in agricultural areas where Swainson's hawk forage and may cause secondary toxicity through ingestion of poisoned prey. CDFW's Wildlife Investigations

Laboratory has documented at least one case of direct mortality of a Swainson's hawk in California attributable to anticoagulant rodenticide toxicity, although this does not appear to be a major source of impacts on the species (CDFW 2016c).

While the specific effects of contaminants on valley elderberry longhorn beetles have not been well-studied, it is likely that they are susceptible to impacts from drift of broad-spectrum pesticides near habitats that they are occupying (FWS 2014). Areas where pesticides are in use may also function as dispersal barriers if they are located between patches of suitable elderberry shrub habitat (FWS 2019b).

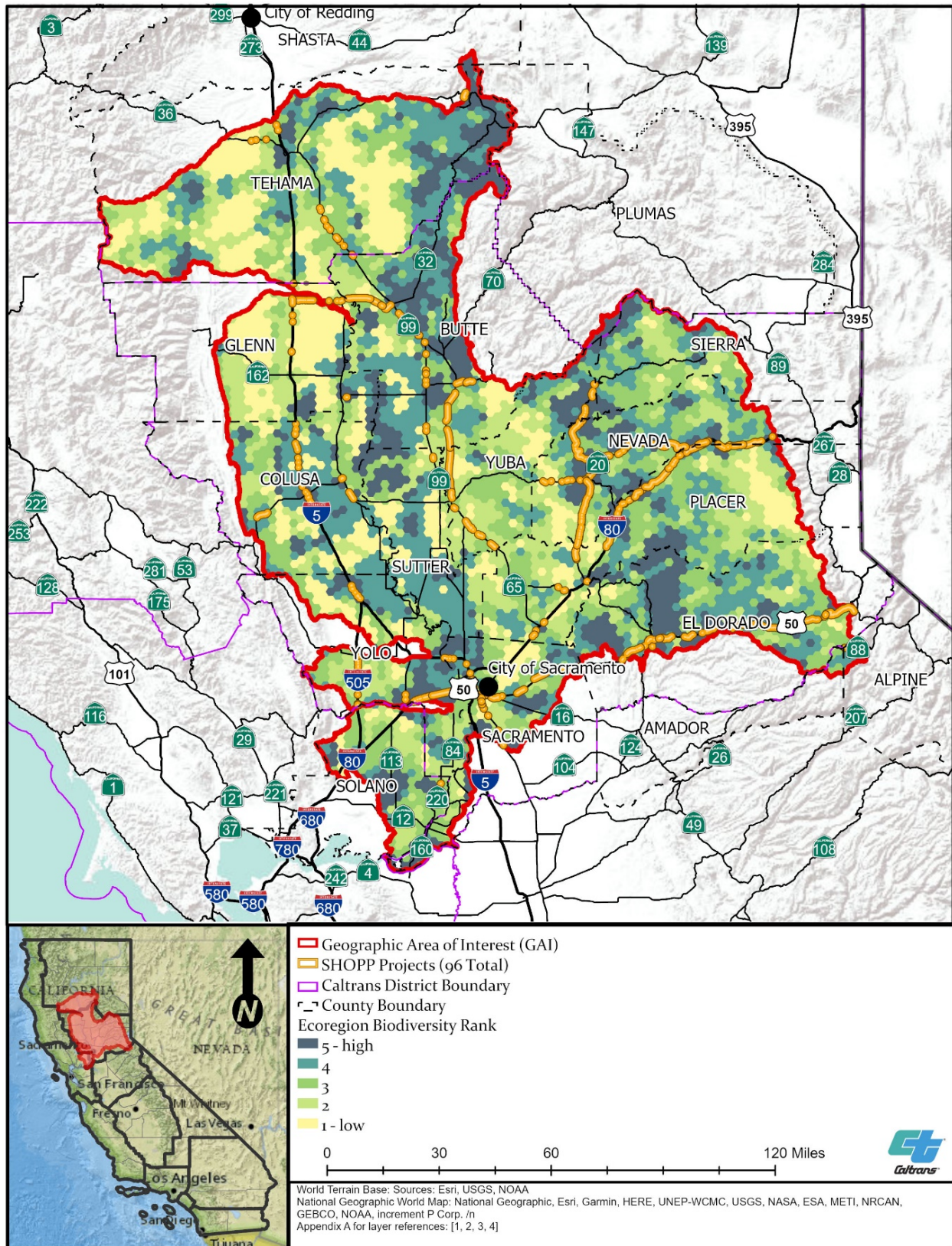
7.6 Multi-species Benefits

While the species of mitigation need identified for this GAI are California red-legged frog, foothill yellow-legged frog, giant garter snake, Swainson's hawk, and valley elderberry longhorn beetle, several other special-status species share habitat with these species and could potentially be affected by Caltrans transportation projects that will need compensatory mitigation to satisfy natural resource regulatory agency conditions on a transportation project (see Chapter 5). Advance mitigation planning provides Caltrans an opportunity to prioritize multi-species and multi-resource benefits through acquisition, protection, restoration, and/or enhancement of habitat that provides the most multispecies benefits within the GAI. Figure 7-1 illustrates the regional terrestrial biodiversity in the GAI, according to CDFW's ACE GIS dataset. According to these data, high to moderate terrestrial biodiversity is present along much of the SHS with SHOPP and STIP-eligible projects, while other portions of the SHS within the GAI with SHOPP and STIP-eligible projects show low biodiversity. Habitats are mapped in Appendix B, and the other special-status species that may occur in these habitats are provided in Appendix C.

As described in Chapter 4, three HCP/NCCPs that cover multiple species occur within the GAI. While the primary purpose of these plans is to benefit the covered species addressed in each plan through acquisition, protection, and restoration of covered species habitat, these actions will benefit a variety of species that utilize these habitats. It is likely that any Caltrans mitigation requirements that are addressed through these plans will also provide benefits to other co-occurring species in addition to the covered species.

Other efforts, such as planting Caltrans easements with species beneficial to pollinators, are expected to contribute to biodiversity protection and enhancement in the GAI. In addition, planting native plants in Caltrans easements also enhances biodiversity by reducing invasive species cover. The installation of culvert ramps and fence jump-outs to facilitate safe movement across highways would also benefit numerous terrestrial wildlife species. Advance mitigation purchased or established to address anticipated impacts on species of mitigation need may also provide mitigation to compensate for impacts on these other species. Caltrans will consider the special-status species with the potential to co-occur in habitat in order to inform advance mitigation scoping and thereby improve the conservation benefits of mitigation in the GAI.

Figure 7-1. Terrestrial Biodiversity in the GAI



7.7 Advance Mitigation Conservation Goals and Objectives

The conservation goals and objectives compiled in Table 7-3 are intended to be relevant to anticipated future SHOPP and STIP transportation project mitigation needs, be consistent with the goals and objectives of natural resource regulatory agencies for the species of mitigation need, address pressures and stressors, and support species of mitigation need population recovery and success in the GAI.

Each conservation goal is supported by one or more conservation objectives and is meant to further guide Caltrans District 3 toward scoping advance mitigation projects to achieve the desired result specified by the goal. Project-specific objectives will be developed for advance mitigation projects in the future, during their project delivery phase in accordance with an instrument, MCA, or other project-specific agreement (Figure 1-2). Project-specific advance mitigation project objectives will be specific, measurable, achievable, relevant, and time-bound.

At the broad scale, these wildlife goals and objectives encompass large-scale ecological processes, environmental gradients, biological diversity, and regional wildlife linkages. These goals and objectives prioritize regional conservation that preserves intact habitat and provides habitat linkages and connectivity. Sub-objectives are included for each objective to guide Caltrans advance mitigation and project scoping toward those authorized actions that would create the greatest functional lift² or conservation benefit for the species of mitigation need in the GAI. Sub-objectives also capture specific measures from conservation and land management plans that address threats to the species of mitigation need.³ Several of the goals are interrelated, and many objectives could apply to more than one goal; objectives were grouped with the goal to which they most specifically aligned. Goals and objectives are generally presented in order from general to more specific. They are not presented in order of importance.

² For the purposes of this document, “functional lift” means the difference between an existing degraded condition and a restored or enhanced condition.

³ In accordance with both law and Caltrans policy, standard best management practices are followed on all Caltrans transportation projects. Hence, they are presumed and they are not itemized as goals and objectives for the AMP.

Table 7-3. Advance Mitigation Conservation Goals and Objectives for the Species of Mitigation Need

Objective	Sub-Objective	Affected Species ^a	Alignment with Conservation and Management Plans ^b
Goal WILD-1: Conserve and expand habitat for species of mitigation need within the GAI to support ecosystem functions that are essential to recovery of the species	See below	See below	See below
Objective WILD-1.1: Acquire, protect, restore, and/or enhance habitat of sufficient quantity to offset estimated impacts on species of mitigation need within the GAI in advance of transportation project impacts.	<p>Sub-Objective WILD-1.1.1: Identify habitat for species of mitigation need in the GAI and acquire, protect, restore, and/or enhance this habitat such that the greatest functional lift to the species of mitigation need is provided, including consolidating compensatory mitigation.</p> <p>Sub-Objective WILD-1.1.2: Prioritize key areas, such as designated critical habitat, movement corridors, and buffer zones.</p> <p>Sub-Objective WILD-1.1.3: Prioritize acquisition and/or protection of large blocks of suitable, occupied habitat for the species of mitigation need; lands adjacent to occupied habitat; and/or land that expands or buffers existing occupied protected habitats.</p> <p>Sub-Objective WILD-1.1.4: Prioritize land acquisition and/or protection that supports key populations.^c</p> <p>Sub-Objective WILD-1.1.5: Prioritize acquisition, protection, and/or enhancement of SWAP (CDFW 2015) conservation targets: Wet Mountain Meadow, Western Upland Grasslands, Salt Marsh, Pacific Northwest Subalpine Forest, North Coastal Mixed Evergreen and Montane Conifer Forests, North Coastal and Montane Riparian Forest and Woodland, Montane Chaparral, Freshwater Marsh, Chaparral, California Grassland and Flowerfields, California Foothill and Valley Forests and Woodlands, California Foothill and Coastal Rock Outcrop Vegetation, American Southwest Riparian Forest and Woodland, and Alpine Vegetation (Figure 7-2) that coincide with the species of mitigation need range, as well as other locally or regionally important habitat types.</p> <p>Sub-Objective WILD-1.1.6: Create, enhance, or restore breeding habitat in protected areas where it is limited.^c</p>	<ul style="list-style-type: none">California red-legged frogfoothill yellow-legged froggiant garter snakeSwainson's hawkvalley elderberry longhorn beetle	<ul style="list-style-type: none">SWAP (CDFW 2015) and companion plansCEHC (Spencer et al. 2010)Recovery Plan for the California Red-legged Frog (<i>Rana aurora draytonii</i>) (FWS 2002)Considerations for Conserving the Foothill Yellow-Legged Frog (CDFW 2018d)A Status Review of the Foothill Yellow-legged Frog (<i>Rana boylei</i>) in California (CDFW 2019d)Recovery Plan for the Giant Garter Snake (<i>Thamnophis gigas</i>) (FWS 2017c)Giant Garter Snake 5-Year Review (FWS 2020)Five Year Status Review for Swainson's Hawk (<i>Buteo swainsoni</i>) (CDFW 2016c)Staff Report Regarding Mitigation for Impacts to Swainson's Hawks (<i>Buteo swainsoni</i>) in the Central Valley of California (California Department of Fish and Game 1994)Revised Recovery Plan for Valley Elderberry Longhorn Beetle (FWS 2019b)Valley Elderberry Longhorn Beetle 5-Year Review (FWS 2006)American River Parkway Natural Resources Management Plan (Sacramento County and Sacramento County Regional Parks 2021)Auburn State Recreation Area Preliminary General Plan and Auburn Project Lands Draft Resource Management Plan (California State Parks and U.S. Bureau of Reclamation 2019)Beale Air Force Base Integrated Natural Resources Management Plan (U.S. Air Force 2019)Butte Sink, Willow Creek-Lurline, and North Valley Wildlife Management Areas Final Comprehensive Conservation Plan and Environmental Assessment (FWS 2019a)California Indian Heritage Center Final General Plan and Environmental Impact Report (California State Parks 2011)Colusa Basin Watershed Management Plan (Colusa County Resource Conservation District 2012)Cosumnes, American, Bear, and Yuba River Integrated Regional Water Management Plan (Cosumnes, American, Bear, and Yuba River Regional Water Management Group 2021)Mid-Sacramento Valley Regional Conservation Investment Strategy (ICF 2020b)Sacramento, Delevan, Colusa, and Sutter National Wildlife Refuges Final Comprehensive Conservation Plan and Environmental Assessment (FWS 2009)Sacramento River National Wildlife Refuge Final Comprehensive Conservation Plan (FWS 2005b)Stone Lakes National Wildlife Refuge Comprehensive Conservation Plan (FWS 2007)Upper Butte Basin Wildlife Area Final Land Management Plan (California Department of Fish and Game 2012)Yolo Bypass Wildlife Area Land Management Plan (California Department of Fish and Game 2008)Rancho Cordova General Plan (City of Rancho Cordova 2006)Sacramento County General Plan (Sacramento County 2010)Yolo County General Plan (Yolo County 2009)

Objective	Sub-Objective	Affected Species ^a	Alignment with Conservation and Management Plans ^b
Goal WILD-2: Preserve, enhance, and increase connectivity between blocks of habitat supporting species of mitigation need to allow for dispersal that will maintain resilience and variability of populations	See below	See below	See below
Objective WILD- 2.1: Acquire, protect, restore, and/or enhance movement corridors within the GAI in advance of transportation project impacts.	<p>Sub-Objective WILD-2.1.1: Identify movement corridors for the species of mitigation need in the GAI and acquire, protect, restore, and/or enhance corridors such that the greatest functional lift for the species of mitigation need is provided.</p> <p>Sub-Objective WILD-2.1.2: Prioritize habitat in key linkage areas, between habitat areas, and/or areas that provide a buffer to key or existing corridors.^c</p> <p>Sub-Objective WILD-2.1.3: Identify areas that will enhance connectivity between existing protected breeding locations and create new breeding habitat for the species of mitigation need.^c</p>	<ul style="list-style-type: none">▪ California red-legged frog▪ foothill yellow-legged frog▪ giant garter snake	<ul style="list-style-type: none">▪ <i>SWAP</i> (CDFW 2015) and companion plans▪ <i>CEHC</i> (Spencer et al. 2010)▪ <i>Recovery Plan for the California Red-legged Frog</i> (<i>Rana aurora draytonii</i>) (FWS 2002)▪ <i>A Status Review of the Foothill Yellow-legged Frog</i> (<i>Rana boylei</i>) <i>in California</i> (CDFW 2019d)▪ <i>Recovery Plan for the Giant Garter Snake</i> (<i>Thamnophis gigas</i>) (FWS 2017c)▪ <i>Giant Garter Snake 5-Year Review</i> (FWS 2020)▪ <i>American River Parkway Natural Resources Management Plan</i> (Sacramento County and Sacramento County Regional Parks 2021)▪ <i>Auburn State Recreation Area Preliminary General Plan and Auburn Project Lands Draft Resource Management Plan</i> (California State Parks and U.S. Bureau of Reclamation 2019)▪ <i>Beale Air Force Base Integrated Natural Resources Management Plan</i> (U.S. Air Force 2019)▪ <i>Butte Sink, Willow Creek-Lurline, and North Valley Wildlife Management Areas Final Comprehensive Conservation Plan and Environmental Assessment</i> (FWS 2019a)▪ <i>Colusa Basin Watershed Management Plan</i> (Colusa County Resource Conservation District 2012)▪ <i>Mid-Sacramento Valley Regional Conservation Investment Strategy</i> (ICF 2020b)▪ <i>Stone Lakes National Wildlife Refuge Comprehensive Conservation Plan</i> (FWS 2007)▪ <i>Upper Butte Basin Wildlife Area Final Land Management Plan</i> (California Department of Fish and Game 2012)▪ <i>Yolo Bypass Wildlife Area Land Management Plan</i> (California Department of Fish and Game 2008)▪ <i>Rancho Cordova General Plan</i> (City of Rancho Cordova 2006)▪ <i>Sacramento County General Plan</i> (Sacramento County 2010)▪ <i>Yolo County General Plan</i> (Yolo County 2009)

Objective	Sub-Objective	Affected Species ^a	Alignment with Conservation and Management Plans ^b
Goal WILD-3: Support resiliency of the landscape to climate change and sea-level rise	See below	See below	See below
Objective WILD-3.1: Acquire, protect, restore, and/or enhance habitat that supports resilience to climate change and sea-level rise within the GAI in advance of transportation project impacts.	<p>Sub-Objective WILD-3.1.1: Identify, acquire, protect, restore, and/or enhance habitat critical to climate resilience for the species of mitigation need in the GAI (Figure 2-5).</p> <p>Sub-Objective WILD-3.1.2: Prioritize management of invasive species in key areas, such as movement corridors, that may be exacerbated by climate change and sea-level rise and that would provide functional lift for the species of mitigation need.</p>	<ul style="list-style-type: none">▪ California red-legged frog▪ foothill yellow-legged frog▪ giant garter snake▪ Swainson's hawk▪ valley elderberry longhorn beetle	<ul style="list-style-type: none">▪ SWAP (CDFW 2015) and companion plans▪ CEHC (Spencer et al. 2010)▪ <i>Recovery Plan for the California Red-legged Frog</i> (Rana aurora draytonii) (FWS 2002)▪ <i>A Status Review of the Foothill Yellow-legged Frog</i> (Rana boylei) in California (CDFW 2019d)▪ <i>Recovery Plan for the Giant Garter Snake</i> (Thamnophis gigas) (FWS 2017c)▪ <i>Giant Garter Snake 5-Year Review</i> (FWS 2020)▪ <i>Five Year Status Review for Swainson's Hawk</i> (Buteo swainsoni) (CDFW 2016c)▪ <i>Revised Recovery Plan for Valley Elderberry Longhorn Beetle</i> (FWS 2019b)▪ <i>Valley Elderberry Longhorn Beetle 5-Year Review</i> (FWS 2006)▪ <i>American River Parkway Natural Resources Management Plan</i> (Sacramento County and Sacramento County Regional Parks 2021)▪ <i>Auburn State Recreation Area Preliminary General Plan and Auburn Project Lands Draft Resource Management Plan</i> (California State Parks and U.S. Bureau of Reclamation 2019)▪ <i>Beale Air Force Base Integrated Natural Resources Management Plan</i> (U.S. Air Force 2019)▪ <i>Butte Sink, Willow Creek-Lurline, and North Valley Wildlife Management Areas Final Comprehensive Conservation Plan and Environmental Assessment</i> (FWS 2019a)▪ <i>Colusa Basin Watershed Management Plan</i> (Colusa County Resource Conservation District 2012)▪ <i>Cosumnes, American, Bear, and Yuba River Integrated Regional Water Management Plan</i> (Cosumnes, American, Bear, and Yuba River Regional Water Management Group 2021)▪ <i>Mid-Sacramento Valley Regional Conservation Investment Strategy</i> (ICF 2020b)▪ <i>Yolo Bypass Wildlife Area Land Management Plan</i> (California Department of Fish and Game 2008)▪ <i>Sacramento County General Plan</i> (Sacramento County 2010)▪ <i>Yolo County General Plan</i> (Yolo County 2009)

