

California High-Speed Rail Authority



RFP No.: HSR 13-57

**Request for Proposal for Design-Build
Services for Construction Package 2-3**

**Reference Materials, Part E.5 –
Construction Package 1: Environmental
Management Plan**

California High-Speed Train Design-Build Project

Construction Package 1

ENVIRONMENTAL MANAGEMENT PLAN

July 2014

Agreement No. HSR 13-06

Prepared by:

Tutor Perini | **ZACHRY** | **PARSONS**
a joint venture

Environmental Management Plan Approval Signoff Sheet

EMP Manager	_____ Macie Cleary	Date	July 7, 2014
Design Manager	_____ Rick Grebner	Date	July 7, 2014
Construction Manager	_____ David Saliba	Date	July 7, 2014
Project Manager	_____ Jim Laing	Date	July 7, 2014

Statement of No Objection by the California High Speed Rail Authority:

Name

Title

Date

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TERMS AND DEFINITIONS

General

This section provides standardized definitions for the terms used in this Environmental Management Plan (EMP). It also identifies frequently used abbreviations and acronyms. Should any discrepancies exist, definitions set forth in the Contract will take precedence over definitions contained in this EMP.

Definition of Terms

Term	Definition
Air Pollution Control District	A county agency with authority to regulate stationary, indirect, and are sources of air pollution (e.g., power plants, highway construction, and housing developments) within the county, and which is governed by a district air pollution control board composed of the elected county supervisors
Archaeology	The systematic recovery and study of material evidence (e.g., structures, tools, and pottery) remaining from past human life and cultures in order to study human ecology and cultural progress
Area of potential effect	A term used in Section 106 regulations to describe the area in which historic and archaeological resources may be affected by a federal undertaking
Base floodplain	The area subject to flooding by the flood or tide having a one percent chance of being exceeded in any given year
Basin	Drainage or catchment area of a stream or lake
Best Management Practice	Policies, practices, procedures, or structures implemented to mitigate the adverse environmental effects on surface water quality resulting from development.
California Department of Fish and Wildlife	State regulatory agency with jurisdiction over various permitting activities for wetlands and state-listed endangered species (plants and animals)
California Department of Transportation	State agency that issues encroachment permits to ensure that the proposed encroachment is compatible with the state highway system, highway drivers' safety, and the state's investment in highway facilities
California Endangered Species Act	State equivalent of the Federal Endangered Species Act
California Natural Diversity Database	State Endangered Species Act program responsible for maintaining information on the status and distribution of rare, threatened, and endangered species
Clean Water Act, Section 401	Section 401 State Water-Quality Certification: Provides that no Federal permit or license for activities that might result in a discharge to navigable waters may be issued unless a CWA Section 401 Water Quality Certification is obtained from or waived by States or authorized Tribes
Clean Water Act, Section 402	Section 402 National Pollutant Discharge Elimination System (NPDES) Program: this program established a permitting system to regulate point source discharges of pollutants (other than dredged or fill material) into waters of the U.S.
Clean Water Act, Section 404	Section 404 Dredged and Fill Material Permit Program: This program has established a permitting system to regulate the discharges of dredged or fill material into waters of the United States

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Term	Definition
Compensatory mitigation	The restoration, establishment, enhancement, or reservation of aquatic resources for the purpose of compensating for unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved
Decibel on the A-weighted scale	Sound pressure level in decibels as measure on a sound level meter using the A-weighted filter network. A-weighted decibels (dBA) refer to a weighting that accounts for the various frequency components in a way that corresponds to human hearing.
Disturbed area	Land that has had its surface altered by grading, digging, or other construction-related activities
Endangered species	A species that is threatened with extinction throughout all or a significant portion of its range
Environmental Impact Report	A disclosure document prepared pursuant to CEQA to evaluate potential impacts and to propose mitigation for significant impacts to facilitate informed decision making
Environmental Impact Statement	A disclosure document prepared pursuant to NEPA to evaluate potential impacts and to propose mitigation for significant impacts to facilitate informed decision making
Fault	A fracture or zone of fractures along which there has been movement of the sides relative to one another and parallel to the fracture
Federal Endangered Species Act	National law regulating threatened and endangered species. It provides a system for protecting and conserving endangered and threatened species and protecting the ecosystems on which they depend.
Floodplain	The relatively flat land lying adjacent to a river channel that is covered by water when the river overflows its banks
Flora	Plants collectively, especially the plants of a particular region or period
Fluvial	Pertaining to a river or stream
Hazardous material	A substance, or combination of substances, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may either cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible illness; or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.
Hazardous waste	Waste material that, by their nature, is inherently dangerous to handle or dispose of (e.g., old explosives, radioactive materials, some chemicals, some biological wastes). Usually, industrial operations produce these waste materials.
Historic property	Any prehistoric or historic district, site (including archaeological site), building, structure, or other object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe that meet the National Register criteria.
Hydrology	The science dealing with the properties, distribution, and circulation of water on the surface of the land and in the soil and underlying rocks

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Term	Definition
Mitigation measure	An action or precaution that can reduce or eliminate individual project impacts
National Environmental Policy Act	The National Environmental Policy Act of 1969, as amended (42 USC 4321–4347; PL 91-190) is the basic national charter for the protection of the environment. It establishes policy, sets goals, and provides means to implement the policy. Its purpose is to provide for the establishment of a Council on Environmental Quality and to instruct federal agencies on what they must do to comply with the procedures and achieve the goals of NEPA.
National Historic Preservation Act	The National Historic Preservation Act of 1966, as amended (16 USC 470.470 et seq.; P.L 89- 665), is the basic legislation of the nation's historic preservation program that established the Advisory Council on Historic Preservation and the Section 106 review process. NHPA Section 106 requires every federal agency to "take into account" the effects of its undertakings on historic properties.
National Register or Historic Places	Administered by the National Park Service, the nation's master inventory of known historic properties, including buildings, structures, sites, objects, and districts that possess historic, architectural, engineering, archeological, or cultural significance at the federal, state, and local levels. The NRHP lists districts, sites, structures, and objects important in American history, architecture, archaeology, and culture; maintained by the Secretary of the Interior under authority of Section 2(b) of the Historic Sites Act of 1935 and Section 101 (a)(l) of the National Historic Preservation Act of 1966, as amended.
Native vegetation	Plant life that occurs naturally in the study area without agricultural or cultivational efforts and prior to Euro-American contact
Nonattainment area	A geographic area that has been designated by the Environmental Protection Agency (EPA) and the appropriate state air quality agency as not complying with one or more national ambient air quality standards (NAAQS)
Nonnative vegetation	Plant communities dominated by exotic species
Paleontological resources	Fossilized plant or animal remains from past geologic periods
Prehistoric	The period of time before the written record, i.e., before Euro-American entry into the study area
Regional Water Quality Control Board	State or regional regulatory agency whose jurisdiction includes regulation of waste discharges. The RWQCB is the state water pollution control agency for all purposes stated in the Federal Water Pollution Control Act.
Revegetation	Regrowth or replacement of a plant community on a disturbed site. Revegetation may be assisted by site preparation, planting, and treatment, or it may occur naturally.
Right-of-way	The land used by a public utility
Riparian area	Riparian areas are lands adjacent to streams, lakes, and estuarine-marine shorelines. Riparian areas are transitional between terrestrial and aquatic ecosystems through which surface and subsurface hydrology connects waterbodies with their adjacent uplands. Riparian areas provide a variety of ecological functions and services and help improve or maintain local water quality.
Runoff	Nonabsorbed excess water entering a stream or other conveyance channel shortly after rainfall

Term	Definition
Seismic	Pertaining to an earthquake or earth vibrations
State Historic Preservation Officer	The official within each state, authorized by the state at the request of the Secretary of the Interior, to act as liaison in implementing the National Historic Preservation Act
State Water Resources Control Board	The principal authority of California for regulating the quantity and quality of waters of the state, established by the legislature in 1967. It assumed responsibility for administration of the Porter–Cologne Water Quality Control Act of 1969. The SWRCB and the nine Regional Water Quality Control Boards are responsible for regulating, protecting, and administering water quality in California.
Stormwater management	Stormwater management is the mechanism for controlling stormwater runoff for the purposes of reducing downstream erosion, water quality degradation, and flooding and mitigating the adverse effects of changes in land use on the aquatic environment
Streambed	The substrate of the stream channel between the ordinary high water marks. The substrate may be bedrock or inorganic particles that range in size from clay to boulders. Wetlands contiguous to the streambed, but outside of the ordinary high water marks, are not considered part of the streambed.
Threatened species	Plant and wildlife species likely to become endangered in the foreseeable future
Transportation control measure	A measure to reduce emissions or concentrations of air pollutants from transportation sources by reducing vehicle use or changing traffic flow or congestion conditions
U.S. Army Corps of Engineers	The agency that holds the responsibility for protection and development of the nation's water resources, including navigation, flood control, energy production through hydropower management, water supply storage, and recreation. NEPA-designated lead agency for the Emergency Water Storage Project
U.S. Fish and Wildlife Service	Federal agency responsible for ensuring that any actions are not likely to jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of the critical habitat of such species
Unique and sensitive habitats	Areas that are especially important to regional wildlife populations or protected species that have other important biological characteristics (e.g., nesting areas and wetlands)
Upland	Ground elevated above bottomlands (e.g., rolling hill terrain and terraces)
Waterbody	A waterbody is a jurisdictional water of the United States that, during a year with normal patterns of precipitation, has water flowing or standing above ground to the extent that an ordinary high water mark or other indicators of jurisdiction can be determined, as well as any wetland area. Examples of “waterbodies” include streams, rivers, lakes, ponds, and wetlands.

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Abbreviations and Acronyms

APE	Area of Potential Effect
ATP	Archaeological Treatment Plan
Authority	California High-Speed Rail Authority
Caltrans	California Department of Transportation
CDFW	California Department of Fish and Wildlife
CP-1	Construction Package 1
DMP	Document Management Plan
EIR/EIS	Environmental Impact Report/Environmental Impact Statement
EM	Environmental Meeting
EMMA	Environmental Mitigation Management & Assessment
EMP	Environmental Management Plan
ERA	Environmentally Restricted Area
ESA	Environmentally Sensitive Area
FRA	Federal Railroad Administration
HMF	Heavy Maintenance Facility
HRC	Heritage Resources Coordinator
HST	High-Speed Train
IDR	Inter-Discipline Design Review
ISR	Indirect Source Review
ITR	Independent Technical Review
MLD	Most Likely Descendant
MMRP	Mitigation Monitoring and Reporting Program
MOA	Memorandum of Agreement
MS4	Municipal Separate Storm Sewer System
NAC	Native American Coordinator
NAHC	Native American Heritage Commission
NCR	Non-conformance Report
NEO	New Employee Orientation
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination System
PCM	Program Construction Management
PMP	Project Management Plan
PRS	Paleontological Resources Specialist
Project	California High-Speed Train, Merced to Fresno Section, CP-1
QA/QC	Quality Assurance/Quality Control
QMP	Quality Management Plan
RWQCB	Regional Water Quality Control Board

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SJVAPCD	San Joaquin Valley Air Pollution Control District
SHPO	State Historic Preservation Officer
SWMP	Stormwater Management Plan
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TPZP	Tutor Perini/Zachry/Parsons, a Joint Venture
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
WDID	Waste Discharge Identification Number
WEAP	Worker Environmental Awareness Program

1 ENVIRONMENTAL MANAGEMENT PLAN

1.1 Introduction

This Environmental Management Plan (EMP) for Construction Package 1 (CP-1) of the California High-Speed Train, Merced to Fresno Section (Project) builds upon the environmental and compliance efforts documented in the Final Environmental Impact Report/Environmental Impact Statement (EIR/EIS) (April, 2012) prepared for the Project. The EMP provides the framework, guidelines, and procedures to implement, monitor, track, and document compliance with the mitigation measures and environmental commitments for the Project.

1.2 Purpose, Goals, and Objectives

This EMP is a user-friendly guide to be used by California High-Speed Rail Authority (Authority), Tutor Perini/Zachry/Parsons, a Joint Venture (TPZP), subconsultant, and subcontractor employees responsible for the implementation and oversight of all Project mitigation measures, agreements and permits. The purpose of the EMP is threefold, as follows:

1. Describe the process to be followed during the course of the Project to fully comply with all environmental requirements.
2. Outline the documentation required to verify and validate compliance with applicable mitigation measures, permits, and approvals.
3. Provide instruction on actions to take when confronted with environmental issues, including emergencies, on the Project site. The EMP, in conjunction with other elements of the Project Management Plan (PMP), aims to provide an informative and effective “go-to” guide for a number of situations and issues encountered on-site.

With proper implementation of this EMP, a goal of zero environmental violations during the performance of all Project activities is targeted. In the event of a violation, the EMP provides a detailed process for rectifying the incident in an appropriate and timely way. With effective use of the EMP, the ultimate goal of the Authority and TPZP is protection of the environment while documenting the measures taken during the performance of the Project to avoid and minimize environmental impacts from design, construction, and maintenance activities. In this regard, the EMP strives to provide concise, consistent, and timely monitoring and reporting throughout construction of the Project.

Upon compliance with all measures, the following will be submitted: (1) a final EMP and (2) a final Mitigation Monitoring and Reporting Program (MMRP), accompanied by a Draft Certification of Environmental Compliance, for review and approval by the California High-Speed Rail Authority (the Authority) and the Federal Railroad Administration (FRA) as a condition of Final Acceptance. Upon approval, the Certification of Environmental Compliance will be signed by the Authority and FRA.

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1.3 Project Background

The Authority is responsible for planning, designing, constructing, and operating the California High-Speed Train (HST) System. Its statutory mandate is to develop a high-speed rail system that coordinates with the state's existing transportation network, which includes intercity rail and bus lines, regional commuter rail lines, urban rail and bus transit lines, highways, and airports.

The California HST System will provide intercity, high-speed service on more than 800 miles of track throughout California, connecting the major population centers of Sacramento, San Francisco Bay Area, Central Valley, Los Angeles, Inland Empire, Orange County, and San Diego. The Authority and FRA prepared two programmatic (Tier 1) EIR/EIS documents to select preferred alignments and station locations to advance for Project-level analysis in Tier 2 EIR/EIS's. The Merced to Fresno Section is one of the nine individual sections that underwent Tier 2 environmental review for Phases 1 and 2 of the California HST System.

FRA and the Authority, as joint lead agencies for National Environmental Policy Act (NEPA) compliance, commenced the environmental review process for the Project in 2009. The Authority held scoping meetings for the Project in March 2009. The Draft EIR/EIS was issued in August 2011 and the 60-day public review period closed on October 13, 2011. The Draft EIR/EIS presented the purpose and need for the Project; the reasonable range of alternatives for rail alignment, station site, heavy maintenance facility (HMF), and a connection to the east-west running San Jose to Merced Section also known as "Wye connections"; the existing environmental setting; potential effects (both beneficial and adverse) from construction and operation; and mitigation measures to reduce or eliminate potential adverse environmental effects.

FRA and the Authority considered the information presented in and the comments received on the Draft EIR/EIS when preparing the Final EIR/EIS. During a hearing by the Authority Board of Directors in December 2011, the Authority designated the Preferred Alternative. The Final EIR/EIS, published April 20, 2012, identified the Hybrid Alternative as the Preferred Alternative and included minor design modifications to proposed alternatives resulting from public and agency comments on the Draft EIR/EIS and an evaluation of the potential environmental effects of the Preferred Alternative.

1.4 EMP Overall Approach

This EMP is tailored to the CP-1 Project (Avenue 17, Madera to East American Avenue, Fresno) and includes specific procedures that will be used to implement each of the environmental commitments. The EMP is organized into the following sections:

- Section 1, Environmental Management Plan – Describes the purpose and goals of plan as well as background to the Project
- Section 2, Organization – Includes the organizational structure, the activities to be performed, and environmental contact protocol during environmental incidents and issues
- Section 3, Personnel – Identifies the key personnel, including the Environmental Mitigation Manager, and provides narratives of roles and responsibilities. This section will also discuss

coordination and management of internal and external staff and includes on-and off-site personnel.

- Section 4, Procedures – Includes the means and methods to implement the EMP, to ensure compliance, and successful implementation of measures
- Section 5, Quality Assurance/Quality Control – This section focuses on the procedures to ensure accuracy, completion, and quality of submittals and transmittals
- Section 6, Audit – A discussion on procedures and personnel responsible for establishing, maintaining, auditing, and reporting on the PMP
- Section 7, Document Management – A discussion on the system of how records and documentation will be maintained and updated.

As a “living document” this EMP will be updated periodically with the most current information. The information contained within this document will change from time to time, as new information is obtained, as measures are completed, and as personnel change throughout the course of the Project. Further details on how this document will be updated are included in the Document Management section.

2 ORGANIZATION

Successful implementation of the EMP will require close coordination with several organizations including agencies, entities, subconsultants and subcontractors. The main organizations discussed within this EMP include the Authority, FRA, California Department of Transportation (Caltrans), and TPZP. Each of the organizations is discussed in detail below.

Authority – The Authority serves as the owner and operator of the Merced to Fresno Section. The Authority is the procuring and contracting agency for the Project, working in cooperation with FRA. The Authority also has certain responsibility and requirements for fulfilling environmental mitigation requirements.

FRA – The FRA will exercise jurisdiction over railroad safety issues during design and operation of the Project. Working in cooperation with the Authority, FRA is joint lead agency for the Project.

Caltrans - As some of the Project occurs on Caltrans right-of-way, Caltrans will provide some oversight and technical support services for the Project. Caltrans will also have certain review and approval rights with respect to the Project.

TPZP – As the Design-Builder, TPZP is responsible for the design and construction of the Project. TPZP has certain responsibilities and requirements for fulfilling environmental mitigation.

In general, information and communication will follow an agreed upon flow method. The flow diagram below illustrates the chain of communication between the various entities mentioned above.



Flow of information pertinent to environmental management will be direct and interactive from TPZP to the Authority, and vice versa. The Authority will communicate directly to the FRA, where required, on matters pertaining to environmental compliance. This flow of communication is important in order to avoid any miscommunication or misinformation between entities. Furthermore, this approach will avoid confusion and establishes protocol for the accurate transmission of information. Contact personnel from each entity are explained in Section 3.

3 PERSONNEL

Due to the size and scope of the CP-1 Project, several hundred individuals could be assigned to the Project. As such, key personnel have been identified for certain tasks as listed in Table 1 with a narrative of roles and responsibilities. This list will change over time, and need to be updated periodically during the course of the Project. The Environmental Mitigation Manager on behalf of TPZP is Macie Cleary.

Table 1: Key Personnel

Name	Title/Role	Email	Phone
High-Speed Rail Authority (Owner)			
Hugo Mejia	Design Construction Manager	Hugo.mejia@HSR.ca.gov	(559) 801-2020
	Hugo Mejia is the Design Construction Manager for HSRA. Hugo will be the point of contact for the TPZP Design/Build Project Director.		
Rick Stead	Design Build Oversight Manager	rstead@pghwong.com	(619) 245-8291
	Rick Stead serves as the Design Build Oversight Manager for the Project and Construction Management (PCM) Team		
Carie Wingert	Environmental Oversight Manager	cwingert@rinconconsultants.com	(559)-385-7225
	Carie Wingert is the Environmental Oversight Manager for the PCM Team		
Environmental Management Team/Parsons			
Macie Cleary	Environmental Mitigation Manager	Macie.Cleary@parsons.com	(949) 333-4467
	Macie Cleary is the Environmental Mitigation Manager for the TPZP team. Macie will participate in environmental meetings, as necessary, provide environmental reviews as applicable, and provide HSRA input for environmental issues regarding the Project. Macie will also coordinate and be the point of contact for all TPZP technical specialists.		
Tutor Perini (Design-Builder)			
Jim Laing	Design/Build Project Director	Jim.Laing@TPZPJV.com	(559) 385-7701
	Jim Laing will serve as the TPZP Project Director and point of contact for communicating information to and from HSRA. Jim will coordinate the flow of information to the TPZP Team, and daily construction activities, as applicable. Jim will also be kept informed of		

Name	Title/Role	Email	Phone
	construction activities from the Construction Manager.		
David Suliba	Utilities/Civil Construction Manager	David.Suliba@TudorSaliba.com	(559) 385-7003
	David Suliba is the Utilities/Civil Construction Manager on the Project. David will be the point of contact for all utilities/civil construction related issues during construction.		
Mike Ostrom	Structure Manager	Mike.Ostrom@TPZPJV.com	(559) 385-7008
	Mike Ostrom is the Structure Manager on the Project. Mike will be the point of contact for all structural issues during construction.		
Dale Gold	Demolition Manager	Dale.Gold@TPZPJV.com	(559) 385-7008
	Dale Gold is the Demolition Manager on the Project. Dale will be the point of contact for all issues related to demolition during construction.		
Rick Grebner	Design Manager	Rick.Grebner@TPZPJV.com	904-385-7004
	Rick Grebner will serve as the Design Manager for the HSRA Project and will be the point of contact for design engineering related issues. Rick will coordinate with the design engineers, environmental staff, agencies, TPZP, as applicable on engineering related matters.		
Technical Specialists of TPZP			
Brian Pittman	Lead Biologist	BPittman@esassoc.com	(916) 564-4500
	Brian Pittman is the Designated Qualified Biologist on the Project. Brian is the point of contact for all issues related to biological resources, including jurisdictional waters, habitat management, and bat biology. Brian will coordinate the efforts for biological resources monitoring during construction.		
Mark Baumgartner	Agency Certified Biologist	mbaumgartner@esassoc.com	(916) 564-4500
	Mark is a U.S. Fish and Wildlife Service (USFWS)-certified wildlife biologist for the California Tiger Salamander. San Joaquin Kit Fox certification is currently (July 2014) expected to be approved by USFWS.		
Natasha Dvorak	Agency Certified Biologist	ndvorak@esassoc.com	(916) 564-4500
	Natasha is a USFWS-certified wildlife biologist for the Swainson's Hawk.		
Shala Craig	Hazardous Waste Specialist	Shala.Craig@parsons.com	(626) 440-6161
	Shala Craig will serve as the Hazardous Waste Specialist for the Project. Shala will coordinate the efforts of hazardous waste monitoring and inspections related to lead, asbestos, and other hazardous materials.		
Lee Monnens	Paleontological Resources Specialist (PRS)	Lee.Monnens@parsons.com	(303) 764-8807
	Lee Monnens is the Paleontological Resources Specialist (PSR) for the Project. Lee will be the point of contact for all paleontological issues during construction and will lead the effort for conducting paleontological resources monitoring during construction.		
Areg Gharabegian	Noise Analysis	Areg.Gharabegian@parsons.com	(626) 440-6047
	Areg Gharabegian will provide noise analysis for the Project. Areg will prepare noise analysis documentation related to the Project, as applicable, with noise monitoring data provided by others.		
Rebecca Allen	Qualified Professional Archaeologist	RAllen@esassoc.com	(916) 564-4500
	Rebecca Allen will serve as the Qualified Professional Archaeologist for the Project. Brian and Greg will be responsible for the archaeological monitors and monitoring effort.		

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3.1 Procedures for Project Communications

Successful Project implementation will require frequent and ongoing communications on status, updates, potential issues, and resolutions. Project communications will require the flow of information following the above-described protocol, from all levels of staff and personnel. Project communication will be required both internally amongst the Project staff, and externally, with the Authority and other resource agencies. Communication forums to be utilized for the Project include face to face meetings, conference calls, field visits, and emails.

During construction, the weekly/biweekly EM serves as an open forum for communication to be attended by appropriate Authority and TPZP environmental staff with action items being distributed after each meeting. Any changes to communication regarding specific submittals/transmittals, meetings, and schedules will be discussed during the weekly/biweekly EM and noted on the meeting minutes. The weekly/biweekly EM will be held in the Fresno Project Office, or via conference call, to include discussion of the EMP and implementation of environmental commitments.

All submittals or transmittals to the Authority by the Environmental Mitigation Manager will be through the TPZP. Direct communication with the Authority and resource agencies by subcontractors, should it be necessary, will occur first with prior authorization and agreement by TPZP, acknowledging that such communication may take place. Any coordination meetings with resource agencies will be led by the Authority. TPZP communications with external agencies, including the FRA and resource agencies, will be through the Authority.

3.2 Environmental Contacts and Environmental Notification Checklist

The list of environmental contacts shown in Table 2 has been compiled for the Project to include all applicable contact persons as well as agency and other affected parties to be notified following unforeseen potential environmental issues that arise during the course of the Project. When an environmental incident or discovery occurs during construction, the contact list will be utilized to identify the appropriate personnel to call. Upon contacting the appropriate personnel, the Environmental Notification Checklist Form provided in Appendix 3 will be completed to provide detailed information about the event (including location, time, date, and individuals involved), and personnel that have been contacted. Once complete, the Environmental Notification Checklist Form will be submitted to the Environmental Mitigation Manager who will verify by signature that the appropriate personnel have been notified. The form will then be submitted to the Authority to be reviewed, revised as appropriate, and kept as part of the EMP files.

Table 2 includes contact persons representing the Authority, TPZP, and applicable governmental entities with environmental jurisdiction and/or oversight in these matters. Table 2 also includes the chain of contact (primary and secondary contacts) and contact information. The first point of contact is the Primary Contact for specific environmental issues, as illustrated in the table below. Upon notification, the Primary Contact will notify the Secondary Contact. The Secondary Contact will then coordinate with the Authority to inform agencies, entities, and other contacts. In all circumstances, the Environmental Mitigation Manager will be notified. As provided in Table 2, footnoted agencies are not

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Table 2: Environmental Contacts

For Issues Related to...	Primary Contact(s)	Secondary Contact(s)	Agency, Entity, and Other Contacts
Hazardous Materials Management	Macie Cleary/Parsons Macie.Cleary@parsons.com Office (949) 333-4467 Cell (714) 421-8232	Shala Craig/Parsons Shala.Craig@parsons.com Office (626) 440-6161 Cell (310)-612-3393	SJVAPCD ¹ DTSC/EPA ¹ Jim Swaney Kevin Shaddy 559-230-6020 559-297-3929
Discovery of active bird nests (with eggs or young)	Macie Cleary/Parsons Macie.Cleary@parsons.com Office (949) 333-4467 Cell (714) 421-8232	Brian Pittman/Environmental Science Associates (ESA) Office (916) 564-4500 Cell (916) 600-8332	Local contacts with USFWS or California Department of Fish and Wildlife (CDFW), as appropriate. ¹
Discovery of cultural or historic artifacts; implementation of cultural resources, environmental commitments requiring coordination with Caltrans	Macie Cleary/Parsons Macie.Cleary@parsons.com Office (949) 333-4467 Cell (714) 421-8232	Rebecca Allen/Environmental Science Associates (ESA) rallen@esassoc.com Office (916) 564-4500 Cell (916) 221-1484	California State Historic Preservation Officer (SHPO) ¹ Property Owner Indian Tribes, as appropriate Caltrans District 6 Heritage Resources Coordinator (HRC)
Discovery of human bones or remains	Macie Cleary/Parsons Macie.Cleary@parsons.com Office (949) 333-4467 Cell (714) 421-8232	Rebecca Allen/Environmental Science Associates (ESA) rallen@esassoc.com Office (916) 564-4500 Cell (916) 221-1484	County Coroner ¹ If remains are determined to be of Native American origin, Coroner notifies Native American Heritage Commission (NAHC) ¹ NAHC notifies the Most Likely Descendent (MLD) of the deceased Native American Caltrans District 6 Native American Coordinator (NAC) Potentially SHPO, as most archaeological sites with Native American burials become automatically eligible for the National Register
Discovery of wildlife injured during construction activities	Macie Cleary/Parsons Macie.Cleary@parsons.com Office (949) 333-4467 Cell (714) 421-8232	Brian Pittman/ Environmental Science Associates (ESA) bpittman@esassoc.com Office (916) 564-4500	Local contacts with USFWS or CDFW, as appropriate. ¹

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For Issues Related to...	Primary Contact(s)	Secondary Contact(s)	Agency, Entity, and Other Contacts
		Cell (707) 787-7557	
Disturbance of any threatened or endangered species or its habitat	Macie Cleary/Parsons Macie.Cleary@parsons.com Office (949) 333-4467 Cell (714) 421-8232	Brian Pittman/ Environmental Science Associates (ESA) bpittman@esassoc.com Office (916) 564-4500 Cell (707) 787-7557	Local contacts with USFWS or CDFW, as appropriate. ¹
National pollutant discharge elimination system (NPDES) inspections by Regional Water Quality Control Board (RWQCB)	Macie Cleary/Parsons Macie.Cleary@parsons.com Office (949) 333-4467 Cell (714) 421-8232	Veronica Seyde/Parsons Veronica.Seyde@parsons.com (949) 333-4563 HanBin Liang/WRECO HanBin_Liang@wreco.com (925) 941-0017 x201	Central Valley Regional Water Quality Control Board Deborah "Debbie" Mahnke dmahnke@waterboards.ca.gov (559) 445-6281
Illicit discharge of water and/or sediment leaving the Project site	Macie Cleary/Parsons Macie.Cleary@parsons.com Office (949) 333-4467 Cell (714) 421-8232	Veronica Seyde/Parsons Veronica.Seyde@parsons.com (949) 333-4563 HanBin Liang/ WRECO HanBin_Liang@wreco.com (925) 941-0017 x201	Central Valley Regional Water Quality Control Board Deborah "Debbie" Mahnke dmahnke@waterboards.ca.gov (559) 445-6281
Occurrence of work in streams or wetlands	Macie Cleary/Parsons Macie.Cleary@parsons.com Office (949) 333-4467 Cell (714) 421-8232	HanBin Liang/WRECO HanBin_Liang@wreco.com (925) 941-0017 x201	Fresno Metropolitan Flood Control District Brent Sunamoto (559) 456-3292 brenths@fresnofloodcontrol.org County of Madera Resource Management Agency Dario Dominguez (559) 675-7817 ex. 3322
Occurrence of work outside of planned ROW limits	Macie Cleary/Parsons Macie.Cleary@parsons.com Office (949) 333-4467 Cell (714) 421-8232	Jim Laing Jim.Laing@TPZPJV.com (559) 385-7701	High-Speed Rail Authority Hugo Mejia (559) 369-6402 Hugo.mejia@HSR.ca.gov
Violations of Clean Water Act	Macie Cleary/Parsons	Veronica Seyde/Parsons	Central Valley Regional Water Quality Control

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For Issues Related to...	Primary Contact(s)	Secondary Contact(s)	Agency, Entity, and Other Contacts
Section 401 – Water Quality Certification	Macie.Cleary@parsons.com Office (949) 333-4467 Cell (714) 421-8232	Veronica.Seyde@parsons.com (949) 333-4563 HanBin Liang/WRECO HanBin_Liang@wreco.com (925) 941-0017 x201	Board Deborah “Debbie” Mahnke dmahnke@waterboards.ca.gov (559) 445-6281
Violations of Clean Water Act Section 402 – NPDES	Macie Cleary/Parsons Macie.Cleary@parsons.com Office (949) 333-4467 Cell (714) 421-8232	Veronica Seyde/Parsons Veronica.Seyde@parsons.com (949) 333-4563 HanBin Liang/WRECO HanBin_Liang@wreco.com (925) 941-0017 x201	Central Valley Regional Water Quality Control Board Deborah “Debbie” Mahnke dmahnke@waterboards.ca.gov (559) 445-6281
Violations of 1602 California Department of Fish and Wildlife (CDFW) Streambed Alteration Agreement	Macie Cleary/Parsons Macie.Cleary@parsons.com Office (949) 333-4467 Cell (714) 421-8232	Brian Pittman Environmental Science Associates (ESA) BPittman@esassoc.com Office (916) 564-4500 Cell (916) 600-8332	California Department of Fish and Wildlife ¹ Linda Connolly Linda.Connolly@wildlife.ca.gov (559) 243-4014
Violations of government rules (including environmental laws)	Macie Cleary/Parsons Macie.Cleary@parsons.com Office (949) 333-4467 Cell (714) 421-8232	Carie Wingert California High-Speed Rail Authority cwingert@rinconconsultants.com (559) 385-7225	The Authority will contact the appropriate regulatory agency, depending upon the type of the rules violation.
Violations of local watershed district or water management organization requirements	Macie Cleary/Parsons Macie.Cleary@parsons.com Office (949) 333-4467 Cell (714) 421-8232	Veronica Seyde/Parsons Veronica.Seyde@parsons.com (949) 333-4563 HanBin Liang/WRECO HanBin_Liang@wreco.com (925) 941-0017 x201	Fresno Irrigation District (559) 233-7161 Fresno Metropolitan Flood Control District Brent Sunamoto (559) 456-3292

1. Only the Authority is authorized to contact these agencies directly, unless advance permission by the Environmental Oversight Manager is granted to contact the regulatory agency.

to be contacted directly by TPZP following an event; this is the Authority's responsibility. The Environmental Mitigation Manager will update the Authority's Environmental Oversight Manager and other key personnel during the weekly Environmental Meetings (EMs), or sooner depending upon the severity of the incident/discovery.

Table 2, Environmental Contacts and the Environmental Notification Checklist form have been submitted to the Authority for review and approval 30 days prior to initiating ground-disturbing construction activities. The table will be updated and new lists will be provided to all monitoring personnel and the Authority, and updates will be included in this EMP.

4 PROCEDURES

The EMP will be provided to all key individuals identified in Section 3, Personnel. Due to the scope and size of the Madera to Fresno Station Project, and the potential for hundreds of construction personnel to work on the Project, it is not anticipated or realistic to assume that copies of the EMP will be distributed to all personnel. Rather, the EMP will be provided to the key managers to review and copies of the EMP will be kept on-site, in construction trailers, or in readily available areas, such as off-site construction offices for reference purposes.

During construction, EMs will be held on a weekly basis at the construction office or via conference call. The weekly EM meetings will include discussions on compliance with the EMP and environmental measures, review of environmental measures, schedules, upcoming construction activities, environmental issues, potential conflicts, and resolutions. Attendees of the EM meetings will include representatives from TPZP and the High-Speed Rail Authority. The weekly EM meetings will be ongoing throughout the course of construction and provide an opportunity to discuss any potential environmental issues that may be encountered on the Project, and actions to prevent and avoid any such occurrences.

4.1 Environmental Protection Training Program

Due to the size and complexity of the Project, the importance of training becomes critical, as personnel need to be aware of environmental issues that may be present or encountered on the Project site. All personnel, including subcontractor employees, truck drivers, and equipment operators, will be required to participate in a standardized Environmental Protection Training Program [aka Worker Environmental Awareness Program (WEAP)], as part of the pre-job orientation.

Every TPZP employee and Subcontractor employee who works on the Project, including each new employee who begins Work after issuance of the notice to proceed, must participate in the Project Environmental Protection Training Program. The WEAP will include all necessary instruction to facilitate compliance with the EMP, MMRP (refer to Appendix 1), and conditions of Environmental Approvals, including:

- clear lines of authority
- reporting procedures

- decision tree for response to an unanticipated discovery, event (e.g., spill or accidental work outside approved construction limit), or other circumstances that require rapid response.

4.2 Participation

The Environmental Mitigation Manager, in coordination with the TPZP Project Director, will be responsible for making sure all personnel have participated in the WEAP training and are provided with all updates to the Environmental Notification Checklist Form. The Authority and the regulatory agencies will be notified of the training sessions and invited to participate.

The WEAP training will be included as part of the overall Project New Employee Orientation (NEO) program. All TPZP and Subcontractor employees will be required to take the NEO/WEAP prior to going onto the Project site or conducting any construction activity. The NEO program will be either in a multi-lingual software format, DVD format, or written copy format. All TPZP and Subcontractor employees will take the training program and return a signed Record of Acknowledgement Form (refer to Appendix 4) indicating that they have viewed, or read and understand the program materials.

The WEAP will include, but not be limited to, education of construction personnel on the following topics:

- particular cultural resources and other environmental sensitivities that may be encountered on the jobsite
- protecting ESAs and ERAs (i.e., recognizing and avoiding areas with environmental fencing)
- construction noise abatement requirements
- erosion and sediment control procedures
- appropriate spill containment methods
- appropriate handling, treatment and discharge of contaminated groundwater
- understanding of Project and personal liabilities associated with any violations or damage to ESAs and ERAs
- procedure for contacting the right personnel during environmental emergencies or incidents.

Flyers and handouts will also be utilized, as necessary, to emphasize key environmental points and issues. Upon completion of the NEO program, including WEAP training, individuals will provide a signature of acceptance and indicate understanding of the aforementioned procedures and personnel to contact. Furthermore, individuals will receive an identifying sticker to place on their safety hard hat, which will make it readily visible to others that the individual has completed the requisite training. TPZP and Subcontractor employees involved in construction activity or going onto the Project site will not be allowed on the Project site until completion of the NEO program and issuance of the sticker.

Follow up WEAP training sessions will be conducted at key times (e.g., prior to construction adjacent to ESAs or ERAs, prior to/within environmental construction windows for migratory birds or sensitive species, and prior to each rainy season) to update and remind workers on specific restrictions,

conditions, concerns, or requirements. Handouts and brochures will be utilized, as applicable, at the follow up sessions. A copy of the Environmental Notification Checklist Form (refer to Appendix 3) will also be provided to personnel.

Prior to initiation of construction, the Environmental Mitigation Manager and applicable environmental staff will attend the pre-activity meeting to discuss environmental priorities. A brief “tailgate talk” to construction personnel will also occur prior to all construction activities in the vicinity of ESAs or ERAs. These talks will be conducted by environmental specialists (i.e., biologists, archaeologists, etc.) with knowledge of the resources and measures to avoid impacts.

4.3 Complying with Mitigation Measures and Environmental Approvals

The Project includes numerous mitigation measures and conditions of approvals that will require completion and compliance tracking. These measures and approvals must be addressed at different phases of the Project including prior to construction, during construction, and after construction. Some of the measures will occur concurrently with permit conditions. Furthermore, some measures will require governmental approvals from agencies such as U.S. Army Corps of Engineers (USACE), USFWS, and RWQCB. The Authority will obtain all required approvals, and in cases that require FRA to act as the coordinating party for resource agency approvals, the Design-Builder will provide all required data and support necessary to secure or meet the conditions of approvals.

For identifying and tracking compliance with all of the different environmental measures and approvals, an MMRP has been prepared (refer to Appendix 1). The MMRP clarifies the roles, responsibilities, and procedures for implementing and monitoring adopted mitigation measures and permit conditions. The MMRP specifies the personnel responsible for implementing the measure/condition, actions necessary to comply, and any other approvals or coordination required with other entities or agencies.

