

California High-Speed Rail Authority



RFP No.: HSR 14-32

**Request for Proposal for Design-Build
Services for Construction Package 4**

**Reference Material, Part E.2 –
Environmental Compliance Program Manual**

California High-Speed Rail Authority

Project Environmental Document

Environmental Compliance Program
Manual

September 2015



RFP No.: HSR 14-32 – Addendum No. 2 – 10/09/2015



California High-Speed Rail Program



TECHNICAL GUIDANCE

Project Environmental Document Environmental Compliance Program Manual

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Revision	Date	Description
0	July 2015	Initial Release
1	September 2015	RDP, Authority, FRA Refinements Incorporated
2		RDP, Authority Refinements Incorporated

Note: Signatures apply for the latest revision as noted above

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RFP No.: HSR 14-32 – Addendum No. 2 – 10/09/2015

ACRONYMS AND ABBREVIATIONS

ADES	Authority Director of Environmental Services
APE	Area of Potential Effect
ATP	Archaeological Treatment Plan
Authority	California High-Speed Rail Authority
BETP	Built Environment Treatment Plan
BMP	Best Management Practice
Caltrans	California Department of Transportation
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CP	Construction Package
CVFPB	Central Valley Flood Protection Board
DB	Design-Build
DPM	Document and Permit Manager
DPM	Document and Permit Manager
DSB	Disposal, Storage, and Borrow
ECP	Contractor's Environmental Compliance Plan
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EMMA	Environmental Mitigation Management and Assessment
ESA	Environmentally Sensitive Area
FED	Final Environmental Documents
FRA	Federal Railroad Administration
GA	Governmental Approvals
GIS	Geographic Information System
IECP	Contractor's Interim Environmental Compliance Plan
ITP	Incidental Take Permit
MM	Mitigation Measure
MMEP	Mitigation Monitoring Enforcement Plan
NEPA	National Environmental Policy Act
NOD	Notice of Determination
NTP	Notice to Proceed
O&M	Operations and Maintenance
PA	Programmatic Agreement
PCM	Project and Construction Management
PLEG	Project Level Environmental Group

RC	Regional Consultant
RDP	Rail Delivery Partner
ROD	Record of Decision
SAGA	Supplemental or Amended Governmental Approval
USFWS	U.S. Fish and Wildlife Service
WEAP	Worker Environmental Awareness Program

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EXECUTIVE SUMMARY

An environmental compliance program is critical to the efficient and cost-effective delivery of large infrastructure projects and is an important aspect of the California High-Speed Rail Authority's (Authority) commitment to protecting and enhancing the environment.

This document describes the purpose of the California High-Speed Rail environmental compliance program and details the six key elements of the program consistent with other similar compliance programs and design-build projects including program policies, inspections and monitoring, commitment tracking in EMMA, contract review, training and education, and adaptive management. It is important to remember while reading this document that the focus is on environmental commitments, activities, and implementation; therefore, other very important and interrelated aspects of the Project, such as engineering design and right-of-way acquisition, among others, may not be specifically addressed.

The target audience for this manual is the environmental scientists and engineers who are implementing the Project during the construction phase. This is a highly technical report with names, terminology, and descriptions that may only be known to staff working on this particular Project.

A set of standards and procedures has been identified, reviewed, tested, analyzed, and approved. These procedures include the roles and responsibilities of all of the main organizations linked together to complete the Project.

The manual also describes the document deliverable and review expectations established to ensure that high-quality materials are consistently prepared and submitted for all aspects of the Project. Quality documents help speed up the review and approval of permit applications and allow agency staff to gain a better understanding of the environmental protection measures built into the Project.

To be successful, the program also includes a communication plan used to ensure that all entities follow consistent protocol to inform, educate, and notify others about the status of the Project and to obtain approval where necessary. This plan ties together a complex network of state and federal agencies, consultants, contractors, and others involved with project delivery.

The manual describes methods to identify different types of noncompliance events and discusses ways to avoid noncompliance. If noncompliance occurs, the manual describes the steps that need to occur to prevent or reduce environmental damage, including issuance of a stop work order, the process to resolve the issue, and procedures to quickly return to work. This compliance program reduces the likelihood of Agencies with enforcement power from shutting down operations, and helps avoid potential fines and penalties.

In order to ensure ongoing success of this program, a set of trainings and special meetings is described that will be used to disseminate information to new staff, contractors, and consultants when they are brought into the Project. Along with training, the process of constant evaluation and adjustment to new or changing circumstances is described, including the ongoing contract improvement review process aimed at refining contract language to clarify and reduce misinterpretations or change orders.

An annotated list of references used in the preparation of this manual has been prepared. The manual draws on these references and the experiences documented by a wide range of organizations. The primary references used include manuals and reports prepared by the California Department of Transportation (Caltrans) and the Washington Department of

Transportation (WSDOT), as well as numerous other state and local transportation departments. Environmental compliance information was gleaned from documents prepared by the Federal Highway Administration, the U.S. Forest Service, the Bureau of Land Management, the American Association of State Highway and Transportation Officials, and others. It also includes many of the principles developed by the U.S. Environmental Protection Agency, as well as several state environmental protection agencies. Numerous university research papers and graduate theses on the topic of environmental compliance were also used to provide background information specific to design-build projects.

Finally, the manual includes numerous appendices that provide more information on specific aspects of this program. These appendices provide useful background information and more details on the implementation of the standards, procedures, and communication protocols described in this manual.

1 TERMS AND USAGE

As used throughout this manual, the following terms have the meaning set forth below.

Affected Environment: The physical, biological, social, and economic setting potentially affected by the Project.

Anthropogenic Fugitive Dust Emissions: All mechanically suspended dust from human activity, including agriculture, construction, mining, and demolition; vehicular movement on paved and unpaved surfaces; materials handling, processing, and transport; cooling towers; and animal movement on surfaces that have been disturbed or altered by humans beyond a natural range.

Area of Potential Effect (APE): A section 106 of the National Historic Preservation Act term for the area along the project right-of-way potentially affected by construction and operation of the Project. For archaeological properties, it is the area of ground proposed to be disturbed during construction of the undertaking, including grading, cut-and-fill, easements, staging areas, utility relocation, borrow pits, and biological mitigation areas; for historic architecture, considered to be the proposed construction footprint and properties near the undertaking where the undertaking would result in an indirect adverse effect to the property. Indirect adverse effects may include loss of access, visual impacts, or noise and vibration levels that would affect a historic property's character-defining features.

Authority: California High-Speed Rail Authority.

Authority Director of Environmental Services (ADES): The environmental staff appointed by the Governor of California to oversee all Program-wide environmental activities of the Authority.

Authority-Provided Governmental Approvals: The Governmental Approvals listed for which the Authority is responsible for obtaining that have not been assigned to the contractor to obtain..

Best Management Practices (BMPs): Methods designed to minimize adverse effects to the environment. Examples of BMPs include practices for erosion and sedimentation controls, including techniques for dust control, perimeter silt fences, hydro-mulching, and sediment basins. Additional BMPs are described in the California Stormwater Quality Association Best Management Practices Handbook. (Board, 2004)

Biological Resources: Plant and wildlife species, terrestrial and aquatic habitats (including jurisdictional waters), and habitats of concern (including sensitive plant communities, critical habitat, core recovery areas, mitigation banks, and wildlife corridors).

California Environmental Quality Act (CEQA): Legislation enacted in 1970 to protect the quality of the environment for the people of California by requiring public agencies and decision-makers to document and consider the environmental consequences of their actions. CEQA is the state equivalent of the National Environmental Policy Act (NEPA).

California High-Speed Rail Program: Any construction project undertaken by the Authority.

CEQA/NEPA Re-Examination Process: The Authority's process for reviewing and analyzing any design variation or change from the originally envisioned project description to determine whether the proposed change is within the scope of the Final Environmental Documents, and whether the proposed change will require any additional review or documentation to ensure compliance with CEQA and NEPA.

Change Order: A written amendment to the terms and conditions of the Contract Documents in accordance with the "Changes" clause.

Construction: Any activity that directly alters the environment, including any “pre-construction” soil-disturbing activities such as staging yard establishment and geotechnical exploration; and all other activity associated with building the Project such as clearing, compacting, digging, dewatering, drilling, excavating, filling, forming, grading, grubbing, pouring concrete, erecting structures, and any noise or dust-generating activity. Construction Work includes all the elements of Construction in combination with the elements of Work described below.

Contract: Collectively, the Contract Documents that establish the respective rights and obligations of the Authority and the Contractor with respect to the Project, including the performance of the work, the furnishing of labor and materials, and the basis of payment.

Contractor: The person who enters into the Contract with the Authority, as identified in the Signature Document. This includes the Design-Build Contractor, the Mitigation Site Contractor, railroads, Caltrans, and all other entities contracted for construction.

Contractor Environmental Submittals: All analyses, plans, documents, maps, GIS layers, compliance personnel resumes, survey and monitoring plans, reports and data, conditions assessments, compliance reports, resource avoidance, minimization, conservation and mitigation programs and plans, and all other environmental information and materials of every kind and nature, and all amendments and updates thereto, that must be prepared to the Contractor pursuant to the Environmental Requirements, including, without limitation, the Environmental Compliance Plan, the Regulated Resources Map, the Environmental Constrained Footprint, and the Required Surveys GIS Data Layer.

Cultural Resources: Resources related to the tangible and intangible aspects of cultural systems, living and dead, that are valued by a given culture or contain information about the culture. Cultural resources include, but are not limited to, sites, structures, buildings, districts, and objects associated with or representative of people, cultures, and human activities and events.

Dewatering: The process of removing water from a substance or an area such as an excavation, irrigation ditch, or stream channel.

Design-Build (DB): The system of contracting under which one entity performs both architecture/engineering and construction under a single contract with the owner.

Design-Bid-Build (DBB): The “traditional” project delivery approach where the owner commissions an architect or engineer to prepare drawings and specifications under a design services contract, and separately contracts for construction by engaging a Contractor through competitive bidding or negotiation.

Designated Biologist: A biologist approved by the California Department of Fish and Wildlife to complete surveys and monitoring of the covered species for which they are designated and to complete activities as set forth in the permits. The Designated Biologist is responsible for monitoring Covered Activities to help minimize and fully mitigate or avoid the incidental take of individual Covered Species and to minimize disturbance of Covered Species' habitat.

Disposal, Storage, and Borrow (DSB): The term used to describe sites used for the disposal, storage, or obtaining (borrow) of earthen materials. All DSB sites must be located as described in the environmental documents, or if new sites are proposed outside the footprint, which are not licensed materials sites, they must be reviewed and approved using the environmental re-examination process.

Disturbance: A discrete natural or human-induced event that causes a change in the condition of an ecological system.

Document and Permit Manager (DPM): An environmental specialist, or group of environmental scientists, who coordinates all environmental activities occurring during construction at the Section level. The DPM is responsible for gaining approval for Environmental Re-Examinations (see below).

Effect: A change in the condition or function of an environmental resource or environmental value as a result of human activity. Typically, this refers to a negative change that may result in unintentional impacts.

Environmental Audit: A systematic, documented, periodic, and objective review by regulated entities of operations and practices related to meeting environmental requirements.. Examples of this Audit include an evaluation of how well the Contractor or PCM is using EMMA, evaluations of construction sites by the Authority or FRA, attending WEAP and other trainings, comparison of document submittals, and others.

Environmental Compliance Plan (ECP): The plan prepared and updated by the Contractor set forth in the Contract and more fully described in Section 3.2.1 Contractor's Environmental Compliance Plan to help assist the Contractor in performing, and to help the Authority ensure the Contractor's compliance with, all Environmental Requirements, including without limitation, those associated with the Final Environmental Documents, the Regulated Resources, and the Governmental Approvals. The Contractor's ECP should define and demonstrate an understanding of the environmental footprint and the method used to propose and obtain approval for changes. The plan describes the steps that the Contractor will take to ensure compliance with all commitments of the Authority.

Environmental Compliance Report: A report prepared and updated by the Contractor certifying that the submittal (a) is within the scope of the analysis and findings of the Gas and FEDs and complies with all Environmental Requirements; or (b) requires further review and analysis and potentially amendment of those GAs and FEDs pursuant to applicable Law as implemented through the Authority's Environmental Re-Examination Process(es).

Environmental Constrained Footprint: The portion of the Environmental Footprint that must be protected from project impacts and/or preserved or conserved to comply with Environmental Requirements.

Environmental Documents: The set of documents prepared to comply with the requirements of CEQA and NEPA.

Environmental Footprint: The area identified on the map and corresponding GIS layer included in the Final Environmental Documents, updated using the Environmental Re-Examination Process, reflecting the physical area in which direct or indirect project impacts to environmental resources are expected to occur as analyzed and approved in the Final Environmental Documents. Any construction activity (see Construction) outside of the Environmental Footprint not included in the maps or project description must have prior approval by the Authority. Compare to Area of Potential Effect (APE).

Environmental Impact Report (EIR): Documentation of the detailed analysis of a project's potential significant effects, mitigation measures, and reasonable alternatives to avoid significant effects. The EIR is prepared as part of the CEQA environmental review process.

Environmental Impact Statement (EIS): Documentation required by NEPA for certain actions "significantly affecting the quality of the human environment." An EIS is a decision-making tool that presents detailed analysis of a proposed action and alternatives to the proposed action. The

EIS presents the project's potential effects—both beneficial and adverse—and any mitigation measures to reduce adverse effects.

Environmental Mitigation Management and Assessment (EMMA): The Authority's compliance tracking database where implementation of environmental commitments is documented using data from field monitors and other users. Documentation of implementation and compliance is archived and associated with impacts for which commitments are associated. The data archive is accessible by users and agency partners and ensures a cohesive administrative record for compliance.

Environmental Re-Examination Process: A process established by the Authority whereby proposed changes to the project described in the environmental documents and permits can be evaluated under CEQA/NEPA to determine if supplemental or revised analysis is required. A re-examination is typically required for any construction activity outside of the environmental footprint, including but not limited to staging area establishment, borrow sites, disposal areas, drilling or excavating for geotechnical or test piles; or changes to the construction activity inside the footprint; or any construction that is not at least generally described in the text of the environmental documents.

Environmental Requirements: All terms, conditions, and requirements of the Contract Documents related to implementation of, and compliance with, all applicable environmental laws, the Final Environmental Documents, the Governmental Approvals, Supplemental or Amended Governmental Approvals, any subsequent or supplemental CEQA or NEPA documents, and any other regulatory protections for the Regulated Resources. This includes all terms, conditions, requirements, and minimization measures, avoidance, mitigation measures, project design features, and conservation and mitigation plans specified therein.

Federal Railroad Administration (FRA): An agency within the U.S. Department of Transportation that administers financial assistance programs and regulates the operation and safety of freight and passenger rail throughout the United States. The FRA is the federal partner to the Authority; lead Federal Agency for NEPA compliance; and is responsible for environmental oversight, compliance, and technical assistance at the Program level.

Final Environmental Documents: The Final EIR/EIS and the Authority's, FRA's, and Surface Transportation Board's related approval documents, including the Authority resolutions of approval; Authority Certifications; CEQA Findings of Fact; CEQA Statement of Overriding Considerations; Mitigation Monitoring and Enforcement Plan; FRA's ROD or other findings, determinations, documents, and decisions that were approved as part of the Authority's and FRA's project approval and CEQA/NEPA process; and the Surface Transportation Board Decisions; among others.

Footprint: The area covered by a facility or affected by construction activities (see also Environmental Footprint).

Governmental Approval (GAs): Any approval, authorization, certification, consent, decision, exemption, filing, lease, license, permit, agreement, concession, grant, franchise, registration, or ruling, together with any required CEQA/NEPA documentation, required by, and approved at the discretion of, or with any Governmental Person in order to design and construct the Project, or operate the Project until Final Acceptance, including, without limitation, all terms, conditions, requirements, and avoidance, minimization, conservation and mitigation plans, and mitigation measures and project design features related to such Governmental Approvals.