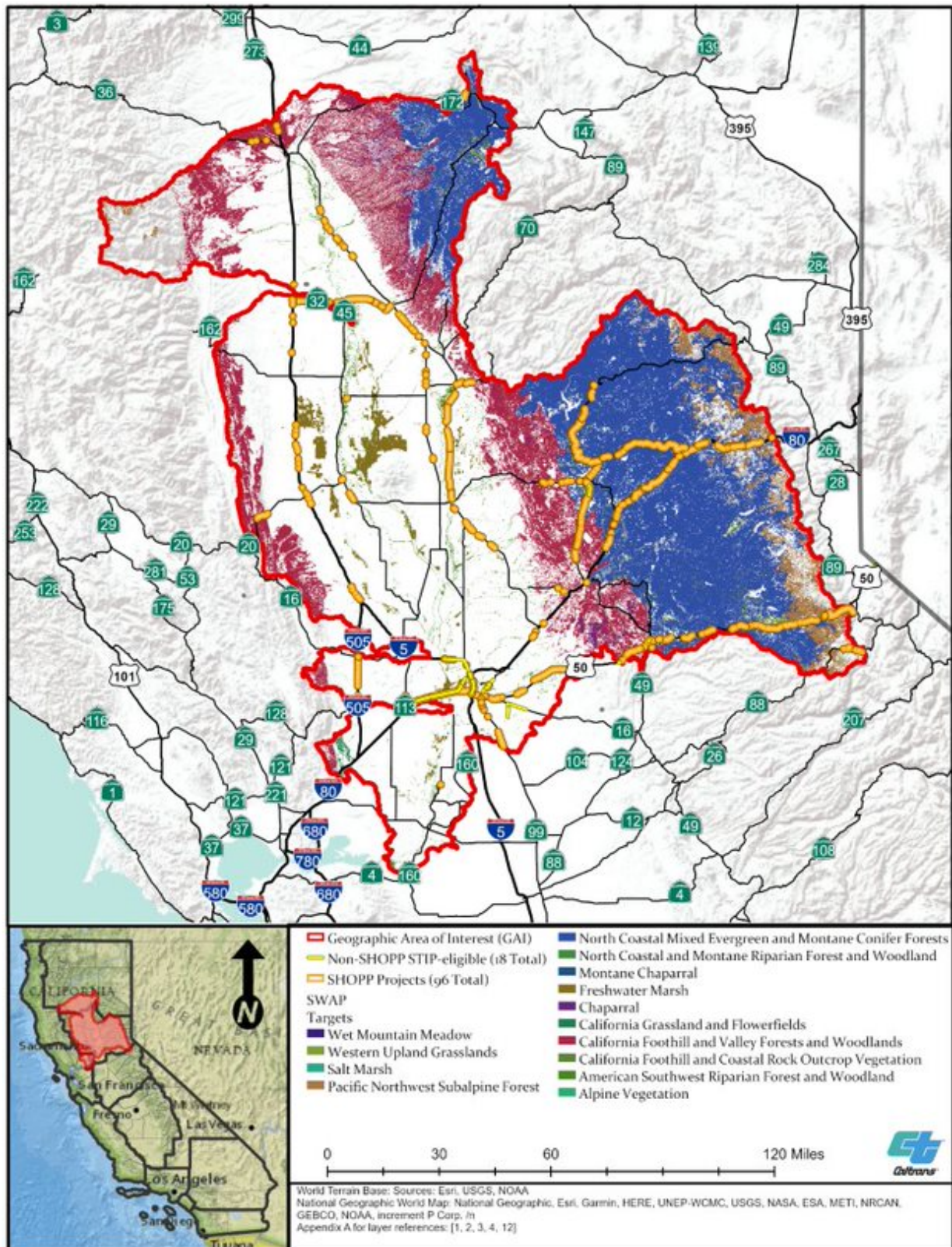
Objective	Sub-Objective	Affected Species ^a	Alignment with Conservation and Management Plans ^b
Goal WILD-4: Decrease mortality and competition, and protect population health for species of mitigation need	See below	See below	See below
Objective WILD-4.1: Reduce impacts of invasive species on populations of species of mitigation need within the GAI in advance of transportation project impacts.	<p>Sub-Objective WILD-4.1.1: Reduce invasive species in key habitat locations and/or in areas that provide a buffer to high-value habitat for the species of mitigation need. Prioritize areas where invasive species reduction would provide the greatest functional lift to species of mitigation need and their habitat.</p> <p>Sub-Objective WILD-4.1.2: Prioritize restoration of native plant species in key areas, such as critical habitat, movement corridors, and buffer zones.</p>	<ul style="list-style-type: none">▪ California red-legged frog▪ foothill yellow-legged frog▪ giant garter snake▪ valley elderberry longhorn beetle	<ul style="list-style-type: none">▪ SWAP (CDFW 2015) and companion plans▪ CEHC (Spencer et al. 2010)▪ <i>Recovery Plan for the California Red-legged Frog</i> (Rana aurora draytonii) (FWS 2002)▪ <i>Considerations for Conserving the Foothill Yellow-Legged Frog</i> (CDFW 2018d)▪ <i>A Status Review of the Foothill Yellow-legged Frog</i> (Rana boylei) in California (CDFW 2019d)▪ <i>Recovery Plan for the Giant Garter Snake</i> (Thamnophis gigas) (FWS 2017c)▪ <i>Giant garter snake 5-Year Review</i> (FWS 2020)▪ <i>Revised Recovery Plan for Valley Elderberry Longhorn Beetle</i> (FWS 2019b)▪ <i>Valley Elderberry Longhorn Beetle 5-Year Review</i> (FWS 2006)▪ <i>American River Parkway Natural Resources Management Plan</i> (Sacramento County and Sacramento County Regional Parks 2021)▪ <i>Auburn State Recreation Area Preliminary General Plan and Auburn Project Lands Draft Resource Management Plan</i> (California State Parks and U.S. Bureau of Reclamation 2019)▪ <i>Beale Air Force Base Integrated Natural Resources Management Plan</i> (U.S. Air Force 2019)▪ <i>Butte Sink, Willow Creek-Lurline, and North Valley Wildlife Management Areas Final Comprehensive Conservation Plan and Environmental Assessment</i> (FWS 2019a)▪ <i>California Indian Heritage Center Final General Plan and Environmental Impact Report</i> (California State Parks 2011)▪ <i>Colusa Basin Watershed Management Plan</i> (Colusa County Resource Conservation District 2012)▪ <i>Cosumnes, American, Bear, and Yuba River Integrated Regional Water Management Plan</i> (Cosumnes, American, Bear, and Yuba River Regional Water Management Group 2021)▪ <i>Mid-Sacramento Valley Regional Conservation Investment Strategy</i> (ICF 2020b)▪ <i>Sacramento River National Wildlife Refuge Final Comprehensive Conservation Plan</i> (FWS 2005b)▪ <i>Stone Lakes National Wildlife Refuge Comprehensive Conservation Plan</i> (FWS 2007)▪ <i>Upper Butte Basin Wildlife Area Final Land Management Plan</i> (California Department of Fish and Game 2012)▪ <i>Yolo Bypass Wildlife Area Land Management Plan</i> (California Department of Fish and Game 2008)▪ <i>Sacramento County General Plan</i> (Sacramento County 2010)▪ <i>Yolo County General Plan</i> (Yolo County 2009)

Objective	Sub-Objective	Affected Species ^a	Alignment with Conservation and Management Plans ^b
Objective WILD-4.2: Reduce impacts from nonnative predators within the GAI in advance of transportation project impacts.	Sub-Objective WILD-4.2.1: Identify and implement measures to reduce predation, such as designing ponds with a hydrologic regime that would discourage bullfrogs from establishing.	<ul style="list-style-type: none">California red-legged frogfoothill yellow-legged froggiant garter snake	<ul style="list-style-type: none">SWAP (CDFW 2015) and companion plansCEHC (Spencer et al. 2010)Recovery Plan for the California Red-legged Frog (<i>Rana aurora draytonii</i>) (FWS 2002)Considerations for Conserving the Foothill Yellow-Legged Frog (CDFW 2018d)A Status Review of the Foothill Yellow-legged Frog (<i>Rana boylei</i>) in California (CDFW 2019d)Recovery Plan for the Giant Garter Snake (<i>Thamnophis gigas</i>) (FWS 2017c)Giant Garter Snake 5-Year Review (FWS 2020)Five Year Status Review for Swainson’s Hawk (<i>Buteo swainsoni</i>) (CDFW 2016c)Revised Recovery Plan for Valley Elderberry Longhorn Beetle (FWS 2019b)Valley Elderberry Longhorn Beetle 5-Year Review (FWS 2006)American River Parkway Natural Resources Management Plan (Sacramento County and Sacramento County Regional Parks 2021)Beale Air Force Base Integrated Natural Resources Management Plan (U.S. Air Force 2019)Butte Sink, Willow Creek-Lurline, and North Valley Wildlife Management Areas Final Comprehensive Conservation Plan and Environmental Assessment (FWS 2019a)Cosumnes, American, Bear, and Yuba River Integrated Regional Water Management Plan (Cosumnes, American, Bear, and Yuba River Regional Water Management Group 2021)Mid-Sacramento Valley Regional Conservation Investment Strategy (ICF 2020b)Sacramento River National Wildlife Refuge Final Comprehensive Conservation Plan (FWS 2005b)Stone Lakes National Wildlife Refuge Comprehensive Conservation Plan (FWS 2007)Yolo Bypass Wildlife Area Land Management Plan (California Department of Fish and Game 2008)Sacramento County General Plan (Sacramento County 2010)Yolo County General Plan (Yolo County 2009)
Objective WILD-4.3: Reduce road-associated mortality within the GAI in advance of transportation project impacts.	Sub-Objective WILD-4.3.1: Identify locations to develop safe SHS wildlife crossing areas in the GAI and direct the species of mitigation need to them.	<ul style="list-style-type: none">California red-legged frogfoothill yellow-legged froggiant garter snake	<ul style="list-style-type: none">SWAP (CDFW 2015) and companion plansRecovery Plan for the California Red-legged Frog (<i>Rana aurora draytonii</i>) (FWS 2002)A Status Review of the Foothill Yellow-legged Frog (<i>Rana boylei</i>) in California (CDFW 2019d)Recovery Plan for the Giant Garter Snake (<i>Thamnophis gigas</i>) (FWS 2017c)Giant Garter Snake 5-Year Review (FWS 2020)

Objective	Sub-Objective	Affected Species ^a	Alignment with Conservation and Management Plans ^b
Goal WILD-5: Provide multi-species and multi-resource benefits	See below	See below	See below
Objective WILD-5.1: Acquire, protect, restore, and/or enhance habitat that provides multi-species benefits within the GAI in advance of transportation project impacts.	<p>Sub-Objective WILD-5.1.1: Prioritize mitigation to provide benefits for special-status species that may co-occur with the species of mitigation need and that will provide functional lift to other special-status species within the GAI.</p> <p>Sub-Objective WILD-5.1.2: Identify SHS right-of-way areas where enhancement efforts may benefit pollinators, as well as the species of mitigation need, such as low traffic areas and other areas that would support pollinators and species of mitigation need, while reducing road-associated mortality.</p> <p>Sub-Objective WILD-5.1.3: Consider the needs of other co-occurring species when planning site-specific actions to restore or create aquatic breeding habitat for California red-legged frog.</p>	<ul style="list-style-type: none">▪ California red-legged frog▪ foothill yellow-legged frog▪ giant garter snake▪ Swainson's hawk▪ valley elderberry longhorn beetle	<ul style="list-style-type: none">▪ SWAP (CDFW 2015) and companion plans▪ CEHC (Spencer et al. 2010)▪ <i>Recovery Plan for the California Red-legged Frog</i> (<i>Rana aurora draytonii</i>) (FWS 2002)▪ <i>A Status Review of the Foothill Yellow-legged Frog</i> (<i>Rana boylei</i>) <i>in California</i> (CDFW 2019d)▪ <i>Recovery Plan for the Giant Garter Snake</i> (<i>Thamnophis gigas</i>) (FWS 2017c)▪ <i>Giant Garter Snake 5-Year Review</i> (FWS 2020)▪ <i>Five Year Status Review for Swainson's Hawk</i> (<i>Buteo swainsoni</i>) (CDFW 2016c)▪ <i>Staff Report Regarding Mitigation for Impacts to Swainson's Hawks</i> (<i>Buteo swainsoni</i>) <i>in the Central Valley of California</i> (California Department of Fish and Game 1994)▪ <i>Revised Recovery Plan for Valley Elderberry Longhorn Beetle</i> (FWS 2019b)▪ <i>Valley Elderberry Longhorn Beetle 5-Year Review</i> (FWS 2006)▪ <i>American River Parkway Natural Resources Management Plan</i> (Sacramento County and Sacramento County Regional Parks 2021)▪ <i>Auburn State Recreation Area Preliminary General Plan and Auburn Project Lands Draft Resource Management Plan</i> (California State Parks and U.S. Bureau of Reclamation 2019)▪ <i>Beale Air Force Base Integrated Natural Resources Management Plan</i> (U.S. Air Force 2019)▪ <i>Butte Sink, Willow Creek-Lurline, and North Valley Wildlife Management Areas Final Comprehensive Conservation Plan and Environmental Assessment</i> (FWS 2019a)▪ <i>Mid-Sacramento Valley Regional Conservation Investment Strategy</i> (ICF 2020b)▪ <i>Sacramento, Delevan, Colusa, and Sutter National Wildlife Refuges Final Comprehensive Conservation Plan and Environmental Assessment</i> (FWS 2009)▪ <i>Sacramento River National Wildlife Refuge Final Comprehensive Conservation Plan</i> (FWS 2005b)▪ <i>Stone Lakes National Wildlife Refuge Comprehensive Conservation Plan</i> (FWS 2007)▪ <i>Upper Butte Basin Wildlife Area Final Land Management Plan</i> (California Department of Fish and Game 2012)▪ <i>Yolo Bypass Wildlife Area Land Management Plan</i> (California Department of Fish and Game 2008)▪ <i>Rancho Cordova General Plan</i> (City of Rancho Cordova 2006)▪ <i>Sacramento County General Plan</i> (Sacramento County 2010)▪ <i>Yolo County General Plan</i> (Yolo County 2009)

^a This column includes species of mitigation need that could benefit from these objectives.
^b More information on these plans is provided in Chapters 3 and 4.
^c As identified in recovery plans and other pertinent documents (see Table 7-2).

Figure 7-2. SWAP Conservation Target Habitats



7.8 Summary

Caltrans anticipates that future SHOPP and STIP-eligible transportation projects may be conditioned by CDFW, FWS, or NMFS to address the pressures and stressors that threaten species of mitigation need in the GAI. The pressures and stressors include:

- Habitat loss, fragmentation, and degradation;
- Invasive species;
- Disease and predation;
- Climate change, drought, and sea-level rise; and
- Contaminants.

Hence, Caltrans will seek to align advance mitigation project scopes with conservation goals and objectives that address the identified pressures and stressors, thereby aligning advance mitigation efforts with regional conservation efforts.

Regional conservation goals and objectives provide a framework for scoping compensatory mitigation credit establishment that would successfully offset future transportation project impacts on wildlife resources by creating function lift or conservation benefit and by mitigating the pressures and stressors on wildlife resources in the GAI. To summarize Table 7-3:

Goals WILD-1 and WILD-2 seek to conserve and expand habitat for species of mitigation need within the GAI and increase connectivity between blocks of habitat. The objectives to fulfill these goals are acquisition, protection, restoration, and/or enhancement of land. Caltrans intends to prioritize efforts that provide the greatest functional lift for the species of mitigation need, and that provide a conservation benefit in terms of size, connectivity, quality, and contribution to the climate resilience of habitat within the GAI. These goals and objectives were selected to address habitat loss, fragmentation, and degradation and to address impacts from climate change and drought. Further, Caltrans anticipates that actions completed through restoration, enhancement, and/or preservation may also provide opportunities to address invasive species, predation, and road-associated mortality.

Goal WILD-3 seeks to support landscape resiliency for species of mitigation need habitat in the GAI. The primary objectives are to reduce the effects of climate change and sea-level rise on these species by increasing the protection and functionality of land that is identified as crucial for climate resiliency, including corridors that allow these species to migrate from areas of low climate resilience into areas with higher resilience and addressing the climate change-related threat from invasive species. In addition to addressing climate change in general, these goals and objectives address habitat loss, fragmentation, and degradation, and invasive species.

Goal WILD-4 seeks to decrease mortality of species of mitigation need from known immediate and ongoing threats to individuals or populations by protecting native vegetation, reducing conditions that favor predators, and protecting species of mitigation

need from road-associated mortality. These objectives address issues related to habitat loss, fragmentation, and degradation, and threats from invasive species and predation.

Goal WILD-5 seeks to guide advance mitigation scoping to prioritize multi-species and multi-resource benefits to maximize ecological benefits in the GAI. Advance mitigation provides the opportunity to maximize Caltrans' benefit to conservation in the GAI, including to species other than the species of mitigation need and other land management objectives. Goal WILD-5 was developed to include conservation for multiple species and to provide compensatory mitigation for impacts on species of mitigation need.

Each of the goals and objectives have sub-objectives intended to guide advance mitigation scoping toward natural resource regulatory agencies' regional conservation goals. These sub-objectives will prompt Caltrans to incorporate priority habitat or corridors into advance mitigation scopes and address important threats in the area through an advance mitigation project. This concept is an important way Caltrans seeks to use advance mitigation scoping to set the stage, once funding approval is received, for specific advance mitigation projects that will provide a functional lift for the species of mitigation need and maximize conservation benefits from mitigation within the GAI.

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8. AQUATIC RESOURCES CONSERVATION GOALS AND OBJECTIVES

Caltrans' primary objective for aquatic resources is to avoid and minimize all impacts on fish, wetlands, non-wetland waters, and riparian habitat from Caltrans transportation projects in the GAI. However, when avoidance and minimization are insufficient or infeasible, compensatory mitigation may be used to offset impacts. Credits or values established through SHC § 800.6(a)-authorized advance mitigation projects offer the unique opportunity to consolidate needed compensatory mitigation. This consolidation helps to provide strategically placed and environmentally sound restoration and enhancement and to provide an improved environmental outcome that may not be available through the usual transportation project-by-project approach to compensatory mitigation.

Caltrans seeks to align its advance mitigation projects with natural resource regulatory agencies' conservation goals and objectives and to contribute to an improved environmental outcome in the GAI. With this in mind, this chapter presents Caltrans' understanding of natural resource regulatory agencies' regional conservation goals and objectives that could be applied to advance mitigation projects undertaken in the GAI to offset forecast impacts from SHOPP transportation projects.

The goals and objectives developed in this chapter are intended to guide advance mitigation scoping decisions toward those choices that will provide for the greatest environmental benefit available through the advance mitigation planning and delivery processes. Such advance mitigation projects undertaken by Caltrans should contribute to aquatic resource and riparian habitat restoration and enhancement and should yield compensatory mitigation usable by future transportation projects, as specified in SHC § 800. Compensatory mitigation usable by future transportation projects should be expressed in standard units or terms recognized by the natural resource regulatory agencies.

Information presented in this chapter is for advance mitigation project scoping purposes only.¹ Transportation projects must still go through environmental and permitting processes and must demonstrate avoidance and minimization efforts prior to compensation.

8.1 Approach

For the purposes of this RAMNA, conservation goals and objectives are a broad set of regional natural resource sustainability goals and objectives that are consistent with both

¹ Pursuant to SHC § 800.9, to the maximum extent practicable, the information required for an RCIS is presented in this RAMNA. During CDFW's review of an RCIS, CDFW determines whether the goals and objectives presented in the RCIS are consistent with FGC § 1852, subdivision (c)(8).

regulatory requirements and conservation science. To determine the aquatic resource conservation goals and objectives applicable to the GAI, Caltrans:

- First, in Section 8.2, identifies natural resource regulatory agencies with the authority to condition transportation projects with aquatic resource-related and riparian habitat compensatory mitigation in the GAI.
- Then, in Section 8.3, summarizes information for the fish, wetland, and non-wetland waters addressed by the assessment.
- Next, in Sections 8.4, 8.5, and 8.6, for aquatic resources identifies:
 - Federal and state policies, and binding and non-binding regional conservation and land management plans.
 - Current and projected pressures and stressors, including climate change and sea-level rise, for which there is a transportation nexus.
 - Opportunities to enhance the conservation benefits through advance mitigation projects.
 - Opportunities to provide co-benefits, where possible, to water quality, groundwater recharge, and species that require aquatic habitats.
- Last, Caltrans analyzes the aforementioned information in relation to the transportation-related activities that could potentially affect aquatic resources and riparian habitats, and the potential range of compensatory mitigation that could satisfy a transportation project condition associated with the activities.

The result of this analysis is a framework of conservation goals and objectives for use in advance mitigation project scoping (Section 8.7).

8.2 Natural Resource Regulatory Agencies with Aquatic Resources Oversight

Table 8-1 lists the natural resource regulatory agencies with the authority to condition transportation projects delivered in the GAI with aquatic resource-related compensatory mitigation. Terrestrial special-status wildlife species are known to use streams, wetlands, and other aquatic resources that are regulated by federal and state agencies specific to those habitat types. This RAMNA identifies goals and objectives for terrestrial species separately in Chapter 7.

Table 8-1. Agencies with Jurisdiction over Aquatic Resources

Agency	Summary
CDFW – Region 1, Northern, Region 2, North Central, Region 3, Bay Delta	CDFW oversees the conservation, protection, and management of fish, wildlife, native plants, and the habitats necessary for biologically sustainable populations of those species in California. California law (FGC § 1602) also requires an entity to notify CDFW prior to commencing any activity that may substantially divert or obstruct the natural flow of any river, stream, or lake; substantially change or use any material from the bed, channel, or bank of any river, stream, or lake; or deposit or dispose of debris, waste, or other materials containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake. CDFW issues agreements to project proponents under its authorities, including Lake and Streambed Alteration Agreements, approvals of conservation and mitigation banks, approvals of MCAs and RCISs, and NCCP permits. Under CESA, CDFW also has authority to issue incidental take permits for state-listed fish species. Additionally, CDFW's Environmental Review and Permitting, Conservation and Mitigation Banking, NCCP, and RCIS programs implement sections of the FGC, Division 1 of Title 14 of the California Code of Regulations, et seq. These programs help fulfill CDFW's mission to manage California's diverse fish, wildlife, and plant resources, and the habitats upon which they depend, for their ecological values.
Corps – South Pacific Division – Sacramento District	It is the mission of the Corps' Regulatory Program (33 CFR Part 230 and Parts 320–332) to protect the nation's aquatic resources and navigation capacity while allowing reasonable development through fair, flexible, and balanced permit decisions. The Corps is responsible for administering laws for the protection and preservation of aquatic resources pursuant to Section 10 of the Rivers and Harbors Act of 1899 and CWA Section 404. Pursuant to the Rivers and Harbors Act, all work or structures in, over, or under navigable WOTUS require Corps authorization. The Corps authorizes, under CWA Section 404, the discharge of dredged or fill material into WOTUS, including wetlands. When the Corps' civil works projects are proposed to be used or altered by another entity, CWA Section 408 permission (33 USC 408 or Section 14 of the Rivers and Harbors Act of 1899, as amended) must be obtained in addition to the CWA Section 404 authorization. Per the 2008 mitigation rule, in general it is the preference of the Corps to use the following order of priority for mitigation: mitigation bank, in-lieu fee program, on-site permittee responsible mitigation, and off-site permittee responsible mitigation; but the preference may change based on what is environmentally preferable.
EPA, Region 9	EPA has authority under the CWA (33 USC § 11251–1357) to restore and maintain the chemical, physical, and biological integrity of the nation's waters. EPA and Corps jointly implement the CWA Section 404 program, which regulates discharge of dredge or fill material into WOTUS. Federal authorizations also need to be reviewed for compliance with CWA Section 401.
FWS	FWS has jurisdiction over all federally protected wildlife, federally protected inland/non-anadromous fish species, and critical habitats, and requires consultation and coordination to comply with the ESA. FWS authorities, including its role in mitigation, are codified under multiple statutes that address management and conservation of natural resources from many perspectives, including, but not limited to, the effects of land, water, and energy development on fish, wildlife, plants, and their habitats. FWS approves HCPs to address impacts on federally protected species, for projects lacking a federal nexus, under ESA Section 10(a)(1)(B). For projects with a federal nexus and potential impacts on federally protected species, FWS issues biological opinions under ESA Section 7. FWS does not, however, have jurisdiction over anadromous fish.

Agency	Summary
NMFS	NMFS has jurisdiction over all federally protected fish and wildlife marine species and critical habitats and requires consultation and coordination to be in compliance with the ESA. Similar to FWS, NMFS manages wildlife and fisheries resources in the marine and estuarine environment. NMFS issues biological opinions under Section 7 of the ESA for projects that may affect federally listed species managed by the agency. In addition, NMFS manages marine mammals under the Marine Mammal Protection Act, with the exception of sea otters, which are managed by FWS. NMFS is also responsible for addressing impacts on EFH under the Magnuson-Stevens Fishery Conservation and Management Act.
SWRCB and RWQCB – Region 5, Central Valley	The Porter-Cologne Act governs water quality regulation in California and gives the SWRCB and RWQCBs the authority to condition projects, through waste discharge requirements, to protect water quality and the beneficial uses of waters of the state, as identified in basin plans. Basin plans, adopted by the SWRCB and RWQCBs, incorporate the beneficial use designation of surface waters of the state and must take into consideration the use and value of water for protection and propagation of fish, shellfish, and wildlife. The SWRCB and RWQCBs have been delegated the responsibility of implementing CWA Section 401, which regulates the discharge of pollutants into WOTUS. Projects that occur in one region are regulated by that regional board, whereas projects that cross regions are regulated by the SWRCB.