Under direction of the Environmental Mitigation Manager, a variety of measures, approvals required, and commitments identified in the MMRP will be organized by construction phase timing (i.e., pre-construction, during construction, post-construction). This will allow time-sensitive measures and commitments to be identified early in the compliance process. The MMRP will be reviewed on a weekly basis during the EM meetings throughout the course of the Project, and copies of status reports will be provided to the Authority’s Environmental Oversight Manager.

4.4 Mitigation Monitoring and Reporting Program

Several measures will require field activities, including surveys and monitoring, prior to, during, and after construction. These measures include, but are not limited to, biological resources, cultural resources, construction air quality, noise, traffic, and water quality. All field monitoring and survey staff will be provided a copy of the MMRP to review. The MMRP and permit conditions include reporting frequency and requirements.

Weekly Reporting – When surveys or monitoring are required, the technical specialist will keep a detailed log of activities, and summarize the information gathered on the Field Data Form. As shown in Appendix 2, the Field Data Form includes information on tasks performed, location, start and end times,

and general field notes. The completed Field Data Forms will then be compiled and entered into the Environmental Mitigation Management & Assessment (EMMA) database on at least a weekly basis. The data entered on these forms will then be used to prepare weekly Mitigation Monitoring Reports. In lieu of submitting a separate memorandum, the weekly reports can be used by TPZP to document compliance requirements for the Authority, as required under several mitigation measures contained in the MMRP.

Monthly Reporting – During construction and applicable activities, all the weekly reports will be summarized into a Monthly Monitoring Report by the field monitor or survey staff at the end of the month. The Monthly Monitoring Report will include such details as names of the monitor or surveyor, dates when monitoring was conducted, photos and maps if available, general weather conditions and locations, summary of observations, identification of any violations, and any actions taken. In lieu of submitting a separate memorandum, the monthly reports can be used by TPZP to document compliance requirements for the Authority, as required under several mitigation measures contained in the MMRP.

The weekly reports and Field Data Forms will be appended to the Monthly Monitoring Report. The Monthly Monitoring Reports will then be submitted within five working days of the first day of the month to the Environmental Mitigation Manager for review. After comments or revisions are made to the Draft Monthly Monitoring Report, the Final Monthly Monitoring Report will be submitted to the Authority by the 12th calendar day, both for filing and distribution to CDFW as required under ITP Condition 7.7. The Monthly Monitoring Reports will be provided starting from initial site mobilization through the plant establishment period.

Annual Reporting – The Authority is required by permit condition to provide CDFW with an Annual Status Report no later than January 31st of every year and continuing until CDFW accepts a Final Mitigation Report. Each annual report shall include, at a minimum: (1) a summary of all Monthly Monitoring Reports for that year; (2) a general description of the status of the Project Area and Covered Activities, including actual or projected completion dates, if known; (3) a copy of the table in the MMRP with notes showing the current implementation status of each mitigation measure; (4) an assessment of the effectiveness of each completed or partially completed mitigation measure in avoiding, minimizing and mitigating Project impacts; (5) all available information about Project-related incidental take of the Covered Species; (6) information about other Project impacts on the Covered Species; (7) updates to the mapped areas of all land disturbances and mapped areas of identified habitat features suitable for Covered Species within the Project Area; (8) a summary of findings from pre-construction surveys; (9) beginning and ending dates of maintenance and emergency related and other Covered Activities undertaken during the reporting year; and (10) a summary of the cumulative status of the disturbed acreages of all land disturbances and identified habitat features for each of the Covered Species within the Project Area, and the acreages of all land and identified habitat features anticipated to be disturbed over the succeeding twelve months.

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4.5 Certification of Environmental Compliance

As the MMRP measures are completed, a tracking system will become necessary. The MMRP includes a Mitigation Measure Monitoring Compliance Form which will be completed by the personnel responsible for implementation of and compliance with the measure, as identified in the MMRP. The form, provided as Attachment 1 of Appendix 1, allows the technical specialist to indicate if the measure has been implemented, if further action is required, and if consultation with an outside agency is required. The form will require a signature by the responsible party to verify completion and compliance of the measure. Once the measure is completed, verified, and the form is signed, the documentation will be provided to the Environmental Mitigation Manager for review and approval and then submitted to the Authority for review. Once the Authority acknowledges compliance with the mitigation measure through either concurrence memo or letter, the measure will be considered closed. The MMRP will be updated to indicate compliance and closure, or non-closure. Any non-closure issues will be noted by the Environmental Mitigation Manager and discussed at the weekly EM meetings.

4.6 Complying with Major Environmental Approvals

Among the environmental approvals required for the Project, several are considered major governmental approvals that must be formally submitted and issued in the Authority's and FRA's name. As indicated in the MMRP, these major governmental approvals require coordination between the Authority, FRA, and TPZP. A brief summary of the major governmental approvals provided in Table 3. The table will be updated by the Environmental Mitigation Manager as each approval is obtained.

Regulatory agency permits listed in Table 3 each contain numerous conditions that require compliance. In this regard, the EMMA database will be used to document how these conditions (and MMRP measures) are addressed for pre-construction, construction, and post-construction (where applicable) activities. Users can view the implementation status of all mitigation measures and permit conditions that require field monitoring, surveys, protective measures (e.g., entrapment prevention, ESA and ERA fencing, BMP installation, etc), revegetation, emergency response, 'take' notification, and other field requirements. See Section 4.10 below for more discussion about EMMA.

4.7 Procedure for Re-Examinations

If previously issued environmental approvals are affected by Project design, new information that has become available, or other changes (e.g., substantial changes in environmental setting, circumstances, impacts, mitigation measures, or environmental commitments) not included in the prior approval, then a re-examination will be required to evaluate the change to determine the validity of the original environmental document and determine the right course of action. These actions may include, but are not limited to, revisions to permit applications, amendments to the environmentally-cleared disturbance limits and/or the Area of Potential Effect (APE), and additional coordination with agencies.

Any required amendments or revisions to existing environmental approvals will be discussed in advance at the weekly EM meetings. The Environmental Mitigation Manager will determine the necessary

Table 3: Major Environmental Permits

Agency / Regulatory Action	Purpose	Issue Date (Expected)	Action Required
<p>U.S. Army Corps of Engineers / Clean Water Act, Section 404 Nationwide Permit for Discharge of Dredge or Fill Materials into Waters of the U.S., Permit No. SPK-2009-01483</p>	<p>Permit governs any activities (dredge/fill) within jurisdictional Waters of the U.S., as defined; permit area does not include the crossings over the Fresno River or Madera Irrigation District's Main Canal.</p>	<p>March 13, 2014</p>	<p>TPZP will comply with the conditions contained within the permit. A copy of the permit will be retained at the Project site where work is being conducted within jurisdictional waters, and periodic monitoring will be required during the construction phase to ensure that conditions of the 404 Permit are met. The status of the Section 404 Permit will be discussed weekly, as applicable, during EM meetings. The EMP has been updated by the Environmental Mitigation Manager to include the conditions of the Section 404 Permit.</p>
<p>U.S. Army Corps of Engineers / Section 408 Permit</p>	<p>For the modification or use of any flood control facility built by the USACE. This permit only applies to the Fresno River viaduct. The Section 408 Permit is issued to public works projects operated and maintained by non-federal sponsors.</p>	<p>(October 2014)</p>	<p>TPZP has submitted a design package that includes the most recent drawings and information in conformance with the Section 408 Permit application requirements to the Authority. TPZP will not be allowed to work in areas designated by the USACE as Section 408 facilities until the Section 408 Permit is obtained. TPZP will adhere to the established timeframe, considerations, conditions, and restrictions of its use. The status of the Section 408 Permit will be discussed weekly, as applicable, during the EM meetings. The EMP will be updated by the Environmental Mitigation Manager to include the conditions of the Section 408 Permit.</p>
<p>U.S. Fish and Wildlife Service / Federal Endangered Species Act Section 7 Consultation, Biological Opinion</p>	<p>Incidental Take Permit (ITP) for federally listed species and/or critical habitat.</p>	<p>September 14, 2012, amended March 13, 2014</p>	<p>TPZP will implement the Section 7 conditions during construction. The EMP has been updated by the Environmental Mitigation Manager to include the conditions of the Section 7 Permit. The conditions of the Section 7 Permit will be discussed weekly, as applicable, during the EM meetings.</p>
<p>U.S. National Marine Fisheries Service / Federal Endangered Species Act Section 7 Consultation, Biological Opinion</p>	<p>ITP for federally listed species and/or critical habitat.</p>	<p>April 17, 2012</p>	<p>TPZP will implement the Section 7 conditions during construction. The EMP has been updated by the Environmental Mitigation Manager to include the conditions of the Section 7 Permit. The conditions of the Section 7 Permit will be discussed weekly, as applicable, during the EM meetings.</p>
<p>Regional Water Quality Control Board / Section 401 of the</p>	<p>Evaluate water quality impacts of any dredge/fill activities in</p>	<p>March 2014</p>	<p>TPZP will provide area maps that clearly identify all Project features with location descriptors used by the Authority and</p>

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Agency / Regulatory Action	Purpose	Issue Date (Expected)	Action Required
Clean Water Act, Water Quality Certification	federal or state jurisdictional waters.		TPZP. TPZP will comply with all permit conditions. The status of the Section 401 permit compliance will be discussed weekly, as applicable, during the EMs. The EMP has been updated by the Environmental Mitigation Manager to include the conditions of the Section 401 Certification.
State Water Resources Control Board / Section 402 National Pollutant Discharge Elimination System (NPDES), General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit), Order No. 2009-0009-DWQ, CAS000002	Discharges of storm water associated with any construction or demolition activity that results in a land disturbance of equal to or greater than one acre, must comply.	May 30, 2014	TPZP has prepared a Storm Water Pollution Prevention Plan (SWPPP) for the Project. A Waste Discharge Identification (WDID) number has been provided through the State's Stormwater Multi-Application Reporting & Tracking System. TPZP will implement the provisions of the Construction General Permit during design and construction activities. The SWPPP will be modified when appropriate as construction advances and changes such as modifications to the project footprint are required.
Central Valley Regional Water Quality Control Board / Waste Discharge Requirements for Dewatering and other Low Threat Discharges to Surface Waters, Order No. R5-2013-0074, NPDES No. CAG995001	Applies to dischargers of clean or relatively pollutant-free wastewaters that pose little or no threat to water quality of waters of the United States; discharges covered by this General Order are either four months or less in duration or have a daily average discharge flow less than 0.25 million gallons per day.	As needed	Although this permit need not be obtained prior to construction, it is important to obtain early concurrence with the Central Valley RWQCB on what discharge conditions may be required, so that these conditions can be taken into account in the design process. Information must be provided on the quality of the groundwater to be discharged and the quality of the receiving waters. Effluent and receiving water monitoring will be required to demonstrate compliance with the effluent limitations, discharge specifications, and other requirements in the General Order.
California Department of Fish and Wildlife / Streambed Alteration Agreement, Fish and Game Code, Section 1602	Required when projects will substantially divert, obstruct, or change the natural flow of a river, stream, or lake; substantially change the bed, channel, or bank of a river, stream, or lake; or use material from a streambed.	March 12, 2014	TPZP will implement the Section 1602 Streambed Alteration Agreement conditions during construction. The EMP has been updated by the Environmental Mitigation Manager to include the conditions of the Section 1602 Permit. The conditions of the Section 1602 Permit will be discussed weekly, as applicable, during the EM meetings.

Agency / Regulatory Action	Purpose	Issue Date (Expected)	Action Required
<p>California Department of Fish and Wildlife / California Endangered Species Act, Section 2081 Incidental Take Permit</p>	<p>CESA consultation is required to issue incidental take permits for state-listed threatened or endangered species when a project has minimized and fully mitigated the impacts (including adequate funding) to such species.</p>	<p>March 13, 2014</p>	<p>TPZP will implement the Section 2081 conditions during construction. The EMP has been updated by the Environmental Mitigation Manager to include the conditions of the Section 2081 Permit. The conditions of the Section 2081 Permit will be discussed weekly, as applicable, during the EM meetings.</p>
<p>San Joaquin Valley Air Pollution Control District (SJVAPCD) / Rule 9510, Indirect Source Review (ISR)</p>	<p>Per letter received from the SJVAPCD, no formal permit is required. SJVAPCD has determined that the project is in compliance with Rule 9510.</p>	<p>May 30, 2014</p>	<p>The project must comply with air quality monitoring and reporting requirements identified in attachments to the Authority’s May 30, 2014 letter. These include emissions tracking requirements.</p>
<p>Individual Municipal Separate Storm Sewer (MS4) NPDES Permit</p>	<p>This permit pertains to the post-development discharges of stormwater.</p>	<p>Obtain prior to storm drain operations</p>	<p>The Authority will obtain an MS4 NPDES Permit and will prepare and obtain approval of a Storm Water Management Plan (SWMP) pursuant thereto, and TPZP will be responsible for implementing both upon completion of the first operational storm drain. With respect to implementation of storm water control measures and design and construction of post-development BMPs, the Authority anticipates that the Individual MS4 Permit post-development storm water management requirements and standards (including those for water quality treatment, low impact development, and hydromodification) will be based upon, and substantially similar to the 2012 Caltrans MS4 Permit.</p>

actions to undertake, review the EMP and the MMRP to ensure compliance with environmental measures, discuss with key personnel, and notify the Authority in writing of actions.

It is the Authority's responsibility to coordinate with agencies to alert them to such amendments or revisions to previously issued environmental approvals. The Authority will send the Supplemental Archaeological Survey Report associated with the re-examination to the SHPO for review, as required for archaeological APE expansion. If the re-examination identifies new adverse impacts, then the package is sent by the Authority to the FRA for review and approval before work can proceed.

Via letter transmitted on April 24, 2014, the Authority has prepared a working draft guidance document for the HSR re-examination process. The guidance provides a standardized approach that the Authority, FRA and TPZP can follow to evaluate proposed changes to the project or project conditions that could result in impacts to the environment, as described above.

The re-examination process consists of the following three steps:

1. Conduct a preliminary reconnaissance-level assessment, producing a written description of the change, including the reason for and timing of the variation. Complete the CEQA and NEPA checklists B1 and B2, respectively, provided in the Authority's draft guidance. Compare with existing environmental documents to determine if there are new impacts. Review for data gaps and identify the potential for public controversy. This review will allow the Authority and FRA to determine if an environmental review is warranted. If results of this analysis indicate the potential for adverse environmental impacts that were not previously analyzed, then the Authority will inform FRA and proceed to step 2.
2. Prior to initiating this step, TPZP staff will meet with the Authority's Environmental Oversight Manager to discuss the scope-of-work for the detailed analysis. Conduct an environmental analysis to identify whether: the project description has changed; the same type of impact caused by the variation was already evaluated in the EIR/EIS; mitigation measures for the impacts of the variations are included in the EIR/EIS; additional mitigation, minimization or avoidance measures are necessary; additional measures would cause new adverse impacts; or the variation would alter the cumulative impacts analysis. During this process, prepare Attachment C, Environmental Re-Examination Form, provided in the Authority's draft guidance. This form must include sufficient comparison, detail and analysis to establish the link between the environmental impact analysis and the conclusion set forth in Attachments D1 and D2 of the guidance (i.e., CEQA and NEPA Determinations and Conclusions Forms, respectively).
3. Determine whether preparation of a subsequent or supplemental EIR or supplement to the EIS is required, and/or permit amendments are needed. This is accomplished by completing the CEQA Determination, NEPA Determination, and Permitting Determination. The CEQA Determination and Permitting Determination require approval of the Authority, while the NEPA Determination requires approval by FRA.

Technical studies may be required by the Environmental Mitigation Manager to support the re-examination process. These will typically be required during Step 1, but more in-depth analysis could also be necessary during Step 2.

If it is concluded after Step 1 that the change will not result in new adverse impacts that could trigger additional environmental analysis or permit modifications, then the Authority may forward the re-examination document to the State Historic Preservation Officer.

To date (July 2014), re-examinations have been prepared to address environmental compliance for the Fresno Viaduct Value Engineering Variation, the Golden State Boulevard Construction Yard, and for a staging area to support Fresno River Viaduct construction activities. The list of future re-examination changes to the Project will be submitted on errata sheets to be incorporated into the Master EMP binder.

4.8 Procedure for Preconstruction Surveys

As indicated in the MMRP and permit documents, the Project will include preconstruction surveys. In some cases, the preconstruction survey will occur after vegetation and pavement are removed. Preconstruction surveys will be required for archaeological, paleontological, and biological resources.

Archaeological Surveys – The MMRP (Arch-MM#4) requires that archaeological monitoring be conducted in proximity to Identified sites or areas of sensitivity. The monitoring is to be handled by a Qualified Archaeological Monitor who will be present during all ground-disturbing construction activities occurring in native sediments/soils. The process for archaeological monitoring outlined in this measure and specified in the Programmatic Agreement (Attachment C) and the Archaeological Treatment Plan will be followed. If the archaeologist discovers cultural resources, and they are unique archaeological resources as defined by Section 21083.2 of CEQA, then the archaeologist will conduct additional excavations to avoid impacts on these resources. If they are not “unique,” then no further mitigation will be required. The Authority will seek Native American input and consultation under terms and conditions specified in the ATP and Memorandum of Agreement for the project.

Paleontological Surveys – The MMRP (Pale-MM#1) requires that a Paleontological Resources Specialist (PRS) be designated at least 120 days prior to construction. The PRS will be responsible for determining where and when paleontological resources monitoring should be conducted. The PRS will document any discoveries and evaluate the potential resource. The need for pre-construction monitoring will be described in the Paleontological Resource Monitoring and Mitigation Plan (PRMMP), as required in Pale-MM#2. In addition to a description of when and where construction monitoring will be required, the PRMMP will include preconstruction coordination procedures, and procedures for reporting the results of the monitoring and mitigation program. Protocol in the PRMMP for handling discoveries will be followed.

Biological Surveys – Depending upon where the work is planned, pre-construction surveys for the following may be required in accordance with the procedures discussed in MMRP measures: special status plants (Bio-MM#17), vernal pool fauna (Bio-MM#19), California tiger salamander (Bio-MM#23), western spadefoot toad (Bio-MM#25), western pond turtle (Bio-MM#26), raptors (Bio-MM#29), other

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breeding birds (Bio-MM#30), Swainson's hawk (Bio-MM#32), burrowing owl (Bio-MM#35), special status bats (Bio-MM#37), American badgers (Bio-MM#40), and the San Joaquin kit fox (Bio-MM#42). Surveys are to be conducted by a Project Biological Monitor, who must also be onsite during all ground-disturbing activities that have potential to affect biological resources and will be the principal agent(s) in the direct implementation of the MMRP and compliance assurance. Prior to ground-disturbing activities, to the extent practicable, TPZP will verify that ESAs and ERAs are appropriately delineated as described in Bio-MM#7. The surveys will be conducted in accordance with Biological Resources Management Plan, Section 3, pre-construction provisions for habitat assessment methods, monitoring assignments, survey locations by species, seasonal scheduling, and actions and reporting requirement responsibilities. Special survey protocols will be followed, such as for the San Joaquin kit fox, and where required, surveys will only be performed by an agency-approved Designated Biologist.

The preconstruction surveys that are required will be identified and discussed with key personnel during the weekly EM meetings. As the timing of the preconstruction surveys is identified, the Environmental Mitigation Manager will notify the appropriate technical specialist (i.e., PRS, Qualified Archaeological Monitor, Designated Qualified Biologist, or Agency Certified Biologist) to schedule the preconstruction surveys. The Environmental Mitigation Manager will coordinate with the Design/Build Project Director and the Authority regarding the timing of the surveys. The status of on-going or upcoming preconstruction surveys will be provided during the weekly EM meetings. The Authority and FRA will be notified upon completion of the preconstruction surveys and the EMP and MMRP will be updated by the Environmental Mitigation Manager as preconstruction surveys are completed.

4.9 Procedure for Violations, Non-Compliance of Environmental Measures

If, through the course of the Project, including pre-construction activities, any personnel working on the Project observes, or notices any violations or the potential for violation of environmental measures or commitments, then the Environmental Mitigation Manager, and the Design/Build Project Director will be immediately notified. The Environmental Mitigation Manager will then notify the Authority within 24 hours, or within any applicable required timeframe, whichever is sooner. This includes any violations or non-compliance during WEAP, preconstruction surveys, monitoring activities, construction activities, and coordination meetings. The observer of the violation, potential violation or non-compliance will complete the Environmental Notification Checklist Form (refer to Appendix 3) and/or Mitigation Monitoring Compliance Form (refer to the MMRP, Attachment 1), noting any violations potential violations, or non-compliance with environmental measures and forward the form to the Environmental Mitigation Manager. The Environmental Mitigation Manager will discuss any non-compliance issues with key personnel and the Authority during the weekly EM or in lieu of meeting, by conference call. Corrective action(s) will be taken to resolve the violations or non-compliance incidents, and remedies to prevent future such occurrences will be discussed during the weekly EM. The Environmental Mitigation Manager will direct the Design/Build Project Director to inform and instruct construction personnel of the violation or non-compliance, and proper procedures to prevent future occurrences and to encourage continuous improvement. All violations, non-compliance, and any corrective actions taken

will be documented by the Environmental Mitigation Manager in a memorandum, included in the Master EMP binder, and distributed to the Authority.

4.10 Procedures for Submittals

Various transmittals/submittals will be prepared throughout the course of the Project. These include weekly and monthly monitoring reports, mitigation monitoring compliance forms, resumes, technical memos and reports, Environmental Re-examinations, permits, and survey reports. All submittals and transmittals will be submitted to the Environmental Mitigation Manager for review.

Environmental Submittals/Transmittals – Project submittals and transmittals will be required to adhere to a process that will maximize and ensure proper review times, revisions, and quality management. The goal is to submit a complete and thorough work product. Submittals and transmittals will be required to go through editing and formatting checks prior to forwarding to the Environmental Mitigation Manager, and TPZP, who will upload and email the final draft document to the appropriate persons or agencies. All submittals/transmittals to the Authority will follow the approved quality and document control procedures described below in Sections 5 and 7.

The Authority has developed the aforementioned EMMA database to be used to allow staff to record, track and report on environmental commitments. See Section 7, Document Management below for a discussion of how this database tracking system will be used to manage environmental document forms.

Design Review Submittals – Design review of various reports and technical documents will be conducted by the Environmental Mitigation Manager and representatives. This review process is identified by an Inter-Discipline Design Review (IDR), an Independent Technical Review (ITR), or a Constructability Review, depending on the type of document and type of review involved. These reports and technical documents will include Preliminary Foundation Reports, Bridge Type Selection Reports, and other related documents. Review of the design submittals by the Environmental Mitigation Manager will ensure the requirements of the permits and MMRP are incorporated into the final designs.

5 QUALITY ASSURANCE / QUALITY CONTROL

The EMP will be used to implement a comprehensive and integrated quality program that meets or exceeds the Authority standards, and FRA requirement and standards. If there is evidence that the EMP is not being implemented to follow procedures, guidelines and requirements included in the Quality Management Plan (QMP), then key QA staff have the authority to stop work until the appropriate quality procedures are implemented. Quality records are maintained by the document control personnel and provide evidence of conformity within the objectives and requirements of the Document Management Plan (DMP) and QMP. Records are available through the designated Document Manager. The Document Manager has authority to retrieve and view all completed forms and documents, including the EMP, which will be maintained electronically and write-protected on the server. The quality program is included in the QMP prepared for the Project. For a discussion of the processes and documentation to verify and validate compliance with environmental commitments, approvals, and government rules, please see the discussion Section 4.10 of this EMP.

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6 AUDIT

These individuals are not involved in either the actual design or construction process and will perform audits in accordance with applicable written quality procedures or checklists. Should the auditor find areas of non-conformance within any of the quality process areas, a Non-conformance Report (NCR) will be written and processed. The non-conformance will be described and documented by the auditor. All NCR's will be processed through the QM and the QM will be responsible for maintaining the NCR Log. Quality audit forms are considered part of the Project records and will be maintained for a specified period of time, in accordance with the QMP.

7 DOCUMENT MANAGEMENT

As mentioned in Section 4.10, the Authority has developed the EMMA database to be used to allow staff to record, track and report on environmental commitments. In this way, the field monitors electronically input data gathered during the field on their daily logs. The reports can then be reviewed internally, approved, compiled into summary reports, and made available for agency review. The EMMA workflow process for review and approvals of reports is as follows:

- Compliance Documented (TPZP's environmental monitors)
- Reviewed by Supervisory Staff (TPZP's Environmental Mitigation Manager)
- Reviewed by Project Construction Team (PCM)
- Reviewed by Environmental Compliance Staff [Authority/Project Management Team (PMT)]
- Summary reports will be available to Regulatory Agencies and General Environmental Staff (Authority/PMT) according to Discipline and Project Section.

EMMA's dashboard contains links to important data, including monitoring tasks and commitments. In addition to submitting daily records for approval, EMMA users can view summary records that are either draft form or have been approved, weekly and monthly summary reports, as well as non-compliance records. For non-compliance issues, records are updated as resolutions are developed and implemented.

Currently, documents for submittal and transmittal are stored as hard copies and stored on the TPZP server. TPZP uses PROLOG software for managing project information, including the generation of submittals and transmittals to the Authority. Prolog is a construction project management system for contractors, providing a complete system of record for managing project information, from the field to the office. In addition, TPZP is in the process of enhancing its document control system using Sharepoint, which is being planned to permit Authority personnel to access selected documents on the TPZP server.

7.1 EMP Document Management

During the course of the Project, the EMP will require periodic updates. The following list includes certain situations, in which the EMP will be updated:

- Environmental measures and commitments are completed;

-
- Permits are obtained;
 - Personnel and/or contact information changes;
 - Changes to EMP procedures;
 - Status of environmental approvals change;
 - Changes to the text of the EMP;
 - New or additional information becomes available.

Changes to the EMP text will be made as needed; the Environmental Mitigation Manager has the authority to make these changes. Any changes or requests for changes must be made by written request to the Environmental Mitigation Manager, who will document the revision. The version, date and changes made to the EMP will be noted on the Revision Control Sheet, located after the cover page of this document. Copies of the EMP modification will be provided by the Environmental Mitigation Manager to the Authority.

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**APPENDIX 1
MITIGATION,
MONITORING, AND
REPORTING PROGRAM**

California High-Speed Train Design-Build Project

Construction Package 1

APPENDIX 1 MITIGATION, MONITORING, AND REPORTING PROGRAM

July 2014

Agreement No. HSR 13-06
Revision A

Prepared by:



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TERMS AND DEFINITIONS

General

This section provides standardized definitions for the terms used in this Mitigation, Monitoring, and Reporting Program (MMRP). It also identifies frequently used abbreviations and acronyms. Should any discrepancies exist; definitions set forth in the Contract will take precedence over definitions contained in this MMRP.

Abbreviations and Acronyms

Caltrans	California Department of Transportation
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
EMP	Environmental Management Plan
EIR/EIS	Environmental Impact Report/Environmental Impact Statement
FRA	Federal Railroad Administration
MMRP	Mitigation, Monitoring, and Reporting Program
PRC	Public Resources Code
RWQCB	Regional Water Quality Control Board
TPZP	Tutor Perini/Zachry/Parsons
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service

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1 INTRODUCTION

The California Environmental Quality Act (CEQA) requires agencies that adopt environmental impact reports (EIRs) to take affirmative steps to determine that approved mitigation measures are implemented subsequent to project approval.

Effective January 1, 1989, CEQA was amended to add Section 21081.6, implementing Assembly Bill 3180. As part of CEQA's (state-mandated) environmental review procedures, Section 21081.6 requires a public agency to adopt a reporting or monitoring program for assessing and ensuring efficacy of any mitigation measures applied to a proposed project. Specifically, the lead or responsible agency must adopt a reporting or monitoring program for mitigation measures incorporated into a project or imposed as conditions of approval. The program must be designed to ensure compliance during project implementation. As stated in Public Resources Code (PRC) Section 21081.6 (a) (1):

The public agency shall adopt a reporting or monitoring program for the changes made to the project or conditions of project approval, adopted in order to mitigate or avoid significant effects on the environment. The reporting or monitoring program shall be designed to ensure compliance during project implementation. For those changes which have been required or incorporated into the project at the request of a responsible agency or a public agency having jurisdiction by law over natural resources affected by the project, that agency shall, if so requested by the lead agency or a responsible agency, prepare and submit a proposed reporting or monitoring program.

Assembly Bill 3180 provides general guidelines for implementing mitigation monitoring and reporting programs (MMRPs). Specific reporting and/or monitoring requirements, which are to be enforced during project implementation, shall be defined prior to final approval of the proposal by the responsible decision maker(s).

2 MITIGATION AND PERMIT MONITORING AND REPORTING FOR THE PROJECT

The Final Environmental Impact Report/Environmental Impact Statement (EIR/EIS) (April 2012) and Record of Decision for High Speed Rail, Merced to Fresno Section, included a Mitigation Monitoring and Reporting Program, which was prepared in compliance with the requirements of PRC Section 21081.6 (a)(1). This MMRP applies to the entire alignment addressed in the Final EIR/EIS, including Construction Package 1 (CP-1; Project).

In addition, subsequent to certification of the Final EIR/EIS, agencies issued environmental permits to the Authority for the Project. Approvals will be required from agencies such as Caltrans, CDFW, USACE, USFWS, RWQCB, and others. Conditions of approval described in the permits must also be addressed by TPZP and the Authority.

Table 1 of this Appendix to the Environmental Management Plan (EMP) provides clarification of roles, responsibilities, and specific actions required to implement and monitor adopted mitigation measures. Table 2 of this Appendix provides clarification of roles, responsibilities, and specific actions required to implement and monitor permit conditions of approval.

The MMRP is a component of the CP-1 Environmental Management Plan (EMP), which is the document that provides the general framework, guidelines, and procedures for managing environmental compliance activities on the Merced to Fresno Section Project. The reader is encouraged to refer to the EMP for further direction and guidance on policies and procedures when implementing, monitoring, and tracking the measures in Tables 1 and 2.

To assist the TPZP team, the Authority, and FRA in implementing the adopted environmental commitments/mitigation measures, Tables 1 and 2 identify for each measure:

- Party Responsible for Implementation of the Mitigation Measure;
- Implementation Phase;
- Party Responsible for Monitoring Activity;
- Monitoring Activity;
- Monitoring Period;
- Monitoring Frequency;
- Implementation Mechanism or Tool, and
- Outside Agency Coordination.

Also provided are columns to track the actions taken to implement the measures and the date those actions are recorded.

Mitigation measures that are the responsibility of TPZP, in part or in their entirety, are listed in Table 1. Measures that are solely the responsibility of the Authority, FRA, or other agencies are also listed. Table 2 is also handled this way in terms of permit conditions associated with major governmental approvals required to comply with environmental regulations. As indicated in the MMRP, TPZP will obtain all required approvals, and in cases that require the Authority, FRA or Caltrans, to act as the coordinating party for resource agency approvals, TPZP will provide all required data and support necessary to secure or meet the conditions of the approvals.

Attachments 1 and 2 of this document are the Mitigation Monitoring Compliance Form and Permit Condition Monitoring Compliance Form, respectively. These forms are to be completed by the monitors responsible for monitoring implementation of and compliance with the mitigation measures/conditions listed in Tables 1 and 2, and will be the basis for periodically updating the 'Actions' column of the tables. The completed forms will identify if the measure has been implemented and if there are any issues remaining. The forms will require a signature by the responsible party to verify completion and

compliance. Once the measure or condition is completed, verified, and the applicable form is signed by the responsible party, the documentation will be provided to the Authority for review. After the Authority acknowledges compliance with the measure/condition, through concurrence memo or letter, the commitment will be considered closed. The EMP/MMRP will be updated to indicate compliance and closure, or non-closure. Any non-closure issues will be noted by the Environmental Mitigation Manager and discussed at the weekly Environmental Task Force meetings.

The information in the Mitigation Monitoring Compliance Form, supplemented with data from the Field Data Form (see Appendix 2 of EMP), will also be used to prepare weekly monitoring reports, which will then be compiled into Monthly Monitoring Reports. When surveys or monitoring occurs, the environmental specialists conducting the survey or monitoring will be required to keep a detailed log of activities and complete the Field Data Form on a daily basis. The Field Data Form will be populated with information about tasks performed, location, start and end times, and general field notes. See Section 7, Document Management, of the EMP for a description of the Environmental Mitigation Management & Assessment database.

At the end of the month, all the weekly reports will be summarized into a Monthly Monitoring Report by the field monitor or survey staff. The Monthly Monitoring Report will include such details as names of the monitor or surveyor, dates when monitoring was conducted, photos and maps if available, general weather conditions and locations, summary of observations, identification of any violations, and any actions taken. The weekly reports, including the Field Data Forms, will be appended to the Monthly Monitoring Report. The Monthly Monitoring Report will then be submitted within five working days to the Environmental Mitigation Manager for review. After comments or revisions are made to the report, it will be submitted to the Authority for filing. The Monthly Monitoring Reports will be provided from the first date of field monitoring through the plant establishment period.

Upon completion of environmental compliance requirements, a Final MMRP will be prepared documenting closure or concurrence of non-closure by the Authority for all compliance actions. The Final MMRP (and EMP), accompanied by a Certification of Environmental Compliance, will be submitted to the Authority and FRA for review and approval as a condition of Final Acceptance.

