San Joaquin River Restoration Program: Salmon Conservation and Research Facility and Related Management Actions Project

Mitigation Monitoring and Reporting Plan

SCH# 2012111083

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In compliance with Section 21081.6 of the California Environmental Quality Act, the California Department of Fish and Wildlife (CDFW) has prepared this Mitigation Monitoring and Reporting Plan (MMRP) for the Proposed Salmon Conservation and Research Facility (SCARF). Each mitigation measure and the method of monitoring or verifying the completion of the measure are described in the MMRP. CDFW will be the party responsible for verifying implementation of the mitigation measures identified in this MMRP.

The MMRP has been divided into seven separate tables. The first table summarizes all of the mitigation measures and identifies to which category of activity it applies. For the remaining six tables, each is specific to one of the six categories of activities that would be conducted under the Proposed Project. Each table shows just the mitigation measures applicable to that category of activity. By removing the mitigation measures which are not applicable to a particular activity, these tables are intended to streamline use of the MMRP in monitoring and verifying completion of the relevant mitigation measures for each activity.

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Mitigation Measure Title	Mitigation Measure Description	Applicable Activity (X = applicable)						Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
AES-CONSTRUCT-3a: Materials and Colors Used in Construction of SCARF Facilities Shall be Compatible with the Surrounding Built and Natural Environments	Department of General Services (DGS), CDFW or the construction contractor shall select materials and colors of the facilities to be compatible with the surrounding developed and natural environments.	X						DGS (if during design); DGS, CDFW and/or Contractor (if during construction)	During design or construction	
AES-CONSTRUCT-3b: Landscaping of SCARF Facilities Shall Consist of Native Vegetation	CDFW or the construction contractor shall use native plants for landscaping in a manner consistent with Mitigation Measure BIO-CONSTRUCT-11a (Minimize Area of Disturbance of Riparian Habitat) and with Mitigation Measure BIO-CONSTRUCT-11b (Develop and Implement Revegetation Plan for Riparian Habitat Disturbed by Construction).	X						DGS (if during design); DGS, CDFW and/or Contractor (if during construction)	During design or construction	
AES-CONSTRUCT-3c: Pipelines and Utilities Serving SCARF Facilities Shall be Installed Underground	DGS, CDFW or the construction contractor shall install pipelines and utilities underground, to the extent feasible.	X						DGS	During design	

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AES-CONSTRUCT-4: Exterior Construction Security Lighting Shall Be Hooded and Directed Downward	CDFW shall ensure that exterior construction security lighting is hooded and directed downward toward the SCARF, and away from adjacent properties.	X						DGS (if during design); DGS, CDFW and/or Contractor (if during construct-ion)	During design or construction	
AES-OP-2a: Permanent Exterior Lighting Shall Be Designed to Protect the Darkness of Nighttime Skies	CDFW shall ensure that permanent lighting utilizes lights that are low wattage, or incorporates appropriate shielding, and that lighting is directed away from sensitive uses and adjacent properties.		X					DGS (if during design); DGS, CDFW and/or Contractor (if during construct-ion)	During design or construction	
AES-OP-2b: SCARF Structures Shall Be Constructed to Avoid Surface Glare	To reduce glare, CDFW shall ensure that all structures are painted with non-glare surfacing or constructed of materials that do not produce glare.		X					DGS (if during design); DGS, CDFW and/or Contractor (if during construct-ion)	During design or construction	

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AQ-OP-3: Fish Disposal Limitations	CDFW will implement at least one of the following measures to minimize the likelihood of potential odors from fish disposal activities affecting a substantial number of sensitive receptors: • Limit fish disposal locations to areas that are at least 1,000 feet from any potential sensitive receptors, including terrestrial recreationists such as hikers. • Implement disposal methods that ensure that fish carcasses are weighed down and disposed of within a stream channel instead of on a stream bank.		X					CDFW	During operation	
AQ-MANAGEMENT-1: Prepare Project-Level Quantitative Analysis of Construction Related Air Quality Emissions, and Implement	As future individual project components are further defined to a level that construction emissions can be estimated, and prior to implementing that component				X		X	CDFW	Prior to implementing a project component or taking actions that commit CDFW to implementing	

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Measures to Cap Emissions	or taking actions that commit CDFW to implementing that component, CDFW will prepare a complete, quantitative project-level air quality analysis for that component. The quantitative construction air quality analyses will be based on the types, locations, numbers, and operations of equipment to be used; the amount and distance of material to be transported; and worker trips required. In addition, the analysis will be based on the projected quantity and frequency of vehicle and/or truck trips, and other activities that generate emissions. The analysis will determine whether the combined emissions of the quantified components' construction activities exceed the SJVAPCD's construction air quality thresholds (see the SJVAPCD thresholds presented in Table 5-5 of the DEIR). In addition, the analysis will evaluate whether the				X		X		that component	

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	combined emissions from all project components constitute a significant health risk from diesel fueled equipment. If the analysis determines that construction emissions exceed the air quality significance thresholds, then CDFW will identify and implement appropriate mitigation. As a performance standard, the mitigation shall be sufficient to reduce construction emissions so that the Proposed Project's emissions are below the applicable significance thresholds. Examples of appropriate mitigation may include, but not be limited to, SJVAPCD Regulation VIII, alternative fueled equipment, phasing of material hauling trips, use of chemical additives or after-market devices to reduce emissions on existing equipment, use of electrically powered equipment, reduction in total equipment hours, use of newer equipment models, adopting a vehicle idling policy				X		X			

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	requiring all vehicles to adhere to a 5 minute idling policy, and sourcing of material from local sources. Actual emissions efficiency for off-road equipment and motor vehicles will be at least as efficient as the most recent CARB fleet average for off-road equipment and motor vehicles for the current calendar year. In the event that the mitigation strategies (either those listed above or others developed to achieve the performance standard) are calculated to be insufficient to reduce construction emissions levels below significance thresholds, then CDFW will enter into a Voluntary Emission Reduction Agreement (VERA) with SJVAPCD. A VERA is a contractual agreement in which the project proponent agrees to mitigate project specific emissions by providing funds for the SJVAPCD's Emission Reduction Incentive Program (ERIP). The funds are				X		X			

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	disbursed by ERIP in the form of grants for projects that achieve emission reductions. Types of emission reduction projects that have been funded in the past include electrification of stationary internal combustion engines (e.g., agricultural irrigation pumps), replacing old heavy-duty trucks with new, cleaner, more efficient heavy-duty trucks, and replacement of old farm tractors. The VERA will be used to offset the project's increase in emissions so that the Proposed Project would have no increase in construction emissions above the significance threshold. Similarly, if the air quality analysis indicates that the activities pose a significant health risk, then CDFW will identify mitigation measures, which, as a performance standard, will ensure health risks are at a less-than-significant level. Examples of appropriate mitigation may				X		X			

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	include, but not be limited to, use of alternative fueled equipment, use of aftermarket control devices such as diesel particulate filters, use of electrical equipment where possible, or reduction in number of hours of equipment use with a minimum reduction in diesel particulate matter of 85% compared to a Tier 2 engine or equivalent to 100 trucks per day based on CARB's Air Quality and Land Use Handbook.				X		X			

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FISH-CONSTRUCT-4a: Relocate Special-Status Fish Species Outside of the Work Area	Prior to commencing instream construction, a barrier will be constructed around the affected area and qualified fisheries biologists shall survey the exclosure by making a minimum of three passes by electrofishing, using protocols developed by NMFS (2000). All fish captured, including special-status species, will be placed into a suitable holding container of cool, aerated stream water and then relocated to a suitable location near the construction area. Construction in the side channel will occur when it is dry or has low flow to the extent feasible; water in the work area will be diverted using coffer dams or similar structures.	X						CFDW and/or Contractor	During construction	

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FISH-CONSTRUCT-4b: Monitor and Maintain Fish Exclosure	The fish exclusion structure will remain in place during all instream construction activities and will be monitored daily during instream construction to ensure that it is effectively excluding fish. If the fisheries biologist determines that the exclosure has been compromised, instream construction will be stopped until the biologist has repeated **Mitigation Measure FISH-CONSTRUCT-4a** and the exclosure has been repaired and is deemed effective.	X						CDFW and/or Contractor	During construction	

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FISH-REINTRO-1: Determine Stream-specific Take Totals	CDFW will confer with USFWS and NMFS to determine stream-specific take totals that incorporate estimates of viable population size, life stage-specific survival, and the maintenance of genetic diversity of the donor stock populations. These take totals will be incorporated as specific permit conditions in a ESA section 10(a)(1)(A) permit, which must be issued prior to broodstock collection. At a minimum, the selected threshold(s) shall ensure that the adverse effects of broodstock collection will not be substantial in the context of the overall population of each spring-run donor stock.			X				CDFW	Prior to conducting wild spring-run broodstock collection	

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FISH-MANAGEMENT-1: Implement Conservation Measures prior to and during Construction Activities	CDFW shall implement appropriate Conservation Measures from Appendix I, CDFW's Conservation Measures for Biological Resources that May Be Affected by Program-level Actions, prior to and during the construction of fish segregation weirs and barriers. Pre-construction planning shall include a site assessment by a qualified fisheries biologist to determine the potential for special-status species to occur in the vicinity. If the biologist determines that special-status aquatic species may be present, CDFW shall implement the applicable Appendix I avoidance and minimization measures for each species that may be present.				X			CDFW and/or Contractor	Before and during construction	

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FISH-MANAGEMENT-5a: Monitor Fish Communities in the Vicinity of Segregation Weirs and Traps	If actions described in Impact FISH-MANAGEMENT-5 are used in the Restoration Area, CDFW shall assess the species composition of fish communities within the 500-foot reach both upstream and downstream of each segregation weir or trap, during the time of year that the weir(s) or trap is in place. The monitoring activities shall focus on large bodied special-status fish species such as green sturgeon and steelhead. Monitoring techniques may include the use of visual surveys, rod and reel angling, set lines, fyke nets, DIDSON™, or seines.				X			CDFW	During operation	

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FISH-MANAGEMENT-5b: Develop and Implement Measures that Allow Special-Status Large Bodied Fishes to Bypass Weirs and Traps	If as a result of **Mitigation Measure FISH-MANAGEMENT-5a** or through other means, CDFW identifies that, outside of the current seasonal operation of the HFB (September to mid-December), the migration of special-status large bodied fishes could be impeded by the operation of the weir(s) or trap and haul activities, then CDFW shall modify the operation of the weir or implement measures that allow fish to bypass the weir so that movement of large bodied special-status fish species such as green sturgeon and steelhead is not impeded. Such measures may include removal or relocation of the weir(s), or operating a trap(s) to allow for manual selection of fish passing across the barrier.				X			CDFW and/or Contractor	During operation	
FISH-MANAGEMENT-8a: Check Traps Daily and Minimize Handling of Fish	To reduce stress on captured fish, all trapping devices will be checked at least once per day. Untargeted wildlife (e.g., snakes, turtles) caught in traps will be released into suitable habitat for the species. Traps				X			CDFW	During operation	

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	will be checked more frequently during times when conditions are stressful (e.g., high temperatures, large amounts of debris during high flow events) to reduce the time that fish are subject to trap-related stress. Fish will be carefully handled and given sufficient time to recover (at least 30 minutes) prior to being released back into the river. If rotary screw traps are used, they will be operated in accordance with the USFWS "Draft Rotary Screw Trap Protocol for Estimating Production of Juvenile Chinook Salmon" (USFWS 2008) and/or similar protocols which are at least as protective and developed after conferring with USFWS and, if required, NMFS.				X					

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FISH-MANAGEMENT-8b: Adaptively Manage Trap Operations	If mortalities greater than 2 fish or 2% of total catch are observed in a given day due to high debris loads, traps will be removed or raised out of the water until conditions are suitable for survival of fish (i.e., reduced winds or streamflow, improved weat her conditions). For rotary screw traps, if predation causes such mortality, a structural refuge will be installed inside the trap to reduce predation. This will consist of a perforated plastic box or similar refuge for small fish within the rotary screw trap to prevent predation by larger fish captured in the trap.				X			CDFW	During operation	
FISH-MONITORING-2a: Implement Standard Protocols for Active Sampling of Aquatic Species	When conducting active sampling, CDFW shall adhere to fish handling procedures prescribed in Guidelines for the Use of Fishes in Research (Nickum *et al*. 2004), or any more current protocols which are considered at least as protective.					X		CDFW	During operation	
FISH-MONITORING-2b: Use Passive Sampling	To reduce impacts associated with active instream					X		CDFW	During operation	

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Techniques in place of Active Sampling Techniques, When Appropriate	monitoring activity such as electrofishing, seining, and use of jet or propeller motor boats by investigators, the use of passive capture equipment will be used in place of active sampling whenever appropriate and feasible. Passive sampling equipment includes entanglement gear such as gill nets and trammel nets, and entrapment gear such as Fyke nets and rotary screw traps.					X				
FISH-MONITORING-2c: Use Observational Techniques in place of Traditional Capture Techniques, When Appropriate	Wherever possible and appropriate, observational techniques will be used in place of capture techniques to reduce the need to handle organisms.					X		CDFW	During operation	
FISH-MONITORING-2d: Check Rotary Screw Traps Daily	Rotary screw traps will be operated in accordance with the USFWS "Draft Rotary Screw Trap Protocol for Estimating Production of Juvenile Chinook Salmon" (USFWS 2008) and/or similar protocols which are at least as protective and developed after conferring with USFWS and, if required,					X		CDFW	During operation	

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	NMFS. USFWS (2008) includes several measures, as follows. To reduce stress on captured fish, all trapping devices will be checked at least once per day when in the fishing position. Untargeted wildlife (e.g., snakes, turtles) caught in traps will be released into suitable habitat for the species. Traps will be checked more frequently during times when conditions are stressful (e.g., high temperatures, large amounts of debris during high flow events) to reduce the time that fish are subject to trap-related stress. Fish may need to be anesthetized, which would be done using methods acceptable to USFWS and NMFS before they are handled and given sufficient time to recover (at least 30 minutes) prior to being released back into the river.					X				
FISH-MONITORING-2e: Adaptively Manage Trap Operations	If mortalities greater than two fish or 2% of total catch are observed in a given day due to high debris loads, traps will be raised out of the water until					X		CDFW	During operation	

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	conditions are suitable for survival of fish (i.e., reduced winds or streamflow, improved weather conditions). If predation causes such mortality, a structural refuge will be installed inside the trap to reduce predation. This will consist of a perforated plastic box or similar refuge for small fish within the rotary screw trap to prevent predation by larger fish captured in the trap.					X				

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FISH-RECREATION-1: Implement Conservation Measures prior to and during Construction of Recreational Enhancements	CDFW shall implement appropriate conservation measures from Appendix I, CDFW's Conservation Measures for Biological Resources that May Be Affected by Program-level Actions, prior to and during the construction of recreational fishing enhancements. Pre-construction planning shall include a site assessment by a qualified fisheries wildlife biologist to determine the potential for special-status species to occur in the vicinity. If the biologists determine that special-status species may be present, CDFW shall implement the applicable Appendix I avoidance and minimization measures for each species that may be present.						X	CDFW and/or Contractor	Before and during construction	
BIO-CONSTRUCT-1a: Perform Focused Surveys for Special-Status Plant Species	Within one year prior to commencement of ground disturbing activities, a qualified CDFW botanist will perform surveys for special-status plant species with the potential to occur at the SCARF site.	X						CDFW	Before construction	

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	Floristic surveys will be performed according to the Protocols for Surveying and Evaluating Impacts to Specials Status Native Plant Populations and Natural Communities (CDFG 2009 or current version). Floristic surveys will include the use of a reference population to increase the likelihood of detection, and will be performed during the appropriate bloom period(s) for each species. If special-status plants are detected within the construction zone or within a 100-foot radius of the construction zone, CDFW will implement **Mitigation Measure BIO-CONSTRUCT-1b**.	X								
BIO-CONSTRUCT-1b: Avoid or Minimize Impacts to Special-Status Plant Species	If special-status plants are detected within the construction zone or within a 100-foot radius of the construction zone, CDFW will adjust the construction footprint or establish exclusion fencing to avoid impacts to the plants. Locations of special-status plant populations will be	X						CDFW and/or Contractor	During construction	

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	clearly identified in the field by staking, flagging, or fencing a minimum 100-foot wide buffer around them prior to the commencement of activities that may cause disturbance. No activity will occur within the buffer area. If avoidance is not feasible, then CDFW will implement measures to minimize the impact to the species. Minimization measures may include transplanting perennial species, seed collection and dispersal for annual species, and other conservation strategies that will protect the viability of the local population. If minimization measures are implemented, monitoring of plant populations will be conducted annually for 5 years to assess the mitigation's effectiveness. The performance standard for the mitigation will be no net reduction in the size or viability of the local population.	X								
BIO-CONSTRUCT-2a:	Prior to implementation of	X						CDFW	Before	

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Perform 2 Years of Surveys for Special Status Vernal Pool Branchiopods	construction activities, CDFW biologists will perform surveys for special-status vernal pool branchiopods species in seasonally ponded depression with the potential to be impacted by construction of the SCARF. Surveys will be performed according to the Interim Survey Guidelines to Permittees for Recovery Permits under Section 10(a)(1)(A) of the Endangered Species Act for the Listed Vernal Pool Branchiopods (USFWS 1996 or current version).								construction	

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BIO-CONSTRUCT-2b: Avoid Impacts to Suitable Vernal Pool Branchiopods Habitat	The Proposed Project will be designed to avoid impacts to suitable vernal pool branchiopods' habitat. Such avoidance measures may include adjusting roadway and pipeline alignments, minimizing the footprint of borrow sites, and locating staging/stockpile areas outside of suitable habitat. If vernal pools are present, a 250-foot no disturbance buffer will be established from the high water mark of the vernal pools and seasonal wetlands that provide suitable habitat for vernal pool crustaceans. Wetland habitat will be delineated by staking, flagging or fencing. This buffer will be established prior to ground-disturbing activities, and it will remain until ground-disturbing activities in that area are completed.	X						DGS and Contractor	During design and construction	
BIO-CONSTRUCT-2c: Replace Vernal Pool	If occupied vernal pool branchiopods habitat cannot							CDFW	Prior to any construction with	