8.3 Aquatic Resources

An overview of aquatic resources was provided in Chapter 2 and is summarized below. The GAI overlaps, in part or in whole, with the HUC-8 boundaries listed in Table 8-2. Additionally, the North Fork American, South Fork American, and Upper Bear HUC-8s also partially occur in the GAI.

8.3.1. Wetlands and Non-wetland Waters

In the GAI, the major stream systems include the Sacramento, Feather, Yuba, Bear, and American Rivers as well as Cottonwood and Stony Creeks (Central Valley RWQCB 2018). Additionally, there are hundreds of named and unnamed tributaries, the majority of which flow into these rivers. Flow into these systems originates from rainfall and snowfall in the Sierra Nevada and Coast Range Mountains (Figure 2-4).

Aquatic habitat types with the potential to occur in the GAI are mapped in Appendix F. Based on the SAMNA Reporting Tool's wetlands and waters layer, the GAI has a total of 515,151 acres of aquatic habitat, consisting of 38 wetland habitats listed in Table 2-11 and 10 non-wetland waters habitats listed in Table 2-12 (Caltrans 2021e, 2021f). Five beneficial uses that support the preservation and enhancement of wildlife habitat and aquatic resources in the GAI also align with the AMP's objective to contribute to an improved environmental outcome through transportation project mitigation and are relevant to this RAMNA. They are detailed in Table 2-10.

Vernal Pool Habitat

Because there is currently no vernal pool GIS layer, vernal pool information was inferred. See Section 2.15.3.

Table 8-2. Named Aquatic Features in the GAI with Aquatic Resource Goals and Objectives, by HUC-8

Big Chico Creek-Sacramento River HUC-8 18020157	Butte Creek HUC-8 18020158	Honcut Headwaters-Lower Feather HUC-8 18020159	Lower American HUC-8 18020111	Lower Sacramento HUC-8 18020163
<ul style="list-style-type: none"> ▪ Bear Creek^a ▪ Big Chico Creek ▪ Cedar Creek^a ▪ Cement Creek ▪ Dear Creek ▪ Sacramento River 	<ul style="list-style-type: none"> ▪ Butte Creek ▪ Clear Creek ▪ Dry Creek^b ▪ Howard Slough ▪ Little Butte Creek ▪ Little Dry Creek ▪ Sacramento River 	<ul style="list-style-type: none"> ▪ Feather River 	<ul style="list-style-type: none"> ▪ American River 	<ul style="list-style-type: none"> ▪ Alamo Creek ▪ Barker Slough ▪ Cache Slough ▪ Decker Island ▪ Elk Slough ▪ Gibson Canyon Creek ▪ Lindsey Slough ▪ Miner Slough ▪ Morrison Creek ▪ Prospect Island ▪ Putah South Canal ▪ Sacramento Drainage Canal ▪ Sacramento River ▪ Sherman Lake ▪ Sutter Slough ▪ Ulatis Creek ▪ Unnamed pond at California Indian Heritage Center State Park ▪ Yolo Bypass Area

Paynes Creek Sacramento River HUC-8 18020155	Sacramento- Stone Corral HUC-8 18020104	Thomes Creek- Sacramento River HUC-8 18020156	Upper Coon- Upper Auburn HUC-8 18020161	Upper Yuba HUC-8 18020125
<ul style="list-style-type: none"> ▪ Blue Tent Creek ▪ Dibble Creek ▪ Paynes Creek ▪ Red Bank Creek ▪ Reeds Creek ▪ Sacramento River 	<ul style="list-style-type: none"> ▪ Logan Creek ▪ Sacramento River ▪ Tehama Colusa Canal ▪ Willow Creek 	<ul style="list-style-type: none"> ▪ Antelope Creek^c ▪ Cottonwood Creek ▪ Dye Creek ▪ Elder Creek ▪ Mill Creek^d ▪ Sacramento River ▪ Salt Creek^c ▪ Thomes Creek 	<ul style="list-style-type: none"> ▪ Coon Creek 	<ul style="list-style-type: none"> ▪ Canyon Creek^e ▪ Lost Creek^e ▪ Slate Creek^e ▪ Yuba River

^a Although there are multiple Bear and Cedar Creeks in the GAI, the Ukiah Resource Management Plan is referring to those in the Big Chico Creek-Sacramento River HUC-8.

^b Although there are multiple Dry Creeks in the GAI, the Butte County General Plan is referring to the one in the Butte Creek HUC-8.

^c Although there are multiple Antelope and Salt Creeks in the GAI, the Tehama East Watershed Management Plan is referring to those in the Thomes-Creek-Sacramento River HUC-8.

^d Although there are multiple Mill Creeks in the GAI, the Lassen National Forest Land and Resource Management Plan is referring to the one in the Thomes-Creek-Sacramento River HUC-8.

^e Although there are multiple Canyon, Lost, and Slate Creeks in the GAI, the Plumas National Forest Land Management Plan is referring to those in the Upper Yuba HUC-8.

8.3.2. Riparian Habitat

Because there is currently no detailed riparian GIS layer available, riparian habitat information was excerpted from the SAMNA's vegetation layer. The riparian habitats identified in the GAI are blue oak woodland; valley foothill riparian, riverine, montane riparian and valley foothill riparian (Table 2-3).

8.3.3. Fish Species of Mitigation Need

Special-status fish species were identified in Section 2.15.2. In brief, all special-status fish species with SAMNA results and expected to be present in the GAI were identified as species of mitigation need for this RAMNA.

Chinook Salmon

Two ESU of chinook salmon overlap the GAI: Central Valley spring-run ESU and Sacramento River winter-run ESU (Section 2.15.2). The Central Valley spring-run ESU is federally listed as threatened and state listed as endangered. The Sacramento River winter-run ESU is federally listed as endangered and state listed as threatened. Designated critical habitat for the Central Valley spring-run ESU of this species does occur in the GAI, however designated critical habitat for the Sacramento River winter-run ESU of this species does not occur in the GAI (Section 2.8). The Sacramento River Winter-run ESU includes all spawned winter-run Chinook salmon originating from the Sacramento River and its tributaries. It also includes winter-run Chinook salmon from the Livingston Stone National Fish Hatchery [81 *Federal Register* 72761]. The Central Valley Spring-run ESU includes all naturally spawned spring-run Chinook salmon originating from the Sacramento River and its tributaries, and also spring-run Chinook salmon from the Feather River Hatchery Spring-run Chinook Program [70 *Federal Register* 37159].

Adult spring-run chinook salmon migrate through the bay delta and into the lower Sacramento River between March and September, primarily between May and June. They remain in the lower Sacramento River for several months as they mature and move into the mainstem of the Sacramento River to spawn between mid-August and early October, primarily in September. Embryos generally require 40 to 60 days to hatch, remaining as alevins for another 4 to 6 weeks, and then emerge as fry between November and March. They generally remain in the river for 12 to 16 months before migrating down through the bay delta and out to the ocean (NMFS 2014).

Adult winter-run chinook salmon migrate through the bay delta and into the lower Sacramento River between December and July. They remain in the lower Sacramento River as they mature before moving up to the mainstem of the Sacramento River between Keswick Dam and the Red Bluff Diversion Dam. Winter-run chinook salmon spawn between late-April and mid-August, but mostly between June and July. Migration of juvenile chinook salmon past the Red Bluff Diversion Dam occurs primarily from July to November (NMFS 2014).

Habitat requirements for both runs of chinook salmon generally consist of deep, cool, well-oxygenated water for immature adults migrating to spawn, clean loose gravel in swift

shallow waters for spawning, and cold water during and after spawning to protect eggs and embryos from ambient heat. Juvenile chinook salmon require riparian vegetation and substrates that allow for sources of invertebrates for food and strongly prefer shallow water habitats as they migrate outward from the Sacramento River (NMFS 2014).

Delta Smelt

Delta smelt is federally listed as threatened and state listed as endangered. Critical habitat has been designated for this species (Sections 2.8 and 2.15.2). Delta smelt are endemic to the upper Sacramento-San Joaquin estuary, and occur in the Sacramento-San Joaquin river delta primarily below Isleton on the Sacramento River, below Mossdale on the San Joaquin River, and in Suisun Bay. They move into freshwater between January to July for spawning. Spawning generally takes place in areas of relatively cool water and high oxygen concentrations in the Sacramento River as high as Sacramento, the Mokelumne River system, the Cache Slough region, the Sacramento-San Joaquin river delta, and the Montezuma Slough area of the estuary. During high outflow periods, they may be washed into San Pablo Bay, but they do not establish permanent populations there. Delta smelt tolerates a wide range of salinities but generally occurs in areas of no more than one-third that of sea water (FWS 1996).

Green Sturgeon

The Southern ESU of green sturgeon is a federal threatened species and a state species of special concern, and designated critical habitat for this species does not occur in the GAI (Sections 2.8 and 2.15.2). This ESU includes naturally spawned green sturgeon originating in the Sacramento, Feather, and Yuba Rivers [71 *Federal Register* 17757]. Green sturgeon use riverine, estuary, and marine habitats along the west coast of California spending the majority of their life cycle in marine waters. Adults enter San Francisco Bay in late winter through early spring and spawn in the upper portions of the Sacramento River, then returning toward the Pacific Ocean starting in July. Juveniles leave from the Sacramento River and either pass through the San Francisco Bay area into the Pacific Ocean (NMFS 2015).

Longfin Smelt

Longfin smelt is a federal candidate for threatened species and state threatened species. Critical habitat has not been designated for this species (Sections 2.8 and 2.15.2). In California, longfin smelt occur from the Klamath River to San Francisco Bay and rivers that exit into the bay such as the Sacramento River and San Joaquin River. Longfin smelt larvae flow outward to the ocean in winter-spring with short to long retention in coastal bays and estuaries. Mature longfin smelt return to river waters for spawning which typically occurs in late fall through spring. Longfin smelt require cool water, no warmer than 22 degrees centigrade, and spawn in sandy substrates in low velocity streams (California Department of Fish and Game 2009).

Steelhead

The Central Valley DPS of steelhead is a federal threatened species (Section 2.15.2). Designated critical habitat for this species does occur in the GAI (Section 2.8). The

Central Valley DPS includes all naturally spawned anadromous steelhead originating below natural and manmade impassible barriers from the Sacramento and San Joaquin River and their tributaries; excluding such fish originating from San Francisco and San Pablo Bays and their tributaries. This DPS also includes the Coleman National Fish Hatchery Program, the Feather River Fish Hatchery Program, and the Mokelumne River Hatchery Program [71 *Federal Register* 833]. Of these, the Feather River Hatchery is in the GAI (NMFS 2014).

Steelhead in this DPS exhibit anadromy and freshwater residency with approximately three quarters of fish being freshwater residents. Anadromous steelhead enter the freshwater systems of the Central Valley from August to April and spawn generally between December and April in small streams with cool well oxygenated water is available year-round. In the Sacramento River, juvenile steelhead generally migrate to the ocean between spring and early summer with peak migration between March and April. Adults spawn in coarse gravel in the tail of a pool or riffle. Juvenile steelhead are found in cool, clear, fast flowing permanent streams (NMFS 2014).

8.4 Regional Conservation Efforts

Caltrans' understanding of natural resource regulatory agency conservation goals and objectives is that they are generally designed to protect aquatic resources. Several conservation and land management plans listed in Table 3-1, relevant to the aquatic resources, identify key habitats, specific designated waters, or areas for aquatic resource enhancement and restoration. Others identify key qualities, such as water quality, that are essential for aquatic resource enhancement and restoration. Still others name specific National Hydrologic Dataset features, presented in Table 8-2, for aquatic resource enhancement and restoration. Additionally, the documents include strategies for aquatic resource protection and measures to address specific known, ongoing threats to aquatic resources. These conservation and land management plans are presented in Table 8-3.

8.5 Pressures and Stressors

Pressures and stressors refer to environmental trends or physical, chemical, or biological factors or conditions that affect aquatic resources. According to the SWAP (CDFW 2015), a pressure is defined as “an anthropogenic (human-induced) or natural driver that could result in changing the ecological conditions of the target. Pressures can be positive or negative depending on intensity, timing, and duration. Negative or positive, the influence of a pressure to the target is likely to be significant.” Additionally, stress is defined in the SWAP as “[a] degraded ecological condition of a target that resulted directly² or indirectly from negative impacts of pressures (e.g., habitat fragmentation)” (CDFW 2015). The Corps defines human stressors as human-caused sources of disturbance in an ecosystem, such as roads, urban areas, and agricultural lands (Corps 2015).

² Direct effects occur at the time of construction and indirect effects are reasonably certain to occur, but later in time.

The documents in Table 8-3 identify multiple pressures and stressors on aquatic resources in the GAI where hydrology, land use and management, and climate intersect. These pressures and stressors were evaluated in relation to the types of direct and indirect effects that could result from transportation projects funded through SHOPP and could benefit from in-kind mitigation purchased or established through an advance mitigation project.

8.5.1. Habitat Loss, Fragmentation, and Degradation

Urbanization and other anthropogenic factors such as roads, poor grazing practices, and habitat invasion by nonnative species have led to the loss and degradation of aquatic resources. Additionally, the expansion of roads and urbanization have resulted in habitat fragmentation and a decrease in connectivity between habitats that support different life stages and have contributed to nonpoint source pollution from chemicals and toxins. Roads have also affected local hydrological conditions by changing sheet flow and altering water movement in drainages (CDFW 2015, 2016a). In the GAI, the majority of urbanization and development has occurred in the central west portion between Interstate 5 and State Route 99 and south of Interstate 80 (Figure 2-6). Habitat loss, fragmentation, and degradation have been described as a factor in the decline of longfin smelt, delta smelt, chinook salmon, steelhead (California Department of Fish and Game 2009; FWS 2004; NMFS 2016a, 2016c). Reduction of spawning habitat is described as the principal factor in the decline of the Southern DPS of green sturgeon (NMFS 2015).

8.5.2. Invasive Species

Transportation 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 wetland type, disrupting aquatic and terrestrial connectivity, and further threats to already endangered or threatened natural resources. Invasive plant species that affect riparian systems in the GAI include giant reed, water hyacinth, Himalayan blackberry, tree of heaven, hydrilla, and perennial pepperweed (Cal-IPC 2021; CDFW 2015). Invasive wildlife species that affect riparian systems in the GAI include striped bass, black crappie, bluegill, red eared slider, Chinese mitten crab, and American bullfrog (CDFW 2015).

Table 8-3. Documents Identifying Aquatic Resource Goals and Objectives in the GAI

Document	Reference	Information Identified
Policies, Procedures, Guidelines, and Water Quality Plans	See below	See below
<i>2008 Final Compensatory Mitigation Rule</i>	73 Federal Register 19593	Corps' ruling to establish standards and criteria for the use of all types of compensatory mitigation, including on and off-site permittee-responsible mitigation, mitigation banks, and in-lieu fee mitigation to offset unavoidable impacts on WOTUS. Recognizes that consolidating mitigation may be environmentally preferable for linear projects (because advance or at least concurrent compensatory mitigation is environmentally preferable, but not always possible to achieve) (Preamble and 33 Section 332.3).
<i>2018 Fish Passage Annual Legislative Report</i>	Caltrans 2020	<p>In compliance with SHC § 156, this report identifies priority fish passage barriers on the SHS. Priorities are determined through FishPAC collaboration and are based on the following:</p> <ul style="list-style-type: none">▪ Species diversity – listed threatened and endangered salmon and steelhead species currently or historically present in the watershed▪ Habitat – suitable habitat quality and quantity above each crossing, relative to recovery of threatened and endangered species▪ Best professional knowledge – professional, discretionary value for science-based information known to fisheries and engineering subject matter experts <p>Subject matter experts include CDFW, NMFS, FWS, CCC, CalTrout, Pacific States Marine Fisheries Commission, and other local fish passage advocates.</p>
<i>303(d) List of Impaired Water Bodies</i>	SWRCB 2018	Section 303(d) of the CWA requires that every 2 years, each state submit to EPA a list of rivers, lakes, and reservoirs in the state for which pollution control or requirements have failed to provide for water quality. Based on a review of this list and its associated Total Maximum Daily Load Priority Schedule (Appendix E in this document), 109 waterbodies are listed as impaired in the GAI. Of the 109, 11 have an established Total Maximum Daily Load.
<i>California Wetlands Conservation Policy</i>	Executive Order W-59-93	The “No Net Loss Policy” for wetlands aims to “[e]nsure no overall net loss and achieve a long-term net gain in the quantity, quality, and permanence of wetlands acreage and values in California in a manner that fosters creativity, stewardship and respect for private property.”
<i>National Wetlands Mitigation Action Plan</i>	EPA and Corps 2002	An EPA and Corps comprehensive, interagency document to further achievement of the goal of no net loss of wetlands. The goals and objectives of the <i>National Wetlands Mitigation Action Plan</i> were incorporated into the 2008 Final Compensatory Mitigation Rule, which was updated in 2015 and includes the no net loss policy.
<i>Regional Compensatory Mitigation and Monitoring Guidelines for South Pacific Division</i>	Corps 2015	Provides guidelines for compensatory mitigation site selection. A watershed approach should be used when selecting sites to establish compensatory mitigation.
<i>State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State</i>	SWRCB 2019	Creates a State of California wetland definition, a framework for determining jurisdiction of state wetlands, wetland delineation procedures, and application procedures for discharges of dredge and fill material to waters of the state.
<i>Water Quality Control Plan for the Central Valley Basin</i>	Central Valley RWQCB 2018	Identifies water quality objectives and beneficial uses for the Sacramento River Basin.
Special-Status Species and Sensitive Habitat Documents	See below	See below
<i>Delta Smelt Resiliency Strategy</i>	CDFW 2016d	<p>Includes a number of goals for improving the delta smelt population condition, including:</p> <ul style="list-style-type: none">▪ Removal of aquatic invasive species from the Cache Slough Complex, around Decker Island, and in Sherman Lake.▪ Addition of supplemental sediment into the low-salinity zone of the Sacramento River delta.▪ Implementation of habitat restoration projects in seven locations in the Sacramento River delta, including Decker Island in the GAI.

Document	Reference	Information Identified
<i>Recovery Plan for the Evolutionarily Significant Units of Sacramento River Winter-run Chinook Salmon and Central Valley Spring-run Chinook Salmon and the Distinct Population Segment of California Central Valley Steelhead</i>	NMFS 2014	<p>Includes the following goals for improving the chinook salmon and steelhead population condition in the Sacramento River delta, including:</p> <ul style="list-style-type: none">▪ Conduct aquatic habitat restoration such that it contributes to an overall goal of 17,000 to 20,000 acres of restored habitat in the Sacramento and San Joaquin River delta.▪ Enhance and/or restore salmonid migratory habitats in the Yolo Bypass area.▪ Conduct habitat restoration around the eastern portion of Decker Island as well as Cache Slough, Liberty Island, Prospect Island, Lindsey Slough, and Barker Slough.▪ Enhance salmonid habitat in Elk and Sutter Sloughs. <p>Includes goals to generally restore habitat for salmonids at the following locations with no specific measures: Clear Creek, Thomes Creek, Mill Creek, Deer Creek, Big Chico Creek, Butte Creek, Coon Creek, and the American River.</p> <p>Includes goals to generally restore habitat for salmonids at the following locations with specific measures:</p> <ul style="list-style-type: none">▪ Sacramento River – specifically remove giant reed and tamarisk.▪ Cottonwood Creek – specifically remove nonnative plants such as giant reed.▪ Antelope Creek – specifically improve water quality.▪ Feather River – specifically control nonnative predators such as striped, largemouth, and smallmouth bass.▪ Yuba River – specifically enhance spawning habitat from the Englebright Dam to the Deer Creek confluence with the Yuba River.▪ Dry Creek – specifically control nonnative predators such as striped bass, largemouth bass, and smallmouth bass.
<i>Recovery Plan for the Sacramento-San Joaquin Delta Native Fishes</i>	FWS 1996	Includes general goals to restore the population of delta smelt and longfin smelt sufficient to delist delta smelt and prevent longfin smelt from becoming listed.
<i>Recovery Plan for the Southern Distinct Population Segment of North American Green Sturgeon (Acipenser medirostris)</i>	NMFS 2018	Includes goals to reduce contaminants, enhance and/or restore habitat, and reduce nonnative species presence that likely consume green sturgeon as well as to preferentially perform these actions in the Feather, Sacramento, and Yuba Rivers.
<i>Department of Fish and Game Report to the Fish and Game Commission: A Status Review of the Longfin Smelt (Spirinchus thaleichthys) in California</i>	California Department of Fish and Game 2009	<p>Includes recovery measures to attempt and determine the extent of their benefit to longfin smelt. These measures include:</p> <ul style="list-style-type: none">▪ Reduce water pollution▪ Manage nonnative fish that consume longfin smelt▪ Enhance and/or create habitat for longfin smelt
<i>Steelhead Restoration and Management Plan for California</i>	California Department of Fish and Game 1996	Identified restoration recommendations in the American, Sacramento, and Yuba Rivers as well as Antelope, Butte, Deer, and Mill Creeks. Recommendations consist generally of habitat restoration and improving stream flow.
<i>Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon</i>	FWS 2005a	<p>The following vernal pool regions and core areas occur in the GAI:</p> <ul style="list-style-type: none">▪ Northeastern Sacramento Valley region – all core areas in the region.▪ Solano-Colusa region – all core areas in the region.▪ Northwestern Sacramento Valley region – Red Bluff, Black Butte, and Orland core areas.▪ Southeastern Sacramento Valley region – Beale, Western Placer, Phoenix Field and Park, Mather, Stone Lake, and Cosumnes/Rancho Seco core areas. <p>Listed species for recovery that use aquatic habitat in the core areas include fleshy owl's clover (<i>Castilleja campestris</i> ssp. <i>succulenta</i>), Hoover's spurge (<i>Euphorbia hooveri</i>), Contra Costa goldfields (<i>Lasthenia conjugens</i>), Butte County meadowfoam (<i>Limnanthes floccosa</i> ssp. <i>californica</i>), Colusa grass (<i>Neostapfia colusana</i>), hairy Orcutt grass (<i>Orcuttia pilosa</i>), slender Orcutt grass (<i>Orcuttia tenuis</i>), Sacramento Orcutt grass (<i>Orcuttia viscida</i>), Greene's tuctoria (<i>Tuctoria greenei</i>), Solano grass (<i>Tuctoria mucronata</i>), vernal pool fairy shrimp, conservancy fairy shrimp, delta green ground beetle (<i>Elaphrus viridis</i>), and vernal pool tadpole shrimp (<i>Lepidurus packardii</i>). Additional species expected to benefit from recovery actions in these areas include Ferris' milk vetch (<i>Astraglaus tener</i> var. <i>ferrisiae</i>), alkali milk vetch (<i>Astraglaus tener</i> var. <i>tener</i>), vernal pool smallscale (<i>Atriplex persistens</i>), Ahart's dwarf rush (<i>Juncus leiospermus</i> var. <i>ahartii</i>), legenere (<i>Legenere limosa</i>), bearded popcorn flower (<i>Plagiobothrys hystriculus</i>), mid-valley fairy shrimp (<i>Branchinecta mesovallensis</i>), California fairy shrimp (<i>Linderiella occidentalis</i>), and western spadefoot toad (<i>Spea hammondi</i>).</p>