Table 1: Mitigation Monitoring and Reporting Program Measures

Issue Area	MM#	Mitigation Measure	Implementing Party and Monitoring / Reporting Party	Mitigation Timing					Implementation Schedule / Reporting Schedule	Implementation Mechanism or Tool	Location Where MM is Applicable	Actions/Notes
				Pre-Construction	Construction	Post-Construction	Operations					
Air Quality and Global Climate Change	AQ-MM#1	Reduce Criteria Exhaust Emissions from Construction Equipment. This mitigation measure will apply to heavy-duty construction equipment used during the construction phase. All off-road construction diesel equipment will use the cleanest reasonably available equipment (including newer equipment and/or tailpipe retrofits), but in no case less clean than the average fleet mix, as set forth in CARB's Non-Road/Off-Road 2007 database. The contractor will document efforts it undertook to locate newer equipment (such as, in order of priority, Tier 4, Tier 3 or Tier 2 equipment) and/or tailpipe retrofit equivalents. The contractor shall provide documentation of such efforts, including correspondence with at least two construction equipment rental companies. A copy of each unit's certified tier specification and any required CARB or SJVAPCD operating permit will be made available at the time of mobilization of each piece of equipment. The contractor shall keep a written record (supported by equipment hours meters where available) of equipment usage during project construction for each piece of equipment.	Contractor		X				Daily Recording/ Weekly Reporting	A copy of each unit's certified tier spec. and any required (CARB) or (SJVAPCD) operating permit will be made available at the time of mob of each piece of equip. When non-retrofitted Tier 3 engines are utilized, the contractor will doc. that no Tier 4 equip or emissions equivalent retrofit equip. is available or practicable for a particular equip. type. Doc. will be provided and at least two const. equip. rental co.	Universal (no specific site location) - Equipment Standard	
Air Quality and Global Climate Change	AQ-MM#2	Reduce Criteria Exhaust Emissions from On-Road Construction Equipment. This mitigation measure applies to on-road trucks used to haul construction materials, including fill, ballast, rail ties, and steel. Material hauling trucks will consist of an average fleet mix of equipment model year 2010 or newer, to the extent reasonably practicable. The contractor shall provide documentation of efforts to secure such fleet mix inclusive of its subcontractors. The contractor and its sub-contractors shall keep a written record of equipment usage during project construction for each piece of equipment.	Contractor		X			Prior to construction/ weekly reporting	Contract Requirements/ Specifications	Universal (no specific site location)	Equipment Standard	
Air Quality and Global Climate Change	AQ-MM#3	Reduce the Potential Impact of Concrete Batch Plants. Concrete batch plants will be sited at least 1,000 feet from sensitive receptors, including daycare centers, hospitals, senior care facilities, residences, parks, and other areas where people may congregate.	Contractor	X	X			Construction/ weekly reporting	Contract Requirements/Specifications	Unlikely - mobile Batch Plants unlikely to be used		
Air Quality and Global Climate Change	AQ-MM#4	Offset Project Construction Emissions through a SJVAPCD Voluntary Emission Reduction Agreement (VERA). This mitigation measure would address AQ IMPACT #1 (Regional Impacts – Construction of the HST would exceed the CEQA emissions threshold for VOC and NOx). The Authority and SJVAPCD will enter into a contractual agreement to mitigate (by offsetting) to net zero the project's actual emissions that exceed thresholds by providing funds for the district's Emission Reduction Incentive Program (SJVAPCD, 2011) to fund grants for projects that achieve emission reductions, thus offsetting project-related impacts on air quality. The project will reduce actual construction emissions for VOC and NOx that exceed significance/General Conformity thresholds through the VERA program. To lower overall cost, funding for the VERA program, to cover estimated construction emissions for any funded construction phase, shall be provided at the beginning of the construction phase. At a minimum, mitigation/offsets shall occur in the year of impact, or as otherwise permitted by 40 CFR Part 93 Section 93.163.	Implementing Party: Contractor & Authority Monitoring/ Reporting Parties: Authority & SJVAPCD		X			Prior to construction/ weekly reporting	The Authority and SJVAPCD will enter into a contractual agreement to mitigate the project's emissions by providing funds for the district's Emission Reduction Incentive Program to fund grants for projects that achieve emission reductions, thus offsetting project-related impacts on air quality.	Universal (no specific site location)		

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Issue Area	MM#	Mitigation Measure	Implementing Party and Monitoring / Reporting Party	Mitigation Timing					Implementation Schedule / Reporting Schedule	Implementation Mechanism or Tool	Location Where MM is Applicable	Actions/Notes
				Pre-Construction	Construction	Post-Construction	Operations					
Air Quality and Global Climate Change	AQ-MM#5	Purchase Offsets and Offsite Emission Mitigation for Emissions Associated with Hauling Ballast Material in the BAAQMD and SCAQMD Air Districts. Actual NOX emissions from ballast hauling shall be reported to the South Coast AQMD and offsets purchased from the South Coast AQMD for actual emissions exceeding the thresholds. In the Bay Area AQMD, actual NOX emissions above the district's significance threshold will be mitigated through an offsite emission mitigation program to achieve emission reduction due to material hauling in Bay Area AQMD. Potential offsite mitigation programs include the Bay Area AQMD's Carl Moyer Memorial Air Quality Standards Attainment Program (CMP) or other air district emission reduction incentive programs.	Implementing Party: Contractor and Authority Monitoring/Reporting Party: Contractor and Authority Contractor to report hauling emissions to the Authority. Authority to purchase offsets and offsite emission mitigation based on data reported from Contractor.	X	X				Prior to construction/ weekly reporting	Authority to coordinate the purchase of offsets with pertinent AQMDs.	Universal (no specific site location)	
Noise and Vibration	N&V-MM#1	Construction noise mitigation measures. Monitor construction noise to verify compliance with the limits. Provide the contractor the flexibility to meet the FTA construction noise limits in the most efficient and cost-effective manner. The contractor would have the flexibility of either prohibiting certain noise-generating activities during nighttime hours or providing additional noise control measures to meet the noise limits. To meet required noise limits, the following noise control mitigation measures will be implemented as necessary, for nighttime and daytime:• Install a temporary construction site sound barrier near a noise source.• Avoid nighttime construction in residential neighborhoods.• Locate stationary construction equipment as far as possible from noise sensitive sites.• Re-route construction-related truck traffic along roadways that will cause the least disturbance to residents.• During nighttime work, use smart back-up alarms, which automatically adjust the alarm level based on the background noise level, or switch off back-up alarms and replace with spotters.• Use low-noise emission equipment.• Implement noise-deadening measures for truck loading and operations.• Monitor and maintain equipment to meet noise limits.• Line or cover storage bins, conveyors, and chutes with sound-deadening material.• Use acoustic enclosures, shields, or shrouds for equipment and facilities.• Use high-grade engine exhaust silencers and engine-casing sound insulation.• Prohibit aboveground jackhammering and impact pile driving during nighttime hours.• Minimize the use of generators to power equipment.• Limit use of public address systems.• Grade surface irregularities on construction sites.• Use moveable sound barriers at the source of the construction activity.• Limit or avoid certain noisy activities during nighttime hours.• To mitigate noise related to pile driving, the use of an augur to install the piles instead of a pile driver would reduce noise levels substantially. If pile driving is necessary, limit the time of day that the activity can occur.	Contractor		X				Construction/ weekly reporting	Contract Requirements/ Specifications	Several Locations - See N&V Tech Rpt. Table 5-3 for City of Fresno noise sensitive areas (8 total), and Table 5-9 for residential receivers NSA 52 (Ave. 17 to Raymond Road), NSA 53 (Madera; SR 145 to Ave. 15); & NSA 54 (Ave. 15 to Ave. 9)	Monitor noise & implement noise reduction procedures; *Determine location of sensitive receptors

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Issue Area	MM#	Mitigation Measure	Mitigation Timing					Implementation Schedule / Reporting Schedule	Implementation Mechanism or Tool	Location Where MM is Applicable	Actions/Notes
			Implementing Party and Monitoring / Reporting Party	Pre-Construction	Construction	Post-Construction	Operations				
Noise and Vibration	N&V-MM#2	Construction vibration mitigation measures. Building damage from construction vibration is only anticipated from impact pile driving at very close distances to buildings. If piling is more than 25 to 50 feet from buildings, or if alternative methods such as push piling or augur piling can be used, damage from construction vibration is not expected to occur. Other sources of construction vibration do not generate high enough vibration levels for damage to occur. When a construction scenario has been established, preconstruction surveys will be conducted at locations within 50 feet of piling to document the existing condition of buildings in case damage is reported during or after construction. Damaged buildings would be repaired or compensation paid.	Contractor	X	X	X		Ongoing monitoring during const./post-const. monitoring as needed to assess damage to buildings	Contract Requirements/Specifications	N/A	Impact pile driving should not be required w/in 50 ft. of buildings; see Hist MM#1
Noise and Vibration	N&V-MM#3	Implement California High-Speed Train Project Noise and Vibration Mitigation Guidelines. California High-Speed Train Project Noise and Vibration Mitigation Guidelines (Guidelines) will be applied for ballast and tie track along the alignment. These Noise Guidelines will also be applied for slab track along the alignment. The Guidelines are included as Attachment 2 to the CEQA Findings. Various options exist to address the potentially severe noise effects from HSTs and from shifting SR 99. With input from local jurisdictions and balancing technological factors, such as structural and seismic safety, cost, number of affected receptors, and effectiveness, mitigation measures from among those identified in the Guidelines and summarized below will be selected and implemented. The mitigation measure or suite of mitigation measures for severe noise impacts will be designed to reduce the noise level from HST operations from "severe" to "moderate" according to the provisions of the FRA noise and vibration manual (FRA 2005). The Guidelines include the following mitigation measures for severe operational noise impacts: • Install sound barriers. Depending on the height and location relative to the tracks, sound barriers can achieve between 5 and 15 dB of noise reduction. The primary requirements for an effective sound barrier are that the barrier must (1) be high enough and long enough to break the line-of-sight between the sound source and the receiver, (2) be of an impervious material with a minimum surface density of 4 pounds per square foot, and (3) not have any gaps or holes between the panels or at the bottom. Because many materials meet these requirements, aesthetics, durability, cost, and maintenance considerations usually determine the selection of materials for sound barriers. Depending on the situation, sound barriers can become visually intrusive. Typically, the sound barriers style is selected with input from the local jurisdiction to reduce the visual effect of barriers on adjacent lands uses. For example, sound barriers could be solid or transparent, of various colors, materials, and surface treatments. The maximum sound barrier height would be 14 feet for at-grade sections; however, all sound barriers would be designed to be as low as possible while still achieving a substantial noise reduction. Berm and berm/wall combinations are the preferred types of sound barriers where space and other environmental constraints permit. On aerial structures, the maximum sound barrier height would also be 14 feet, but barrier material would be limited by engineering weight restrictions for barriers on the structure. Sound barriers on the aerial structure should still be designed to be as low as possible while still achieving a substantial noise reduction. Sound barriers on aerial structures and at-grade could consist of solid, semitransparent, and transparent materials. • Work with the communities to determine how the use and height of sound barriers would be determined using jointly developed performance criteria. Other solutions may result in higher numbers of residual impacts than reported herein. Options may be to reduce the height of sound barriers and combine barriers with sound insulation or to accept higher than the FRA's current noise thresholds. • Install building sound insulation. Sound insulation of residences and institutional buildings to improve the outdoor-to-indoor noise reduction is a mitigation measure that can be provided when the use of sound barriers is not feasible in providing a reasonable	Implementing Party: Contractor Monitoring/Reporting Party: Contractor Regarding final bullet, Contractor and Authority shall work together to identify and acquire easements required to mitigate N&V.	X	X	X		Construction/ weekly reporting	Noise and Vibration Mitigation Guidelines	N/A Several Locations - See N&V Tech Rpt. Fig. 7-4 and 7-5 for locations of "severe" noise impacts	Install sound barriers or retrofit homes where barriers are not feasible; *Locations of barriers/retrofits to be determined based on coord. w/ Noise Consultant & Contractor

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Issue Area	MM#	Mitigation Measure	Mitigation Timing					Implementation Schedule / Reporting Schedule	Implementation Mechanism or Tool	Location Where MM is Applicable	Actions/Notes
			Implementing Party and Monitoring / Reporting Party	Pre-Construction	Construction	Post-Construction	Operations				
		level (5 to 7 dB) of noise reduction. Although this approach has no effect on noise in exterior areas, it may be the best choice for sites where sound barriers are not feasible or desirable and for buildings where indoor sensitivity is of most concern. Substantial improvements in building sound insulation (on the order of 5 to 10 dB) can often be achieved by adding an extra layer of glazing to windows, by sealing holes in exterior surfaces that act as sound leaks, and by providing forced ventilation and air conditioning so that windows do not need to be opened. Establish performance criteria to balance existing noise events and ambient roadway noise conditions as factors for determining mitigation measures. Acquire easements on properties severely affected by noise. Another option for mitigating noise impacts is for the Authority to acquire easements on residences likely to be affected by HST operations in which the homeowners would accept the future noise conditions. This approach is usually taken only in isolated cases where other mitigation options are infeasible, impractical, or too costly.									
Noise and Vibration	N&V-MM# 4	Vehicle Noise Specification. In the procurement of an HST vehicle technology, the Authority will require bidders to meet the federal regulations applicable at the time of procurement (currently a 93-dB level standard for cars operating at speeds of greater than 45 mph). Depending on the available technology, this could significantly reduce the number of impacts throughout the corridor.	Contractor	X				Prior to construction/ weekly reporting	HST vehicle technology procurement	N/A Universal (no specific site location)	
Noise and Vibration	N&V-MM# 5	Special Trackwork at Crossovers and Turnouts. Because the impacts of HST wheels over rail gaps at turnouts increases HST noise by approximately 6 dB over typical operations, turnouts can be a major source of noise impact. If the turnouts cannot be moved from sensitive areas, the project can use special types of trackwork that eliminate the gap.	Contractor				X	Post Construction/ Operations Monitoring	Authority to coordinate with local jurisdictions to address noise related issues	Turnout locations - localized impact Special trackwork proposed at these locations: 1. Option 1 - Universal Crossover south of Avenue 15 1/2 / north of Cottonwood Creek; Option 2 - Universal Crossover between Avenue 8 and Avenue 9; 2. Universal Crossover south of West McKinley Avenue / North of West Olive Avenue; 3. Station Turnout begins just North of East Stanislaus Street; 4. Storage Turnout begins just South of Kern Street; 5. Station Turnout begins just South of Santa Clara Street; 6. Universal Crossover South of SR 41 / North of East Florence Avenue	

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Issue Area	MM#	Mitigation Measure	Implementing Party and Monitoring / Reporting Party	Mitigation Timing				Implementation Schedule / Reporting Schedule	Implementation Mechanism or Tool	Location Where MM is Applicable	Actions/Notes
				Pre-Construction	Construction	Post-Construction	Operations				
Noise and Vibration	N&V-MM# 6	Additional Noise Analysis During Final Design. If final design of the track base or final vehicle specifications results in changes to the assumptions underlying the noise analysis, reassess noise impacts and recommendations for mitigation and provide supplemental environmental documentation, as required by CEQA and NEPA.	Implementing Party: Contractor Monitoring/Reporting Party: Contractor	X	X			Prepare construction management plan/weekly reporting	Noise impact re-assessment during final project design	Additional Noise Analysis During Final Design. If final design of the track base or final vehicle specifications results in changes to the assumptions underlying the noise analysis, reassess noise impacts and recommendations for mitigation and provide supplemental environmental documentation, as required by CEQA and NEPA.	Evaluate at Final Design
Public Utilities and Energy	PUE-MM#1	Redesign to avoid substation. Roadway modifications associated with the Hybrid Alternative would affect a substation. The final project design will avoid these conflicts through refinements of project features.	Implementing Party: Contractor Monitoring/Reporting Party: Contractor	X				Prepare construction management plan/weekly reporting	Condition of Design/Build Contract	N/A (outside CP1 footprint)	Design issue - MM should be cleared during project design
Public Utilities and Energy	PUE-MM#2	Move existing substation. If the Ave 21 Wye requires relocation of a substation, the existing substation could be moved to one of five potential locations, as shown in Figure 3.6-8 in the Final Project EIR/EIS.	Implementing Party: Contractor and Authority Monitoring/Reporting Party: Contractor and Authority	X				Prepare construction management plan/weekly reporting	Contract Requirements/ Specifications and agreement with appropriate utility provider	N/A (outside CP1 footprint)	MM Applies only to Ave. 21 Wye
Biological Resources	Bio-MM#3	Prepare and Implement a Worker Environmental Awareness Program. Prior to ground-disturbing activities, the Contractor will prepare and implement a WEAP for construction crews. WEAP training materials will include the following: discussion of the federal ESA, CESA, BGEPA, and the MBTA; consequences and penalties for violation or noncompliance with these laws and regulations and project permits; identification and value of special-status plants, special-status wildlife, jurisdictional waters, and special-status plant communities; hazardous substance spill prevention and containment measures; the contact person in the event of the discovery of a dead or injured wildlife species; and review of mitigation measures. In the WEAP, the Contractor will detail construction timing in relation to habitat and species' life stage requirements and discuss project maps, showing areas of planned minimization and avoidance measures. A fact sheet prepared by the Contractor conveying this information will be prepared for distribution to the construction crews and to other individuals who enter the construction footprint. Upon completion of the WEAP training, construction crews will sign a form stating that they attended the training and understand and will comply with the information presented. Construction crews will be informed during the WEAP training that, to the extent possible, travel within the marked project site will be restricted to established roadbeds. Established roadbeds include all pre-existing and project-constructed unimproved, as well as improved roads.	Contractor	X	X			Training of all crew/construction personnel prior to start of construction. Provide weekly/monthly reporting as required by permit conditions.	Condition of Design/Build Contract	Universal (no specific site location) - Training	Complete- modify with video

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Biological Resources	Bio-MM#4	<p>Prepare and Implement a Weed Control Plan. Prior to ground-disturbing activities, the Contractor will prepare and implement a Weed Control Plan to minimize or avoid the spread of weeds during ground-disturbing activities. The Weed Control Plan will address the following:</p> <ul style="list-style-type: none"> • Schedule for conducting noxious weed surveys to be conducted in coordination with the Biological Resources Management Plan (BRMP)(Bio- M#5). • Success criteria for noxious and invasive weed control as established by a qualified biologist. The success criteria will be linked to the HMMP for compensatory mitigation sites, and the standards for onsite work during construction will limit invasive species to less than 5% and non-native herbaceous species to less than 25%. If these success criteria have not been met by the end of the BRMP monitoring and implementation period, monitoring and control efforts will continue and remedial actions will be identified and implemented until success criteria are met. Based on monitoring results, additional or revised measures may be needed to ensure the introduction and spread of noxious weeds is not promoted by the construction and operation of the HST. • Provisions to ensure that the development of the Weed Control Plan will be coordinated with development of the Restoration and Revegetation Plan (RRP)(Bio-MM#6) so that the RRP incorporates measures to reduce the spread and establishment of noxious weeds and incorporates percent cover of noxious weeds into revegetation performance standards. Identify weed control treatments including permitted herbicides, and manual and mechanical methods for application. Restrict herbicide application from use in environmentally sensitive areas (ESAs). • Determine timing of the weed control treatment for each plant species. • Identify fire prevention measures. <p>The Contractor will implement the Weed Control Plan during the construction period and require that maintenance crews follow the guidelines in the Weed Control Plan during the project period. The Authority will appoint the responsible party during the operations period. A monthly memorandum will be prepared by the Contractor to document the progress of the Plan and its implementation.</p>	Contractor	X	X			Prior to construction/ monthly memorandum to document the progress of the Weed Control Plan and implementation	Condition of Design/Build Contract/ Weed Control Plan	Universal - Prepare Plan, Implement and Report	

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			Implementing Party and Monitoring / Reporting Party	Pre-Construction	Construction	Post-Construction	Operations				
Biological Resources	Bio-MM#5	<p>Prepare and Implement a Biological Resources Management Plan. During final design, and prior to construction, the Contractor will prepare the Biological Resources Management Plan (BRMP), and assemble the biological resources mitigation measures. In the BRMP, the Contractor will include terms and conditions from applicable permits and agreements and make provisions for monitoring assignments, scheduling, and responsibility. The BRMP will also include habitat replacement and revegetation, protection during ground-disturbing activities, performance (growth) standards, maintenance criteria, and monitoring requirements for temporary and permanent native plant community impacts. The BRMP will form the parameters for the biology mitigation measures from this EIR/EIS, including terms and conditions as applicable from the USFWS, USACE, SWRCB, and CDFG permits. The BRMP will be prepared for all phases of project implementation, but may be exclusively prepared for each construction package. The goal of the BRMP is to assist the Contractor with an organized reporting tool to ensure the mitigation measures and terms and conditions are implemented in a timely manner and are reported on. These include all avoidance, minimization, repair, mitigation, and compensatory actions stated in the mitigation measures or terms and conditions from the permits referenced above. These measures and conditions are tracked through final design, implementation, and post construction phases. Specific performance standards are habitat-based and are related to success of onsite or offsite repair of temporary impacts, or more permanent impacts that are compensated at an offsite location. Habitat based mitigation applies to compensatory mitigation or permittee-responsible mitigation for impacts on special-status plants, special-status wildlife, special-status plant communities, or jurisdictional waters and are generally addressed in the Bio-MM#58 as part of the HMMP. Performance standards are targets for determining the effectiveness of the mitigation and assessing the need for adaptive management (e.g., mitigation design or maintenance revisions). Success criteria are formal criteria that must be met after a specific timeframe to meet regulatory requirements of the permitting agencies. These are habitat-based performance standards that include consideration for the establishment of a species or habitat. Since species are nested within habitats, the performance standards are primarily based on vegetation, substrate, and hydrology conditions. The performance standards for the establishment of any temporary or permanent impacts on these resources are recognized in those resource categories, but are more specifically covered in the specific performance standards/guidelines shown in Bio-MM#58. The overarching goal is to neutralize the impacts with respect to species and habitat impacted. The BRMP will help the long-term perpetuation of biological resources within the temporarily disturbed areas, as well as protect adjacent targeted habitats. The BRMP will contain but not be limited to the following information: a) Specific measures for the protection of special-status species. b) Identification (on construction plans) of the locations and quantity of habitats to be avoided or removed, including locations where habitats are to be restored. c) Procedures for vegetation analyses of temporarily impacted habitats to approximate their relative composition, as well as procedures for site preparation, irrigation, planting, and maintenance. This information may be used to determine the requirements of the revegetation areas for both onsite temporary impacts and offsite compensatory sites. d) Sources of plant materials and methods of propagation. e) Specific parameters for determining the amount of replacement habitat for temporary disturbance areas identified consistent with mitigation ratios and permit conditions. f) Specification of parameters for maintenance and monitoring of re-established habitats, including weed control measures, frequency of field checks, and monitoring reports for temporary disturbance areas. g) Specification of performance standards for the re-established plant communities within the construction limits. h) Remedial measures, such as a</p>	Contractor	X					Contract Requirement; Biological Resources Management Plan (BRMP) and Construction plans	Universal - Prepare Plan	

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		form of adaptive management, to be taken if performance standards are not met.i) Methodologies and requirements for monitoring the restoration/ replacement efforts, which will be a combination of qualitative and quantitative data consistent with mitigation measures and permit conditions.j) Measures to preserve topsoil and control erosion.k) Design of protective fencing around ESAs and ERAs and the construction staging areas.l) Specification of location and quantities of gallinaceous guzzlers (catch basin/artificial watering structures) if needed; specification of monitoring of water levels in guzzlers.m) Location of trees to be protected as wildlife habitat (roosting sites) and locations for planting replacement trees.n) Specification of the purpose, type, frequency, and extent of chemical use for insect and disease control operations as part of vegetative maintenance within sensitive habitat areas.o) Specific construction monitoring programs for habitats of concern and special-status species, as needed.p) Specific measures for the protection of vernal pool habitat and riparian areas. These measures may include but are not limited to: erosion and siltation control measures, protective fencing guidelines, dust control measures, grading techniques, construction area limits, and biological monitoring requirements.q) Provisions for biological monitoring during ground-disturbing activities to confirm compliance and success of protective measures. The monitoring procedures will: (1) identify specific locations of wildlife habitat and sensitive species to be monitored, (2) identify the frequency of monitoring and the monitoring methodology (for each habitat and sensitive species to be monitored), (3) list required qualifications of biological monitor(s), and (4) identify reporting requirements.									
Biological Resources	Bio-MM#6	Prepare and Implement a Restoration and Revegetation Plan. During final design, the Contractor will prepare a restoration and revegetation plan (RRP) for upland communities. This is a complement for site restoration in addition to the temporary effects for riparian plant communities (Bio-MM#15) and for jurisdictional waters (Bio-MM#44). In the RRP, address impacts on habitat subject to temporary ground disturbances that will require decompaction or regrading, if appropriate. The standards for onsite work during construction will limit invasive species to less than 5% and nonnative herbaceous species to less than 25% unless otherwise called out in the final approved seed mix. During ground-disturbing activities, the Contractor will implement the RRP in temporarily disturbed areas. The Contractor will prepare and submit compliance reports to document implementation. The RRP compliance reports will be prepared and submitted to the Authority.	Contractor	X	X			Prior to construction. Follow reporting requirements as established by agency permit conditions.	Contract Requirement; Restoration and Revegetation Plan (RRP) for upland communities and Compliance reports to document implementation and performance standards	Universal - Restore and Revegetate disturbed upland areas	This MM will apply to upland areas that exist all along the project alignment

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				Pre-Construction	Construction	Post-Construction	Operations				
Biological Resources	Bio-MM#7	Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in-field). Prior to ground-disturbing activities, to the extent practicable, the Contractor will verify that environmentally sensitive areas (ESAs) and environmentally restricted areas (ERAs) are delineated as appropriate. ESAs are areas within the construction zones containing suitable habitat for special-status species and habitats of concern that may allow construction activities, but have restrictions based on the presence of special-status species or habitats of concern at the time of construction. ERAs are areas outside the construction footprint that must be protected in-place during all construction activities. Prior to ground-disturbing activities, the Contractor will include all ESAs and ERAs on final construction plans (including grading and landscape plans). Prepare, review and approve the map of all ESAs and ERAs on the design drawings and work to update the map as necessary. Prior to ground-disturbing activities, the Contractor will mark ESAs and ERAs with high visibility temporary fencing to prevent encroachment of construction personnel and equipment onto sensitive areas. Designate the two categories, ESA and ERA, differently in the field (e.g., different colored flagging/fencing). Use sub-meter accurate GPS equipment to delineate all ESAs and ERAs. Remove ESA and ERA fencing when construction is complete or the resource has been cleared according to agency permit conditions and construction drawings and specifications. The Contractor will submit memoranda regarding the field delineation of all ESAs/ERAs to the Authority. These areas will receive ongoing monitoring during site preparation and construction activities.	Contractor	X	X			Prior to construction/Post construction. Follow reporting requirements as established by agency permit conditions	Condition of Design/Build Contract	Several Locations - where ESAs and ERAs exist along the alignment, as determined by the Project Biologist prior to construction; some locations unknown at present, e.g., where burrowing owls are nesting	<i>*This will need further research to determine each of the locations</i>
Biological Resources	Bio-MM# 8	Equipment Staging Areas. Prior to ground-disturbing activities, the Contractor will locate staging areas for construction equipment outside sensitive biological resources including habitat for special-status species, habitats of concern (e.g., wetlands, waters of the U.S., riparian communities), and wildlife movement corridors, to the maximum extent possible. The Contractor will submit memoranda to the Authority documenting compliance.	Contractor	X	X			Prior to construction Follow reporting requirements as established by agency permit conditions	Condition of Design/Build Contract	Specific Sites - 1) field at McKinley and Golden State Blvd; 2) field south of Herndon Ave. & east of Golden State Blvd; 3) other locations still TBD	<i>*Contractor to ID additional staging site locations outside sensitive lands</i>
Biological Resources	Bio-MM# 9	Mono-Filament Netting. During ground-disturbing activities, the Contractor will verify that plastic mono-filament netting (erosion-control matting) or similar material is not used in erosion control materials; substitutes include coconut hair matting or tackified hydroseeding compounds. The Contractor will submit memoranda to the Authority documenting compliance monthly, or as appropriate, through the life of the project construction.	Contractor		X			During ground-disturbing activities and Construction. Follow reporting requirements as established by agency permit conditions	Condition of Design/Build Contract	Universal - comply w/ requirement & document	
Biological Resources	Bio-MM# 10	Vehicle Traffic. During ground-disturbing activities, the Contractor will restrict project-related vehicle traffic, within the construction area, to established roads, construction areas, and other designated areas. Establish vehicle traffic locations disturbed by previous activities to prevent further adverse effects. Observe a 20 mph speed limit for construction areas with potential special-status species habitat. Clearly flag and mark access routes and prohibit off-road traffic. The Contractor will submit a memorandum to the Authority documenting compliance on a weekly basis.	Contractor	X	X			During ground-disturbing activities. Report on weekly basis.	Condition of Design/Build Contract	Universal - comply w/ requirement & document weekly	

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				Pre-Construction	Construction	Post-Construction	Operations				
Biological Resources	Bio-MM# 11	Entrapment Prevention. The Contractor will cover all excavated, steep-sided holes or trenches, more than 8 inches deep, at the close of each working day with plywood or similar materials, or provide a minimum of one escape ramp per 10 feet of trenching constructed of earth fill. The Contractor will thoroughly inspect such holes or trenches for trapped animals before leaving the construction site each day. The Contractor will screen all culverts, or similar enclosed structures, with a diameter of 4 inches or greater to prevent use by wildlife. The Contractor will ensure that cleared and stored material at the construction site for common and special-status wildlife species before the material is subsequently used or moved. The Contractor will submit a memorandum to the Authority documenting compliance on a weekly basis.	Contractor	X	X			During ground-disturbing activities. Report on weekly basis.	Condition of Design/Build Contract	Universal - comply w/ requirement & document weekly	
Biological Resources	Bio-MM# 12	Work Stoppage. During ground-disturbing activities, the Contractor will halt work in the event that a special-status wildlife species gains access to the construction footprint. This work stoppage will be coordinated with the resident engineer and/or the Authority or its designee. The work stoppage will occur within the area where the potential construction activity could affect the species; other work may continue. This will be determined prior to direction given to the Contractor. At this direction the Contractor will suspend ground-disturbing activities in the immediate construction area that could reasonably result in a "take" of special-status wildlife species. The Contractor will continue the suspension until the individual leaves voluntarily is relocated to a release area using USFWS- and/or CDFG-approved handling techniques and relocation methods, or as required by USFWS or CDFG. The Contractor will submit a memorandum to the Authority documenting compliance within 1 day of the work stoppage and subsequent action.	Contractor	X	X			During ground-disturbing activities. Submit a memorandum to the Mitigation Manager documenting compliance within 1 day of the work stoppage and subsequent action.	Condition of Design/Build Contract	Universal - comply w/ requirement & document how situation handled	This type of event is more likely in rural areas of the alignment, but possible in urban areas
Biological Resources	Bio-MM# 13	'Take' Notification and Reporting. The Contractor will notify the USFWS and/or CDFG immediately in the case of an accidental death or injury to a federal or state listed species during project-related activities. The Authority or its designee will be notified prior to the notification to the agencies. The Contractor will submit a memorandum to the Authority documenting compliance.	Contractor	X	X			Following incident, immediately report to USFWS and/or CDFG. Prepare report and document in weekly/monthly report.	Condition of Design/Build Contract	Unknown Location - comply w/ requirement & document how situation handled	Unknown if such an incident will occur
Biological Resources	Bio-MM# 14	Post-Construction Compliance Reports. After each construction period is completed, the Contractor will submit post-construction compliance reports consistent with the appropriate agency (e.g., UFSWS, NMFS and CDFG) protocols, including compliance with resource agency permits (i.e., Section 7 of federal ESA, Section 2081 of CESA and Section 401 and 404 of FCWA and 1600 of Fish and Game Code). The Contractor will submit a memorandum to the Authority documenting compliance. The frequency of the memorandum compilation and submission will be consistent with regulatory compliance permits.	Implementing Party: Contractor Monitoring/Reporting Party: Contractor & Authority Each Contractor will submit a Post-Const. Compliance Report at substantial contract completion for its own scope			X		Post-construction. Follow reporting requirements as established by regulatory compliance permits.	Condition of Design/Build Contract	Universal - prepare and submit reports	

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			Implementing Party and Monitoring / Reporting Party	Pre-Construction	Construction	Post-Construction	Operations				
Biological Resources	Bio-MM# 15	Restore Temporary Riparian Impacts. During post construction, the Contractor will revegetate all disturbed riparian areas using appropriate plants and seed mixes. The Contractor will monitor restoration activities consistent with provisions in the Habitat Mitigation and Monitoring Plan (HMMP)(Bio-MM#58). The Contractor will submit a memorandum to the Authority documenting compliance and other reporting requirements in the 1600 Streambed Alteration Agreement.	Contractor					Post-construction. Follow reporting requirements as established by agency permit conditions	Condition of Design/Build Contract. Habitat Mitigation and Monitoring Plan (HMMP) and Memorandum documenting compliance and other reporting requirements in the 1600 Streambed Alteration Agreement.	Three Locations - Fresno River; Cottonwood Creek; & San Joaquin River	As determined from review of Master 1602 Agreement, Table 2
Biological Resources	Bio-MM# 17	Conduct Pre-Construction Surveys for Special-Status Plant Species. The Contractor will conduct pre-construction surveys for special-status plant species in suitable habitat areas, subject to ground-disturbing activities. The surveys will be conducted in the appropriate season prior to ground-disturbing activities for salvage and relocation activities. The Contractor will use the results of the Special-Status Plants Survey Report (prepared as part of the Biological Resources Technical Report), including mapping of locations of special-status plant species, to determine focused locations for the pre-construction surveys, as appropriate. The Contractor will mark and avoid locations of all special-status plant species observed where feasible or incorporate the species into the relocation/compensation program defined in Bio-MM#50: Compensate for Impacts on Special-Status Plant Species. Prior to ground-disturbing activities, the Contractor will protect any populations of special-status plant species identified during the surveys within 100 feet of the construction footprint as ERAs. As appropriate, the Contractor will update the special-status or habitats of concern mapping within the construction limits, based upon resource agency permits. The Contractor will determine the locations of special-status plant species on construction drawings and identified as ESAs within the construction footprint. Plant populations within 100 feet of the construction limits will be fenced as ERAs by the Contractor. Terms and conditions from Section 7 and Section 2081 agreements will be incorporated as appropriate. The Contractor will provide verification and report through memorandum to the Authority.	Contractor	X				Pre-construction and Prior to ground-disturbing activities	Plan for monitoring, salvage, relocation, and propagation of special-status plant species and Memorandum documenting compliance	Camp Pashayan - reported location of Sanford's arrowhead; anywhere SS plant species could possibly occur	As determined from review of EIS/EIR; Note: Project Biologist to evaluate potential for SS Plants w/in limited vernal pools to be affected (along ROW in Madera vicinity)
Biological Resources	Bio-MM# 18	Prepare and Implement Plan for Salvage, Relocation, and/or Propagation of Special-Status Plant Species. The Contractor will prepare a plan prior to ground-disturbing activities to address monitoring, salvage, relocation, and propagation of special-status plant species. The relocation or propagation of plants and seed will be performed at a suitable mitigation site, as appropriate per species. Documentation will include provisions that address the techniques, location, and procedures required for the successful establishment of the plant populations. The plan will include provisions for performance that address survivability requirements, maintenance, monitoring, implementation, and the annual reporting requirements. Permit conditions issued by the appropriate resource agencies (e.g., USFWS, CDFG) will guide the development of the plan and performance standards. The Contractor will submit a memorandum to the Authority documenting compliance.	Contractor	X		X		Pre-construction and prior to ground-disturbing activities. Follow reporting requirements as established by regulatory compliance permits.	Condition of Design/Build Contract; Memorandum documenting compliance	Universal - prepare Plan	

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			Implementing Party and Monitoring / Reporting Party	Pre-Construction	Construction	Post-Construction	Operations				
Biological Resources	Bio-MM# 19	Conduct Pre-Construction Sampling and Assessment for Vernal Pool Fauna. Prior to ground-disturbing activities, the Contractor will conduct pre-construction, non-protocol surveys in seasonally inundated habitats (seasonal wetland, noninundated wetlands) within the construction footprint. The Contractor will conduct general aquatic surveys at a suitable interval after the first significant storm event of the rainy season (October 15 to June 1), as feasible prior to ground-disturbing activities. The sampling is an assessment of the hydrological, biological and ecological conditions of each seasonal wetland and open waters. This assessment will determine the quality and suitability of seasonal wetlands for special-status species (e.g., vernal pool branchiopods, western spadefoot toads, and California tiger salamanders) and later assist in determining which materials (e.g., soils, viable plant seeds, vernal pool cysts) may be collected. The sampling is an assessment that will be useful in understanding the species present and will help guide the implementation of performance standards to be consistent with Bio-MM#20: Implement and Monitor Vernal Pool Protection, for vernal pool special-status species (e.g., vernal pool branchiopods, western spadefoot toads, and California tiger salamanders).The Contractor will submit a report within 1 month of completing the field work and submit to the Authority. The report will provide the documentation and the results of the sampling, including the results of the data collected and compared with the performance standards.	Contractor	X	X	X		Prior to ground-disturbing activities Follow reporting requirements as established by regulatory compliance permits.	Condition of Design/Build Contract Plan for monitoring, salvage, relocation, and propagation of special-status plant species and Memorandum documenting compliance	Locations TBD - EIS/EIR says, seasonal pools are present along RR betw. Dry Creek & Cottonwood Creek	Conduct surveys where seasonally-inundated habitats exist; *Survey locations to be determined by Project Biologist
Biological Resources	Bio-MM# 20	Seasonal Vernal Pool Work Restriction. For seasonal avoidance of special-status vernal pool branchiopods and vernal pool-dependent species (e.g., California tiger salamander), the Contractor will not work within 250 feet of aquatic habitats suitable for these species (e.g., vernal pools and other seasonal wetlands) from October 15 to June 1 (corresponding to the rainy season), or as determined through informal or formal consultation with the USFWS or USACE. Ground-disturbing activities may begin once the habitat is no longer inundated for the season. If any work remains to be completed after October 15, exclusion fencing and erosion control measures will be placed at the vernal pools and other seasonal wetlands by the Contractor. The fencing will act as a buffer between ground-disturbing activities and the vernal pools and other seasonal wetlands as determined through consultations with USFWS/USACE. The Contractor will document compliance through a memorandum to the Authority during the establishment of the fencing activities.	Contractor	X	X			Pre-construction and during construction. Seasonal restrictions: October 15 to June 1 (corresponding to the rainy season), or as determined through informal or formal consultation with the USFWS or USACE. Report within 1 month of completing the field work	Condition of Design/Build Contract	Locations TBD - EIS/EIR says, seasonal pools are present along RR betw. Dry Creek & Cottonwood Creek	Comply with requirements where seasonally-inundated habitats exist, and document *Survey locations to be determined by Project Biologist

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Biological Resources	Bio-MM# 21	Implement and Monitor Vernal Pool Protection. If construction impacts can be avoided, the vernal pool(s) will be protected by erecting exclusion fencing. The Contractor will erect and maintain the exclusion fencing. For temporary impacts on vernal pools and other seasonal wetlands that cannot be avoided, the Contractor will apply geotextile fabric and a layer of gravel over the affected vernal pool(s) prior to ground-disturbing activities to protect the contours in cases where the pool is not directly, permanently impacted from the construction footprint. The Contractor will implement this measure within the construction areas during one dry season period. Resource agency consultations with the USFWS/USACE will occur as needed to determine impacts per construction schedules and based on permit conditions. If temporary impacts occur beyond the dry season (approximately June 1 to October 15) and the vernal pool(s) cannot be fenced, the Contractor will collect a representative sampling of soils from the vernal pool(s) prior to initiating ground-disturbing activities within vernal pools as applicable per USFWS and/or CDFG consultations. The representative soil sample(s) will contain viable plant seeds and vernal pool branchiopod cysts to be preserved from the vernal pool(s). These samples may be incorporated into other specified vernal pools. If construction impacts take more than one full wet-dry season, offsite mitigation will be implemented.	Implementing Party: Contractor Monitoring/Reporting Party: Contractor If offsite mitigation is required, the Authority will be responsible for implementation, monitoring, and reporting.	X	X	X		Prior to construction/Post Construction monitoring and reporting as determined by regulatory agency permit conditions.	Condition of Design/Build Contract	Several Locations - EIS/EIR says, seasonal pools are present along RR betw. Dry Creek & Cottonwood Creek	Comply with requirements where seasonally-inundated habitats exist, and document *Survey locations to be determined by Project Biologist
Biological Resources	Bio-MM# 22	Implement Conservation Guidelines During the Construction Period for Valley Elderberry Longhorn Beetle. Prior to and during ground-disturbing activities, the Contractor will implement the avoidance and minimization measures detailed in the Conservation Guidelines for the Valley Elderberry Longhorn Beetle (USFWS 1999a). These measures include establishing and maintaining appropriate buffer areas around elderberry plants, surveying for beetle boreholes in affected shrubs, restricting the use of chemicals that might harm beetles, and mowing. After ground-disturbing activities are completed, restore any damage to buffer areas containing elderberry shrubs according to specifications within the Conservation Guidelines for the Valley Elderberry Longhorn Beetle (USFWS 1999a). In areas where encroachment on the 100-foot buffer has been approved by USFWS, the Contractor will provide a minimum setback of at least 20 feet from the dripline of each Mexican elderberry plant. In buffer areas, ground-disturbing activities should be minimized, and any damaged area should be restored by the Contractor following construction. The Contractor will erect signage every 50 feet along the edge of the avoidance area with the following information: "This area is habitat of the valley elderberry longhorn beetle, a federally threatened species, and must not be disturbed. This species is protected by the Federal ESA of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment." The signs should be clearly readable from a distance of 20 feet, and must be maintained by the Contractor for the duration of ground-disturbing activities. To prevent encroachment, these buffer areas must continue to be protected per USFWS protocol (after ground-disturbing activities) from adverse effects of the project (USFWS 1999a) during the construction phase. The Contractor will include protective measures such as fencing, signage, weeding, and trash removal to enforce the protection of the valley elderberry longhorn beetle and its associated habitat. The Contractor will submit a memorandum to the Authority documenting compliance on a weekly basis or at other appropriate intervals.	Contractor	X	X			Prior to ground-disturbing activities, during ground-disturbing activities, and after ground-disturbing activities. Follow reporting requirements as established by regulatory compliance permits.	Condition of Design/Build Contract	Camp Pashayan - where Elderberry plants exist; and anywhere else host plant occurs	Comply with requirements where Elderberry plants exist, and comply w/ Valley Elderberry Longhorn Beetle protection requirements; *Beetle locations will need to be confirmed by Project Biologist