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Branchiopod Habitat	be avoided, CDFW will first identify if there are potential wetland mitigation opportunities on-site and will preferentially conserve, restore, or construct new wetland habitat at this location. If habitat cannot be restored on-site or in the immediate vicinity of the disturbance location, replacement at a nearby off-site location will be provided. The replacement of habitat will be equivalent to the nature of the habitat lost, and will be provided at a suitable ratio to ensure that, at a minimum, there is no net loss of habitat acreage or value. The replacement habitat will be set aside in perpetuity for habitat use. Mitigation ratios to achieve the "no net loss" standard will be determined in consultation with the USFWS. If off-site compensation includes dedication of conservation easements, purchase of mitigation credits or other off-site conservation	X							potential to adversely affect vernal pool branchiopad habitat	

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	measures, the details of these measures will be developed through consultation with USFWS. The plan will include information on responsible parties for long-term management, holders of conservation easements, long-term management requirements, and other details, as appropriate, for the preservation of long-term viable populations. Any impacts that result in a compensation purchase will be required to do so with an endowment for land management in perpetuity prior to any project groundbreaking activities.	X								

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BIO-CONSTRUCT-3a: Conduct Protocol-Level Surveys for California Tiger Salamander	CDFW will conduct a minimum of 2 years of surveys to determine the presence/absence of CTS at the SCARF site. Surveys will be conducted in accordance with the Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander (USFWS 2003). In consultation with the USFWS, CDFW may modify survey protocols to reflect site conditions and potential utilization of habitat by CTS. If protocol surveys result in negative findings of CTS for 2 consecutive years, then **Mitigation Measure BIO-CONSTRUCT-3c** would not be implemented.	X						CDFW	Before construction	

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BIO-CONSTRUCT-3b: Avoid Impacts to Suitable Upland California Tiger Salamander.	To the extent feasible, the Proposed Project will be designed to avoid impacts to suitable upland CTS habitat. Such avoidance measures may include adjusting roadway and pipeline alignments, minimizing the footprint of borrow sites, and locating staging/stockpile areas outside of suitable upland habitat.	X						DGS	During design	
BIO-CONSTRUCT-3c: Minimize Construction-related Impacts to California Tiger Salamander	If CTS are detected during protocol surveys conducted under **Mitigation Measure BIO-CONSTRUCT-3a**, or in the absence of conducting 2 years of protocol-level surveys, CDFW will implement the following actions during construction to minimize potential impacts to CTS. • Prior to commencing ground disturbing activities, construction workers will be educated regarding CTS and the measures intended to protect this species.	X						CDFW and/or Contractor	Before and during construction	

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	• When feasible, there will be a 50-foot no-disturbance buffer around burrows that provide suitable upland habitat for CTS. Burrows considered suitable for CTS will be identified by a qualified CDFW biologist. The biologist will delineate and mark the no-disturbance buffer. • All suitable burrows directly impacted by construction will be hand excavated under the supervision of a qualified wildlife biologist. If CTS are found, the biologist will relocate the organism to the nearest burrow that is outside of the construction impact area. • All ground-disturbing work will occur during daylight hours. In coordination with USFWS, and depending on the level of rainfall and site conditions. CDFW will monitor the National Weather Service 72-hour	X								

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	forecast for the work area. If a 70% or greater chance of rainfall is predicted within 72 hours of project activity, all activities in areas within 1.3 miles of potential or known CTS breeding sites will cease until no further rain is forecast. If work must continue when rain is forecast, a qualified biologist will survey the project site before construction begins each day rain is forecast. If rain exceeds 0.25 inch during a 24 hour period, work will cease until no further rain is forecast. This restriction is not applicable for areas located greater than 1.3 miles from potential or known CTS breeding sites once they have been encircled with CTS exclusion fencing. However, even after exclusion fencing is installed, this condition would still apply to construction related traffic moving though areas within 1.3 miles of potential or known CTS breeding sites	X								

Mitigation Measure Title	Mitigation Measure Description	Applicable Activity (X = applicable)						Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
	but outside of the salamander exclusion fencing (e.g. on roads). • For work conducted during the CTS migration season (November 1 to May 31), exclusionary fencing will be erected around the construction site during ground disturbing activities after hand excavation of burrows has been completed. A biological monitor will visit the site weekly to ensure that the fencing is in good working condition. Fencing material and design will be subject to the approval of USFWS. If exclusionary fencing is not used, a qualified biological monitor will be on-site during all ground disturbance activities. Exclusion fencing will also be placed around all spoils and stockpiles. • For work conducted during the CTS migration season	X								

Mitigation Measure Title	Mitigation Measure Description	Applicable Activity (X = applicable)						Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
	(November 1 to May 31), a qualified biologist will survey the active work areas (including access roads) in mornings following measurable precipitation events. Construction may commence once the biologist has confirmed that no CTS are in the work area. • Prior to beginning work each day, underneath equipment and stored pipes greater than 1.2 inches in diameter will be inspected for CTS. If any are found they will be allowed to move out of the construction area under their own accord. • Trenches and holes will be covered and inspected daily for stranded animals. Trenches and holes deeper than 1 foot will contain escape ramps (maximum slope of 2:1) to allow trapped animals to escape uncovered holes or trenches. Holes and trenches will be	X								

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		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
	inspected prior to filling. • All food and food-related trash will be enclosed in sealed trash containers at the end of each workday and removed completely from the construction site once every three days to avoid attracting wildlife. • A speed limit of 15 mph will be maintained on dirt roads. • All equipment will be maintained such that there are no leaks of automotive fluids such as fuels, oils, and solvents. Any fuel or oil leaks will be cleaned up immediately and disposed of properly. • Plastic monofilament netting (erosion control matting) or similar material will not be used at the project site because CTS may become entangled or trapped. Acceptable substitutes include coconut coir matting	X								

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		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
	or tackified hydroseeding compounds. • Hazardous materials such as fuels, oils, solvents, etc. will be stored in sealable containers in a designated location that is at least 100 feet from wetlands and the San Joaquin River channel. If it is not feasible to store hazardous materials 100 feet from wetlands and the river channel, then spill containment measures will be implemented to prevent the possibility of accidental discharges to wetlands and waters.	X								
BIO-CONSTRUCT-3d: Minimize Construction-related Impacts to Western Spadefoot	• Prior to commencing ground disturbing activities, construction workers will be educated regarding western spadefoot, and the measures intended to protect these species. • For work conducted during the western spadefoot toad	X						CDFW and/or Contractor	Before and during construction	

Mitigation Measure Title	Mitigation Measure Description	Applicable Activity (X = applicable)						Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
	migration and breeding season (November 1 to May 31), a qualified biologist will survey the active work areas (including access roads) in mornings following measurable precipitation events. Construction may commence once the biologist has confirmed that no spadefoot toads are in the work area. • When feasible, there will be a 50-foot no-disturbance buffer around burrows that provide suitable upland habitat for western spadefoot toad. Burrows considered suitable for spadefoot will be identified by a qualified CDFW biologist. The biologist will delineate and mark the no-disturbance buffer. • If western spadefoot is toad is found within the construction footprint, it will be allowed to move out of harm's way of its own	X								

Mitigation Measure Title	Mitigation Measure Description	Applicable Activity (X = applicable)						Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
	volition or a qualified biologist will relocate the organism to the nearest burrow that is outside of the construction impact area. • Prior to beginning work each day, underneath equipment and stored pipes greater than 1.2 inches (3 cm) in diameter will be inspected for western spadefoot toad. If any are found, they will be allowed to move out of the construction area under their own accord. • Trenches and holes will be covered and inspected daily for stranded animals. Trenches and holes deeper than 1 foot will contain escape ramps (maximum slope of 2:1) to allow trapped animals to escape uncovered holes or trenches. Holes and trenches will be inspected prior to filling.	X								

Mitigation Measure Title	Mitigation Measure Description	Applicable Activity (X = applicable)						Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
		X								
BIO-CONSTRUCT-4: Implement Pre-construction Surveys and Minimization Measures for Western Pond Turtle	Pre-construction surveys for WPT will be conducted by a qualified biologist 14 days before and 24 hours before the start of construction activities where suitable habitat exists (i.e., along riparian areas, ponds and freshwater emergent wetlands). If WPT or their nests are observed during pre-construction surveys, the following measures will be implemented: • A qualified biologist will be on site to monitor construction in suitable WPT habitat. WPT found within the construction area will be allowed to leave on its own volition or it will be captured by the qualified biologist and relocated out of harm's way to the nearest suitable habitat immediately upstream or downstream from the project site. • If WPT nests are identified	X						CDFW and/or Contractor	Before and during construction	

Mitigation Measure Title	Mitigation Measure Description	Applicable Activity (X = applicable)						Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
	in the work area during pre-construction surveys, a 300-foot no-disturbance buffer will be established between the nest and any areas of potential disturbance. Buffers will be clearly marked with temporary fencing. Construction will not be allowed to commence in the exclusion area until hatchlings have emerged from the nest, or the nest is deemed inactive by a qualified biologist.	X								
BIO-CONSTRUCT-5: Implement Pre-construction Surveys and Minimization Measures for Burrowing Owls	Prior to initiating ground-disturbing activities, CDFW will conduct surveys for burrowing owls in accordance with protocols established in the Staff Report on Burrowing Owl Mitigation (CDFG 2012 or current version). If ground-disturbing activities are delayed or suspended for more than 30 days after the pre-construction survey, the site will be resurveyed. If burrowing owls are detected, disturbance to burrows will be	X						CDFW and/or Contractor	Before and during construction	

Mitigation Measure Title	Mitigation Measure Description	Applicable Activity (X = applicable)						Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
	avoided during the nesting season (February 1 through August 31). CDFW will establish buffers around occupied burrows in accordance with guidance provided in the Staff Report on Burrowing Owl Mitigation, and at the discretion of the qualified CDFW wildlife biologist. Buffers around occupied burrows will be a minimum of 656 feet during the breeding season, and 160 feet during the non-breeding season. Outside of the nesting season (February 1 through August 31), passive owl relocation techniques will be implemented. Owls would be excluded from burrows within 160 feet of construction by installing one-way doors in burrow entrances. The work area will be monitored daily for 1 week to confirm owl departure from burrows prior to any ground-disturbing activities. Where possible	X								

Mitigation Measure Title	Mitigation Measure Description	Applicable Activity (X = applicable)						Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
	burrows will be excavated using hand tools and refilled to prevent reoccupation. Sections of flexible plastic pipe will be inserted into the tunnels during excavation to maintain an escape route for any animals inside the burrow. If occupied burrows cannot be avoided during the non-breeding season, CDFW will enhance or create burrows in adjacent habitat at a 1:1 ratio (burrows destroyed to burrows enhanced or created) one week prior to implementation of passive relocation techniques. If burrowing owl habitat enhancement or creation takes place, CDFW will develop and implement a monitoring and management plan to assess the effectiveness of the mitigation.	X								
BIO-CONSTRUCT-6a: Implement Pre-construction Surveys and Minimization	Surveys for bald and golden eagle nests will be conducted within 2 miles of any construction area supporting							CDFW and/or Contractor	Before and during construction	

Mitigation Measure Title	Mitigation Measure Description	Applicable Activity (X = applicable)						Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
Measures for Bald Eagle and Golden Eagle	suitable nesting habitat and important eagle roost sites and foraging areas. Surveys will be conducted in accordance with the USFWS Interim Golden Eagle Inventory and Monitoring Protocols (USFWS 2010), and CDFW's Bald Eagle Breeding Survey Instructions (CDFG 2010), or current guidance. If an active eagle's nest is found, project disturbance will not occur within 0.5 mile of the active nest site during the breeding season (December 30 through July 1), or in any area that may disturb the nesting birds. The 0.5 mile no-disturbance buffer will be maintained throughout the breeding season or until the young have fledged and are no longer dependent upon the nest or parental care for survival.	X X								

Mitigation Measure Title	Mitigation Measure Description	Applicable Activity (X = applicable)						Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
BIO-CONSTRUCT-6b: Implement Pre-construction Surveys and Minimization Measures for Swainson's Hawk and White-tailed Kite	If construction occurs between February 1 and August 31, CDFW will conduct surveys for nesting raptors, with a focus on Swainson's hawk and white-tailed kite, in accordance with established CDFW raptor survey protocols (e.g., CDFG 2000, or current guidance). Surveys will cover a minimum of a 0.5-mile radius around the construction area. If nesting raptors are detected, CDFW will establish buffers around nests that are sufficient to ensure that breeding is not likely to be disrupted or adversely impacted by construction. Buffers will be maintained until a qualified CDFW biologist has determined that young have fledged and are no longer reliant upon the nest or parental care for survival. If potential nesting trees are to be removed during construction activities, removal will take place outside of Swainson's hawk nesting	X						CDFW and/or Contractor	Before and during construction	

Mitigation Measure Title	Mitigation Measure Description	Applicable Activity (X = applicable)						Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
	season and CDFW will develop a plan to replace known Swainson's hawk nest trees at a ratio of 3:1. If replacement planting is implemented, monitoring will be conducted annually for 5 years to assess the mitigation's effectiveness. The performance standard for the mitigation will be 65% survival of all replacement plantings.	X								
BIO-CONSTRUCT-6c: Implement Pre-construction Surveys and Minimization Measures for Non-listed Raptors	If construction occurs between February 1 and August 31, CDFW will conduct surveys for nesting raptors in accordance with established CDFW raptor survey protocols. Surveys will cover a minimum of a 0.5-mile radius around the construction area. If nesting raptors are detected, CDFW will establish buffers around nests that are sufficient to ensure that breeding is not likely to be disrupted or adversely impacted by construction. Buffers around active raptor nests will be 500 feet for non-listed raptors, unless a	X						CDFW and/or Contractor)	Before and during construction	

Mitigation Measure Title	Mitigation Measure Description	Applicable Activity (X = applicable)						Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
	qualified biologist determines that smaller buffers would be sufficient to avoid impacts to nesting raptors. Factors to be considered for determining buffer size will include: the presence of natural buffers provided by vegetation or topography; nest height; locations of foraging territory; and baseline levels of noise and human activity. Buffers will be maintained until a qualified CDFW biologist has determined that young have fledged and are no longer reliant upon the nest or parental care for survival. If potential nesting trees are to be removed during construction activities, removal will take place outside of the raptor nesting season and CDFW will develop a plan to replace known nest trees at a ratio of 3:1. If replacement planting is implemented, monitoring will be conducted annually for 5 years to assess the mitigation's effectiveness. The performance standard for the mitigation will be 65%	X X								

Mitigation Measure Title	Mitigation Measure Description	Applicable Activity (X = applicable)						Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
	survival of all replacement plantings.									
BIO-CONSTRUCT-7a: Implement Pre-construction Surveys and Minimization Measures for Special-Status Passerine Species	If construction begins between February 1 and August 31, CDFW will conduct surveys for special-status birds within a 1,000-ft radius of the construction area. Surveys will be conducted by biologists adhering to guidance offered in Western Yellow-billed Cuckoo Natural History Summary and Survey Methodology (Halterman et al. 2009); Least Bell's Vireo Survey Guidelines (USFWS 2001); and/or A Survey Protocol for Willow Flycatcher in California (Bombay et al. 2003). If nests are detected, CDFW will establish buffers around nests that are sufficient to ensure that breeding is not likely to be disrupted or adversely impacted by construction. No-disturbance buffers around active nests will be a minimum of 500 feet, unless a qualified CDFW biologist determines that smaller buffers would be	X						CDFW and/or Contractor	Before and during construction	

Mitigation Measure Title	Mitigation Measure Description	Applicable Activity (X = applicable)						Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
	sufficient to avoid impacts to nesting birds. Factors to be considered for determining buffer size will include: the presence of natural buffers provided by vegetation or topography; nest height; locations of foraging territory; and baseline levels of noise and human activity. Buffers will be maintained until a qualified CDFW biologist has determined that young have fledged and are no longer reliant upon the nest or parental care for survival.	X								
BIO-CONSTRUCT-7b: Implement Pre-construction Surveys for Birds Protected under the MBTA	Whenever possible, impacts to native nesting birds will be avoided by not conducting project activities that involve clearing of vegetation, generation of mechanical noise, or ground disturbance during the typical breeding season (February 1 to September 1), if	X						CDFW and/or Contractor	Before and during construction	

Mitigation Measure Title	Mitigation Measure Description	Applicable Activity (X = applicable)						Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
	species covered under the Migratory Bird Treaty Act and Fish and Game Code sections 3503, 3503.5, and/or 3513 are determined to be present. If construction begins between February 1 and August 31, CDFW will conduct surveys for nesting birds within a 1,000-ft radius of the construction area. If nests are detected, CDFW will establish buffers around nests that are sufficient to ensure that breeding is not likely to be disrupted or adversely impacted by construction. Buffers around active nests will be a minimum of 250 feet, unless a qualified CDFW biologist determines that smaller buffers would be sufficient to avoid impacts to nesting birds. Factors to be considered for determining buffer size will include: the presence of natural buffers provided by vegetation or topography; nest height; locations of foraging territory; and baseline levels of noise and	X								