Governmental Approvals Amendment Process: The Authority's process for reviewing and analyzing environmental data and information regarding any Variation to determine, in the Authority's sole discretion, whether the Variation would have regulatory permitting consequences, including new or more severe impacts to jurisdictional resources subject to environmental permitting, such as waters of the U.S., waters of the state, habitats of sensitive species, discharges to receiving waters, and all other Regulated Resources related to necessary Environmental Requirements (see also Environmental Re-Examination Process).

Impact: A change in the condition or function of an environmental resource or environmental value as a result of human activity.

Lead Agency: The public agency that has the principal responsibility for carrying out or approving a project or action and is responsible for preparing environmental review documents in compliance with CEQA and/or NEPA.

Mitigation: Action or measure undertaken to minimize, reduce, eliminate, or rectify the adverse impacts of a project, practice, action, or activity.

Mitigation Monitoring and Enforcement Program (MMEP): A document outlining the strategy for implementation of the mitigation measure committed to in the EIR/EIS.

Monitoring: The collection of information during construction work to determine the effects of resource management and to identify changing resource conditions or needs.

Notice of Determination (NOD): A concise notice to be filed by a California public agency after it approves or determines to carry out a project that is subject to the requirements of CEQA.

Notice to Proceed (NTP): One or more written directives from the Authority to the Contractor authorizing the Contractor to initiate the work or a portion of the work. In the case where only a portion of the work is authorized, a Limited Notice to Proceed (LNTP) is issued.

On-Call Environmental Consultant (OCEC): Environmental consultants that complete studies, reports, analysis, reviews, and other planning work associated with the delivery of the EIR/EIS, re-examinations, Authority responsible permits, or other activities as determined necessary by the Authority. The OCEC may complete work originally assigned to the RC, or serve the roll previously filled by the RC.

Paleontological: Related to the study of life in past geologic time.

Professional Qualification Standards: These define the Secretary of the Interior's standards of minimum education and experience required of archaeologists, historians, and architectural historians to perform identification, evaluation, registration, and treatment of historic properties.

Program-Level: Refers to activities that cover the broad spectrum of a large, complex, regionally extensive effort comprised of a number of smaller, regionally focused projects or phases.

Program Management Team: Contract staff hired to serve as an extension of the Authority staff with a focus on planning and implementation at the Program level. As part of a new Contract, this was renamed the Rail Delivery Partner (RDP) in 2015.

Programmatic Agreement: A formal agreement among the Federal Railroad Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California High-Speed Rail Authority Regarding Compliance with Section 106 of the National Historic Preservation Act, as it Pertains to the California High-Speed Rail Project.

Project Footprint: The area needed to construct, operate, and maintain all permanent project features (including tracks and guideway structures, train signaling and controls and communications facilities, traction power distribution and substations, switching and paralleling stations, passenger platforms and stations, maintenance-of-way facilities, maintenance facilities, perimeter security controls, passenger station access, facility operation or maintenance access, sound walls or other peripheral features owned and maintained by the Authority), freight or transit railroad grade separations, roadway grade separations and adjoining street or intersection changes, contiguous access to severed parcels, new utility features, existing utility relocations, access to new or relocated utility features, any other physical changes within the area needed to construct and operate high-speed rail, and property rights or licenses to accommodate its construction, operation and maintenance (temporary and permanent ground or aerial fee properties, easements or licenses for facility and associated feature sites, operations and maintenance activities, operation or maintenance access, utility connections and maintenance, stormwater and wildlife management features, construction activities, mobilization, staging and access).

Project-Level: Refers to more detailed site-specific environmental issues focusing on construction implementation. A project level issue usually involves the Contractor, Construction Management and a Section level environmental staff, with occasional Regional level involvement.

Project Level Environmental Group (PLEG): A committee composed of environmental specialists and construction managers who meet on an as-needed basis to resolve environmental issues related to each construction package.

Project and Construction Management (PCM): Consulting staff hired to serve as an extension of the Authority construction management team with a focus on managing individual design-build contracts.

Quality Assurance: All planned and systematic activities implemented within the quality system that can be demonstrated to provide confidence that the project, products, or services will fulfill requirements for quality.

Quality Control: Techniques that are used to ensure that a product or service meets requirements and that the work meets the product or service goals. Quality Control is the act of taking measurements, testing, and inspecting a process or product to ensure that it meets specification.

Rail Delivery Partner (RDP): Effective July 1, 2015, consultant firm similar to the Project Management Team, overseeing and providing program management, support for strategic advice, business planning, continued development, and management assistance.

Record of Decision (ROD): A concise public record issued by FRA pursuant to NEPA containing inter alia, a statement of the decision, identification of all alternatives considered, identification of an environmentally preferable alternative, a public statement as to whether all practical means to avoid or minimize environmental harm from the alternative selected have been adopted (and if not, why they were not), and a summary of monitoring and enforcement, also known as the Mitigation, Monitoring and Enforcement Plan, where applicable, for any mitigation.

Regional Consultant (RC): Qualified firms that provide planning, preliminary engineering, alternatives development, financial and programming analysis, stakeholder coordination, environmental services, and right-of-way services for Sections of the high-speed rail system.

Relocation Work: The utility work and public facility work as well as the work by third parties and/or their contractors associated with relocation of utilities and/or public facilities, including

design, construction, installation, manufacture, supply, testing, inspection, and any other work associated with the Project and required by the Third-Party Agreements.

Service-approved Project Biologist: A biologist approved by the USFWS who is responsible for reporting and overseeing the biological resources mitigation. The USFWS-approved Project Biologist reports to the USFWS-approved mitigation manager, coordinates with the resident engineer, and ensures implementation of all conservation measures and mitigation plans by the Contractor and Service-approved Contractor's Biologist, and advises the Contractor regarding measures that may minimize or avoid impacts on federally listed species. The USFWS-approved Project Biologist has specialized support from other biological monitors and works with the USFWS-approved mitigation manager during deployment of the biological monitors and their respective responsibilities. The USFWS-approved Project Biologist submits memorandums and reports to document compliance with all conservation measures to the mitigation manager at daily, weekly, and monthly intervals.

Special-Status Species: Plants and animals that are legally protected under the Federal Endangered Species Act of 1973, the California Endangered Species Act, or other regulations, such as those species that meet the definitions of rare or endangered under CEQA Guidelines Sections 15380 and 15125.

Stormwater Pollution Prevention Plan: A plan that specifies site-management activities to be implemented during site development, including construction stormwater BMPs, erosion and sedimentation controls, dewatering (nuisance water removal), runoff controls, and construction equipment maintenance

Supplemental or Amended Governmental Approval (SAGAs): Any new, additional, or amended Governmental Approvals determined (pursuant to the Governmental Approvals Amendment Process or otherwise) to be required after issuance of Governmental Approvals for design, construction, or implementation of the Project in compliance with applicable laws.

Take: To harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.

Third Party: Any utility owner or public facility owner; provided, however, that in the Contract Documents other than the General Provisions and Special Provisions, "third party" may sometimes mean and include third parties in addition to utility owners or public facility owners (such as railroads and other third parties), depending on the context.

Triggers for Environmental Re-Examination: Any event or activity that requires the preparation of a re-examination, such as a change in the environmental footprint due to a proposed Variation; proposal to establish a staging area or other construction outside the environmental footprint; or a change in the vertical, horizontal, or other aspect of the Project that was not described in the final environmental documents.

Variation: Refinements, changes, or modifications to the Project (or elements thereof) approved in the Final Environmental Documents or Governmental Approvals. Variations may include, but are not limited to, proposed changes in alignment, right-of-way, size or type of structure, mitigation measures, construction methods, construction staging, detours, or road closures or any other project element or change that is not within the Environmental Footprint or the Environmental Constrained Footprint and/or not described in the Final Environmental Documents.

Vernal Pool: An ephemeral wetland that predictably forms in permanent basins during the cooler part of the year but turns dry during summer.

Waters of the State: Isolated wetlands that may not be subject to regulations under federal law (as defined by the Porter-Cologne Water Quality Control Act (§ 1305(e))). An area is a wetland if, under normal circumstances, it (1) is saturated by ground water or inundated by shallow surface water for a duration sufficient to cause anaerobic conditions within the upper substrate; (2) exhibits hydric substrate conditions indicative of such hydrology; and (3) either lacks vegetation or the vegetation is dominated by hydrophytes (San Francisco Estuary Institute 2009).

Waters of the United States: The federal Clean Water Act defines waters of the U.S. as (1) all waters that are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters subject to the ebb and flow of the tide; (2) all interstate waters, including interstate wetlands; and (3) all other waters, such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce (33 Code of Federal Regulations 328.3[a]).

Wetland: An area of land with soil that is saturated with moisture, either permanently or seasonally. According to the U.S. Army Corps of Engineers Wetland Delineation Manual, three criteria must be satisfied to classify an area as a jurisdictional wetland: (1) a predominance of plant life that is adapted to life in wet conditions (hydrophytic vegetation); (2) soils that saturate, flood, or pond long enough during the growing season to develop anaerobic conditions in the upper part (hydric soils); and (3) permanent or periodic inundation or soils saturation, at least seasonally (wetland hydrology).

Wildlife Corridor: A belt of habitat that is essentially free of physical barriers, such as fences, walls, and development, and connects two or more larger areas of habitat, allowing wildlife to move between physically separate areas.

Work: All services, labor, materials, and other efforts to be provided and performed by the Contractor, including scheduling; utility relocation; demolition; permitting; survey; geotechnical; design; environmental mitigation; construction; Quality Control and Quality Assurance for design and construction; community relations; quality inspection and testing; construction safety and security program; systems testing; preparation of as-built plans; and coordination with jurisdictional authorities (governments, public and private entities), utility companies, railroad companies, and local communities.

2 INTRODUCTION

Environmental compliance is critical to the success of the California High-Speed Rail project. The protection of the environment requires close attention to the various laws, codes, and criteria established by federal, state, and local governments. This environmental compliance program is designed to clarify the process for ensuring that the Authority’s environmental commitments are successfully fulfilled and to continue to foster partnerships, respect, and good working relationships with natural resource and permit agencies, environmental groups, Native American Tribes, and the public. Toward that end, the following manual is designed to achieve the following:

- Improve environmental compliance and reduce or eliminate noncompliance events
- Increase operational efficiency due to proactive planning and elimination of potential environmental impacts
- Reduce costs and time associated with resolving noncompliance, violations, or possible litigation
- Speed up the delivery of project environmental documents and permits
- Improve trust from regulatory agencies and environmental organizations as a result of increased environmental performance
- Improve communication among all stakeholders
- Improve public perception and community relations by following a transparent and effective program to protect the environment
- Establish good documentation of environmental compliance as evidence that commitments have been met

The Authority delegates implementation of environmental commitments to Contractors; however, as the project owner and “Lead Agency” under the California Environmental Quality Act (CEQA), the Authority is responsible to confirm environmental compliance. In addition, the Federal Railroad Administration (FRA) as “Lead Agency” under the National Environmental Policy Act (NEPA) is also responsible for the environmental compliance activities which the Authority is responsible for implementing. Therefore, it is critical that all staff have the knowledge to recognize environmental issues in the field and the confidence to report non-complaint events or identify shortcomings in the documentation process. This awareness, combined with a high degree of responsiveness, will ensure consistent and reliable environmental stewardship.

This manual was prepared after numerous meetings and consultations with environmental, engineering, and construction management staff. In addition, an in-depth literature review was completed on the topic of environmental compliance with a focus on design-build construction contracting mechanisms.

2.1 Purpose of the Environmental Compliance Program

The purpose of the Environmental Compliance Program is to support high-speed rail personnel that are responsible for environmental compliance during construction. To be successful for a project as complex as high-speed rail, the development of business practices and organizational capacity is crucial. This manual includes the following:

- Definition of the roles and responsibilities of the participants in the environmental compliance program
- The process and procedures to ensure compliance
- The process to transition complex environmental compliance requirements and continuity of issue history from Regional Consultants (RC) or On-call Environmental Consultants (OCEC) to Contractors
- The process for continuous improvement of bid documents, environmental documents, and Project and Construction Management (PCM) scopes of work
- The structure for collection of resource data
- The administrative record for compliance across the entire program
- A lessons learned feedback loop that includes analysis of compliance process strengths and weaknesses

Ultimately, this manual describes expectations for the environmental activities of the Contractors and how that work fits into the overarching program of PCM, Authority, and FRA environmental compliance oversight required by the permitting agencies, the Authority and the FRA.

2.2 Use of this Manual

This manual is designed to serve as a reference tool for all high-speed rail staff conducting environmental work related to the Project. This manual will be referenced in contract documents and other manuals, as needed. All parties are expected to follow the procedures and fulfill the responsibilities described in this manual. The standards and procedures should be integrated into the daily Construction Management work of the PCM and PLEG; the Contractor's Environmental Compliance Plan and daily construction activities; and the oversight and planning work carried out by the Authority, Rail Delivery Partner (RDP), and FRA.

2.3 What Defines Environmental Compliance?

In order to gain environmental approval for the Project, the Authority agreed to a number of commitments to protect and enhance the environment. These commitments became the basis of project approval; therefore, the need exists for a program to ensure that the Project is achieving compliance with all commitments. The primary sources for these environmental commitments are the Environmental Impact Report and Environmental Impact Statement (EIR/EIS). Equally important to these are the Governmental Approvals (GAs), including all permits that are approved for the Project, and other binding commitments that resulted from litigation or negotiation. Finally there are the commitments the Authority made for itself that are not required by another entity but equally important for completing the project.

The following outlines the Authority's environmental commitments:

- Mitigation measures within the environmental documents (EIR/EIS)
- Permit measures issued by state and federal agencies
- Agreements, applications, reports, settlements, or other documents where the Authority made a commitment to take action
- Management plans that interpret mitigation measures or permit conditions

The goal of this program is to:

- Create a framework to track and actively pursue compliance with all of these commitments through the course of the Project
- Provide clear documentation that compliance was achieved

It is recognized that perfect compliance for a project of this complexity is difficult and requires dedication from all levels. Therefore, procedures, protocols, and corrective processes to resolve noncompliance and methods for adaptive management have been developed and described to insure that all persons working on the Project understand and carry out their responsibilities to the greatest extent possible.

2.4 Components of the Environmental Compliance Program

There are six core components of the environmental compliance program that are primarily designed to operationalize the processes used to ensure that the environmental commitments made by the Authority and FRA are met. This is accomplished by creating and implementing a process that ensures that the environmental commitments are successfully completed by the Contractor as project sections proceed from the environmental document phase into the construction phase. These components also work together to document compliance with all commitments to the permitting agencies within the framework of the entire Project. Figure 2-1 illustrates each of the components of the high-speed rail compliance program.

By linking together the different branches of the organization into alignment with the six core elements of a compliance program including Program Policies, Inspections and Monitoring, Commitment Tracking in EMMA, Contract Review, Training and Education, and Adaptive Management, this manual provides the road map for all parties responsible for environmental compliance to follow. As such, this manual, along with the documents it references, is the foundation of the first element of the compliance program. It documents the standards and procedures for the entire program.



Figure 2-1 Components of the Environmental Compliance Program

3 PROGRAM POLICIES

3.1 Roles and Responsibilities

Environmental compliance for this project is divided into five “levels” or tiers of responsibility (see Figure 3-1) including:

- Program
- Regional
- Section
- Construction Management
- Construction

The five level structure is used to insure that all commitments of the Authority are carried out, tracked, and reported. Each level has its own specific area of responsibility which is critical in ensuring a smooth and efficient project delivery. However, each level is also closely connected to the other levels, and depends on a well-established line of communication and a commitment to teamwork. In addition, no level is more important than any other, and no level has control over the other. Rather, it is a symbiotic relationship designed to address all aspects of environmental compliance and ensure project success.