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Issue Area	MM#	Mitigation Measure	Mitigation Timing					Implementation Schedule / Reporting Schedule	Implementation Mechanism or Tool	Location Where MM is Applicable	Actions/Notes
			Implementing Party and Monitoring / Reporting Party	Pre-Construction	Construction	Post-Construction	Operations				
Biological Resources	Bio-MM# 23	Translocation of California Tiger Salamanders. Prior to ground-disturbing activities, the Contractor will conduct a pre-construction survey and relocate any California tiger salamanders from within the construction footprint 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). The relocation will occur for any individuals within the construction footprint per coordination with the USFWS. The Contractor will conduct pit trapping. The Contractor will install amphibian exclusion fencing specified in Bio-MM#24. The Contractor will submit a memorandum to the Authority documenting compliance on a weekly basis or at other appropriate intervals.	Contractor	X	X			Pre-construction surveys. Prior to ground-disturbing activities. Follow reporting as determined by regulatory permit conditions.	Condition of Design/Build Contract Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander	Locations TBD - EIS/EIR says, seasonal pools are present along RR betw. Dry Creek & Cottonwood Creek; also stock ponds	Survey areas where CTS habitat exists, and conduct relocations as necessary; * Biol MM #19 requires sampling to determine each of the CTS habitat locations
Biological Resources	Bio-MM# 24	Erect Amphibian Exclusion Fencing. The Contractor will install exclusion barriers (i.e. silt fences) to influence the movement of California tiger salamander, including other amphibian species, within impacted areas. The barriers can be used to exclude California tiger salamander and other amphibian species, from ground-disturbing areas and to guide breeding adults toward pre-identified mitigation ponds. Exclusion fencing will be maintained by the Contractor throughout the California tiger salamander's entire active period (November to April) or until all ground-disturbing activities are completed, whichever occurs first. Exclusion fencing must be trenched into the soil at least 4 inches in depth with the soil compacted against both sides of the fence for its entire length to prevent amphibians from passing under the fence. Barriers must be inspected by the Contractor at least twice weekly on non-consecutive days and after any significant rain event (defined as a 0.75 inch downpour or 1.5 inches of rain in any 24-hour period). Barriers will be installed by the Contractor with turn-arounds at any access openings needed in the fencing, to redirect amphibians away from openings. The Contractor will submit a memorandum to the Authority documenting compliance.	Contractor	X	X			Pre-construction. Prior to ground-disturbing activities. Follow reporting as determined by regulatory permit conditions.	Condition of Design/Build Contract	Locations TBD - EIS/EIR says, seasonal pools are present along RR betw. Dry Creek & Cottonwood Creek; also stock ponds	Install barriers where CTS habitat exists, and inspect as directed; * Biol MM #19 requires sampling to determine each of the CTS habitat locations
Biological Resources	Bio-MM# 25	Conduct Emergence and Larval Surveys for Western Spadefoot Toad. The Contractor or designee (qualified herpetologist) will conduct pre-construction emergence and larval surveys for western spadefoot toad during the fall and winter rainy season. Emergence surveys will be conducted within the appropriate time period(s) after precipitation events as evaluated by a qualified herpetologist and will be partially in tandem with California tiger salamander surveys. Potential breeding depressions, including vernal pools, will be surveyed for western spadefoot toad larvae concurrently with special-status vernal pool branchiopod and California tiger salamander pre-construction surveys. Adults found within the construction footprint during emergence surveys will be relocated to an appropriate area adjacent to another pool suitable for breeding. Pre-construction surveys will help identify the proper implementation of mitigation measures, identify state and federal permit requirements, and inform the accurate implementation of mitigation requirements. The Contractor will submit a memorandum to the Authority documenting compliance after surveys are complete.	Contractor	X	X			Pre-construction surveys. Prior to ground-disturbing activities. Follow reporting as determined by regulatory permit conditions.	Condition of Design/Build Contract	Locations TBD - EIS/EIR says, seasonal pools are present along RR betw. Dry Creek & Cottonwood Creek; also stock ponds	Survey areas where Western spadefoot toad habitat exists, and conduct relocations as necessary; * Biol MM #19 requires sampling to determine each of the toad's habitat locations; Note: survey timing is concurrent w/ CTS and Vernal Pool surveys

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				Pre-Construction	Construction	Post-Construction	Operations				
Biological Resources	Bio-MM# 26	Conduct Western Pond Turtle Pre-Construction Surveys and Relocation. Prior to ground-disturbing activities, conduct pre-construction surveys for western pond turtles to determine the presence or absence of western pond turtles within the construction footprint. If western pond turtles are found within the construction footprint, conduct daily clearance surveys prior to the initiation of any construction activities. If a western pond turtle nest will be affected by ground-disturbing activities, relocate the eggs according to relocation protocol coordinated with CDFG for all life stages of western pond turtles. Relocate hatchling and adult turtles outside of the construction footprint in suitable habitat. The Contractor will submit a memorandum to the Authority documenting compliance.	Contractor	X	X			Pre-construction surveys. Prior to ground-disturbing activities. Clearance surveys during construction. Follow reporting as determined by regulatory permit conditions.	Condition of Design/Build Contract	Stream Crossings - Where western pond turtle habitat exists	Survey areas where western pond turtle habitat exists, and conduct relocations as necessary; *Project Biologist to define which streams w/in study area may support turtles
Biological Resources	Bio-MM# 27	Conduct Western Pond Turtle Monitoring. During ground-disturbing activities, the Contractor will observe all construction activities within habitat that supports populations of western pond turtles. If ESAs are deemed necessary, the Contractor will conduct a clearance survey for western pond turtles prior to the time the fence is installed. If necessary, conduct daily clearance surveys prior to construction. The Contractor will submit a memorandum to Authority documenting compliance.	Contractor		X			During ground-disturbing activities and Daily clearance surveys during construction. Follow reporting as determined by regulatory permit conditions.	Condition of Design/Build Contract	Stream Crossings - Within western pond turtle habitat	Check for western pond turtles required during construction; if ESA is appropriate, then survey & install barriers; *Project Biologist to define which streams w/in study area may support turtles
Biological Resources	Bio-MM# 28	Implement Western Pond Turtle Avoidance and Relocation. Prior to ground-disturbing activities, if a western pond turtle nesting area is present and will be affected by ground-disturbing activities, the Contractor will avoid western pond turtle nesting areas. If avoidance is not feasible, the Authority will coordinate with CDFG to identify where to relocate western pond turtles. The Authority will coordinate specific trapping and relocation protocols with CDFG for adults, hatchlings, and eggs prior to ground-disturbing activities. The Contractor will not move eggs or hatchlings without prior coordination with the Authority and concurrence from CDFG. The Contractor will submit a memorandum to the Authority documenting compliance on a weekly basis or as determined appropriate pending construction progress.	Contractor	X	X			Prior to ground-disturbing activities and during ground-disturbing activities and construction. Follow reporting as determined by regulatory permit conditions.	Condition of Design/Build Contract	Stream Crossings - Within habitat for western pond turtles nests	Check for western pond turtles nests during construction; follow procedures for moving any nests; *Project Biologist to define which streams w/in study area may support turtles

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Issue Area	MM#	Mitigation Measure	Mitigation Timing					Implementation Schedule / Reporting Schedule	Implementation Mechanism or Tool	Location Where MM is Applicable	Actions/Notes
			Implementing Party and Monitoring / Reporting Party	Pre-Construction	Construction	Post-Construction	Operations				
Biological Resources	Bio-MM# 29	Conduct Pre-Construction Surveys and Monitoring for Raptors. Prior to ground-disturbing activities, the Contractor will conduct preconstruction surveys for nesting raptors if construction and habitat removal activities are scheduled to occur during the breeding season (February 1 to August 15). The Contractor will conduct surveys in areas within 300 feet of the construction footprint. Modify the required survey dates based on local conditions. If breeding raptors with active nests are found, establish a 300-foot buffer around the nest and phase construction activities within the buffer(s) until the young have fledged from the nest or the nest is abandoned. Approve construction activities within the buffer area, pending site conditions that will not jeopardize the nest. The Contractor will conduct pre-construction surveys for bald and golden eagle nests within ¼ mile of the construction footprint. If nesting bald or golden eagles are identified, the Contractor will establish a 1,000-foot buffer area. The Contractor will adjust the 1,000-foot buffer as needed to reflect existing conditions including ambient noise, topography, and disturbance with the approval of the USFWS or CDFG, as appropriate. The Contractor will conduct regular monitoring of the nest to determine success/failure and to confirm that project activities are not conducted within the buffer(s) until the nesting cycle is complete or the nest fails. The Contractor will document the results of the surveys and the ongoing monitoring, and provide a copy of the monitoring reports for impact areas to the respective agencies. The Contractor will approve ground-disturbing activities within the buffer area, pending site conditions that will not jeopardize the nest. The Contractor will submit a memorandum to the Authority documenting compliance.	Contractor	X	X			Pre-construction surveys, prior to ground-disturbing activities, and during construction	Condition of Design/Build Contract	Several Locations - trees associated with residential uses, farms, parks & riparian and open space properties	Conduct pre-con raptor surveys during breeding season, including bald and golden eagle surveys, following the approach provided
Biological Resources	Bio-MM# 30	Conduct Pre-Construction Surveys and Delineate Active Nest Exclusion Areas For Other Breeding Birds. In the event active bird nests are encountered during the pre-construction survey, the Contractor will determine the nest avoidance buffer zones as appropriate. The Contractor will establish the suitable buffers consistent with the intent of the MBTA. The Contractor will delineate nest avoidance buffers established for ground nesting birds in a manner that does not create predatory bird perch points in close proximity (150 feet) to the active nest site. The Contractor will monitor active bird nests weekly or more frequently pending status of nest and status of fledgling development. The Contractor will maintain the nest avoidance buffer zone until nestlings have fledged or the nest is abandoned. The Contractor will submit a memorandum to the Authority documenting compliance.	Contractor	X				Pre-construction surveys and during construction	Condition of Design/Build Contract	Universal - avoid active bird nests if discovered, determine buffer, and follow the approach provided	
Biological Resources	Bio-MM# 31	Raptor Protection on Power Lines. During final design, the Contractor will verify that the catenary system and masts are designed to be raptor-safe, in accordance with the Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 2006 (Avian Power Line Interaction Committee 2006). The Contractor will check the final design drawings and submit a memorandum to the Authority documenting compliance.	Contractor	X				Final design, completed prior to construction.	Condition of Design/Build Contract	Universal - comply w/ requirement & document via memo from TPZP to Authority	This is handled during design

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				Pre-Construction	Construction	Post-Construction	Operations				
Biological Resources	Bio-MM# 32	Conduct Pre-Construction Surveys for Swainson’s Hawks. The Contractor will conduct pre-construction surveys for Swainson’s hawks during the nesting season (March 1 through September 15) within the construction footprint and within a 0.5-mile buffer. The Contractor will conduct the pre-construction nest surveys at least 30 days prior to ground-disturbing activities and phase with project construction. The pre-construction surveys will determine the status (i.e., active, inactive) of the nest and then will be used to set up nest avoidance strategies (Bio-MM#33). The Contractor will submit a memorandum to the Authority documenting compliance with the measure.	Contractor	X				Pre-construction surveys at least 30 days prior to ground-disturbing activities and construction	Condition of Design/Build Contract	Several Locations - trees associated with residential uses, farms, parks & riparian and open space properties	Conduct pre-con Swainson’s Hawk survey during nesting season, following the approach provided
Biological Resources	Bio-MM# 33	Swainson’s Hawk Nest Avoidance. If active Swainson’s hawk nests (defined as a nest used one or more times in the last 5 years) are found within 0.5 mile of the construction footprint during the nesting season (March 1 to September 15), the Contractor will implement buffers restricting construction activities, following CDFG’s Staff Report Regarding Mitigation for Impacts to Swainson’s Hawks (<i>Buteo swainsoni</i>) in the Central Valley of California (CDFG 1994). Adjustments to the buffer(s) will require prior approval by CDFG as coordinated by the Contractor. The buffers and nest condition will then be monitored (see Bio-MM#34). The Contractor will submit a memorandum to the Authority documenting compliance on a weekly basis.	Contractor	X	X			Nesting season (March 1 – September 15)	Condition of Design/Build Contract	Unknown Locations - trees associated with residential uses, farms, parks & riparian and open space properties	If Swainson's Hawk nests are found, implement buffers & coord. w/ Authority
Biological Resources	Bio-MM# 34	Monitor Removal of Nest Trees for Swainson’s Hawks. Prior to ground-disturbing activities, the Contractor will monitor nest trees for Swainson’s hawks in the construction footprint that are not removed. If a nest tree for a Swainson’s hawk must be removed, the Contractor will obtain a Management Authorization (including conditions to offset the loss of the nest tree) from the CDFG, as described in CDFG’s Staff Reporting Regarding Mitigation for Impacts to Swainson’s Hawks (<i>Buteo swainsoni</i>) in the Central Valley of California (CDFG 1994). The Management Authorization will specify the tree removal period, generally between October 1 and February 1. If ground-disturbing activities or other project-related activities may cause nest abandonment by a Swainson’s hawk or forced fledging within the specified buffer area, monitoring of the nest site (funded by the Authority) by the Contractor will be required to determine if the nest is abandoned. The Contractor will submit a memorandum to the Authority documenting compliance on a weekly basis during the appropriate season.	Contractor	X	X			Prior to ground-disturbing activities, during construction.	Condition of Design/Build Contract	Unknown Locations - trees associated with residential uses, farms, parks & riparian and open space properties	If Swainson's Hawk nests are found, implement buffers & coord. w/ Authority
Biological Resources	Bio-MM# 35	Conduct Pre-Construction Surveys for Burrowing Owls. Prior to ground-disturbing activities, the Contractor will conduct preconstruction surveys in accordance with CDFG’s Staff Report on Burrowing Owl Mitigation (CDFG 1995). The Contractor will conduct these surveys at appropriate timeframes within suitable habitat located in the construction footprint and a 500-foot buffer. Results of the surveys will be used to inform Bio-MM#36. The Contractor will submit a memorandum to the Authority documenting compliance on a weekly basis.	Contractor	X	X			Prior to ground-disturbing activities, the winter (December 1 through January 31) and breeding season (April 15 through July 15)	Condition of Design/Build Contract	Several Locations - grasslands	Conduct pre-con Burrowing Owl surveys prior to ground disturbance, following the approach provided

Issue Area	MM#	Mitigation Measure	Implementing Party and Monitoring / Reporting Party	Mitigation Timing				Implementation Schedule / Reporting Schedule	Implementation Mechanism or Tool	Location Where MM is Applicable	Actions/Notes
				Pre-Construction	Construction	Post-Construction	Operations				
Biological Resources	Bio-MM# 36	Burrowing Owl Avoidance and Minimization. Implement burrowing owl avoidance and minimization measures following CDFG's Staff Report on Burrowing Owl Mitigation (CDFG 1995). <ul style="list-style-type: none"> The Contractor will not disturb occupied burrowing owl burrows during the nesting season (February 1 through August 31) unless it is verified that either the birds have not begun egg-laying and incubation, or that juveniles from the occupied burrows are foraging independently and are capable of independent survival as determined by the Contractor. Eviction outside the nesting season may be permitted pending evaluation of eviction plans and receipt of formal written approval from the CDFG authorizing the eviction. Unless otherwise authorized by CDFG, the Contractor will establish a 250- foot buffer (as an environmentally sensitive area) between the construction work area and nesting burrowing owls during the nesting season. The Contractor will maintain this protected area until August 31 or a time set at CDFG's discretion and based upon monitoring evidence, until the young owls are foraging independently. Unless otherwise authorized by CDFG, the Contractor will establish a 160- foot buffer (as an environmentally sensitive area) between the construction work area and occupied burrows during the non-breeding season (September 1 through January 31). The Contractor will maintain this protected area until January 31 or at CDFG's discretion and based upon monitoring evidence, until the young owls are foraging independently. If burrowing owls must be moved away from the construction footprint, the Contractor will undertake the passive relocation measures in accordance with CDFG's (1995) guidelines. The Contractor will submit a memorandum to the Authority documenting compliance on a weekly basis.	Contractor	X	X			Preconstruction burrow identification, during construction.	Condition of Design/Build Contract	Unknown Location(s) - Grasslands where occupied burrows may exist	Follow 2012 Staff Report guidance, including buffers to mitigate impact to any occupied burrows
Biological Resources	Bio-MM# 37	Conduct Pre-Construction Surveys for Special-Status Bat Species. Prior to any ground-disturbing activities, the Contractor will conduct a visual and acoustic pre-construction survey for roosting bats. Include a minimum of one day and one evening in the visual pre-construction survey. The Contractor will contact CDFG if any hibernation roosts or active nurseries are identified within the construction footprint, as appropriate. The Contractor will submit a memorandum to the Authority documenting compliance.	Contractor	X	X	X		Pre-construction surveys, prior to ground-disturbing activities	Condition of Design/Build Contract	Several Locations - Trees, bridges and old buildings (e.g, barns)	Conduct pre-con surveys for roosting SS Bats prior to ground disturbance, following the approach provided
Biological Resources	Bio-MM# 38	Bat Avoidance and Relocation. During ground-disturbing activities, the Contractor will avoid active hibernation roosts. If avoidance of the hibernation roost is not feasible, the Contractor will prepare a relocation plan and coordinate the construction of an alternative bat roost with CDFG. The Contractor will implement the Bat Roost Relocation Plan prior to the commencement of construction activities. Remove roosts with approval from CDFG before hibernation begins (October 31), or after young are flying (July 31), using exclusion and deterrence techniques described in Bio-MM#39 below. The timeline to remove vacated roosts is between August 1 and October 31. All effort to avoid disturbance to maternity roosts will be made during construction activities. The Contractor will submit a memorandum to the Authority documenting compliance.	Contractor	X	X	X		Ground-disturbing activities; Roost removal Timeline: August 1 to October 31	Condition of Design/Build Contract	Unknown Location(s) - Trees, bridges and old buildings (e.g, barns) where active hibernation roosts may exist	Follow guidance to mitigate impact to any active hibernation roosts

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				Pre-Construction	Construction	Post-Construction	Operations				
Biological Resources	Bio-MM# 39	Bat Exclusion and Deterrence. During ground-disturbing activities, if non-breeding or non-hibernating individuals or groups of bats are found within the construction footprint, the bats will be safely excluded by either opening the roosting area to change lighting and airflow conditions, or by installing one-way doors, or other appropriate methods specified by CDFG. The Contractor will leave the roost undisturbed by project-related activities for a minimum of one week after implementing exclusion and/or eviction activities. The Contractor will not implement exclusion measures to evict bats from established maternity roosts or occupied hibernation roosts. The Contractor will submit a memorandum to the Authority documenting compliance.	Contractor	X	X	X		During ground-disturbing activities	Condition of Design/Build Contract	Unknown Location(s) - Trees, bridges and old buildings (e.g, barns) where any non-breeding/non-hibernating bats are roosting;	Follow guidance to mitigate impact to any non-breeding/ non-hibernating bats
Biological Resources	Bio-MM# 40	Conduct Pre-Construction Surveys for American Badger. Prior to ground-disturbing activities, the Contractor will conduct preconstruction surveys for American badger den sites within suitable habitats in the construction footprint. The Contractor will conduct these surveys no more than 30 days before the start of ground-disturbing activities and phase with project build out. The Contractor will submit a memorandum to the Authority documenting compliance.	Contractor	X	X			Prior to ground-disturbing activities	Condition of Design/Build Contract	Several Locations - Grasslands, fallow ag lands and ruderal	Conduct pre-con surveys for badger den sites prior to ground disturbance, following the approach provided
Biological Resources	Bio-MM# 41	American Badger Avoidance. The Contractor will establish a 50-foot buffer around occupied American badger dens. The Contractor will establish a 200-foot buffer around badger maternity dens through the pup-rearing season (February 15 through July 1). Adjustments to the buffer(s) will require prior approval by CDFG. The Contractor will submit a memorandum to the Authority documenting compliance.	Contractor	X	X			Prior to construction per approval by CDFG	Condition of Design/Build Contract	Unknown Location(s) - Grasslands where any badger dens may be found; fallow ag land; and ruderal	
Biological Resources	Bio-MM# 42	Conduct Pre-Construction Surveys for San Joaquin Kit Fox. The USFWS' Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance (USFWS 1999b) will be implemented as follows for construction related impacts. Prior to the start of ground-disturbing activities, the Contractor will conduct pre-construction surveys in accordance with the USFWS' San Joaquin Kit Fox Survey Protocol for the Northern Range (USFWS 1999c). The Contractor will submit a memorandum to the Authority documenting compliance.	Contractor	X				Pre-construction surveys and prior to ground-disturbing activities	Condition of Design/Build Contract	Several Locations - CA annual grassland, pasture, barren, fallow field, inactive agriculture, ruderal	Conduct pre-con surveys for fox prior to ground disturbance, following the approach provided
Biological Resources	Bio-MM# 43	Minimize Impacts on San Joaquin Kit Fox. The Contractor will Implement USFWS' Standard Measures for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance (USFWS 1999b) to minimize ground disturbance-related impacts on this species. The Contractor will submit a memorandum to the Authority documenting compliance.	Contractor	X	X			Pre-construction surveys and prior to ground-disturbing activities	Condition of Design/Build Contract USFWS' Standard Measures for Protection of the San Joaquin Kit Fox	Several Locations - CA annual grassland, pasture, barren, fallow field, inactive agriculture, ruderal	Follow guidance to mitigate impacts to Kit Fox

Issue Area	MM#	Mitigation Measure	Mitigation Timing					Implementation Schedule / Reporting Schedule	Implementation Mechanism or Tool	Location Where MM is Applicable	Actions/Notes
			Implementing Party and Monitoring / Reporting Party	Pre-Construction	Construction	Post-Construction	Operations				
Biological Resources	Bio-MM# 44	Restore Temporary Impacts on Jurisdictional Waters. During or post-construction, the Contractor will restore disturbed jurisdictional waters using stockpiled and segregated soils. The Contractor will conduct revegetation using appropriate plants and seed mixes, and conduct maintenance monitoring consistent with the provisions in the HMMP (Bio-MM#58). The Contractor will document compliance with memorandum submitted to the Authority.	Contractor		X	X		Construction and Post-construction Follow reporting as determined by regulatory agency permit conditions.	Condition of Design/Build Contract	Four Locations - Fresno River (0.49 ac impact); Main Canal (0.10 ac impact); San Joaquin River (0.78 ac. Impact); and Herndon Canal (0.01 ac. Impact)	Restore soil, conduct revegetation, monitor & document; acreage information shown excerpted from Master 1602 Agreement, Table 2
Biological Resources	Bio-MM# 45	Monitor Construction Activities within Jurisdictional Waters. During ground-disturbing activities, the Contractor will conduct monitoring within jurisdictional waters, including monitoring of the installation of protective devices (silt fencing, sandbags, fencing, etc.), installation and/or removal of creek crossing fill, construction of access roads, vegetation removal, and other associated construction activities. The Contractor will conduct biological monitoring to document adherence to habitat avoidance and minimization measures addressed in the project mitigation measures and as listed in the USFWS, CDFG, SWRCB, and USACE permits conditions. The Contractor will report and document compliance consistent with requirements in the permitting documents, including frequency and timing and submittals.	Contractor		X			During ground-disturbing activities and Construction Follow reporting as determined by regulatory agency permit conditions.	Condition of Design/Build Contract	Six Locations - Fresno River; Main Canal; Cottonwood Creek; San Joaquin River; Herndon Canal; and Dry Creek Canal	Monitor & document all work within Juris. Waters, consistent w/ permit conditions; information shown excerpted from Master 1602 Agreement, Table 2
Biological Resources	Bio-MM# 46	Install Wildlife Fencing. Prior to operation of the HST, the Contractor will install free-ranging mammal-proof fencing along portions of the proposed project consistent with final design. The Contractor will verify that the installation is consistent with the designated terms and conditions in the applicable permits. The Contractor will prepare and submit a memorandum to the Authority documenting compliance.	Contractor			X		Prior to operation of the HST; Submit a memorandum to Authority, documenting compliance.	Condition of Design/Build Contract	Universal (no specific site location)	Install fencing to keep mammals out; *Location of fencing not specified; to be discussed betw. Design Engineers, Biologist, & Contractor
Biological Resources	Bio-MM#4 7	Install Wildlife Fencing. Prior to operation of the HST, the Contractor will install free-ranging mammal-proof fencing along portions of the proposed project consistent with final design. The Contractor will verify that the installation is consistent with the designated terms and conditions in the applicable permits. The Contractor will prepare and submit a memorandum to the Authority documenting compliance.	Contractor	X	X	X		Post-construction; Memorandum documenting compliance	Condition of Design/Build Contract	Same as MM#46	
Biological Resources	Bio-MM#4 8	Construction in Wildlife Movement Corridors. Before ground-disturbing activities, the Contractor will submit a construction avoidance and minimization plan for the Eastman Lake-Bear Creek ECA to the Authority for concurrence. During ground-disturbing activities, the Contractor will keep the Eastman Lake-Bear Creek ECA riparian corridors (including Deadman and Dutchman creeks) free of all equipment, storage materials, construction materials, and any significant potential impediments. The Contractor will minimize ground-disturbing activities within the Eastman Lake-Bear Creek ECA riparian corridors (Deadman and Dutchman creeks) during nighttime hours to the extent practicable. In addition, keep nighttime illumination (e.g., for security) from spilling into the ECA or shield nighttime lighting to avoid illumination spilling into the ECA. Inspections by the Authority will check compliance and the Contractor will prepare and submit memorandum to the Authority to document compliance.	Contractor	X	X			Pre-construction, During construction; Memorandum documenting compliance	Condition of Design/Build Contract	N/A (outside CP1 footprint)	

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			Pre-Construction	Construction	Post-Construction	Operations	Implementing Party and Monitoring / Reporting Party				
Biological Resources	Bio-MM#49	<p>Compensate for Permanent Riparian Impacts. The Authority will compensate for permanent impacts on Great Valley mixed riparian forest and other riparian habitats, determined in consultation with the appropriate agencies (e.g., CDFG), by restoring nearby areas to suitable habitat through permittee responsible mitigation and/or by purchasing credits in a mitigation bank. Other relevant regulatory permits addressing riparian impacts include the CDFG 1600 Streambed Alteration Agreement, the USACE Section 404 Permit, and the SWRCB 401 Permit. The HMMP will provide the planning details as referenced in Bio-MM#58. Bio-MM#58 provides documentation and reporting requirements. Compensation will be based on the following ratios (acres of mitigation to acres of impact):</p> <ul style="list-style-type: none"> • Great Valley Mixed Riparian Forest: 2:1 • Other Riparian: 2:1 			X		Prior to operations; Post-construction compliance reports consistent with the appropriate agency-issued permits		N/A - Authority Responsible Three Locations - Fresno River; Cottonwood Creek; & San Joaquin River	Mitigate riparian habitat impacts at 2:1 ratio, as discussed; locations shown excerpted from Master 1602 Agreement, Table 2	
Biological Resources	Bio-MM#50	<p>Compensate for Impacts on Special-Status Plant Species. Prior to Final Design and during the permitting process, the Authority will comply with CESA and the federal ESA by implementing the following measures: Purchase credits from an existing mitigation bank or conduct a special-status plant re-establishment program within the same watershed or in proximity to the impact area at a 1:1 ratio. The success of the special status plant species program is related to the success of the vernal pools. Restored areas must be similar in species composition and ecosystem function to the reference habitat to be considered completed and successful at the end of the monitoring period. In general, this means that data collected on restored or enhanced pools must fall within the range of data obtained from reference pools. General performance standards and guidelines are presented in Bio-MM#58. Mitigate the impacts on special-status plants in accordance with the USFWS Biological Opinion and/or CDFG 2081(b). The Authority will document compliance.</p>	X	X	X		Prior to final design; Memorandum documenting compliance		Locations TBD - EIS/EIR says, seasonal pools are present along RR betw. Dry Creek & Cottonwood Creek	Purchase credits or conduct restoration program in accord w/ agency requirements; If credits purchased, then no specific site to mitigate would exist; otherwise, restoration has to be w/in same watershed as impact location	

Issue Area	MM#	Mitigation Measure	Implementing Party and Monitoring / Reporting Party	Mitigation Timing				Implementation Schedule / Reporting Schedule	Implementation Mechanism or Tool	Location Where MM is Applicable	Actions/Notes
				Pre-Construction	Construction	Post-Construction	Operations				
Biological Resources	Bio-MM#51	Implement Conservation Guidelines During the Project Period for Valley Elderberry Longhorn Beetle. The Authority or its designee will conduct compensatory mitigation for the valley elderberry longhorn beetle, including transplanted and replacement of elderberry shrubs, and maintenance for replacement shrubs, following the USFWS' Conservation Guidelines for the Valley Elderberry Longhorn Beetle (USFWS 1999a). Performance standards for valley elderberry longhorn beetle habitat are generally described in Bio-MM#58. It is important to recognize that Bio-MM#58 includes standards that apply to several resource areas (e.g., jurisdictional waters, riparian habitat, California tiger salamander habitat). The Authority will document compliance.	Implementing Party: Authority to compensate based on area of Valley Elderberry Longhorn Beetle habitat impacted by the Contractor Monitoring/Reporting Party: Authority. The Contractor shall monitor any activities and prepare any reports required where its construction activities contribute to the requirement for this mitigation measure			X		Prior to Operations; Memorandum documenting compliance		N/A – Authority Contractor monitor activities; Site Specific - mostly at San Joaquin River crossing	Where Elderberry shrubs exist/support the Valley Elderberry Longhorn Beetle; conduct compensatory mitigation for Elderberry beetle, including transplanted and replacement of shrubs
Biological Resources	Bio-MM#52	Compensate for Impacts on California Tiger Salamander. The Authority or its designee will determine compensatory mitigation for the temporary and permanent loss of suitable upland and aquatic breeding habitat through agency consultation with the USFWS and CDFG. Performance standards for California tiger salamander habitat are generally described in Bio-MM#58. It is important to recognize that Bio-MM#58 includes standards that apply to several resource areas (e.g., jurisdictional waters, riparian habitat, California tiger salamander habitat). Compensatory mitigation could include one of the following: <ul style="list-style-type: none"> • Purchase of credits from an agency-approved mitigation bank. • Fee-title-acquisition of natural resource regulatory agency-approved property. • Purchase or establishment of a conservation easement with an endowment for long-term management of the property-specific conservation values. • In-lieu fee contribution determined through negotiation and consultation with the various natural resource regulatory agencies. • Implementation of USFWS Biological Opinion and/or CDFG 2081(b). The Authority will document compliance.	Implementing Party: Authority to compensate based on area of temporary and permanent California Tiger Salamander habitat impacted by the Contractor Monitoring/Reporting Party: Authority The Contractor shall monitor any activities and prepare any reports required where its construction activities contribute to the requirement for	X	X	X		Prior to Operations; Memorandum documenting compliance with agency-issued BO and 2081 Determination.		N/A - Authority Responsible Contractor monitor activities; Locations TBD - EIS/EIR says, seasonal pools are present along RR betw. Dry Creek & Cottonwood Creek	See Bio MM#23; Purchase credits, acquire land or easement, or make contribution in accord w/ agency requirements

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			Implementing Party and Monitoring / Reporting Party	Pre-Construction	Construction	Post-Construction	Operations				
			this mitigation measure								
Biological Resources	Bio-MM# 53	Implement Western Pond Turtle Mitigation Measures. The Contractor will mitigate the impacts on western pond turtle in accordance with the USFWS Biological Opinion and/or CDFG 2081(b). The Contractor will submit a memorandum documenting compliance to the Authority.	Contractor	X	X	X		Schedule according to BO and 2081 Determination; Memorandum documenting compliance with BO and 2081 Determination	Condition of Design/Build Contract	Stream Crossings - Where western pond turtle habitat exists	Implement western pond turtle mitigation; follow procedures for moving any nests; See MM #27, 28; *Project Biologist to define which streams w/in study area may support turtles
Biological Resources	Bio-MM# 54	Compensate for Loss of Swainson's Hawk Foraging Habitat. To compensate for the loss of Swainson's hawk foraging habitat, the Authority or its designee will provide compensatory mitigation that follows the ratios recommended by CDFG's (1994) Staff Report Regarding Mitigation for Impacts to Swainson's hawks in the Central Valley. The Authority will document compliance. The ratios are based on the distance from the construction footprint to the closest active nest site (which for this species is defined as a nest used one or more times in the last 5 years), as follows: <ul style="list-style-type: none"> • Compensate where impacts on foraging habitat occur within 1 mile of an active nest tree, at a 1:1 ratio on agricultural lands or other suitable foraging habitat; or at a 0.5:1 ratio where habitat can be managed for prey production. • Compensate where impacts on foraging habitat occur within 5 miles, but more than 1 mile from an active nest tree, at a 0.75:1 ratio. • Compensate where impacts on foraging habitat occur within 10 miles, but more than 5 miles from an active nest tree, at a 0.5:1 ratio. • Mitigate the impacts on special-status plants in accordance with the USFWS Biological Opinion and/or CDFG 2081(b). 	Each Contractor will submit a Post-Construction Compliance Report at substantial contract completion for its own scope of work. The Authority will aggregate all reports and continue post-construction compliance reporting as required. Rev1	X	X	X		Prior to Operations; Memorandum documenting compliance		N/A - Authority Responsible Several Locations - CA annual grassland, inactive agriculture, pasture, barren, fallow field, ruderal, field crops, row crops, irrigated hay crops	Compensate for loss of Swainson's Hawk foraging habitat, at ratios specified

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			Implementing Party and Monitoring / Reporting Party	Pre-Construction	Construction	Post-Construction	Operations				
Biological Resources	Bio-MM# 55	Compensate for Loss of Burrowing Owl Foraging and Breeding Habitat. The Authority or its designee will provide base compensatory mitigation for the temporary and permanent loss of foraging and breeding habitat on the number of western burrowing owl pairs or individuals affected. Compensation will be at a 6.5:1 ratio (acres of habitat: number of pairs or individuals). Mitigate each occupied burrow destroyed by enlarging or enhancing existing unsuitable burrows at a 2:1 ratio based on CDFG's (1995) Staff Report on Burrowing Owl Mitigation. The Authority will document compliance.	Implementing Party: Authority to compensate based on area of kit burrowing owl habit impacted by the Contractor Monitoring/Reporting Party: Authority			X		Prior to Operations; Memorandum documenting compliance with BO and 2081 Determination		N/A - Authority Responsible Unknown Location(s) - Where burrowing owl foraging/ breeding habitat exists	Compensate for loss of owl foraging & breeding habitat, at ratio specified; <i>*This will need further research to determine where owl habitat exists</i>
Biological Resources	Bio-MM# 56	Compensate for Destruction of Natal Dens. The Authority will mitigate the destruction of kit fox natal dens by the purchase of suitable, approved habitat (USFWS and CDFG). Replace habitat at a minimum of 1:1 acre of habitat in order to provide additional protection and habitat in a location consistent with the recovery of the species. Mitigate the impacts on San Joaquin kit fox in accordance with the USFWS Biological Opinion and/or CDFG 2081(b). The Authority will document compliance.	Implementing Party: Authority to compensate based on area of kit fox natal den habitat impacted by the Contractor Monitoring/Reporting Party: Authority	X	X	X		Prior to Operations; Memorandum documenting compliance with CDFG guidance		N/A - Authority Responsible Unknown Location(s) -Where Kit Fox natal dens exist	Compensate for loss of Kit Fox natal dens, at ratio specified; <i>*This will need further research to determine where kit fox natal dens exists</i>
Biological Resources	Bio-MM#57	Conduct Delineation of Jurisdictional Waters and State Streambeds. The Contractor, prior to final design, will conduct a jurisdictional delineation, documenting jurisdictional waters and state streambeds consistent with USACE, SWRCB, and CDFG guidance. As part of the delineation, determine the functions and values of the jurisdictional waters using accepted methods such as the CRAM so that the functions and values have been replaced and that no net loss of jurisdictional waters and state streambed values occurs. Develop habitat replacement guidelines to identify and quantify habitats that are to be removed and identify the locations for restoring or relocating habitats. The Contractor will submit a memorandum to the Authority documenting compliance.	Contractor	X				Prior to ground-disturbing	Condition of Design/Build Contract	Six Locations - Fresno River; Main Canal; Cottonwood Creek; San Joaquin River; Herndon Canal; and Dry Creek Canal	Conduct surveys where jurisdictional waters exist, and document; information shown excerpted from Master 1602 Agreement, Table 2

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			Pre-Construction	Construction	Post-Construction	Operations					
Biological Resources	Bio-MM# 58	<p>Prepare and Implement a Habitat Mitigation and Monitoring Plan. As part of the USFWS, USACE, SWRCB, and CDFG permit applications and prior to ground-disturbing activities, the Contractor will prepare an HMMP to mitigate for temporary and permanent impacts on jurisdictional waters and state streambeds. The HMMP will detail performance standards, including percent cover of native species, survivability, canopy cover requirements, wildlife utilization, the acreage basis, restoration ratios, and the combination of onsite and/or offsite mitigation. Preference shall be given to conduct the mitigation within the same watershed where the impact occurs. The Authority and Contractor will conduct work with the USACE, SWQCB, and CDFG to develop appropriate avoidance, minimization, mitigation, and monitoring measures to be incorporated into the HMMP. The intent of the HMMP is to mitigate for the lost functions and values of impacts on jurisdictional waters and state streambeds consistent with resource agency requirements and conditions presented in Sections 404 and 401 of the CWA and Section 1600 of the CFGC. It is also anticipated that since listed species such as California tiger salamander, colusa grass, and vernal pool branchiopods are nested within these habitats, the HMMP will also serve to mitigate for listed species through Section 7 of ESA and CESA 2081. The Contractor will submit a memorandum to the Authority documenting compliance. In the HMMP, the applicant or its designee shall incorporate the following standard requirements consistent with USACE, SWRCB, and CDFG guidelines:</p> <ul style="list-style-type: none"> • Description of the project impact/site. • Goal(s) (i.e., functions and values) of the compensatory mitigation project. • Description of the proposed compensatory mitigation site. • Implementation plan for the proposed compensatory mitigation site. • Maintenance activities during the monitoring period. • Monitoring plan for the compensatory mitigation site. • Completion of compensatory mitigation. • Contingency measures. <p>Additionally, the following will be included at a minimum for the implementation plan:</p> <ul style="list-style-type: none"> • Site analysis for appropriate soils and hydrology. • Site preparation specifications based on site analysis, including but not limited to grading and weeding. • Soil and plant material salvage from impact areas, as appropriate to the timing of impact and restoration as well as the location of restoration sites. • Specifications for plant and seed material appropriate to the locality of the mitigation site. • Specifications for site maintenance to establish the habitats, including but not limited to weeding and temporary irrigation. <p>Habitat restoration, enhancement, and/or establishment activities will be conducted on some of the compensatory (i.e., selected permittee-responsible) mitigation sites to achieve the mitigation goals. A detailed design of the mitigation habitats will be created in coordination with the permitting agencies and be described in the HMMP. It is recognized that several HMMPs will be developed consistent with the selected mitigation sites and the resources mitigated at each. The Contractor will ensure that construction is implemented in a manner that minimizes disturbance of such areas to the extent feasible. Temporary fencing will be used during construction to avoid sensitive biological resources that are adjacent to construction areas and can be avoided.</p> <p>Performance standards are targets for determining the effectiveness of the mitigation and</p>	<p>Implementing Party: Contractor and Authority Monitoring/Reporting Party: Contractor and Authority</p> <p>1. For off-site and compensatory mitigation activities, the Authority will be responsible for the production of that specific HMMP and implementation, monitoring and reporting against it</p> <p>2. Any modifications of mitigation ratios will require consultation and agreement with Authority</p> <p>3. Annual monitoring reports will be produced by the Contractor for its scope of work until substantial completion of the work at which time the Authority shall assume responsibility for production or assign the responsibility to other contractors.</p>	X	X	X	X	Annual monitoring reports for 5 years (or less if success criteria are met as described earlier) and/or other documentation prescribed in the resource agency permits.	Documentation Reports demonstrating compliance with HMMP	Universal - Prepare Plan	<i>* Determine if this applies only to Jurisdictional Waters</i>