Mitigation Measure Title	Mitigation Measure Description	Applicable Activity (X = applicable)						Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
	human activity. Buffers will be maintained until young have fledged or the nests become inactive.	X								
BIO-CONSTRUCT-8a: Conduct Pre-construction Surveys for Bat Species	No less than 7 days and no more than 14 days prior to the beginning of ground disturbance and/or construction activities, a qualified CDFW wildlife biologist, or wildlife biologist approved by CDFW, will conduct surveys for special-status bats during the appropriate time of day to maximize detectability to determine if bat species are roosting near the work area. Survey methodology may include visual surveys of bats (observation of presence of bats during foraging period), inspection for suitable habitat or bat sign (guano), or use of ultrasonic detectors (Anabat, etc.). Visual surveys may consist of a daytime pedestrian survey looking for evidence of bat use (e.g., guano) and/or an evening emergence survey to	X						CDFW and/or Contractor	Before and during construction	

Mitigation Measure Title	Mitigation Measure Description	Applicable Activity (X = applicable)						Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
	note the presence or absence of bats and will include trees within 0.25 mile of project construction activities. The type of survey will depend on the condition of the potential roosting habitat. If no bat roosts are found, then no further study is required. If evidence of bat use is observed, the number and species of bats using the roost will be determined.	X								
BIO-CONSTRUCT-8b: Avoid and Minimize Impacts to Roosting/Breeding Sites	CDFW will avoid disturbance to roosts to the greatest extent feasible. If roosts must be removed, the bats will be excluded from the roosting site before it is removed. A mitigation program addressing compensation, exclusion methods, and roost removal procedures will be developed prior to implementation. Exclusion methods may include use of one-way doors at roost entrances (bats may leave, but not reenter), or sealing roost entrances when a site can be confirmed to	X						CDFW and/or Contractor	Before and during construction	

Mitigation Measure Title	Mitigation Measure Description	Applicable Activity (X = applicable)						Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
	contain no bats. Exclusion efforts may be restricted during periods of sensitive activity (e.g., during hibernation or while females in maternity colonies are nursing young).	X								

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		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
BIO-CONSTRUCT-8c: Replace Bat Roosting/Breeding Sites	If roosts cannot be avoided or it is determined that construction activities may cause roost abandonment, such activities may not commence until permanent, elevated bat houses have been installed outside of, but near the construction area. Placement and height will be determined by a qualified CDFW wildlife biologist, but the height of bat house will be at least 15 feet. Bat houses will be multi-chambered and be purchased or constructed in accordance with CDFW standards. The number of bat houses required will be dependent upon the size and number of colonies found, but at least one bat house will be installed for each pair of bats (if occurring individually), or of sufficient number to accommodate each colony of bats to be relocated.	X						CDFW and/or Contractor	Before and during construction	
BIO-CONSTRUCT-9: Conduct Pre-construction Surveys and Minimization	No less than 14 days and no more than 30 days prior to the beginning of ground disturbance and/or	X						CDFW and/or Contractor	Before construction in locations with potential to affect	

Mitigation Measure Title	Mitigation Measure Description	Applicable Activity (X = applicable)						Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
Measures for American Badger	construction activities, CDFW will conduct a survey to determine if American badger den sites are present at the SCARF site. If dens are found, they will be monitored for badger activity. If CDFW determines that dens may be active, the entrances of the dens will be blocked with soil, sticks, and debris for three to five days to discourage the use of these dens prior to project disturbance activities. The den entrances will be blocked to an incrementally greater degree over the three to five-day period. After the qualified CDFW biologist determines that badgers have stopped using active dens, the dens will be hand-excavated with a shovel to prevent re-use during construction. No disturbance of active dens will take place when cubs may be present and dependent on parental care, as determined by a qualified CDFW biologist.	X							badgers	
BIO-CONSTRUCT-10:	A qualified biologist will							CDFW and/or	Before	

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		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
Conduct Pre-construction Surveys and Minimization Measures for San Joaquin Kit Fox	conduct pre-construction surveys no less than 14 days and no more than 30 days before the commencement of construction activities to identify potential dens more than 5 inches in diameter. CDFW will implement USFWS Standardized Recommendations for Protection of San Joaquin Kit Fox Prior to or During Ground Disturbance (USFWS 1999, 2011). CDFW will notify USFWS in writing of the results of the pre-construction survey within 30 days after these activities are completed. If potential dens are located within the proposed work area and cannot be avoided during construction activities, a USFWS-approved biologist will determine if the dens are occupied. If occupied dens are present within the proposed work area, they will be avoided through the use of exclusion zones following the most current USFWS procedures	X						Contractor	construction in locations with potential to affect San Joaquin Kit Fox	

Mitigation Measure Title	Mitigation Measure Description	Applicable Activity (X = applicable)						Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
	(currently USFWS 1999, 2011). Furthermore, CDFW will notify USFWS immediately if a natal or pupping den is found in the survey area, and will present the results of pre-activity den searches within 5 days after these activities are completed and before the start of construction activities in the area. CDFW, in coordination with USFWS, will determine if SJKF den removal is appropriate. If unoccupied dens need to be removed, the USFWS-approved biologist will remove these dens by hand-excavating them in accordance with USFWS procedures (USFWS 1999, 2011). Additional conservation measures will be coordinated between USFWS and CDFW, and may include replacing dens, installing off-site artificial dens, acquiring compensatory habitat, or other conservation options. Compensation may include dedicating conservation easements,	X								

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		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
	purchasing mitigation credits, or other off-site conservation measures, and the details of these measures will be included in the mitigation plan and must occur with full endowments for management in perpetuity. The plan will include information on responsible parties for long-term management, holders of conservations easements, long-term management requirements, and other details, as appropriate, for the preservation of long-term viable SJKF populations. If conservation measures are implemented, CDFW will monitor their performance annually for 5 years to assess the mitigation's effectiveness. The performance standard for the mitigation will be no net reduction in the size or viability of the local SJKF population.	X								
BIO-CONSTRUCT-11a: Minimize Area of Disturbance of Riparian	The disturbance or removal of vegetation will not exceed the minimum necessary to	X						DGS and contractor	During design and construction	

Mitigation Measure Title	Mitigation Measure Description	Applicable Activity (X = applicable)						Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
Habitat	complete construction and will only occur within the defined work area.	X								
BIO-CONSTRUCT-11b: Develop and Implement Revegetation Plan for Riparian Habitat Disturbed by Construction	CDFW will develop a revegetation plan for riparian habitat and sensitive natural communities disturbed by construction. All disturbed soils and new fill in riparian habitat or sensitive natural communities will be revegetated with site-appropriate native species. Any native vegetation 4 inches or greater DBH damaged or removed as result of construction activity will be replaced at a 3:1 ratio; this ratio will increase to 10:1 for native trees of 24 inches DBH and greater. Revegetation areas will be maintained and monitored to ensure a minimum of 65% survival of the plantings after 5 years.	X						CDFW, DGS and/or Contractor	During design and construction	
BIO-CONSTRUCT-12a: Obtain Regulatory Permits for Work	Work within areas defined as waters of the U.S. that includes placement of fill will require a	X						CDFW and/or Contractor	Before construction	

Mitigation Measure Title	Mitigation Measure Description	Applicable Activity (X = applicable)						Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
Activities Taking Place in Wetlands and Waters of the United States and the State	CWA Section 404 permit from the USACE and Section 401 Water Quality Certification from the RWQCB. All work proposed in jurisdictional waters of the U.S. will be authorized by permits from the USACE and RWQCB. In areas where project activities are temporary in nature, jurisdictional wetland and other waters of the U.S. will be restored to their condition prior to disturbance. In areas where permanent disturbance to jurisdictional waters or wetlands will occur, CDFW will first identify if potential mitigation sites are present within close proximity to the area of disturbance, and will construct new or restore degraded wetlands. If waters or wetlands cannot be restored on-site or in the immediate vicinity of the disturbance location, replacement at a nearby off-site location will be provided. The replacement of waters or wetlands will be	X								

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		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
	equivalent to the nature of the habitat lost, and will be provided at a suitable ratio to ensure that, at a minimum, there is no net loss of habitat acreage or value. The replacement habitat will be set aside in perpetuity for habitat use. Mitigation ratios to achieve the "no net loss" standard will be determined in consultation with the USACE and RWQCB.	X								
BIO-CONSTRUCT-12b: Avoidance of and Mitigation for Incidental Fill	Incidental fill of wetland areas will be minimized wherever possible. Temporary construction fencing will be erected around wetlands areas to reduce the potential of incidental fill. Areas affected by construction will be restored to pre-construction contours and revegetated using a mix of native vegetation in accordance with **Mitigation Measure BIO-CONSTRUCT-11b.**	X						CDFW, DGS, and/or Contractor	During design and construction	
BIO-REINTRO-3:	When project activities are							CDFW and/or	Before and during	

Mitigation Measure Title	Mitigation Measure Description	Applicable Activity (X = applicable)						Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
Conduct Project-Level Assessment of Activity, and Implement Conservation Measures to Avoid, Minimize, or Mitigate Impacts	defined to a level that impacts to biological resources can be evaluated, and prior to implementing that component or taking actions that commit CDFW to implementing that component, CDFW will assess the site to determine the potential for impacts to biological resources. At minimum, the assessment will include a CNDDB search of the site vicinity (minimum 5-mile radius), and a site visit by a qualified botanist and wildlife biologist to evaluate the potential for special-status species and sensitive habitats to be impacted by the activity. If the biologists determine that special-status species or sensitive habitats may be affected by the activity, CDFW will implement the conservation measures listed in Appendix I, CDFW's Conservation Measures for Biological Resources that May Be Affected by Program-level Actions, for each species and habitat type that may be			X				Contractor	construction	

Mitigation Measure Title	Mitigation Measure Description	Applicable Activity (X = applicable)						Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
	affected.			X						
BIO-RECREATION-2: Preserve and Protect Special-Status Plant Populations in the Vicinity of Recreational Enhancement Areas	Prior to developing recreational enhancements, CDFW will implement the **Mitigation Measure BIO-REINTRO-3**. If the qualified botanist identifies special-status plants species in the vicinity of the recreational enhancements, CDFW will implement measures to minimize potential impacts. Minimization measures may include constructing pathways, fencing, signage, and other strategies to reduce the potential for trampling or matting that will protect the viability of the local plant population and suitable habitat. If minimization measures are implemented, monitoring of plant populations will be conducted annually for 5 years to assess the mitigation's effectiveness. The performance standard for the mitigation will be no net reduction in the size or			X			X	CDFW and/or Contractor (and DGS, depending on the selected measures)	During design, construction, and operation	

Mitigation Measure Title	Mitigation Measure Description	Applicable Activity (X = applicable)						Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
	viability of the local population.			X			X			
CR-CONSTRUCT-1a: Evaluate Cultural Resources for Eligibility for Inclusion in the CRHR, and Implement Appropriate Mitigation Measures for Eligible Resources	CDFW shall ensure that all cultural resources identified prior to or during construction of the various Proposed Project components will be evaluated for eligibility for inclusion in the CRHR. Where implementation of the Proposed Project necessitates ground disturbance at sites besides the SCARF (e.g., sites for recreational enhancements), a records search and pedestrian survey shall be conducted prior to construction. Resource evaluations will be conducted by individuals who meet the U.S. Secretary of Interior's professional standards in archaeology and architectural history. If any of the resources that are identified during this evaluation meet the eligibility criteria identified in PRC section 5024.1, or PRC section 21083.2(g), CDFW will develop and implement mitigation measures according to CEQA	X						CDFW and/or Contractor	During design and construction	

Mitigation Measure Title	Mitigation Measure Description	Applicable Activity (X = applicable)						Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
	Guidelines section 15126.4(b) before construction begins or resumes. For resources eligible for listing in the CRHR that would be rendered ineligible by the effects of project construction, CDFW shall implement mitigation measures. Mitigation measures for archaeological resources shall be selected from the following: avoidance; incorporation of sites within parks, greenspace, or other open space; capping the site; deeding the site into a permanent conservation easement; or data recovery excavation. Mitigation measures for archaeological resources shall be developed in consultation with responsible agencies, including but not limited to the State Office of Historic Preservation and, as appropriate, interested parties such as Native American tribes. Mitigation measures for historic architectural resources shall be consistent with the U.S.	X								

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	Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings. Implementation of the approved mitigation would be required before beginning/resuming any construction activities with potential to affect identified eligible resources at the site.	X								
CR-CONSTRUCT-1b: Immediately Halt Construction if Cultural Resources are Discovered	Not all cultural resources are visible on the ground surface. If any cultural resources, such as structural features, unusual amounts of bone or shell, flaked or ground stone artifacts, historic-era artifacts, human remains, or architectural remains are encountered during any project construction activities, work shall be suspended immediately at the location of the find and within an appropriate radius of at least 50 feet. A qualified archaeologist shall conduct a	X						CDFW and/or Contractor	During construction	

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		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
	field investigation of the specific site and recommend mitigation necessary for the protection or recovery of any cultural resource concluded by the archaeologist to represent a historical resource or unique archaeological resource. **Mitigation Measure CR-CONSTRUCT-1a** would then be implemented.	X								
CR-CONSTRUCT-3: Immediately Halt Construction if Human Remains are Discovered and Implement California Health and Safety Code	If human remains are accidentally discovered during the Proposed Project's construction activities, the requirements of California Health and Human Safety Code section 7050.5 must be followed. Potentially damaging excavation must halt in the area of the remains, with a minimum radius of 50 feet, and the local County Coroner must be notified. The Coroner is required to examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or state lands (Health and Safety Code section 7050.5[b]).	X						CDFW and/or Contractor	During construction	

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	If the Coroner determines that the remains are those of a Native American, he or she must contact NAHC by phone within 24 hours of making that determination (Health and Safety Code section 7050[c]). Pursuant to the provisions of PRC section 5097.98, the NAHC shall identify a Most Likely Descendent (MLD). The MLD designated by the NAHC shall have at least 48 hours to inspect the site and propose treatment and disposition of the remains and any associated grave goods.	X								
GEO-CONSTRUCT-1a: Implement Construction Best Management Practices to Minimize Erosion and the Loss of Topsoil	CDFW, DGS, or their contractor(s) shall implement the following measures: • Implement practices to minimize the contact of construction materials, equipment, and maintenance supplies with storm water. • Limit fueling and other	X						Contractor	During construction	

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	activities involving hazardous materials to use in designated areas only; provide drip pans under equipment and conduct daily checks of vehicle condition. • Implement wildlife-friendly practices to reduce erosion of exposed soil, including stabilization for soil stockpiles, watering for dust control, establishment of perimeter silt fences, and/or placement of fiber rolls. • Implement practices to maintain water quality, including silt fences, stabilized construction entrances, and storm-drain inlet protection. • Develop spill prevention and emergency response plans to handle potential fuel or other spills. • Where feasible, limit	X								

Mitigation Measure Title	Mitigation Measure Description	Applicable Activity (X = applicable)						Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
	construction to dry periods. • The performance standard for this mitigation measures is use of the best available technology that is economically achievable.	X								
GEO-CONSTRUCT-1b: Comply with Cal/OSHA Requirements for Excavation Slopes	CDFW, DGS, or their contractor(s) shall ensure that temporary excavation slopes meet Cal/OSHA requirements, as appropriate. Excavation sloping, benching, the use of trench shields, and the placement of trench spoils should conform to the last applicable Cal/OSHA standards. Nearby utilities, structures, and other improvements shall be protected from potential damage by earth movements.	X						DGS and/or Contractor	During design and/or construction	
GEO-CONSTRUCT-1c: Design Cut-and-Fill Slopes to Minimize Erosion	CDFW, DGS, or their contractor(s) shall implement the following measures: • Construction methods will	X						DGS and/or Contractor	During design and/or construction	

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		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
	incorporate appropriate erosion-prevention actions. This may include, but will not be limited to, reducing slope steepness as much as possible, re-vegetating slopes as appropriate, and directing surface drainage away from the tops of slopes. Actions shall be taken to compact fill soils uniformly. • The guidance from the Geocon 2012 Geotechnical Investigation Report (Geocon 2012) shall be used for erosion-prevention techniques, modified if necessary depending on actual field conditions.	X								
GEO-CONSTRUCT-2a: Test Fill for Recommended Compaction and Moisture Content, and Apply Appropriate Measures to Reach Desired Content When	CDFW, DGS, or their contractor(s) shall implement the following measures: • All earthwork operations should be observed by a qualified inspector who is a California licensed	X						CDFW and/or Contractor	During construction	

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Necessary	Professional Geologist and is also a California Certified Engineering Geologist. A test fill will be constructed to determine the suitability of fill material for use at the site. The results of the test fill will be used to determine the appropriate method for conditioning, placement and compaction of fill material necessary at the site to ensure stable foundation conditions are achieved. Within the existing effluent detention pond area, existing fill and loose alluvium should be removed down to competent granite bedrock. The removal should extend at least 5 feet laterally beyond the footprint of the proposed hatchery compound, including the parking area. • Over-excavation bottoms, areas to receive fill or areas left at-grade should be thoroughly scarified to a minimum depth of 8 inches,	X								

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	uniformly moisture-conditioned at or near optimum moisture content, and compacted to at least 90% relative compaction. Scarification in exposed, hard bedrock areas is not required.	X								
GEO-CONSTRUCT-2b: Ensure Fill Soils Contain Adequate Binder	CDFW, DGS, or their contractor(s) shall implement the following measures: • If fill soils consist of sand and gravel mixtures with silt or clay binder, these soils should be blended with other soils containing sufficient fines to provide adequate binder (usually 10–15% fines by dry weight). • If pond-bottom sediment is used, it should be dried and sufficiently blended with other soils such that the resulting fill does not contain organics in excess of	X						CDFW and/or Contractor	During construction	