Document	Reference	Information Identified
Conservation and Land Management Documents	See below	See below
<i>2030 Countywide General Plan Yolo County</i>	Yolo County 2009	Includes a general goal to restore and/or enhance watersheds in the county for the benefit of chinook salmon and steelhead.
<i>American River Basin Integrated Regional Water Management Plan</i>	Regional Water Authority 2018	Includes general goals to improve riparian habitat and reduce invasive species in the plan area, which includes portions of the Lower American, Lower Sacramento, Upper Bear, and Upper Coon-Upper Auburn HUC-8s.
<i>American River Parkway Natural Resource Management Plan</i>	Sacramento County and Sacramento County Regional Parks 2021	Includes a general goal to improve habitat in the park, along with specific goals centered on restoring 182 acres of riparian habitat, removing nonnative species, and conducting one salmonid enhancement project annually.
<i>Bidwell-Sacramento River State Park General Plan & Environmental Impact Report</i>	California State Parks 2006	Includes a goal to restore sensitive habitat communities, which include wetlands and riparian woodlands.
<i>Butte Regional Conservation Plan</i>	Butte County Association of Governments 2019	Includes goals to control Himalayan blackberry, giant reed, and parrot feather (<i>Myriophyllum aquaticum</i>) and restore the following acreage and habitat assemblages: <ul style="list-style-type: none"> ▪ 297 acres of vernal pools and swales ▪ 179 acres of riparian habitat in the following manner: 11 acres of willow scrub and 120 acres of emergent wetland ▪ All of these assemblages have multiple region-specific targets found in Table 5-4 of the plan
<i>Butte Sink, Willow Creek-Lurline, and North Valley Wildlife Management Areas Final Comprehensive Conservation Plan and Environmental Assessment</i>	FWS 2019b	Includes the following goals: <ul style="list-style-type: none"> ▪ Enhance 1,000 acres of wetlands and associated upland and riparian habitats on an annual basis. ▪ Restore up to 12,535 acres of managed wetlands and associated upland and riparian habitats on easement lands in the North Central Valley and Willow Creek-Lurline Areas. ▪ Restore up to 3,321 acres of wetlands and associated upland and riparian habitats on fee-title lands, and in particular convert 15 acres of grasslands in Tract 4 of the Llano Seco Unit to seasonal wetland. ▪ Reduce total cover of nonnative species in vernal pools and surrounding annual grassland habitat and restore these habitats with particular attention for species covered in the <i>Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon</i> (FWS 2005a). ▪ Restore and enhance 30 acres of riparian habitat on Tract 1 of the Butte Sink Unit.
<i>California Indian Heritage Center Final General Plan and Environmental Impact Report</i>	California State Parks 2011	Includes goals to restore riparian woodlands and wetlands in the park and the perimeter of the unnamed pond in particular.
<i>Colusa Basin Watershed Management Plan</i>	Colusa County Resource Conservation District 2012	Includes goals to restore wetland and stream habitats, particularly in floodprone areas; improve water quality, particularly with respect to pesticide, herbicide, salinity, and nitrates; and remove target invasive species including giant reed, tamarisk, perennial pepperweed, tree of heaven, and nonnative water primroses (<i>Ludwigia</i> sp.).
<i>Colusa Sacramento River State Recreation Area Final General Plan and Program Environmental Impact Report</i>	California State Parks 2016	Includes goals to restore riparian woodlands and wetlands in the park and the Restoration Recreation Management Zone and Riparian Recreation Management Zone in particular.
<i>Comprehensive Management Plan for the Sacramento River Wildlife Area</i>	California Department of Fish and Game 2004	Includes a goal to contribute to the reestablishment of a riparian ecosystem along the Sacramento River from Red Bluff to Chico and reestablish riparian vegetation along the Sacramento River from Chico to Verona.
<i>Dry Creek Parkway Recreation Master Plan</i>	Sacramento County 2003	Includes a general goal to enhance and/or restore habitat in the park.
<i>Eagle Lake Field Office Proposed Resource Management Plan and Final Environmental Impact Statement</i>	BLM 2007	Includes a goal to improve 35 miles of perennial or intermittent streams and 33 acres of riparian/wetland areas in the management area.

Document	Reference	Information Identified
<i>Final South Sacramento HCP Volume 1</i>	Sacramento County, City of Rancho Cordova, City of Galt, Sacramento County Water Agency, Southeast Connector Joint Powers Authority 2018	<p>Includes goals to establish or reestablish a minimum number of acres and habitat assemblages in the following manner:</p> <ul style="list-style-type: none"> ▪ 50 acres of vernal pool, 30 acres of swale, and 50 acres of freshwater marsh in the Morrison Creek HUC-10 (1802016304) ▪ 389 acres of functional vernal pool habitat, with at least 50 acres occurring in the Mather Core Recovery Area as referenced in the <i>Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon</i> (FWS 2005a) ▪ 256 acres of swale or vernal pool habitat ▪ 300 acres of function Vernal Pool Ecosystem in or in 1 mile of the Mather Core Recovery Area ▪ 105 acres of seasonal wetland ▪ 127 acres of freshwater marsh ▪ 117 acres of Stream/Creek land cover ▪ 155 acres of open water ▪ 591 acres of mixed riparian woodland and/or mixed riparian scrub specifically along Deer Creek and/or Willow Slough along with other streams that are outside of the GAI <p>Additionally, these goals have preferential priorities to occur in 3 miles of habitat for covered species</p>
<i>Folsom Lake State Recreation Area and Folsom Powerhouse State Historic Park General Plan/Resource Management Plan</i>	California State Parks 2010	Includes goals to restore freshwater marsh, seasonal wetlands, vernal pools, and riparian woodlands. Avery's pond is identified as a site for restoration if deemed appropriate with existing cultural features.
<i>Hidden Falls Regional Park Vegetation, Fuels and Range Management Plan</i>	Placer County 2007	Identifies Himalayan blackberry as a priority for removal.
<i>Integrated Regional Water Management Plan Cosumnes American Bear Yuba Watersheds, California</i>	Cosumnes, American, Bear and Yuba River Regional Water Management Group 2021	<p>Includes the following goals in the plan area, which includes portions of the North Fork American, South Fork American, Upper Bear, Upper Coon-Upper Auburn, and Upper Yuba HUC-8s:</p> <ul style="list-style-type: none"> ▪ Restore the natural sediment regime in at least three river reaches. ▪ Enhance and/or restore at least 4 miles of streams. ▪ Treat at least 50 acres of riparian habitat for nonnative plant species.
<i>Mendocino National Forest Land and Resource Management Plan</i>	USFS 1995	Includes a general goal to improve aquatic habitats in the forest.
<i>Parks & Open Space Master Plan Yolo County, California</i>	Yolo County 2006	Includes recommendations to conduct riparian habitat restoration at the Clarksburg River Access Site, 1.5 miles south of Clarksburg along the Sacramento River.
<i>Placer County Conservation Program Western Placer County HCP/NCCP</i>	Placer County 2020	<p>Includes the following goals in the plan area, which is entirely in the GAI and occurs in portions of the Honcut Headwaters-Lower Feather, Upper Bear, and Upper Yuba HUC-8s:</p> <ul style="list-style-type: none"> ▪ Create 3,000 acres of vernal pool complex, with 30 wetted acres of vernal pools and up to an additional 870 acres of vernal pool constituent habitat, which must contain at least 326 acres of vernal pool wetlands. ▪ Restore 20 acres of fresh emergent marsh and up to an additional 390 acres of non-vernal pool wetlands. ▪ Restore 32 acres of riparian constituent habitat and up to an additional 1,250 acres of riparian constituent habitat and up to 175 acres of riverine habitat.
<i>Plumas National Forest Land and Resource Management Plan</i>	USFS 2004	Includes goals to enhance Lost Creek and the Feather River for trout habitat, and Canyon Creek and Slate Creek to improve water quality.
<i>Proposed Redding Resource Management Plan and Final Environmental Impact Statement</i>	BLM 1992	Includes goals to enhance Paynes Creek, the Sacramento River, and Butte Creek.
<i>Sacramento, Delevan, Colusa, and Sutter National Wildlife Refuges Final Comprehensive Conservation Plan and Environmental Assessment</i>	FWS 2009	<p>Includes goals to:</p> <ul style="list-style-type: none"> ▪ Enhance 4,021 acres of vernal pool/alkali meadow habitat, with specific components of 32 acres on Tract 24.12 and 60 acres on Tract 26 at Colusa as well as 73 acres on Tract 1.1 at Delevan. ▪ Enhance 581 acres of riparian habitat, with a specific component of 5 acres at Powell Slough and Tract 14 of Colusa, and general preference for restoration at Colusa.

Document	Reference	Information Identified
<i>Sacramento River National Wildlife Refuge Final Comprehensive Conservation Plan</i>	FWS 2005b	Includes goals to: <ul style="list-style-type: none"> Restore 3,255 acres of riparian vegetation and upland habitats with the following habitat types as targets: Great Valley Willow Scrub, Great Valley Cottonwood Forest, Great Valley Mixed Riparian Forest, Great Valley Valley Oak Riparian Forest, and Grassland, Herbland, and Wetland. A complex of specific acreages and areas of restoration are detailed in Table 9 of the document. Enhance and restore 33.5 miles of shaded riverine habitat for salmonids. Target the following refuge units for invasive species control: Pine Creek, Phelan Island, Capay, La Barranta, Drumheller Slough, Flynn, and Rio Vista.
<i>Stone Lakes National Wildlife Refuge Comprehensive Conservation Plan</i>	FWS 2007	Only the northernmost approximately 12 acres of the Stone Lakes National Wildlife Refuge is inside of the GAI; however, the following goals of the refuge are pertinent to the GAI: <ul style="list-style-type: none"> Expand the riparian zone to a range of 150 to 400 feet wide along the Sacramento Drainage Canal. Remove perennial pepperweed in riparian areas.
<i>SWAP</i>	CDFW 2015	Identified American southwest riparian forest and woodland and freshwater marsh as conservation targets.
<i>Tehama West Watershed Management Plan</i>	Tehama County 2008	Includes goals for improving Blue Tent, Dibble, Elder, Red Bank, and Reeds Creeks for sediment loads, restoring riparian habitats, and prioritizing the removal of giant reed and tamarisk from the plan area.
<i>Tehama East Watershed Management Plan</i>	Tehama County 2010	Identifies road crossings at the headwaters of Antelope, Dye, and Salt Creeks and the braided channel in the lowland areas of Antelope Creek as target areas for water quality improvement projects. The plan also calls for restoring riparian habitat generally and removing giant reed and tamarisk specifically.
<i>Ukiah Resource Management Plan</i>	BLM 2006	Includes general goals to enhance aquatic habitats and remove exotic species from 272 miles of streams. Includes specific goals to enhance Cement and Cedar Creeks and remove nonnative species such as tamarix and giant reed from Bear Creek.
<i>Upper Butte Basin Wildlife Area Final Land Management Plan</i>	California Department of Fish and Game 2012	Includes a general goal to remove giant reed, perennial pepperweed, water primrose, and Himalayan blackberry from the reserve. Specific goals include: <ul style="list-style-type: none"> Enhance and/or restore wetland habitats, particularly in fields 107, 110, 119, 125, 214, 225, 226, 302, and 309. Connect and expand existing riparian habitat at Butte Creek, Howard Slough, Little Dry Creek, and Little Butte Creek such that there is continuous riparian habitat in the area of greater than 13 miles from the Gridley-Colusa Highway to the northern end of Howard Slough. Enhance riverine and lacustrine habitats in the reserve, particularly on Butte Creek.
<i>U.S. Air Force Integrated Natural Resources Management Plan Beale Air Force Base & Lincoln Receiver Site</i>	U.S. Air Force 2018	Includes a goal to restore and create wetland habitats on the base.
<i>Westside Sacramento Integrated Regional Water Management Plan Update</i>	Regional Water Management Group 2019	Includes goals to improve the form and function of degraded natural channels, improve water quality, and eliminate New Zealand mud snails (<i>Potamopyrgus antipodarum</i>) from Putah Creek.
<i>Yolo Bypass Wildlife Area Land Management Plan</i>	California Department of Fish and Game 2008	Includes the following priorities and opportunities for enhancement and/or restoration: <ul style="list-style-type: none"> Generally enhance and/or restore all wetlands, vernal pools, and riparian communities as well as adjacent grasslands. Specifically restore the tidal marsh adjacent to the East Toe Drain below Lisbon Weir. Minimize mercury methylation in the area. Control perennial pepperweed in the entire area. Conduct wetland restoration, as feasible, at the Tule Ranch Unit, Los Rios Unit, South Unit, and Causeway Ranch. Restore aquatic ecosystems in the area by creating an alignment channel for Putah Creek through the Tule Ranch Unit. <p>Note: although Putah Creek itself is outside of the GAI, an alignment channel for the creek running through the Tule Ranch Unit would mostly occur in the GAI.</p> <ul style="list-style-type: none"> As able, restore intertidal marsh habitat and/or seasonal floodplain habitat at the southeast portion of Tule Ranch adjacent to the East Toe Drain.

Document	Reference	Information Identified
<i>Yolo HCP/NCCP Volume 1</i>	Yolo Habitat Conservancy 2018	<p>Includes the following goals:</p> <ul style="list-style-type: none">▪ Restore or create up to 956 acres of wetlands and riparian habitat, with a lesser priority to support a corridor of riparian vegetation along the Sacramento River and Yolo Bypass.▪ Restore 608 acres of valley foothill riparian habitat.▪ Enhance 500 acres of fresh emergent wetland.▪ Restore 88 acres of fresh emergent wetland.▪ Enhance 600 acres of lacustrine and riverine habitat.▪ Restore or create 236 acres of lacustrine and riverine habitat. <p>Note, the document includes a higher prioritization of riparian and wetland restoration in the Cache Creek floodplain and the Putah Creek floodplain, which are outside of the GAI.</p>

Invasive species known or strongly assumed to negatively affect chinook salmon and steelhead include striped bass, smallmouth bass (*Micropterus dolomieu*), largemouth bass (*Micropterus salmoides*), American shad (*Alosa sapidissima*), giant reed, and tamarisk (NMFS 2014, 2016a, 2016b, 2016c). Invasive species known to negatively affect both delta smelt and longfin smelt include striped bass, overbite clam (*Potamocorbula amurensis*), and an exotic copepod (*Sinocalanus doerrii*) (FWS 1996). Delta smelt is also more recently negatively affected by inland silverside (*Menidia beryllina*) (FWS 2004). Overbite clam is known to negatively affect green sturgeon, and invasive invertebrates such as European green crab (*Carcinus maenas*) have affected the green sturgeon's food web (NMFS 2015, 2018).

8.5.3. Altered Hydrology, Geomorphology, and Water Quality

Water quality and hydrology can be directly altered by physical barriers, such as dams, roads and canals, which can have effects both upstream and downstream by truncating connectivity, altering sediment transport processes, and altering flow. Stable geomorphology is critical to maintaining healthy streams so that degradation and aggradation does not destroy habitats in the stream and riparian and wetland habitats downstream. Water diversions, in-channel construction, riparian vegetation reduction, agriculture, alteration of streambed and banks, components of timber management, and point and nonpoint source pollution have affected the aquatic ecosystem by altering historical flooding regimes, erosion, and deposition of sediments that maintain floodplains (CDFW 2015, 2016b).

The supply of sand used by longfin smelt for spawning has been reduced by the placement of dams and water diversions, and a number of contaminants such as mercury, selenium, and organochlorines are present in their spawning areas (California Department of Fish and Game 2009). Selenium is also listed as a potential factor for green sturgeon (NMFS 2015). Changes in hydrology from water resource development upstream of the Sacramento River delta are a factor in delta smelt's decline and sustained low abundance (FWS 2004) and have similarly affected chinook salmon and steelhead (NMFS 2016a, 2016b, 2016c). Additionally, issues with water pollution in the Sacramento River and tributaries are known as a factor in the decline of chinook salmon (NMFS 2016a, 2016b).

Fish barrier removal priorities exist both on and off the SHS. However, on-system fish passage barriers take priority over off-system barriers until such time that no feasible on-system barriers exist. Caltrans and CDFW agree to a collaborative barrier prioritization process through the FishPACs. This prioritization is updated each year in the *Fish Passage Annual Legislative Report* (Caltrans 2020). The priorities on the SHS are dynamic, changing as they are addressed and as funding becomes available.

For the SHS, priority barriers are determined in coordination with the six regional FishPACs and reported to the Legislature in October of each year, in accordance with SHC § 156.1-3 (Senate Bill 857, Kuehl, Chapter 589, Statutes of 2005). Priority fish passage barriers currently account for an estimated 330 miles of currently blocked habitat

for threatened and endangered salmon and steelhead along the California coastline and inland Central Valley. Full-span solutions allow Caltrans to reduce the overall number of known barriers on the SHS, provide access to the highest-quality habitat, and reduce rework and partial solutions, which require long-term monitoring and costly maintenance until the end of the facility's service life—when the full-span solution will be required. Priority locations are ranked by considering a species' listing status and diversity, quality and quantity of habitat for recovery, and related best professional knowledge. FishPAC's subject matter experts include CDFW, NMFS, FWS, CCC, CalTrout, Pacific States Marine Fisheries Commission, other local fish passage advocates, and Caltrans.

8.5.4. Climate Change, Drought, and Sea-level Rise

Section 2.4 provided a brief overview of the GAI's climate and available planning-level predictions for climate change and sea-level rise for the region. In the next 30 years, the climate is expected to change. Expected changes include extended periods of higher temperatures, less precipitation overall but with greater intensity when precipitation does occur and an increased shift toward rainfall instead of snowfall, and an increased risk of wildfire, landslide, and flooding (Caltrans 2019b). Drought in the Sacramento Valley area affects the abilities of species to migrate to different areas by reducing resource availability in other areas, which compounds the effects of climate change. It also greatly amplifies wildfire risk (Houlton and Lund 2008).

Drought was found to be a major factor in the decline of longfin smelt as a significant reduction in juvenile fish maturing to adults was noticed after the 1987 to 1992 drought. Climate change and sea-level rise are both considered to likely affect longfin smelt habitat by changing temperatures, increasing flood events, and increasing salt concentration (California Department of Fish and Game 2009). Climate change and drought are expected to have increasingly significant effects on chinook salmon and steelhead from reduction in snowpack flows of freshwater, increases in ambient warming, and reduced overall flows (NMFS 2016a, 2016b, 2016c). Saltwater intrusion from sea-level rise is projected to negatively affect juvenile green sturgeon (NMFS 2015).

8.5.5. Wildfire Risk

Vegetation can be altered by large-scale wildfire effects by altering microclimatic regimes, increasing runoff and river discharge, and enhancing erosion and sediment inputs, transport, and deposition. Fires can also affect the physical characteristics of riparian and wetland ecosystems by transitioning vegetation from aquatic and riparian areas to uplands (Bixby et al. 2015). Fire in riparian zones can reduce canopy cover, resulting in increased water temperatures (CDFW 2015). All of these effects would be expected to affect fish species.

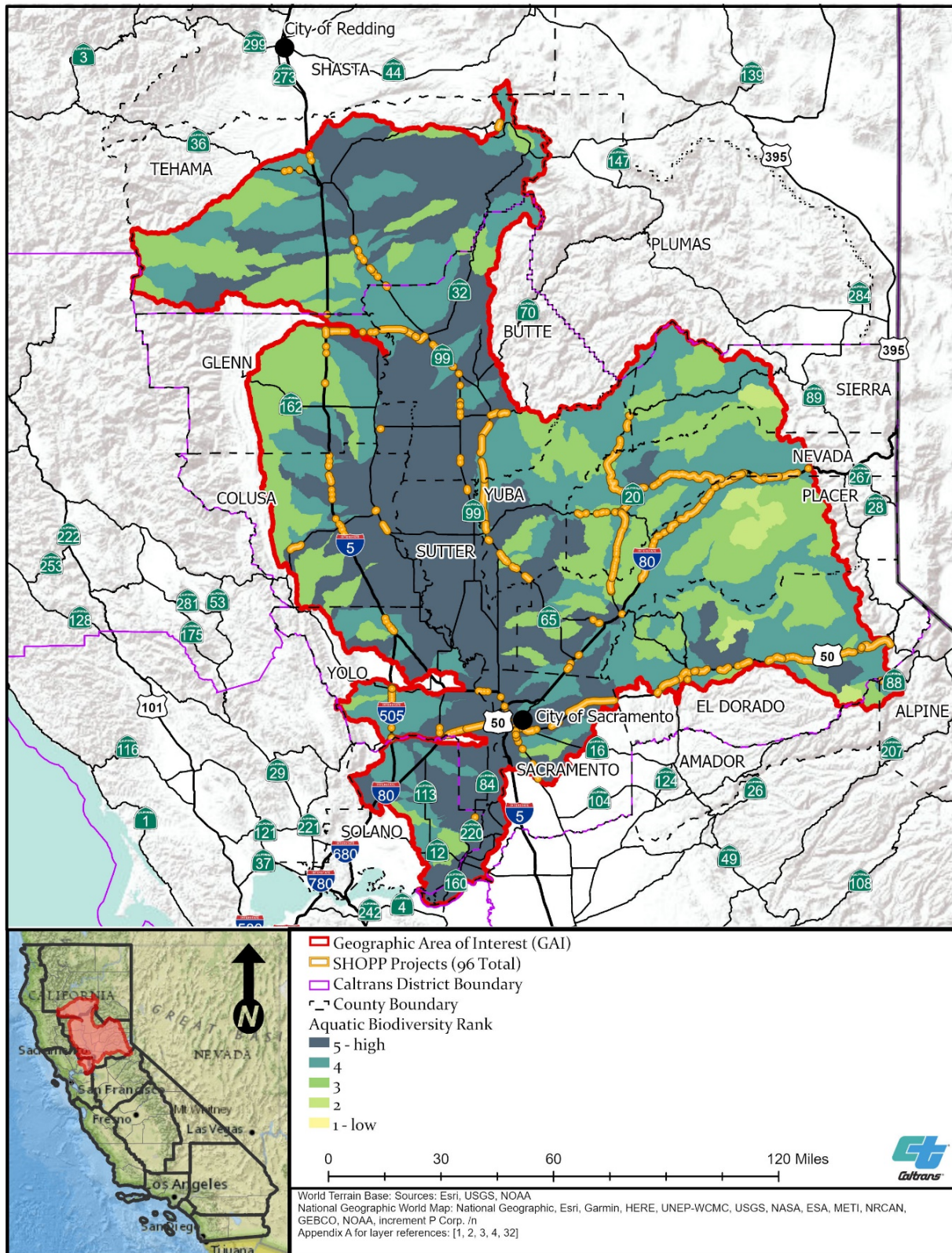
8.6 Multi-resource Benefits

Advance mitigation planning provides Caltrans an opportunity to integrate the enhancement and/or restoration of multiple aquatic resource related values into its advance mitigation scoping to benefit California native aquatic biodiversity, aquatic and terrestrial connectivity, special-status species, wetlands, and non-wetland aquatic resources.