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			Pre-Construction	Construction	Post-Construction	Operations	Implementing Party and Monitoring / Reporting Party				
		<p>assessing the need for adaptive management (e.g., mitigation design or maintenance revisions). Success criteria are formal criteria that must be met after a specific timeframe to meet regulatory requirements of the permitting agencies. Where applicable, replacement planting/seeding will be implemented if monitoring demonstrates that performance goals or success criteria are not met during a particular monitoring interval.</p> <p>The criteria for measuring performance will be used to determine whether the habitat improvement is trending toward sustainability (i.e., reduced human intervention) and to assess the need for adaptive management. These criteria must be met for the habitat improvement to be declared successful, both during a particular monitoring year and at the end of the establishment period. These performance criteria will be developed in consultation with the permitting agencies. The criteria include:</p> <ul style="list-style-type: none"> • Percent survival of planted trees (65–85%). • Percent survival of transplanted trees (60–85%). • Percent relative canopy cover (5–35%). • Percent cover of invasive species (<1%). • Percent cover of nonnative herbaceous plants (<10–25%). • Percent absolute cover of native species (>50–80%). • Percent relative cover of native species (>50%). • Percent total cover of plant species (20–75%). • Percent relative cover of wetland indicator species (75–90%). • Water level within +/-6 inches (or other measurement) of design. • Species composition and community diversity, relative to reference sites, and/or as described in the guidelines issued by permitting agencies (e.g., • USFWS conservation guidelines for valley elderberry longhorn beetle). <p>Performance goals and success criteria will be provided for each of the years of monitoring and will be specific to habitat types at each permittee-responsible mitigation site. The monitoring schedule will be detailed in the site-specific HMMPs. To be deemed successful, the site may be required to meet the success criteria only in selected years. However, if success criteria are not met in specific years, remedial measures, including regrading, adjustment to modify the hydrological regime, and/or replacement planting or seeding, must be implemented and that year's monitoring must be repeated the following year until the success criteria are met. The success criteria specified must be reached without human intervention (e.g., irrigation, replacement plantings) aside from maintenance practices described in the site-specific HMMPs for maintenance during the establishment period.</p> <p>Where the HST alignment affects an existing mitigation bank, the Authority or its designee will modify the mitigation ratio to meet the vernal pool mitigation requirement. The Authority or its designee will relocate the affected portion of the mitigation bank or compensate the landowner in accordance with the Uniform Relocation and Real Property Policy Act of 1970, as amended.</p> <p>The Contractor in coordination with the Authority will oversee the implementation of all HMMP elements and monitor consistent with the prescribed maintenance and performance monitoring requirements.</p> <p>The Contractor will prepare annual monitoring reports for 5 years (or less if success criteria are met as described earlier) and/or other documentation prescribed in the resource agency permits. In addition, the Contractor will document compliance and submit to the Authority.</p>									

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Biological Resources	Bio-MM#59	<p>Compensate for Permanent Impacts on Jurisdictional Waters. The Authority will mitigate permanent wetland impacts through compensation determined in consultation with the USACE, SWRCB, USFWS, and CDFG, in order to be consistent with the HMMP (Bio-MM#58). Regulatory compliance for jurisdictional waters includes relevant terms and conditions from the USACE 404 Permit, SWRCB 401 Permit, and CDFG 1600 Streambed Alteration Agreement. The Authority will document compliance. Performance standards for jurisdictional waters are generally described in Bio-MM#58. It is important to recognize that Bio-MM#58 includes standards that apply to several resource areas (e.g., jurisdictional waters, riparian habitat, California tiger salamander habitat). Compensation could include one of the following:</p> <ul style="list-style-type: none"> • Purchase of credits from an agency-approved mitigation bank. • Fee-title-acquisition of natural resource agency-related property. • Purchase or establishment of a conservation easement with an endowment for long-term management of the property-specific conservation values. • In-lieu fee contribution determined through negotiation and consultation with the various natural resource regulatory agencies. <p>Base compensation for permanent impacts on the following ratios (acres of mitigation to acres of impact), pending agency confirmation:</p> <ul style="list-style-type: none"> • Vernal pools and other seasonal wetlands: 2:1 Preservation and 1:1 Creation. • Coastal and Valley Freshwater Marsh: 1:1. • Other Wetlands: Between 1.1:1 and 1.5:1 (1:1 onsite and 0.1 to 0.5:1 offsite), based on function and values lost. <p>Ratios determined in consultation with the appropriate agencies. The Authority will mitigate impacts on jurisdictional waters by replacing, creating, restoring, or preserving the identified resource at the ratios presented below or other ratio that compensates for functions and values lost. The Authority or its designee will consider modifying the vernal pool mitigation ratio in the final permits based on site-specific conditions and the specific life history requirements of vernal pool branchiopods, California tiger salamanders, and western spadefoot toads. Where the HST Alternative affects an existing mitigation bank, the Authority or its designee will modify the mitigation ratio to meet the vernal pool mitigation requirement. Relocate the affected portion of the mitigation bank or provide compensation to the holder of the conservation easement, in accordance with the Uniform Relocation and Real Property Policy Act of 1970, as amended. Through the HMMP reporting program and the applicable terms and conditions from the USACE 404 Permit, SWRCB 401 Permit, and the CDFG 1600 Streambed Alteration Agreement, the Authority will document compliance.</p>	<p>Implementing Party: Authority to compensate based on area of permanent jurisdictional waters impacted by the Contractor Monitoring/Reporting Party: Authority</p>	X	X	X		Prior to Operations	Documentation of compliance with permit conditions-	<p>N/A - Authority Responsible Six Locations - Fresno River; Main Canal; Cottonwood Creek; San Joaquin River; Herndon Canal; and Dry Creek Canal</p>	<p>Compensate for impacts to jurisdictional waters using the optional methods and ratios specified; information shown excerpted from Master 1602 Agreement, Table 2; <i>*Impact area locations to be determined by Project Biologist based on BSR, in consultation w/ Authority via Contractor</i></p>

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				Pre-Construction	Construction	Post-Construction	Operations				
Biological Resources	Bio-MM# 60	Offsite Habitat Restoration, Enhancement, and Preservation. Prior to site preparation at the mitigation site, the Authority or its designee will consider the offsite habitat restoration, enhancement, or preservation program, and identify short-term temporary and/or long-term permanent effects on the natural landscape. A determination will be made on any effects from the physical alteration of the site to onsite biological resources, including plant communities, land cover types, and the distribution of special-status plants and wildlife. Appropriate seasonal restrictions (e.g., breeding season) may be applicable if appropriate habitats exist onsite. Activities resulting in the physical alteration of the site include grading/modifications to onsite topography, stockpiling, storage of equipment, installation of temporary irrigation, removal of invasive species, and drainage feature treatments. In general, the long-term improvements to habitat functions and values will offset temporary effects during restoration, enhancement, or preservation activities. The offsite habitat restoration, enhancement, and preservation program will be designed, implemented, and monitored consistent with the terms and conditions of the USACE Section 404 Permit, CDFG 1600 Streambed Alteration Agreement, and CESA and federal ESA as they apply to their jurisdiction and resources onsite. Potential effects on site-specific hydrology and the downstream resources will be evaluated as a result of implementation of the restoration-related activity. Site specific BMPs and an SWPPP will be implemented as appropriate. The Authority or its designee will report on compliance with permitting requirements. The Authority will be responsible for the monitoring and tracking of the program and will document compliance.	Implementing Party: Authority to implement offsite mitigation based on effects from the physical alteration of onsite biological resources by the Contractor Monitoring/Reporting Party: Authority The Contractor shall monitor any activities and prepare any reports required where its construction activities contribute to the requirement for this mitigation measure	X	X	X		Pre-Construction, Construction, Post-Construction	Offsite habitat restoration, enhancement, and preservation program will be designed, implemented, and monitored consistent with the terms and conditions of the USACE Section 404 Permit, CDFG 1600 Streambed Alteration Agreement, and CESA and federal ESA as they apply to their jurisdiction and resources onsite	N/A - Authority Responsible Unknown Locations - At off-site habitat mitigation sites	Authority Responsible. *Authority to determine location of off-site mitigation sites
Hazardous Wastes and Materials	HMW-MM#1	Limit use of extremely hazardous materials near schools. The contractor shall not handle an extremely hazardous substance (as defined in California Public Resources Code Section 21151.4) or a mixture containing extremely hazardous substances in a quantity equal to or greater than the state threshold quantity specified pursuant to subdivision (j) of Section 25532 of the Health and Safety Code within 0.25 mile of a school. Signage would be used to delimit all work areas within 0.25 mile of a school and the contractor would be required to monitor all use of extremely hazardous substances.	Contractor		X			Construction/Monthly reporting	Contract Requirements/Specifications	Within 0.25 mile of any school; applies to Madera Community College Center; Rio Vista Middle School; River Bluff Elementary; Saroyan Elementary; Addams Elementary; & Lincoln Elementary	Install signs and monitor

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Safety and Security	S&S-MM#2	Monitor response of local fire, rescue, and emergency service providers to incidents at stations and the HMF and provide a fair share of cost of service. Upon approval of the Merced to Fresno Section, the Authority will monitor service levels in the vicinity of the Merced and Fresno stations, in order to determine baseline service demands. "Service levels" consist of the monthly volume of calls for fire and police protection, as well as city- or fire protection district-funded EMT/ambulance calls that occur within the station and HMF site service areas. Prior to operation of the stations for HST service, the Authority will enter into an agreement with the public service providers of fire, police, and emergency services to fund the Authority's fair share of services above the average baseline service demand level for the station and HMF service areas (as established during the monitoring period). The fair share will be based on projected passenger use for the first year of operations, with a growth factor for the first 5 years of operation. This cost sharing agreement will include provisions for ongoing monitoring and future negotiated amendments as the stations are expanded or passenger use increases. Such amendments will be made on a regular basis for the first 5 years of station operation, as will be provided in the agreement. To make sure that services are made available, impact fees will not constitute the sole funding mechanism, although impact fees may be used to fund capital improvements or fixtures (for example, police substation, additional fire vehicles, onsite defibrillators) necessary to service delivery. After the first 5 years of operation, the Authority will enter into a new or revised agreement with the public service providers of fire, police, and emergency services to fund the Authority's fair share of services. The fair share will take into account the volume of ridership, past record and trends in service demand at the stations and HMF site, new local revenues derived from station area development, and any services that the Authority may be providing at the station.	Implementing Party: Authority Monitoring/Reporting Party: Authority	X	X	X	X	Monitoring of service levels during construction in the vicinity of the Merced and Fresno stations to determine baseline service demands. Prior to operation of the stations for HST service	Authority to fund through fair share of services agreement.	N/A- Authority Responsible Fresno Station 'vicinity'	*N/A; This is an Authority responsibility, as it applies during HST operations; Monitor response calls at station to determine fair share, and enter into agreement
Socioeconomics, Communities, and Environmental Justice	SO-MM#4	Implement measures to reduce impacts associated with the relocation of community facilities. This mitigation measure would address SO IMPACT #3 (Displacement of community facility). Minimize impacts associated with the acquisition of the homeless shelter in Merced, by conducting outreach and coordinating with the facility prior to acquisition. Coordinate with the respective parties prior to land acquisition to reconfigure or relocate facilities, as necessary, to minimize disruption to activities. To reduce disruption to the use of this community facility the Authority will make sure that reconfiguring of land uses or buildings or relocating of community facilities is completed before the demolition of any existing structures. Work with the City of Merced to facilitate the construction of the facilities prior to demolition of the existing structures. During the design process, the Authority, with support from the Contractor, will conduct targeted outreach efforts for these facilities to understand and determine their needs for siting criteria. This mitigation measure will be effective in minimizing the impacts of the project by completing new facilities prior to relocation being necessary, and by involving affected facilities in the process of identifying new locations for their facilities.	Implementing Party: Authority and Contractor Monitoring/Reporting Party: Authority	X	X			Final design and prior to acquisitions	Outreach efforts - recruitment, training, and job set-aside programs	N/A	* Applies to acquisition of shelter in Merced

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				Pre-Construction	Construction	Post-Construction	Operations				
Socioeconomics, Communities, and Environmental Justice	SO-MM#5	Continue outreach to disproportionately and negatively affected environmental justice communities of concern. The Authority will continue to conduct substantial environmental justice outreach activities in adversely affected neighborhoods to obtain resident feedback on potential impacts and suggestions for mitigation measures. Input from these communities will be used to refine project features during the design phase and facilitate the identification of the highest priority mitigation measures developed for the Merced to Fresno section. In addition, to offset any disproportionate effects, the Authority will develop special recruitment, training, and job set-aside programs so that minority and low-income populations are able to benefit from the jobs created by the project. This type of outreach is common for large infrastructure projects with long construction periods and has been found to be effective.	Implementing Party: Authority Monitoring/Reporting Party: Authority	X	X			Prior to acquisitions	Outreach efforts - recruitment, training, and job set-aside programs	EJ Communities - Unknown	Authority to ID opportunities to modify project design; *Authority responsibility to conduct outreach
Agricultural Lands	Ag-MM#1	Preserve the Total Amount of Prime Farmland, Farmland of Statewide Importance, Farmland of Local Importance, and Unique Farmland. The Authority will enter into an agreement with the DOC California Farmland Conservancy Program to implement the preservation of farmland. The Authority will fund the California Farmland Conservancy Program's work to identify suitable agricultural land for mitigation of impacts and to fund the purchase of agricultural conservation easements from willing sellers. The performance standards for this measure are to preserve Important Farmland in an amount commensurate with the quantity and quality of the converted farmlands, within the same agricultural regions as the impacts occur, at a replacement ratio of not less than 1:1. The California Farmland Conservancy Program will work with local, regional, or statewide entities whose purpose includes the acquisition and stewardship of agricultural conservation easements. The Authority and California Farmland Conservancy Program will develop selection criteria under this agreement to guide the pursuit and purchase of conservation easements. These will include, but are not limited to, provisions to ensure that the easements will conform to the requirements of Public Resources Code Section 10252 and to prioritize the acquisition of willing seller easements on lands that are adjacent to other protected agricultural lands or that would support the establishment of greenbelts and urban separators. In addition, the Authority has incorporated establishment and administering of a farmland consolidation program to sell remnant parcels to neighboring landowners for consolidation with adjacent farmland properties. In addition, the program will assist the owners of remnant parcels in selling those remnants to adjacent landowners, upon request. The goal of the program is to provide for continued agricultural use on the maximum feasible amount of remnant parcels that otherwise may not be uneconomical to farm. The program will focus on severed remainder parcels, including those that were under Williamson Act or Farmland Security Act contract at the time of right-of-way acquisition and have become too small to remain in the local Williamson Act or Farmland Security Act program. The program will assist landowners in obtaining lot line adjustments where appropriate to incorporate remnant parcels into a larger parcel that is consistent with size requirements under the local government general plan. The program will operate for a minimum of 5 years after construction of the section is completed.	Implementing Party: Authority & California Farmland Conservancy Monitoring/Reporting Party: Authority	X				Prior to construction/Monthly reporting	The Authority will enter into an agreement with the DOC California Farmland Conservancy Program to implement the preservation of farmland. The Authority and California Farmland Conservancy Program will develop selection criteria under this agreement to guide the pursuit and purchase of conservation easements.	N/A - Authority Responsible	* Authority responsibility to enter agreements, provide funding, and facilitate the purchase of conservation easements, and to sell remnant parcels

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				Pre-Construction	Construction	Post-Construction	Operations					
Parks, Recreation, and Open Space	PK-MM#1	Compensate for Staging in Park Property for Construction. The Authority will coordinate with the respective jurisdictions to establish appropriate compensation in terms of allowance or additional property to accommodate for displaced park use during construction. Options will include preparing a plan for alternative public recreation resources during the period of closure, and preparing signs and newsletters describing the project, its schedule, and the alternative public recreational opportunities. Alternative parks and recreational resources will include the installation of recreational facilities, trails, and landscaping on lands currently owned by the city but not already developed, or it will include temporary park development on open lands until the park can be reopened. Landscaping replacement will include replacement grass areas, tree replacement on a ratio of two 5-inch caliber trees for every tree removed and two shrubs for every shrub removed. All other facilities will be replaced or moved on a one-for-one ratio, including play equipment, benches, and the like.	Implementing Party: Authority to implement park property mitigation based on displaced park use by the Contractor Monitoring/Reporting Party: Authority The Contractor shall monitor any activities and prepare any reports required where its construction activities contribute to the requirement for this mitigation measure.	X	X	X		Prior to construction/Post construction. Authority to coordinate with local jurisdictions.	The Authority and contractor will work with respective jurisdictions to develop a staging plan.	N/A - Authority Responsible Unknown Location(s)	If impact occurs, fund & replace temp. dev't of parks during construction; * Authority has responsibility to develop replacement park space during const.	
Parks, Recreation, and Open Space	PK-MM#4	Acquire Park Property for Camp Pashayan. Final design will continue to seek to minimize right-of-way impacts and pier placement in Camp Pashayan. Mitigation will include in-lieu fee for property impacts associated with pier installation as well as revegetation of disturbed areas with native plantings (consistent with CDFG vegetation/landscaping plans for the reserve).	Implementing Party: Contractor and Authority Monitoring/Reporting Party: Contractor in coordination with the Authority Rev1	X				Prior to construction/monthly reporting	The Contractor and Authority will work with the California Department of Fish and Game to prepare and execute an agreement to acquire the property.	Camp Pashayan, SR 99 at San Joaquin River	Acquire property & minimize ROW; * Contractor to minimize ROW impact	

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			Implementing Party and Monitoring / Reporting Party	Pre-Construction	Construction	Post-Construction	Operations				
Parks, Recreation, and Open Space	PK-MM#5	Address Noise at Roeding Park with City of Fresno. To mitigate the noise impacts, a sound barrier approximately 2,800 feet in length will be constructed. It is assumed that a sound barrier will be 10 to 14 feet tall and have aesthetic treatment. A 10-foot-high sound barrier will reduce noise to 64 dBA at 250 feet inside the park and residual noise effects will occur. A 14-foot-high sound barrier will reduce noise effects to within 1 dB of no impact. The sound barrier will result in visual effects, but would not change the existing visual quality. The visual character of the eastern part of the park will change as one moves closer to the edge of the park. The landscape character at the park's edge will change with the presence and build of the sound barrier compared to the existing chain link fence, flat roadway, and open views. However, the sound barrier, with aesthetic treatment of shrubs located along the park side of the wall, will improve the park's visual quality and setting by blocking views of the existing transportation facilities outside the park's visual quality and setting by blocking views of the existing transportation facilities outside the park that detract from its setting. Aesthetic treatment of the sound barrier will be selected with input from the community. The mitigation measure will be further refined in consultation with the owners and maintenance keepers of the park and recreational facilities.	Implementing Party: Contractor Monitoring/Reporting Party: Contractor	X				Design and Construction	Contractor will work with the City of Fresno as the resource owner to address noise impacts. It is possible that the City of Fresno would view the projected noise levels as acceptable and preferable to the implementation of mitigation measures.	Golden State Blvd. betw. Olive and Belmont , adjacent to Roeding Park, City of Fresno	Construct noise barrier
Aesthetics and Visual Resources	VQ-MM#1	Minimize Visual Disruption During Construction and from Construction Activities. Adhere to local jurisdiction construction requirements (if applicable) regarding construction-related visual/aesthetic disruption. In order to minimize visual disruption, construction will employ the following activities: <ul style="list-style-type: none"> Minimize the pre-construction clearing to that necessary for construction. Limit the removal of buildings to those that would obstruct project components. When possible, preserve existing vegetation, particularly vegetation along the edge of construction areas that may help screen views. After construction, degrade areas disturbed by construction, staging, and storage to original contours and revegetate with plant material similar in replacement numbers and type to that which was removed upon completion of construction, based upon local jurisdictional requirements. If there are no local jurisdictional requirements to follow, replace remove vegetation at a 1:1 replacement ratio for shrubs and small trees, and a 2:1 replacement ratio for mature trees. For example, if 10 mature trees in an area are removed, replant 20 younger trees that after 5 to 15 years (depending on the growth rates of the trees) would provide coverage that was similar to the coverage provided by the trees that were removed for construction. To the extent feasible, do not locate construction staging sites within immediate foreground distance (0 to 500 feet) of existing residential, recreational, or other high-sensitivity receptors. Where such siting is unavoidable, staging sites will be screened from sensitive receptors using appropriate solid screening materials such as temporary fencing and walls. Any graffiti or visual defacement of temporary fencing and walls will be painted over or removed within 5 business days. Implementation of this mitigation measure is not expected to result in secondary impacts.	Contractor	X	X			Construction/weekly reporting	Contract Requirements/Specifications	Universal	Minimize disturbance area; restore and revegetate disturbed areas; site staging areas to minimize visual disruption
Aesthetics and Visual Resources	VQ-MM#2	Minimize Light Disturbance During Construction. Where construction lighting will be required during nighttime construction, shield such lighting and direct it downward in such a manner that the light source is not visible offsite, and so that the light does not fall outside the boundaries of the project site to avoid light spillage offsite. Implementation of this mitigation measure is not expected to result in secondary impacts.	Contractor	X	X			Construction/weekly reporting	Contract Requirements/Specifications	Universal	Shield and direct lighting to minimize offsite spillage

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Aesthetics and Visual Resources	VQ-MM#3	Incorporate Design Criteria for Elevated and Station Elements That Can Adapt to Local Context. This mitigation measure is referenced and included in VQ-MM#6 to address VQ IMPACT #11 (Sound Barrier and Retaining Wall Would Block Views). During final design of elevated guideways and the Merced and Fresno stations, the Authority will coordinate with local jurisdictions on the design of these facilities so that they are designed appropriately to fit in with the visual context of the areas near them. This will include the following activities: <ul style="list-style-type: none"> For stations: During the station design process, establish a local consultation process with the City of Merced and the City of Fresno to identify and integrate local design features into the station design through a collaborative context-sensitive solutions approach. The process will include activities to solicit community input in their respective station areas. This effort will be coordinated with the station area planning process that will be undertaken by those cities under their station area planning grants. For elevated guideways in cities or unincorporated communities: During the elevated guideway design process, establish a process with the city or county with jurisdiction over the land along the elevated guideway to advance the final design through a collaborative context-sensitive solutions approach. Participants in the consultation process will meet on a regular basis to develop a consensus on the urban design elements to be incorporated into the final guideway designs. The process will include activities to solicit community input in the affected neighborhoods. Actions taken to help achieve integration with the local design context during the context-sensitive solutions process will include the following: <ul style="list-style-type: none"> Design HST stations and associated structures such as elevators, escalators, and walkways to be attractive architectural elements or features that add visual interest to the streetscapes near them. Design HST station parking structures and adjacent areas to integrate visually into the areas where they would be located. Where the city has adopted applicable downtown design guidelines, the parking structures and adjacent areas will be designed to be compatible with the policies and principles of those guidelines. For the elevated guideways and columns, incorporate architectural elements, such as graceful curved or tapered sculptural forms and decorative surfaces, to provide visual interest. Include decorative texture treatments on large-scale concrete surfaces such as parapets and other portions of elevated guideways. Include a variety of texture, shadow lines, and other surface articulation to add visual and thematic interest. Closely coordinate the design of guideway columns and parapets with station and platform architecture to promote unity and coherence where guideways lie adjacent to stations. Integrate trees and landscaping into the station streetscape and plaza plans where possible to soften and buffer the appearance of guideways, columns, and elevated stations. This will be consistent with the principles of crime prevention through environmental design. For the stations, structures, and related open spaces: incorporate design features that provide interest and reflect the local design context. These features could include landscaping, lighting, and public art. The designs within cities and unincorporated communities will reflect the results of the context-sensitive solutions design process. During the context-sensitive solutions design process, the HST Project's obligations and constraints related to planning, mitigation, engineering, performance, funding, and operational requirements will be taken into consideration. 		X				Final design and Construction/monthly reporting	Established local consultation process with City of Merced and City of Fresno	Elevated Guideways and the Fresno Station	Design issue - MM should be cleared during project design; use context-sensitive solutions; collaborate w/ local governments re architectural and landscape elements; * Contractor should have list of structures where this MM applies

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Aesthetics and Visual Resources	VQ-MM#5	Provide Landscape Treatments Along the HST Project Overcrossings and Retained Fill Elements of the HST. Upon the completion of construction, the Authority will plant the surface of the ground supporting the overpasses (slope-fill overpasses) and retained fill elements with vegetation consistent with the surrounding landscape in terms of vegetative type, color, texture, and form. During final design, the Authority will consult with the affected cities and counties regarding the landscaping program for planting the slopes of the overcrossings and retained fill. Plant species will be selected on the basis of their mature size and shape, growth rate, and drought tolerance. No species that is listed on the Invasive Species Council of California's list of invasive species will be planted. The landscaping will be continuously maintained and appropriate irrigation systems will be installed, if needed. Where wall structures supporting the overpasses or retained fill are proposed, the structure will employ architectural details and low-maintenance trees and other vegetation to screen the structure, minimize graffiti, and reduce the effects of large walls. Surface coatings will be applied on wood and concrete to facilitate cleaning and the removal of graffiti. Any graffiti or visual defacement or damage of fencing and walls will be painted over or repaired within a reasonable time after notification. Implementation of this mitigation measure is not expected to result in secondary impacts.	Implementing Party: Contractor and Authority Monitoring/Reporting Party: Contractor in coordination with Authority. Landscaping and maintenance, provided by the Contractor for its scope of work until substantial completion of the work at which time the Authority shall assume responsibility for landscaping or assign the responsibility to other third parties.			X		Pre and Post Construction/ monthly reporting	Contract Requirements/ Specifications	Several Locations - overcrossings & retaining structures	Plant vegetation at overpasses; consult w/ local agencies; apply techniques mentioned to minimize intrusion of large walls; *Contractor has list of overcrossings & retaining structures for CP-1
Aesthetics and Visual Resources	VQ-MM#6	Provide Sound Barrier Treatments. The Authority will design a range of sound barrier treatments for visually sensitive areas, such as those where residential views of open landscaped areas would change or in urban areas where sound barriers would adversely affect the existing character and setting. The Authority will develop the treatments during final design and integrate them into the final project design. The treatments will include, but are not limited to, the following:• Sound barriers along elevated guideways may incorporate transparent materials, where sensitive views would be adversely affected by solid sound barriers. • Sound barriers will use non-reflective materials and will be of a neutral color. • Surface design enhancements and vegetation appropriate to the visual context of the area will be installed with the sound barriers. Vegetation will be installed consistent with the provisions of VQ-MM#5. Surface enhancements will be consistent with the design features and will include architectural elements (i.e. stamped pattern, surface articulation, and decorative texture treatment as determined acceptable to the local jurisdiction. Surface coatings will be used on wood and concrete sound barriers to facilitate cleaning and the removal of graffiti. Implementation of this mitigation measure is not expected to result in secondary impacts.	Implementing Party: Contractor Monitoring/Reporting Party: Contractor		X			Construction/monthly reporting	Contract Requirements/ Specifications	Three Primary Locations - 6 noise barriers are proposed in City of Fresno; Table 8-12 lists 17,450 total length; Fig. 8-8 shows barriers 1) along tracks for ~3000' N of Herndon Canal; 2) along tracks along Roeding Park; and 3) along tracks for ~8000' north of Belmont Ave. to Weldon Ave.	Table 8-12 and Figure 8-8 appear to be inconsistent; Design noise barrier treatments to minimize visual intrusion; EIS results are preliminary - locations and dimensions to be finalized during Final Design

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Aesthetics and Visual Resources	VQ#7	Screen Traction Power Distribution Station and HMF. Upon completion of traction power distribution station or HMF construction, the Authority will screen the traction power substations (located at approximately 30-mile intervals along any of the HST alternatives) and HMF from public view through the use of landscaping or solid walls/fences. This will consist of context-appropriate landscaping of a type and scale that does not draw attention to the station. Plant species will be selected on the basis of their mature size and shape, growth rate, hardiness, and drought tolerance. No species that is listed on the Invasive Species Council of California's list of invasive species will be planted. The landscaping will be continuously maintained and appropriate irrigation systems will be installed within the landscaped areas. Walls will be constructed of cinderblock or similar material and will be painted a neutral color to blend in with the surrounding context. If a chain-link or cyclone fence is used, it will include wood slats in the fencing. Any graffiti or visual defacement or damage of fencing and walls will be painted over or repaired within a reasonable period as agreed between the Authority and local jurisdiction. Implementation of this mitigation measure is not expected to result in secondary impacts.			X		Post Construction	Contract Requirements/ Specifications	Traction Power Station - Pending Final Design review, the current identified location is at Raymond Road intersection w/ RR, to be serviced via PG&E substation Storey (Rd 28 1/4 and Raymond Rd)	Use landscaping/barrier, as described, to screen facility; optional location in vicinity would be near PG&E Substation at SR 145 and Avenue 12	

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Cultural and Paleontological Resources	Arch-MM#1	<p>Conduct Archaeological Training. Prior to ground-disturbing activities within the project alternatives, a qualified professional archaeologist, who meets the Secretary of the Interior's (SOI's) Standards for Archaeology, will develop a training program and printed material to be presented to construction personnel. The purpose of this training and accompanying materials will be to familiarize construction personnel with the relevant legal (Section 106/NEPA/CEQA) context for cultural resources of the project and with the types of cultural sites, features, and artifacts that could be uncovered during construction activities. These training sessions will be conducted prior to commencing construction within discrete portions of the project alternatives or as needed as construction crews and supervisors may change. The archaeological training program is further detailed in the Archaeological Treatment Plan (ATP), which will focus on the treatment of known buried historic properties and will provide guidance in the event of unanticipated discoveries. This is being developed with input from all consulting parties, including:</p> <ul style="list-style-type: none"> • Merced County • City of Merced • City of Merced Design Review Board/Commission and Historic Preservation Commission • Fresno County • City of Fresno • City of Fresno Historic Preservation Program • Fresno County Landmarks and Records Advisory Commission • Madera County • City of Madera • California State Historic Preservation Office (SHPO) • Advisory Council on Historic Preservation (ACHP) <p>In addition, consultation is being undertaken with participating parties and entities that have expressed a formal interest in being involved with the project, including Native American tribes. The ATP will reflect the input of all parties. The ATP is a living document, monitored by all of the consulting parties so that compliance activities and mitigation commitments can be tracked. The ATP will be also be tied to the Memorandum of Agreement (MOA), which will also contain compliance and tracking stipulations tied to each specific mitigation item. The combination of the ATP and the MOA, along with ongoing coordination with the consulting parties, tracks and measures the commitments.</p>	<p>Implementing Party: Contractor Monitoring/Reporting Party: Contractor</p>	X				<p>Prior to ground-disturbing activities/weekly monitoring</p>	<p>Worker Environmental Awareness Program Training Resources: ATP MOA</p> <p>An Unanticipated Discoveries Plan is a part of the ATP and has been developed, in coordination with the consulting parties, to detail the specific procedures to be followed if archaeological materials are found during construction.</p> <p>Implement an ADRP if the circumstances warrant an ADRP. The Authority will provide the ADRP, as an element of the treatment plan prepared for the section, to the MOA signatories and MOA concurring parties for review and comment.</p> <p>Programmatic Agreement (PA)</p>	<p>Not Location Specific Develop and implement training program</p>	<p>Develop and implement training program</p>

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Cultural and Paleontological Resources	Arch-MM#2	Halt Work in the Event of an Archaeological Discovery. If any cultural resources are discovered during ground-disturbing activities, all work within 50 feet of the resources will halt, and the project proponent will consult with a qualified archaeologist to assess the significance of the find, according to CEQA Guidelines Section 15064.5, and any work may proceed on other parts of the project site while mitigation for historical resources or unique archaeological resources is being carried out. An Unanticipated Discoveries Plan will be developed in coordination with the consulting parties to detail the specific procedures to be followed if archaeological materials are found during construction. This plan is a part of the ATP, which is also being developed through a consultative process. The California State Lands Commission (CSLC) will be notified if the find is a cultural resource on or in the submerged lands of California, consequently under the jurisdiction of the CSLC. The project proponent will comply with all applicable rules and regulations promulgated by CSLC with respect to cultural resources located in submerged lands, and in accordance with the Programmatic Agreement (PA). If human remains are encountered, the project proponent will comply with applicable laws and regulations regarding notification and disposition of the remains. If the coroner determines that the remains are Native American, the coroner will notify the Native American Heritage Commission (NAHC) under Health and Safety Code 7050.5. If any find is determined to be significant, the project proponent and the archaeologist will meet to determine the appropriate avoidance measures or other appropriate mitigation in conjunction with the SHPO and the MOA signatories. All significant cultural materials recovered will be, as necessary and at the discretion of the consulting archaeologist, subject to scientific analysis, professional museum curation, and documentation according to current professional standards as determined in the project MOA. In considering any suggested mitigation proposed by the consulting archaeologist to mitigate impacts on historical resources or unique archaeological resources, a determination will be made whether avoidance is necessary and feasible in light of factors such as the nature of the find, project design, costs, and other considerations. If, in consultation with the consulting archaeologist, it is determined that a significant archaeological resource is present and that the resource could be adversely affected by the proposed project, one of the following actions may be followed, as feasible: • If prudent and feasible, redesign the project to avoid any adverse effect on the significant archaeological resource. • Implement Arch-MM#3, Intentional Site Burial for Site Preservation. • Implement an archaeological data recovery program (ADRP) (unless the archaeologist determines that the archaeological resource is of greater interpretive use than research significance and that interpretive use of the resource is feasible). If the circumstances warrant an ADRP, such a program will be conducted. Together with a project archaeologist, the scope of the ADRP will be determined. The archaeologist will prepare a draft ADRP, which will identify the scientific/historical research questions that are applicable to the expected resource, the data classes the resource is expected to possess, and how the expected data classes will address the applicable research questions. Pursuant to Section VIII(c)(1) of the PA, the Authority will provide the ADRP, as an element of the treatment plan prepared for the section, to the MOA signatories and MOA concurring parties for review and comment. Data recovery, in general, should be limited to the portions of the historical property that could be adversely affected by the proposed project. Destructive data recovery methods will not be applied to portions of the archaeological resources if nondestructive methods are practical. Performance tracking of this mitigation measure will be based upon successful implementation and approval of the documentation by the SHPO and appropriate consulting parties.	Implementing Party: Contractor, in consultation with the California State Lands Commission, the Native American Heritage Commission, and the State Historic Preservation Office, as appropriate. Monitoring/Reporting Party: Contractor, in coordination with Authority, SHPO and appropriate consulting agencies	X				Construction	Resources: ATP MOA	Unknown Location(s)	Follow guidance to mitigate impact in event archaeological resources or human remains are discovered during construction

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Cultural and Paleontological Resources	Arch-MM#3	Plan an Intentional Site Burial Preservation In-Place. If project engineering concludes that avoidance is not feasible, a process to determine whether the site can be preserved through intentional site burial will be considered. When complete avoidance is not possible, preservation in-place is the preferred form of mitigation for an "historical resource of an archaeological nature" because it retains the relationships between artifact and context, and may avoid conflicts with groups associated with the site, pursuant to CEQA Guidelines 15126.4(b)(3)(A). The process, presented in overview below, is specified in detail in the ATP, which is being developed in coordination with all of the project's consulting parties. To intentionally bury a site, it will be necessary to conduct test excavations to determine the vertical and horizontal extent of the identified resources discovered as planning proceeds or through accidental discovery. If excavations have not yet been conducted for the purpose of evaluating the site for eligibility in accordance with Section 106 of the NHPA, the Authority will contract with a qualified archaeologist to conduct a formal excavation of the site to delineate the site boundaries and to determine the site's eligibility for the CRHR or NRHP. If found to be eligible and avoidance is not possible, consideration will be given to intentional site burial. The contracted archaeologist will, in addition to the formal delineation of the site boundaries, prepare and implement a design plan to dictate the conditions of the intentional site burial according to the recommendations discussed in the National Park Service Technical Brief Number 5, Intentional Site Burial: A Technique to Protect Against Natural or Mechanical Loss (Thorne 1991). Among the requirements of an effective capping, the mechanical process of burying the site must be designed in a manner that will make sure that the site matrix is protected during the placement process and during the operation of the HST. Preconstruction testing can be used to determine the construction equipment and fill material load limits that are allowable without causing compression or warpage of the artifact and feature components of the site. If the preconstruction testing determines that compression or warpage of the site is probable and the mitigation will not effectively reduce the effects of the project to less than significant levels, additional mitigation, such as data recovery, will be necessary. Furthermore, if it is determined that the engineering requirements of the construction and operation of the HST at the location of the site prohibit the effective avoidance of the site, or if the surrounding conditions prohibit the protection or preservation of the archaeological components, the mitigation of data recovery will be the only feasible mitigation (see Arch-MM#2 above). In addition, the Authority will make provisions with the contracted archaeologist to monitor the site after the burial process is completed. Performance tracking of this mitigation measure will be based upon successful implementation and the approval of the documentation by the SHPO and appropriate consulting parties.	Implementing Party: Contractor Monitoring/Reporting Party: Contractor, in coordination with the Authority, SHPO and appropriate consulting agencies Site burial monitoring reports will be produced by the Contractor for its scope of work until substantial completion of the work at which time the Authority shall assume responsibility for production or assign the responsibility to other contractors. Rev1	X	X	X		Prior to construction/Weekly reporting	Resource: ATP MOA	Unknown Location(s)	Follow guidance regarding burial in place and consult w/ appropriate agencies, in event archaeological resources or human remains are discovered during construction