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		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
	3% by dry weight. • Imported fill material should be primarily granular with a "very low" expansion potential (Expansion Index less than 20) and a Plasticity Index less than 15. Imported fill material should also contain sufficient binder and be free of organic material and construction debris; it should not contain rocks/cementations larger than 6 inches in their greatest dimension.	X								
GEO-CONSTRUCT-3: Accommodate Shallow Groundwater and Potential Perched Groundwater and Seepage throughout the Project Excavation Sites	CDFW, DGS, or their contractor(s) shall implement the following measures: • Drain the settling ponds several weeks prior to grading, and perform earthwork and grading operations during the summer, if possible. • Be prepared to accommodate potential	X						CDFW and/or Contractor	During construction	

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		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
	perched groundwater and seepage in deeper project excavations, such as the pond removal excavations. Depending on the extent of perched groundwater at the time of grading, temporary dewatering measures, such as wellpoints or trench drains, may be required. Some form of subgrade stabilization may be necessary where wet, unstable soils are exposed. • Depending on conditions found at the time of construction, mitigation alternatives, such as over-excavation and replacement with gravel wrapped in geosynthetic fabric, may be necessary to provide a stable bottom.	X								
GEO-CONSTRUCT-4: Take Recommended Grading and Fill Actions to Maximize Foundation Stability	CDFW, DGS, or their contractor(s) shall implement the following measures: • Foundation design will							DGS, CDFW and/or Contractor	During design and construction	

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		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
	incorporate appropriate measures to maximize long-term stability. This may address, but will not be limited to, footings and reinforcement specifications, the use of aggregate base and compacted fill or native soils, and methods to permit drainage for areas below the design flood elevation. • The Geocon 2012 Geotechnical Investigation Report (Geocon 2012) may be used as guidance, but final design and implementation will depend on actual field conditions, and modifications will be made as necessary. • A qualified geotechnical engineer will oversee onsite field investigations and approved final design.	X X								
GEO-OP-1: Conduct and Additional Investigation	Due to the increased flow through the return flow outfall							CDFW, DGS and/or Contractor	During design and construction	

Mitigation Measure Title	Mitigation Measure Description	Applicable Activity (X = applicable)						Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
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into the Flow Capacity of Impacted Channels and Implement the Investigation's Recommendations	channel, CDFW, DGS, or their contractor(s) shall conduct an investigation into the capacity of the channel and its connection to the San Joaquin River to verify that the channel and connection point have the capacity to support potential increased flows. Similarly, the volitional release channel would require the same investigation. The geotechnical investigation would be conducted by a qualified hydrologist(s) or hydraulic engineer(s) (or team of such experts) and detailed in a technical report. If the geotechnical investigation results indicate that the flow capacities of the affected channels would not be sufficient to accommodate the Proposed Project's flows, recommended actions will be included in the report. CDFW will implement the report's recommended actions. Potential recommendations may include but not be limited		X							

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	to: expansion and/or reinforcement of the existing outfall and volitional release channels, a reduction of flow rates to a level that can be supported by the existing channels, and/or an investigation into and development of alternative channels to support peak flows. As a performance standard, in no case shall the return flows from the outfall or the volitional release channel cause channel instability or erosion and sedimentation downstream.		X							

Mitigation Measure Title	Mitigation Measure Description	Applicable Activity (X = applicable)						Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
GEO-MANAGEMENT-1a: Stabilize Soils to Avoid Increasing Erosion on Streambanks	Project activities will be done in such a manner as to not increase erosion within the banks of the river during or immediately following rainfall events. All disturbed soils at project activity sites will be stabilized to reduce erosion potential, both during and following installation of equipment (e.g., weirs, fyke nets, traps, etc.). After removal of such equipment, soils shall be stabilized and recontoured, as necessary.				X			Contractor	During construction	
GEO-MANAGEMENT-1b: Use Energy Dissipaters to Minimize Turbidity at the Point of Discharge	Water deposited back into the river following Chinook salmon transport shall be done at a rate to minimize water turbidity and erosion. As necessary at each site, temporary energy dissipaters such as rip rap shall be placed at the point of discharge to moderate the return of water to the channel.				X			CDFW	During operation	
GEO-RECREATION-1: Conduct a Geotechnical	A geotechnical investigation must be conducted by a							CDFW and/or Contractor	During design, before	

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Investigation and Incorporate Report Recommendations into the Design and Construction of any Future Recreation Management Roads or Facilities	qualified geotechnical engineer (or team of geotechnical engineers) to evaluate subsurface soil and geologic conditions at future sites of recreation management roads and facilities. The investigation report should provide conclusions and recommendations relative to the geotechnical aspects of designing and constructing the recreation management roads and facilities, which are yet to be determined. Recommendations should address site and geologic conditions, including soil, groundwater, and corrosion. They should also address geologic hazards, such as regional active faults, ground shaking, liquefaction, and flooding. The report should provide seismic design criteria; excavation and cut-and-fill characteristics; criteria for foundations, retaining walls, and pavement; and any other design criteria appropriate for the Proposed Project such that						X		construction	

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		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
	the facilities remain stable. The proposed recreation management activities will incorporate all recommendations put forth by the Geotechnical Investigation Report into the design and construction of the Proposed Project.						X			
GHG-MANAGEMENT-1: Prepare Project-Level Quantitative Analysis of Construction-Related GHG Emissions, and Implement Measures to Reduce and/or Offset Emissions	As future individual Proposed Project components are further defined to a level that construction emissions can be estimated, and prior to implementing that component or taking actions that commit CDFW to implementing that component, CDFW will prepare a complete, quantitative project-level GHG emissions analysis for that component. The GHG emissions analysis will be based on the types, locations, numbers, and operations of equipment to be used; the amount and distance of material to be transported;				X		X	CDFW and/or Contractor	Prior to implementing a project component or taking actions that commit CDFW to implementing that component	

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		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
	and worker trips required. The analysis will determine whether the combined emissions of the various quantified components' construction activities exceed the construction thresholds (230 metric tons CO2e/year amortized or district approved BPS). If the analysis determines that construction emissions will exceed the construction thresholds, CDFW will first implement all feasible, applicable GHG emission reduction measures and propose these as BPS for the project, up to a 29% reduction from a defined business-as-usual baseline or 1,100 metric tons CO2e per year. Potential GHG emission reduction measures to be considered include, but are not limited to the following: • Utilize alternative fueled vehicles such as electric or biodiesel for equipment and				X		X			

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		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
	vehicles. • Utilize newer, more fuel efficient equipment and vehicles for construction. • Increase employee vanpool share (2% of vanpool mode share). • Utilize locally sourced material. In the event that the mitigation measures are insufficient to reduce construction emissions to be equal to or less than the significance thresholds, then CDFW shall purchase sufficient GHG emission credits to offset the Proposed Project's construction net increase in emissions above the thresholds. These may include GHG credits that have been banked under SJVAPCD Rule 2301 or other GHG credits that are considered acceptable by SJVAPCD.				X X		X X			

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		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
HAZ-CONSTRUCT-3: Implement a Construction Management Plan to Minimize Interference with Emergency Response	CDFW, DGS, or the construction contractor, in consultation with the County, will prepare and implement a Traffic Management Plan (TMP). CDFW will be responsible for ensuring that the plan is adequately developed and implemented. CDFW will provide the TMP to the Fresno County Public Works and Planning Department and Caltrans. The TMP will include recommended traffic-control and traffic-reduction measures as identified in the Transportation Management Plan Guidelines issued by the Division of Traffic Operations Office of System Management Operations (Caltrans 2009). CDFW will implement all traffic-control or traffic-reduction measures described in the TMP. In addition, to the extent feasible, construction-related traffic and any temporary road closures shall be scheduled during non-peak	X						CDFW, DGS, or Contractor	Before and during construction	

Mitigation Measure Title	Mitigation Measure Description	Applicable Activity (X = applicable)						Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
	traffic periods. The measures included in the TMP shall be consistent with any applicable guidelines outlined in the Standard Specifications for Public Works Construction, the U.S. Department of Transportation's Manual on Uniform Traffic Control Devices, and the Work Area Traffic Control Handbook. The plan will include the following items: • Defined location and timing of any temporary lane closures; • Identification and provision for circumstances requiring the use of temporary traffic control measures, flag persons, warning signs, lights, barricades, and cones, etc. to provide safe work areas in the vicinity of the project site or along the haul routes, including for those roadway segments that have	X								

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		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
	substandard width (less than 18 feet), and to warn, control, protect, and expedite vehicular and pedestrian traffic and access by emergency responders; • Implementation of comprehensive traffic control measures, including scheduling of major truck trips and deliveries to avoid peak-hour traffic, placement of detour signs (if required), lane closure procedures (if required), flaggers (if required), placement of cones for drivers, and designated construction access routes and access points; • Notification to adjacent property owners and public safety personnel regarding when major deliveries, detours, and lane closures will occur; • Address the potential for construction-related traffic	X								

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	to impede emergency response vehicles and present a specific training and information program for construction workers to ensure awareness of emergency procedures from project-related accidents; • Identification of haul routes for movement of construction vehicles that will minimize impacts on vehicular and pedestrian traffic and circulation and safety, and provision for monitoring surface streets used for haul routes so that any damage and debris attributable to the haul trucks can be identified and corrected by CDFW and/or DGS in coordination with the construction contractor; • Development of a process for responding to and tracking complaints pertaining to construction activity, including identification of an onsite	X								

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	complaint manager; and • Documentation of road pavement conditions for all routes that would be used by construction vehicles both before and after project construction. Roads damaged by construction vehicles will be repaired to the level at which they existed before project construction.	X								
HAZ-MANAGEMENT-3: Prepare Project-Level Quantitative Analysis of Site-specific Current and Historical Hazardous Materials, Implement Recommendations in the Phase I Environmental Site Assessment, and Comply with all Applicable Regulations	CDFW will implement the following measures to assess and minimize potential hazards on sites selected for the construction or removal of fish segregation weirs. CDFW will have a qualified expert perform a Phase 1 Environmental Site Assessment and hazardous-site records search for the Proposed Project sites. This process will include the identification of potential hazards within the project sites and identification of nearby				X			CDFW, DGS, and/or Contractor	Before construction	

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		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
	sensitive receptors. The assessment will determine whether hazards and hazardous materials are present and, if so, their potential impact on workers and nearby sensitive receptors. The analysis will also include recommendations to reduce potential risks from identified hazards and hazardous materials. CDFW will implement recommendations provided in the Phase 1 Environmental Site Assessment and comply with all applicable regulations. Compliance with these regulations will include preparation of a hazardous materials business plan, which would include a training program for employees and an emergency plan (Cal EMA 2012). CDFW will implement applicable provisions of the EPA, OSHA, Cal/OSHA, Cal/EPA, Cal EMA, and CUPA permitting processes, and any applicable county general plan policies. Should the site have unmitigatable hazardous				X					

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	conditions, or mitigation is not feasible, CDFW shall choose an alternate site.				X					

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HAZ-RECREATION-3: Research and Consult Applicable Comprehensive Airport Land Use Plans before Construction Activities	As stated in the California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15154, CDFW shall ensure that the design and construction will comply with all applicable comprehensive airport land use plans within which boundaries the Project falls. If a comprehensive airport land use plan has not been adopted for a project within 2 nautical miles of a public airport or public-use airport, the Airport Land Use Planning Handbook published by the California Department of Transportation's Division of Aeronautics (Caltrans 2011) will serve as the guide for the design and construction of the Proposed Project with regard to potential airport-related safety hazards and noise problems.						X	CDFW	During design	
HYD-CONSTRUCT-6: Perform Flood Analysis and Conform to	Prior to finalizing the SCARF design, CDFW will conduct an analysis of pre- and post-	X						CDFW and DGS	During design	

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Standards in Fresno County Code	project flood conditions in the SCARF area. The analysis will include an assessment of the potential change in velocity, floodplain storage and Base Flood Elevation (BFE) for the pre- and post-project conditions. If the analysis determines that the SCARF would significantly decrease floodplain storage or result in a significant increase in the BFE, velocity, or cause erosion, then measures will be designed and implemented to reduce these potential effects to an acceptable level. This could include bank stabilization measures at erosional locations, development of increased floodplain storage, redesign to avoid increases in the BFE, etc. As a performance standard, the design and construction shall conform to the standards contained in the most current version of Fresno County Code Chapter 15.48; such standards are considered by CDFW to reduce this impact	X								

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	to a less-than-significant level.	X								
LU-MANAGEMENT 1: Ensure Consistency of Land Use	As part of the design for removal or relocation of the two fish weirs, DGS, CDFW or the contractor shall investigate land uses at and adjacent to potential sites, along with relevant plans, policies and regulations. The weirs, fish traps and other equipment shall not be sited in locations that create land use incompatibilities.				X			CDFW and/or Contractor	During design	
LU-RECREATION-2: Avoid Locations with Land Use Conflicts	As part of the selection of recreational enhancement sites, CDFW shall investigate land uses at and adjacent to potential sites, along with relevant plans, policies and regulations. CDFW will choose locations for enhancement of recreational fishing that would not conflict with existing or planned land uses and/or local land use policies.						X	CDFW and/or Contractor	During design	

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NOISE-OP-1: Implement Noise Control Measures to Reduce Noise Generated by Mechanical Equipment	To reduce potential noise impacts from mechanical equipment, CDFW shall locate mechanical rooftop equipment for HVAC and refrigeration units as far from residential homes as possible. If such functioning rooftop equipment were unavoidably as close as 150 feet to the nearest sensitive receptor, then equipment will be selected that features lower-speed rotating components (e.g., fans, pumps, compressors), factory-approved acoustically-insulated housings or enclosures, and other typical means of noise control or sound abatement so that its resulting sound pressure level at a distance of 150 feet does not exceed the Fresno County threshold of 45 dBA L50 as shown in Table 14-2 in the DEIR.		X					DGS	During design	
NOISE-MANAGEMENT-1: Implement Noise Control Measures for Construction Activities	Before engaging in noise-generating activity associated with the construction of weirs, structural modification of the				X			CDFW and Contractor	Before and during construction	

Mitigation Measure Title	Mitigation Measure Description	Applicable Activity (X = applicable)						Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
	Hill's Ferry Barrier, or other construction activity, CDFW will evaluate how close sensitive receptors are located to the construction site, and whether the construction activity would exceed applicable noise thresholds. This evaluation will utilize the same FTA-based general assessment methodology that was used to predict the noise that would be generated during SCARF construction. Should the noise levels be anticipated to exceed the threshold for any sensitive receptors, CDFW will implement specific noise control measures to mitigate impacts associated with construction. These measures may include but are not limited to the following: a. Best available noise control techniques (including factory-approved mufflers, intake silencers, ducts, engine enclosures, and acoustically attenuating shields or shrouds) will be				X					

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	used for all equipment and trucks to minimize construction noise impacts. b. If impact equipment (e.g., concrete/rock breaker, rock drill) is used during project construction, hydraulic- or electric-powered equipment will be used to avoid the noise associated with compressed-air exhaust from pneumatically powered tools. However, where use of pneumatically powered tools is unavoidable, an exhaust muffler on the compressed-air exhaust will be used (a muffler can lower noise levels from the exhaust by up to 10 dBA). External jackets on the tools themselves will be used, which could achieve a reduction of 5 dBA. Where considered practical, quieter procedure alternatives, such as drilling or vibratory methods, will be used				X					

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		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
	instead of impact equipment. c. Stationary noise sources will be located away from sensitive receptors. If the sources must be located near sensitive receptors, adequate sound abatement (with enclosures and mufflers, where appropriate) will be used to ensure performance standards are met. Enclosure openings or vents will face away from sensitive receptors. If any stationary equipment (e.g., pumps, ventilation fans, generators) is operated beyond the ordinance time limits, this equipment will conform to the affected jurisdiction's noise limits. In addition, CDFW will designate a project liaison to be responsible for responding to noise complaints during construction. The name and phone number of the liaison will be conspicuously posted at				X					

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		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
	construction areas and on all advanced notifications. The liaison will take steps to resolve complaints, including the arrangement of periodic noise monitoring, if necessary. Results of noise monitoring will be presented at regular project meetings with the project contractor, and the liaison will coordinate with the contractor to modify any construction activities that generate excessive noise levels.				X					
REC-CONSTRUCT-1a: Reroute the Trail during Construction	CDFW will coordinate construction activities with the San Joaquin River Conservancy to minimize to the extent and duration of rerouting of the newly built San Joaquin Hatchery Public Access and Trail during construction of the SCARF.	X						CDFW	Before and during construction	

Mitigation Measure Title	Mitigation Measure Description	Applicable Activity (X = applicable)						Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
		SCARF Construction	SCARF Operations	Fish Reintroduction	Fisheries Management	Fisheries Research and Monitoring	Recreation Management			
REC-CONSTRUCT-1b: Provide Signage during Construction	CDFW or its contractor shall provide signage during construction of the SCARF to notify those using the San Joaquin Hatchery Public Access and Trail of trail and access disruptions.	X						CDFW	During construction	
REC-CONSTRUCT-1c: Rebuild the Trail if Damaged during Construction	If the San Joaquin Hatchery Public Access and Trail becomes damaged during construction of the SCARF, CDFW or its contractor shall re-construct damaged trail and public access points within 2 years of the damage.	X						CDFW or Contractor	Following construction	