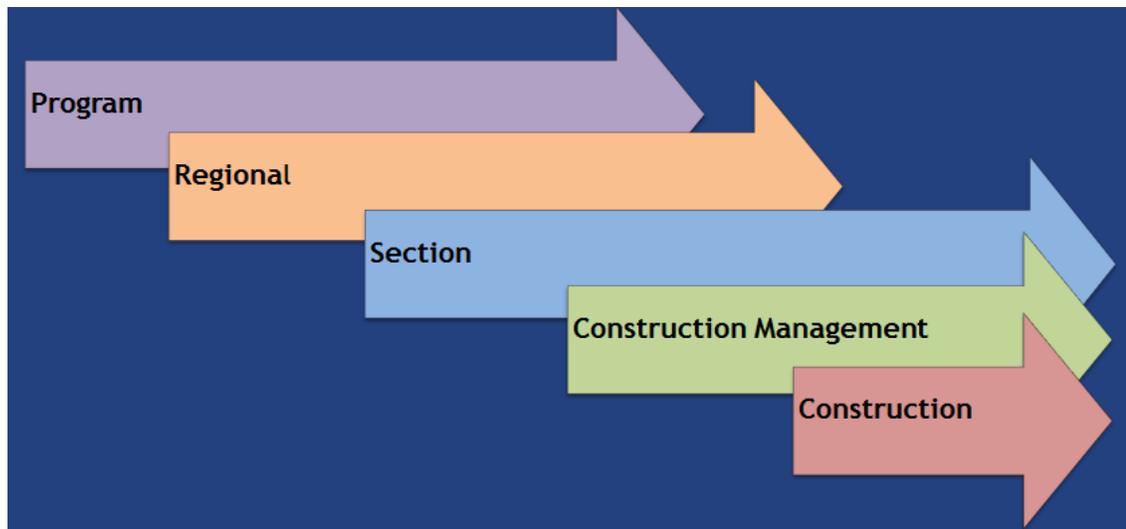


Figure 3-1 Structure of environmental compliance responsibilities

The Program level develops overall environmental policy and programs for the entire project statewide and is typically located in the Authority Headquarters office in Sacramento, California. The Program level staff frequently communicates with the Region and Section levels, and occasionally with Construction Management. The Regional staff are located in one of three geographic regions in the State and assist the Office of the Regional Manager with understanding and implementing the project’s environmental goals and policies. The Regional staff play an important role in transferring information between the Program and the Section, and are often involved with issues directly related to Construction Management and Construction. The Regional staff allows for more autonomy of the work being implemented in each Region, while at the same time ensures consistency with the Program level commitments. The Section level environmental staff are located as close to their respective project section as possible and are primarily responsible for managing the MMEP and Agency permits. This level coordinates the activities of

the different Construction Management and Construction teams occurring on numerous CP to ensure consistency with environmental documents and permits. The Section plays a key role with all Agency communications as well as ensures that information is passed down from the Program to the various CP construction managers. The Section staff are keenly aware of all activities on the ground within their assigned project section, but do not directly manage those activities. The actual management and verification of environmental tasks occurs at the Construction Management level. Construction Management staff reviews, approves, and verifies completion of all construction related environmental commitments. This level works closely with the Construction and Section level environmental staff, and has some shared responsibilities with the Regional staff, but have infrequent sharing of responsibilities with the Program level. And last, but perhaps most important, the Construction level environmental teams comprised of the various contractors and other construction entities where the actual implementation of most environmental commitments occurs. The Construction level provides for Biologists, Archaeologists, Hydrologists and other environmental specialists to assist with project design and monitor construction to ensure and document compliance.

Figure 3-2 shows the levels of environmental compliance responsibility as currently envisioned with a focus on the Central Valley Region. The arrows on the left side of the graphic show the breadth of typical communication of each of the levels. On the right side the multi-level PLEG is displayed showing its inclusion of the Region and Construction Management levels. A PLEG will be created for each of the CPs displayed as a green box stacked over its respective red box. This graphic also displays the scale of the environmental effort considering the fact that each box (not including Northern and Southern California) could represent a workforce of 2 to 10+ staff.

The following sections describe in more detail the roles and responsibilities of each of the levels, along with a description of the multi-level Project Level Environmental Group. The responsibilities include preparing various environmental documents; reviewing, commenting, and sending back for revisions or forwarding to the next level; finalizing documents to ensure compliance with permits and documents and submitting them for approval; and final approval of the work product.

3.1.1 Multi-Level

For each construction package (CP), the Authority will create an environmental compliance task force known as the PLEG which is a group of environmental staff representing multiple levels of environmental roles and responsibilities (see Figure 3-2). This group is created to streamline processes that require approvals from multi levels. It is not a separate level of responsibility but brings the levels together for decision making purposes.

The PLEG taskforce is comprised of:

- PCM Oversight Manager (Construction Management level)
- PCM Environmental Manager (Construction Management level)
- Authority Design and Construction Manager (Construction Management level)
- Authority Regional Environmental Liaison (Regional level)
- Section environmental staff (Section level)
- Other PLEG representatives that may be affected by a proposed action

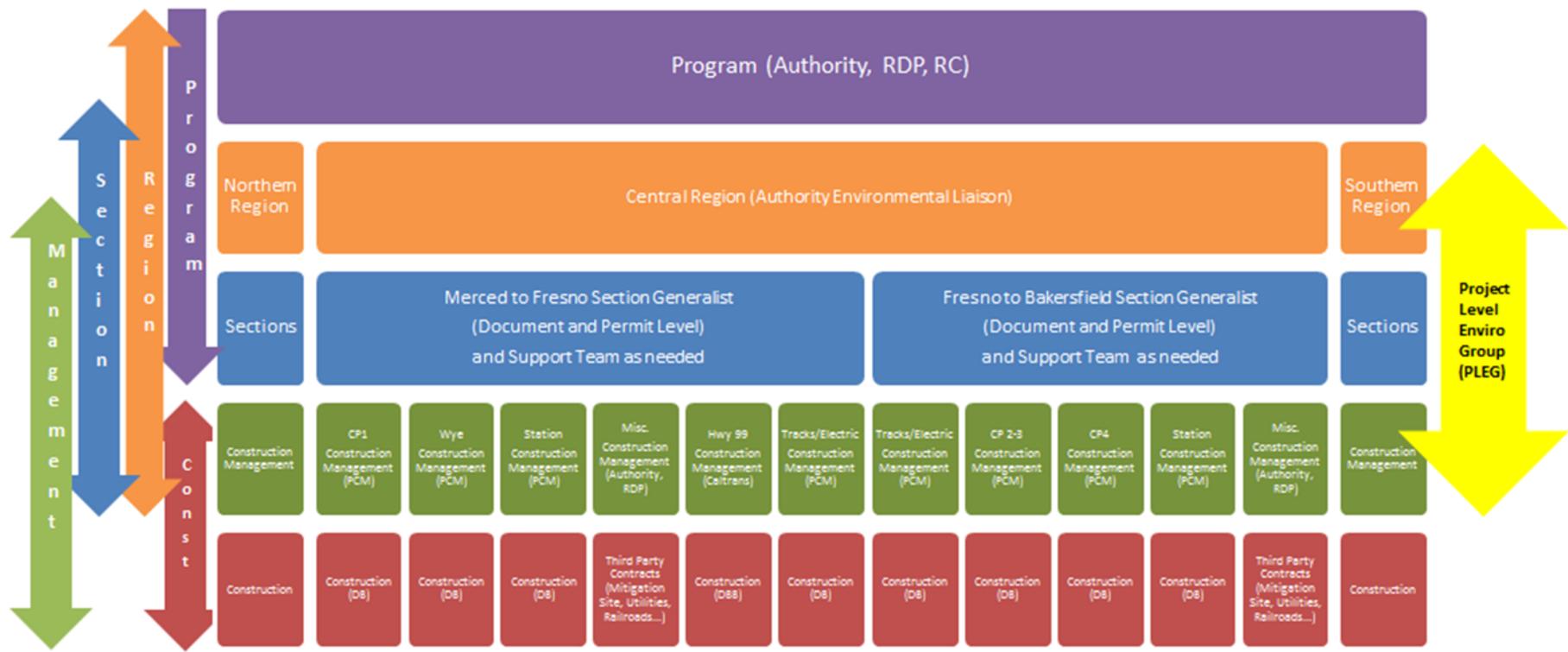


Figure 3-2 Levels of environmental compliance responsibility

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The PLEG specific environmental tasks include review and finalize re-examinations; review and finalize permit revision applications; review Contractor's annual reports; review Contractor's ECP; review MMEP required plans; and review application for "Environmental Certification" if applicable. Each member of the PLEG has specific approval responsibility, and they can use the PLEG meetings to gain information and understanding of the issues in order to make approval determinations.

The PLEG functions include the following:

- Close coordination and assistance with completion of re-examinations and permit revisions necessary to proceed with construction
- Review Contractor submittals such as re-examination and permit packages, plans, reports, or other documents that require approval by the Authority or Agencies
- Partnering with the Contractor regarding the Contractor's responsibility for environmental inspection, monitoring, and quality control/quality assurance of environmental elements of the Project
- Conduct construction oversight and audit process to review construction work for compliance with the Design-Builder's ECP and all project environmental commitments and contract requirements
- Cross-train environmental staff and bring all levels into organizational alignment.
- Update all environmental staff on developments at the Program, Region, or Section Level and send information gained at the Construction and Construction Management upward into the organization to ensure consistency and overall project success

The PLEG will work collaboratively to facilitate timely and clear communications at all levels to foster effective implementation of the Environmental Compliance Program. The PLEG participates in pre-construction meeting in the field with the Design-Builder's Inspectors and resource Agencies to discuss potential areas of concern. The pre-construction meeting should be used to summarize environmental goals and requirements related to the Project such as the specific permit conditions and environmental commitments of the Contract.

The PLEG will hold regular meetings to coordinate and assist it's members complete their assigned tasks. The meetings may include:

- Review of design changes to ensure consistency with Environmental Requirements
- Anticipate and consider permit modifications that may be necessary for new design or construction activities
- Develop strategies for guarding against schedule delays and additional costs
- Conduct over the shoulder and formal reviews of design documents to ensure incorporation of Environmental Requirements in construction documents
- Strategize and facilitate meetings with resource Agencies during project design and construction to ensure effective communication regarding environmental issues and requirements
- Work with inspectors to evaluate environmental compliance in the field
- Discuss and facilitate resolution of deficiencies with the Contractor's environmental compliance performance

Each member of the PLEG has different responsibilities, with many overlapping tasks. The following sections describe the specific responsibilities of each level of compliance review, approval, documentation, notification and other tasks.

3.1.2 Program Level

The Program level is responsible for the overall program-wide management; coordination of review and approval of environmental documents and permits; and execution of this environmental compliance program. The primary environmental responsibility of the Program level staff is to:

- Ensure completion of EIR/EIS environmental documents,
- Prepare and submit permit applications
- Review and submit plans or reports prepared by others to ensure they comply with Authority’s policies, procedures, methods and standards
- Developing contracts and agreements
- Establishing (obtaining permits, agreements, contracts, developing plans) and funding the compensatory mitigation for the Authority-responsible permits
- Notify Native Americans, interested parties, and SHPO of changes or noncompliance with cultural resources commitments

The Program prepares construction, consultant, and third-party contracts in close coordination with Construction Management, and conducts regular reoccurring reviews of contracts to ensure that all environmental commitments are clearly referenced in contract documents and tasks are assigned to a responsible party. The Program level conducts a project-wide compliance audit to evaluate all CP to determine the level of compliance as part of the commitments made to protect and enhance the environment.

At the Program level, the Authority directs the environmental work of the RDP, RC, and OCEC. The Authority ensures that all parties are fulfilling their assigned roles and responsibilities. The Authority Director of Environmental Services (ADES) oversees all environmental activities program-wide and coordinates closely with other division managers within the organization. The ADES has responsibility to ensure implementation of this environmental compliance program.

The Program level reviews, comments, and provides approval signatures on the EIR/EIS and all related documents. The Program manages all aspects of environmental document delivery. The Program level responsibility includes providing federal-level final review and approval of environmental documents, Federal permit applications, and plans or reports developed to fulfill commitments. The FRA is the last step in the chain of approvals for re-examinations.

The Program-level permitting staff obtains all Authority responsible permits and manages the permit delivery schedule. The Program staff may require the other levels to postpone submittals to agencies in order to not exceed agency staff workload capabilities and to allow them to focus on items determined to have high program-wide priority.

Program level staff conducts training to Regional, Section, and Construction Management staff on all aspects of the environmental compliance program, including topics such as the re-examination process, understanding the construction footprint, how to pass a construction site audit, permit compliance, and use of EMMA, among others.

The Program level staff manages the Program Geographic Information System (GIS) data and provides standards and policy in order to ensure consistency across all sections. This level is

responsible for preparing the initial GIS data and may interface with the Contractors, RDP, PCM, and Authority GIS representatives to transfer the data and provide background information.

The Program level is responsible for implementing a formal procedure for continuous improvement of the environmental compliance procedures. Details of the adaptive management strategy are spread throughout this manual, and Chapter 10 describes specific details for implementation. This manual will be updated on an annual basis to reflect lessons learned and provide clarification as these processes are put into practice.

The program-wide environmental assurance audit is a system by which the Authority and FRA verify that all environmental commitments are being adequately implemented by all levels. The system includes inspections of representative construction sites, review of Contractor environmental submittals, and verification that the EMMA database is being used correctly, assessment of training programs. The audit system serves as the checks and balances to other environmental compliance work executed at the Construction Management or Construction level. The audit provides timely and unbiased reporting of environmental conditions to the leadership of the Authority, the FRA, and permit agencies.

The Program level coordinates and manages the use of the EMMA database by the following:

- Providing periodic database revisions
- Developing reports as determined necessary
- Resolving technical difficulties
- Providing training
- Responding to “help” questions
- Facilitate use by Construction Management and Section levels
- Entering records for Authority “Headquarters” responsible commitments
- Reporting positive compliance for use by the Authority Public Relations

Changes proposed by the Contractor that result in changes to compensatory mitigation requirements are the responsibility of the Contractor to fund. However, for contractor initiated changes, the Authority remains responsible to ensure completion of the compensatory mitigation.

3.1.3 Regional Level

The Project is divided into three Regions: Northern California, Central Valley, and Southern California. Each Region is managed by a Regional Director and several Regional staff. The Regional level includes an environmental specialist who coordinates and assists with all environmental activities in the region. This level is responsible for providing the local leadership with key information and advising them to the environmental process. The staff at this level allows each of the regional teams to be somewhat autonomous while still maintaining effective communication with important Program level developments, policies, and management decisions being implemented by the Authority leadership.

At the same time, the Regional staff is also responsible for keeping the Program level informed of issues and provide information generated during construction to ensure that the Program level is able to continue to develop policies that are based on the reality of building the high-speed rail. The Regional staff may also assist the Section and Construction Management levels when needed to complete environmental tasks in a timely manner.

Regional staff coordinates the environmental activities occurring on the various Sections within the Region and generally tracks the schedule of environmental activities related to construction. As part of this coordination, the Region staff attends as many PLEG meetings as possible to quickly resolve environmental issues and ensure consistency across the geographic reach of the

region. However, because a Region could have numerous PLEGs, the Regional staff prioritizes which meetings to attend or may delegate Regional level responsibility to other staff.

The environmental staff at this level may be delegated approval of the re-examinations after they have been finalized by the Section. If approval has not been delegated, the approval occurs at the Program level. In general, the Regional staff will depend on the Construction and Construction Management levels to provide complete preparation and comprehensive review of documents so that the Regional staff is only required to conduct brief consistency checks and glean needed information in order to approve, or obtain approval, of documents.

3.1.4 Section Level

The Section is the functional unit that manages the EIR/EIS and permits during construction. This level is responsible for document and permit consistency review of Construction deliverables and to obtain signatures of approval from Authority or Agency staff at the Program or Region levels. Environmental staff working at the Section level allows for local control of the environmental process, which allows for more rapid completion of critical tasks and speeds up project implementation. The section level staff coordinates and assists the environmental teams of the various construction management and construction contractors, as well as coordinating with the Region and Program levels to ensure consistency across the entire Project state-wide. The manager of the Section Level is known as the Document and Permit Manager (DPM).