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Cultural and Paleontological Resources	Arch-MM#4	Conduct Archaeological Monitoring in Proximity to Identified Sites or Areas of Sensitivity. Ground-disturbing activities that have the potential to affect archaeological remains may occur in areas that have been identified as either the location of a known archaeological site, or in an area known to be sensitive for the presence of buried cultural resources. The Authority will retain the services of a qualified archaeological monitor who will be present during all ground-disturbing construction activities occurring in native sediments/soils. The process for archaeological monitoring, presented in overview below, will be specified in detail in the ATP, developed in coordination with all of the project's consulting parties. In the event that cultural resources are exposed during construction, following guidelines presented in the ATP, the archaeological monitors will be empowered to temporarily halt activities in the immediate vicinity of the discovery while it is evaluated for significance. If the archaeologist determines that the cultural resources exposed are unique archaeological resources as defined by Section 21083.2 of CEQA, then the archaeologist will conduct additional excavations to avoid impacts on these resources by the development. If they are not "unique," then no further mitigation will be required. Unique cultural resources will be determined based on the criteria set forth in Section 21083.2 of CEQA. The Authority will seek Native American input and consultation under terms and conditions specified in the ATP and MOA. Performance tracking of this mitigation measure is based upon successful implementation and approval of the documentation by the SHPO and appropriate consulting parties.	Implementing Party: Contractor Monitoring/Reporting Party: Contractor, in coordination with the Authority, SHPO and appropriate consulting agencies Rev1	X	X	X		Construction/Weekly reporting	Resources: EIR/EIS	Several Locations - areas w/ known resources or of archaeological sensitivity	Conduct monitoring ; follow procedures laid out in the ATP; <i>HST-H-JL-02 is historic domestic site east of Fresno R. on BNSF Alternative (site recently graded; late 19th/ early 20th century; pile of bridge timbers); Reported burial ground so. of S.J. River (dev't w/ a commercial building); pending performance of field studies, lands where the APE crosses perennial watercourses or larger seasonal drainages are considered sensitive.</i>
Cultural and Paleontological Resources	Pale-MM#1	Engage a Paleontological Resources Specialist to Direct Monitoring during Construction. At least 120 days prior to construction, a paleontological resources specialist (PRS) will be designated for the project and will be responsible for determining where and when paleontological resources monitoring should be conducted. Paleontological resources monitors (PRMs) will be selected by the PRS based on their qualifications, and the scope and nature of their monitoring will be determined and directed based on the Paleontological Resource Monitoring and Mitigation Plan (PRMMP). The PRS will be responsible for developing and implementing their portion of the Worker Environmental Awareness Program training. All management and supervisory personnel and construction workers involved with ground-disturbing activities will be required to take this training prior to beginning work on the project and will be provided with the necessary resources for response in case paleontological resources are found during construction. The PRS will document any discoveries, as needed, evaluate the potential resource, and assess the significance of the find under the criteria set forth in CEQA Guidelines Section 15064.5.	Implementing Party: Contractor Monitoring/Reporting Party: Authority	X	X			Identify PRS at least 120 days prior to construction. The PRS will document any discoveries, as needed, evaluate the potential resource, and assess the significance of the find.	Paleontological Resource Monitoring and Mitigation Plan (PRMMP) Worker Environmental Awareness Program Training	Several Locations - areas of paleontological sensitivity	Conduct monitoring; prepare PRMMP; conduct training for workers

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Cultural and Paleontological Resources	Pale-MM#2	Prepare and Implement a Paleontological Resource Monitoring and Mitigation Plan (PRMMP). Paleontological monitoring and mitigation measures are restricted to those construction-related activities that will result in the disturbance of paleontologically sensitive sediments. The PRMMP will include a description of when and where construction monitoring will be required; emergency discovery procedures; sampling and data recovery procedures; procedures for the preparation, identification, analysis, and curation of fossil specimens and data recovered; preconstruction coordination procedures; and procedures for reporting the results of the monitoring and mitigation program. In general, the monitoring program will reflect site-specific construction of the selected option. The PRMMP will be consistent with Society of Vertebrate Paleontology guidelines (SVP 1995a,b) for the mitigation of construction-related impacts on paleontological resources. The PRMMP will also be consistent with the SVP (1996) conditions for receivership of paleontological collections and any specific requirements of the designated repository for any fossils collected.	Contractor	X	X			Construction	Condition of Design/Build Contract	Several Locations - where paleontologically-sensitive formations will be disturbed	Monitoring locations to be identified in the PRMMP; Per FED, monitoring required where deep excavation (i.e., 5 to 10 ft BGS) occurs in sensitive sediments for bridge footings, drainage systems, and drilling for pole foundations; conduct training for workers; <i>*See PRMMP for areas requiring paleontological monitoring</i>
Cultural and Paleontological Resources	Pale-MM#3	Halt Construction when Paleontological Resources Are Found. If fossil or fossil-bearing deposits are discovered during construction, regardless of the individual making a paleontological discovery, construction activity in the immediate vicinity of the discovery will cease. This requirement will be spelled out in both the PRMMP and the Worker Environmental Awareness Program. Construction activity may continue elsewhere provided that it continues to be monitored as appropriate. If the discovery is made by someone other than a PRM or the PRS, a PRM or the PRS will immediately be notified.	Implementing Party: Contractor Monitoring/Reporting Party: Contractor to halt construction and <i>notify Authority of discovery.</i>	X	X			Construction/weekly reporting	Condition of Design/Build Contract	Unknown Location(s)	Follow guidance to mitigate impact in event paleontological resources are discovered during construction

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Cultural and Paleontological Resources	Hist-MM#1	<p>Avoid Construction Adverse Vibration Effects. The HST Project will develop construction methods to avoid indirect adverse effects or substantial adverse change to any historic properties (Section 106) or historical resources (CEQA) from vibration caused by construction activities. Vibration from impact pile-driving during construction could cause the physical destruction, damage, or alteration of historic properties or historical resources if the pile-driving is within 25 to 50 feet of the building. Because this impact pile-driving could cause adverse effects or substantial adverse changes, alternative construction methods causing less than 0.12 peak particle velocity of one inch per second (0.12 PPV in/sec) measured at the receptor would be developed for construction activities near historic properties or historical resources if they are determined to be extremely susceptible to vibration damage. If piling is more than 50 feet from buildings, or if alternative methods such as push piling or auger piling can be used, damage from construction vibration should not be an issue. Preconstruction surveys conducted at locations within 50 feet of piling would document existing condition of buildings in case there is an issue during or after construction. The mitigation measure described above is consistent with FRA's High-Speed Ground Transportation Noise and Vibration Impact Assessment (2005) for evaluation of noise and vibration impacts associated with HSTs.</p> <p>A BETP will be prepared that provides additional detail on the methodology for the avoidance of adverse vibration effects, and how that will be implemented during the project. The BETP is being developed in coordination with the project's consulting parties to verify that all parties have a role in the generation of this plan. Performance tracking of this mitigation measure is based upon successful implementation and the approval of the documentation by the SHPO and appropriate consulting parties.</p>	<p>Implementing Party: Contractor Monitoring/Reporting Party: Contractor and Authority, in consultation with the SHPO and appropriate consulting agencies.</p>	X	X	X		Preconstruction surveys and Construction	BETP as resource- Authority Directive	<p>Locations where pile dev't is w/in 50 ft of historic buildings</p>	<p>Monitor pre- and post-construction; impact pile driving not anticipated close to buildings, however, need to follow guidance provided for historic properties & buildings; <i>historic resources next to RR ROW = SP Railroad Depot (Map ID#31); BofA Building (Map ID#35); 1528-1548 Tulare St (Map ID#39); & Hobbs Parsons Produce Co. (Map ID#42); Note - these impacts may be avoided w/ implementation of Tulare St Underpass Option;</i> * Contractor to determine the locations requiring monitoring</p>

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				Pre-Construction	Construction	Post-Construction	Operations				
Cultural and Paleontological Resources	Hist-MM#2	Develop Protection and Stabilization Measures. The Built Environment Treatment Plan (BETP) will identify historic properties/ historical resources that will require protection and/or stabilization prior to the start of construction of the project. Properties subject to this mitigation activity include any that are physically affected, and/or relocated, and/or in close enough proximity to require protection. This mitigation will be used to confirm that adverse effects on historic properties/historical resources will be either avoided entirely, or minimized to the extent possible. This mitigation will be developed in consultation with the landowner and land-owning agencies, as well as the SHPO and the MOA signatories, as required by the PA. Such measures will include, but will not be limited to, vibration monitoring of construction in the vicinity of historic properties; cordoning off of resources, such as traffic, equipment storage, and personnel, from construction activities; shielding of resources from dust or debris; and stabilization of buildings adjacent to construction. For buildings that are to be moved, such measures will include stabilization of buildings and structures before, during, and after relocation; protection of buildings and structures during temporary storage; and relocation at a new site and during subsequent rehabilitation. Moving buildings could result in minor impacts on air emissions from equipment and vehicles and minor effects on developed or undeveloped sites. Protection and stabilization measures proposed for impacted resources will be presented in more detail in the BETP, a plan that is being developed with critical input from all of the project's consulting parties. This mitigation measure is consistent with best practices within the professional historic preservation community and is commensurate with mitigation measures for similar scale transportation projects. Similar mitigation measures have proven to be effective in achieving the stewardship goals of Section 106 and CEQA review. Performance tracking of this mitigation measure is based upon successful implementation and the approval of the documentation by the SHPO and appropriate consulting parties.	Implementing Party: Contractor and Authority, in consultation with the landowner, land-owning agencies, SHPO, and the MOA signatories, as required by the Programmatic Agreement (PA). Monitoring/ Reporting Party: Contractor and Authority, in consultation with the SHPO and appropriate consulting agencies	X	X			Preconstruction surveys and Construction/weekly reporting	BETP PA; Historic Structure Report (HSR) and the relocation plan- Authority Directives	Several Locations Likely	Avoidance/Minimization measures and location of historic properties & resources identified in the BETP; <i>See Hist. MM#1 Notes above for properties close to track structures; In addition, directly affected properties are Weber Ave. Overcrossing (Map ID#17); Belmont Ave. Subway & Traffic Circle (Map ID#18); & Pacific Coast Seeded Raisin Co. (Map ID#41)</i>
Cultural and Paleontological Resources	Hist-MM#3	Minimize Adverse Effects through Relocation of Historic Structures. The BETP will identify historic properties/historical resources that will be relocated to help avoid destruction and minimize the direct adverse effect of their physical damage or alteration. The plan for relocation and implementation of relocation will take place prior to construction. The relocation of the historic properties/historical resources will take into account the historic site and layout (i.e., the orientation of the buildings to the cardinal directions), as well as their potential re-use. All structures will be thoroughly recorded in a Historic Structure Report (HSR), and the relocation plan will provide for stabilization of the structures before, during, and after the move. The project's consulting parties will provide input to develop the relocation of historic structures section of the BETP in an effort to provide a comprehensive and thorough approach that would best meet the needs of the parties as well as the resources. This mitigation measure is consistent with best practices within the professional historic preservation community and is commensurate with mitigation measures for similar scale transportation projects. Relocating historic structures has proven to be effective in achieving the stewardship goals of Section 106 and CEQA review. Performance tracking of this mitigation measure is based upon successful relocation of resources and the approval of the process by the SHPO and appropriate consulting parties.	Implementing Party: Contractor Monitoring/ Reporting Party: Contractor and Authority, in consultation with the SHPO and appropriate consulting agencies	X	X			Preconstruction surveys and Construction/weekly reporting	BETP (current BETP does not specify any resources requiring this type of mitigation; however, future amendments to the BETP may identify such resources) Photographs and nomination document- Authority-Directives	Specific Location(s) - Where historic buildings are to be relocated	EIS/EIR makes no mention of any relocations; Review BETP to confirm no relocations
Cultural and Paleontological Resources	Hist-MM#4	Minimize Adverse Operational Noise Effects. The BETP will identify historic properties/historical resources that will be subject to treatment to help minimize indirect adverse effects caused by operational noise of the HST Project. Properties subject to this mitigation will be identified in the BETP and will be treated in consultation with the	Implementing Party: Contractor, with the landowner, and the	X	X	X		Preconstruction and Construction	BETP PA Historic American Building Survey (HABS)/Historic American Engineering	Specific Location(s) - Where historic properties/buildings would be adversely	See Hist. MM#1 Notes above for properties close to track structures; *Need to review BETP to

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			Implementing Party and Monitoring / Reporting Party	Pre-Construction	Construction	Post-Construction	Operations				
		landowner, or land-owning agencies, and the CEQA lead agency (Authority). Preliminary project design options, such as noise walls, have been developed to help reduce noise impacts and follow FRA methodologies for noise abatement.	CEQA lead agency Monitoring/Reporting Party: Contractor and Authority						Record (HAER)/ Historic American Landscape Survey (HALS) programs- Authority-Directives	affected by noise	confirm which properties would be adversely affected by operational noise
Cultural and Paleontological Resources	Hist-MM#5	Prepare and Submit NRHP Nominations. The BETP will identify specific historic properties/historical resources for nomination to the NRHP Program of the National Park Service (NPS). Properties subject to this mitigation will be treated in consultation with the landowner, or land-owning agencies, and the CEQA lead agency (i.e., the Authority). Current photographs of the property used in the nomination(s) will be taken prior to the start of project construction. The nomination document may also use other current and/or historic images prepared as part of other mitigation activities. This mitigation measure is consistent with best practices within the professional historic preservation community and is commensurate with mitigation measures for similar scale transportation projects. Preparing and submitting NRHP nominations has proven to be effective in achieving the stewardship goals of Section 106 and CEQA review. Performance tracking of this mitigation measure is based upon successful implementation and approval of the documentation by the SHPO and appropriate consulting parties.	Implementing Party: Authority Monitoring/Reporting Party: Authority, in consultation with the SHPO and appropriate consulting agencies	X	X			Prior to construction/monthly reporting	BETP (current BETP does not specify any resources requiring mitigation; however, future amendments to the BETP may identify such resources) Photographs and nomination document- Authority Directives	N/A	Location of historic buildings to be relocated will be identified in the BETP; *This measure is the Authority's responsibility
Cultural and Paleontological Resources	Hist-MM#6	Prepare and Submit CRHR Nominations. The BETP identifies specific historical resources for nomination to the CRHR Program at the California OHP. Current photographs of the resource used in the nomination(s) will be made prior to the start of construction. The nomination document may also use current and/or historic images prepared as part of other mitigation activities. Properties subject to this mitigation will be treated in consultation with the landowner, or land-owning agencies, and the CEQA lead agency (i.e., the Authority). This mitigation measure is consistent with best practices within the professional historic preservation community and is commensurate with mitigation measures for similar scale transportation projects. Preparing and submitting CRHR nominations has proven to be effective in achieving the stewardship goals of Section 106 and CEQA review. Performance tracking of this mitigation measure is based upon successful implementation and approval of the documentation by the SHPO and appropriate consulting parties.	Implementing Party: Authority Monitoring/Reporting Party: Authority, in consultation with the SHPO and appropriate consulting agencies	X	X			Prior to construction	BETP (current BETP does not specify any resources requiring mitigation; however, future amendments to the BETP may identify such resources) Photographs and recordation document per National Parks Service (NPS) HABS/HAER/HALS guidelines (up to Level II HABS written data standards) Authority Directives	N/A	*This measure is the Authority's responsibility

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Issue Area	MM#	Mitigation Measure	Implementing Party and Monitoring / Reporting Party	Mitigation Timing				Implementation Schedule / Reporting Schedule	Implementation Mechanism or Tool	Location Where MM is Applicable	Actions/Notes
				Pre-Construction	Construction	Post-Construction	Operations				
Cultural and Paleontological Resources	Hist-MM#7	<p>Prepare and Submit Historic American Building Survey (HABS)/ Historic American Engineering Record (HAER)/ Historic American Landscape Survey (HALS) Documentation. The BETP identifies specific historical resources that would be physically altered, damaged, relocated, or destroyed by the project and that may be documented in compliance with the HABS/HAER/HALS programs. Consultation with the SHPO, NPS, and the consulting parties will be required if any of the resources must be documented to these standards.</p> <p>Prior to the start of construction, in consultation with the Western Regional Office of the NPS, Oakland, California, large-format (4-inch by 5-inch, or larger, negative-size) black and white photographs will be taken of these historic properties/historical resources showing them in context, as well as details of character-defining features. The photographs will be processed for archival permanence in accordance with HABS/HAER/HALS photographic specifications. Each view will be fully captioned and, if necessary, perspective corrected. Oblique aerial photography will be considered as a photographic recordation option in these coordination efforts.</p> <p>The recordation will follow the NPS HABS/HAER/HALS guidelines, and the report format, views, and other documentation details will be coordinated with the NPS. It is anticipated that the recordation of historic properties will be completed to Level II HABS written data standards and will include archival and digital reproduction of historic images, plans, and drawings, if available. Copies of the documentation will be offered to the appropriate local governments, historical societies and agencies, and libraries. The documentation will also be offered in printed and electronic form to any repository or organization upon which SHPO, the Authority, and local agency with jurisdiction over the property, through consultation, may agree. The electronic copy of the report may also be placed on an agency or organization's web site.</p> <p>This mitigation measure is consistent with best practices within the professional historic preservation community and is commensurate with mitigation measures for similar scale transportation projects. Preparing and submitting HABS/HAER/HALS documentation has proven to be effective in achieving the stewardship goals of Section 106 and CEQA review. Performance tracking of this mitigation measure is based upon successful implementation and approval of the documentation by the SHPO and appropriate consulting parties.</p>	<p>Implementing Party: Authority, in consultation with the Western Regional Office of the NPS</p> <p>Monitoring/ Reporting Party: Authority, in consultation with the SHPO and appropriate consulting agencies</p>	X				Prior to construction	BETP HSR- Authority directives	N/A	<i>*This measure is the Authority's responsibility</i>
Cultural and Paleontological Resources	Hist-MM#8	<p>Prepare Historic Structure Reports. The BETP identifies historic properties/historical resources that would be physically altered, damaged, or relocated that would be subject to an HSR. The HSR will be prepared prior to the start of construction. The HSR will follow the general guidelines for such reports as described in the California OHP publication, "Historic Structure Report Format" (OHP n.d.). The scope of each HSR will be developed in consultation with the land-owning agencies, the SHPO, and appropriate consulting parties. The HSR will include documentation of existing landscaping, if appropriate. The HSRs may be used in the ongoing planning process and re-use of the properties, and may be coordinated with the other mitigation documentation activities, such as HABS/HAER records. This mitigation measure is consistent with best practices within the professional historic preservation community and is commensurate with mitigation measures for similar scale transportation projects. Preparing HSRs has proven to be effective in achieving the stewardship goals of Section 106 and CEQA review. Performance tracking of this mitigation measure is based upon successful implementation and approval of the documentation by the SHPO and appropriate consulting parties.</p>	<p>Implementing Party: Authority</p> <p>Monitoring/ Reporting Party: Authority, in consultation with the SHPO and appropriate consulting agencies</p>	X				Prior to construction	BETP (current BETP does not specify any resources requiring mitigation; however, future amendments to the BETP may identify such resources) Interpretive exhibits Informative permanent metalplaques- Authority Directives	N/A	<i>*This measure is the Authority's responsibility</i>

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Issue Area	MM#	Mitigation Measure	Mitigation Timing					Implementation Schedule / Reporting Schedule	Implementation Mechanism or Tool	Location Where MM is Applicable	Actions/Notes
			Pre-Construction	Construction	Post-Construction	Operations					
Cultural and Paleontological Resources	Hist-MM#9	<p>Prepare Interpretive Exhibits. Some historic properties/historical resources may be identified in the BETP for historic interpretation. Interpretive exhibits will provide information regarding the specific historic property or historical resource. The interpretive exhibits will utilize images, narrative history, drawings, or other material produced for the mitigation described above, including the HABS/HAER reports, NRHP and CRHR nominations, or other archival sources. The interpretive exhibits may be in the form of, but are not limited to, interpretive display panels and/or printed material for dissemination to the public. The interpretive exhibits may be installed at local libraries, historical societies, or public buildings.</p> <p>All historic properties/historical resources demolished by the project will be the subject of informative permanent metal plaques that will be installed at the site of the demolished historic property, or at nearby public locations. The plaques will provide a brief history of the property, its engineering/architectural features and characteristics, and the reasons for and date of its demolition.</p> <p>This mitigation measure is consistent with best practices within the professional historic preservation community and is commensurate with mitigation measures for similar scale transportation projects. Preparing interpretive exhibits has proven to be effective in achieving the stewardship goals of Section 106 and CEQA review. Performance tracking of this mitigation measure is based upon successful implementation and approval of the documentation by the SHPO and appropriate consulting parties.</p>			X			Post-construction/annual reporting	BETP Photographic documentation Plan for repairs to historic properties- Authority Directives	N/A	<i>*This measure is the Authority's responsibility</i>
	Hist-MM#10	<p>Plan Repair of Inadvertent Damage. The BETP provides a plan for the repair of inadvertent damage to historic properties/historical resources. The plan will be developed prior to construction, and it states that damage resulting from the project to any of the historic properties/historical resources near construction activities will be repaired in accordance with the SOI's Standards for Rehabilitation. The HSR, and/or HABS/HAER, recordation will photographically document the condition of historic properties/historical resources prior to the start of construction to establish the baseline condition for assessing damage. A copy of this photographic documentation will be provided to the landowner or land-owning agencies. Prior to implementation, plans for any repairs to historic properties will be submitted for SHPO review and comment to verify conformance with the SOI's Standards for Rehabilitation.</p> <p>This mitigation measure is consistent with best practices within the professional historic preservation community and is commensurate with mitigation measures for similar scale transportation projects. This type of measure has proven to be effective in achieving the stewardship goals of Section 106 and CEQA review. Performance tracking of this mitigation measure is based upon successful repair of any damage to historic properties/historical resources and approval of that work by the SHPO and appropriate consulting parties.</p>		X	X			Prior to construction	Historic American Building Survey (HABS)/Historic American Engineering Record (HAER)/ Conformance with SOI's Standards of Rehabilitation Authority Directives	N/A	<i>*This measure is the Authority's responsibility</i>

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**Table 2: Permit Condition Monitoring and Reporting Program Measures
USFWS Biological Opinion**

	Page Number	Permit Conditions and Other Excerpted Material	Implementing Party and Monitoring / Reporting Party	Mitigation Timing					Implementation Schedule / Reporting Schedule	Implementation Mechanism or Tool	Location Where Condition is Applicable	Actions/Notes
				Pre-Const.	Construction	Post-Const.	Operations					
Preconstruction Activities												
Geotechnical investigations	15	1. Conducting geotechnical investigations which will focus on defining precise geology, groundwater, seismic, and environmental conditions along the alignment. The results of this work will guide final design and construction methods for foundations, underground structures, tunnels, stations, grade crossings, aerial structures, systems, and substations.	Contractor All	X				Final Design	Contract Requirements/ Specifications	Several Locations – Fresno Station; bridges and other structures; power stations		
Staging areas and pre-casting yards	15	2. Identifying staging areas and pre-casting yards which will be needed for the casting, storage, and preparation of pre-cast concrete segments, temporary spoil storage, workshops, and the temporary storage of delivered, construction materials. Field offices and/or temporary job-site trailers will also be located at the staging areas. Construction staging will use the areas within the construction footprint. For example, staging areas may be placed at the future locations of the HST maintenance yards or other facilities. Additional staging areas may be located within other identified parcels within the construction footprint at various points along the HST ROW, chosen in part for their easy access to the local road network and highways.	Contractor All	X				Final Design	Contract Requirements/ Specifications	Specific Locations – 1) field at McKinley and Golden State Blvd; 2) field south of Herndon Ave. & east of Golden State Blvd; 3) other locations still TBD but must be w/in construction footprint	Staging to take advantage of areas w/in construction footprint	
Site preparation and demolition	16	3. Initiating site preparation and demolition, such as clearing, grubbing, and grading, followed by the mobilization of equipment and materials. Demolition will require strict controls to ensure that adjacent buildings or infrastructure are not damaged or otherwise affected by the demolition efforts.	Contractor All	X				Final Design, Construction	Contract Requirements/ Specifications	Specific Locations – applies to demolition work in urban areas		
Utility relocations	16	4. Initiating utility relocations, where the contractor will work with the utility companies to relocate or protect in place high-risk utilities such as overhead tension wires, pressurized transmission mains, oil lines, fiber optics, and communications prior to construction.	Contractor All	X				Final Design, Construction	Contract Requirements/ Specifications	Several Locations – mostly urban		
Road closures	16	5. Implementing temporary, long-term, and permanent road closures to re-route or detour traffic away from construction activities. Handrails, fences, and walkways will be provided for the safety of pedestrians and bicyclists.	Contractor All	X				Final Design, Construction	Contract Requirements/ Specifications	Several Locations – temp. & permanent road closures	For detours provide handrails, fences, and walkways will be provided for the safety of pedestrians and bicyclists	

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				Pre-Const.	Construction	Post-Const.	Operations					
Temporary batch plants	16	6. Locating temporary batch plants, which will be required to produce Portland cement concrete (PCC) or asphaltic concrete (AC) needed for roads, bridges, aerial structures, retaining walls, and other large structures. The facilities generally consist of silos containing fly ash, lime, and cement; heated tanks of liquid asphalt; sand and gravel materials storage areas; mixing equipment; aboveground storage tanks, and designated areas for sand and gravel unloading, and concrete truck washout. The contractor will be responsible for implementing procedures for reducing air emissions, mitigating noise impacts, and reducing discharge of potential pollutants into storage drains or watercourses from the use of equipment, materials, and waste products.	Contractor All	X					Final Design	Contract Requirements/ Specifications	Unlikely - mobile Batch Plants unlikely to be used per contractor	Reduce air emissions, mitigate noise, and avoid discharge of water pollutants from batch plant(s)
Conducting other studies and investigations	16	7. Conducting other studies and investigations, as needed, such as local business surveys to identify business usage, delivery, shipping patterns, and critical times of the day or year for business activities. This information will help develop construction requirements and worksite traffic control plans, and will identify potential alternative routes, cultural resource investigations, and historic property surveys.	Authority	X					Final Design	Condition of Design/Build Contract	N/A – deals with surveys and other information gathering activities	Authority Responsibility
Conservation Measures												
Determining biologists and other qualified staff	26	1. At least 15 days prior to the onset of activities, the Authority will submit the name(s) and resumes of biologists and other qualified staff who will conduct activities specified in the following measures. No project activities will begin until proponents have received written approval from the Service that the biologists are approved to conduct the work. The following roles and definitions represent the lead biology positions responsible for monitoring, reporting, and implementing proposed conservation measures and terms and conditions of the biological opinion. Restoration ecologists, landscape architects, and special-status species experts may also be contracted for assistance with implementation of proposed conservation measures.	Contractor	X	X				At least 15 days prior to start of Vegetation removal/ground disturbance activities	N/A	N/A – Procedural	No project activities can start until Contractor is given go-ahead from Authority that written approval has been received from the Service for biologists to begin work
	26	a. Service-approved project biologist: The Service-approved project biologist will represent the construction management team, report	Contractor	X	X				N/A	N/A	N/A – Procedural	

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				Pre-Const.	Construction	Post-Const.	Operations					
		directly to the construction management team, and will be responsible for reporting and overseeing the biological resources mitigation measures presented in the Final California HST Merced to Fresno Section EIR/EIS. The Service-approved project biologist will also be responsible for confirming that all conservation measures and terms and conditions in the biological opinion are included in the Mitigation Monitoring and Reporting Program (MMRP). The Service-approved project biologist will report to the Service-approved mitigation manager, coordinate with the resident engineer, and ensure implementation of all conservation measures and mitigation plans by the contractor and Service-approved contractor's biologist, and advise the contractor regarding measures that may minimize or avoid impacts on federally listed species. The Service-approved project biologist will have specialized support from other biological monitors and will work with the Service-approved mitigation manager during deployment of the biological monitors and their respective responsibilities. The Service-approved project biologist will submit memorandum and reports to document compliance with all conservation measures to the mitigation manager at daily, weekly, and monthly intervals.										
	26	b. Service-approved mitigation manager: The Service-approved mitigation manager is responsible for overseeing implementation and compliance with all project-related conservation measures and provide guidance to the construction management team. The Service-approved project biologist will report to the mitigation manager to verify compliance with all conservation measures.	Contractor	X	X			N/A		N/A – Procedural		
	27	c. Service-approved contractor's biologist: The Service-approved contractor's biologist will be responsible for implementing conservation measures and ensuring compliance with all terms and conditions in the biological opinion. The Service-approved contractor's biologist will implement all conservation measures. The Service-approved contractor's biologist will keep the Service-approved project biologist informed regarding the progress, planning, implementation	Contractor	X	X			On-going		N/A – Procedural		

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	27	d. Service-approved biological monitors: The Service-approved biological monitors will report directly to the Service-approved project biologist. The Service-approved biological monitors will be remain onsite during all project related activities that have the potential to affect biological resources and will be the principal agent(s) in the direct implementation of all conservation measures and compliance assurance. The Service-approved biological monitor will be responsible for Worker Environmental Awareness Program (WEAP) training, general surveys, compliance monitoring, and reporting. The Service-approved biological monitors will act on behalf of the Service-approved project biologist.	Contractor	X	X			Prior to start of vegetation removal/ground disturbance activities		N/A – Procedural		
Access by the Service to the construction site and procedure.	27	2. If requested, before, during, or upon completion of construction activities, the contractor will allow access by the Service to the construction site. All visitors will check in with the resident engineer prior to accessing the construction site for compliance with on-site safety regulations. A memorandum prepared by the Service-approved project biologist within one day documenting agency access and issues raised during the field meeting will be submitted to the Service-approved mitigation manager and the Service. Any noncompliance issues will be immediately reported to the Authority.	Contractor	X	X	X		Service-approved project biologist to prepare memo w/in 1 day following field meeting with agency	N/A	N/A – Procedural		
Construction staging	27	3. As much as practicable, construction staging will use the same areas that will ultimately be occupied by permanent HST facilities. Prior to ground-disturbing activities, the Contractor will locate staging areas for construction equipment outside sensitive biological resources, including habitat for listed species, wetlands and riparian habitat, and wildlife movement corridors, to the maximum extent possible.	Contractor	X	X			Design – identify staging areas; Construction – fence staging areas prior to ground disturbing activities	Contract Requirements/ Specifications	Universal – No specific locations	Locate staging outside sensitive habitat areas or other areas with biological resources	

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Excavated materials	27	4. Contractors will temporarily store excavated materials produced by construction activities in designated areas at or near the construction site. Wherever possible, they will return excavated soil to its original location to be used as backfill, and dispose waste materials associated with construction in local landfills permitted to take these types of materials. Material unsuitable for reuse would be hauled offsite to a permitted location.	Contractor		X				Staging areas will be identified during Design phase	Contract Requirements/ Specifications	Specific Locations – Staging: 1) field at McKinley and Golden State Blvd; 2) field south of Herndon Ave. & west of Golden State Blvd; 3) south of river at Fresno River Viaduct; 4) other locations still TBD... Avoid San Joaquin River, Cottonwood Creek, Fresno River, and vernal pool habitat areas	Use excavated soil as backfill wherever possible, and properly dispose of unsuitable material at permitted landfill
WEAP	27	5. Prior to construction activities, the Service-approved mitigation manager or designee will prepare and implement a WEAP for construction crews. WEAP training materials will include the following: discussion of the Act and other applicable laws and regulations; consequences and penalties for violation or noncompliance with these laws and regulations and project permits; identification and value of special-status plants, special-status wildlife, jurisdictional waters, and special-status plant communities; hazardous substance spill prevention and containment measures; the contact person in the event of the discovery of a dead or injured wildlife species; and review of mitigation measures. The Service-approved mitigation manager will detail construction timing in relation to habitat and species' life stage requirements and discuss project maps, showing areas of planned minimization and avoidance measures within the WEAP. A fact sheet conveying this information will be prepared by the Service-approved mitigation manager for distribution to the construction crews and to other individuals who enter the construction footprint. Upon completion of the WEAP training, construction crews will sign a form stating that they attended the training, understand the information presented and will comply with all conservation measures and applicable regulations. Construction crews will be informed during the WEAP training that travel within the marked project site will be restricted to established roadbeds. Established roadbeds include all pre-existing and project-constructed	Contractor	X	X			Ongoing	Condition of Design/Build Contract	N/A – Procedural		

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BRMP	27	<p>unimproved, as well as improved roads.</p> <p>6. During final design, and prior to construction, the Service-approved project biologist will prepare the BRMP and assemble all the biological resources conservation and mitigation measures. In the BRMP, the Service-approved project biologist will include terms and conditions from applicable permits and agreements and make provisions for monitoring assignments, scheduling, and responsibility. The BRMP will also include habitat replacement and revegetation protection during construction activities, performance (growth) standards, maintenance criteria, and monitoring requirements for temporary and permanent native plant community impacts. The BRMP will be prepared for all phases of project implementation, and may be exclusively prepared for each construction package. The goal of the BRMP will be to provide the Service-approved project biologist with an organized reporting tool to ensure the mitigation measures and terms and conditions are implemented in a timely manner and are reported on. These will include all conservation measures, repair, mitigation, and compensatory actions included in the biological opinion. These measures and conditions will be tracked through final design, implementation, and post-construction phases. Specific performance standards will be habitat-based and related to success of onsite or offsite repair of temporary impacts, or more permanent impacts that are compensated at an offsite location. The BRMP will assist in the long-term conservation and recovery of listed species and their respective habitats within the temporarily disturbed areas, as well as protect adjacent targeted habitats. The BRMP will contain but not be limited to the following information:</p> <ul style="list-style-type: none"> a) Specific measures for the protection of listed species. b) Identification (on construction plans) of the locations and quantity of habitats to be 	Contractor	X				Final Design/Prior to construction		N/A – Procedural	<p>Locations and quantity of habitats to be avoided or removed, including habitat restoration areas, need to be identified on Plans</p> <p>Incorporate revegetation parameters into Contract Specifications</p>	

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				Pre-Const.	Construction	Post-Const.	Operations					
		<p>avoided or removed, including locations where habitats are to be restored.</p> <p>c) Procedures for vegetation analyses of temporarily impacted habitats to approximate their relative composition, as well as procedures for site preparation, irrigation, planting, and maintenance. This information may be used to determine the requirements of the revegetation areas for both onsite temporary impacts and offsite compensatory sites.</p> <p>d) Sources of plant materials and methods of propagation.</p> <p>e) Specific parameters for determining the amount of replacement habitat for temporary disturbance areas identified consistent with mitigation ratios and permit conditions.</p> <p>f) Specification of parameters for maintenance and monitoring of re-established habitats, including weed control measures, frequency of field checks, and monitoring reports for temporary disturbance areas.</p>										
Weed Control Plan	28	<p>7. Prior to construction activities, the contractor will prepare and implement a Weed Control Plan (WCP) to minimize or avoid the spread of weeds during construction activities. The contractor will implement the WCP during the construction period and require that maintenance crews follow the guidelines in the WCP during the project period. The Authority or its designee will appoint the responsible party for implementing the WCP during the operations period. The WCP will include the following:</p> <p>a) Schedule for conducting noxious weed surveys to be conducted in coordination with the BRMP.</p> <p>b) Success criteria for noxious and invasive weed control as established by a qualified biologist.</p> <p>c) The success criteria will be linked to the Habitat Mitigation and Monitoring Plan (HMMP) for compensatory mitigation sites, and the standards for onsite work during construction will limit invasive species to less than 5 percent and nonnative herbaceous species to less than 25 percent. If these</p>	Contractor	X				Prepare Plan prior to construction; implement during construction		N/A – Procedural	Success criteria in WCP linked to the Habitat Mitigation and Monitoring Plan; weed control components of WCP to be incorporated into Restoration and Revegetation Plan	

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		<p>success criteria have not been met by the end of the BRMP monitoring and implementation period, monitoring and control efforts will continue and remedial actions will be identified and implemented until success criteria are met.</p> <p>d) Based on monitoring results, additional or revised measures may be needed to ensure the introduction and spread of noxious weeds is not promoted by the construction and operation of the HST.</p> <p>e) Provisions to ensure that the development of the Weed Control Plan will be coordinated with development of the Restoration and Revegetation Plan (RRP) so that the RRP incorporates measures to reduce the spread and establishment of noxious weeds and incorporates percent cover of noxious weeds into revegetation performance standards.</p> <p>f) Identify weed control treatments including permitted herbicides, and manual and mechanical methods for application. Restrict herbicide application from use in environmentally sensitive areas (ESAs).</p> <p>g) Determine timing of the weed control treatment for each plant species.</p> <p>h) Identify fire prevention measures.</p>										
Restoration and Revegetation Plan	30	<p>8. During final design, the Service-approved contractor's biologist will prepare a restoration and revegetation plan (RRP) for upland communities and verified by the Service approved project biologist. This will be a complement for site restoration in addition to the temporary effects for riparian plant communities and for jurisdictional waters. The RRP will address impacts to habitat subject to temporary ground disturbances, such as de-compaction or regrading. The standards during construction will limit invasive and nonnative plant species to less than 5 percent. The Service-approved project biologist will approve the seed mix. During construction activities, the contractor will implement the RRP in temporarily disturbed areas. The Service-approved project biologist will prepare and submit compliance reports to document implementation of this measure. The RRP compliance reports will be prepared and</p>	Contractor	X				<p>Final Design – Prepare RRP; Construction – Implement Plan</p> <p>Biologist to submit reports following site-specific restoration/ revegetation work to demonstrate compliance</p>		N/A – Procedural	RRP will contain criteria and approvals to be incorporated into Contract Documents	

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		submitted to the Service-approved mitigation manager.										
When work is permitted in the river channel	30	9. Work within the wetted perimeter of the river channel is assumed to occur between June 15 and October 15 to minimize impacts on aquatic species and other aquatic resources.	Contractor		X			Timing of work w/in river channel is limited by this condition	Contract Requirements/ Specifications	San Joaquin River	June 15-October 15 is the timeframe described in the NMFS B.O. Incidental Take Statement.	
CVFPB restricted work	30	10. Where the Central Valley Flood Protection Board (CVFPB) has defined the limits of a designated floodway, work within those limits may be restricted during the wet season for flood protection issues unless otherwise authorized by the CVFPB.	Contractor		X			Timing of work w/in CVFPB floodway is limited by this condition	Contract Requirements/ Specifications	San Joaquin River & Fresno River	CVFPB Permit Application for Fresno R. requests approval to work year-round in floodway) Where applicable (San Joaquin River), work should be conducted in compliance with conditions in the NMFS B.O., including timeframe of June 15-October 15 for in-water work.	
Material and equipment storage	30	11. Material and equipment storage within close proximity to the river channel areas will be limited to the restricted period from April 15 to October 31. Equipment may enter into the restricted river channel areas but will be removed daily and stored outside of the areas subject to flooding.	Contractor		X			Work window established for staging in close proximity* to river channels	Contract Requirements/ Specifications	Three Locations - Fresno River & San Joaquin River...Cottonwood Creek	For Fresno River work, Contractor has indicated it would be impractical to remove crane(s) from work area each day; *Authority to contact USFWS to define distance for close proximity	
Preconstruction surveys	30	12. Prior to initiation of construction activities, Service-approved biologists will conduct preconstruction survey(s) for special-status species (wildlife and plants) and special aquatic resources. Pre-construction surveys will be conducted in general accordance with the appropriate technical guidance documents approved by the Service.	Contractor	X				Prior to construction	Contract Requirements/ Specifications	Numerous Locations - Fresno River; Cottonwood Creek; San Joaquin River; vernal pools/seasonal wetlands; San Joaquin kit fox suitable habitat (annual grasslands, ruderal, agricultural, and any other habitat which contain suitable dens or burrows.	Measure applies to various locations. Governed by MMRP and specifics in BO	
Contractor education and environmental training session	30	13. Personnel who work onsite will attend a contractor education and environmental training session. The environmental training will cover general and specific biological and legal information on federally listed species and their habitats. The training sessions will be given by Service-approved biological monitors before the initiation of construction activities and repeated, as needed. Daily updates and synopsis of the training will be performed during the daily safety ("tailgate") meeting. HST maintenance crews will be required to attend a contractor education and environmental training annually.	Contractor	X				Prior to construction	Contract Requirements/ Specifications	N/A – Procedural	Contractor's biologist to provide Worker Environmental Awareness Training likely via video.	
Ensure ESAs and ERAs are	30	14. Prior to construction activities, to the extent practicable, the Service-approved project	Contractor	X				Prior to construction	Condition of Design/Build Contract	N/A – Procedural	Multiple locations based on biological resources;	