MITIGATION MEASURES, ARRANGED BY ACTIVITY

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SCARF Construction Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
AES-CONSTRUCT-3a: Materials and Colors Used in Construction of SCARF Facilities Shall be Compatible with the Surrounding Built and Natural Environments	Department of General Services (DGS), CDFW or the construction contractor shall select materials and colors of the facilities to be compatible with the surrounding developed and natural environments.	DGS (if during design); DGS, CDFW and/or Contractor (if during construction)	During design or construction	
AES-CONSTRUCT-3b: Landscaping of SCARF Facilities Shall Consist of Native Vegetation	CDFW or the construction contractor shall use native plants for landscaping in a manner consistent with Mitigation Measure BIO-CONSTRUCT-11a (Minimize Area of Disturbance of Riparian Habitat) and with Mitigation Measure BIO-CONSTRUCT-11b (Develop and Implement Revegetation Plan for Riparian Habitat Disturbed by Construction).	DGS (if during design); DGS, CDFW and/or Contractor (if during construction)	During design or construction	
AES-CONSTRUCT-3c: Pipelines and Utilities Serving SCARF Facilities Shall be Installed Underground	DGS, CDFW or the construction contractor shall install pipelines and utilities underground, to the extent feasible.	DGS	During design	
AES-CONSTRUCT-4: Exterior Construction Security Lighting Shall Be Hooded and Directed Downward	CDFW shall ensure that exterior construction security lighting is hooded and directed downward toward the SCARF, and away from adjacent properties.	DGS (if during design); DGS, CDFW and/or Contractor (if during construction)	During design or construction	
FISH-CONSTRUCT-4a: Relocate Special-Status Fish Species Outside of the Work Area	Prior to commencing instream construction, a barrier will be constructed around the affected area and qualified fisheries biologists shall survey the exclosure by making a minimum of three passes by electrofishing, using protocols developed by NMFS (2000). All fish captured, including special-status species, will be placed into a suitable holding container of cool, aerated stream water and then relocated to a suitable location near the construction area. Construction in the side channel will occur when it is dry or has low flow to the extent feasible; water in the work area will be diverted using coffer dams or similar structures.	CFDW and/or Contractor	During construction	

SCARF Construction Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
FISH-CONSTRUCT-4b: Monitor and Maintain Fish Exclosure	The fish exclusion structure will remain in place during all instream construction activities and will be monitored daily during instream construction to ensure that it is effectively excluding fish. If the fisheries biologist determines that the exclosure has been compromised, instream construction will be stopped until the biologist has repeated **Mitigation Measure FISH-CONSTRUCT-4a** and the exclosure has been repaired and is deemed effective.	CDFW and/or Contractor	During construction	
BIO-CONSTRUCT-1a: Perform Focused Surveys for Special-Status Plant Species	Within one year prior to commencement of ground disturbing activities, a qualified CDFW botanist will perform surveys for special-status plant species with the potential to occur at the SCARF site. Floristic surveys will be performed according to the Protocols for Surveying and Evaluating Impacts to Specials Status Native Plant Populations and Natural Communities (CDFG 2009 or current version). Floristic surveys will include the use of a reference population to increase the likelihood of detection, and will be performed during the appropriate bloom period(s) for each species. If special-status plants are detected within the construction zone or within a 100-foot radius of the construction zone, CDFW will implement **Mitigation Measure BIO-CONSTRUCT-1b**.	CDFW	Before construction	

SCARF Construction Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
BIO-CONSTRUCT-1b: Avoid or Minimize Impacts to Special-Status Plant Species	If special-status plants are detected within the construction zone or within a 100-foot radius of the construction zone, CDFW will adjust the construction footprint or establish exclusion fencing to avoid impacts to the plants. Locations of special-status plant populations will be clearly identified in the field by staking, flagging, or fencing a minimum 100-foot wide buffer around them prior to the commencement of activities that may cause disturbance. No activity will occur within the buffer area. If avoidance is not feasible, then CDFW will implement measures to minimize the impact to the species. Minimization measures may include transplanting perennial species, seed collection and dispersal for annual species, and other conservation strategies that will protect the viability of the local population. If minimization measures are implemented, monitoring of plant populations will be conducted annually for 5 years to assess the mitigation's effectiveness. The performance standard for the mitigation will be no net reduction in the size or viability of the local population.	CDFW and/or Contractor	During construction	
BIO-CONSTRUCT-2a: Perform 2 Years of Surveys for Special Status Vernal Pool Branchiopods	Prior to implementation of construction activities, CDFW biologists will perform surveys for special-status vernal pool branchiopods species in seasonally ponded depression with the potential to be impacted by construction of the SCARF. Surveys will be performed according to the Interim Survey Guidelines to Permittees for Recovery Permits under Section 10(a)(1)(A) of the Endangered Species Act for the Listed Vernal Pool Branchiopods (USFWS 1996 or current version).	CDFW	Before construction	

SCARF Construction Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
BIO-CONSTRUCT-2b: Avoid Impacts to Suitable Vernal Pool Branchiopods Habitat	The Proposed Project will be designed to avoid impacts to suitable vernal pool branchiopods' habitat. Such avoidance measures may include adjusting roadway and pipeline alignments, minimizing the footprint of borrow sites, and locating staging/stockpile areas outside of suitable habitat. If vernal pools are present, a 250-foot no disturbance buffer will be established from the high water mark of the vernal pools and seasonal wetlands that provide suitable habitat for vernal pool crustaceans. Wetland habitat will be delineated by staking, flagging or fencing. This buffer will be established prior to ground-disturbing activities, and it will remain until ground-disturbing activities in that area are completed.	DGS and Contractor	During design and construction	

SCARF Construction Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
BIO-CONSTRUCT-2c: Replace Vernal Pool Branchiopod Habitat	If occupied vernal pool branchiopods habitat cannot be avoided, CDFW will first identify if there are potential wetland mitigation opportunities on-site and will preferentially conserve, restore, or construct new wetland habitat at this location. If habitat cannot be restored on-site or in the immediate vicinity of the disturbance location, replacement at a nearby off-site location will be provided. The replacement of habitat will be equivalent to the nature of the habitat lost, and will be provided at a suitable ratio to ensure that, at a minimum, there is no net loss of habitat acreage or value. The replacement habitat will be set aside in perpetuity for habitat use. Mitigation ratios to achieve the "no net loss" standard will be determined in consultation with the USFWS. If off-site compensation includes dedication of conservation easements, purchase of mitigation credits or other off-site conservation measures, the details of these measures will be developed through consultation with USFWS. The plan will include information on responsible parties for long-term management, holders of conservation easements, long-term management requirements, and other details, as appropriate, for the preservation of long-term viable populations. Any impacts that result in a compensation purchase will be required to do so with an endowment for land management in perpetuity prior to any project groundbreaking activities.	CDFW	Prior to any construction with potential to adversely affect vernal pool branchiopad habitat	

SCARF Construction Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
BIO-CONSTRUCT-3a: Conduct Protocol-Level Surveys for California Tiger Salamander	CDFW will conduct a minimum of 2 years of surveys to determine the presence/absence of CTS at the SCARF site. Surveys will be conducted in accordance with the Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander (USFWS 2003). In consultation with the USFWS, CDFW may modify survey protocols to reflect site conditions and potential utilization of habitat by CTS. If protocol surveys result in negative findings of CTS for 2 consecutive years, then **Mitigation Measure BIO-CONSTRUCT-3c** would not be implemented.	CDFW	Before construction	
BIO-CONSTRUCT-3b: Avoid Impacts to Suitable Upland California Tiger Salamander.	To the extent feasible, the Proposed Project will be designed to avoid impacts to suitable upland CTS habitat. Such avoidance measures may include adjusting roadway and pipeline alignments, minimizing the footprint of borrow sites, and locating staging/stockpile areas outside of suitable upland habitat.	DGS	During design	
BIO-CONSTRUCT-3c: Minimize Construction-related Impacts to California Tiger Salamander	If CTS are detected during protocol surveys conducted under **Mitigation Measure BIO-CONSTRUCT-3a**, or in the absence of conducting 2 years of protocol-level surveys, CDFW will implement the following actions during construction to minimize potential impacts to CTS. • Prior to commencing ground disturbing activities, construction workers will be educated regarding CTS and the measures intended to protect this species. • When feasible, there will be a 50-foot no-disturbance buffer around burrows that provide suitable upland habitat for CTS. Burrows considered suitable for CTS will be identified by a	CDFW and/or Contractor	Before and during construction	

SCARF Construction Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
	qualified CDFW biologist. The biologist will delineate and mark the no-disturbance buffer. • All suitable burrows directly impacted by construction will be hand excavated under the supervision of a qualified wildlife biologist. If CTS are found, the biologist will relocate the organism to the nearest burrow that is outside of the construction impact area. • All ground-disturbing work will occur during daylight hours. In coordination with USFWS, and depending on the level of rainfall and site conditions. CDFW will monitor the National Weather Service 72-hour forecast for the work area. If a 70% or greater chance of rainfall is predicted within 72 hours of project activity, all activities in areas within 1.3 miles of potential or known CTS breeding sites will cease until no further rain is forecast. If work must continue when rain is forecast, a qualified biologist will survey the project site before construction begins each day rain is forecast. If rain exceeds 0.25 inch during a 24 hour period, work will cease until no further rain is forecast. This restriction is not applicable for areas located greater than 1.3 miles from potential or known CTS breeding sites once they have been encircled with CTS exclusion fencing. However, even after exclusion fencing is installed, this condition would still apply to construction related traffic moving though areas within 1.3 miles of potential or known CTS breeding sites but outside of the salamander exclusion fencing (e.g. on roads). • For work conducted during the			

SCARF Construction Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
	CTS migration season (November 1 to May 31), exclusionary fencing will be erected around the construction site during ground disturbing activities after hand excavation of burrows has been completed. A biological monitor will visit the site weekly to ensure that the fencing is in good working condition. Fencing material and design will be subject to the approval of USFWS. If exclusionary fencing is not used, a qualified biological monitor will be on-site during all ground disturbance activities. Exclusion fencing will also be placed around all spoils and stockpiles. • For work conducted during the CTS migration season (November 1 to May 31), a qualified biologist will survey the active work areas (including access roads) in mornings following measurable precipitation events. Construction may commence once the biologist has confirmed that no CTS are in the work area. • Prior to beginning work each day, underneath equipment and stored pipes greater than 1.2 inches in diameter will be inspected for CTS. If any are found they will be allowed to move out of the construction area under their own accord. • Trenches and holes will be covered and inspected daily for stranded animals. Trenches and holes deeper than 1 foot will contain escape ramps (maximum slope of 2:1) to allow trapped animals to escape uncovered holes or trenches. Holes and trenches will be inspected prior to filling. • All food and food-related trash			

SCARF Construction Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
	will be enclosed in sealed trash containers at the end of each workday and removed completely from the construction site once every three days to avoid attracting wildlife. • A speed limit of 15 mph will be maintained on dirt roads. • All equipment will be maintained such that there are no leaks of automotive fluids such as fuels, oils, and solvents. Any fuel or oil leaks will be cleaned up immediately and disposed of properly. • Plastic monofilament netting (erosion control matting) or similar material will not be used at the project site because CTS may become entangled or trapped. Acceptable substitutes include coconut coir matting or tackified hydroseeding compounds. Hazardous materials such as fuels, oils, solvents, etc. will be stored in sealable containers in a designated location that is at least 100 feet from wetlands and the San Joaquin River channel. If it is not feasible to store hazardous materials 100 feet from wetlands and the river channel, then spill containment measures will be implemented to prevent the possibility of accidental discharges to wetlands and waters.			
BIO-CONSTRUCT-3d: Minimize Construction-related Impacts to Western Spadefoot	• Prior to commencing ground disturbing activities, construction workers will be educated regarding western spadefoot, and the measures intended to protect these species. • For work conducted during the western spadefoot toad migration and breeding season	CDFW and/or Contractor	Before and during construction	

SCARF Construction Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
	(November 1 to May 31), a qualified biologist will survey the active work areas (including access roads) in mornings following measurable precipitation events. Construction may commence once the biologist has confirmed that no spadefoot toads are in the work area. • When feasible, there will be a 50-foot no-disturbance buffer around burrows that provide suitable upland habitat for western spadefoot toad. Burrows considered suitable for spadefoot will be identified by a qualified CDFW biologist. The biologist will delineate and mark the no-disturbance buffer. • If western spadefoot is toad is found within the construction footprint, it will be allowed to move out of harm's way of its own volition or a qualified biologist will relocate the organism to the nearest burrow that is outside of the construction impact area. • Prior to beginning work each day, underneath equipment and stored pipes greater than 1.2 inches (3 cm) in diameter will be inspected for western spadefoot toad. If any are found, they will be allowed to move out of the construction area under their own accord. Trenches and holes will be covered and inspected daily for stranded animals. Trenches and holes deeper than 1 foot will contain escape ramps (maximum slope of 2:1) to allow trapped animals to escape uncovered holes or trenches. Holes and trenches will be inspected prior to filling.			

SCARF Construction Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
BIO-CONSTRUCT-4: Implement Pre-construction Surveys and Minimization Measures for Western Pond Turtle	Pre-construction surveys for WPT will be conducted by a qualified biologist 14 days before and 24 hours before the start of construction activities where suitable habitat exists (i.e., along riparian areas, ponds and freshwater emergent wetlands). If WPT or their nests are observed during pre-construction surveys, the following measures will be implemented: • A qualified biologist will be on site to monitor construction in suitable WPT habitat. WPT found within the construction area will be allowed to leave on its own volition or it will be captured by the qualified biologist and relocated out of harm's way to the nearest suitable habitat immediately upstream or downstream from the project site. If WPT nests are identified in the work area during pre-construction surveys, a 300-foot no-disturbance buffer will be established between the nest and any areas of potential disturbance. Buffers will be clearly marked with temporary fencing. Construction will not be allowed to commence in the exclusion area until hatchlings have emerged from the nest, or the nest is deemed inactive by a qualified biologist.	CDFW and/or Contractor	Before and during construction	
BIO-CONSTRUCT-5: Implement Pre-construction Surveys and Minimization Measures for Burrowing Owls	Prior to initiating ground-disturbing activities, CDFW will conduct surveys for burrowing owls in accordance with protocols established in the Staff Report on Burrowing Owl Mitigation (CDFG 2012 or current version). If ground-disturbing activities are delayed or suspended for more than 30 days after the pre-construction survey, the site will be resurveyed. If burrowing owls are detected, disturbance to burrows will be avoided during the nesting	CDFW and/or Contractor	Before and during construction	

SCARF Construction Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
	season (February 1 through August 31). CDFW will establish buffers around occupied burrows in accordance with guidance provided in the Staff Report on Burrowing Owl Mitigation, and at the discretion of the qualified CDFW wildlife biologist. Buffers around occupied burrows will be a minimum of 656 feet during the breeding season, and 160 feet during the non-breeding season. Outside of the nesting season (February 1 through August 31), passive owl relocation techniques will be implemented. Owls would be excluded from burrows within 160 feet of construction by installing one-way doors in burrow entrances. The work area will be monitored daily for 1 week to confirm owl departure from burrows prior to any ground-disturbing activities. Where possible burrows will be excavated using hand tools and refilled to prevent reoccupation. Sections of flexible plastic pipe will be inserted into the tunnels during excavation to maintain an escape route for any animals inside the burrow. If occupied burrows cannot be avoided during the non-breeding season, CDFW will enhance or create burrows in adjacent habitat at a 1:1 ratio (burrows destroyed to burrows enhanced or created) one week prior to implementation of passive relocation techniques. If burrowing owl habitat enhancement or creation takes place, CDFW will develop and implement a monitoring and management plan to assess the effectiveness of the mitigation.			
BIO-CONSTRUCT-6a: Implement Pre-construction Surveys and Minimization Measures for Bald Eagle	Surveys for bald and golden eagle nests will be conducted within 2 miles of any construction area supporting suitable nesting habitat and important eagle roost sites and	CDFW and/or Contractor	Before and during construction	

SCARF Construction Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
and Golden Eagle	foraging areas. Surveys will be conducted in accordance with the USFWS Interim Golden Eagle Inventory and Monitoring Protocols (USFWS 2010), and CDFW's Bald Eagle Breeding Survey Instructions (CDFG 2010), or current guidance. If an active eagle's nest is found, project disturbance will not occur within 0.5 mile of the active nest site during the breeding season (December 30 through July 1), or in any area that may disturb the nesting birds. The 0.5 mile no-disturbance buffer will be maintained throughout the breeding season or until the young have fledged and are no longer dependent upon the nest or parental care for survival.			