The Section staff person provides a final consistency review to ensure that re-examination packages that were prepared at the Construction level and reviewed by the Construction Management level meet the requirements of the approved environmental document and associated permits. The Section staff may delay delivery of packages for approval signature based on consideration of the urgency and prioritization of other re-examinations that may be in the pipeline or need immediate attention. Any decision to delay submitting a re-examination for signature must be made in conjunction with Construction Management or the PLEG. This level ensures that re-examinations are delivered to the appropriate Authority staff for final approval signature.

The Section staff is responsible for submitting permit revision applications to the agencies and for working directly with agencies to provide any requested information. The Section reviews for completeness and transmits applications or notifications to the Agencies that were prepared by the Contractor and reviewed by Construction Management and the PLEG. Within 10 days of receiving applications or documents from Construction Management, the Section staff is expected to either return documents for revisions or submit the complete package to agencies. However, the transmittal of documents may be delegated from the Section level to Construction Management or Construction. The Section may from time to time request support from other levels based on the workload and schedule.

The Section level staff person is responsible to ensure that all environmental documents, permits, and agreements are made available to the appropriate Construction Management team as soon as they are approved. Included in the list of documents are the cultural resources documents including the Programmatic Agreement, Memorandum of Agreement, the Built Environment Treatment Plan and the Archaeology Treatment Plan which are further described in Section 3.2. The Section staff ensures that the Construction Management and Construction teams are implementing the Built Environment Treatment Plan (BETP) and Archaeological Treatment Plan (ATP), and are expected to coordinate with Program Cultural Resources staff on a regular basis.

The section staff person is responsible for ensuring that Authority-responsible compensatory mitigation occurs, or is on schedule to occur, as described in permits before issuing environmental certification.

The Section level staff submits the biologist resumes, which are provided by the Contractor and initially reviewed by the PCM, to the agencies for approval. It is important that the Contractor and PCM deliver resumes of biologists with relevant species-specific experience, which allows the agencies to determine if the biologist has adequate experience with the specific species to conduct the surveys and monitoring required. The Section ensures that the various CPs are delivering consistent resumes of staff with similar qualifications to work across the Section. The Section is responsible for communicating this need to the Construction Management staff and for quickly transmitting the resumes for approval. After the initial consistency check, submittal of resumes is delegated to Construction Management.

The Section level staff develops the Worker Environmental Awareness Program (WEAP) outline based on the section specific permit and mitigation measures and provides these materials to the Contractor. The Section level staff may work directly with Agency staff to ensure the outline meets expectations and fulfills the permit conditions. The Section also provides non-WEAP training to the PCM and Contractor as needed to help improve environmental compliance on the Project.

In addition to the above, the Section level staff is responsible for the following:

- Completes the final approval in the EMMA workflow to provide for consistency with EIR/EIS and permits. This responsibility may be delegated to the Construction Management or Regional level depending on available staff and workloads.
- Coordinates and distributes the Section GIS data and provides the data to agencies as required by permit conditions. This data is provided to the Program level and to the construction level as needed.
- Assembles monthly and annual reports using data and text provided by Contractors and delivers the reports to Agencies. This may be delegated when only a single CP is in progress within a section.
- Conducts section-wide audits of construction sites to verify compliance and conduct a “spot-check” of the work being done by each Contractor. The frequency of these inspections will vary depending on the performance of each CP team and may be as often as once daily or as infrequent as once per year.

The Section level is a member of each PLEG (refer to Figure 3-3).

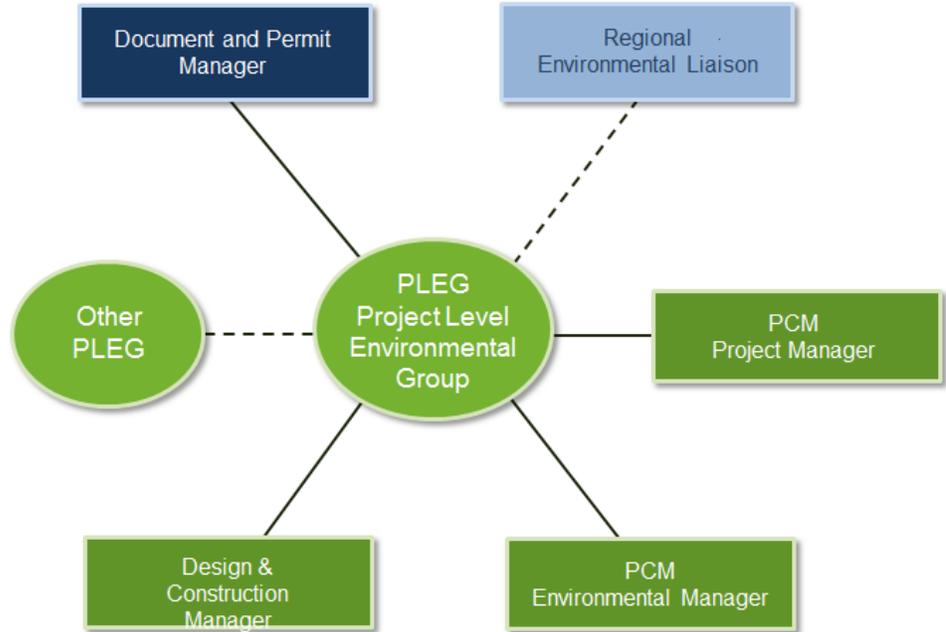


Figure 3-3 Structure of the Project Level Environmental Group

In general, the Section is responsible (but may delegate to Construction Management) for submitting any document to the Agencies that is 1) required by permit, 2) is not 100% CP specific, or requires coordination of agency workload or agency negotiations. Figure 3-4 depicts the decision process to determine which level has primary responsibility for submitting documents to Agencies.

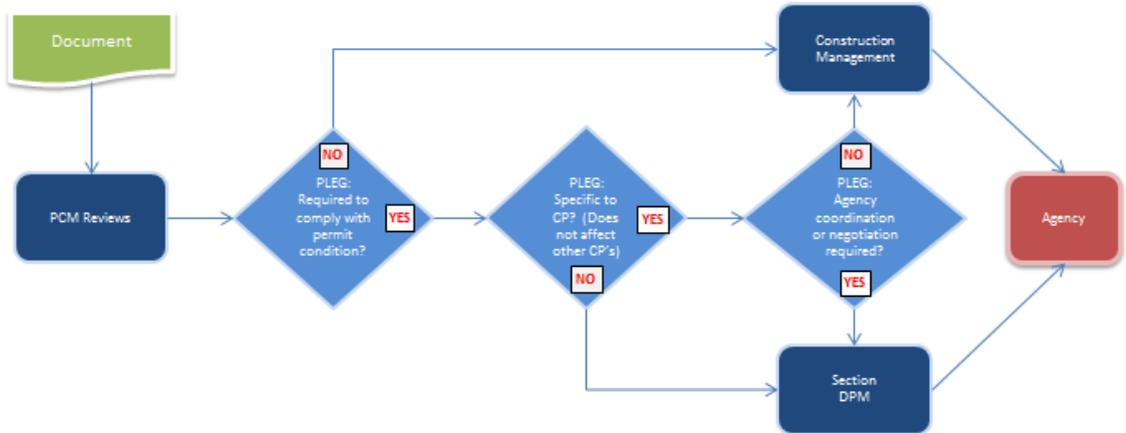


Figure 3-4 Decision flowchart for document submittal to Agencies

3.1.5 Construction Management Level

The Construction Management level is responsible for representing the Authority in the management of environmental activity at the construction level. This level exists to manage the DB contracts including the environmental compliance performed by the contractor. The construction managers provide the first line of communications with contractors, and they conduct

initial reviews and approval of all contractor submittals. This level is responsible to ensure that documents prepared by contractors meet the quality expectations of the Authority and Agencies. Construction Management is the primary level where the Authority verifies that protection of the environment and natural resources is occurring during construction.

Construction Management maintains close communications with other levels in order to ensure environmental compliance and plays a key role in the PLEG. This level reviews re-examinations and permit applications or amendment applications that were prepared by the Contractor, and once the package is determined to be adequate, it is forwarded to the Section. The Construction Management staff also reviews and approves surveys and assessments that were prepared by the Contractor and forwards them to the Section level. Cultural Resources studies are forwarded to the Authorities professionally qualified staff for final approval. The PCM is expected to notify the Section and Program level staff as early as possible about potential upcoming re-examinations. Forwarding documents or notifications to the Section level will normally occur as part of PLEG meetings.

Construction Management reviews resumes submitted by the Contractor and forwards them to the Section for submittal to the agencies for approval. Review at this level ensures that the resumes include information describing the biologists' specific experience working with each covered species. Lack of species-specific information often results in the Agency rejecting a resume, which can result in delays and the need for additional follow-up work by the Contractor, Construction Management, Section, and agency staff. For cultural resources, the Section should review the resumes and verify that the proposed staff meets the Secretary of the Interior's professional standards. The Authority/RDP will approve the staffing.

Construction Management reviews the Contractor's weekly, monthly, and annual reports for adequacy and consistency. This level may return reports to the Contractor for further improvements, to address review comments, to format it to ensure consistency, among other reasons. Once Construction Management approves the report, it is forwarded to the Section for compilation into the Agency Report. The Agency report is a compilation of reports from each CP into a single deliverable to the Agency. Construction Management tracks the submittal to the Agencies and any approval obtained in order to ensure that the CP is in compliance.

Construction Management staff ensure that no construction begins until all Authority pre-construction environmental commitments have been fulfilled. This level verifies that all work is occurring within an approved environmental footprint. In addition, the Construction Management staff ensures that if a noncompliance event occurs, the partner agencies are immediately notified by the Contractor. In the event of a noncompliance activity as a result of permit violations, the Authority implements the corrective action measures outlined in Chapter 6 Noncompliance Events and the Adaptive Management Protocols outlined in Chapter 10. This ensures that the Project can adaptively improve as lessons are learned from past mistakes. For cultural resources, Construction Management shall notify the Authority cultural resources staff at the Program Level of any noncompliance events in archaeologically sensitive areas or inconsistent with the archaeological treatment plan (ATP), or treatment of built resources that is inconsistent with the built environment treatment plan (BETP).

Oversight monitoring inspections are performed at the Construction Management level to ensure that all commitments are being implemented by the Contractors. This involves a system of three types of inspections: 1) Unannounced Random, 2) Site Meetings with Contractor, and 3) Agency Site Visits. Construction Management also ensures that appropriate corrective actions are taken

by the Construction level and all procedures are followed in the case of noncompliance as described in Chapter 6.3

Construction Management is responsible for notification to the Section and Program level staff in the event of a noncompliance with the conditions of the permit or if “take” of covered species occurs or if the requirements of the ATP or BETP are not followed. Prior to notification, Construction Management coordinates with the Contractor to obtain all appropriate and necessary information. If a noncompliance event occurs, this level ensures that the Contractor uploads a noncompliance report to EMMA, and if the Contractor fails to do so within 24 hours of being notified, the Construction Management staff enters the report. The Construction Management level also reviews and approves EMMA records that were entered by the Contractor. Records may be returned to the contractor for additional information or clarification.

Construction Management is responsible for developing a system that will educate and inform the Contractor of the expectations to meet all environmental commitments. The Construction Management team is responsible for providing non-WEAP training to the Contractor regarding implementation of environmental commitments, including topics such as how to determine if a re-examination is required, understanding the environmental footprint, understanding commitments, daily reporting requirements, and the WEAP provider training. This level may request the assistance of the Section, Region, or Program levels when needed based on workload or expertise needed for the training. Ensures that the WEAP is being provided by the Contractor at a level and quality that meets all commitments of the Authority and that the outline provided to them is being used.

In addition, the Construction Management level:

- Reviews and processes environmental change orders
- Ensures that EMMA is being used and all commitments are being documented when appropriate
- Verifies that the Contractor’s Environmental Compliance Plan was prepared and approved prior to any pre-construction soil disturbance or construction activity,

Roles and responsibilities of construction management level environmental execution are further defined in the Project Construction Management Manual and the Design-Build Contract for that CP.

3.1.6 Construction Level

The Contractor’s primary environmental responsibility is to construct the Project in compliance with the FEDs, GAS, and other commitments or agreements the Authority made for project approval. To complete this task, the Contractor is expected to have a clear understanding of all environmental items mentioned in the contract and in this manual. If any conflicts are discovered, the contract holds precedence. In this case the contractor is required to notify the Authority as soon as a potential conflict is discovered.

An Environmental Compliance Plan (ECP) is prepared by the Contractor to describe the process they will use to meet this responsibility (see Section 3.2.1). Because of its importance, this plan requires review and approval by the Construction Management and Section level managers; and no construction work, pre-construction soil disturbances, or other “covered activities” are authorized until it is approved. The ECP must clearly describe the Contractor’s understanding of the environmental footprint, the process to propose work outside the footprint, and the process to propose changes within the footprint. The ECP will also reiterate all elements of this

Environmental Compliance Program Manual related to the Contractor and describe the specific implementation methods to be used. The DB Contractor is responsible to ensure that all subcontractors follow the guidelines and commitments described in the ECP, and the ECP explains how the Contractor will ensure subcontractor compliance.

All of the commitments in the MMEP include information assigning them to either the Authority or to the Contractor. The Contractor is expected to implement all commitments listed in the MMEP as being the Contractor's responsibility to report or implement. If a contractor finds a measure that is unclear, conflicts with another measure or is difficult to implement the Contractor shall request clarification from the Authority in writing. A measure that is unclear does not relieve the Contractor from their contractual responsibility for implementation of that measure. Additionally, if the MMEP does not clearly describe the responsible party, the Contractor should assume responsibility. The Authority may remove commitments from the Contractor's list at any time, directed so in writing, if it determines that a different party could more effectively and efficiently implement the commitment. The Contractor may not excuse itself from being responsible without written approval from the Authority. However, some commitments assigned to the Contractor may not be triggered, and therefore no action will be taken other than to document the fact that it was not triggered.

3.1.6.1 Contractor during Design and Planning

As described above, the Contractor is required to have in place a process to identify changes that will occur as the design advances that may require a change to one or more of the project footprints. These design variations will require analysis and may result in additional environmental review. For this reason, they must be identified with adequate time to complete these processes. Clear communication is required by the Contractor to provide early notification, coordination, data, maps, and information related to environmental re-examinations. The contractor is expected to notify Construction Management as early in the process as possible about upcoming re-examinations that may be needed so that Construction Management can notify the Section and FRA.

The Contractor will prepare environmental re-examinations (see Appendix A: Environmental Re-Examination Guidance) for changes to the Area of Potential Effect (APE), footprint expansions, and changes within the footprint that were not previously considered or described in the final environmental documents that result from refinements or variations. The Contractor will prepare re-examinations with a full understanding of the primary FEDs and GAs, as well as any additional data, plans, and maps produced by the Contractor's team. The re-examination process requires review and approvals outside the Contractor's team by Construction Management and Section level with final approval by the Program-level staff (this may be delegated to Regional or Section staff in some cases). The re-examination process includes identification of permit amendment or new permit applications that may need to be prepared by the Contractor.

As part of their formal knowledge acquisition, the Contractor's environmental manager and specialists will attend various meetings early in the contract period to ensure they understand the environmental commitments and the reason those commitments were made. The makeup of the Contractor's Environmental Compliance Team is described in Appendix E: Qualifications of the Environmental Compliance Team.

As part of the Environmental Requirements, the Contractor will deliver their WEAP to all persons performing work on the Contract. The WEAP will meet all requirements identified in the MMEP, permits, and other commitments (see Section 9.4 Worker Environmental Awareness Program Training).