- Figure 8-1 illustrates the regional aquatic biodiversity in the GAI, as provided by CDFW's ACE GIS dataset. According to these data, high to moderate aquatic biodiversity dominates the GAI.
- Enhancing and/or restoring the aquatic resources of the GAI is expected to contribute to biologically sustainable populations of special-status aquatic, wetland, and riparian plant and wildlife species. For example, increasing the amount, complexity, and connectivity of riparian habitat will provide additional shaded riverine aquatic habitat in the GAI that can benefit fish species such as California roach (*Hesperoleucus symmetricus*) and the Central Valley DPS steelhead, as well as other species that use aquatic habitat such as silky cryptantha (*Cryptantha crinita*).
- Enhancing and/or restoring the aquatic resources of the GAI is expected to support or contribute to beneficial uses of wetland and non-wetland waters of the GAI. For example, enhancement and/or restoration of wetlands adjacent to wildlife habitat would likely improve wildlife habitat water quality. Further, enhancement and/or restoration of wetlands adjacent to GAI waterways could sequester contaminants on waterways identified as 303(d) impaired and/or with an established Total Maximum Daily Load.

Caltrans will consider aquatic resources' biodiversity values, special-status species with the potential to co-occur in aquatic habitats, the beneficial uses of waterways, and impaired waterways during advance mitigation project scoping—thereby improving the conservation benefits of mitigation in the GAI.

Figure 8-1. Aquatic Biodiversity of the GAI



8.7 Advance Mitigation Conservation Goals and Objectives

The conservation goals and objectives compiled in Table 8-4 are intended to be relevant to anticipated future SHOPP transportation project compensatory mitigation needs, be consistent with the goals and objectives of natural resource regulatory agencies for aquatic resources, address pressures and stressors on aquatic resources, and support mitigation success in the GAI. Each conservation goal is supported by one or more conservation objective; objectives are more specific, measurable, achievable, relevant, and time-bound measures that align to a desired result specified by a goal. At the broad scale, these aquatic resources goals and objectives encompass ecological processes, address functions and values of aquatic systems, and prioritize regional conservation that preserves intact aquatic resources, restores aquatic function, and supports climate change planning. Sub-objectives are included for each objective to guide Caltrans' advance mitigation scoping toward those actions that would create the greatest functional lift or conservation benefit, support long-term preservation, restore surface water flows, protect and restore hydrologic processes such as channel stability, and reduce climate change effects on aquatic resources in the GAI. Sub-objectives also capture specific measures from conservation and land management plans that address threats to aquatic resources. Several of the goals are interrelated, and many objectives could apply to more than one goal; objectives were grouped with the goal to which they most specifically aligned. Goals and objectives are generally presented in order from general to more specific.

The goals and objectives presented here are intended to support the watershed approach, as practiced by natural resource regulatory agencies. The watershed approach is an analytical process through which the Corps, EPA, SWRCB, and RWQCBs make decisions that support the sustainability or improvement of aquatic resources, with the goal of maintaining and improving the quality and quantity of aquatic resource through strategic selection of compensatory mitigation sites. The Corps subscribes to a watershed approach for compensatory mitigation that uses the HUC-based classification system, or a topographic watershed-based system, depending on the size and location of a transportation or other project (Corps 2015). The SWRCB and RWQCBs generally subscribe to an approach for compensatory mitigation decisions that follows the Corps' watershed approach; however, the HU classification system may be used on a case-by-case basis (SWRCB 2019). The goals, objectives, and sub-objectives presented in Table 8-4 reflect Caltrans' intention to develop advance mitigation project scopes for in-kind mitigation.

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Table 8-4. Advance Mitigation Conservation Goals and Objectives for Aquatic Resources

Objective	Sub-Objective	Alignment with Documents Identified in Table 8-3
Goal AR-1: No net loss to area, functions, values, and condition of wetland and non-wetland water resources	See below	See below
Objective AR-1.1: Improve quality and function of wetland and non-wetland water resources.	<p>Sub-Objective AR-1.1.1: Enhance and/or rehabilitate wetland and non-wetland water resources such that the greatest functional lift to the aquatic resource is provided, including by consolidating compensatory mitigation consistent with Executive Order W59-93.</p> <p>Sub-Objective AR-1.1.2: Enhance and/or rehabilitate key wetland and non-wetland water habitats that are identified in the SWAP, FWS recovery plans, CDFW recovery plans, and other land management plans identified in Table 8-3.</p> <p>Sub-Objective AR-1.1.3: Prioritize enhancement and/or restoration of riparian vegetation in the HUC-8s of the GAI, particularly Cottonwood and Stony Creeks, the Sacramento, Feather, Yuba, Bear, and American Rivers, as well as other named and unnamed tributaries, many of which are listed in Table 8-2.</p> <p>Sub-Objective AR-1.1.4: Enhance and/or rehabilitate wetland and non-wetland water resource functions, such as connectivity, abundance of native plants, stream geomorphology, hydrologic regime, substrate diversity and complexity, and water quality, that define habitat value for aquatic organisms.</p>	<ul style="list-style-type: none">▪ <i>2008 Final Compensatory Mitigation Rule</i> (73 Federal Register 19593)▪ <i>American River Basin Integrated Regional Water Management Plan</i> (Regional Water Authority 2018)▪ <i>American River Parkway Natural Resource Management Plan</i> (Sacramento County and Sacramento County Regional Parks 2021)▪ <i>Bidwell-Sacramento River State Park General Plan & Environmental Impact Report</i> (California State Parks 2006)▪ <i>Butte Regional Conservation Plan</i> (Butte County Association of Governments 2019)▪ <i>Butte Sink, Willow Creek-Lurline, and North Valley Wildlife Management Areas Final Comprehensive Conservation Plan and Environmental Assessment</i> (FWS 2019b)▪ <i>California Wetlands Conservation Policy</i> (Executive Order W-59-93)▪ <i>Colusa Basin Watershed Management Plan</i> (Colusa County Resource Conservation District 2012)▪ <i>Comprehensive Management Plan for the Sacramento River Wildlife Area</i> (California Department of Fish and Game 2004)▪ <i>Dry Creek Parkway Recreation Master Plan</i> (Sacramento County 2003)▪ <i>Eagle Lake Field Office Proposed Resource Management Plan and Final Environmental Impact Statement</i> (BLM 2007)▪ <i>Final South Sacramento HCP Volume 1</i> (Sacramento County, City of Rancho Cordova, City of Galt, Sacramento County Water Agency Southeast Connector Joint Powers Authority 2018)▪ <i>Folsom Lake State Recreation Area and Folsom Powerhouse State Historic Park General Plan/Resource Management Plan</i> (California State Parks 2010)▪ <i>Integrated Regional Water Management Plan Cosumnes American Bear Yuba Watersheds, California</i> (Cosumnes, American, Bear and Yuba River Regional Water Management Group 2021)▪ <i>Mendocino National Forest Land and Resource Management Plan</i> (USFS 1995)▪ <i>National Wetlands Mitigation Action Plan</i> (EPA and Corps 2002)▪ <i>Parks & Open Space Master Plan Yolo County, California</i> (Yolo County 2006)▪ <i>Placer County Conservation Program Western Placer County HCP/NCCP</i> (Placer County 2020)▪ <i>Plumas National Forest Land and Resource Management Plan</i> (USFS 2004)▪ <i>Proposed Redding Resource Management Plan and Final Environmental Impact Statement</i> (BLM 1992)▪ <i>Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon</i> (FWS 2005a)▪ <i>Regional Compensatory Mitigation and Monitoring Guidelines for South Pacific Division</i> (Corps 2015)▪ <i>Sacramento, Delevan, Colusa, and Sutter National Wildlife Refuges Final Comprehensive Conservation Plan and Environmental Assessment</i> (FWS 2009)▪ <i>Sacramento River National Wildlife Refuge Final Comprehensive Conservation Plan</i> (FWS 2005b)▪ <i>State Wetland Definition and Procedures for Discharges of Dredged or Fill Material in Waters of the State</i> (SWRCB 2019)▪ <i>Stone Lakes National Wildlife Refuge Comprehensive Conservation Plan</i> (FWS 2007)▪ <i>SWAP</i> (CDFW 2015)▪ <i>Tehama West Watershed Management Plan</i> (Tehama County 2008)▪ <i>Tehama East Watershed Management Plan</i> (Tehama County 2010)▪ <i>Ukiah Resource Management Plan</i> (BLM 2006)▪ <i>Upper Butte Basin Wildlife Area Final Land Management Plan</i> (California Department of Fish and Game 2012)▪ <i>U.S. Air Force Integrated Natural Resources Management Plan Beale Air Force Base & Lincoln Receiver Site</i> (U.S. Air Force 2018)▪ <i>Yolo Bypass Wildlife Area Land Management Plan</i> (California Department of Fish and Game 2008)▪ <i>Yolo HCP/NCCP Volume 1</i> (Yolo Habitat Conservancy 2018)

Objective	Sub-Objective	Alignment with Documents Identified in Table 8-3
Objective AR-1.2: Avoid a net loss of aquatic resource acreage by establishing aquatic resources	<p>Sub-Objective AR-1.2.1: Establish and/or reestablish wetland and non-wetland water aquatic resources, particularly in key wetland and non-wetland water habitats that are identified in the SWAP, FWS recovery plans, CDFW recovery plans, and other land management plans identified in Table 8-3.</p> <p>Sub-Objective AR-1.2.2: Establish and/or reestablish riparian vegetation in the HUC-8s of the GAI, particularly in the American River, Sacramento River, Deer Creek, Yuba River, Upper Bear River, and Butte Creek as well as other named and unnamed tributaries into the Sacramento River, many of which are listed in Table 8-2.</p>	<ul style="list-style-type: none"> ▪ <i>2008 Final Compensatory Mitigation Rule</i> (73 Federal Register 19593) ▪ <i>American River Basin Integrated Regional Water Management Plan</i> (Regional Water Authority 2018) ▪ <i>American River Parkway Natural Resource Management Plan</i> (Sacramento County and Sacramento County Regional Parks 2021) ▪ <i>Bidwell-Sacramento River State Park General Plan & Environmental Impact Report</i> (California State Parks 2006) ▪ <i>Butte Regional Conservation Plan</i> (Butte County Association of Governments 2019) ▪ <i>Butte Sink, Willow Creek-Lurline, and North Valley Wildlife Management Areas Final Comprehensive Conservation Plan and Environmental Assessment</i> (FWS 2019b) ▪ <i>California Wetlands Conservation Policy</i> (Executive Order W-59-93) ▪ <i>Colusa Basin Watershed Management Plan</i> (Colusa County Resource Conservation District 2012) ▪ <i>Comprehensive Management Plan for the Sacramento River Wildlife Area</i> (California Department of Fish and Game 2004) ▪ <i>Dry Creek Parkway Recreation Master Plan</i> (Sacramento County 2003) ▪ <i>Eagle Lake Field Office Proposed Resource Management Plan and Final Environmental Impact Statement</i> (BLM 2007) ▪ <i>Final South Sacramento HCP Volume 1</i> (Sacramento County, City of Rancho Cordova, City of Galt, Sacramento County Water Agency Southeast Connector Joint Powers Authority 2018) ▪ <i>Folsom Lake State Recreation Area and Folsom Powerhouse State Historic Park General Plan/Resource Management Plan</i> (California State Parks 2010) ▪ <i>Integrated Regional Water Management Plan Cosumnes American Bear Yuba Watersheds, California</i> (Cosumnes, American, Bear and Yuba River Regional Water Management Group 2021) ▪ <i>Mendocino National Forest Land and Resource Management Plan</i> (USFS 1995) ▪ <i>National Wetlands Mitigation Action Plan</i> (EPA and Corps 2002) ▪ <i>Parks & Open Space Master Plan Yolo County, California</i> (Yolo County 2006) ▪ <i>Placer County Conservation Program Western Placer County HCP/NCCP</i> (Placer County 2020) ▪ <i>Plumas National Forest Land and Resource Management Plan</i> (USFS 2004) ▪ <i>Proposed Redding Resource Management Plan and Final Environmental Impact Statement</i> (BLM 1992) ▪ <i>Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon</i> (FWS 2005a) ▪ <i>Regional Compensatory Mitigation and Monitoring Guidelines for South Pacific Division</i> (Corps 2015) ▪ <i>Sacramento, Delevan, Colusa, and Sutter National Wildlife Refuges Final Comprehensive Conservation Plan and Environmental Assessment</i> (FWS 2009) ▪ <i>Sacramento River National Wildlife Refuge Final Comprehensive Conservation Plan</i> (FWS 2005b) ▪ <i>State Wetland Definition and Procedures for Discharges of Dredged or Fill Material in Waters of the State</i> (SWRCB 2019) ▪ <i>Stone Lakes National Wildlife Refuge Comprehensive Conservation Plan</i> (FWS 2007) ▪ <i>SWAP</i> (CDFW 2015) ▪ <i>Tehama West Watershed Management Plan</i> (Tehama County 2008) ▪ <i>Tehama East Watershed Management Plan</i> (Tehama County 2010) ▪ <i>Ukiah Resource Management Plan</i> (BLM 2006) ▪ <i>Upper Butte Basin Wildlife Area Final Land Management Plan</i> (California Department of Fish and Game 2012) ▪ <i>U.S. Air Force Integrated Natural Resources Management Plan Beale Air Force Base & Lincoln Receiver Site</i> (U.S. Air Force 2018) ▪ <i>Yolo Bypass Wildlife Area Land Management Plan</i> (California Department of Fish and Game 2008) ▪ <i>Yolo HCP/NCCP Volume 1</i> (Yolo Habitat Conservancy 2018)

Objective	Sub-Objective	Alignment with Documents Identified in Table 8-3
Goal AR-2: Restore and maintain the chemical, physical, and biological integrity of non-wetland waters	See below	See below
Objective AR-2.1: Restore and/or enhance water quality.	<p>Sub-Objective AR-2.1.1: In coordination with the RWQCB, restore and/or enhance wetland and non-wetland waters with RWQCB biology-related beneficial use designations, such as cold freshwater habitat; freshwater replenishment; spawning, reproduction, and/or early development; warm freshwater habitat; and wildlife habitat.</p> <p>Sub-Objective AR-2.1.2: In coordination with natural resource regulatory agencies, address aggradation, erosion, nutrients, contaminants, sedimentation, and temperatures in the HUC-8s identified in Table 8-2.</p> <p>Sub-Objective AR-2.1.3: In coordination with the RWQCB, implement habitat restoration and enhancement actions that address water quality for aquatic resources, for example, at Antelope Creek, Tehama Colusa Canal, Logan Creek, Salt Creek, the American River, Canyon Creek, Slate Creek, and vernal pools.</p> <p>Sub-Objective AR-2.1.4: Restore or create adjacent wetlands and non-wetland aquatic features to enhance water quality in tributaries.</p> <p>Sub-Objective AR-2.1.5: Identify small streams and sections of larger streams to remove nonnative plant species that degrade stream water quality, such as giant reed, Himalayan blackberry, perennial pepperweed, parrot feather, tree of heaven, and nonnative water primroses.</p> <p>Sub-Objective AR-2.1.6: Improve stream temperatures by increasing shaded riverine aquatic habitat in the Sacramento River, Yuba River, Upper Bear River, Paynes Creek, Butte Creek, and the American River for fish and other aquatic life.</p>	<ul style="list-style-type: none">▪ <i>303(d) List of Impaired Water Bodies</i> (SWRCB 2018)▪ <i>American River Basin Integrated Regional Water Management Plan</i> (Regional Water Authority 2018)▪ <i>Butte Regional Conservation Plan</i> (Butte County Association of Governments 2019)▪ <i>Butte Sink, Willow Creek-Lurline, and North Valley Wildlife Management Areas Final Comprehensive Conservation Plan and Environmental Assessment</i> (FWS 2019b)▪ <i>California Indian Heritage Center Final General Plan and Environmental Impact Report</i> (California State Parks 2011)▪ <i>Colusa Basin Watershed Management Plan</i> (Colusa County Resource Conservation District 2012)▪ <i>Colusa Sacramento River State Recreation Area Final General Plan and Program Environmental Impact Report</i> (California State Parks 2016)▪ <i>Comprehensive Management Plan for the Sacramento River Wildlife Area</i> (California Department of Fish and Game 2004)▪ <i>Final South Sacramento HCP Volume 1</i> (Sacramento County, City of Rancho Cordova, City of Galt, Sacramento County Water Agency, Southeast Connector Joint Powers Authority 2018)▪ <i>Hidden Falls Regional Park Vegetation, Fuels and Range Management Plan</i> (Placer County 2007)▪ <i>Integrated Regional Water Management Plan Cosumnes American Bear Yuba Watersheds, California</i> (Cosumnes, American, Bear and Yuba River Regional Water Management Group 2021)▪ <i>Placer County Conservation Program Western Placer County HCP/NCCP</i> (Placer County 2020)▪ <i>Plumas National Forest Land and Resource Management Plan</i> (USFS 2004)▪ <i>Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon</i> (FWS 2005a)▪ <i>Sacramento, Delevan, Colusa, and Sutter National Wildlife Refuges Final Comprehensive Conservation Plan and Environmental Assessment</i> (FWS 2009)▪ <i>Sacramento River National Wildlife Refuge Final Comprehensive Conservation Plan</i> (FWS 2005b)▪ <i>Tehama West Watershed Management Plan</i> (Tehama County 2008)▪ <i>Tehama East Watershed Management Plan</i> (Tehama County 2010)▪ <i>Upper Butte Basin Wildlife Area Final Land Management Plan</i> (California Department of Fish and Game 2012)▪ <i>Water Quality Control Plan for the Central Valley Basin</i> (Central Valley RWQCB 2018)▪ <i>Westside Sacramento Integrated Regional Water Management Plan Update</i> (Regional Water Management Group 2019)▪ <i>Yolo Bypass Wildlife Area Land Management Plan</i> (California Department of Fish and Game 2008)▪ <i>Yolo HCP/NCCP Volume 1</i> (Yolo Habitat Conservancy 2018)

Objective	Sub-Objective	Alignment with Documents Identified in Table 8-3
Objective AR-2.2: Improve surface water hydrology.	<p>Sub-Objective AR-2.2.1: Restore and/or enhance natural hydrologic regimes, natural sediment transport, and geomorphic processes.</p> <p>Sub-Objective AR-2.2.2: Reconnect severed aquatic systems and improve connectivity in aquatic and riparian systems, with particular focus on reconnecting higher watershed areas with lower watershed areas, such as reconnecting tributaries to the Sacramento, Feather, Yuba, Bear, and American Rivers.</p> <p>Sub-Objective AR-2.2.3: Reestablish hydrologic regimes or drainage patterns for better function of depressional, freshwater emergent wetland, freshwater forested/shrub wetland, individual vernal pool, vernal pool system, freshwater pond, lake, and riverine habitats.</p>	<ul style="list-style-type: none">▪ <i>303(d) List of Impaired Water Bodies</i> (SWRCB 2018)▪ <i>American River Basin Integrated Regional Water Management Plan</i> (Regional Water Authority 2018)▪ <i>Butte Regional Conservation Plan</i> (Butte County Association of Governments 2019)▪ <i>Butte Sink, Willow Creek-Lurline, and North Valley Wildlife Management Areas Final Comprehensive Conservation Plan and Environmental Assessment</i> (FWS 2019b)▪ <i>California Indian Heritage Center Final General Plan and Environmental Impact Report</i> (California State Parks 2011)▪ <i>Colusa Basin Watershed Management Plan</i> (Colusa County Resource Conservation District 2012)▪ <i>Colusa Sacramento River State Recreation Area Final General Plan and Program Environmental Impact Report</i> (California State Parks 2016)▪ <i>Comprehensive Management Plan for the Sacramento River Wildlife Area</i> (California Department of Fish and Game 2004)▪ <i>Final South Sacramento HCP Volume 1</i> (Sacramento County, City of Rancho Cordova, City of Galt, Sacramento County Water Agency, Southeast Connector Joint Powers Authority 2018)▪ <i>Hidden Falls Regional Park Vegetation, Fuels and Range Management Plan</i> (Placer County 2007)▪ <i>Integrated Regional Water Management Plan Cosumnes American Bear Yuba Watersheds, California</i> (Cosumnes, American, Bear and Yuba River Regional Water Management Group 2021)▪ <i>Placer County Conservation Program Western Placer County HCP/NCCP</i> (Placer County 2020)▪ <i>Plumas National Forest Land and Resource Management Plan</i> (USFS 2004)▪ <i>Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon</i> (FWS 2005a)▪ <i>Sacramento, Delevan, Colusa, and Sutter National Wildlife Refuges Final Comprehensive Conservation Plan and Environmental Assessment</i> (FWS 2009)▪ <i>Sacramento River National Wildlife Refuge Final Comprehensive Conservation Plan</i> (FWS 2005b)▪ <i>Tehama West Watershed Management Plan</i> (Tehama County 2008)▪ <i>Tehama East Watershed Management Plan</i> (Tehama County 2010)▪ <i>Upper Butte Basin Wildlife Area Final Land Management Plan</i> (California Department of Fish and Game 2012)▪ <i>Water Quality Control Plan for the Central Valley Basin</i> (Central Valley RWQCB 2018)▪ <i>Westside Sacramento Integrated Regional Water Management Plan Update</i> (Regional Water Management Group 2019)▪ <i>Yolo Bypass Wildlife Area Land Management Plan</i> (California Department of Fish and Game 2008)▪ <i>Yolo HCP/NCCP Volume 1</i> (Yolo Habitat Conservancy 2018)