SCARF Construction Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
BIO-CONSTRUCT-6b: Implement Pre-construction Surveys and Minimization Measures for Swainson's Hawk and White-tailed Kite	If construction occurs between February 1 and August 31, CDFW will conduct surveys for nesting raptors, with a focus on Swainson's hawk and white-tailed kite, in accordance with established CDFW raptor survey protocols (e.g., CDFG 2000, or current guidance). Surveys will cover a minimum of a 0.5-mile radius around the construction area. If nesting raptors are detected, CDFW will establish buffers around nests that are sufficient to ensure that breeding is not likely to be disrupted or adversely impacted by construction. Buffers will be maintained until a qualified CDFW biologist has determined that young have fledged and are no longer reliant upon the nest or parental care for survival. If potential nesting trees are to be removed during construction activities, removal will take place outside of Swainson's hawk nesting season and CDFW will develop a plan to replace known Swainson's hawk nest trees at a ratio of 3:1. If replacement planting is implemented, monitoring will be conducted annually for 5 years to assess the mitigation's effectiveness. The performance standard for the mitigation will be 65% survival of all replacement plantings.	CDFW and/or Contractor	Before and during construction	

SCARF Construction Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
BIO-CONSTRUCT-6c: Implement Pre-construction Surveys and Minimization Measures for Non-listed Raptors	If construction occurs between February 1 and August 31, CDFW will conduct surveys for nesting raptors in accordance with established CDFW raptor survey protocols. Surveys will cover a minimum of a 0.5-mile radius around the construction area. If nesting raptors are detected, CDFW will establish buffers around nests that are sufficient to ensure that breeding is not likely to be disrupted or adversely impacted by construction. Buffers around active raptor nests will be 500 feet for non-listed raptors, unless a qualified biologist determines that smaller buffers would be sufficient to avoid impacts to nesting raptors. Factors to be considered for determining buffer size will include: the presence of natural buffers provided by vegetation or topography; nest height; locations of foraging territory; and baseline levels of noise and human activity. Buffers will be maintained until a qualified CDFW biologist has determined that young have fledged and are no longer reliant upon the nest or parental care for survival. If potential nesting trees are to be removed during construction activities, removal will take place outside of the raptor nesting season and CDFW will develop a plan to replace known nest trees at a ratio of 3:1. If replacement planting is implemented, monitoring will be conducted annually for 5 years to assess the mitigation's effectiveness. The performance standard for the mitigation will be 65% survival of all replacement plantings.	CDFW and/or Contractor)	Before and during construction	

SCARF Construction Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
BIO-CONSTRUCT-7a: Implement Pre-construction Surveys and Minimization Measures for Special-Status Passerine Species	If construction begins between February 1 and August 31, CDFW will conduct surveys for special-status birds within a 1,000-ft radius of the construction area. Surveys will be conducted by biologists adhering to guidance offered in Western Yellow-billed Cuckoo Natural History Summary and Survey Methodology (Halterman et al. 2009); Least Bell's Vireo Survey Guidelines (USFWS 2001); and/or A Survey Protocol for Willow Flycatcher in California (Bombay et al. 2003). If nests are detected, CDFW will establish buffers around nests that are sufficient to ensure that breeding is not likely to be disrupted or adversely impacted by construction. No-disturbance buffers around active nests will be a minimum of 500 feet, unless a qualified CDFW biologist determines that smaller buffers would be sufficient to avoid impacts to nesting birds. Factors to be considered for determining buffer size will include: the presence of natural buffers provided by vegetation or topography; nest height; locations of foraging territory; and baseline levels of noise and human activity. Buffers will be maintained until a qualified CDFW biologist has determined that young have fledged and are no longer reliant upon the nest or parental care for survival.	CDFW and/or Contractor	Before and during construction	

SCARF Construction Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
BIO-CONSTRUCT-7b: Implement Pre-construction Surveys for Birds Protected under the MBTA	Whenever possible, impacts to native nesting birds will be avoided by not conducting project activities that involve clearing of vegetation, generation of mechanical noise, or ground disturbance during the typical breeding season (February 1 to September 1), if species covered under the Migratory Bird Treaty Act and Fish and Game Code sections 3503, 3503.5, and/or 3513 are determined to be present. If construction begins between February 1 and August 31, CDFW will conduct surveys for nesting birds within a 1,000-ft radius of the construction area. If nests are detected, CDFW will establish buffers around nests that are sufficient to ensure that breeding is not likely to be disrupted or adversely impacted by construction. Buffers around active nests will be a minimum of 250 feet, unless a qualified CDFW biologist determines that smaller buffers would be sufficient to avoid impacts to nesting birds. Factors to be considered for determining buffer size will include: the presence of natural buffers provided by vegetation or topography; nest height; locations of foraging territory; and baseline levels of noise and human activity. Buffers will be maintained until young have fledged or the nests become inactive.	CDFW and/or Contractor	Before and during construction	

SCARF Construction Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
BIO-CONSTRUCT-8a: Conduct Pre-construction Surveys for Bat Species	No less than 7 days and no more than 14 days prior to the beginning of ground disturbance and/or construction activities, a qualified CDFW wildlife biologist, or wildlife biologist approved by CDFW, will conduct surveys for special-status bats during the appropriate time of day to maximize detectability to determine if bat species are roosting near the work area. Survey methodology may include visual surveys of bats (observation of presence of bats during foraging period), inspection for suitable habitat or bat sign (guano), or use of ultrasonic detectors (Anabat, etc.). Visual surveys may consist of a daytime pedestrian survey looking for evidence of bat use (e.g., guano) and/or an evening emergence survey to note the presence or absence of bats and will include trees within 0.25 mile of project construction activities. The type of survey will depend on the condition of the potential roosting habitat. If no bat roosts are found, then no further study is required. If evidence of bat use is observed, the number and species of bats using the roost will be determined.	CDFW and/or Contractor	Before and during construction	

SCARF Construction Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
BIO-CONSTRUCT-8b: Avoid and Minimize Impacts to Roosting/Breeding Sites	CDFW will avoid disturbance to roosts to the greatest extent feasible. If roosts must be removed, the bats will be excluded from the roosting site before it is removed. A mitigation program addressing compensation, exclusion methods, and roost removal procedures will be developed prior to implementation. Exclusion methods may include use of one-way doors at roost entrances (bats may leave, but not reenter), or sealing roost entrances when a site can be confirmed to contain no bats. Exclusion efforts may be restricted during periods of sensitive activity (e.g., during hibernation or while females in maternity colonies are nursing young).	CDFW and/or Contractor	Before and during construction	
BIO-CONSTRUCT-8c: Replace Bat Roosting/Breeding Sites	If roosts cannot be avoided or it is determined that construction activities may cause roost abandonment, such activities may not commence until permanent, elevated bat houses have been installed outside of, but near the construction area. Placement and height will be determined by a qualified CDFW wildlife biologist, but the height of bat house will be at least 15 feet. Bat houses will be multi-chambered and be purchased or constructed in accordance with CDFW standards. The number of bat houses required will be dependent upon the size and number of colonies found, but at least one bat house will be installed for each pair of bats (if occurring individually), or of sufficient number to accommodate each colony of bats to be relocated.	CDFW and/or Contractor	Before and during construction	

SCARF Construction Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
BIO-CONSTRUCT-9: Conduct Pre-construction Surveys and Minimization Measures for American Badger	No less than 14 days and no more than 30 days prior to the beginning of ground disturbance and/or construction activities, CDFW will conduct a survey to determine if American badger den sites are present at the SCARF site. If dens are found, they will be monitored for badger activity. If CDFW determines that dens may be active, the entrances of the dens will be blocked with soil, sticks, and debris for three to five days to discourage the use of these dens prior to project disturbance activities. The den entrances will be blocked to an incrementally greater degree over the three to five-day period. After the qualified CDFW biologist determines that badgers have stopped using active dens, the dens will be hand-excavated with a shovel to prevent re-use during construction. No disturbance of active dens will take place when cubs may be present and dependent on parental care, as determined by a qualified CDFW biologist.	CDFW and/or Contractor	Before construction in locations with potential to affect badgers	
BIO-CONSTRUCT-10: Conduct Pre-construction Surveys and Minimization Measures for San Joaquin Kit Fox	A qualified biologist will conduct pre-construction surveys no less than 14 days and no more than 30 days before the commencement of construction activities to identify potential dens more than 5 inches in diameter. CDFW will implement USFWS Standardized Recommendations for Protection of San Joaquin Kit Fox Prior to or During Ground Disturbance (USFWS 1999, 2011). CDFW will notify USFWS in writing of the results of the pre-construction survey within 30 days after these activities are completed. If potential dens are located within the proposed work area and cannot be avoided during construction activities, a USFWS-approved biologist will determine if the dens are occupied. If occupied dens are	CDFW and/or Contractor	Before construction in locations with potential to affect San Joaquin Kit Fox	

SCARF Construction Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
	present within the proposed work area, they will be avoided through the use of exclusion zones following the most current USFWS procedures (currently USFWS 1999, 2011). Furthermore, CDFW will notify USFWS immediately if a natal or pupping den is found in the survey area, and will present the results of pre-activity den searches within 5 days after these activities are completed and before the start of construction activities in the area. CDFW, in coordination with USFWS, will determine if SJKF den removal is appropriate. If unoccupied dens need to be removed, the USFWS-approved biologist will remove these dens by hand-excavating them in accordance with USFWS procedures (USFWS 1999, 2011). Additional conservation measures will be coordinated between USFWS and CDFW, and may include replacing dens, installing off-site artificial dens, acquiring compensatory habitat, or other conservation options. Compensation may include dedicating conservation easements, purchasing mitigation credits, or other off-site conservation measures, and the details of these measures will be included in the mitigation plan and must occur with full endowments for management in perpetuity. The plan will include information on responsible parties for long-term management, holders of conservations easements, long-term management requirements, and other details, as appropriate, for the preservation of long-term viable SJKF populations. If conservation measures are implemented, CDFW will monitor their performance annually for 5 years to assess the mitigation's effectiveness. The performance standard for the mitigation will be			

SCARF Construction Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
	no net reduction in the size or viability of the local SJKF population.			
BIO-CONSTRUCT-11a: Minimize Area of Disturbance of Riparian Habitat	The disturbance or removal of vegetation will not exceed the minimum necessary to complete construction and will only occur within the defined work area.	DGS and contractor	During design and construction	
BIO-CONSTRUCT-11b: Develop and Implement Revegetation Plan for Riparian Habitat Disturbed by Construction	CDFW will develop a revegetation plan for riparian habitat and sensitive natural communities disturbed by construction. All disturbed soils and new fill in riparian habitat or sensitive natural communities will be revegetated with site-appropriate native species. Any native vegetation 4 inches or greater DBH damaged or removed as result of construction activity will be replaced at a 3:1 ratio; this ratio will increase to 10:1 for native trees of 24 inches DBH and greater. Revegetation areas will be maintained and monitored to ensure a minimum of 65% survival of the plantings after 5 years.	CDFW, DGS and/or Contractor	During design and construction	

SCARF Construction Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
BIO-CONSTRUCT-12a: Obtain Regulatory Permits for Work Activities Taking Place in Wetlands and Waters of the United States and the State	Work within areas defined as waters of the U.S. that includes placement of fill will require a CWA Section 404 permit from the USACE and Section 401 Water Quality Certification from the RWQCB. All work proposed in jurisdictional waters of the U.S. will be authorized by permits from the USACE and RWQCB. In areas where project activities are temporary in nature, jurisdictional wetland and other waters of the U.S. will be restored to their condition prior to disturbance. In areas where permanent disturbance to jurisdictional waters or wetlands will occur, CDFW will first identify if potential mitigation sites are present within close proximity to the area of disturbance, and will construct new or restore degraded wetlands. If waters or wetlands cannot be restored on-site or in the immediate vicinity of the disturbance location, replacement at a nearby off-site location will be provided. The replacement of waters or wetlands will be equivalent to the nature of the habitat lost, and will be provided at a suitable ratio to ensure that, at a minimum, there is no net loss of habitat acreage or value. The replacement habitat will be set aside in perpetuity for habitat use. Mitigation ratios to achieve the "no net loss" standard will be determined in consultation with the USACE and RWQCB.	CDFW and/or Contractor	Before construction	

SCARF Construction Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
BIO-CONSTRUCT-12b: Avoidance of and Mitigation for Incidental Fill	Incidental fill of wetland areas will be minimized wherever possible. Temporary construction fencing will be erected around wetlands areas to reduce the potential of incidental fill. Areas affected by construction will be restored to pre-construction contours and revegetated using a mix of native vegetation in accordance with **Mitigation Measure BIO-CONSTRUCT-11b.**	CDFW, DGS, and/or Contractor	During design and construction	
CR-CONSTRUCT-1a: Evaluate Cultural Resources for Eligibility for Inclusion in the CRHR, and Implement Appropriate Mitigation Measures for Eligible Resources	CDFW shall ensure that all cultural resources identified prior to or during construction of the various Proposed Project components will be evaluated for eligibility for inclusion in the CRHR. Where implementation of the Proposed Project necessitates ground disturbance at sites besides the SCARF (e.g., sites for recreational enhancements), a records search and pedestrian survey shall be conducted prior to construction. Resource evaluations will be conducted by individuals who meet the U.S. Secretary of Interior's professional standards in archaeology and architectural history. If any of the resources that are identified during this evaluation meet the eligibility criteria identified in PRC section 5024.1, or PRC section 21083.2(g), CDFW will develop and implement mitigation measures according to CEQA Guidelines section 15126.4(b) before construction begins or resumes. For resources eligible for listing in the CRHR that would be rendered ineligible by the effects of project construction, CDFW shall implement mitigation measures. Mitigation measures for archaeological resources shall be selected from the following: avoidance; incorporation of sites within parks, greenspace, or other open space; capping the site; deeding the site into a permanent conservation easement; or data	CDFW and/or Contractor	During design and construction	

SCARF Construction Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
	recovery excavation. Mitigation measures for archaeological resources shall be developed in consultation with responsible agencies, including but not limited to the State Office of Historic Preservation and, as appropriate, interested parties such as Native American tribes. Mitigation measures for historic architectural resources shall be consistent with the U.S. Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings. Implementation of the approved mitigation would be required before beginning/resuming any construction activities with potential to affect identified eligible resources at the site.			
CR-CONSTRUCT-1b: Immediately Halt Construction if Cultural Resources are Discovered	Not all cultural resources are visible on the ground surface. If any cultural resources, such as structural features, unusual amounts of bone or shell, flaked or ground stone artifacts, historic-era artifacts, human remains, or architectural remains are encountered during any project construction activities, work shall be suspended immediately at the location of the find and within an appropriate radius of at least 50 feet. A qualified archaeologist shall conduct a field investigation of the specific site and recommend mitigation necessary for the protection or recovery of any cultural resource concluded by the archaeologist to represent a historical resource or unique archaeological resource. **Mitigation Measure CR-CONSTRUCT-1a** would then be implemented.	CDFW and/or Contractor	During construction	

SCARF Construction Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
CR-CONSTRUCT-3: Immediately Halt Construction if Human Remains are Discovered and Implement California Health and Safety Code	If human remains are accidentally discovered during the Proposed Project's construction activities, the requirements of California Health and Human Safety Code section 7050.5 must be followed. Potentially damaging excavation must halt in the area of the remains, with a minimum radius of 50 feet, and the local County Coroner must be notified. The Coroner is required to examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or state lands (Health and Safety Code section 7050.5[b]). If the Coroner determines that the remains are those of a Native American, he or she must contact NAHC by phone within 24 hours of making that determination (Health and Safety Code section 7050[c]). Pursuant to the provisions of PRC section 5097.98, the NAHC shall identify a Most Likely Descendent (MLD). The MLD designated by the NAHC shall have at least 48 hours to inspect the site and propose treatment and disposition of the remains and any associated grave goods.	CDFW and/or Contractor	During construction	
GEO-CONSTRUCT-1a: Implement Construction Best Management Practices to Minimize Erosion and the Loss of Topsoil	CDFW, DGS, or their contractor(s) shall implement the following measures: • Implement practices to minimize the contact of construction materials, equipment, and maintenance supplies with storm water. • Limit fueling and other activities involving hazardous materials to use in designated areas only; provide drip pans under equipment and conduct daily checks of vehicle condition. • Implement wildlife-friendly practices to reduce erosion of	Contractor	During construction	

SCARF Construction Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
	exposed soil, including stabilization for soil stockpiles, watering for dust control, establishment of perimeter silt fences, and/or placement of fiber rolls. • Implement practices to maintain water quality, including silt fences, stabilized construction entrances, and storm-drain inlet protection. • Develop spill prevention and emergency response plans to handle potential fuel or other spills. • Where feasible, limit construction to dry periods. The performance standard for this mitigation measures is use of the best available technology that is economically achievable.			
GEO-CONSTRUCT-1b: Comply with Cal/OSHA Requirements for Excavation Slopes	CDFW, DGS, or their contractor(s) shall ensure that temporary excavation slopes meet Cal/OSHA requirements, as appropriate. Excavation sloping, benching, the use of trench shields, and the placement of trench spoils should conform to the last applicable Cal/OSHA standards. Nearby utilities, structures, and other improvements shall be protected from potential damage by earth movements.	DGS and/or Contractor	During design and/or construction	

SCARF Construction Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
GEO-CONSTRUCT-1c: Design Cut-and-Fill Slopes to Minimize Erosion	CDFW, DGS, or their contractor(s) shall implement the following measures: • Construction methods will incorporate appropriate erosion-prevention actions. This may include, but will not be limited to, reducing slope steepness as much as possible, re-vegetating slopes as appropriate, and directing surface drainage away from the tops of slopes. Actions shall be taken to compact fill soils uniformly. The guidance from the Geocon 2012 Geotechnical Investigation Report (Geocon 2012) shall be used for erosion-prevention techniques, modified if necessary depending on actual field conditions.	DGS and/or Contractor	During design and/or construction	

SCARF Construction Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
GEO-CONSTRUCT-2a: Test Fill for Recommended Compaction and Moisture Content, and Apply Appropriate Measures to Reach Desired Content When Necessary	CDFW, DGS, or their contractor(s) shall implement the following measures: • All earthwork operations should be observed by a qualified inspector who is a California licensed Professional Geologist and is also a California Certified Engineering Geologist. A test fill will be constructed to determine the suitability of fill material for use at the site. The results of the test fill will be used to determine the appropriate method for conditioning, placement and compaction of fill material necessary at the site to ensure stable foundation conditions are achieved. Within the existing effluent detention pond area, existing fill and loose alluvium should be removed down to competent granite bedrock. The removal should extend at least 5 feet laterally beyond the footprint of the proposed hatchery compound, including the parking area. Over-excavation bottoms, areas to receive fill or areas left at-grade should be thoroughly scarified to a minimum depth of 8 inches, uniformly moisture-conditioned at or near optimum moisture content, and compacted to at least 90% relative compaction. Scarification in exposed, hard bedrock areas is not required.	CDFW and/or Contractor	During construction	

SCARF Construction Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
GEO-CONSTRUCT-2b: Ensure Fill Soils Contain Adequate Binder	CDFW, DGS, or their contractor(s) shall implement the following measures: • If fill soils consist of sand and gravel mixtures with silt or clay binder, these soils should be blended with other soils containing sufficient fines to provide adequate binder (usually 10–15% fines by dry weight). • If pond-bottom sediment is used, it should be dried and sufficiently blended with other soils such that the resulting fill does not contain organics in excess of 3% by dry weight. Imported fill material should be primarily granular with a "very low" expansion potential (Expansion Index less than 20) and a Plasticity Index less than 15. Imported fill material should also contain sufficient binder and be free of organic material and construction debris; it should not contain rocks/cementations larger than 6 inches in their greatest dimension.	CDFW and/or Contractor	During construction	