3.1.6.2 Contractor during Construction

The Contractor is responsible for on-the-ground implementation of environmental commitments involving construction work, including biological, paleontological, Native American, archaeological, and water quality monitoring as required. Along with monitoring, the Contractor’s team is required to report on daily activities and enter all required data into the EMMA database (see Appendix D: EMMA User Manual). The Contractor’s environmental monitors are responsible for ensuring that the Contractor meets all commitments and do not cause unintended environmental impacts during all ground disturbing, noise, vibration, or anthropogenic fugitive dust generation, or other construction activities with the potential to result in environmental impacts; and the staff serving as monitor must be approved by the Project Biologist and wildlife agencies, or, for cultural resources, the Authority Program cultural resources staff. The Contractor will also monitor the success of its revegetation and landscaping efforts.

The Contractor completes all biological and archaeological surveys as required in agency permits and other commitments. The Contractor also commits to all mitigation as assigned in the BETP. The Contractor provides the “Project” and “Designated” Biologist(s) and “Principal Archaeologist” who are responsible for identifying on site and in project plans Environmentally Sensitive Areas (ESAs), buffer zones, sensitive resources, and other survey results in their CP area. These biologists must be approved by the USFWS and CDFW for species covered by the wildlife agency permits.

The majority of documentation and reporting of environmental commitments is the Contractor’s responsibility, including submittal of records using EMMA. Every time a monitor performs an activity in the field a record should be filled out in EMMA. At a minimum, this provides documentation that a monitor was on site that day. The Contractor will compile the daily monitoring records and create weekly, monthly, and annual reports for submittal to the PCM and Section manager who will compile with other Section information and submit to the agencies.

The Contractor is responsible for managing the CP GIS data and interfacing with the PCM, RDP, and Authority GIS representatives. The Contractor prepares the “real-time” GIS mapping and submits to the PCM who submits to the Section who submits the data to the Agencies as required by permit. This transfer of data may occur in a single step from Contractor to Agencies if delegated by the Section manager as a representative of the PLEG.

The Contractor is responsible for paying any fees or fines that are assessed by agencies as a result of noncompliance or permit violations. As with all other aspects of the Program, the Contractors are also required to develop, and describe in the ECP, a system to conduct self-audits and make corrections as needed. The internal self-auditing program shall be a systematic and repetitive approach by which the Contractor can verify that all environmental systems are in-place and functioning, and report the results of these audits using EMMA.

The Contractor remains responsible for obtaining CP specific permitting, such as the Stormwater Pollution Prevention Plan, Encroachment Permits, National Flood Insurance, Air Pollution, and others.

The Contractor prepares all management plans that are required in agency permits, approvals, or in the MMEP. These plans must be reviewed and approved by Construction Management to ensure they comply with the contract, and the Section manager to ensure permit and document level consistency, before becoming final. Examples of typical plans required on the Project include the Biological Resources Management Plan; Weed Management and Revegetation Plan; Kit Fox Den Replacement Plan; Wildlife Construction Avoidance and Minimization Plan; Plan for Alternative Access to Recreation Facilities; Fish Rescue Plan; Plan for Treatment of Inadvertent

Damage to Historic Resources; Plan for Salvage, Relocation, Propagation of Special Status Species Plants; plans specified in the project section ATP and BETP, such as protection and stabilization plans, and others. After Construction Management verifies the plans are complete, when required by permit, the plans are forwarded to the Section staff for submittal to the Agencies. For any notification or submittal that requires Agency approval, Construction is responsible for uploading the approval letter or email into an EMMA record. For notifications that do not require approval, the Section submits the notification letter or email as an EMMA record.

The project also involves “Other Contractors” who are responsible for implementation of specific construction work and may include Caltrans, Pacific Gas & Electric, mitigation site contractors, utility companies, cities and counties, or any other entities responsible for some aspect of construction that could result in environmental impacts during the Project but is not part of the DB team. Other Contractors have many of the same roles and responsibilities as the DB, except the level of detail is scaled to their specific aspect of the Project. However, Other Contractors generally are not managed by the PCM; rather, they receive review and approval of submittals directly from the Authority or the RDP at the Section, Regional, or Program level. These contracts are managed in a number of different ways; however, each contractor is responsible for complying with all environmental commitments. Other Contractors does not refer to subcontractors of the DB.

3.1.7 Environmental Compliance Task Summary

The division of labor and assignment of responsibilities are important to maximize the organizational capacity needed to achieve the overall project objectives. Table 3-1 lists the main environmental compliance tasks and assigns them to the appropriate level. The responsible group has also been identified; however, it is important to note that ongoing changes in project delivery may result in changes to the responsible group. In addition, some tasks may be delegated by the Program to the Region, Region to Section, or Section to Construction Management.

Table 3-1 Environmental compliance tasks

	Task	Level	Responsible Group
1	Review, coordinate, oversee preparation, and approve final environmental documents (EIR/EIS) for project approval	Program	Authority and FRA
2	Obtain Authority responsible agency permits	Program	Authority and FRA
3	Prepare re-examinations for design changes	Construction	Contractor
4	Review re-examinations	Construction Management	PCM
5	Finalize re-examinations	Construction Management	PLEG
6	Conduct re-examination consistency review; obtain signatures of approval	Section	DPM and Authority
7	Sign re-examinations	Program (may be delegated to Region or Section)	Authority and FRA
8	Prepare permit revision applications	Construction	Contractor

	Task	Level	Responsible Group
9	Review permit revision applications	Construction Management	PCM
10	Finalize permit revision applications	Construction Management, Section and Region	PLEG
11	Sign permit revision applications	Region	Authority
12	Submit permit applications to agencies	Section	DPM
13	Complete post ROD/NOD studies and assessments related to a specific site	Construction	Contractor
14	Review and approve studies and assessments related to a specific site	Construction Management and Section	PCM; and DPM when document level involved
15	Complete post ROD/NOD studies and assessments related to <i>multiple construction packages</i>	Section	DPM
16	Develop WEAP guidelines/outline	Section	DPM
17	Provide WEAP to workers	Construction	Contractor
18	Ensure WEAP is being implemented adequately	Construction Management	PCM
19	Provide environmental training (other than WEAP)	All	Authority, RDP, DPM, PCM, and Contractor
20	Ensure compensatory mitigation completed for Authority responsible permits	Program and Section	RC, RDP, Authority, DPM
21	Ensure compensatory mitigation completed for Contractor proposed changes	Construction Management	PCM
22	Fund and complete compensatory mitigation for Contractor proposed changes	Construction	Contractor
23	Implement construction commitments (MMEP, BETP, ATP, permit, etc.)	Construction	Contractor
24	Ensure construction commitments (MMEP, BETP, ATP, permit, etc.) implemented	Construction Management	PCM
25	Install ESA fencing	Construction	Contractor
26	Install temporary erosion control	Construction	Contractor
27	Holder of permit-wide GIS data	Section	DPM
28	Maintain and provide consistency to program GIS data	Program	RDP and Authority
29	Maintain project GIS data and provide to Construction Management	Construction	Contractor
30	Reporting daily records and non-compliance reports in EMMA	Construction	Contractor
31	Enforcing requirement that Contractor submit daily records and non-compliance reports in EMMA	Construction Management	PCM

	Task	Level	Responsible Group
32	Review and accept EMMA records	Construction Management and Section	PCM and DPM
33	Audit of EMMA records for program consistency	Program	RDP
34	Notify Agency of “take”	Construction and Section	Contractor and DPM (representing the PLEG) together
35	Notify Agency of noncompliance with Authority responsible permits	Section and Construction	DPM (representing the PLEG) and Contractor
36	Notify Agency of noncompliance with Contractor responsible permits	Construction and Construction Management	Contractor and PCM
37	Create a noncompliance record in EMMA	Construction, Construction Management, Section	Contractor
38	Prepare annual reports	Construction	Contractor
39	Review Contractor’s annual reports	Construction Management	PCM
40	Approve Contractor’s annual reports	Construction Management, Section, and Region	PLEG
41	Compile annual reports and submit to Agency	Section	DPM
42	Prepare Contractor’s ECP	Construction	Contractor
43	Review Contractor’s ECP	Construction Management	PCM
44	Approve Contractor’s ECP	Construction Management, Section, and Region	PLEG
45	Prepare permit and MMEP required plans	Construction	Contractor
46	Review and approve permit and MMEP required plans	Construction Management, Section, and Region	PLEG
47	Submit permit and MMEP required plans to Agency	Section	DPM
48	Process environmental change orders	Construction Management	PCM, Authority
49	Internal “self” audit	Construction	Contractor
50	Resource pre-construction surveys	Construction	Contractor (unless completed prior by RC)
51	Permit and MMEP required Resource monitoring during	Construction	Contractor

	Task	Level	Responsible Group
	construction		
52	Oversight monitoring during construction	Construction Management and Section	PCM and DPM
53	Conduct compliance audit inspections	Section and Program	DPM and RDP
54	Prepare application for “Environmental Certification”	Construction	Contractor
55	Review application for “Environmental Certification”	Construction Management, Section, and Region	PLEG
56	Issue “Environmental Certification” indicating that all commitments have been met on a parcel and it is ready for construction	Section	DPM
57	Prepare addendum Archaeological Survey Reports (ASR) as access is gained.	Construction	Contractor
58	Request review and approval of ASR from Authority/RDP	Construction	Contractor

Notes: Authority = California High-Speed Rail Authority; ECP = Environmental Compliance Plan; EIR/EIS = environmental impact report/environmental impact statement; ESA = Environmentally Sensitive Area; FRA = Federal Railroad Administration; GIS = Geographic Information System; PCM = Project and Construction Management; PLEG = Project Level Environmental Group; MMEP = Mitigation Monitoring and Enforcement Program/Mitigation Monitoring and Reporting Program; NOD = Notice of Determination; RDP = Rail Delivery Partner; ROD = Record of Decision; DPM = Document and Permit Manager; WEAP = Worker Environmental Awareness Program

3.2 Processes and Procedures

The Processes and Procedures section of the manual outlines the expectations of all parties with respect to the environmental compliance program. It details the roles and responsibilities, and discusses communications both within the internal team and external to the team, including Agency relations. It defines noncompliance and discusses the levels of violations, the required reporting, and the consequences. It also provides the framework for the resolution of noncompliance and timing requirements.

This section discusses a variety of tools and practices that the Program will use to accomplish compliance. One of the most important aspects of this Program is the requirement that the DB produce a detailed ECP and that it is reviewed and approved by the Construction Management before any construction work occurs to ensure that the Contractor has a good understanding of the Project’s environmental commitments and requirements. Part of the process includes the preconstruction surveys and daily monitoring. Another important procedure is the Authority’s Environmental Re-Examination process that allows changes to the process to be considered as part of CEQA/NEPA. In addition, the Contractor’s self-certification program and commitment to conduct oversight inspections ensure compliance and identify changes that need to be made to improve the process.

Many detailed protocols, procedures, and tools are described in the appendices, including Appendix A: Environmental Re-Examination Guidance; Appendix B: GIS Specifications; Appendix C: Contractor’s ECP Preparation Outline; Appendix D: Emma User Manual; Appendix E: Qualifications of the Environmental Compliance Team.

3.2.1 Contractor's Environmental Compliance Plan

Each Contractor must prepare an ECP for their CP that describes the Contractor's environmental compliance program. The ECP identifies the environmental compliance requirements and defines the procedures that the Contractor will implement to satisfy such requirements. The ECP outlines the Contractor's approach to environmental management throughout the construction phase with the primary aim of ensuring compliance with the Environmental Requirements.

The ECP has four primary functions:

- Identifies constraints as seen by the Contractor early in the process and aids in the development of the compliance methods
- Provides a guide for the Contractor's team on how to implement and document its own compliance program
- Provides a forum for the Contractor and Authority to develop solutions to environmental constraints early in the process
- Demonstrates to the Authority and the FRA that the Contractor understands the Environmental Requirements of the Project and knows how to successfully implement a compliance program.

The Contractor will develop the ECP according to the general guidance of this Manual and take into account the specific operating circumstances (e.g., right-of-way access; permit conditions specific to geography; fundamentals of construction methods; the Programmatic Agreement, Memorandum of Agreement, Built Environment Treatment Plan, Archaeological Treatment Plan and other cultural resources plans and documents; climatic conditions; surrounding land uses; and others). The ECP will cover all aspects of project implementation from design review, preconstruction surveys and clearances, to close-out of the Project.

The Contractor will synthesize the environmental measures and conditions contained in the Environmental Requirements, compare them against site-specific conditions, and consider this information while developing the design and construction methods that employ a feasible approach to building the Project while maintaining environmental compliance.

The ECP must detail a method for conducting routine assessments to determine whether it is performing its primary function. The ECP must identify criteria or methods that measure its performance. The Contractor will update or amend the ECP to ensure adaptive management has been applied to ensure the ECP is performing its primary function.

The ECP will assign Contractor staff, consultants, and subcontractors, and detail roles and responsibilities of those involved in environmental compliance for the Project. The ECP will detail how the Contractor's compliance tracking processes and data capture requirements will document compliance with all Environmental Requirements using EMMA.

The ECP will include procedures to identify and rectify environmental noncompliance. Discovery of all noncompliance will be communicated to the Authority within 24 hours or less, if a shorter time is otherwise specified in the Environmental Requirements, including applicable laws, the FEDs, and/or the GAs.

The ECP will describe all of the environmental issues that need to be managed during construction and provide a strategic approach on how the Contractor will control and manage these issues during construction.

An example outline meeting the minimum requirements of an acceptable ECP is provided in Appendix C: Contractors ECP Outline, although the Contractor is encouraged to adapt and enhance the outline to meet the specific needs of the construction Project as necessary.

3.2.2 Interim Environmental Compliance Plan

An Interim ECP (IECP) may be required to support preliminary field investigations (e.g., environmental surveys, geotechnical survey, etc.) in support of preliminary design. If needed, the Contractor will submit an IECP specific to the proposed field investigation work. The IECP will include all applicable information, including environmental issues and constraints for the locations where field investigation work will occur. The information provided in the IECP will be incorporated into the Draft and Final ECP. The IECP will also contain a discussion of how to operate in the absence of any GAs, if any are still in the acquisition phase.

3.2.3 Environmental Compliance Report

The environmental compliance requirements for each CP are based on specific descriptions of the Project that helped determine the scope of the impacts and related mitigation measures. These descriptions include the identification of specific limits of work, the specific infrastructure being constructed and its location, as well as the methods of how this work will be performed. Any changes to these descriptions may require additional CEQA/NEPA review and documentation or Supplemental or Amended Governmental Approval (SAGA). Therefore, for all Technical Contract Submittals identified in the contracts, the Contractor will provide an Environmental Compliance Report certifying that the submittal (a) is within the scope of the analysis and the findings comply with all environmental compliance requirements; or (b) requires further review and analysis and potentially amendment of those GAs and FEDs pursuant to applicable law as implemented through the Authority's Environmental Re-Examination Process (see 3.2.4 Authority's Environmental Re-Examination Process and Appendix A: Environmental Re-Examination Process).

For the Contractor to prepare an accurate Environmental Compliance Report, the Contractor's design team must have a thorough understanding of the design as well as the methods of construction being proposed as compared to the underlying project-description that was the basis for the FEDs and GAs. The Contractor will determine if the descriptions of the design elements match how the FEDs and GAs portrayed the activities and what resource information was used as a basis for any impact assessments. The Contractor is obligated to note in its Environmental Compliance Report any Variation and the potential resolution.

A Variation may have a number of resolutions depending on the type and location. It may require updating the environmental footprint with some level of additional analysis, obtaining additional CEQA/NEPA review and documentation, or deciding that the change does not result in any new impacts and nothing is required. The report will document the components of the Project that are maintaining compliance and those components that are not in compliance with the Environmental Requirements, including the FEDs and GAs. For those activities that are not in compliance, the Contractor will provide proposed or anticipated steps to resolution.