Objective	Sub-Objective	Alignment with Documents Identified in Table 8-3
Objective AR-2.3: Improve water storage and groundwater recharge	Sub-Objective AR-2.3.1: Promote restoration of stream and riparian areas' natural functions to provide water storage and release.	<ul style="list-style-type: none"> ▪ <i>303(d) List of Impaired Water Bodies</i> (SWRCB 2018) ▪ <i>American River Basin Integrated Regional Water Management Plan</i> (Regional Water Authority 2018) ▪ <i>Butte Regional Conservation Plan</i> (Butte County Association of Governments 2019) ▪ <i>Butte Sink, Willow Creek-Lurline, and North Valley Wildlife Management Areas Final Comprehensive Conservation Plan and Environmental Assessment</i> (FWS 2019b) ▪ <i>California Indian Heritage Center Final General Plan and Environmental Impact Report</i> (California State Parks 2011) ▪ <i>Colusa Basin Watershed Management Plan</i> (Colusa County Resource Conservation District 2012) ▪ <i>Colusa Sacramento River State Recreation Area Final General Plan and Program Environmental Impact Report</i> (California State Parks 2016) ▪ <i>Comprehensive Management Plan for the Sacramento River Wildlife Area</i> (California Department of Fish and Game 2004) ▪ <i>Final South Sacramento HCP Volume 1</i> (Sacramento County, City of Rancho Cordova, City of Galt, Sacramento County Water Agency, Southeast Connector Joint Powers Authority 2018) ▪ <i>Hidden Falls Regional Park Vegetation, Fuels and Range Management Plan</i> (Placer County 2007) ▪ <i>Integrated Regional Water Management Plan Cosumnes American Bear Yuba Watersheds, California</i> (Cosumnes, American, Bear and Yuba River Regional Water Management Group 2021) ▪ <i>Placer County Conservation Program Western Placer County HCP/NCCP</i> (Placer County 2020) ▪ <i>Plumas National Forest Land and Resource Management Plan</i> (USFS 2004) ▪ <i>Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon</i> (FWS 2005a) ▪ <i>Sacramento, Delevan, Colusa, and Sutter National Wildlife Refuges Final Comprehensive Conservation Plan and Environmental Assessment</i> (FWS 2009) ▪ <i>Sacramento River National Wildlife Refuge Final Comprehensive Conservation Plan</i> (FWS 2005b) ▪ <i>Tehama West Watershed Management Plan</i> (Tehama County 2008) ▪ <i>Tehama East Watershed Management Plan</i> (Tehama County 2010) ▪ <i>Upper Butte Basin Wildlife Area Final Land Management Plan</i> (California Department of Fish and Game 2012) ▪ <i>Water Quality Control Plan for the Central Valley Basin</i> (Central Valley RWQCB 2018) ▪ <i>Westside Sacramento Integrated Regional Water Management Plan Update</i> (Regional Water Management Group 2019) ▪ <i>Yolo Bypass Wildlife Area Land Management Plan</i> (California Department of Fish and Game 2008) ▪ <i>Yolo HCP/NCCP Volume 1</i> (Yolo Habitat Conservancy 2018)
	Sub-Objective AR-2.3.2: Reduce excessive and invasive vegetation along stream/riparian corridors to lower vegetative transpiration rates to sustainable levels and increase water storage in soils and streams.	
	Sub-Objective AR-2.3.3: Create or restore wetlands adjacent to streams to enhance groundwater-surface water dynamics in tributaries.	
Goal AR-3: Restore or enhance and expand habitat for fish species of mitigation need	See below	See below
Objective AR-3.1: Restore and/or enhance habitat.	Sub-Objective AR-3.1.1: Consult with FishPAC to select and implement habitat restoration and enhancement actions that support key populations and important habitat and contribute to the recovery of threatened and endangered salmon and steelhead. Enhancement or restoration may include placement of large pieces of wood in alcoves and pools and stream channel restoration.	<ul style="list-style-type: none"> ▪ <i>Caltrans Fish Passage Annual Legislative Reports</i> (Caltrans 2020) ▪ <i>Recovery Plan for the Evolutionarily Significant Units of Sacramento River Winter-run Chinook Salmon and Central Valley Spring-run Chinook Salmon and the Distinct Population Segment of California Central Valley Steelhead</i> (NMFS 2014) ▪ <i>Recovery Plan for the Sacramento-San Joaquin Delta Native Fishes</i> (FWS 1996) ▪ <i>Recovery Plan for the Southern Distinct Population Segment of North American Green Sturgeon (Acipenser medirostris)</i> (NMFS 2018) ▪ <i>Steelhead Restoration and Management Plan for California</i> (California Department of Fish and Game 1996) ▪ <i>SWAP</i> (CDFW 2015)
	Sub-Objective AR-3.1.2: Consult with FishPAC to select and implement FishPAC and legislative priorities in the GAI to restore access to habitats that support key populations for recovery of threatened and endangered salmon and steelhead. The highest value for fish passage remediation and habitat restoration should be given to the current high-priority locations on the SHS (listed in each years' Fish Passage Annual Report to Legislature). FishPAC priority locations have the highest biological value for recovery and should have the greatest support for remediating, both internally and from natural resource regulatory agencies.	

Objective	Sub-Objective	Alignment with Documents Identified in Table 8-3
Goal AR-4: Support resiliency of aquatic resources to climate change and sea-level rise	See below	See below
Objective AR-4.1: Reduce impacts from climate change and sea-level rise.	<p>Sub-Objective AR-4.1.1: Enhance and/or restore aquatic resource function and value in areas of lower climate resilience, such as the central portion of the GAI, to reduce climate change effects on aquatic resources.</p> <p>Sub-Objective AR-4.1.2: Prioritize enhancement and/or restoration that will increase resilience to climate change and sea-level rise such as aquatic features with hydrologic connection to the American and Sacramento Rivers, as well as the Butte Sink area, Colusa Basin, and Morrison Creek, such that the potential for aquatic resource migration increases.</p> <p>Sub-Objective AR-4.1.3: Prioritize riparian areas of the HUC-8s identified in Table 8-2 and implement improvements that involve enhancement and/or restoration to improve freshwater quantity and quality, floodplain connectivity, and instream cover continuity.</p> <p>Sub-Objective AR-4.1.4: Enhance, rehabilitate, establish and/or reestablish aquatic habitats by using native species such as Fremont's cottonwood (<i>Populus fremontii</i>), western sycamore (<i>Platanus racemosa</i>), willows (<i>Salix</i> sp.), cattails (<i>Typha</i> spp.), rushes (<i>Juncus</i> sp.), and bulrushes (<i>Schoenoplectus</i> sp.) to reduce the effects of climate change.</p> <p>Sub-Objective AR-4.1.5: Reduce adverse instream flooding effects by restoring affected headwater and tributary hydrological functions for the American River, Sacramento River, Yolo Bypass, Upper Bear River, Butte Creek, and streams associated with the Colusa Basin.</p> <p>Sub-Objective AR-4.1.6: Prioritize habitat establishment and reestablishment in areas that can also reduce risk in floodprone systems, in particular areas along the American River, Sacramento River, Yolo Bypass, Reeds Creek, Elder Creek, Blue Tent Creek, and Butte Creek.</p>	<ul style="list-style-type: none">▪ <i>American River Basin Integrated Regional Water Management Plan</i> (Regional Water Authority 2018)▪ <i>Butte Regional Conservation Plan</i> (Butte County Association of Governments 2019)▪ <i>Butte Sink, Willow Creek-Lurline, and North Valley Wildlife Management Areas Final Comprehensive Conservation Plan and Environmental Assessment</i> (FWS 2019b)▪ <i>Colusa Basin Watershed Management Plan</i> (Colusa County Resource Conservation District 2012)▪ <i>Colusa Sacramento River State Recreation Area Final General Plan and Program Environmental Impact Report</i> (California State Parks 2016)▪ <i>Comprehensive Management Plan for the Sacramento River Wildlife Area</i> (California Department of Fish and Game 2004)▪ <i>Final South Sacramento HCP Volume 1</i> (Sacramento County, City of Rancho Cordova, City of Galt, Sacramento County Water Agency, Southeast Connector Joint Powers Authority 2018)▪ <i>Placer County Conservation Program Western Placer County HCP/NCCP</i> (Placer County 2020)▪ <i>Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon</i> (FWS 2005a)▪ <i>Sacramento, Delevan, Colusa, and Sutter National Wildlife Refuges Final Comprehensive Conservation Plan and Environmental Assessment</i> (FWS 2009)▪ <i>Sacramento River National Wildlife Refuge Final Comprehensive Conservation Plan</i> (FWS 2005b)▪ <i>Stone Lakes National Wildlife Refuge Comprehensive Conservation Plan</i> (FWS 2007)▪ <i>SWAP</i> (CDFW 2015)▪ <i>Tehama West Watershed Management Plan</i> (Tehama County 2008)▪ <i>Tehama East Watershed Management Plan</i> (Tehama County 2010)▪ <i>Upper Butte Basin Wildlife Area Final Land Management Plan</i> (California Department of Fish and Game 2012)▪ <i>Westside Sacramento Integrated Regional Water Management Plan Update</i> (Regional Water Management Group 2019)▪ <i>Yolo Bypass Wildlife Area Land Management Plan</i> (California Department of Fish and Game 2008)▪ <i>Yolo HCP/NCCP Volume 1</i> (Yolo Habitat Conservancy 2018)

Objective	Sub-Objective	Alignment with Documents Identified in Table 8-3
Objective AR-4.2: Improve aquatic habitat resiliency.	<p>Sub-Objective AR-4.2.1: Promote native plant species that can stabilize banks, improve filtering of nutrient loads from water, and maintain the flood conveyance properties of streams and estuaries, such as rushes, bulrushes, cattail, and willows.</p> <p>Sub-Objective AR-4.2.2: Prioritize management of invasive species that occur in large contiguous areas in aquatic habitats, such as giant reed, Himalayan blackberry, New Zealand mud snails, perennial pepperweed, parrot feather, tree of heaven, and nonnative water primroses that may be exacerbated by climate change such that the greatest functional lift is provided.</p> <p>Sub-Objective AR-4.2.3: Enhance and/or restore small (that is, low order) tributaries/streams that discharge into larger rivers such as the Sacramento, Feather, Yuba, Bear, and American Rivers.</p>	<ul style="list-style-type: none"> ▪ <i>American River Basin Integrated Regional Water Management Plan</i> (Regional Water Authority 2018) ▪ <i>Butte Regional Conservation Plan</i> (Butte County Association of Governments 2019) ▪ <i>Butte Sink, Willow Creek-Lurline, and North Valley Wildlife Management Areas Final Comprehensive Conservation Plan and Environmental Assessment</i> (FWS 2019b) ▪ <i>Colusa Basin Watershed Management Plan</i> (Colusa County Resource Conservation District 2012) ▪ <i>Colusa Sacramento River State Recreation Area Final General Plan and Program Environmental Impact Report</i> (California State Parks 2016) ▪ <i>Comprehensive Management Plan for the Sacramento River Wildlife Area</i> (California Department of Fish and Game 2004) ▪ <i>Final South Sacramento HCP Volume 1</i> (Sacramento County, City of Rancho Cordova, City of Galt, Sacramento County Water Agency, Southeast Connector Joint Powers Authority 2018) ▪ <i>Placer County Conservation Program Western Placer County HCP/NCCP</i> (Placer County 2020) ▪ <i>Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon</i> (FWS 2005a) ▪ <i>Sacramento, Delevan, Colusa, and Sutter National Wildlife Refuges Final Comprehensive Conservation Plan and Environmental Assessment</i> (FWS 2009) ▪ <i>Sacramento River National Wildlife Refuge Final Comprehensive Conservation Plan</i> (FWS 2005b) ▪ <i>Stone Lakes National Wildlife Refuge Comprehensive Conservation Plan</i> (FWS 2007) ▪ <i>SWAP</i> (CDFW 2015) ▪ <i>Tehama West Watershed Management Plan</i> (Tehama County 2008) ▪ <i>Tehama East Watershed Management Plan</i> (Tehama County 2010) ▪ <i>Upper Butte Basin Wildlife Area Final Land Management Plan</i> (California Department of Fish and Game 2012) ▪ <i>Westside Sacramento Integrated Regional Water Management Plan Update</i> (Regional Water Management Group 2019) ▪ <i>Yolo Bypass Wildlife Area Land Management Plan</i> (California Department of Fish and Game 2008) ▪ <i>Yolo HCP/NCCP Volume 1</i> (Yolo Habitat Conservancy 2018)
Goal AR-5: Provide multi-resource benefits	See below	See below
Objective AR-5.1: Coordinate mitigation to provide benefits to other resources.	<p>Sub-Objective AR-5.1.1: Enhance, rehabilitate, establish and/or reestablish aquatic resource areas currently occupied by, or that provide habitat for, one or more special-status species, or areas that contribute to the protection of ecologically, geographically, and/or genetically distinct populations or sub-populations of obligate aquatic special-status species.</p> <p>Sub-Objective AR-5.1.2: Enhance and/or restore habitats for other aquatic species such as vernal pool crustaceans and plants, fish species included in Section 2.15.2, as well as species included in Appendix C that could benefit from aquatic habitat enhancement and/or restoration.</p> <p>Sub-Objective AR-5.1.3: Address additional RWQCB beneficial use designations, such as recreation (for example, bird watching), through enhancement, rehabilitation, establishment and/or reestablishment actions.</p>	<ul style="list-style-type: none"> ▪ <i>Butte Sink, Willow Creek-Lurline, and North Valley Wildlife Management Areas Final Comprehensive Conservation Plan and Environmental Assessment</i> (FWS 2019b) ▪ <i>Mendocino National Forest Land and Resource Management Plan</i> (USFS 1995) ▪ <i>Proposed Redding Resource Management Plan and Final Environmental Impact Statement</i> (BLM 1992) ▪ <i>Plumas National Forest Land and Resource Management Plan</i> (USFS 2004) ▪ <i>Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon</i> (FWS 2005a) ▪ <i>SWAP</i> (CDFW 2015) ▪ <i>Tehama East Watershed Management Plan</i> (Tehama County 2010) ▪ <i>Westside Sacramento Integrated Regional Water Management Plan Update</i> (Regional Water Management Group 2019) ▪ <i>Yolo Bypass Wildlife Area Land Management Plan</i> (California Department of Fish and Game 2008)

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8.8 Summary

Caltrans anticipates that future SHOPP transportation projects may be conditioned by the Corps, SWRCB, RWQCB, and/or CDFW to address the pressures and stressors that threaten aquatic resources in the GAI. The pressures and stressors include:

- Habitat loss, fragmentation, and degradation;
- Invasive species;
- Altered hydrology, geomorphology, and water quality;
- Climate change, drought, and sea-level rise; and
- Wildfire risk.

Hence, Caltrans will seek to align advance mitigation scopes with conservation goals and objectives that address the identified pressures and stressors, thereby aligning advance mitigation efforts with regional conservation efforts. As noted in 33 CFR § 332.3, consolidating compensatory mitigation is generally ecologically preferable.

Regional conservation goals and objectives provide a framework for scoping mitigation credit establishment that would likely successfully offset future transportation project impacts on aquatic resources by creating functional lift or conservation benefit, and by mitigating the pressures and stressors on aquatic resources in the GAI. To summarize Table 8-4:

Goal AR-1 seeks to achieve no net loss of area, functions, values, and the condition of wetland and non-wetland water resources in the GAI. The primary objectives associated with this goal are to improve existing wetland and non-wetland water resources and create new ones. The sub-objectives were selected to address the following pressures and stressors: altered hydrology, geomorphology, and water quality; habitat loss, fragmentation, and degradation; invasive species; and wildfire risk.

Goal AR-2 seeks to restore and maintain the chemical, physical, and biological integrity of waters. The primary objectives associated with this goal are to restore and/or enhance water quality, improve surface water hydrology, and improve water storage and groundwater recharge. The sub-objectives were selected to address the following pressures and stressors: altered hydrology, geomorphology, and water quality.

Goal AR-3 seeks to restore or enhance and expand habitat for fish species of mitigation need. The primary objective associated with this goal is to restore and/or enhance habitat. The sub-objectives were selected to address habitat restoration and enhancement actions and to implement FishPAC and legislative priorities.

Goal AR-4 seeks to support climate resiliency for aquatic resources in the GAI. The primary objectives are to reduce impacts on aquatic resources from climate change and to improve aquatic habitat climate resiliency. The sub-objectives were selected to address the following pressures and stressors: climate change, drought, and sea-level rise; invasive species; and wildfire risk.

Goal AR-5 seeks to guide advance mitigation project scoping to prioritize multi-resource benefits, with the only objective being to coordinate mitigation efforts for multi-resource benefits. The sub-objectives of Goal AR-4 describe what additional benefits exist for other

resources in the GAI, including benefits to upland terrestrial habitat. Goal AR-4 was developed to include conservation for multiple resources while seeking to address in-kind transportation projects' effects on aquatic resources.

Each of the goals and objectives have sub-objectives intended to further guide advance mitigation project scoping toward resource and regulatory agencies' regional conservation goals and objectives. These sub-objectives will prompt Caltrans to incorporate multiple benefits into advance mitigation project scopes and address important threats in the area through an advance mitigation project. This concept is an important way Caltrans seeks to use advance mitigation scoping to set the stage, once funding approval is received, for specific advance mitigation projects to provide a functional lift for aquatic resources and to maximize conservation benefits from mitigation in the GAI.

9. ASSESSMENT OF AUTHORIZED ACTIVITIES

Informed by this RAMNA and its reviewers' comments and feedback, Caltrans District 3 will nominate advance mitigation projects to the Caltrans Director and request funding approval (see Step 4 in Figure 1-1; Figure 6-1; Caltrans 2021b). Each advance mitigation project nominated to the Director will consist of a scope, schedule, and cost for an SHC § 800.6(a)-authorized activity. With respect to scope, in this chapter, Caltrans analyzes the information presented previously to identify advance mitigation project scope options that have a high probability of successfully meeting the AMP's transportation project and environmental objectives. Understanding the regulatory framework, environmental setting, available opportunities to purchase credits, impact forecasts, transportation project schedule needs, and natural resource regulatory agency goals and objectives will assist Caltrans District 3 with scoping of SHC § 800.6(a)-authorized activities to be considered further for potential funding by the AMA (see Step 4 of Figure 1-1 and Section 9.4).

Note that the analysis presented in this chapter is for advance mitigation project scoping purposes only. Transportation projects must still go through environmental and permitting processes and must demonstrate avoidance and minimization efforts prior to compensation.

9.1 Overview of Advance Mitigation Project Scope Development

Advance mitigation project scopes will provide enough information, at the appropriate level of detail, for the Caltrans Director to concur with funding. Appropriately, advance mitigation project scopes will address transportation project delivery acceleration and environmental objectives:

- To meet the AMP's objective of accelerating transportation project delivery, advance mitigation project scopes will be consistent with the AMP's founding legislation and the state's competitive bid requirements and will address transportation project schedule milestones and constraints.
- To meet the environmental objectives through transportation project mitigation, an advance mitigation project scope will be consistent with natural resource regulatory agency goals and objectives expressed in an approved regulatory instrument or interagency agreement, and/or be aligned with conservation goals and objectives identified in Chapter 7 or Chapter 8.

Summaries of transportation-related advance mitigation project scope requirements and conservation-related advance mitigation project scope goals and objectives are provided in Tables 9-1 and 9-2, respectively.

Table 9-1. Summary of Transportation-related Advance Mitigation Project Scope Requirements

Advance mitigation project scopes must:

Be an authorized activity in accordance with SHC § 800.6(a)

Benefit multiple transportation projects' delivery schedules

Deliver mitigation anticipated to be needed to fulfill the mitigation requirements of transportation improvements^a

Be consistent with natural resource regulatory agency(ies) goals and objectives

Yield mitigation in units and terms approved by natural resource regulatory agencies with the authority to condition transportation project permits with compensatory mitigation

Employ, as appropriate, existing applicable state and federal standards and instruments, mitigation-related agreements, advance mitigation project-specific agreements,^{b,c} and contracts with qualified third parties^d

Address overlapping mitigation requirements

Implement the state's competitive proposal and bidding processes^d

Strategically exercise the AMA

Manage the financial, technical, and strategic risks associated with Caltrans' investments

^a California Constitution, Article XIX, § 2, subdivision (a)

^b An advance mitigation project-specific interagency agreement is a general term to describe an agreement between natural resource regulatory agencies that attaches or binds advance mitigation requirements to a sponsor, qualified third party, or permittee; natural resource regulatory agencies agree that the action provides mitigation. Examples of advance mitigation project-specific interagency agreements include cooperative agreements, MCAs, or other interagency agreements. Advance mitigation project-specific interagency agreements are developed after a Caltrans advance mitigation project is funded.

^c The authority for Caltrans to enter into interagency agreements with public entities such as CDFW is under SHC § 114 and SHC § 130.

^d Procedures for Caltrans to enter in contracts with third parties are available at:
<http://ppmoe.dot.ca.gov/des/oe/contractor-info.html>.

Table 9-2. Summary of Conservation-related Advance Mitigation Project Scope Goals and Objectives

Advance mitigation project scopes will strive to:

Benefit multiple wildlife species and aquatic resources

Be consistent with existing regional conservation planning expressed in a natural resource regulatory agency strategic plan, conservation plan, HCP, NCCP, watershed plan, restoration plan, investment strategy, RCIS, BEI, in-lieu fee program instrument, land management plan, or other documented conservation effort

Benefit regional biodiversity

Contribute to landscape climate change resiliency

Contribute to landscape connectivity

Contribute to federal and/or California special-status species population recovery

Mitigate effects of stressors on wildlife species and aquatic resources

Restore and rehabilitate wildlife habitat and aquatic resources

9.2 Benefiting Transportation Project Needs Summary

The proximity of planned SHOPP and non-SHOPP STIP-eligible transportation projects to natural resources is shown in figures throughout this document. Estimated transportation project mitigation needs within the GAI for fiscal years 2019/20 to 2028/29 are presented in Chapter 5, and the timing of the needs is analyzed in Chapter 6. For the time interval under consideration, 2019/20 to 2028/29, Caltrans District 3 intends to prioritize purchasing or developing mitigation credits or values that address the Road Repair and Accountability Act of 2017 (also known as Senate Bill 1) priorities and that are planned for the middle and end of the planning period. Hence, given the expected timing of mitigation need, at this time (January of fiscal year 2021/2022) mitigation that can be purchased or established by 2023/24 (within the next 2 years) could potentially address approximately:

- 0.2 acre of wetland, 0.2 acre of non-wetland waters, 0.1 acre of fish habitat (including species of mitigation need: steelhead and tidewater goby), 1.2 acres of vernal pool habitat, and 0.2 acre of riparian habitat impacts in the Butte Creek sub-basin, potentially contributing to the acceleration of 2, 2, 1, 1, and 1 transportation projects, respectively.
- 0.6 acre of wetland, and 1.7 acres of non-wetland waters, 0.8 acres of vernal pool habitat, and 2.8 acres of riparian habitat impacts in the Honcut-Headwaters sub-basin, potentially contributing to the acceleration of 3, 3, 2, and 4 transportation projects, respectively.
- <0.1 acre of wetland, <0.1 acre of non-wetland waters, <0.1 acre of fish habitat, and 1.5 acres of riparian habitat impacts in the Lower American sub-basin,

potentially contributing to the acceleration of 1, 1, 1, and 4 transportation project(s), respectively.