SCARF Construction Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
GEO-CONSTRUCT-3: Accommodate Shallow Groundwater and Potential Perched Groundwater and Seepage throughout the Project Excavation Sites	CDFW, DGS, or their contractor(s) shall implement the following measures: • Drain the settling ponds several weeks prior to grading, and perform earthwork and grading operations during the summer, if possible. • Be prepared to accommodate potential perched groundwater and seepage in deeper project excavations, such as the pond removal excavations. Depending on the extent of perched groundwater at the time of grading, temporary dewatering measures, such as wellpoints or trench drains, may be required. Some form of subgrade stabilization may be necessary where wet, unstable soils are exposed. Depending on conditions found at the time of construction, mitigation alternatives, such as over-excavation and replacement with gravel wrapped in geosynthetic fabric, may be necessary to provide a stable bottom.	CDFW and/or Contractor	During construction	

SCARF Construction Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
GEO-CONSTRUCT-4: Take Recommended Grading and Fill Actions to Maximize Foundation Stability	CDFW, DGS, or their contractor(s) shall implement the following measures: • Foundation design will incorporate appropriate measures to maximize long-term stability. This may address, but will not be limited to, footings and reinforcement specifications, the use of aggregate base and compacted fill or native soils, and methods to permit drainage for areas below the design flood elevation. • The Geocon 2012 Geotechnical Investigation Report (Geocon 2012) may be used as guidance, but final design and implementation will depend on actual field conditions, and modifications will be made as necessary. A qualified geotechnical engineer will oversee onsite field investigations and approved final design.	DGS, CDFW and/or Contractor	During design and construction	
HAZ-CONSTRUCT-3: Implement a Construction Management Plan to Minimize Interference with Emergency Response	CDFW, DGS, or the construction contractor, in consultation with the County, will prepare and implement a Traffic Management Plan (TMP). CDFW will be responsible for ensuring that the plan is adequately developed and implemented. CDFW will provide the TMP to the Fresno County Public Works and Planning Department and Caltrans. The TMP will include recommended traffic-control and traffic-reduction measures as identified in the Transportation Management Plan Guidelines issued by the Division of Traffic Operations Office of System Management Operations (Caltrans 2009). CDFW will implement all traffic-control or traffic-reduction measures described in the TMP. In addition, to the extent feasible,	CDFW, DGS, or Contractor	Before and during construction	

SCARF Construction Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
	construction-related traffic and any temporary road closures shall be scheduled during non-peak traffic periods. The measures included in the TMP shall be consistent with any applicable guidelines outlined in the Standard Specifications for Public Works Construction, the U.S. Department of Transportation's Manual on Uniform Traffic Control Devices, and the Work Area Traffic Control Handbook. The plan will include the following items: • Defined location and timing of any temporary lane closures; • Identification and provision for circumstances requiring the use of temporary traffic control measures, flag persons, warning signs, lights, barricades, and cones, etc. to provide safe work areas in the vicinity of the project site or along the haul routes, including for those roadway segments that have substandard width (less than 18 feet), and to warn, control, protect, and expedite vehicular and pedestrian traffic and access by emergency responders; • Implementation of comprehensive traffic control measures, including scheduling of major truck trips and deliveries to avoid peak-hour traffic, placement of detour signs (if required), lane closure procedures (if required), flaggers (if required), placement of cones for drivers, and designated construction access routes and access points; • Notification to adjacent property owners and public safety personnel regarding when major deliveries, detours, and lane			

SCARF Construction Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
	closures will occur; • Address the potential for construction-related traffic to impede emergency response vehicles and present a specific training and information program for construction workers to ensure awareness of emergency procedures from project-related accidents; • Identification of haul routes for movement of construction vehicles that will minimize impacts on vehicular and pedestrian traffic and circulation and safety, and provision for monitoring surface streets used for haul routes so that any damage and debris attributable to the haul trucks can be identified and corrected by CDFW and/or DGS in coordination with the construction contractor; • Development of a process for responding to and tracking complaints pertaining to construction activity, including identification of an onsite complaint manager; and Documentation of road pavement conditions for all routes that would be used by construction vehicles both before and after project construction. Roads damaged by construction vehicles will be repaired to the level at which they existed before project construction.			

SCARF Construction Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
HYD-CONSTRUCT-6: Perform Flood Analysis and Conform to Standards in Fresno County Code	Prior to finalizing the SCARF design, CDFW will conduct an analysis of pre- and post-project flood conditions in the SCARF area. The analysis will include an assessment of the potential change in velocity, floodplain storage and Base Flood Elevation (BFE) for the pre- and post-project conditions. If the analysis determines that the SCARF would significantly decrease floodplain storage or result in a significant increase in the BFE, velocity, or cause erosion, then measures will be designed and implemented to reduce these potential effects to an acceptable level. This could include bank stabilization measures at erosional locations, development of increased floodplain storage, redesign to avoid increases in the BFE, etc. As a performance standard, the design and construction shall conform to the standards contained in the most current version of Fresno County Code Chapter 15.48; such standards are considered by CDFW to reduce this impact to a less-than-significant level.	CDFW and DGS	During design	
REC-CONSTRUCT-1a: Reroute the Trail during Construction	CDFW will coordinate construction activities with the San Joaquin River Conservancy to minimize to the extent and duration of rerouting of the newly built San Joaquin Hatchery Public Access and Trail during construction of the SCARF.	CDFW	Before and during construction	
REC-CONSTRUCT-1b: Provide Signage during Construction	CDFW or its contractor shall provide signage during construction of the SCARF to notify those using the San Joaquin Hatchery Public Access and Trail of trail and access disruptions.	CDFW	During construction	

SCARF Construction Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
REC-CONSTRUCT-1c: Rebuild the Trail if Damaged during Construction	If the San Joaquin Hatchery Public Access and Trail becomes damaged during construction of the SCARF, CDFW or its contractor shall re-construct damaged trail and public access points within 2 years of the damage.	CDFW or Contractor	Following construction	

SCARF Operations Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
AES-OP-2a: Permanent Exterior Lighting Shall Be Designed to Protect the Darkness of Nighttime Skies	CDFW shall ensure that permanent lighting utilizes lights that are low wattage, or incorporates appropriate shielding, and that lighting is directed away from sensitive uses and adjacent properties.	DGS (if during design); DGS, CDFW and/or Contractor (if during construction)	During design or construction	
AES-OP-2b: SCARF Structures Shall Be Constructed to Avoid Surface Glare	To reduce glare, CDFW shall ensure that all structures are painted with non-glare surfacing or constructed of materials that do not produce glare.	DGS (if during design); DGS, CDFW and/or Contractor (if during construction)	During design or construction	
AQ-OP-3: Fish Disposal Limitations	CDFW will implement at least one of the following measures to minimize the likelihood of potential odors from fish disposal activities affecting a substantial number of sensitive receptors: • Limit fish disposal locations to areas that are at least 1,000 feet from any potential sensitive receptors, including terrestrial recreationists such as hikers. Implement disposal methods that ensure that fish carcasses are weighed down and disposed of within a stream channel instead of on a stream bank.	CDFW	During operation	

SCARF Operations Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
GEO-OP-1: Conduct and Additional Investigation into the Flow Capacity of Impacted Channels and Implement the Investigation's Recommendations	Due to the increased flow through the return flow outfall channel, CDFW, DGS, or their contractor(s) shall conduct an investigation into the capacity of the channel and its connection to the San Joaquin River to verify that the channel and connection point have the capacity to support potential increased flows. Similarly, the volitional release channel would require the same investigation. The geotechnical investigation would be conducted by a qualified hydrologist(s) or hydraulic engineer(s) (or team of such experts) and detailed in a technical report. If the geotechnical investigation results indicate that the flow capacities of the affected channels would not be sufficient to accommodate the Proposed Project's flows, recommended actions will be included in the report. CDFW will implement the report's recommended actions. Potential recommendations may include but not be limited to: expansion and/or reinforcement of the existing outfall and volitional release channels, a reduction of flow rates to a level that can be supported by the existing channels, and/or an investigation into and development of alternative channels to support peak flows. As a performance standard, in no case shall the return flows from the outfall or the volitional release channel cause channel instability or erosion and sedimentation downstream.	CDFW, DGS and/or Contractor	During design and construction	

SCARF Operations Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
NOISE-OP-1: Implement Noise Control Measures to Reduce Noise Generated by Mechanical Equipment	To reduce potential noise impacts from mechanical equipment, CDFW shall locate mechanical rooftop equipment for HVAC and refrigeration units as far from residential homes as possible. If such functioning rooftop equipment were unavoidably as close as 150 feet to the nearest sensitive receptor, then equipment will be selected that features lower-speed rotating components (e.g., fans, pumps, compressors), factory-approved acoustically-insulated housings or enclosures, and other typical means of noise control or sound abatement so that its resulting sound pressure level at a distance of 150 feet does not exceed the Fresno County threshold of 45 dBA L50 as shown in Table 14-2 in the DEIR.	DGS	During design	

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SCARF Fish Reintroduction Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
FISH-REINTRO-1: Determine Stream-specific Take Totals	CDFW will confer with USFWS and NMFS to determine stream-specific take totals that incorporate estimates of viable population size, life stage-specific survival, and the maintenance of genetic diversity of the donor stock populations. These take totals will be incorporated as specific permit conditions in a ESA section 10(a)(1)(A) permit, which must be issued prior to broodstock collection. At a minimum, the selected threshold(s) shall ensure that the adverse effects of broodstock collection will not be substantial in the context of the overall population of each spring-run donor stock.	CDFW	Prior to conducting wild spring-run broodstock collection	
BIO-REINTRO-3: Conduct Project-Level Assessment of Activity, and Implement Conservation Measures to Avoid, Minimize, or Mitigate Impacts	When project activities are defined to a level that impacts to biological resources can be evaluated, and prior to implementing that component or taking actions that commit CDFW to implementing that component, CDFW will assess the site to determine the potential for impacts to biological resources. At minimum, the assessment will include a CNDDB search of the site vicinity (minimum 5-mile radius), and a site visit by a qualified botanist and wildlife biologist to evaluate the potential for special-status species and sensitive habitats to be impacted by the activity. If the biologists determine that special-status species or sensitive habitats may be affected by the activity, CDFW will implement the conservation measures listed in Appendix I, CDFW's Conservation Measures for Biological Resources that May Be Affected by Program-level Actions, for each species and habitat type that may be affected.	CDFW and/or Contractor	Before and during construction	
BIO-RECREATION-2: Preserve and Protect Special-Status Plant Populations in the Vicinity of Recreational	Prior to developing recreational enhancements, CDFW will implement the **Mitigation Measure BIO-REINTRO-3**. If the qualified botanist identifies	CDFW and/or Contractor (and DGS, depending on the selected measures)	During design, construction, and operation	

SCARF Fish Reintroduction Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
Enhancement Areas	special-status plants species in the vicinity of the recreational enhancements, CDFW will implement measures to minimize potential impacts. Minimization measures may include constructing pathways, fencing, signage, and other strategies to reduce the potential for trampling or matting that will protect the viability of the local plant population and suitable habitat. If minimization measures are implemented, monitoring of plant populations will be conducted annually for 5 years to assess the mitigation's effectiveness. The performance standard for the mitigation will be no net reduction in the size or viability of the local population.			

SCARF Fisheries Management Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
AQ-MANAGEMENT-1: Prepare Project-Level Quantitative Analysis of Construction Related Air Quality Emissions, and Implement Measures to Cap Emissions	As future individual project components are further defined to a level that construction emissions can be estimated, and prior to implementing that component or taking actions that commit CDFW to implementing that component, CDFW will prepare a complete, quantitative project-level air quality analysis for that component. The quantitative construction air quality analyses will be based on the types, locations, numbers, and operations of equipment to be used; the amount and distance of material to be transported; and worker trips required. In addition, the analysis will be based on the projected quantity and frequency of vehicle and/or truck trips, and other activities that generate emissions. The analysis will determine whether the combined emissions of the quantified components' construction activities exceed the SJVAPCD's construction air quality thresholds (see the SJVAPCD thresholds presented in Table 5-5 of the DEIR). In addition, the analysis will evaluate whether the combined emissions from all project components constitute a significant health risk from diesel fueled equipment. If the analysis determines that construction emissions exceed the air quality significance thresholds, then CDFW will identify and implement appropriate mitigation. As a performance standard, the mitigation shall be sufficient to reduce construction emissions so that the Proposed Project's emissions are below the applicable significance	CDFW	Prior to implementing a project component or taking actions that commit CDFW to implementing that component	

SCARF Fisheries Management Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
	thresholds. Examples of appropriate mitigation may include, but not be limited to, SJVAPCD Regulation VIII, alternative fueled equipment, phasing of material hauling trips, use of chemical additives or after-market devices to reduce emissions on existing equipment, use of electrically powered equipment, reduction in total equipment hours, use of newer equipment models, adopting a vehicle idling policy requiring all vehicles to adhere to a 5 minute idling policy, and sourcing of material from local sources. Actual emissions efficiency for off-road equipment and motor vehicles will be at least as efficient as the most recent CARB fleet average for off-road equipment and motor vehicles for the current calendar year. In the event that the mitigation strategies (either those listed above or others developed to achieve the performance standard) are calculated to be insufficient to reduce construction emissions levels below significance thresholds, then CDFW will enter into a Voluntary Emission Reduction Agreement (VERA) with SJVAPCD. A VERA is a contractual agreement in which the project proponent agrees to mitigate project specific emissions by providing funds for the SJVAPCD's Emission Reduction Incentive Program (ERIP). The funds are disbursed by ERIP in the form of grants for projects that achieve emission reductions. Types of emission reduction projects that have been funded in the past include electrification of stationary internal combustion engines (e.g., agricultural irrigation pumps), replacing old heavy-duty trucks			

SCARF Fisheries Management Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
	with new, cleaner, more efficient heavy-duty trucks, and replacement of old farm tractors. The VERA will be used to offset the project's increase in emissions so that the Proposed Project would have no increase in construction emissions above the significance threshold. Similarly, if the air quality analysis indicates that the activities pose a significant health risk, then CDFW will identify mitigation measures, which, as a performance standard, will ensure health risks are at a less-than-significant level. Examples of appropriate mitigation may include, but not be limited to, use of alternative fueled equipment, use of aftermarket control devices such as diesel particulate filters, use of electrical equipment where possible, or reduction in number of hours of equipment use with a minimum reduction in diesel particulate matter of 85% compared to a Tier 2 engine or equivalent to 100 trucks per day based on CARB's Air Quality and Land Use Handbook.			

SCARF Fisheries Management Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
FISH-MANAGEMENT-1: Implement Conservation Measures prior to and during Construction Activities	CDFW shall implement appropriate Conservation Measures from Appendix I, CDFW's Conservation Measures for Biological Resources that May Be Affected by Program-level Actions, prior to and during the construction of fish segregation weirs and barriers. Pre-construction planning shall include a site assessment by a qualified fisheries biologist to determine the potential for special-status species to occur in the vicinity. If the biologist determines that special-status aquatic species may be present, CDFW shall implement the applicable Appendix I avoidance and minimization measures for each species that may be present.	CDFW and/or Contractor	Before and during construction	
FISH-MANAGEMENT-5a: Monitor Fish Communities in the Vicinity of Segregation Weirs and Traps	If actions described in Impact FISH-MANAGEMENT-5 are used in the Restoration Area, CDFW shall assess the species composition of fish communities within the 500-foot reach both upstream and downstream of each segregation weir or trap, during the time of year that the weir(s) or trap is in place. The monitoring activities shall focus on large bodied special-status fish species such as green sturgeon and steelhead. Monitoring techniques may include the use of visual surveys, rod and reel angling, set lines, fyke nets, DIDSON™, or seines.	CDFW	During operation	

SCARF Fisheries Management Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
FISH-MANAGEMENT-5b: Develop and Implement Measures that Allow Special-Status Large Bodied Fishes to Bypass Weirs and Traps	If as a result of **Mitigation Measure FISH-MANAGEMENT-5a** or through other means, CDFW identifies that, outside of the current seasonal operation of the HFB (September to mid-December), the migration of special-status large bodied fishes could be impeded by the operation of the weir(s) or trap and haul activities, then CDFW shall modify the operation of the weir or implement measures that allow fish to bypass the weir so that movement of large bodied special-status fish species such as green sturgeon and steelhead is not impeded. Such measures may include removal or relocation of the weir(s), or operating a trap(s) to allow for manual selection of fish passing across the barrier.	CDFW and/or Contractor	During operation	

SCARF Fisheries Management Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
FISH-MANAGEMENT-8a: Check Traps Daily and Minimize Handling of Fish	To reduce stress on captured fish, all trapping devices will be checked at least once per day. Untargeted wildlife (e.g., snakes, turtles) caught in traps will be released into suitable habitat for the species. Traps will be checked more frequently during times when conditions are stressful (e.g., high temperatures, large amounts of debris during high flow events) to reduce the time that fish are subject to trap-related stress. Fish will be carefully handled and given sufficient time to recover (at least 30 minutes) prior to being released back into the river. If rotary screw traps are used, they will be operated in accordance with the USFWS "Draft Rotary Screw Trap Protocol for Estimating Production of Juvenile Chinook Salmon" (USFWS 2008) and/or similar protocols which are at least as protective and developed after conferring with USFWS and, if required, NMFS.	CDFW	During operation	
FISH-MANAGEMENT-8b: Adaptively Manage Trap Operations	If mortalities greater than 2 fish or 2% of total catch are observed in a given day due to high debris loads, traps will be removed or raised out of the water until conditions are suitable for survival of fish (i.e., reduced winds or streamflow, improved weat her conditions). For rotary screw traps, if predation causes such mortality, a structural refuge will be installed inside the trap to reduce predation. This will consist of a perforated plastic box or similar refuge for small fish within the rotary screw trap to prevent predation by larger fish captured in the trap.	CDFW	During operation	
GEO-MANAGEMENT-1a:	Project activities will be done in	Contractor	During construction	

SCARF Fisheries Management Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
Stabilize Soils to Avoid Increasing Erosion on Streambanks	such a manner as to not increase erosion within the banks of the river during or immediately following rainfall events. All disturbed soils at project activity sites will be stabilized to reduce erosion potential, both during and following installation of equipment (e.g., weirs, fyke nets, traps, etc.). After removal of such equipment, soils shall be stabilized and recontoured, as necessary.			
GEO-MANAGEMENT-1b: Use Energy Dissipaters to Minimize Turbidity at the Point of Discharge	Water deposited back into the river following Chinook salmon transport shall be done at a rate to minimize water turbidity and erosion. As necessary at each site, temporary energy dissipaters such as rip rap shall be placed at the point of discharge to moderate the return of water to the channel.	CDFW	During operation	
GHG-MANAGEMENT-1: Prepare Project-Level Quantitative Analysis of Construction-Related GHG Emissions, and Implement Measures to Reduce and/or Offset Emissions	As future individual Proposed Project components are further defined to a level that construction emissions can be estimated, and prior to implementing that component or taking actions that commit CDFW to implementing that component, CDFW will prepare a complete, quantitative project-level GHG emissions analysis for that component. The GHG emissions analysis will be based on the types, locations, numbers, and operations of equipment to be used; the amount and distance of material to be transported; and worker trips required. The analysis will determine whether the combined emissions of the various quantified components' construction activities exceed the construction thresholds (230 metric tons CO2e/year	CDFW and/or Contractor	Prior to implementing a project component or taking actions that commit CDFW to implementing that component	

SCARF Fisheries Management Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
	amortized or district approved BPS). If the analysis determines that construction emissions will exceed the construction thresholds, CDFW will first implement all feasible, applicable GHG emission reduction measures and propose these as BPS for the project, up to a 29% reduction from a defined business-as-usual baseline or 1,100 metric tons CO2e per year. Potential GHG emission reduction measures to be considered include, but are not limited to the following: • Utilize alternative fueled vehicles such as electric or biodiesel for equipment and vehicles. • Utilize newer, more fuel efficient equipment and vehicles for construction. • Increase employee vanpool share (2% of vanpool mode share). • Utilize locally sourced material. In the event that the mitigation measures are insufficient to reduce construction emissions to be equal to or less than the significance thresholds, then CDFW shall purchase sufficient GHG emission credits to offset the Proposed Project's construction net increase in emissions above the thresholds. These may include GHG credits that have been banked under SJVAPCD Rule 2301 or other GHG credits that are considered acceptable by SJVAPCD.			