3.2.4 Authority's Environmental Re-Examination Process

Prior to proceeding with any project Variation, the Contractor will obtain Authority approval using the Environmental Re-Examination Process (Figure 3-4 and Figure 3-56). The Authority and the FRA have prepared the *California High-Speed Rail Project Environmental Re-Examination Process* document, which presents a standardized approach that the Authority, the FRA, and the Authority's Contractors/Consultants can follow to evaluate Variations. The document articulates

the procedural and substantive steps required for environmental review of Variations not previously evaluated by the Authority and the FRA.

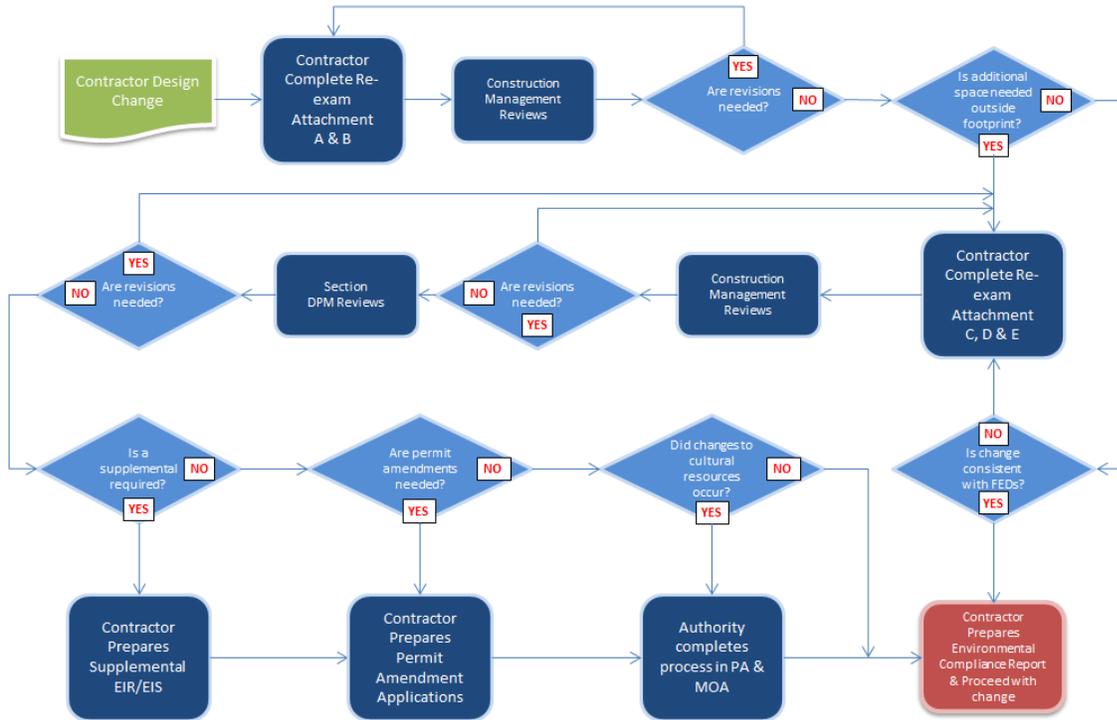


Figure 3-5 Re-examination process flowchart

The Contractor is required to use this process and receive approval prior to proceeding with any Variation to help determine whether the Variation would require additional CEQA/NEPA review and documentation, and/or would require any SAGAs. This process is also used any time the Contractor proposes construction work outside of the project footprint, including staging or equipment for use on the Project.

3.2.5 Permit Amendments

The process for amending Authority-responsible permits begins with the environmental re-examination process. The process provides environmental staff with a consistent method for making a determination as to whether a proposed change requires a permit amendment.

The Contractor is responsible for preparing all amendments that are determined to be required due to a Contractor proposed change. However, because the Authority is the permittee, the permit amendment application and materials must be reviewed and approved by the Authority at the Section level or higher. An initial adequacy review is completed by the PCM, followed by full review by the PLEG. Once the PLEG approves the package, it is forwarded to the Section level staff to obtain appropriate signatures and submit to Agencies (Figure 3-6). The Section staff may request assistance from the Program level staff if needed to ensure program-wide consistency.

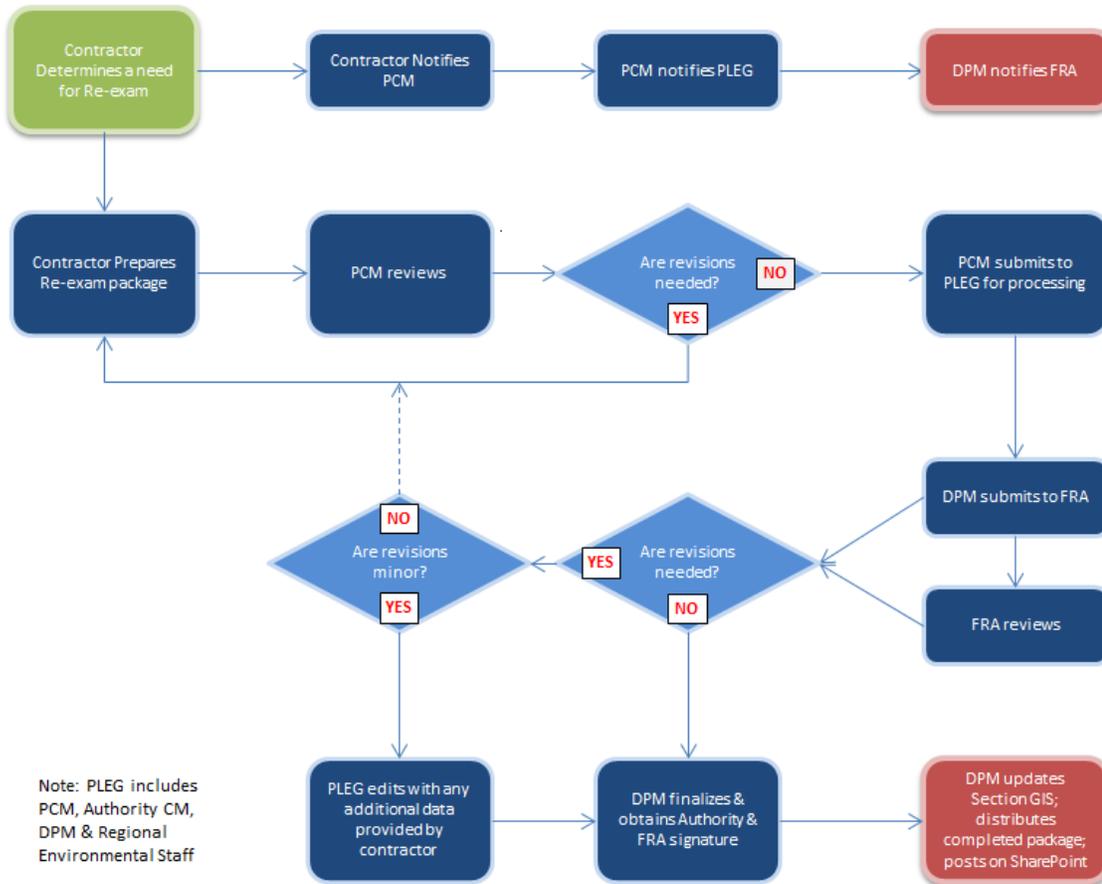


Figure 3-6 Environmental re-examination communication

Prior to submitting a permit application to the Agencies, a copy of the final submittal should be posted onto the SharePoint database as well as a copy sent to all environmental staff who were involved with the preparation and review.

3.2.6 Permit Fact Sheet

The California High-Speed Rail Permit Fact Sheet is a brief summary of each of the permits required for the Project. This factsheet describes the key issues related to complying with the permits. The Fact Sheet will continue to evolve as lessons are learned about the permit process.

Additional information on applying for permits and the permit process is available in the Statewide HST Environmental Approvals and Permits Guide, July 2012.

Table 3-2 lists the permits from CP 2-3, which represents the typical permits needed for a project Section. Encroachment permits from other state and federal Agencies, such as the U.S. Forest Service and U.S. Bureau of Land Management, may also be necessary.

Table 3-2 Typical permits required for construction (others may apply)

Permitting agency	Approval/permit needed
USFWS	Section 7 Biological Opinion
SHPO	Section 106 Memorandum of Agreement
FRA	Air Quality General Conformity Determination
FRA	Section 4(f)/Section 6(f) Determination
SJVAPCD	Indirect Source Review
SWRCB	Section 401—State Water Quality Certification
SWRCB	Section 402—Construction Phase NPDES Stormwater Discharge Permit (Construction General Permit)
SWRCB	Section 402—Post Development (Operations Phase) NPDES MS4 Stormwater Discharge Permit
USACE	Section 404 Clean Water Act
USACE CVFPB	Preliminary Section 408 Determination
USACE CVFPB	Final Section 408 Determination and Final permit
USACE	Section 404 Clean Water Act Permit - Preconstruction Notification of issued Individual Permit
CDFW	Section 1602 Master Streambed Alteration Agreement
CDFW	Section 1602 Streambed Alteration Agreement Sub-notifications
CDFW	Section 2081 Incidental Take Permit
CVFPB	Encroachment Permits (CA Title 23; USACE Section 208.10; and Local Maintaining Agency Endorsement)
Local Agency Floodplain Administrators	National Flood Insurance Program Compliance
FEMA	Condition Letter of Map Revision/Letter of Map Revision
Caltrans	ROW Encroachment Permits

Notes: Authority = California High-Speed Rail Authority; Caltrans = California Department of Transportation; CDFW = California Department of fish and Wildlife; CVFPB = Central Valley Flood Protection Board; FEMA = Federal Emergency Management Agency; FRA = Federal Railroad Administration; NPDES = National Pollutant Discharge Elimination System; NTP = Notice to Proceed; ROD = Record of Decision; ROW = right-of-way; SHPO = State Historic Preservation Office; SJVAPCD = San Joaquin Valley Air Pollution Control District; SWRCB = State Water Resources Control Board; USACE = U.S. Army Corps of Engineers; USFWS = U.S. Fish and Wildlife Service

3.2.7 Preconstruction Surveys

This section describes the range of resource surveys that are required to occur prior to any construction at a given location. As such, it includes historic properties inventories, building condition assessments, habitat surveys, and species pre-construction surveys. Due to the lack of access across the project area and early development of design, many activities that are done

prior to release to contract on traditional projects are occurring during final design and construction on high-speed rail.

Preconstruction resource surveys are completed on parcels prior to any ground disturbance or construction work based on site-specific criteria established in the MMEP and agency permits. The Contractor should establish a checklist as part of the ECP describing the preconstruction surveys that may be required on the parcels within their CP.

In some cases, permits may require that surveys occur to verify the habitat that will be impacted by the Project. These surveys are used to determine the actual impacts of the Project and will be used to determine the appropriate avoidance or minimization measures and the compensatory mitigation for habitat losses. After the contractor completes the survey, a survey report is submitted to the appropriate agency, and the survey and transmittal to the agency is documented by the contractor in EMMA.

Biological species surveys all have different timelines for completion; therefore, the checklist should include a review of permits or species-specific protocols developed by the U.S. Fish and Wildlife Service (USFWS), the California Department of Fish and Wildlife (CDFW), or other wildlife organizations to determine appropriate survey techniques. All preconstruction biological surveys will be completed by the Contractor’s staff, and the Program Management staff are responsible to ensure that no construction begins without the completion of surveys.

The following is a partial list of survey protocol that may need to be incorporated into pre-construction survey work for this Project:

- USFWS Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance, January 2011
- Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander, October 2003
- Conservation Guidelines for the Valley Elderberry Longhorn Beetle (USFWS, July 1999)
- Fieldwork Code of Practice (The Declining Amphibian Task Force)
- Burrowing Owl Survey Protocol and Mitigation Guidelines (The California Burrowing Owl Consortium, 1993)
- May 2004 updated version of the Blunt-nosed Leopard Lizard Survey Protocol (California Department of Fish and Game, 2004).
- Survey Protocol for Determining Presence of San Joaquin Kangaroo Rats (USFWS Sacramento Field Office, March 2013)

A complete list of protocol can be found on the USFWS (Service) and CDFW web pages (Wildlife).

For more information on Cultural Resources surveys required prior to construction, see Programmatic Agreement, Memoranda of Agreement and Archaeological and Built Environment Treatment Plans below.

3.2.8 Construction Monitoring

Monitoring is an integral aspect of environmental compliance as it establishes how the Project is performing against the Environmental Requirements, including compliance objectives and targets. In addition to the monitoring specifically required by the Environmental Requirements, including the FEDs and GAs, the ECP will include a proposed level of monitoring to provide a

comprehensive documentation of environmental compliance. This level of monitoring must be acceptable to the Agencies.

Maintaining a good record of positive compliance across all commitments demonstrates to the Authority and the FRA that the Contractor understands the Environmental Requirements and knows how to successfully implement a compliance program. It also assists the Authority with maintaining positive relationships with the interested parties and helps when dealing with the inevitable noncompliance events. Many measures and conditions do not have a specific monitoring requirement; however, the Authority requires documentation of these at appropriate intervals. EMMA makes documentation of all commitments easy and consistent.

The Contractor will describe in detail in the ECP how compliance monitoring will be implemented, including how it will investigate, communicate, and resolve observations of noncompliance. Once a noncompliance event is identified, the ECP will describe the timeframe in which the noncompliance will be resolved, how it will be documented, and what further action will be taken if the noncompliance issue is not resolved within the identified timeframe.

The Contractor will electronically submit written records of compliance, incident, noncompliance, or corrective action reports to the Authority via the established records management structure and be attached to a record in EMMA. These written records will include the date, location, and description of the noncompliance event; photo documentation; documentation of attempts to remedy the discrepancies or issues; and signatures of the on-site monitor, Contractor representative, and PCM representative.

All incidents of noncompliance will be evaluated to determine the need for corrective action. These may include changes to work instructions (frequency of testing, test method etc.) and updates or amendments to the ECP or other appropriate corrective actions. It is the Contractor's responsibility to immediately initiate corrective actions, and once completed, provide documentation that corrective actions have been taken to address the issues raised in the noncompliance/corrective action report. The Contractor will electronically submit this documentation to the Authority via EMMA within 24 hours of issuance of the noncompliance/corrective action report and will require review and approval by the Authority before the issue is considered resolved.

If requirements of the ECP are not fulfilled and appropriate and corrective action is not taken, a noncompliance report will be prepared and electronically submitted via EMMA by either the Authority or the Contractor, as applicable. Throughout the process of reporting, the responsible party will initiate and confirm completion of appropriate corrective actions.

The ECP must include a schedule and procedures for monitoring and reporting in order to:

- Identify a process to ensure appropriate monitors are available when required at specific locations
- Document that monitoring and all associated activities (e.g., recorded observations, photos, Global Positioning System) occur as required
- Demonstrate compliance with the Environmental Requirements, including regulatory conditions and objectives and targets established by the FEDs and GAs

The Contractor will regularly monitor and report on dust, noise, vibration, and water quality. The frequency of this monitoring and reporting will be dictated by requirements of the permits, mitigation measures, agency protocols, Section 106 agreements, and the objectives and targets set forth in the ECP.

In addition, monitoring may be required as a result of a complaint, a request by a statutory body, or a trigger point in an inspection or checklist being exceeded. Monitoring and reporting should also reflect any requirements identified or commitments made in the FEDs or GAs.

3.2.9 Programmatic Agreement, Memoranda of Agreement and Archaeological and Built Environment Treatment Plans

Because of the large geographic scope of the Project, a Programmatic Agreement (PA) was developed to prescribe a process for program-wide compliance with Section 106 of the National Historic Preservation Act. The PA defines each of the geographic “sections” of the larger HST system as a separate undertaking for the purposes of Section 106. The PA also requires the development of a Memorandum of Agreement (MOA) for each HST Section and, tiered off of each MOA, an archaeological treatment plan (ATP) and a built environment treatment plan (BETP). The PA also describes the roles, responsibilities, and professional qualifications required for compliance.