- 0.5 acre of wetland, 0.5 acre of non-wetland waters, 1.3 acres of fish habitat, 5.3 acres of vernal pool habitat, and 0.6 acre of riparian habitat impacts in the Lower Sacramento Sub-basin, potentially contributing to the acceleration of 3, 2, 1, 1, and 2 transportation projects, respectively.
- <0.1 acre of wetlands and 0.5 acre of non-wetland waters impacts in the North Fork American Sub-basin, potentially contributing to the acceleration of 1 and 2 transportation projects, respectively.
- 0.6 acre of wetland, 1.0 acre of non-wetland waters, 0.2 acre of fish habitat, 2.2 acres of vernal pool habitat, and 0.1 acre of riparian habitat impacts in the Sacramento-Stone Corral Sub-basin, potentially contributing to the acceleration of 3, 3, 1, 2, and 1 transportation projects, respectively.
- 1.6 acres of wetland, 5.1 acres of non-wetland waters, and 1.3 acres of riparian habitat impacts in the South Fork American Sub-basin, potentially contributing to the acceleration of 6, 7, and 8 transportation projects, respectively.
- 0.3 acre of wetland, 0.9 acre of non-wetland waters, and 0.5 acre of riparian habitat impacts in the Upper Bear Sub-basin, potentially contributing to the acceleration of 5, 5, and 2 transportation projects, respectively.
- 0.1 acre of wetland, 0.1 acre of non-wetland waters, and 2.1 acres of riparian habitat impacts in the Upper Coon-Upper Auburn Sub-basin, potentially contributing to the acceleration of 1, 1, and 3 transportation projects, respectively.
- 0.4 acre of wetland, 2.7 acres of non-wetland waters, 0.1 acre of fish habitat, and 0.2 acre of riparian habitat impacts in the Upper Yuba Sub-basin, potentially contributing to the acceleration of 6, 7, 1, and 3 transportation projects, respectively.
- 1.7 acres of California red-legged frog habitat, 15.6 acres of giant garter snake habitat, 15.9 acres of Swainson's hawk habitat, and 0.2 acres of valley elderberry longhorn beetle habitat impacts in the Great Valley Ecoregion Section, potentially contributing to the acceleration of 4, 8, 9, and 3 transportation projects, respectively.
- 11.3 acres of California red-legged frog habitat, 3.8 acres of foothill yellow-legged frog habitat, 3.6 acres of giant garter snake habitat, and 3.6 acres of Swainson's hawk habitat impacts in the Northern California Interior Coast Ranges Ecoregion Section, potentially contributing to the acceleration of 3, 3, 1, and 1 transportation projects, respectively.
- 26.6 acres of California red-legged frog habitat and 41.2 acres of foothill yellow-legged frog habitat impacts in the Sierra Nevada Ecoregion Section, potentially contributing to the acceleration of 11 and 14 transportation projects, respectively.
- 4.6 acres of California red-legged frog habitat impacts in the Sierra Nevada Foothills Ecoregion Section, potentially contributing to the acceleration of 6 transportation projects.

All or some of these needs could form the basis for Caltrans District 3 to develop an advance mitigation project scope.

9.3 Authorized Activity Summary

Advance mitigation project scope options that have a high probability of successfully meeting the AMP's objectives are feasible. Below, a brief description of each of the 11 SHC § 800.6(a)-authorized advance mitigation project types is provided, followed by a discussion of its feasibility. Listed in Table 9-3, some advance mitigation project types are not currently feasible because they are not available in the GAI. Others are not currently feasible because a regulatory and administrative pathway is not available. Still others have potential but may not be feasible to implement on a schedule to contribute to accelerated transportation project delivery. Further, the activity authorized by SHC § 800.6(a)(4) is only feasible if § 800.6(a)(1)–(3) options are not feasible. Results of the feasibility analysis are summarized in the subsections below and in Table 9-4 (wildlife resources) and Table 9-5 (aquatic resources).

Table 9-3. Advance Mitigation Project Types^a

Advance Mitigation Project Type	Authorization	Section
Caltrans pays mitigation fees or other costs or payments associated with coverage of transportation projects under an approved NCCP ^b and/or an approved HCP.	SHC § 800.6(a)(2)	9.3.1
Caltrans purchases credits from an existing conservation bank.	SHC § 800.6(a)(1)	9.3.2
Caltrans purchases credits from an existing mitigation bank.	SHC § 800.6(a)(1)	9.3.3
Caltrans purchases credits from an existing in-lieu fee program.	SHC § 800.6(a)(1)	9.3.4
Caltrans purchases credits developed through an MCA, established under a CDFW-approved RCIS. ^c	SHC § 800.6(a)(3)(A)	9.3.5
Caltrans funds the establishment of a Caltrans or third-party sponsored and operated conservation bank, in accordance with applicable state and federal standards.	SHC § 800.6(a)(1)	9.3.6
Caltrans funds the establishment of a Caltrans or third-party sponsored and operated mitigation bank in accordance with applicable state and federal standards.	SHC § 800.6(a)(1)	9.3.7
Caltrans funds the establishment of a Caltrans or third-party sponsored and operated in-lieu fee program in accordance with applicable state and federal standards.	SHC § 800.6(a)(1)	9.3.8
Caltrans funds the implementation of conservation actions and habitat enhancement actions ^{c,d} to generate mitigation credits pursuant to an MCA ^b established under a CDFW-approved RCIS. ^c The scope may include Caltrans first entering into or funding the preparation of an MCA. ^c The scope may also include Caltrans first entering into or funding the preparation of an RCIS. ^c	SHC § 800.6(a)(3) SHC § 800.6(a)(3)(A)	9.3.9

Advance Mitigation Project Type	Authorization	Section
Caltrans acquires, restores, manages, monitors, enhances, and preserves ^e lands, waterways, aquatic resources, or fisheries, or funds the acquisition, restoration, management, monitoring, enhancement, and preservation of lands, waterways, aquatic resources, or fisheries, that would measurably advance a conservation objective specified in an RCIS if the department concludes that the action or actions could conserve or create environmental values that are appropriate to mitigate the anticipated potential impacts of planned transportation improvements.	SHC § 800.6(a)(3)(B)	9.3.10
When the other mitigation options (above) are not practicable, Caltrans may perform mitigation in accordance with a programmatic mitigation plan ^f pursuant to SHC § 800.9. The programmatic mitigation plan shall include, to the maximum extent practicable, the information required for an RCIS. ^c	SHC § 800.6(a)(4) SHC § 800.9	9.3.11

^a Caltrans intends to contract or subcontract implementation tasks when appropriate and as required.

^b When Caltrans is a permittee under the NCCP, or if Caltrans qualifies as a Participating Special Entity and the project is a covered activity in the NCCP

^c See: <https://www.wildlife.ca.gov/Conservation/Planning/Regional-Conservation>

^d Under specific conditions, fish passage and wildlife crossing structures may qualify as enhancement actions under an RCIS in accordance with FGC § 1850–1861.

^e SWRCB and the RWQCBs do not typically approve establishment of or accept preservation credits.

^f Programmatic mitigation plans are defined in 23 USC § 169(a) (SHC § 800.9). No more than 25 percent of the funds in the AMA may be allocated for this purpose over a 4-year period [SHC § 800.6(a)(4)].

9.3.1. NCCP and/or HCP Fees

NCCPs and HCPs are discussed in Section 4.2. NCCPs and HCPs are species-focused and are aligned with and plan for natural resource protection. NCCPs and HCPs provide for incidental take under CESA and ESA, respectively. CDFW is the signatory agency to NCCPs. FWS is the signatory agency to HCPs.

Caltrans identified three HCP/NCCPs with plan areas that overlap the GAI (Table 4-2, Figure 4-1). Caltrans is a permittee to one of these plans (Table 4-2). When Caltrans is not a permittee, it is unknown whether Caltrans would be able to contribute to an NCCP because Caltrans would need to apply as a Participating Special Entity to the plan's sponsor to qualify for some of the plan's privileges. It is also unknown whether the NCCPs where Caltrans might qualify as a Participating Special Entity are structured in such a way that Caltrans could purchase bulk credits or values in advance of transportation project delivery—that is, through advance mitigation project delivery.

Feasibility. HCPs are not authorized to accept bulk financial contributions; however, this authorized activity may be feasible for NCCPs and NCCPs/HCPs. After the Caltrans Director's approval for funding, delivering an advance mitigation project to purchase credits or fees is expected to take 1 to 3 years,¹ at which point the credits or values would be available to transportation projects. For HCP/NCCPs where Caltrans would seek

¹ Caltrans contracting processes and agency interactions are incorporated into this time estimate.

Participating Special Entity status, there may be schedule benefits if contributions were complete by 2023/24 (Table 4-2, see Figure 6-18 for schedule). The Caltrans District and a specific NCCP sponsor would need to determine the feasibility of this approach.

9.3.2. Conservation Bank Credit Purchase

Conservation banks were discussed in Section 4.3. Conservation banks are species-focused, and each bank's alignment with natural resource protection is documented through its BEI. In the GAI, CDFW is a signatory to seven conservation banks, one of which (with FWS) offers California red-legged frog credits, one of which (with FWS) offers giant garter snake credits, three of which (with FWS) offer Swainson's hawk or Swainson's hawk foraging habitat credits, and none of which offer valley elderberry longhorn beetle credits (Table 4-3). FWS is a signatory to 25 conservation banks, four of which offer California red-legged frog credits, two of which offer giant garter snake credits, four of which offer Swainson's hawk or Swainson's hawk foraging habitat credits, and three of which offer valley elderberry longhorn beetle credits (Table 4-3). CDFW and FWS are cosignatories for seven of the conservation banks.

Conservation bank service areas are shown in Appendix G, and the anticipated transportation project impact forecast is presented by year in Figures 6-13 through 6-17. When placed side-by-side, it is possible to see that multiple transportation projects may need species of mitigation need credits and which bank's service areas might have them available by 2023/24, when the credits might contribute to transportation project acceleration.

Feasibility. This authorized activity may be feasible. Caltrans District 3 may be able to address some of its giant garter snake and Swainson's hawk mitigation need through credits purchased previously through the SHOPP (Table 4-1). However, additional purchases to address other needs may be made. After the Caltrans Director's approval for funding, delivering an advance mitigation project to purchase credits or fees is expected to take 1 to 3 years, at which point the credits or values would be available to transportation projects. The Caltrans District will need to approach each bank to confirm the availability of credits and bulk credit purchase terms. Bulk credits purchased through an advance mitigation project might, with CDFW approval, be applied to meet future CDFW permit conditions on transportation projects. Since the giant garter snake is a dually listed species, it is probable that compensatory mitigation will be incorporated into future ESA biological assessments/opinions in coordination with FWS. Pre-permit purchases must be authorized in a BEI for this authorized activity to be feasible. For existing banks, a BEI amendment would be required to formalize a process for bulk pre-permit credit purchases, which must be completed before undertaking this authorized activity. The decision to amend a BEI is at the discretion of the bank sponsor and, if needed, additional Caltrans-specific terms would also need to be negotiated with bank sponsors.

9.3.3. Mitigation Bank Credit Purchase

Mitigation banks were discussed in Section 4.3. Mitigation banks are generally wetlands- and non-wetland waters-focused, and each bank's alignment with natural resource protection is documented through its BEI. Thirteen mitigation banks in the GAI provide wetland and/or non-wetland water credits; the Corps is a signatory to all (Table 4-3, Appendix G). In addition, many of these mitigation banks offer credits for species of mitigation need.

Feasibility. This authorized activity may be feasible. After the Caltrans Director's approval for funding, delivering an advance mitigation project to purchase credits or fees is expected to take 1 to 3 years, at which point the credits or values would be available to transportation projects. The mitigation bank service area is shown in Appendix G, and the anticipated transportation project schedule is shown in Figures 6-2 through 6-12. Pre-permit purchases must be authorized in the BEI for this authorized activity to be feasible. For existing banks, a BEI amendment would be required to formalize a process for bulk pre-permit credit purchases, which must be completed before undertaking this authorized activity. The decision to amend a BEI is at the discretion of the bank sponsor and, if needed, additional Caltrans-specific terms would also need to be negotiated with bank sponsors.

9.3.4. In-lieu Fee Credit Purchase

In-lieu fee programs were discussed in Section 4.4. In-lieu fee mitigation occurs when a permittee provides funds to an in-lieu fee sponsor instead of either completing project-specific mitigation or purchasing credits from a conservation or mitigation bank. Once enough money is received by an in-lieu fee program, it implements a wetland, stream, or threatened or endangered species habitat restoration, creation, enhancement, or preservation activity in the watershed.² The in-lieu fee program's alignment with natural resource protection is documented through its enabling instrument. The Corps is signatory to two in-lieu fee programs established in the GAI. Each in-lieu fee program offers permittees an in-lieu fee option to satisfy their compensatory mitigation obligations as determined by the applicable regulatory agencies for impacts on aquatic resources authorized under the CWA, the Rivers and Harbors Act, the ESA, the Porter-Cologne Water Quality Control Act, and other applicable laws.

Feasibility. This authorized activity may be feasible. After the Caltrans Director's approval for funding, delivering an advance mitigation project to purchase credits or fees is expected to take 1 to 3 years, at which point the credits or values would be available to transportation projects. Pre-permit purchases must be authorized in the enabling instrument for this authorized activity to be feasible. Bulk credits purchased from an in-lieu fee program through an advance mitigation project might, with natural resource regulatory agency approval, be incorporated into future permits for Caltrans transportation

² https://www.fhwa.dot.gov/innovation/everydaycounts/edc-1/pdf/banking_faq.pdf

projects. At this time (January of fiscal year 2021/2022), Caltrans District 3 will need to approach the NFWF Sacramento District ILF Program and Western Placer County In-lieu Fee Program to confirm bulk credit pre-permit purchase terms. At this time (January of fiscal year 2021/2022), the NFWF Sacramento District ILF Program has amended its enabling instrument to allow for pre-permit bulk credit purchases. The Western Placer County In-lieu Fee Program may also need to amend its enabling instrument to allow for pre-permit bulk credit purchases.

9.3.5. MCA Credit Purchase

As discussed in Section 4.5, MCAs are an advance mitigation tool that can be developed when and where an RCIS is approved by CDFW. At this time (January of fiscal year 2021/2022), instructions and guidance for establishing MCAs are under development by CDFW.³ There are currently two CDFW-approved RCISs that overlap the GAI. Giant garter snake, Swainson's hawk, and valley elderberry longhorn beetle are also focal species in both CDFW-approved RCISs.

Feasibility. At this time (January of fiscal year 2021/2022), this authorized activity is not feasible because no MCA credits are available for purchase in the GAI.

9.3.6. Conservation Bank Establishment

Instructions and guidance for establishing conservation banks are available from CDFW⁴ and FWS.⁵ Conservation banks are species-focused, and each bank's alignment with natural resource protection will be documented through its BEI. CDFW, FWS, and NMFS are potential signatories, and there also may be circumstances where the Corps and/or SWRCB would participate.

To support future transportation project conditions, a conservation bank funded through the AMA would establish CESA and ESA credits. At a minimum, conservation bank establishment project scopes will refer to and rely on GAI information provided in:

- Chapter 2, *Environmental Setting*
- Chapter 3, *Relevant Plans, Policies, and Regulations*
- Chapter 7, *Wildlife Resources Conservation Goals and Objectives*
- Chapter 8, *Aquatic Resources Conservation Goals and Objectives*
- Appendix B, *Land Cover Types*
- Appendix C, *Complete SAMNA Species Results*

An understanding of CDFW and FWS goals and objectives for wildlife resources in the GAI will improve the chances that credits established through an advance mitigation project will meet the compensatory mitigation needs of Caltrans' future transportation projects. In Chapter 7, Caltrans analyzed and synthesized the relevant and applicable

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

⁴ <https://wildlife.ca.gov/Conservation/Planning/Banking/Templates>

⁵ https://www.fws.gov/endangered/esa-library/pdf/Conservation_Banking_Guidance.pdf

information listed in Chapter 3 to develop its understanding of natural resource regulatory agency goals and objectives for the GAI. In brief, it is Caltrans' understanding that a conservation bank that addresses the following goals would be consistent with CDFW and FWS goals:

- Conserve and expand existing habitat for species of mitigation need within the GAI (WILD-1).
- Preserve, enhance, and increase connectivity between blocks of species of mitigation need habitat (WILD-2).
- Support resiliency of the landscape to climate change and sea-level rise (WILD-3).
- Decrease mortality and protect population health for species of mitigation need (WILD-4).
- Prioritize multi-species and multi-resource benefits (WILD-5).

Further, for each objective, Table 7-3 presented sub-objectives, which are intended to help guide Caltrans advance mitigation project scoping toward protecting natural resources through transportation project mitigation.

Feasibility. This authorized activity may be feasible. As pointed out above, instructions and guidance for establishing conservation banks are available from CDFW and FWS. After the Caltrans Director's approval for funding, delivering an advance mitigation project to establish a conservation bank is expected to take 2 to 6 years before the initial credit release; the credits or values would be available to transportation projects according to the credit release schedule in the Interagency Review Team-approved BEI (CNRA et al. 2011). Caltrans may contract or subcontract bank establishment and/or implementation tasks, including site selection.

9.3.7. Mitigation Bank Establishment

Instructions and guidance for establishing mitigation banks are available from the Corps⁶ and CDFW.⁷ At a minimum, mitigation bank establishment project scopes will refer to and rely on GAI information provided in:

- Chapter 2, *Environmental Setting*
- Chapter 3, *Relevant Plans, Policies, and Regulations*
- Chapter 7, *Wildlife Resources Conservation Goals and Objectives*
- Chapter 8, *Aquatic Resources Conservation Goals and Objectives*
- Appendix D, *Hydrologic Units*
- Appendix F, *Aquatic Resource Locations*

To support future transportation project permits, Caltrans would seek wetland, non-wetland water, and other important aquatic feature credit establishment under the Corps'

⁶ https://www.usace.army.mil/Missions/Civil-Works/Regulatory-Program-and-Permits/mitig_info/

⁷ <https://wildlife.ca.gov/Conservation/Planning/Banking/Templates>

jurisdiction (wetlands and WOTUS) and RWQCB jurisdiction (waters of the state), as well as riparian credit establishment under CDFW's Lake and Streambed Alteration Program.

Mitigation banks are wetland- and non-wetland waters-focused, and each bank's alignment with natural resource protection is documented through its BEI. In addition, there may also be an understanding of special-status species and wildlife goals, if a joint mitigation and conservation bank that would have both aquatic resource and species credits is proposed. The Corps, RWQCB, FWS, CDFW, and NMFS are potential signatories. In some circumstances, CDFW's participation in a bank could be documented through an MCA.

An understanding of Corps, RWQCB, FWS, NMFS, and CDFW goals and objectives for aquatic resources in the GAI will improve the chances that credits established through an advance mitigation project will meet the compensatory mitigation needs of Caltrans' future transportation projects. In Chapter 8, Caltrans analyzed and synthesized the relevant and applicable information listed in Chapter 3 to develop its understanding of natural resource regulatory agency goals and objectives for the GAI. In brief, it is Caltrans' understanding that a mitigation bank that addresses the following goals would be consistent with natural resource regulatory agency goals:

- No net loss to area, functions, values, and condition of WOTUS⁸ and waters of the state to ensure no overall net loss and long-term net gain in the quantity, quality, and permanence of wetland acreage and values in California in a manner that fosters creativity, stewardship, and respect for private property, as described in Executive Order W-59-93⁸ (AR-1).
- Restore and/enhance the chemical, physical, and biological integrity of non-wetland waters (AR-2).
- Support resiliency of aquatic resources to climate change (AR-4).
- Provide multi-resource benefits (AR-5).

Further, for each objective, Table 8-4 presented sub-objectives, which are intended to help guide Caltrans advance mitigation project scoping toward protecting natural resources through transportation project mitigation.

Feasibility. This authorized activity may be feasible. As discussed above, instructions and guidance for establishing mitigation banks are available from the Corps and CDFW and, hence, establishing credits is feasible. After the Caltrans Director's approval for funding, delivering an advance mitigation project to establish a mitigation bank is expected to take at least 2 to 6 years before the initial credit release, at which point the credits or values would be available to transportation projects. Caltrans may contract or subcontract bank establishment and/or implementation tasks, including site selection.

⁸ Preservation alone is not recognized by the Corps or RWQCB as providing no net loss.

9.3.8. In-lieu Fee Program Establishment

Each in-lieu fee program's alignment with natural resource protection is documented in its enabling instrument. Instructions and guidance for establishing in-lieu fee programs are available from the federal agencies.⁹ With respect to wildlife, like the Corps, FWS also follows federal guidance for establishing an in-lieu fee program; however, a supportive legislative, regulatory, and administrative pathway for CDFW to develop an in-lieu fee program has not been developed.

To support future transportation project conditions, in-lieu fee program establishment projects would rely on the same information as mitigation bank establishment (Section 9.3.7). At a minimum, in-lieu fee establishment project scopes will refer to and rely on GAI information provided in:

- Chapter 2, *Environmental Setting*
- Chapter 3, *Relevant Plans, Policies, and Regulations*
- Chapter 7, *Wildlife Resources Conservation Goals and Objectives*
- Chapter 8, *Aquatic Resources Conservation Goals and Objectives*
- Appendix D, *Hydrologic Units*
- Appendix F, *Aquatic Resource Locations*

To support future transportation project permits, Caltrans would seek CWA credit establishment under the Corps' jurisdiction (WOTUS) and RWQCB jurisdiction (waters of the state). The Corps, EPA, SWRCB, and/or RWQCB are potential signatories to the in-lieu fee program enabling instrument. Caltrans may also seek to establish credits that could be applied as compensatory mitigation to offset impacts as part of future ESA biological assessments/opinions in coordination with FWS and NMFS.