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delineated		biologist will verify that environmentally sensitive areas (ESAs) and environmentally restricted areas (ERAs) are delineated as appropriate. ESAs are areas within the construction zones containing suitable habitat for special-status species and habitats of concern that may allow construction activities, but have restrictions based on the presence of special-status species or habitats of concern at the time of construction. ERAs are areas outside the construction footprint that must be protected in-place during all construction activities.									Need to show locations on plans	
Include all ESAs and ERAs on final construction plans	31	15. Prior to construction activities, the Service-approved contractor's biologist will include all ESAs and ERAs on final construction plans (including grading and landscape plans). Prepare, review and approve the map of all ESAs and ERAs on the design drawings and work to update the map as necessary.	Contractor	X				Prior construction to	Contract Requirements/ Specifications	N/A – Procedural	ESAs and ERAs to be included on final construction plans	
Mark ESAs and ERAs with high visibility temporary fencing	31	16. Prior to construction activities, the Contractor will mark ESAs and ERAs with high visibility temporary fencing to prevent encroachment of construction personnel and equipment onto sensitive areas. Designate the two categories, ESA and ERA, differently in the field (e.g., different colored flagging/fencing). Sub-meter accurate GPS equipment will be used to delineate all ESAs and ERAs. Remove ESA and ERA fencing when construction is complete or the resource has been cleared according to agency permit conditions in the MMRP and construction drawings and specifications. The Service approved project biologist will submit a report regarding the field delineation of all ESAs/ERAs to the Mitigation Manager. These areas will be monitored during all site preparation and construction activities.	Contractor	X	X			Install fencing prior to ground disturbance work, and monitor during construction	Contract Requirements/ Specifications	Several Locations - where ESAs and ERAs exist along the alignment, as determined by the Project Biologist prior to construction; some locations unknown at present, e.g., where burrowing owls are nesting	Mark and fence ESAs and ERAs using different colored flagging/fencing Remove fencing when construction complete Project biologist to submit a report to document installations to the Mit. Manager On-going coordination is required. Contractor's biologist will identify locations that require fencing based on pre-construction surveys and existing information.	
Monitoring	31	17. A Service-approved biological monitor will be present onsite during key construction activities, including during ground-disturbance activities and for all construction activities conducted within or adjacent to identified Environmentally Sensitive Areas, Environmentally Restricted Areas (ERAs), Wildlife Exclusion Fence (WEF) zones, or non-disturbance zones to oversee permit compliance and monitoring efforts.	Contractor	X	X			During vegetation grubbing and other ground disturbance activities, including all work next to ESAs, ERAs, & WEFs	Contract Requirements/ Specifications	Universal – Construction Footprint		
Non-disturbance	31	18. Fencing will be used to establish non-disturbance	Contractor	X	X			Install fencing prior	Contract Requirements/ Specifications	Universal – General fencing of	(See Note Item 16 above)	

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exclusion zones		exclusion zones to restrict construction equipment and personnel from entering Environmentally Sensitive Areas or restrict wildlife species from entering the construction areas. Environmentally Sensitive Areas and ERAs will include sensitive habitats that may support federally listed species and areas within limits of indirect effect for federally listed species, as identified by the regulatory agencies in their permit documents. Two types of fencing will be used for these purposes. Environmentally Sensitive Area fencing will be located and depicted on the project plans and delineated in the field by the biological monitor. The contractor will ensure that all Environmentally Sensitive Areas and ERAs are off-limits to construction personnel and equipment. Species-appropriate WEF will be installed along the outer perimeter of Environmentally Sensitive Area fencing.						to ground disturbance work, and monitor during construction	Specifications	Construction Footprint Several Locations – Special fence for ESAs /ERAs, as determined by the Project Biologist prior to construction; some locations unknown at present, e.g., where burrowing owls are nesting	ESAs and ERAs to be included on final construction plans	
Wildlife crossings	31	19. A combination of temporary wildlife crossings and permanent designated wildlife crossings will be incorporated during construction to mirror the proposed spacing of dedicated wildlife crossings post-construction as specified in the LPP and the <i>Memorandum: Dedicated Wildlife Crossings for the Merced to Fresno Section of the California High-Speed Train System</i> . Therefore, during construction, temporary or permanent wildlife crossings will be spaced at approximately 0.3-linear mile intervals within the Eastman Lake-Bear Creek Essential Connectivity Area (ECA). Outside of the ECA where adjacent land uses are relatively conducive to wildlife movement (e.g., grazing land; grain, hay, and idle pasture), temporary or permanent wildlife crossings would be spaced at no more than 2.5-linear mile intervals. In areas outside of the ECA where adjacent land uses are not conducive to wildlife movement (e.g., vineyards, high-density development), temporary or permanent wildlife crossings would be spaced at no more than 5-linear mile intervals.	Contractor	X	X			Design – Design temporary and permanent crossings; Construction – maintain crossings across work zone in accordance with design	Contract Requirements/ Specifications; <i>Memorandum: Dedicated Wildlife Crossings for the Merced to Fresno Section of the California High-Speed Train System.</i>	Unknown Locations – space wildlife crossings min. every 2.5 miles (rural) & 5 miles (urban)	Locations of dedicated wildlife crossings have been determined (see pg. 21 of the CDFW ITP No. 2081); specifications also included in the ITP.	
Federally listed wildlife species relocation	32	20. Federally listed wildlife species detected within the limit of direct effect during construction may be relocated by the Service-approved biological monitor in accordance with agency guidance, if	Contractor		X			Construction – Carry out Plan and Monitor during relocations after	Contract Requirements/ Specifications	Unknown Location - comply w/ requirement & document how situation handled	Incorporate requirement into Specifications for such an event	

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		deemed necessary and approved by the Service.						receiving approval from Service				
Restoration of temporarily disturbed biological communities or habitats	32	21. Temporarily disturbed biological communities or habitats that could support federally listed species and special aquatic resources will be restored to pre-project conditions. Restoration activities will include, but not limited to, the following: grading landform contours to approximate pre-disturbance conditions, removal of invasive plant species, and revegetating temporarily disturbed areas using native plant species to the extent possible, and using certified weed-free straw and mulch. A site restoration plan will be prepared to identify appropriate restoration activities, establish a monitoring schedule, describe the materials that should be used, identify timing of the work, identify monitoring requirements and success criteria, and recommend contingency measures. All restoration plans will be submitted to the Service for review and approval prior to implementation.	Contractor		X			Prior to revegetation activities (need Service approval of Plans in advance of work)	Contract Requirements/ Specifications	Several Locations – River, creek and canal crossings; vernal pools; grasslands	Prepare Site Restoration plans to include individual components discussed Submit Plans to Service for review and approval	
Equipment cleaning	32	22. During construction, equipment will be washed before entering and leaving the work area. Mud and foreign plant materials will be removed from construction equipment when working in native plant communities, near sensitive biological communities, or in areas where special-status plant species have been identified.	Contractor	X	X			Design – Prepare Concept SWPPP to include BMPs; Construction - follow NPDES / WDR permits schedule and reporting requirements	Contract Requirements/ Specifications; NPDES/WDR permits; USFWS Reporting Requirements	Several Locations – San Joaquin and Fresno Rivers, Cottonwood Creek; vernal pools	Locations to be determined by Contractor in coordination with Biologist	
Dust	32	23. In order to minimize dust production, a speed limit of 20 mph will be enforced during project construction for all vehicles operating in temporary and permanent construction areas within the limit of direct effect.	Contractor		X			During construction	Contract Requirements/ Specifications	Universal – no specific location		
Staging areas	32	24. Prior to construction activities, the contractor will locate staging areas for construction equipment outside sensitive biological resources including habitat for special-status species, habitats of concern (e.g., wetlands, waters of the U.S., riparian communities), and wildlife movement corridors, to the maximum extent possible. The Service-approved project biologist will submit memoranda to the Service-approved mitigation manager documenting compliance with this measure.	Contractor	X	X			Staging area will be identified during bridge Design phase	Contract Requirements/ Specifications	Specific Locations – 1) field at McKinley and Golden State Blvd; 2) field south of Herndon Ave. & east of Golden State Blvd; 3) other locations still TBD but must be w/in construction footprint	Laydown areas must be outside of sensitive habitat	

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Erosion control materials	32	25. During construction activities, the Service-approved project biologist will verify that plastic mono-filament netting (erosion-control matting) or similar material is not used in erosion control materials; substitutes include coconut hair matting or tackified hydroseeding compounds. The Service-approved project biologist will submit memoranda to the Service-approved project mitigation manager documenting compliance with this measure on a monthly basis throughout the duration project construction activities.	Contractor	X	X			Design – Prepare Concept SWPPP to include BMPs; Construction - follow NPDES / WDR permits schedule and reporting requirements	Contract Requirements/ Specifications; NPDES/WDR permits	Universal – no specific location		
Vehicle traffic	33	26. During construction activities, the contractor will restrict project-related vehicle traffic, within the construction area, to established roads, construction areas, and other designated areas. Establish vehicle traffic locations disturbed by previous activities to prevent further adverse effects. Clearly flag and mark access routes and prohibit off-road traffic.	Contractor	X	X			During construction	Contract Requirements/ Specifications	Universal – no specific location	; Access routes to be clearly flagged/marked	
Trenches	33	27. The Service-approved contractor's biologist will cover all excavated, steep-sided holes or trenches, more than 8 inches deep, at the close of each working day with plywood or similar materials, or provide a minimum of one escape ramp per 10 feet of trenching constructed of earth fill. The Service-approved contractor's biologist will thoroughly inspect such holes or trenches for trapped animals before leaving the construction site each day. The Service-approved contractor's biologist will screen all culverts, or similar enclosed structures, with a diameter of 4 inches or greater to prevent use by wildlife. The Service-approved contractor's biologist will ensure that cleared and stored material at the construction site for common and special-status wildlife species before the material is subsequently used or moved.	Contractor		X			During construction, at close of each workday	Contract Requirements/ Specifications	Universal – no specific location		
Halt work in the event that a special-status wildlife species gains access to the construction footprint	33	28. During construction activities, the Service-approved project biologist or Service-approved project biological monitors will halt work in the event that a special-status wildlife species gains access to the construction footprint. This work stoppage will be coordinated with the resident engineer and/or the Authority or its designee. The work stoppage will occur within the area where the potential construction activity could	Contractor		X			During ground-disturbing activities. Submit a memorandum to the Mitigation Manager documenting compliance within 1 day of the work	Condition of Design/Build Contract	Universal – no specific location	Halt work within the general area in the event that a special-status wildlife species gains access to worksite	

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		affect the species; other work may continue. This will be determined prior to direction given to the contractor. At this direction, the contractor will suspend construction activities in the immediate construction area that could reasonably result in a "take" of special-status wildlife species. The contractor will continue the suspension until the individual leaves voluntarily or safely relocated to an appropriate site per Service approval. The Service-approved project biologist will submit a report to the Service-approved mitigation manager documenting compliance with this measure within one day of the work stoppage and subsequent action.						stoppage and subsequent action.				
Accidental death or injury to a federal or state listed species	33	29. The Service-approved contractor's biologist in coordination with the Service-approved project biologist and Service-approved mitigation manager will notify the Service, the CDFG, and the Authority or its designee immediately, via telephone and email, in the case of an accidental death or injury to a federal or state listed species during project related activities.	Contractor		X			Following incident, immediately report to USFWS and/or CDFG via the Authority . Prepare report and document in weekly/monthly report.	Condition of Design/Build Contract	Unknown Location - procedural		
Post-construction compliance reports	33	30. After each construction period is completed, the Service-approved project biologist will submit post-construction compliance reports consistent with Service protocols and compliance with the Act.	Contractor will submit a Post-Const. Compliance Report at substantial contract completion for its own scope			X		Post-construction. Follow reporting requirements as established by regulatory compliance permits.	Condition of Design/Build Contract	N/A - Procedural	Post-construction compliance report to be prepared and submitted to Service	
Draft MSIP	34	31. A mitigation plan has been proposed by the Authority for the Merced to Fresno Section to compensate for the permanent loss of habitat and provide long-term habitat conservation for the San Joaquin kit fox, the central California tiger salamander, the conservancy fairy shrimp, the vernal pool fairy shrimp, the vernal pool tadpole shrimp, the valley elderberry longhorn beetle, the Colusa grass, the San Joaquin Valley Orcutt grass, the hairy Orcutt grass, the Greene's	: Authority Monitoring/Reporting Party: Authority will be responsible for implementation, monitoring, and reporting of off-site mitigation planning	X	X	X				N/A – Procedural	Authority Responsible	

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		<p>tuctoria, and the succulent owl's-clover. The Draft MSIP was submitted to Service for review and comments in March 2012. An updated Draft MSIP was submitted in July 2012. The MSIP includes: (1) a comprehensive approach designed to mitigate project effects on the San Joaquin kit fox, the central California tiger salamander, the conservancy fairy shrimp, the vernal pool fairy shrimp, the vernal pool tadpole shrimp, the valley elderberry longhorn beetle, the Colusa grass, the San Joaquin Valley Orcutt grass, the hairy Orcutt grass, the Greene's tuctoria, the succulent owl's-clover and their respective habitats; (2).a proposed methodology for determining appropriate compensation; (3) an analysis of mitigation sites; and (4) a mitigation package to provide conservation value for, and mitigate the Merced to Fresno Section's effects on sensitive biological resources, including listed species.</p> <p>The MSIP employs a comprehensive, landscape-scale approach to habitat conservation that seeks to increase the amount of conserved wetlands and protected habitat for special-status species, preserve and enhance important wildlife movement corridors, and consolidate and expand existing protected habitat.</p> <p>The Draft MSIP includes a proposal to secure conservation easements, and develop long-term management plans, for a number of permittee-responsible mitigation sites, including Grasslands, Lazy K, Dutchman Creek, and Roen. The list of potential permittee responsible mitigation sites identified in the Draft MSIP has not been finalized and is subject to augmentation with Service approval. These permittee-responsible mitigation sites were selected based on their relatively high conservation value (e.g., proximity to other protected habitats or conserved areas, location within important wildlife movement corridors, recovery areas, or designated critical</p>										

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		<p>habitat, the presence of listed species and/or suitable habitat, and ability to satisfy the requirements of the Service and other permitting agencies). The permanent protection of the permittee-responsible mitigation sites would also support goals identified in the recovery plan for vernal pool plants and crustaceans by protecting habitat within key vernal pool core areas; support goals identified in the recovery plan for San Joaquin kit fox by protecting habitat within key wildlife movement corridors; and protect habitat that the Service has deemed critical for the survival and recovery of listed vernal pool plants and crustaceans. For all proposed mitigation sites, long-term management plans, conservation easements, and funding analyses for the long-term endowments will be submitted to the Service for review and approval before the plans are finalized and implemented.</p> <p>The Authority has proposed phasing of the mitigation strategy in accordance with the progress of construction of the Merced to Fresno Section. Phase 1 covers the distance from Avenue 17 in Madera County to (and including) the Fresno Station. Effects associated with Phase I will be mitigated before or at the onset of construction of Phase I. The timing and extent of subsequent permitting phases is not known at this time, but implementation of permittee-responsible mitigation that is consistent with the MSIP for Phase I and each future phase of construction for the Merced to Fresno Section will commence on or before the commencement of construction for each respective project phase pursuant to condition 3. The Authority anticipates that effects associated with Phase I and future permitting phases will be mitigated before or concurrently with each of those respective phases. The Authority may propose advance mitigation for the remainder of the</p>										

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		Merced to Fresno Section.										
San Joaquin Kit Fox												
35-36	1.	<p>The following measures are proposed to allow movement of San Joaquin kit foxes and maintain connectivity among populations of this species within and around the project action area:</p> <p>a) Dedicated wildlife crossings (17 to 24) will be constructed throughout wildlife corridors identified for movement of San Joaquin kit fox. Two types of designs are proposed and will be incorporated into engineering designs based on topography. The primary design for dedicated wildlife crossings will use one of two basic concrete structure types (box culverts or short span slab bridges) to provide an opening located below the tracks of the HST. The choice of structure used to provide the opening will depend on the height of the embankment supporting the track at a given location. The primary design will provide a minimum opening 3 feet high, 10 feet wide, and up to 73 feet long, resulting in an openness factor (OF) of 0.41 as measured by (Height x Width)/Length. The length of the crossing would be reduced whenever possible to increase the OF as much as possible. Where feasible from an engineering perspective, and appropriate from an ecological perspective, dedicated wildlife crossings would be constructed with larger openings. The dimensions of these larger wildlife structures will be 6 feet high and 10 feet wide and about 73 feet long.</p> <p>b) The length of the crossing will be reduced whenever possible to improve the OF and reduce cost. To accommodate variations in the topography, the height of the structure could extend as much as 18 inches below grade; however, at least 50 percent of the vertical clearance would be above grade. This will allow San Joaquin kit fox entering the crossing to be able to see light coming from the opposite end of the structure.</p> <p>c) At locations where swales are constructed parallel to the track embankment to control stormwater, they would be designed to</p>	Contractor	X	X			Design – Design temporary and permanent crossings; Construction – maintain crossings across work zone in accordance with design	Contract Requirements/ Specifications; <i>Memorandum: Dedicated Wildlife Crossings for the Merced to Fresno Section of the California High-Speed Train System.</i>	Unknown Locations – see Item #19 (p. 31) discussion above for wildlife crossings	Locations of dedicated wildlife crossings have been determined (see pg. 21 of the CDFW ITP No. 2081); specifications also included in the ITP.	

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		<p>terminate at the crossing to prevent water from ponding in the structure. The path would be shaped to drain to the sides, and small retention basins would be provided adjacent to the path to collect runoff. These features would keep the crossing passable during normal rain events.</p> <p>d) Right-of-way fencing will be diverted toward the toe of the slope, up the embankment, and above the entrance of the structure, thus allowing unimpeded access to the crossing structures for San Joaquin kit fox.</p> <p>e) For each crossing, four sections of corrugated metal pipe (CMP), 20 feet long and 10 inches in diameter, would be anchored to either the floor or the wall of the crossing. The openings of both ends of all CMPs would be narrowed to a 4 to 6 inch diameter. San Joaquin kit foxes will gain temporary refuge opportunity within the CMPs in the event they find themselves in a culvert with a larger predator.</p> <p>f) The spacing and location of dedicated wildlife crossings are proposed based on existing land use; existing and proposed infrastructure not associated with the HST Project, previously identified wildlife movement corridors, and consistency with recovery goals for the San Joaquin kit fox. Within the Eastman Lake-Bear Creek Essential Connectivity Area, dedicated wildlife crossings will be spaced at approximately 0.3-mile intervals.</p> <p>g) The Authority, in collaboration with the Service and CDFG, will develop and implement a monitoring program for use of the dedicated wildlife crossings, and possibly other structures, by San Joaquin kit fox. The final monitoring plan will be reviewed and approved by the Service prior to implementation. The goal of the monitoring program will be to collect data on use of dedicated wildlife crossings by the San Joaquin kit fox, and other wildlife species. The data will also be used to determine the efficacy of the wildlife crossing in facilitating movement of San Joaquin kit fox under the</p>										

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		HST and inform future wildlife crossing design alternatives that could be installed in other segments. The monitoring plan will be implemented for no less than five years and may be continued by mutual agreement between the Authority, the Service, and the CDFG.										
36	2.	Prior to the start of construction activities, the Service-approved project biologist will conduct pre-construction surveys in accordance with the <i>San Joaquin Kit Fox Survey Protocol for the Northern Range</i> (Service 1999c).	Contractor	X				Prior to construction	<i>San Joaquin Kit Fox Survey Protocol for the Northern Range</i>	Several Locations – grassland, agriculture, and barren	Contractor's Biologist will conduct surveys. Need <i>San Joaquin Kit Fox Survey Protocol for the Northern Range</i> (Service 1999c).	
36	3.	The Service-approved contractor's biologist will implement the <i>Standard Measures for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance</i> (Service 1999b) to minimize ground disturbance-related impacts on this species.	Contractor	X	X			Construction	Contract Requirements/ Specifications; <i>Standard Measures for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance</i>	Several Locations – grassland, agriculture, and barren	Need <i>Standard Measures for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance</i> (Service 1999b)	
36	4.	Pre-construction surveys will be conducted between May 1 and September 30 within suitable habitat (i.e., annual grassland, agriculture and barren) to identify potential San Joaquin kit fox dens. Pre-construction surveys will be conducted by a qualified, agency approved biologist(s) within 30 days prior to the start of construction or construction activities, and will be phased with project build-out.	Contractor	X				Within 30 days prior to start of construction within suitable habitat	<i>San Joaquin Kit Fox Survey Protocol for the Northern Range</i>	Several Locations – grassland, agriculture, and barren	Survey window (May 1 and September 30) applies	
37	5.	If construction activities within the non-disturbance exclusion zone of active San Joaquin kit fox burrows cannot be avoided during the breeding and pupping season, the Service-approved project biologist will implement measures in accordance with the <i>Standardized Recommendations for Protection of the San Joaquin kit fox Prior to or During Ground Disturbance</i> following approval from the Service (Service 1999). Destruction of any known or natal or pupping den will not occur without approval from the Service. A minimum of five days of den-monitoring is required to allow animals to relocate, during which time passive harassment measures (i.e., partially blocking den entrances with soil) may be pursued to encourage relocation. After a non-natal den is determined to be unoccupied, it may be excavated under the direction of a Service-	Contractor		X			Construction phase	<i>Standardized Recommendations for Protection of the San Joaquin kit fox Prior to or During Ground Disturbance</i>	Unknown Location - Grasslands as well as open, agricultural or urban habitats where occupied burrows may exist	Locations will be determined during pre-construction surveys.	

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		approved project biologist following Service approval.										
37	6.	All construction pipes, culverts, or similar structures with a diameter of four inches or greater stored at a construction site for one or more overnight periods will be thoroughly inspected for San Joaquin kit fox before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If a San Joaquin kit fox is discovered inside a pipe, that section of pipe will not be moved until Service has been consulted. If necessary, and under the direct supervision of the Service-approved biological monitor, the pipe may be moved once to remove it from the path of construction activity, until the San Joaquin kit fox has escaped.	Contractor		X			Construction phase	Contract Requirements/ Specifications; <i>Standard Measures for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance</i>	Universal – this applies to all construction areas.		
37	7.	If San Joaquin kit fox do not vacate the project action area after five days and passive harassment measures have been implemented, or a San Joaquin kit fox has become accidentally trapped within the project action area, the Service-approved biologist will immediately notify the Service.	Contractor	X	X	X		Construction phase; Notify Service in event kit fox doesn't cooperate after 5 days	Contract Requirements/ Specifications; <i>Standard Measures for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance</i>	N/A – hypothetical and procedural		
37	8.	Disturbance to all San Joaquin kit fox dens will be avoided to the maximum extent possible.	Contractor	X	X	X		Construction phase	Contract Requirements/ Specifications; <i>Standard Measures for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance</i>	Unknown Location - Grasslands, agriculture, and barren areas used by Kit Foxes	Locations to be determined by Contractor's Biologist following pre-construction surveys.	
37	9.	During the breeding season (December 1 through July 31), all construction activities will be prohibited within the following limits: a) A non-natal den exclusion zone of 100 feet will be implemented in areas surrounding occupied/non-occupied non-natal dens. b) A natal den exclusion zone of 200 feet will be implemented in areas (or as approved by the Service) surrounding occupied or non-occupied natal dens.	Contractor	X	X			Pre-con and Construction phases	Contract Requirements/ Specifications; <i>Standard Measures for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance</i>	Unknown Location - Grasslands, agriculture, and barren areas used by Kit Foxes	This condition could require a 'work around' during breeding season Locations to be determined by Contractor's Biologist following pre-construction surveys.	
37	10.	Non-natal exclusion zone fencing will be comprised of ESA high-visibility construction fencing within the limit of direct effects.	Contractor	X	X	X		Install fencing prior to ground disturbance work, and monitor during construction	Contract Requirements/ Specifications	Unknown Location(s) - where kit fox ESAs exist along the alignment, as determined by the Project Biologist prior to construction	Mark and fence ESAs using different colored flagging/fencing Remove fencing when construction complete Project biologist to submit a report to document installations to the Mit.	

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											Manager	
	37	11. All construction activities near any occupied dens will cease one-half hour before sunset and will not begin earlier than one-half hour after sunrise.	Contractor		X			Construction phase	Contract Requirements/ Specifications; <i>Standard Measures for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance</i>	Unknown Location - Grasslands, agriculture, and barren areas used by Kit Foxes	This condition could affect construction schedule if occupied dens present Locations to be determined by Contractor's Biologist following pre-construction surveys.	
	38	12. Vacant natal dens may be excavated only between August 15 and November 1 and after pups have vacated the den.	Contractor		X			Construction phase	Contract Requirements/ Specifications; <i>Standard Measures for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance</i>	Unknown Location - Grasslands, agriculture, and barren areas used by Kit Foxes	This condition could affect construction schedule Locations to be determined by Contractor's Biologist following pre-construction surveys.	
	38	13. As described above under conservation measure 31, the Authority will preserve suitable habitat and/or purchase habitat compensation credits at a Service-approved bank to offset direct effects to habitat for the San Joaquin kit fox.	Implementing Party: Authority compensate based on area of kit fox natural den habitat impacted by the Contractor Monitoring/Reporting Party: Authority	X	X	X				N/A - Authority responsibility to acquire habitat for mitigation	Authority Responsible	
Central California Tiger Salamander												
	38	1. Prior to construction activities, the Service-approved project biologist will conduct a preconstruction survey of potential breeding habitat within the project footprint, and 250 feet of this area. If any central California tiger salamanders are found the Service-approved biologist will immediately notify the Service. Relocation of central California tiger salamanders from within the project action area will only be conducted with Service-approval. The Service-approved project biologist may conduct pit trapping, if necessary, with approval from the Service.	Contractor	X				Prior to construction to	Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander	Several Locations - Where vernal pools & seasonal wetlands are present as shown on Aquatic Survey Maps	Locations to be determined by Contractor's Biologist Mapping to be field verified	
	38	2. The Service-approved contractor's biologist will work in coordination with the Service-approved project biologist when installing amphibian exclusion fencing.	Contractor	X	X			Prior to ground-disturbing activities; Follow reporting as determined by regulatory permit conditions.		Several Locations - Where vernal pools & seasonal wetlands are present as shown on Aquatic Survey Maps	Mapping to be field verified	

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	38	3. The Service-approved contractor's biologist will install exclusion barriers (i.e., silt fences) to exclude central California tiger salamander, and other amphibian or reptile species, from construction areas and to guide breeding adults toward pre-identified mitigation ponds. Exclusion fencing will be maintained by the contractor throughout the central California tiger salamander's entire active period (November to April) or until all construction activities are completed, whichever occurs first. Exclusion fencing must be trenched into the soil at least four inches in depth, with the soil compacted against both sides of the fence for its entire length to prevent amphibians from passing under the fence. Barriers must be inspected by the Service-approved contractor's biologist at least twice weekly on non-consecutive days outside of the breeding season. Barriers will be inspected daily following any rain event, and during months when juvenile central California tiger salamander are most likely emigrating from their breeding ponds in search of burrows in surrounding upland habitat. Barriers will be installed by the contractor with turn-arounds at any access openings needed in the fencing, to redirect amphibians away from openings.	Contractor	X	X				Prior to ground-disturbing activities; Follow salamander inspection scheduling regimen as required by this condition		Several Locations – Where vernal pools & seasonal wetlands are present as shown on Aquatic Survey Maps Install barriers where CTS habitat exists, and inspect as directed; * Biol MM #19 requires sampling to determine each of the CTS habitat locations Mapping to be field verified	
	38	4. The Service-approved project biologist will establish 250-foot non-disturbance exclusion zones around all potential central California tiger salamander breeding habitat that will be avoided; fencing will be comprised of a combination of both ESA high-visibility construction fencing and WEF.	Contractor	X	X			Pre- Construction		Several Locations – Where vernal pools & seasonal wetlands are present as shown on Aquatic Survey Maps This condition could require a 'work around' during breeding season Locations to be determined by Contractor's Biologist after pre-construction surveys. Mapping to be field verified		
	38	5. Non-disturbance exclusion zones will be maintained and monitored by the Service-approved project biologist or biological monitors to ensure that no take of central California tiger salamander or destruction of suitable habitat occurs outside of the limit of direct effect.	Contractor		X					Several Locations – Where vernal pools & seasonal wetlands are present as shown on Aquatic Survey Maps Locations to be determined by Contractor's Biologist after pre-construction surveys Mapping to be field verified		
	39	6. Construction activities within 250 feet of central California tiger salamander breeding habitat, while pools are inundated, will be avoided to the extent possible. If construction activities occur	Contractor;	X	X			Pre-Construction		Several Locations – Where vernal pools & seasonal wetlands are present as shown on Aquatic Survey Maps Locations to be determined by Project Biologist Mapping to be field verified		

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		within 250 feet of potential central California tiger salamander breeding habitat, which cannot be avoided during the wet season, the following steps will be taken: a) Pre-construction wet season surveys will be conducted within potential breeding habitat located in the project action area. b) If any life-stage of central California tiger salamanders are found the Service-approved project biologist will immediately contact the Service.										
39	7.	As described above under conservation measure 31, the Authority will preserve occupied habitat, create/restore suitable habitat, and/or purchase habitat compensation credits at a Service-approved bank in order to offset direct effects to habitat for the central California tiger salamanders.	Authority to compensate based on area of CTS habitat impacted by the Contractor Monitoring/Reporting Party: Authority			X	X			N/A – Authority responsibility to acquire habitat for mitigation	Authority Responsible	
Vernal pool habitat and invertebrates: conservancy fairy shrimp, vernal pool fairy shrimp, and vernal pool tadpole shrimp												
39	1.	The Service-approved project biologist will document compliance with the mitigation measures specific to vernal pool branchiopods, including the results of surveys, seasonal work restrictions and protective measures. These activities will be documented daily during the specific season for sampling, work restrictions, and protective measures when construction takes place.	Contractor	X	X					N/A – Procedural	Requires daily documentation of compliance during season during construction	
39	2.	Prior to construction activities, the Service-approved project biologist will conduct preconstruction, reconnaissance surveys in seasonally inundated habitats (seasonal wetland, non-inundated wetlands) within the construction footprint. The Service-approved project biologist will conduct general aquatic surveys at a suitable interval after the first significant storm event of the rainy season (October 15 to June 1), as feasible prior to construction activities. The surveys will include a habitat assessment of the hydrological, biological and ecological conditions of each seasonal wetland and open waters. The habitat assessment will provide information regarding the quality and suitability of seasonal wetlands for conservancy fairy shrimp, vernal pool fairy shrimp, and vernal pool tadpole	Contractor	X						Several Locations – Where vernal pools are present as shown on Aquatic Survey Maps	Locations to be determined by Contractor's Biologist	

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		shrimp. If any vernal pool crustaceans are found during the surveys, the Service-approved project biologist will immediately contact the Service. The Service-approved project biologist will submit a report within one month of completing the field work to the Service-approved project mitigation manager and the Authority. The report will provide results of all surveys, a summary of all the data collected, and the habitat assessment.										
39	3.	If any work remains to be completed after October 15, exclusion fencing and erosion control measures will be placed at the vernal pools and other seasonal wetlands as determined by the Service-approved project contractor's biologist. The fencing will provide a buffer between construction activities and the vernal pools and other seasonal wetlands. The Service-approved project contractor's biologist, under the supervision of the Service-approved project biologist, will erect and maintain the exclusion fencing.	Contractor	X	X					Several Locations – Where vernal pools are present as shown on Aquatic Survey Maps	Mark and fence ERAs, and maintain during Work Remove fencing when construction complete Locations to be determined by Contractor's Biologist Mapping to be field verified	
40	4.	As described above under conservation measure 31, the Authority will preserve occupied habitat, create/restore suitable habitat, and/or purchase habitat compensation credits at a Service-approved bank in order to offset direct effects to habitat for the conservancy fairy shrimp, the vernal pool fairy shrimp, and the vernal pool tadpole shrimp.	Authority			X	X			N/A – Authority responsibility to acquire habitat for mitigation	Authority Responsible	
Valley elderberry longhorn beetle												
40	1.	Prior to and during construction activities, the contractor will implement the avoidance and minimization measures detailed in the <i>Conservation Guidelines for the Valley Elderberry Longhorn Beetle</i> (Service 1 999). These measures include establishing and maintaining appropriate buffer areas around elderberry plants, surveying for beetle boreholes in affected shrubs, restricting the use of chemicals that might harm beetles, and restricted mowing within 5 feet of elderberry plants. After construction activities are completed, the Authority will restore any damage to buffer areas containing elderberry shrubs according to specifications within the <i>Conservation Guidelines for the Valley Elderberry Longhorn Beetle</i>	Contractor	X	X			Prior to ground-disturbing activities, during ground-disturbing activities, and after ground-disturbing activities. Follow reporting requirements as established by regulatory compliance permits.	Condition of Design/Build Contract; <i>Conservation Guidelines for the Valley Elderberry Longhorn Beetle</i>	Camp Pashayan ; plus any areas where Elderberry plants exist	Comply with requirements where Elderberry plants exist, and comply w/ Valley Elderberry Longhorn Beetle protection requirements Presence of beetles is difficult to determine therefore the Service requires protection measures be implemented for all elderberry shrubs in the project area which are 1" in diameter or greater.	