Prior to issuing a Final EIR/EIS for the Project, all parcels owned by the Authority or where permission to enter has been granted, are surveyed for archaeological resources by the RC. Surveys for the built environment are primarily conducted from the public right-of-way. Consequently the surveys for the built environment are generally more complete and do not require the extensive post EIR/EIS or “phased” survey and identification as archaeology. For parcels where no access was available for archaeological pedestrian surveys, or parcels with built resources that could not be seen from public right-of-way, surveys must be completed by the Contractor prior to any construction work. This is stipulated in the MOA for each Section, and the process is described in the BETP and ATP prepared for that Section.

In addition to describing phased surveys and requiring treatment plans, the MOAs stipulate how post-review historic property identification and treatment efforts for any currently unknown historic properties that may be encountered are implemented. Native American Tribes and other interested parties may have participated in the development of mitigation defined in the MOA and treatment plans and if so they will need to be notified.

The ATP provides detailed descriptions of treatment measures for both known and unknown archaeological resources. As additional property access is obtained for pedestrian archaeological surveys, these unsurveyed parcels will be inventoried, and any resources identified will undergo evaluation and mitigation, as necessary, before ground-disturbing activities commence. Because the effects to National Register of Historic Places-eligible and listed built resources are generally known prior to construction, the Built Environment Treatment Plan (BETP) will include resource-specific avoidance, minimization, and mitigation measures to be undertaken by the Contractor prior to, during, and post -construction. Phased survey and identification may also be required. Such measures may include, but not be limited to, pre-construction conditions assessments or historic structures reports, vibration monitoring, or other protective requirements, recordation consistent with the National Park Service Historic American Building Survey, Historic American Engineering Record, and/or Historic American Landscape Survey (HABS/HAER/HALS) program, moving buildings, and interpretation. Should any parcels not be adequately visible from the public right-of-way during the initial surveys, the BETP will include a process for identifying and evaluating such properties for their eligibility for the National Register of Historic Places and California Register of Historic Resources (NRHP/CRHR).

Because this is a design-build project, it is anticipated that both the archaeological and architectural APE will change post ROD as the design is refined. Therefore both treatment plans establish a process to address design changes, including survey, identification, and evaluation of

potential historic resources, effects on historic properties, consultation with Native Americans and interested parties, and resolution of adverse effects to such properties, The agreed-upon mitigation may be documented in a revised treatment plan; the MOA will not need to be reopened.

3.2.10 Disposal, Storage, and Borrow Sites

The acronym DSB describes sites used for the disposal, storage, or obtaining (borrow) of earthen materials. Table 3-3 provides additional details and descriptions of each type of site. This term was described by Caltrans in Design Information Bulletin 85: Guidance for the Consideration of Material Disposal, Staging and Borrow Sites. All DSB sites must either occur as described in the environmental documents, or if new sites are proposed outside the footprint (that are not currently licensed and permitted mine sites), they must be reviewed and approved using the environmental re-examination process.

Borrow and Disposal sites require archaeological survey; sites that are over one acre or over 1000 cubic yards of material may require permits pursuant to the Surface Mining and Reclamation Act of 1975. SMARA was enacted by the California Legislature to address the need for a continuing supply of mineral resources, and to prevent or minimize the negative impacts of surface mining to public health, property and the environment. City and county "lead agencies" adopt ordinances for land-use permitting and reclamation procedures which provide the regulatory framework under which local mining and reclamation activities are conducted.

The DB Contractor and other third-party Contractors are responsible for identifying sites as early as possible, and to submit re-examination packages and permit applications well ahead of the proposed move-in date. Staff at the Construction Management level is responsible to ensure compliance with all DSB conditions and to occasionally inspect or monitor construction sites to identify any unauthorized activities. The Authority must be notified of any use of off-site DSBs.

Table 3-3 DSB Site definitions

Disposal	Staging	Borrow
Includes any site were unneeded or waste materials generated from the project such as soil, rock, aggregate, concrete, trees, branches, woodchips, or any other organic materials, are permanently placed or disposed. This may include private property, Authority owned parcels, borrow pits, mine sites, landfills, or any other site where materials generated on the project are disposed.	Includes contractor’s yards, equipment maintenance or storage areas, lay down sites for storage of construction materials, aggregate storage sites, temporary soil piles, boulder sorting areas, temporary concrete or asphalt plant sites, materials recycling, and other similar sites needed to support construction.	Includes areas where soil, sand, aggregate, rock and other fill material is obtained for use on the project. This may include established quarries, mines, rock pits, or any private, state or federal property where materials are generated or proposed to be generated for the project.

Sites to generally avoid for DSB include:

- In or adjacent to streams, rivers, canals, ditches, and floodplains, wetlands, pools, springs, seeps, wet areas
- On or near known sensitive archaeology, historical or cultural resources
- Areas where stabilization and revegetation of the materials will be difficult or impossible

- Legally approved sites that have a controversial history or have been the target of litigation or agency enforcement action
- Areas where DSB will create a wildlife migration barrier
- Steep or unstable slopes
- Areas visible from recreation sites, vistas, parks, or other public viewing areas

3.2.11 Pre-Construction Checklists

To demonstrate that all the Environmental Requirements are met, the ECP should include a detailed checklist of all Environmental Requirements that need to be considered prior to construction. The checklist should include all commitments of the MMEP, permits, agreements, and action items described in any plans approved by Agencies. The checklists should be completed before moving equipment or starting construction at any site.

After the Record of Decision/Notice of Determination (ROD/NOD) have been signed and approved and all permits have been obtained, the Contractor may begin the process of completing surveys and other preconstruction activity to prepare for construction. A checklist should be prepared by Construction Management to be used when a request is made by the Contractor to gain access to a parcel. Table 3-4 outlines the first step to determine if construction work may be authorized. Table 3-5 shows the second step and is used prior to moving construction equipment onto a site. These checklists can be used in conjunction with the Environmental Certification or as an equivalent procedure.

Table 3-4 Generalized Preconstruction Checklist to be completed prior to construction work

Preconstruction Checklist	
Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	Have all required plans been prepared, submitted, and approved?
Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	Has a biologist/archaeologist/architectural historian been approved? Are they available to conduct oversight, surveys, and monitoring as needed?
Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	Have pre-construction protective measures for historic built resources been implemented? Have all required pre-construction photographic documentation of historic built resources been completed?
Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	Has a WEAP been developed?
Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	Have all preconstruction notifications been completed?
Describe N/A here:	
Explain No Answers:	
If all questions are answered yes, construction work may proceed.	

Table 3-5 Generalized Preconstruction Checklist to be completed prior to moving onto a parcel

Prior to moving onto a parcel (owned by Authority and within footprint)	
Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	Have all preconstruction surveys specific to this location as described in MMEP, Permits, and Plans been completed? (See preconstruction survey checklist)

Prior to moving onto a parcel (owned by Authority and within footprint)	
Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	Have all ESAs been identified and properly identified/fenced on site?
Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	Have all (or will all) workers be WEAP trained before entering the site?
Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	Has a SWPPP been amended to include the parcel?
Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	Have all work limits been surveyed and identified?
Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	Has the site pre-construction condition been photo-documented?
Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	Have all of the above been documented in EMMA?
Describe N/A here:	
Explain No Answers:	
If all questions are answered yes, construction equipment may be moved onto the site and work may continue.	

3.2.12 Geospatial Data Specifications

3.2.12.1 Resource Data

The environmental geospatial data will be provided by the Authority to the Contractor during the GIS meeting (see Section 3.3.2) after NTP. The Contractor will be responsible for maintaining and amending the data throughout the duration of the Contract. The datasets provided will be clearly linked to various documents (e.g., EIR/EIS, 404 and 2081 permit application, Archaeological Survey Report) and will reflect the purpose of the document. This organization will allow the Contractor to understand how each impact was communicated to the appropriate Agencies.

3.2.12.2 Environmental Footprint

The Environmental Footprint included in the FEDs is based on the project description and anticipated impacts of the construction as described in the project section EIR/EIS. For cultural resources, the Environmental Footprint is generally identical to the archaeological APE; the built resources APE is generally larger to include potential indirect/visual effects to historic built resources. The GIS data display the footprint concept as both direct and indirect zones. Any change to the project description (as analyzed in the FEDs) has the potential to change the footprint, including the limits of direct and indirect impacts. If a change is being considered or is necessary, the Contractor must evaluate the change through the Environmental Re-Examination Process. Any change to the Environmental Footprint is a Variation and requires Authority approval prior to any use of the expanded footprint.

The Contractor is responsible for developing an Environmental Constrained Footprint demonstrating their understanding of the physical subarea within the Environmental Footprint in compliance with any additional constraints imposed in connection with the Regulated Resources, GAs, SAGAs, and/or applicable environmental law.

A proposed design change or Variation must still be evaluated through the Authority’s Environmental Re-Examination Process even if it does not require expansion of the Environmental Footprint.

3.2.12.3 Required Surveys GIS Data Layer

The Contractor is responsible for producing a Required Surveys GIS Data Layer indicating where various types of surveys and clearances are required across the Project. This task will require synthesizing the data provided across all environmental materials made available for the project including the MMEP and permits. Due to the organization described above, specific project locations may have requirements spanning several documents and data layers. Wetlands described in the Section 404 application may have required species surveys discussed and displayed in the Biological Assessment.

This task will allow the Contractor to display their understanding of the project requirements and their ability to synthesize all of this information to maintain compliance with the Environmental Requirements.

A description of the Required Surveys GIS Data Layer should be included in the Contractor’s ECP.

3.2.13 Contractor’s Self Certification Process

The Contractor is required to implement a self-certification process for environmental compliance. As the project owner, the Authority maintains the right to require a review and approval process for any environmental task. If the Authority is in disagreement with or finds a self-certification to be inadequate, the Contractor may be required to revise and update its actions or certification. These certifications must be in full compliance with the law, all governmental approvals, and commitments of the Authority. This requirement is in addition to and prior to any other reviews or approvals as required in the Contract or by law and as outlined in this manual.

The Contractor is expected to self-certify its environmental compliance activities. This certification is completed by the following:

- Preparation of Environmental Compliance Reports
- Describing compliance procedures in the Contractor’s Environmental Compliance Plan
- Conducting construction site monitoring
- Implementing an “independent” audit of all environmental activity
- Conducting a self-evaluation using the Contractor’s Report Card
- Attendance of all environmental meetings and trainings

3.3 Communication Plan

The environmental communications plan identifies the key personnel or organizational groups who ensure compliance with all environmental commitments and how those staff interrelate or communicate with each other. The plan discusses the roles and communication protocols to be used for both internal and external communications. Internal communications refers to communication within and between the members of the high-speed rail program, including the Authority, FRA, RDP, PCM, Contractor, DPM, RC, and other environmental consultants. External communication is between the high-speed rail groups and outside organizations or individuals, such as permitting Agencies, government officials, members of the public, law firms, Tribes, and other stakeholders. Because communication is important for project success, the strategy and expectations for communication are incorporated into all sections of this manual.

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3.3.1 Protocols for Communication

The Project utilizes a tiered organization to limit any one level to a reasonable span of communication and control such that decisions can be made efficiently at appropriate levels. This means the communication plan must discuss communication that will need to cross the levels of responsibility and control. Communications internal to a specific level are not covered here but should still be organized and planned according to the framework contained in this document. For example, this document does not try to impose specific direction on the DB contractor's communication; however, it does require that a contractor develop a communication plan specific to environmental compliance and that plan must fit with the structure outlined here with regard to communication to outside levels of responsibility.

Environmental staff working at the Program, Regional, and Section levels includes the Authority and RDP. The staff person working at the Section level is known as the Document and Permit Manager (DPM). The environmental personnel at the construction management level is primarily the PCM, with some environmental duties being performed by Authority employees. At the Construction level, the DB and other contractors also employ an environmental team typically composed of an environmental manager, cultural resources manager, along with biological and cultural monitors. The Project Level Environmental Group (PLEG) is a multi-level working group composed of construction managers and environmental staff from the construction management, section, and region levels combined (Figure 3-2) who meet on a regular basis to quickly resolve environmental issues.

The PCM and RDP are considered to be an extension of the Authority, are often co-located with Authority staff, may have overlapping job duties, and share equally the responsibility for successful completion of the project. Therefore, these levels are primarily useful to describe the different responsibilities and are not meant to describe the order of importance or indicate line of command such as what is depicted in a typical organizational chart. As the Program continues to expand into new geographic areas, it is anticipated that the RDP may assume the role of the PCM where none currently exists, depending on the resources available for various Sections or CPs.

To understand communication, it is important to understand the different responsibilities for each of the levels (see Chapter 3). For example, if the communication involves the specifics of a contract, understanding that the Construction Management level is the place where all contract decisions are made will help to identify the appropriate levels of communications. Furthermore, asking a Section level staff contracting questions is not appropriate; however, if the question involves the project permits the Section-level staff is the appropriate participant in the communication. In general, each level maintains close communication with the level above and below in the structure.

Table 3-1 lists a number of tasks that need to be accomplished as part of environmental compliance. These tasks are broken into discreet steps showing one responsible group, or they show a process and multiple responsible groups. In either case they point out where communication (information, data, documentation) needs to flow from one group to another.

3.3.1.1 Program Level

Communications within the Authority typically follow the line of command established in the organizational chart. In general, all communications regarding compliance with GAs and environmental documents must include members of the environmental staff, such as the Director of Environmental Services, the Senior Environmental Planner, or the Supervising Environmental

Planner. All communications regarding design, engineering, and construction must include the Construction Manager or Project Engineer.

The Authority or its designee is responsible for all external communications associated with the Program. The Authority has granted external communication rights to the RC, PCM, and RDP in order to conduct tasks required as part of their scope of work, and at times may grant the Contractors communications rights that might typically be outside their normal protocol.

The Authority Construction Managers oversee the work of the PCM and manage the PCM contracts. The Authority staff at the Construction Management level is primarily design and construction, with most environmental duties falling to the RDP, PCM, or Contractor's staff.

The program level has the role of setting in place the policies and processes that allow the other levels to function with limited oversight from the program. They should primarily have direct contact only with the Regional and Section levels and be able to rely on them for all communication regarding levels below that. This is to protect the program from data overload and resist the desire to micromanage.

During project implementation the program level should not have many reasons to be involved in the environmental compliance process. The primary focus, as seen in the tasks listed as program level responsibility in Table 3-1, is acquiring environmental approvals. There will be times during implementation where the history and the relationships with agencies formed during approval acquisition will need to be understood, specifically during re-examination development and permit amendment. The program should prepare for this by thoroughly preparing the Section level with this background.

The Program level includes and must represent the two lead agencies under environmental law. The Authority is the state lead Agency under CEQA and project owner, and is responsible to ensure that all parties maintain an effective and open communication to ensure environmental compliance. The FRA is the federal lead Agency and is responsible for administering the federal funding of the Project. Together they act at the Program level to perform these responsibilities.

The Program environmental staff maintains direct communications with all groups within the high-speed rail structure. The Program environmental team is led by the Authority Director of Environmental Services. The Program maintains direct communications with all regulatory Agencies and others involved with the environmental approvals required for the Project. The Program also communicates directly with other external stakeholders as part of the environmental review process.

The majority of internal environmental communication occurs during the weekly Authority/FRA Environmental Coordination Meeting. The FRA does not generally communicate with or direct the work of the DB Contractor or Other Contractors except in the case of an emergency. FRA environmental staff and grant managers may request information or initiate communications with any high-speed rail program staff. Re-Examinations and permit amendment applications are submitted to the FRA for review and approval.

The FRA will provide environmental oversight of construction to provide technical assistance to the Authority and Contractors. The FRA site inspectors prepare and submit reports directly to the FRA grant managers. If FRA staff become aware of noncompliance, they will immediately notify the Authority.

The Authority has developed an Agency Coordination Plan as part of the EIR/EIS for each Section. The Agency Coordination Plan establishes a formal procedure by which interested governmental Agencies can participate in the environmental review process to facilitate and

document the lead Agency's structured interaction with the public and other Agencies as well as to inform groups of how the plan will be implemented. The Coordination Plan promotes an efficient, streamlined process, as well as good project management through coordination, scheduling, and early resolution of issues.