Feasibility. This authorized activity may be feasible. As pointed out above, instructions and guidance for establishing an in-lieu fee program for CWA credits are available from the federal agencies. After the Caltrans Director's approval for funding, delivering an advance mitigation project to establish an in-lieu fee program is expected to take 2 to 6 years. Credits or values would be available to transportation projects according to the Interagency Review Team-approved in-lieu fee enabling instrument. Caltrans may contract or subcontract implementation tasks.

9.3.9. MCA Credit or Value Establishment

As discussed in Section 4.5, MCAs are an advance mitigation tool that can be developed when and where an RCIS is approved by CDFW. In accordance with the *Regional Conservation Investment Strategies Program Guidelines*, MCAs are species- and species habitat-focused and can include credits under CESA and/or for riparian habitat to meet mitigation needs under a Lake and Streambed Alteration Agreement. An MCA's alignment with natural resource protection will be documented through the foundational

⁹ <https://www.spl.usace.army.mil/Missions/Regulatory/Mitigation/>

RCIS and the MCA itself (CDFW 2019e). RCIS development is also an SHC § 800.6(a)-authorized advance mitigation project deliverable.

Caltrans envisions that credits or values created through an MCA and funded through the AMA could be established under three scenarios:

- Caltrans enters into or funds the preparation of an MCA, where Caltrans is the MCA sponsor. Caltrans, CDFW, and a third-party landowner would likely be signatories to the MCA. This scenario assumes an existing RCIS anticipates the requirements and needs for MCA credits. In other words, the focal species, non-focal species, or other conservation elements of the associated conservation or habitat enhancement actions proposed in the MCA included in the RCIS would directly apply to and address Caltrans needs.
- Caltrans funds performance of conservation actions and habitat enhancement actions as needed to generate mitigation credits pursuant to an MCA, where a third party is the MCA sponsor. The MCA sponsor, CDFW, and the landowner would be signatories to the MCA. This scenario assumes an existing RCIS anticipates the requirements and needs for MCA credits to apply to transportation projects.
- Caltrans prepares or funds the preparation of an RCIS that anticipates transportation project requirements and needs for MCA credits before entering into or funding the preparation of an MCA.

To support future transportation project permits, an MCA or, if needed, an RCIS in concert with an MCA, funded through the AMA, could potentially establish CESA and/or Lake and Streambed Alteration Program credits¹⁰ and CDFW would be the signatory. Two species of mitigation need, foothill-yellow legged frog and Swainson's hawk, are state-only listed species; an MCA for CESA credits within one of the RCIS areas may be appropriate. Caltrans may also request other agencies to be signatories to the MCA or seek project-specific interagency agreements with other natural resource regulatory agencies whose jurisdiction overlaps with CDFW's. However, participation in an MCA may be more feasible for state agencies than federal agencies. Under federal definitions, MCAs may be treated as permittee-responsible mitigation. Federal agencies prioritize credits purchased or established through banking and in-lieu fee programs over permittee-responsible mitigation.

Feasibility. At this time (January of fiscal year 2021/2022), instructions and guidance for establishing MCAs are under development by CDFW,¹¹ and the RCIS Program is conducting pilot efforts to inform its development of MCA Guidelines and associated agreements. Consequently, at this time, timelines and specifics related to the MCAs are uncertain and scoping and delivering an advance mitigation project within the AMP's timeline needs is unlikely. Caltrans will stay involved to understand how CDFW's pilots

¹⁰ Caltrans is the Lead Agency under CEQA; CDFW's permitting authority does not include conditioning transportation projects under CEQA (Section 7).

¹¹ <https://wildlife.ca.gov/Conservation/Planning/Regional-Conservation>

are going, but given the nature of the AMP's revolving account, Caltrans has determined that it cannot commit AMA funds to a pilot effort.

Nevertheless, in the future, Caltrans anticipates that when a CDFW-approved RCIS is in place¹² and after the Caltrans Director's approval for funding, it is expected that delivering an advance mitigation project to establish an MCA and its credits or values would take 4 to 9 years: 2 to 3 years to set up the MCA, followed by 2 to 6 years to perform a conservation action or habitat enhancement action¹³ to establish the credits or values. Credits would become available to Caltrans' SHOPP and STIP transportation projects according to the credit release schedule in the CDFW-approved MCA. Caltrans would include seeking signatures from natural resource regulatory agencies with overlapping jurisdictions and/or conducting parallel evaluations¹⁴ with the other agencies into the scope and schedule.

Wildlife Crossing and Aquatic Corridor Enhancements

As described in Section 4.5 and discussed previously, the RCIS and MCA framework provides CDFW with a compensatory mitigation mechanism to approve credits for wildlife crossing and aquatic corridor enhancements. In other words, through an MCA developed under an RCIS, CDFW would be authorized to recognize credits established through wildlife crossing and aquatic corridor enhancement made separate from and distinct from specific transportation projects. An MCA for connectivity would be consistent with Caltrans' understanding of natural resource regulatory agency goal and objectives that support resiliency of aquatic resources to climate change (AR-3); provide multi-resource benefits (AR-4 and WILD-5); conserve and expand existing habitat for species of mitigation need in the GAI (WILD-1); and preserve, enhance, and increase connectivity between blocks of species of mitigation need habitat (WILD-2).

To support future transportation project permits, it would be necessary for a wildlife crossing or aquatic corridor improvement MCA funded through the AMA to establish CESA and/or Lake and Streambed Alteration Program credits. In addition to the uncertainty listed above related to MCA implementation and associated agreements, connectivity enhancements have additional uncertainty related to mitigation crediting framework and outputs (temporary versus permanent), cost feasibility, engineering, and delivery timelines. Caltrans will reassess wildlife crossing and aquatic corridor enhancements related to feasibility with respect to the AMA expenditures and mitigation needs covered in this RAMNA once the RCIS Program's MCA guidelines for wildlife crossing and aquatic corridor enhancements are finalized.

¹² In accordance with SHC § 800.6(a)(3)(A), advance mitigation project scopes funded through the AMA may also include Caltrans first entering into or funding the preparation of an RCIS, which could add 2 to 3 years to the schedule.

¹³ <https://wildlife.ca.gov/Conservation/Planning/Regional-Conservation>

¹⁴ Parallel evaluations are undertaken when, for the same environmental enhancement/action, two or more agencies must employ different mechanisms to approve the credits.

9.3.10. Mitigation That Meets an RCIS Conservation Objective

SHC § 800.6(a)(3)(B) authorizes the following expenditure from the AMA:

Caltrans acquires, restores, manages, monitors, enhances, and preserves lands, waterways, aquatic resources, or fisheries, or funds the acquisition, restoration, management, monitoring, enhancement, and preservation of lands, waterways, aquatic resources, or fisheries that would measurably advance a conservation objective specified in an RCIS if the department concludes that the action or actions could conserve or create environmental values that are appropriate to mitigate the anticipated potential impacts of planned transportation improvements.

Feasibility. At this time (January of fiscal year 2021/2022), this authorized activity is not feasible. A supportive regulatory and administrative pathway for a natural resource regulatory agency to recognize credits or values outside of existing advance mitigation mechanisms, such as the procedures to establish banks, does not exist. Without an existing regulatory pathway, the time to establish credits or values for this advance mitigation project type is uncertain. Consequently, at this time, scoping and delivering an advance mitigation project within the AMP's timeline needs through this authorized activity is unlikely; given the nature of the AMP's revolving account, the AMP has determined that Caltrans cannot commit AMA funds to a pilot effort.

9.3.11. Mitigation in Accordance with a Programmatic Mitigation Plan

This project type may be undertaken by Caltrans if all of the other advance mitigation project types discussed above are not feasible [SHC § 800.6(a)(4)]. In brief, SHC § 800.6(a)(4) and SHC § 800.9 authorize the following expenditure from the AMA:

Caltrans performs mitigation in accordance with a programmatic mitigation plan pursuant to SHC §800.9. The programmatic mitigation plan shall include, to the maximum extent practicable, the information required for a RCIS.

This authorized activity would likely require an advance mitigation project-specific agreement, such as a cooperative agreement, and the time needed to establish credits or values for this advance mitigation project type is uncertain. In general, unless otherwise prescribed in regulation, in this case, an advance mitigation project-specific interagency agreement should include the agency's jurisdiction, resource type, resource value, protection level, service area, time frame, performance and compliance requirements, mitigation accounting procedures, funding, monitoring, and the advance mitigation project's closeout terms and conditions.

Feasibility. At this time (January of fiscal year 2021/2022), a number of the authorized activities listed in Table 9-3 appear to be feasible (Tables 9-4 and 9-5). This suggests that addressing a Caltrans SAMNA-estimated need will not require another approach in accordance with SHC § 800.6(a)(4). At this time, management of the AMA does not need to consider limiting any advance mitigation project type to 25 percent of the fund.

9.3.12. Discussion

Caltrans modeled its compensatory mitigation needs in the GAI for fiscal years 2019/20 through 2028/29 (Chapter 5) and evaluated its needs in light of when transportation projects might need the mitigation (Chapter 6 and Section 9.2). Summarized in Tables 9-4 and 9-5, Caltrans identified a number of options for how to meet its mitigation needs. The authorized activities consist of options to purchase existing mitigation credits (Sections 9.3.1 to 9.3.5) or establish additional mitigation (Section 9.3.6 through 9.3.11).

Based on its evaluation, Caltrans found that, at this time (January of fiscal year 2021/2022), a number of authorized activities appear to be feasible and, under several scenarios, advance mitigation project scopes could cover multiple resources and address overlapping natural resource regulatory agency jurisdictions. For example, Swainson's hawk, valley elderberry longhorn beetle, vernal pool habitat, and state waters/streams could be addressed through the same credit purchase or by establishing a single credit establishment project.

Nevertheless, since Caltrans still has remaining giant garter snake, Swainson's hawk, vernal pool, and wetland credits from the bulk credits purchased from the Colusa Basin Mitigation Bank, Elsie Gridley Conservation Bank, Cosumnes Floodplain Mitigation Bank, and Bullock Bend Mitigation Bank (service areas overlap with GAI), it is likely that additional credits for these species/resources would be a lower priority for purchase through the AMP. Further, credits purchased or established by 2023/24 (within the next 2 years) have the potential to address the following:

- **Butte Creek Sub-basin forecast wetland and non-wetland waters impacts.** Specifically, mitigation credits purchased or established for an anticipated 0.1 acre of fish, 0.2 acre of wetland, 0.2 acre of non-wetland waters, 1.2 acres of vernal pool, and 0.2 acres of riparian habitat impact have the potential to accelerate 2 Caltrans transportation projects.
- **Honcut Headwaters-Lower Feather Sub-basin forecast wetland and non-wetland waters impacts.** Specifically, mitigation credits purchased or established for an anticipated <0.1 acre of wetland, 1.2 acres of non-wetland waters, 0.8 acre of vernal pool, and <0.1 acre of riparian habitat impact have the potential to accelerate 3 Caltrans transportation projects.
- **Lower American Sub-basin forecast wetland and non-wetland waters impacts.** Specifically, mitigation credits purchased or established for an anticipated <0.1 acre of fish, <0.1 acre of wetland, <0.1 acre of non-wetland waters, and <0.1 acre of riparian habitat impact have the potential to accelerate 1 Caltrans transportation project.
- **Lower Sacramento Sub-basin forecast wetland and non-wetland waters impacts.** Specifically, mitigation credits purchased or established for an anticipated 1.3 acre of fish, 0.2 acre of wetland, 0.5 acre of non-wetland waters, 5.3 acres of vernal pool, and <0.1 acre of riparian habitat impact have the potential to accelerate 2 Caltrans transportation projects.

- **North Fork American River Sub-basin forecast non-wetland waters impacts.** Specifically, mitigation credits purchased or established for an anticipated 0.5 acre of non-wetland waters impact have the potential to accelerate 2 Caltrans transportation projects.
- **Sacramento-Stone Corral Sub-basin forecast wetland and non-wetland waters impacts.** Specifically, mitigation credits purchased or established for an anticipated 0.2 acre of fish, 0.3 acre of wetland, 1.0 acre of non-wetland waters, and 2.2 acres of vernal pool impact have the potential to accelerate 3 Caltrans transportation projects.
- **South Fork American Sub-basin forecast wetland and non-wetland waters impacts.** Specifically, mitigation credits purchased or established for an anticipated 0.7 acre of wetland, 5.1 acres of non-wetland waters, and 0.9 acre of riparian habitat impact have the potential to accelerate 7 Caltrans transportation projects.
- **Upper Bear Sub-basin forecast wetland and non-wetland waters impacts.** Specifically, mitigation credits purchased or established for an anticipated 0.3 acre of wetland impact and 0.9 acre of non-wetland waters impact have the potential to accelerate 5 Caltrans transportation projects.
- **Upper Coon-Upper Auburn Sub-basin forecast non-wetland waters impacts.** Specifically, mitigation credits purchased or established for an anticipated 0.1 acre of non-wetland waters impact have the potential to accelerate 1 Caltrans transportation project.
- **Upper Yuba Sub-basin forecast wetland and non-wetland waters impacts.** Specifically, mitigation credits purchased or established for an anticipated 0.1 acre of wetland, 2.7 acres of non-wetland waters, and 0.1 acre of riparian habitat impact have the potential to accelerate 7 Caltrans transportation projects.
- **Great Valley, Northern California Interior Coast Ranges, Sierra Nevada, or Sierra Nevada Foothills Ecoregions forecast California red-legged frog habitat impacts.** Specifically, mitigation credits purchased or established for an anticipated 44.3 acres of California red-legged frog habitat impacts have the potential to accelerate 24 transportation projects.
- **Northern California Interior Coast Ranges, Sierra Nevada, or Sierra Nevada Foothills Ecoregions forecast foothill yellow-legged frog habitat impacts.** Specifically, mitigation credits purchased or established for an anticipated 45.0 acres of foothill yellow-legged frog impacts have the potential to accelerate 21 transportation projects.
- **Great Valley, Northern California Interior Coast Ranges, or Sierra Nevada Foothills Ecoregions forecast giant garter snake habitat impacts.** Specifically, mitigation credits purchased or established for an anticipated 19.1 acres of giant garter snake habitat impacts have the potential to accelerate 10 transportation projects.

- **Great Valley, Northern California Interior Coast Ranges, or Sierra Nevada Foothills Ecoregions forecast Swainson's hawk habitat impacts.** Specifically, mitigation credits purchased or established for an anticipated 19.5 acres of Swainson's hawk habitat impacts have the potential to accelerate 10 transportation projects.
- **Great Valley or Sierra Nevada Foothills Ecoregions forecast valley elderberry longhorn beetle habitat impacts.** Specifically, mitigation credits purchased or established for an anticipated 0.3 acre of valley elderberry longhorn beetle habitat impacts have the potential to accelerate 3 transportation projects.

Under some conditions, establishing new mitigation credits through existing mechanisms may also be possible.

Table 9-4. Wildlife Resources Credit Options and Feasibility, January 2022

Authorized Activity	Regulatory and Administrative Pathway Available	Available/Opportunity Exists in the GAI	Potential to Address Overlapping Jurisdictions	Time to Complete ^a
Pay NCCP and/or HCP fees ^b	Yes	Yes, three HCP/NCCPs	Yes, CDFW and FWS	1 to 3 years
Purchase conservation bank credits	Yes, requires instrument amendment	Yes, four FWS or CDFW and FWS approved banks in GAI with red-legged frog or Swainson's hawk credits, two with giant garter snake credits, and three with valley elderberry longhorn beetle credits	Yes, CDFW and FWS for dually listed species	1 to 3 years
Purchase in-lieu fee credits	Yes, requires instrument amendment	No, two Corps in-lieu fee programs, but none for FWS or CDFW	No	1 to 3 years
Purchase MCA credits	No	Not available	Not available	Not available
Establish conservation bank	Yes	Yes, CDFW, FWS, and NMFS	Yes, with CDFW, FWS, NMFS	2 to 6 years
Establish in-lieu fee program	Yes	Yes, with FWS and NMFS	Yes, with FWS and NMFS Potential to align with Corps in-lieu fee program	2 to 6 years
Establish MCA credits or values ^c	Yes, in part; two approved RCISs; MCA guidelines in progress	Maybe—MCA guidelines in progress	Maybe, CDFW, SWRCB, RWQCBs, FWS, and NMFS Potential for parallel evaluations	Unknown (pilot underway)
Establish RCIS and MCA ^c	Yes, in part; two approved RCISs; MCA guidelines in progress	Maybe—RCIS guidelines available; MCA guidelines in progress	Maybe, CDFW, SWRCB, RWQCBs, FWS, and NMFS Potential for parallel evaluations	Unknown (pilot underway)

Authorized Activity	Regulatory and Administrative Pathway Available	Available/Opportunity Exists in the GAI	Potential to Address Overlapping Jurisdictions	Time to Complete ^a
Establish mitigation that meets an RCIS objective	No	Not available	Not available	Not available
Establish mitigation in accordance with a programmatic mitigation plan	No	Not available	Not available	Not available

^a Caltrans contracting processes and agency interactions are incorporated into this time estimate.

^b Payment of NCCP/HCP fees may have some overlap with in-lieu fee program credits and meet multiple mitigation needs.

^c Either Caltrans or a third party would be the signatory with CDFW.

Table 9-5. Aquatic Resources Credit Options and Feasibility, January 2022

Authorized Activity	Regulatory and Administrative Pathway Available	Available/Opportunity Exists in the GAI	Potential to Address Overlapping Jurisdictions	Time to Complete ^a
Purchase mitigation bank credits	Yes, requires instrument amendment	Yes, 13 Corps banks	Yes, RWQCB, Corps, EPA, CDFW, FWS, and NMFS	1 to 3 years
Purchase in-lieu fee credits ^b	Yes, requires instrument amendment	Yes, two Corps in-lieu fee programs	No	1 to 3 years
Purchase MCA credits	No	Not available	Not available	Not available
Establish mitigation bank	Yes	Yes, Corps, EPA, CDFW, FWS, and NMFS	Yes, RWQCB, Corps, EPA, CDFW, FWS, and NMFS	2 to 6 years
Establish in-lieu fee program	Yes	Yes, for Corps, EPA, FWS, and NMFS	Maybe, Corps, FWS, NMFS, EPA, and RWQCB	2 to 6 years
Establish MCA credits or values ^c	Yes, in part; two approved RCISs; MCA guidelines in progress	Maybe—MCA guidelines in progress	Maybe, RWQCB and NMFS Potential for parallel evaluation(s)	Unknown (pilot underway)
Establish RCIS and MCA ^c	Yes, in part; two approved RCISs; MCA guidelines in progress	Maybe—RCIS guidelines available; MCA guidelines in progress	Maybe, RWQCB, and NMFS Potential for parallel evaluation(s)	Unknown (pilot underway)
Establish mitigation that meets an RCIS objective	No	Not available	Not available	Not available
Establish mitigation in accordance with a programmatic mitigation plan	No	Not available	Not available	Not available

^a Caltrans contracting processes and agency interactions are incorporated into this time estimate.

^b Applies to the purchase of in-lieu fee credits at in-lieu fee programs associated with an HCP/NCCP.

^c Either Caltrans or a third party would be the signatory with CDFW.

9.4 Next Steps

Caltrans is required to avoid and minimize any impacts on the environment where practicable, but some impacts are unavoidable. When this is the case, as determined by a natural resource regulatory agency, Caltrans may use compensatory mitigation to offset these unavoidable impacts on the environment. Compensatory mitigation involves the restoration, establishment, enhancement, and/or preservation of the environment, including wetlands, non-wetland waters, and threatened or endangered species and/or their habitats, including riparian habitat.

Caltrans District 3 will consider all feasible options when developing advance mitigation project scopes. The feasibility of each authorized activity to meet the mitigation need depends on the availability of a regulatory and administrative pathway and other conditions summarized in Tables 9-4 and 9-5. Not included in the tables is an explicit comparison of other desired qualities, outcomes, or other factors of performing any particular authorized activity, which Caltrans District 3 will also consider based on its localized knowledge of delivering mitigation in its region. As just one example, Caltrans may prioritize advance mitigation projects that reduce risk in implementation and long-term management by eliciting others to be bank or in-lieu fee sponsors.

As described in the introduction to this chapter and in Section 9.1, to inform the advance mitigation project scope, Caltrans District 3 will use information in the RAMNA. Each scope will consider mitigation needs; the timing of mitigation needs; conservation data and plans; input from natural resource regulatory agencies, interested parties, and tribes; feasibility; timing; and other financial, strategic, and technical risks associated with transportation project delivery and conservation actions. Advance mitigation project scopes will also employ, as appropriate, existing applicable state and federal standards and instruments, mitigation-related agreements, advance mitigation project-specific agreements, and contracts with qualified third parties.

Caltrans District 3 will submit a nominated advance mitigation project's scope, schedule, and budget to the Caltrans Director for approval. When the Director concurs and funding is approved, Caltrans District 3 will commit to delivering the advance mitigation project within the scope, schedule, and budget communicated with nomination materials. At that point, Caltrans District 3 will initiate project delivery (see Steps 6 through 10 in Figure 1-2; Caltrans 2021a). Advance mitigation project delivery includes stakeholder engagement, project alternative analysis, coordination with natural resource regulatory agencies with the authority to approve compensatory mitigation, contracting with third parties and/or credit sponsors, and developing an agency-approved instrument and/or one or more advance mitigation project-specific interagency agreement. In addition:

- Stakeholder engagement will be conducted in accordance with each advance mitigation project's communication plan and be consistent with the applicable and appropriate requirements of existing applicable state and federal standards and instruments.

- When required by the advance mitigation project type, site selection may be performed by Caltrans or under contract to Caltrans through a competitive bid process, and may include existing mitigation providers—for example, banks, NCCPs, MCAs, as well as the identification of new acquisitions. When a competitive bid process is used, sites are subject to what bid respondents put forward in their proposals. Site selection should be consistent with appropriate conservation goals and objectives identified in Chapters 7 and 8.
- When appropriate for the advance mitigation project type, it may be necessary to identify the steps required to meet the goal of satisfying overlapping jurisdictional mitigation requirements.
- Instruments and advance-mitigation project-specific interagency agreement(s) will specify the terms of use of the credits, including the service areas. Service areas will be defined based on feedback from the natural resource regulatory agencies. It is intended for the ecological units used for this RAMNA to lead to ecologically based advance mitigation project scopes and service areas; Caltrans uses HUC-8 sub-basins to be consistent with the 2008 Mitigation Rule and ecoregions to be consistent with the SWAP.

As with all credits and values established through advance mitigation processes, the credits' suitability for application to a specific transportation project is determined in the future, on a case-by-case basis, when transportation project mitigation requirements are known.

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