SCARF Fisheries Management Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
HAZ-MANAGEMENT-3: Prepare Project-Level Quantitative Analysis of Site-specific Current and Historical Hazardous Materials, Implement Recommendations in the Phase I Environmental Site Assessment, and Comply with all Applicable Regulations	CDFW will implement the following measures to assess and minimize potential hazards on sites selected for the construction or removal of fish segregation weirs. CDFW will have a qualified expert perform a Phase 1 Environmental Site Assessment and hazardous-site records search for the Proposed Project sites. This process will include the identification of potential hazards within the project sites and identification of nearby sensitive receptors. The assessment will determine whether hazards and hazardous materials are present and, if so, their potential impact on workers and nearby sensitive receptors. The analysis will also include recommendations to reduce potential risks from identified hazards and hazardous materials. CDFW will implement recommendations provided in the Phase 1 Environmental Site Assessment and comply with all applicable regulations. Compliance with these regulations will include preparation of a hazardous materials business plan, which would include a training program for employees and an emergency plan (Cal EMA 2012). CDFW will implement applicable provisions of the EPA, OSHA, Cal/OSHA, Cal/EPA, Cal EMA, and CUPA permitting processes, and any applicable county general plan policies. Should the site have unmitigatable hazardous conditions, or mitigation is not feasible, CDFW shall choose an alternate site.	CDFW, DGS, and/or Contractor	Before construction	

SCARF Fisheries Management Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
LU-MANAGEMENT 1: Ensure Consistency of Land Use	As part of the design for removal or relocation of the two fish weirs, DGS, CDFW or the contractor shall investigate land uses at and adjacent to potential sites, along with relevant plans, policies and regulations. The weirs, fish traps and other equipment shall not be sited in locations that create land use incompatibilities.	CDFW and/or Contractor	During design	
NOISE-MANAGEMENT-1: Implement Noise Control Measures for Construction Activities	Before engaging in noise-generating activity associated with the construction of weirs, structural modification of the Hill's Ferry Barrier, or other construction activity, CDFW will evaluate how close sensitive receptors are located to the construction site, and whether the construction activity would exceed applicable noise thresholds. This evaluation will utilize the same FTA-based general assessment methodology that was used to predict the noise that would be generated during SCARF construction. Should the noise levels be anticipated to exceed the threshold for any sensitive receptors, CDFW will implement specific noise control measures to mitigate impacts associated with construction. These measures may include but are not limited to the following: a. Best available noise control techniques (including factory-approved mufflers, intake silencers, ducts, engine enclosures, and acoustically attenuating shields or shrouds) will be used for all equipment and trucks to minimize construction noise impacts. b. If impact equipment (e.g., concrete/rock breaker, rock drill) is used during project	CDFW and Contractor	Before and during construction	

SCARF Fisheries Management Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
	construction, hydraulic- or electric-powered equipment will be used to avoid the noise associated with compressed-air exhaust from pneumatically powered tools. However, where use of pneumatically powered tools is unavoidable, an exhaust muffler on the compressed-air exhaust will be used (a muffler can lower noise levels from the exhaust by up to 10 dBA). External jackets on the tools themselves will be used, which could achieve a reduction of 5 dBA. Where considered practical, quieter procedure alternatives, such as drilling or vibratory methods, will be used instead of impact equipment. c. Stationary noise sources will be located away from sensitive receptors. If the sources must be located near sensitive receptors, adequate sound abatement (with enclosures and mufflers, where appropriate) will be used to ensure performance standards are met. Enclosure openings or vents will face away from sensitive receptors. If any stationary equipment (e.g., pumps, ventilation fans, generators) is operated beyond the ordinance time limits, this equipment will conform to the affected jurisdiction's noise limits. In addition, CDFW will designate a project liaison to be responsible for responding to noise complaints during construction. The name and phone number of the liaison will be conspicuously posted at construction areas and on all advanced notifications. The			

SCARF Fisheries Management Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
	liaison will take steps to resolve complaints, including the arrangement of periodic noise monitoring, if necessary. Results of noise monitoring will be presented at regular project meetings with the project contractor, and the liaison will coordinate with the contractor to modify any construction activities that generate excessive noise levels.			

SCARF Fisheries Research and Monitoring Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
FISH-MONITORING-2a: Implement Standard Protocols for Active Sampling of Aquatic Species	When conducting active sampling, CDFW shall adhere to fish handling procedures prescribed in Guidelines for the Use of Fishes in Research (Nickum *et al*. 2004), or any more current protocols which are considered at least as protective.	CDFW	During operation	
FISH-MONITORING-2b: Use Passive Sampling Techniques in place of Active Sampling Techniques, When Appropriate	To reduce impacts associated with active instream monitoring activity such as electrofishing, seining, and use of jet or propeller motor boats by investigators, the use of passive capture equipment will be used in place of active sampling whenever appropriate and feasible. Passive sampling equipment includes entanglement gear such as gill nets and trammel nets, and entrapment gear such as Fyke nets and rotary screw traps.	CDFW	During operation	
FISH-MONITORING-2c: Use Observational Techniques in place of Traditional Capture Techniques, When Appropriate	Wherever possible and appropriate, observational techniques will be used in place of capture techniques to reduce the need to handle organisms.	CDFW	During operation	

SCARF Fisheries Research and Monitoring Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
FISH-MONITORING-2d: Check Rotary Screw Traps Daily	Rotary screw traps will be operated in accordance with the USFWS "Draft Rotary Screw Trap Protocol for Estimating Production of Juvenile Chinook Salmon" (USFWS 2008) and/or similar protocols which are at least as protective and developed after conferring with USFWS and, if required, NMFS. USFWS (2008) includes several measures, as follows. To reduce stress on captured fish, all trapping devices will be checked at least once per day when in the fishing position. Untargeted wildlife (e.g., snakes, turtles) caught in traps will be released into suitable habitat for the species. Traps will be checked more frequently during times when conditions are stressful (e.g., high temperatures, large amounts of debris during high flow events) to reduce the time that fish are subject to trap-related stress. Fish may need to be anesthetized, which would be done using methods acceptable to USFWS and NMFS before they are handled and given sufficient time to recover (at least 30 minutes) prior to being released back into the river.	CDFW	During operation	
FISH-MONITORING-2e: Adaptively Manage Trap Operations	If mortalities greater than two fish or 2% of total catch are observed in a given day due to high debris loads, traps will be raised out of the water until conditions are suitable for survival of fish (i.e., reduced winds or streamflow, improved weather conditions). If predation causes such mortality, a structural refuge will be installed inside the trap to reduce predation. This will consist of a perforated plastic box or similar refuge for small fish within the rotary screw trap to prevent predation by larger fish captured in the trap.	CDFW	During operation	

SCARF Recreation Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
AQ-MANAGEMENT-1: Prepare Project-Level Quantitative Analysis of Construction Related Air Quality Emissions, and Implement Measures to Cap Emissions	As future individual project components are further defined to a level that construction emissions can be estimated, and prior to implementing that component or taking actions that commit CDFW to implementing that component, CDFW will prepare a complete, quantitative project-level air quality analysis for that component. The quantitative construction air quality analyses will be based on the types, locations, numbers, and operations of equipment to be used; the amount and distance of material to be transported; and worker trips required. In addition, the analysis will be based on the projected quantity and frequency of vehicle and/or truck trips, and other activities that generate emissions. The analysis will determine whether the combined emissions of the quantified components' construction activities exceed the SJVAPCD's construction air quality thresholds (see the SJVAPCD thresholds presented in Table 5-5 of the DEIR). In addition, the analysis will evaluate whether the combined emissions from all project components constitute a significant health risk from diesel fueled equipment. If the analysis determines that construction emissions exceed the air quality significance thresholds, then CDFW will identify and implement appropriate mitigation. As a performance standard, the mitigation shall be sufficient to reduce construction emissions so that the Proposed Project's emissions are below the applicable significance thresholds. Examples of appropriate mitigation may include, but not be limited to, SJVAPCD Regulation	CDFW	Prior to implementing a project component or taking actions that commit CDFW to implementing that component	

SCARF Recreation Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
	VIII, alternative fueled equipment, phasing of material hauling trips, use of chemical additives or after-market devices to reduce emissions on existing equipment, use of electrically powered equipment, reduction in total equipment hours, use of newer equipment models, adopting a vehicle idling policy requiring all vehicles to adhere to a 5 minute idling policy, and sourcing of material from local sources. Actual emissions efficiency for off-road equipment and motor vehicles will be at least as efficient as the most recent CARB fleet average for off-road equipment and motor vehicles for the current calendar year. In the event that the mitigation strategies (either those listed above or others developed to achieve the performance standard) are calculated to be insufficient to reduce construction emissions levels below significance thresholds, then CDFW will enter into a Voluntary Emission Reduction Agreement (VERA) with SJVAPCD. A VERA is a contractual agreement in which the project proponent agrees to mitigate project specific emissions by providing funds for the SJVAPCD's Emission Reduction Incentive Program (ERIP). The funds are disbursed by ERIP in the form of grants for projects that achieve emission reductions. Types of emission reduction projects that have been funded in the past include electrification of stationary internal combustion engines (e.g., agricultural irrigation pumps), replacing old heavy-duty trucks with new, cleaner, more efficient heavy-duty trucks, and replacement of old farm tractors. The VERA will be used to offset the project's increase in emissions so that the			

SCARF Recreation Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
	Proposed Project would have no increase in construction emissions above the significance threshold. Similarly, if the air quality analysis indicates that the activities pose a significant health risk, then CDFW will identify mitigation measures, which, as a performance standard, will ensure health risks are at a less-than-significant level. Examples of appropriate mitigation may include, but not be limited to, use of alternative fueled equipment, use of aftermarket control devices such as diesel particulate filters, use of electrical equipment where possible, or reduction in number of hours of equipment use with a minimum reduction in diesel particulate matter of 85% compared to a Tier 2 engine or equivalent to 100 trucks per day based on CARB's Air Quality and Land Use Handbook.			
FISH-RECREATION-1: Implement Conservation Measures prior to and during Construction of Recreational Enhancements	CDFW shall implement appropriate conservation measures from Appendix I, CDFW's Conservation Measures for Biological Resources that May Be Affected by Program-level Actions, prior to and during the construction of recreational fishing enhancements. Pre-construction planning shall include a site assessment by a qualified fisheries wildlife biologist to determine the potential for special-status species to occur in the vicinity. If the biologists determine that special-status species may be present, CDFW shall implement the applicable Appendix I avoidance and minimization measures for each species that may be present.	CDFW and/or Contractor	Before and during construction	
BIO-RECREATION-2:	Prior to developing recreational	CDFW and/or	During design,	

SCARF Recreation Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
Preserve and Protect Special-Status Plant Populations in the Vicinity of Recreational Enhancement Areas	enhancements, CDFW will implement the **Mitigation Measure BIO-REINTRO-3**. If the qualified botanist identifies special-status plants species in the vicinity of the recreational enhancements, CDFW will implement measures to minimize potential impacts. Minimization measures may include constructing pathways, fencing, signage, and other strategies to reduce the potential for trampling or matting that will protect the viability of the local plant population and suitable habitat. If minimization measures are implemented, monitoring of plant populations will be conducted annually for 5 years to assess the mitigation's effectiveness. The performance standard for the mitigation will be no net reduction in the size or viability of the local population.	Contractor (and DGS, depending on the selected measures)	construction, and operation	

SCARF Recreation Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
GEO-RECREATION-1: Conduct a Geotechnical Investigation and Incorporate Report Recommendations into the Design and Construction of any Future Recreation Management Roads or Facilities	A geotechnical investigation must be conducted by a qualified geotechnical engineer (or team of geotechnical engineers) to evaluate subsurface soil and geologic conditions at future sites of recreation management roads and facilities. The investigation report should provide conclusions and recommendations relative to the geotechnical aspects of designing and constructing the recreation management roads and facilities, which are yet to be determined. Recommendations should address site and geologic conditions, including soil, groundwater, and corrosion. They should also address geologic hazards, such as regional active faults, ground shaking, liquefaction, and flooding. The report should provide seismic design criteria; excavation and cut-and-fill characteristics; criteria for foundations, retaining walls, and pavement; and any other design criteria appropriate for the Proposed Project such that the facilities remain stable. The proposed recreation management activities will incorporate all recommendations put forth by the Geotechnical Investigation Report into the design and construction of the Proposed Project.	CDFW and/or Contractor	During design, before construction	
GHG-MANAGEMENT-1: Prepare Project-Level Quantitative Analysis of Construction-Related GHG Emissions, and Implement Measures to Reduce and/or Offset Emissions	As future individual Proposed Project components are further defined to a level that construction emissions can be estimated, and prior to implementing that component or taking actions that commit CDFW to implementing that component, CDFW will prepare a complete, quantitative project-level GHG emissions analysis for that	CDFW and/or Contractor	Prior to implementing a project component or taking actions that commit CDFW to implementing that component	

SCARF Recreation Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
	component. The GHG emissions analysis will be based on the types, locations, numbers, and operations of equipment to be used; the amount and distance of material to be transported; and worker trips required. The analysis will determine whether the combined emissions of the various quantified components' construction activities exceed the construction thresholds (230 metric tons CO2e/year amortized or district approved BPS). If the analysis determines that construction emissions will exceed the construction thresholds, CDFW will first implement all feasible, applicable GHG emission reduction measures and propose these as BPS for the project, up to a 29% reduction from a defined business-as-usual baseline or 1,100 metric tons CO2e per year. Potential GHG emission reduction measures to be considered include, but are not limited to the following: • Utilize alternative fueled vehicles such as electric or biodiesel for equipment and vehicles. • Utilize newer, more fuel efficient equipment and vehicles for construction. • Increase employee vanpool share (2% of vanpool mode share). • Utilize locally sourced material. In the event that the mitigation measures are insufficient to reduce construction emissions to be equal to or less than the			

SCARF Recreation Mitigation Measure Title	Mitigation Measure Description	Implementing Party	Implementation Timing	Verification Sign-off (initials and date)
	significance thresholds, then CDFW shall purchase sufficient GHG emission credits to offset the Proposed Project's construction net increase in emissions above the thresholds. These may include GHG credits that have been banked under SJVAPCD Rule 2301 or other GHG credits that are considered acceptable by SJVAPCD.			
HAZ-RECREATION-3: Research and Consult Applicable Comprehensive Airport Land Use Plans before Construction Activities	As stated in the California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15154, CDFW shall ensure that the design and construction will comply with all applicable comprehensive airport land use plans within which boundaries the Project falls. If a comprehensive airport land use plan has not been adopted for a project within 2 nautical miles of a public airport or public-use airport, the Airport Land Use Planning Handbook published by the California Department of Transportation's Division of Aeronautics (Caltrans 2011) will serve as the guide for the design and construction of the Proposed Project with regard to potential airport-related safety hazards and noise problems.	CDFW	During design	
LU-RECREATION-2: Avoid Locations with Land Use Conflicts	As part of the selection of recreational enhancement sites, CDFW shall investigate land uses at and adjacent to potential sites, along with relevant plans, policies and regulations. CDFW will choose locations for enhancement of recreational fishing that would not conflict with existing or planned land uses and/or local land use policies.	CDFW and/or Contractor	During design	

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