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		(Service 1999).										
	40	2. In areas where encroachment on the 100-foot buffer has been approved by the Service, the contractor will provide a minimum setback of at least 20 feet from the drip line of each elderberry plant. In buffer areas, construction activities should be minimized, and any damaged area will be restored following construction.	Contractor		X	X		Construction and Post-Construction phases	Contract Requirements/ Specifications	Camp Pashayan - where Elderberry plants exist	Mark and fence ESAs, and maintain during Work Remove fencing when construction complete	
	40	3. The Service-approved project biologist will erect signage every 50 feet along the edge of the avoidance area with the following information: <i>"This area is habitat of the valley elderberry longhorn beetle, a federally threatened species, and must not be disturbed. This species is protected by the federal ESA of 1973, as amended Violators are subject to prosecution, fines, and imprisonment."</i> The signs should be clearly readable from a distance of 20 feet, and must be maintained by the contractor throughout the duration of construction activities.	Contractor		X					Camp Pashayan - where Elderberry plants exist	Locations to be determined by Contractor's Biologist	
	40	4. If Valley elderberry longhorn beetle are determined to be present within the project action area the following measures will be implemented: a) Dust control procedures, such as regular watering of disturbed soils and soil piles, and covering of soil piles, will be used throughout the construction period. b) No insecticides, herbicides, fertilizer, or other chemicals that might harm the beetle or its host plant will be used within the 100-foot non-disturbance zone. c) Elderberry shrubs with a diameter of one inch or greater that cannot be avoided during project construction will be transplanted according to the methods outlined in the <i>ANSI A3 00 standards for tree care operations for arboriculture</i> . Shrubs will be transplanted to a Service-approved conservation area during the dormancy period (November 1 to February 15). Each Service-approved conservation area will be a minimum of 1,800 square feet per each transplanted shrub.	Contractor		X			Construction phase	Contract Requirements/ Specifications; <i>ANSI A3 00 standards for tree care operations for arboriculture</i>	Camp Pashayan - where Elderberry plants exist	Controls required for dust control; applications of chemical compounds; and translocation of shrubs	
	41	5. As described above under conservation measure 31, the Authority will preserve occupied habitat, create/restore suitable habitat, and/or purchase	Authority			X	X			N/A – Authority responsibility to acquire habitat for mitigation	Authority Responsible	

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	habitat compensation credits at a Service-approved bank to offset direct effects to habitat for the valley elderberry longhorn beetle.										
Colusa grass, San Joaquin Valley Orcutt grass, hairy Orcutt grass, Greene's tuctoria, and succulent owl 's-clover											
41	1. For areas of suitable habitat likely to support listed plant species, the Service-approved contractor's biologist will prepare a plan prior to construction activities to address monitoring, salvage, relocation, and propagation of Colusa grass, San Joaquin Valley Orcutt grass, hairy Orcutt grass, Greene's tuctoria, and succulent owl's-clover. The plan will be submitted to the Service-approved project biologist for review and approval. The relocation or propagation of these plants and their seed will be performed at a suitable mitigation site, as appropriate per species. Documentation will include provisions that address the techniques, location, and procedures required for the successful establishment of the plant populations. The plan will include provisions for performance that address survivability requirements, maintenance, monitoring, implementation, and the annual reporting requirements. Permit conditions issued by the appropriate resource agencies (e.g., Service, CDFG) will guide the development of the plan and performance standards.	Contractor, in coordination with Authority	X				Pre-construction	Permit conditions issued by the appropriate resource agencies	Several Locations – Where vernal pools are present as shown on Aquatic Survey Maps	Plan preparation required and submitted to Project Biologist for approval Mapping to be field verified	
41	2. Protocol-level, pre-construction botanical surveys for Colusa grass, San Joaquin Valley Orcutt grass, hairy Orcutt grass, Greene's tuctoria, and succulent owl's-clover will be conducted prior to any construction activities in areas of suitable habitat where permission to enter was not previously granted, time of year precluded full protocol-level botanical surveys, or where the project design changes. Surveys will be conducted in areas of suitable habitat and areas identified as "natural lands."	Contractor	X				Pre-construction	Contract Requirements	Several Locations – Where vernal pools are present as shown on Aquatic Survey Maps	Locations to be determined by Contractor's Biologist following pre construction surveys. Mapping to be field verified	
41	3. Areas that support Colusa grass, San Joaquin Valley Orcutt grass, hairy Orcutt grass, Greene's tuctoria, and succulent owl's-clover that will be temporarily disturbed will be restored to pre-construction conditions. Prior to disturbance, pre-construction conditions will be documented detailing species composition, species richness,	Contractor	X	X	X		Pre-con, Construction and Post-Construction phases	Contract Requirements	Several Locations – Where vernal pools are present as shown on Aquatic Survey Maps	Document site, including photographs, prior to construction Submit success criteria to Service for approval Locations to be determined by Contractor's Biologist following pre	

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		percent cover of key species, and photo points will be established. Success criteria for restored areas will be submitted to the Service for review and approval.									construction Surveys . Mapping to be field verified	
	41	4. All directly affected populations of Colusa grass, San Joaquin Valley Orcutt grass, hairy Orcutt grass, Greene's tuctoria, and succulent owl's-clover will be documented. Documentation will include the density and percent cover of the species and key habitat characteristics including soil type, associated species, hydrology, topography, and photo documentation of pre-construction conditions.	Contractor	X				Pre- Construction phase	Contract Requirements	Several Locations – Where vernal pools are present as shown on Aquatic Survey Maps	Document site, including photographs, prior to construction Submit success criteria to Service for approval Mapping to be field verified	
	42	5. In the event that Colusa grass, San Joaquin Valley Orcutt grass, hairy Orcutt grass, Greene's tuctoria, or succulent owl's-clover is identified in the project action area through protocol-level botanical pre-construction surveys, the Service will be notified and the Authority will work with the Service to avoid, minimize and potentially compensate for potential direct and indirect effects on the species.	Contractor	X						N/A – Procedural	Notify Service if these vernal pool plant species are identified in project area	
	42	6. As described above under conservation measure 31, the Authority will preserve occupied or suitable habitat, create/restore suitable habitat, and/or purchase habitat compensation credits at a Service-approved bank to offset unavoidable direct effects to habitat for Colusa grass, San Joaquin Valley Orcutt grass, hairy Orcutt grass, Greene's tuctoria, or succulent owl's-clover.	Authority to compensate based on area of habitat impacted by the Contractor			X	X			N/A – Authority responsibility to acquire habitat for mitigation	Authority Responsible	
Incidental Take Measures												
Amount or Extent of Take	85	<i>San Joaquin kit fox</i> : It is not possible to quantify the number of individual San Joaquin kit fox that will be taken as a result of Phase 1 of the proposed project because of their nocturnal behavior, the species is highly mobile and usually maintain large home ranges (average estimated in Merced County = 1,169 acres), and the number of individuals with home ranges that overlap with project action area is unknown. Therefore, the amount of habitat for this species that will be impacted as a result of Phase I of the CHST-MF Project will be used as a surrogate for quantifying take. The Service anticipates that all San Joaquin kit foxes inhabiting 3,624 acres of land will be subject to incidental take in the form of harassment as construction activities progress for								N/A – Procedural		

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		Phase 1. In addition, the Service anticipates that up to 324 acres of suitable habitat will be directly impacted and permanently lost as a result of Phase 1 of the CHST-MF Project resulting in harm to the species by significantly impairing essential behaviors, including breeding foraging, and denning. Upon implementation of the Reasonable and Prudent Measures, these levels of incidental take associated with the CHST-MF Project in the form of harm and harassment of the San Joaquin kit fox caused by habitat loss and construction activities will become exempt from the prohibitions described under section 9 of the Act.										
	86	<i>Central California tiger salamander</i> : It is not possible to quantify the number of individual central California tiger salamanders that will be impacted as a result of Phase 1 of the CHST-MF the proposed project. Specifically, when central California tiger salamanders are not in their breeding ponds, they inhabit the burrows of ground squirrels or other rodents or may be moving from one location to another, and may be difficult to locate due to their cryptic appearance and behavior; they may be located a distance from the breeding ponds; and the finding of an injured or dead individual is unlikely because of their relatively small body size. Loss of these species also may be difficult to quantify due to seasonal fluctuations in their numbers, random environmental events, changes in water regime at their breeding ponds, or additional environmental disturbances. Therefore, the amount of habitat for this species impacted by the project will be used as a surrogate for quantifying take. The Service anticipates that 9.21 acres of suitable aquatic breeding habitat and 102.55 acres of suitable upland habitat for the central California tiger salamander will be permanently lost as a result of Phase 1 of the CHST-MF Project. Upon implementation of the Reasonable and Prudent Measures, these levels of incidental take associated with the CHST-MF Project in the form of harm, harassment, capture, injury, and death of the central California tiger salamander caused by habitat loss and construction activities will become exempt from the prohibitions described under section 9 of the Act.								N/A – Procedural		
	86	<i>Conservancy fairy shrimp, vernal pool fairy shrimp, and vernal pool tadpole shrimp</i> : It is not possible to								N/A – Procedural		

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		quantify the number of individual conservancy fairy shrimp, vernal pool fairy shrimp, and vernal pool tadpole shrimp that will be taken as a result of the proposed project. Specifically, the finding of an injured or dead conservancy fairy shrimp, vernal pool fairy shrimp, or vernal pool tadpole shrimp is unlikely because of their extremely small body size. Loss of these species also may be difficult to quantify due to seasonal fluctuations in their numbers, random environmental events, changes in water regime at their vernal pool habitat, or additional environmental disturbances. Therefore, the quantity of acres of habitat for this species impacted by the project will be used as a surrogate for quantifying take. The Service anticipates that all conservancy fairy shrimp, vernal pool fairy shrimp, and vernal pool tadpole shrimp inhabiting vernal pool and seasonal wetland habitat within the project footprint, and within 250 feet of the project footprint will be subject to incidental take in the form of harm. The Service anticipates that 6.15 acres of vernal pool habitat suitable for the conservancy fairy shrimp will be lost. A 5.78-acre subset of the above 6.15-acres of vernal pool habitat suitable for the vernal pool fairy shrimp, and the vernal pool tadpole shrimp will be permanently lost as a result of Phase 1 of the CHST-MF Project. Upon implementation of the Reasonable and Prudent Measures, these levels of incidental take associated with the CHST-MF Project of the conservancy fairy shrimp, vernal pool fairy shrimp, and vernal pool tadpole shrimp caused by habitat loss and construction activities will become exempt from the prohibitions described under section 9 of the Act.										
	87	<i>Valley elderberry longhorn beetle</i> : It is not possible to quantify the number of individual Valley elderberry longhorn beetles will be taken as a result of the proposed project. Specifically, the finding of an injured or dead Valley elderberry longhorn beetle is unlikely because of their extremely small body size, ecology, and behavior. Therefore, the amount of acres of habitat for this species that will be impacted will be used as a surrogate for quantifying take. Therefore, the Service anticipates that all Valley elderberry longhorn beetles inhabiting elderberry shrubs within suitable habitat comprising the project action area for Phase 1 will be subject to incidental take in the form of harm and harassment.								N/A – Procedural		

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		The Service anticipates that 1.17 acres of suitable riparian habitat that supports elderberry shrubs for the Valley elderberry longhorn beetle will be permanently lost as a result of Phase 1 of CHST-MF Project. However, it is not known how much of the habitat subject to direct or indirect effects actually contain elderberry shrubs that would support valley elderberry longhorn beetle. Upon implementation of the Reasonable and Prudent Measures, these levels of incidental take associated with the CHST-MF Project in the form of harm and death of the Valley elderberry longhorn beetle caused by habitat loss and construction activities will become exempt from the prohibitions described under section 9 of the Act.										
Effect of the Take	87	The Service has determined this level of anticipated take is not likely to result in jeopardy to the San Joaquin kit fox, the central California tiger salamander, the conservancy fairy shrimp, the vernal pool fairy shrimp, the vernal pool tadpole shrimp, and the valley elderberry longhorn beetle.								N/A – General Statement of Service determination		
Reasonable and Prudent Measure	87	The Service has determined that the following reasonable and prudent measure is necessary and appropriate to minimize the effects of the CHST-MF Project on the San Joaquin kit fox, the central California tiger salamander, the conservancy fairy shrimp, the vernal pool fairy shrimp, the vernal pool tadpole shrimp, the valley elderberry longhorn beetle: All of the conservation measures as proposed by the FRA and the Authority in the biological assessment, and restated in the project description section of this biological opinion, must be fully implemented and adhered to.								N/A – General Statement of Service determination		
Terms and Conditions	87	1. The FRA shall ensure that the Authority and all of its contractors fully implement and adhere to the proposed conservation measures. All terms and conditions that apply to contractor activities shall be conditioned in contracts for the work.	Contractor	X				Pre-construction	Contract Requirements/ Specifications	N/A – Procedural	Ensure that all permit conditions are carried forward to plans and specifications, where appropriate	
	88	2. In order to monitor whether the amount or extent of incidental take anticipated from implementation of the project is approached or exceeded, the FRA shall adhere to the following reporting requirements. Should this anticipated amount or extent of incidental take be exceeded, the FRA must immediately reinstate formal consultation as per 50 CFR 402.16. a) For those components of the action that will	Contractor, in coordination with Authority	X	X	X		Pre-con, Construction and Post-Construction phases	Contract Requirements/Specifications	N/A – Procedural	Provide weekly updates to Service describing acres of habitat mods. when incidental take in the form of harm is anticipated Immediately contact Service when take in the form of harassment, harm, injury, or death is anticipated	

	Page Number	Permit Conditions and Other Excerpted Material	Implementing Party and Monitoring / Reporting Party	Mitigation Timing					Implementation Schedule / Reporting Schedule	Implementation Mechanism or Tool	Location Where Condition is Applicable	Actions/Notes
				Pre-Const.	Construction	Post-Const.	Operations					
		<p>result in habitat degradation or modification whereby incidental take in the form of harm is anticipated, the FRA shall provide weekly updates to the Service with a precise accounting of the total acreage when the following habitats are impacted: (1) natural grasslands (Table 6); (2) compatible-use agricultural lands (Table 6); (3) upland habitat for the California tiger salamander (Table 7); (4) vernal pool habitat for vernal pool species (Tables 8 to 9); (5) riparian for the valley elderberry longhorn beetle; and (6) actual number of elderberry shrubs and stems for the valley elderberry longhorn beetle (Table 10). Updates shall also include any information about changes in project implementation that result in habitat disturbance not described in the <i>Description of the Proposed Action</i> and not analyzed in this biological opinion.</p> <p>b) For those components of the action that may result in direct encounters between listed species and project workers and their equipment whereby incidental take in the form of harassment, harm, injury, or death is anticipated, the FRA shall immediately contact the Service's SFWO at (916) 414-6600, to report the encounter. If an encounter occurs after normal working hours, the FRA shall contact the SFWO at the earliest possible opportunity the next working day. When injured or killed individuals of the listed species are found, the FRA shall follow the steps outlined in the <i>Salvage and Disposition of Individuals</i> section.</p> <p>c) A post-construction report detailing compliance with the project design criteria and proposed conservation measures described under the <i>Description of the Proposed Action</i> section of this biological opinion shall be provided to the Service within 30 calendar days of completion of the project. The report shall include: (1) dates of project groundbreaking and completion; (2) pertinent information concerning the success of the project in meeting</p>								<p>Prepare a post-construction report detailing compliance</p> <p>Report new sightings of any listed species to the Service using reporting form and map</p> <p>(Contractor must go through the Authority to submit to the Service)</p>		

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				Pre-Const.	Construction	Post-Const.	Operations					
		<p>compensation and other conservation measures; (3) an explanation of failure to meet such measures, if any; (4) known project effects listed species, if any; (5) observed incidences of injury to or mortality of any listed species, if any; and, (6) any other pertinent information.</p> <p>d) New sightings of any listed species shall be reported to the CNDDDB. A copy of the reporting form and a topographic map clearly marked with the location in which the animals were observed also shall be provided to the Service.</p>										
	88	<p>3. The FRA will submit a final Mitigation Strategy and Implementation Plan to the Service prior to initiation of construction of the CHST-MF Project. In addition, prior to commencement of construction for any phase, the Authority will provide a phase specific final mitigation plan that implements mitigation consistent with the MSIP, and identifies long term management measures, appropriate conservation instruments, appropriate financial assurances (e.g., proof of credit purchase from Service-approved conservation banks) to the Service for each phase of construction. The Authority will also submit all proposed conservation easements or similar instruments, management plans, and financial assurances to the Service for review and approval prior to initiation of construction activities.</p>	: Authority	X	X	X				N/A – Procedural	Authority Responsible	
	89	<p>4. The FRA shall follow all compensatory mitigation measures provided within the <i>Conservation Guidelines for the Valley Elderberry Longhorn Beetle</i> (Table 10).</p>	Contractor for on-site and Authority for off-site mitigation		X	X		Restoration activities start during construction and extend beyond construction	Contract Requirements/ Specifications; <i>Conservation Guidelines for the Valley Elderberry Longhorn Beetle</i>	Camp Pashayan - where Elderberry plants exist , and possibly offsite locations	the <i>Conservation Guidelines for the Valley Elderberry Longhorn Beetle</i> (Table 10).	
	89	<p>5. The FRA shall require the use of appropriate California native species in vegetation and habitat enhancement efforts.</p>	Contractor	X	X	X		Pre-construction through Post-Construction	Condition of Design/Build Contract; Restoration and Revegetation Plan (RRP) for upland communities and Compliance reports to document implementation and performance standards	Universal	Use native plant mix in site Restoration and Revegetation Plan	
Salvage and Disposition of	89	<p>In the case of an injured and/or dead San Joaquin kit fox or central California tiger salamander, the Service</p>	Contractor	X	X			Following incident, immediately report	Condition of Design/Build Contract	N/A – Procedural	Follow procedures for reporting incident, caring for injured animals, or preserving	

	Page Number	Permit Conditions and Other Excerpted Material	Implementing Party and Monitoring / Reporting Party	Mitigation Timing					Implementation Schedule / Reporting Schedule	Implementation Mechanism or Tool	Location Where Condition is Applicable	Actions/Notes
				Pre-Const.	Construction	Post-Const.	Operations					
Individuals		shall be notified of events within one day and the animal shall only be handled by a Service-approved biologist. Injured San Joaquin kit foxes or central California tiger salamanders shall be cared for by a licensed veterinarian or other qualified person. In the case of a dead San Joaquin kit fox or central California tiger salamander, the animal shall be preserved, as appropriate, and shall be bagged and labeled (i.e. species type; who found or reported the incident; when the report was made; when and where the incident occurred; and if possible, cause of death). Carcasses shall be held in a secure location, such as a freezer or cooler, until instructions are received from the Service regarding the disposition of the specimen or until the Service, or another appropriate agency or qualified person, takes custody of the specimen. The FRA must report to the Service within one calendar day any information about take or suspected take of federally-listed species not exempted in this opinion. Notification must include the date, time, and location of the incident or of the finding of a dead or injured animal. The Service contacts are Daniel Russell, Deputy Assistant Field Supervisor, Endangered Species Program, Sacramento, at (916) 414-6600 and the Service's Law Enforcement Division at (916) 414-6660. Any contractor or employee who, during routine operations and maintenance activities inadvertently kills or injures a listed wildlife species must immediately report the incident to his representative at his contracting/employment firm and to the FRA. This representative must contact the Service within one calendar day.						(w/in 1 day) to USFWS and/or CDFG. Prepare report and document in weekly/ monthly report.			deceased animals until a Service representative can collect	
Conservation Recommendations												
Discretionary agency activities that can be implemented to further the purposes of the Act, such as preservation of endangered species habitat,	89	1. The Service recommends the Authority develop and implement the appropriate restoration measures in areas designated in the <i>Valley Elderberry Longhorn Beetle Recovery Plan</i> (Service 1984), <i>Recovery plan for upland species of the San Joaquin Valley, California</i> (Service 1998), and the <i>Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon</i> (Service 2005c).	Contractor, in coordination with the Authority	X				Pre-construction	Contract Requirements/ Specifications; <i>Valley Elderberry Longhorn Beetle Recovery Plan</i> ; <i>Recovery plan for upland species of the San Joaquin Valley, California</i> ; and <i>Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon</i>	Camp Pashayan - where Elderberry plants exist, and possibly offsite locations		

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				Pre-Const.	Construction	Post-Const.	Operations					
implementation of recovery actions, or development of information and data bases.	90	2. The FRA and Authority should incorporate "environmentally friendly" erosion and stabilization techniques whenever possible in this project, such as use of biodegradable materials constructed from natural fibers (e.g. coconut fiber).	Contractor	X	X			Design – Prepare Concept SWPPP to include BMPs; Construction - follow NPDES/WDR permits schedule and reporting requirements	Contract Requirements/ Specifications; NPDES/WDR permits	Universal – construction footprint	Condition to be incorporated into Contract Specifications and SWPPP	
	90	3. Sightings of any listed or sensitive animal species should be reported to the CNDDDB of the CDFG. A copy of the reporting form and a topographic map clearly marked with the location the animals were observed also should be provided to the Service.	Contractor	X	X	X		Pre-con, Construction and Post-Construction phases	Condition of Design/Build Contract; Contract Requirements/Specifications	N/A – Procedural	Report new sightings of any listed species to the Service using reporting form and map Measure requires CNDDDB forms; suggest copies of forms be included with weekly/monthly reports	

**Table 2: Permit Condition Monitoring and Reporting Program Measures
NOAA-NMFS Biological Opinion**

	Page Number	Permit Conditions and Other Excerpted Material	Implementing Party and Monitoring / Reporting Party	Mitigation Timing					Implementation Schedule / Reporting Schedule	Implementation Mechanism or Tool	Location Where Condition is Applicable	Actions/Notes
				Pre Construction	Construction	Post Construction	Operations					
Preconstruction Activities												
Impacts to Special-Status Fish Species	7	1. There will be a construction work window of June 15 - October 15. This time period will minimize impacts on migrating juvenile and adult CCV steelhead and CV spring-run Chinook salmon.	Contractor All		X			Timing of work in San Joaquin River channel is limited by this condition	Contract Requirements/ Specifications	San Joaquin River		
	7	2. Pre-construction fish surveys (snorkel surveys following CDFG Salmonid Restoration Manual techniques) conducted by qualified fisheries biologist to determine the presence and/or density of salmonids utilizing the Resource Study Area (RSA).	Contractor All	X				Prior to construction	Contract Requirements/ Specifications	San Joaquin River	Use Qualified Fisheries Biologist	
	7	3. Contractor education and environmental training about salmonid biology (life history and habitat requirements) and using best management practices (BMPs) as described below to minimize potential impacts on water quality and/or fish habitat.	Contractor All	X				Prior to construction	Contract Requirements/ Specifications	Universal (no specific site location) - Training		
	7	4. Biological monitoring during construction activities.	Contractor All		X			During pile development, removal, and other work within the river channel	Contract Requirements/ Specifications	San Joaquin River		
	7	5. Use of environmentally sensitive areas and environmentally restricted areas to protect Essential Fish Habitat.	Contractor All		X			Install fencing prior to ground disturbance work, and monitor during	Contract Requirements/ Specifications	San Joaquin River and associated riparian habitat	Biologist to identify these areas	

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				Pre Construction	Construction	Post Construction	Operations					
								construction				
	7	6. Restoration of temporarily disturbed areas upon project completion.	Contractor All			X	X	Following NPDES/WDR permits schedule and reporting requirements; BRMP; RRP	Contract Requirements/ Specifications	San Joaquin River		
	7	7. Temporary construction sites, including staging areas, lay down and storage areas for equipment, materials, and construction vehicles, parking areas, and incidental stockpiling areas, will be assigned, as feasible, on the north side of the San Joaquin River in areas that do not include sensitive habitat for listed species or that affect riparian vegetation. These temporary construction sites may include areas that are within agriculture, pasture, barren or otherwise disturbed vegetation.	Contractor All	X	X			Staging area will be identified during bridge Design phase	Contract Requirements/ Specifications	San Joaquin River – north side and outside of riparian habitat	Laydown areas must be outside of sensitive habitat	
	7	8. Work within the area of the designated floodway will be limited to the period from April 15 to October 31 for flood protection issues, unless otherwise authorized by the Central Valley Flood Protection Board.	Contractor All		X			Timing of work w/in CVFPB floodway is limited by this condition	Contract Requirements/ Specifications	San Joaquin River– floodway	Use June 15 – October 15 window based on the NMFS B.O. incidental take statement (pg. 41-42 of B.O.).	
	7	9. Develop and implement a Storm Water Pollution Prevention Plan (SWPPP). Temporary construction BMPs will be implemented in accordance with the Merced to Fresno section plans and specifications, as well as the approved SWPPP. BMPs may include, but would not be limited to, silt fences, fiber rolls, straw bales, sandbag barriers, check	Contractor All		X			During pile development and other work within river channel; following NPDES/WDR permits	Condition of Design/Build Contract; NPDES/WDR permits	San Joaquin River		

	Page Number	Permit Conditions and Other Excerpted Material	Implementing Party and Monitoring / Reporting Party	Mitigation Timing					Implementation Schedule / Reporting Schedule	Implementation Mechanism or Tool	Location Where Condition is Applicable	Actions/Notes
				Pre Construction	Construction	Post Construction	Operations					
		dams, and sediment basins.						schedule and reporting requirements.				
	7	<p>10. Pile Driving Underwater Sound Pressure Measures. The following measures will be implemented to avoid and minimize potential adverse effects that could otherwise result from in-water pile-driving activities:</p> <ul style="list-style-type: none"> The contractor will develop a plan for pile-driving activities in water to minimize impacts on fish and will allow sufficient time in the schedule for coordination with regulatory agencies. Measures will be implemented to minimize underwater sound pressures to levels below thresholds for peak pressure and accumulated sound exposure levels. Threshold levels established by NMFS that will not be exceeded are as follows: <ul style="list-style-type: none"> Peak Pressure = 206 dB Accumulated sound exposure levels = 183 dB Underwater sound monitoring will be performed during pile-driving activities. A qualified biologist or natural resource specialist will be present during such work to monitor construction activities and compliance with terms and conditions of permits. Sheet piling will be driven by vibratory or nonimpact methods (<i>i.e.</i> hydraulic) that result in sound pressures below threshold levels to 	Contractor All	X	X			<p>Implementation Schedule: (Prepare Plan): During project Design phase</p> <p>Implementation Schedule: (Carry out Plan and Monitor): During sheet and pile driving operations</p> <p>Work window (daylight hours, as specified) applies for pile driving</p>	Contract Requirements/ Specifications	San Joaquin River	<p>Develop a Plan for pile driving in water</p> <p>Conduct underwater sound monitoring</p> <p>Use Qualified Fisheries Biologist/Natural Resource Specialist</p> <p>Follow technical requirements for sheet pile and pile driving</p>	

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				Pre Construction	Construction	Post Construction	Operations					
		<p>the extent feasible.</p> <ul style="list-style-type: none"> Pile driving will be conducted only during daylight hours and initially will be used at low energy levels and reduced impact frequency. Applied energy and frequency will be gradually increased until necessary full force and frequency are achieved. 										
	8	<p>11. Implement Fish Rescue Plan Inside Cofferdam. Installation of the cofferdam and dewatering on the site during construction could result in fish stranding. The contractor will develop and implement a fish rescue plan acceptable to the CDFG, USFWS and NMFS:</p> <ul style="list-style-type: none"> The contractor will ensure that a qualified fisheries biologist with a current CDFG collection permit conducts the fish rescue and relocation efforts behind the cofferdam. The fish rescue effort will be implemented during the dewatering of the areas behind the cofferdam(s) and involve capture and return of those fish to suitable habitat within the adjacent waterways. The area will first be seined, followed by electrofishing to remove fish that are behind the cofferdam. A fisheries biologist will be on-site during initial pumping (dewatering) to ensure compliance with the plan. The Contractor will monitor the progress of dewatering and allow for 										

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		<p>the fish rescue to occur prior to completely closing the cofferdam and again when water depths reach approximately 2 feet. USFWS, NMFS, and CDFG will be notified at least 48 hours prior to the start of fish rescue efforts. Information on the species' number and sizes of fish collected would be recorded during the fish rescue and provided in a letter report to be submitted within 30 days after the fish rescue to USFWS, NMFS, and CDFG.</p> <ul style="list-style-type: none"> • The Fish Rescue Plan will contain methods for minimizing the risk of stress and mortality due to capture and handling of fish removed from the Construction site and returned to adjacent waterways. • Implementation of the Fish Rescue Plan would minimize potential adverse effects to listed fish species (if present) associated with fish stranding during dewatering activities related to the construction activities. • The Design-Build team will work systematically with NMFS to establish design hydrology and demonstrate minimal hydraulic impacts from design. • The San Joaquin Bridge crossing will be designed with the planned increase in flow due to the SJRRP and will maintain or effectively minimize any appreciable changes in scour, sediment transport, deposition, or changes in geomorphic process that could alter 										

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				Pre Construction	Construction	Post Construction	Operations					
		habitat conditions in a manner that would impede the reestablishment of CV spring-run Chinook salmon. <ul style="list-style-type: none"> The HSRA along with the Design-Build team will present a final San Joaquin Crossing Plan prior to any site preparation or mobilization of work in or near the San Joaquin River. If final design refinements are deemed to be substantial changes from the original product description, ESA Section 7 consultation will be reinitiated. Use quarry stone, cobblestone, or their equivalent for erosion control along rivers and streams, complemented with native riparian plantings or other natural stabilization alternatives that would restore and maintain a natural riparian corridor, where feasible. 										
Terms and Conditions, non-discretionary	44	1. Measures shall be taken to minimize the amount and duration of pile driving and its potential impacts on listed salmonids, and to monitor the range and magnitude of compression shock waves generated by pile driving operations. <ul style="list-style-type: none"> The FRA and HSRA shall monitor underwater sound during all vibratory hammer pile driving activities on land or in water. If underwater sound produced on a single day exceeds the maximum allowable level of single strike 206 dB peak at 10 meters from the pile being installed or SEL 187 dB, then NMFS must be contacted within 24 hours. Pile driving shall occur only during 	Contractor All		X			Construction/ weekly reporting; notify NMFS within 24 hours if threshold exceeded	Contract Requirements/ Specifications	San Joaquin River	Minimize amount & duration of pile driving <ul style="list-style-type: none"> Monitor sound Conduct pile driving during daytime, as defined (from one hour after sunrise to one hour before sunset) 	

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		daylight hours from one hour after sunrise to one hour before sunset. This is to ensure that pile driving does not occur at dawn or dusk, during peak salmonid migration and feeding times.										
	44	<p>2. Measures shall be taken to minimize the amount of "take" during cofferdam installation and dewatering activities.</p> <ul style="list-style-type: none"> NMFS anticipates incidental take of juvenile CV spring-run Chinook salmon and CCV steelhead from impacts directly related to dewatering activities. The incidental take is expected to be in the form of harm or mortality of juvenile CV spring-run Chinook salmon and CCV steelhead resulting from seining and electrofishing. Take is expected to be limited to migrating, rearing and smolting juveniles. Take in the form of mortality of stranded juvenile CV steelhead and CV spring-run Chinook salmon during the dewatering activities from June 15 to October 15 shall be less than 10 percent of the relocated (salvaged) CY steelhead and CY spring-run Chinook salmon juveniles. Fish salvage operations should minimize the number of juveniles lost. A report shall be submitted to NMFS within 30 days of relocation activities indicating the number of listed species that were lost due to mortality and injury and the number of listed species that were relocated without harm. This report should be sent to: 	<p>Implementing Party: Contractor shall monitor all activities, take appropriate measures to minimize impact, and prepare report for NMFS</p> <p>Monitoring/Reporting Party: Contractor</p>		X			Construction; Contractor has 30 days to submit report following fish relocation activities	Contract Requirements/ Specifications	San Joaquin River	<p>Keep 'take' at <10% during cofferdam and dewatering operations</p> <p>Submit report w/in 30 days of fish relocation activities</p>	

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				Pre Construction	Construction	Post Construction	Operations					
		Central Valley Office National Marine Fisheries Service 650 Capitol Mall, Suite 5-100 Sacramento CA 95814 FAX: (916) 930-3629 Phone: (916) 930-3600										
	45	<p>3. Measures shall be taken to maintain, monitor, and adaptively manage all conservation measures throughout the life of the project to ensure their effectiveness.</p> <ul style="list-style-type: none"> The FRA or HSRA on behalf of the FRA shall purchase riparian credits at a NMFS approved anadromous fish conservation bank at a 3:1 ratio for the aerial extent of riparian habitat affected by the action. The FRA or HSRA on behalf of the FRA shall monitor and maintain all onsite riparian plantings within the action area for three years, and provide irrigation, fertilization, and replacement plantings as necessary to insure full and rapid recovery of disturbed riparian habitat features beneficial to anadromous fish. If a listed species is observed injured or killed by project activities, FRA and/or HSRA shall contact Sierra Franks at NMFS within 48 hours at 916-930-3720 or 650 Capitol Mall, Suite 5-100, Sacramento, CA 95814. Notification shall include species identification, the number of fish, and a description of the action that 	<p>Implementing Party: Authority to implement offsite mitigation based on effects from the physical alteration of onsite biological resources by the Contractor</p> <p>Contractor shall monitor all activities and prepare any reports required where its construction activities contribute to the requirement for this condition</p>	X	X	X		Pre-Construction, Construction, Post-Construction	<p>NA Authority Responsible</p> <p>Offsite habitat restoration, enhancement, and preservation program will be designed, implemented, and monitored consistent with the terms and conditions of the USACE Section 404 Permit, CDFG 1600 Streambed Alteration Agreement, and CESA and federal ESA as they apply to their jurisdiction and resources onsite</p>	San Joaquin River	<p>Conduct revegetation of riparian vegetation, and monitor for 3 years</p> <p>Notify NMFS via Authority if listed species injured or killed</p> <p>Conduct annual reporting</p>	

	Page Number	Permit Conditions and Other Excerpted Material	Implementing Party and Monitoring / Reporting Party	Mitigation Timing					Implementation Schedule / Reporting Schedule	Implementation Mechanism or Tool	Location Where Condition is Applicable	Actions/Notes
				Pre Construction	Construction	Post Construction	Operations					
		<p>resulted in take. If possible, dead individuals shall be collected, placed in an airtight bag; and refrigerated with the aforementioned information until further direction is received from NMFS.</p> <ul style="list-style-type: none"> Annual updates and reports required by these terms and conditions shall be submitted by December 31 of each year during the construction period to: Central Valley Office National Marine Fisheries Service 650 Capitol Mall, Suite 5-100 Sacramento CA 95814 FAX: (916) 930-3629 Phone: (916) 930-3600 	Monitoring/Reporting Party: Authority & Contractor									
Conservation Recommendations												
Water Quality impacts	46	<p>1. The FRA and HSRA should advise their contractor to follow these water quality measures during construction of the proposed project.</p> <ul style="list-style-type: none"> The contractor will implement all applicable Best Management Practices (BMPs) to avoid sedimentation, spills, etc. The contractor will be required to prepare a Storm Water Pollution Prevention Plan (SWPPP). During construction, all equipment refueling and maintenance shall occur more than 200 feet from the main channel, except for the pile driver(s) or other stationary equipment. Any spill within the floodplain and active channel of the San Joaquin River shall be reported 	Contractor	X	X	X		Prior to construction; Comply with schedule and reporting requirements contained in SWRCB's General Construction Permit for Stormwater Discharges	Contract Requirements/ Specifications; Statewide General Permit	San Joaquin River	<p>Implement SWPPP & BMPs</p> <p>Refuel and maintain vehicles at least 200 ft. from channel</p> <p>Report to NMFS any spill to the channel and floodplain</p> <p>Maintain on-site absorbent boom to control any accidental spills</p>	

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				Pre Construction	Construction	Post Construction	Operations					
		<p>to NMFS, CDFG and any other appropriate resource agencies within 48 hours.</p> <ul style="list-style-type: none"> The contractor shall have an absorbent boom available within 250 feet of the live channel during all in or near channel work to be readily prepared for quick containment of any unanticipated spills within or adjacent to the San Joaquin River. All measures from the 1602 Streambed Alteration Agreement, 404 and 401 water quality certifications/permits will be adhered to. 										
Riparian vegetation removal	46	2. Any riparian vegetation removal within 250 feet of the San Joaquin River, that cannot be restored onsite, must be mitigated off site at a ratio of 3:1.	Contractor					Post-construction. Follow reporting requirements as established by agency permit conditions	Condition of Design/Build Contract Habitat Mitigation and Monitoring Plan (HMMP) and Memorandum documenting compliance and other reporting requirements in the 1600 Streambed Alteration Agreement.	San Joaquin River		
Aquatic and riparian habitat	46	3. The FRA and HSRA should support and promote aquatic and riparian habitat restoration within the San Joaquin River Basin, and implement practices that avoid or minimize negative impacts to salmon and steelhead on all of their project sites.	Contractor and Authority	X	X	X				San Joaquin River Basin	Minimize impacts to riparian vegetation; apply BMPs for all construction work w/in San Joaquin River Basin	
Notification	47	In order for NOAA Fisheries to be kept	Authority	X	X	x	X			San Joaquin River		

	Page Number	Permit Conditions and Other Excerpted Material	Implementing Party and Monitoring / Reporting Party	Mitigation Timing					Implementation Schedule / Reporting Schedule	Implementation Mechanism or Tool	Location Where Condition is Applicable	Actions/Notes
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		informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats, NOAA Fisheries requests notification of the implementation of any conservation recommendations.								Basin		

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ATTACHMENT 1
MITIGATION MEASURE MONITORING COMPLIANCE FORM

Reporting Period: Pre-construction Construction Post-construction

Report Date: _____

Mitigation Measure/Number:

Has the mitigation measure been implemented?

Yes No

Notes (add additional sheets as necessary):

Is further action or monitoring required?

Yes No

If yes, describe (add additional sheets as necessary):

Is consultation with outside agencies required?

Yes No

If yes, identify agency: _____

Has consultation with outside agency been completed?

Yes No

Monitoring verified by: _____

Date: _____

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ATTACHMENT 2

PERMIT CONDITION MONITORING COMPLIANCE FORM

Reporting Period: Pre-construction Construction Post-construction

Report Date: _____

Permit Condition/Number:

Has the permit condition been implemented?

Yes No

Notes (add additional sheets as necessary):

Is further action or monitoring required?

Yes No

If yes, describe (add additional sheets as necessary):

Is consultation with outside agencies required?

Yes No

If yes, identify agency: _____

Has consultation with outside agency been completed?

Yes No

Monitoring verified by: _____

Date: _____

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APPENDIX 2

FIELD DATA FORM

TEMPLATE (DRAFT)

FIELD DATA FORM TEMPLATE (DRAFT)

Date: _____

Project: _____

Surveyors/Monitors: _____

Start Time: _____ End Time: _____

Weather: _____

Location/Coordinates: _____

Photos (roll, number, etc.): _____

Issues/Special Concerns/Finds (explain below): YES NO

Remedial Actions Performed or Recommended (explain below): YES NO

Field Notes (include illustrations, attach photos, use additional sheets as necessary):

Return completed form to the Environmental Mitigation Manager, Macie Cleary, 2201 Dupont Dr., Suite 200, Irvine, CA, 92612, or by email at Macie.Cleary@parsons.com, or by fax at (949) 263-1225.

APPENDIX 3

ENVIRONMENTAL

NOTIFICATION CHECKLIST

FORM

Environmental Notification Checklist Form

ENC Version 1.0

CP1 Section Environmental Notification Checklist Form

Today's Date: _____

This Environmental Notification Checklist form is for reporting and notifying appropriate personnel for unforeseen potential environmental impacts encountered during the course of CP1. When unforeseen environmental impacts occur on the Project site, notify the appropriate personnel immediately (refer to the Environmental Management Plan Table 2, Environmental Contacts for a list of names and contact information). Upon notifying the appropriate personnel, complete the following form and return to the Environmental Mitigation Manager within 24 hours.

Name (Print): _____

Title: _____ Date of Incident: _____

Location of Incident: _____

Check which of the following events occurred anywhere on the Project site:

<input type="checkbox"/>	Hazardous Materials management	<input type="checkbox"/>	Discharge to groundwater
<input type="checkbox"/>	Discovery of an active bird nest (with eggs or young)	<input type="checkbox"/>	Violation of Clean Water Act Section 401 Water Quality Certification
<input type="checkbox"/>	Discovery of a Cultural or historic artifacts	<input type="checkbox"/>	Violation of Clean Water Act Section 402 – NPDES
<input type="checkbox"/>	Discovery of human bones or remains	<input type="checkbox"/>	Violation of 1602 California Department of Fish and Wildlife (CDFW) Streambed Alteration Agreement
<input type="checkbox"/>	Discovery of wildlife injured during construction activities	<input type="checkbox"/>	Violation of Governmental Rules (including Environmental Laws)
<input type="checkbox"/>	Discovery of hazardous materials	<input type="checkbox"/>	Violation of local watershed district or water management organization requirements
<input type="checkbox"/>	Discovery of disturbance to any threatened or endangered species or its habitat	<input type="checkbox"/>	Occurrence of work in streams or wetlands
<input type="checkbox"/>	National Pollutant Discharge Elimination System (NPDES) inspections by Regional Water Quality control Board (RWQCB)	<input type="checkbox"/>	Occurrence of work outside of planned right-of-way limits
<input type="checkbox"/>	Discovery of illicit discharges of water and/or sediment leaving the site	<input type="checkbox"/>	Any pollution, discharge, or other environmental issues not covered in items listed in this table. Please Specify (use additional sheets as necessary):

Have the appropriate personnel been notified? (refer to the Environmental Management Plan Table 2, Environmental Contacts for a list of names and contact information)

Yes, [name(s) of personnel contacted] _____

was contacted on _____.

If not, include explanation (use additional sheets as necessary):

Return completed form to the CP-1 Project Environmental Mitigation Manager, Macie Cleary, 2201 Dupont Dr., Suite 200, Irvine, CA, 92612, or by email at Macie.Cleary@parsons.com, or by fax at (949) 263-1225.

**APPENDIX 4
RECORD OF
ACKNOWLEDGEMENT
FORM, ENVIRONMENTAL
PROTECTION TRAINING
PROGRAM**

Record of Acknowledgement

Environmental Protection Training Program

Tutor Perini/Zachry/Parsons (TPZP) and Subcontractor employee that will be working on the Project site must carefully review the following statements declaring that the individual understands and will fully comply with the guidelines, as set forth in the Environmental Protection Training Program.

1. I have reviewed the Environmental Protection Training Program and understand the information presented in the materials provided.
2. I understand the proper procedures for notifying and documenting any unforeseen environmental impacts that may occur on the Project site.
3. I understand that failure to abide by the procedures outlined in the Environmental Protection Training Program may cause adverse effects on the Project and may result in disciplinary action.
4. I understand that there are legal consequences to the individual and to the Project for violating any applicable local, State, or Federal laws, ordinances, and regulations as indicated in the Environmental Protection Training Program.
5. I have reviewed the Environmental Protection Training Program and understand the information presented in the materials provided.
6. I understand the proper procedures for notifying and documenting any unforeseen environmental impacts that may occur on the Project site.
7. I understand that failure to abide by the procedures outlined in the Environmental Protection Training Program may cause adverse effects on the Project and may result in disciplinary action.
8. I understand that there are legal consequences to the individual and to the Project for violating any applicable local, State, or Federal laws, ordinances, and regulations as indicated in the Environmental Protection Training Program.

Print Name: _____

Signature: _____

Date: _____

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