Regional Consultants

As the name indicates, the RC is focused completely on a specific Section; however, they work at the Program level where the EIR/EIS and Authority responsible permits are being completed. All communication between the RC and other members of the organization is coordinated by the RDP. This is because the RDP is responsible for management of the RC Contract. The RC and RDP work closely to complete the EIR/EIS and obtain all Authority responsible permits. If the RCs need information, templates, reports, or other information generated in other Sections, they should network with the RDP to obtain this information. If meetings or direct communications are needed between RCs, the RDP should be included in those communications. After completion of this scope of work, all permit information is passed to the RDP, DPM, PCM, DB, and Other Contractors.

Communication between the RC and external groups is coordinated and/or monitored by the RDP. The RDP is included in order to be able to maintain better control of overall program schedule and control of the flow of information to Agencies or other external communications, as well as to ensure program consistency.

3.3.1.2 Section Level

The Section conducts significant communications during construction among internal and external groups as part of its role as Section manager including all communication directly related to the environmental documents and permits.

The Section communicates on a regular basis with Construction Management, Regional, and Program staff and also takes part in meetings of the PLEG. The Section, as the manager of the EIR/EIS and permits during construction, conducts significant communication with the Region and Program to gain review and approval of environmental re-examinations. Communication with the DB should pass through Construction Management or at a minimum be copied to Construction Management.

During construction, all permit revisions are coordinated by the Section; therefore, the Section conducts significant external communications with agency staff and is the primary control point for agency communications. The Section may delegate its communication responsibility to others if it determines that no disruptions or confusions will occur. This delegation may occur for specific issues that require the PCM or Contractor to communicate directly with the Agency, or may occur for extended periods for example when only one CP is under construction in a Section and agency staff is not overloaded with numerous activities occurring at the same time.

3.3.1.3 Construction Management Level

The PCM is contracted to the Authority to enforce the contract language and make change order determinations when the Contractor is asked to complete environmental tasks.

The PCM follows all protocols of the Project and Construction Management Manual, as well as the following:

- The majority of the PCM communication is with the DB Contractor. The PCM coordinates the Contractor efforts to prepare environmental re-examination packages and obtain

permit amendments. The PCM reviews the Contractor’s documents to ensure they are adequate, and communicates with the RDP and DPM to affect the required changes.

- The PCM primarily reports to the Design and Construction Manager assigned to their specific CP.
- The PCM develops a system and specific protocol for communication with the Contractor.
- The PCM provides notice to the PLEG as early as possible when it becomes aware of the preparation of environmental re-examinations by the Contractor. This allows the FRA to begin scheduling staff resources for its review and approval process.

3.3.1.4 Construction Level

Design Build Contractor

The DB Contractor is responsible to ensure that all of its subcontractors follow all procedures, protocols, rules and regulations, and guidelines in this manual. The DB must clearly communicate to all subcontractors and take responsibility for any communication failures. The DB Contractor is encouraged to maintain close communication with the Authority throughout the design and construction of the Project. It is anticipated that this close communication will expedite project reviews and facilitate the incorporation of innovative project solutions and final completion of the Project.

DB Internal Communications

The DB will develop, document, and implement an Environmental Communications Protocol as part of the ECP. The Environmental Communications Protocol will describe the specific process to be used by the Contractor for noncompliance reporting; unanticipated discoveries of Regulated Resources; personnel roles; procedures for internal and external communications; and communications with the Authority.

The ECP contains the following information related to how the Contractor will communicate:

- A description of the organization of the Contractor’s reporting structure, including roles and responsibilities
- A description of the coordination and communication among the environmental, design, and construction staff
- A clear discussion regarding “stop work” authority, including who on the team has this authority, how it will be executed, and examples of what the decision thresholds are to prevent violations of the Environmental Requirements
- The process for identifying and responding to noncompliance events and discussion of the differences between noncompliance and violations and how the different levels of compliance will be recorded.
- The process the Contractor will use to communicate all environmental responsibilities and commitments to subcontractors, how the Contractor will ensure that all subcontractors will comply, and the mechanism for documentation and reporting

All communications from the Contractor to the Authority will conform to the Environmental Communication Protocol described in the ECP. All communications regarding environmental compliance or environmental data or information will include at a minimum the environmental lead for the Authority.

The ECP will detail how the Contractor will manage routine project record communications through the Authority’s web-accessed database EMMA.

At a minimum, within 7 calendar days of each meeting, the DB will prepare and circulate to the Authority and meeting attendees hard copies and electronic files of all correspondence, minutes of meetings, and other documents developed as a result of any and all communications

DB External Communications

Within the ECP, the Contractor will describe procedures for external communications received by the Contractor. These communications could originate from the public, regulatory Agencies, Tribes, or other stakeholders. The Contractor will include a description of the process for relaying these communications to the Authority as appropriate. Under no circumstances will the Contractor initiate these communications or substantively respond to them without advanced approval from the Authority.

Several agency permits and agreements require the Agencies to be notified in the event of a “take” of covered species, an unexpected archaeological discovery, or in the case of a noncompliance event. The DB is required to communicate with the PCM and the DPM to discuss the event. For biological issues, notification should then occur ideally by conference call with the DPM’s involvement and be followed up with an email to the Agency copied to the DPM, Regional, and Program staff. After the initial notification, the DPM becomes responsible for coordination of communication with the Agencies while the DB provides follow-up information, documentation, and support (Figure 3-7). For unanticipated archaeological discoveries or any non-compliance events regarding cultural resources, the Authority/RDP cultural resources staff is responsible for contacting the SHPO, appropriate tribes, and any MOA signatories. The DB cultural staff is to provide support for the Authority/RDP during this consultation.

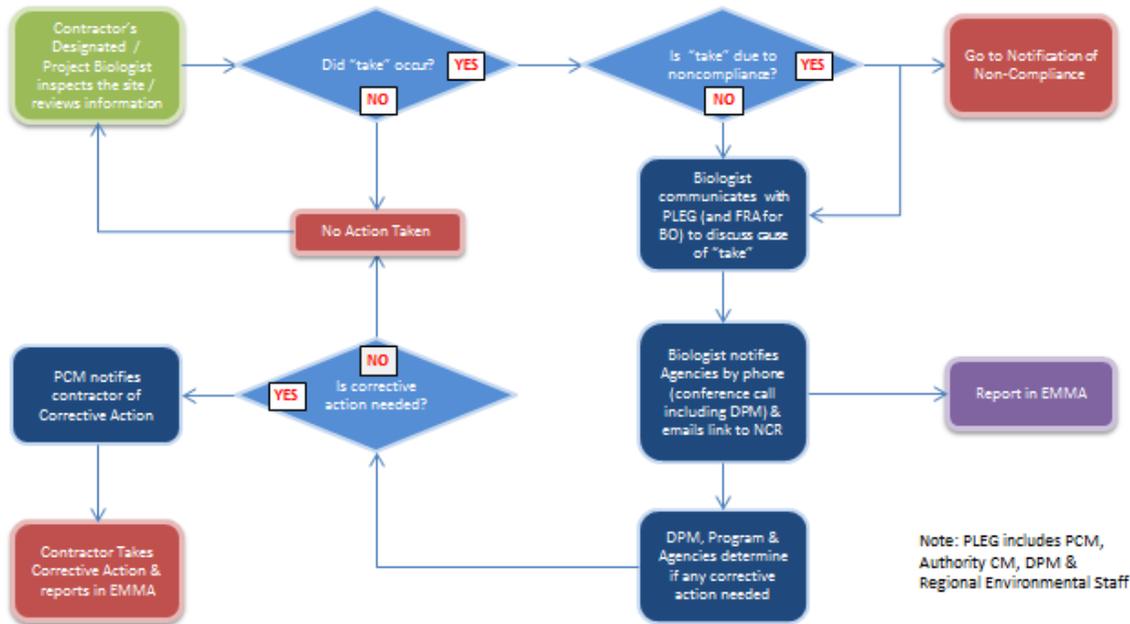


Figure 3-7 Notification of “Take”

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Other Contractors (Third-Party)

Other Contractor refers to a range of different construction entities all responsible for some aspect of construction on the Project, such as the Mitigation Site Contractor, Caltrans, Railroads, Cities, Utilities, and others that are not working as a subcontractor to the DB. For the purposes of this document, subcontractors are considered part of the DB Contractor’s team and should follow protocol described for the DB Contractor.

Similar to the DB Contractor, all Other Contractors will develop and implement an Environmental Communications Protocol as part of their recommended ECP. This protocol should be scaled to the size of the scope of work for each construction entity. For small contracts, this could be as simple as a one-page description of how communication flows within the organization and the interplay with environmental concerns of that specific site.

The primary point of contact for Other Contractors for environmental compliance is the DPM for the Section where they are working, the Region environmental staff, or the staff person assigned to manage the contract.

Similar to the DB, Other Contractors may receive communications from the public, regulatory Agencies, Tribes, or other stakeholders. The Other Contractor should prepare a procedure for relaying these communications to the Authority as appropriate. Under no circumstances should the Other Contractor initiate these communications or substantively respond to them without advanced approval from the Authority. Any communications that do require immediate response from the Other Contractors should be copied to the Authority and phone or on-site communications should be reported to the Authority in writing. The response to correspondence or communication should be brief and indicate that the authority should be contacted for a full response.

3.3.2 Meetings

3.3.2.1 Weekly Environmental Coordination Meetings

The Weekly Environmental Coordination Meeting occurs weekly or as needed during design and construction to ensure that the project design and implementation satisfies the Environmental Requirements and to identify which construction elements, such as locations, work activities, weather conditions, and times of day, present the greatest risk of environmental noncompliance.

The Contractor generally requests and schedules these meeting with the PLEG and the Contractor provides a meeting room or may organize a site visit. The Contractor should prepare an agenda and provide invitees with sufficient advance notice to plan attendance. The Contractor is responsible for taking notes at these meetings, collecting an attendees list, and distributing minutes within one week. The Contractor’s environmental team should be present at this meeting, including any staff who the Contractor intends to seek approval from the Agencies to perform an environmental function.

3.3.2.2 Environmental Kick-Off (Data Transfer) Meetings

The Environmental Kick-Off Meeting is a pre-construction event designed to support the Contractor’s acquisition of historical and baseline environmental knowledge from the RC, RDP, PCM, and Authority. In attendance should be the Authority’s environmental team, RC staff if available and included in scope of work, PLEG, PCM and RDP. Additional focused subject meetings will also occur as identified during this meeting.

The meeting should be scheduled by the Contractor 30 days prior to the initiation of construction work. Prior to the meeting, the Contractor will prepare a list of documents and information needed

to complete its work and provide this list to the PCM. The PCM team is responsible to provide the Authority produced materials requested by the Contractor and the Section and Program levels are required to quickly provide those documents or make them available in a shared library. The purpose of this meeting is for the Authority to present information to the Contractor regarding the documents such as the EIR/EIS and to explain the commitments in the MMEP, permits, and plans.

The Contractor's environmental team should be present at this meeting, including any staff that the Contractor intends to seek approval from the Agencies to perform an environmental function. This meeting should be attended by at least one Authority Senior Environmental Planner and one Authority Project Engineer. The RDP environmental team who was assigned to the EIR/EIS preparation and permit acquisition should also be in attendance along with the PCM environmental team who will be conducting reviews and ensuring compliance.

3.3.2.3 GIS Meeting

To facilitate the transfer of geospatial data, a meeting between the Contractor and Authority representative shall occur to review the GIS data, present the GIS file structure and naming convention, and provide the specifications for maintaining and updating the GIS data. At a minimum, these meetings will be attended by the Contractor's GIS Specialist, along with GIS specialists from all other levels. The GIS transfer meeting should be requested by the Contractor when their team has been assembled and ready for work. No data will be transferred prior to the initial meeting of this group.

Data related to cultural resources and the National Historic Preservation Act Section 106 process will be transferred only when the Cultural Resource Compliance Manager (CRCM) is present and with approval by the Authority/RDP cultural resources staff.

3.3.2.4 Cultural Resources Meeting

The Contractor will also request and attend a meeting with the Authority/RDP cultural resources staff to facilitate the Contractor team's understanding of the Project's cultural resources and current progress in the Section 106 process. This meeting will, at a minimum, be attended by the CRCM, the Principal Architectural Historian, and the Principal Investigator Archaeologist. (The CRCM may also be either the Principal Architectural Historian or the Principal Investigator Archaeologist.)

3.3.2.5 Governmental Approval Acquisition Update Meeting

Once all GAs are obtained, a meeting will be held to discuss the implications of the GAs and their conditions. The Authority will provide background, including consultation history on all of the permits, as well as any GIS data specifically related to the acquisition of the GAs. The Contractor will be responsible for reviewing the language and using its familiarity of the project design and construction methods to determine if any conditions contain language the Contractor believes is unclear. The meeting will focus discussion around approaches to resolving any conflicts or interpretations, and determining if any SAGAs may be necessary. This meeting may be combined with the environmental kick-off meeting. This meeting is distinct from permit update meetings held between Agency staff and the permit acquisition team (which is not attended by the Construction level staff).

3.3.2.6 Environmental Preconstruction Meeting

The Contractor will organize and participate in an Environmental Preconstruction Meeting with the PLEG at least 30 days prior to the start of construction. During this meeting, the Contractor will

discuss its ECP, including its WEAP, to demonstrate how the Contractor will satisfy the Environmental Requirements by, among other things, meeting permit conditions and fulfilling environmental commitments. The Contractor will discuss its construction schedule and identify the early construction elements. The meeting will include a discussion of environmental compliance documentation requirements. The Contractor will be responsible for obtaining, maintaining, and reviewing all documents and records required in the Contract for compliance with the Environmental Requirements and other contract requirements prior to this meeting. These meetings will be held in person and, at a minimum, will be attended by the Contractor, Project Biologist, Cultural Resource Compliance Manager, and the lead field monitor.

3.3.2.7 Environmental Improvement Task Force

Task force meetings are particularly effective when they are established for each design discipline, when they commence prior to starting design, and when they continue at regular intervals throughout the design. This meeting is designed to provide a feedback loop between the construction staff and environmental staff regarding methods to improve the environmental compliance process. On a regular basis, the Environmental Compliance Improvement Task Force will meet to review work status, scheduled tasks, pre-activity planning, implementation of effective best management practices (BMPs) in the field, and environmental permits and compliance obligations. This team also provides feedback to the RC and RDP who are preparing the EIR/EIS and MMEPS so that measures are clearly described in the environmental documents so as to not result in confusion when the Contractor goes to implementation.

3.3.2.8 Project Level Environmental Group Meeting

The PLEG meeting is intended to coordinate and resolve environmental issues for each CP. The meeting should be attended by the PCM Oversight Manager (Construction Management level), PCM Environmental Manager (Construction Management level), Authority Design and Construction Manager (Construction Management level), Authority Regional Environmental Liaison (Regional level), Section environmental staff (Section level), and other PLEG representatives that may be affected by a proposed action. This group is expected to resolve difficult issues and to make approvals for the Contractor’s environmental submittals or other deliverables requiring Authority approval.

4 DOCUMENT AND DELIVERABLE REVIEW PROCESSES

Program-wide environmental compliance requires the careful and detailed production of a wide range of construction-specific plans, reports, and compliance memorandum. The primary responsibility for preparation of most environmental documents (after ROD/NOD) is the Contractor. Documents prepared by the DB Contractor are always reviewed by the PCM assigned to that CP (see Figure 4-1 Figure 4-1 Plan review and approval process). Documents prepared by third-party Contractors, and many of the documents with PCM comments incorporated, are reviewed by the Section level staff and sometimes require Regional level approval. The Section or Region staff may at times request assistance from the Program to conduct reviews. Contractor prepared environmental documents are expected to meet a high standard of professional writing and demonstrate a use of language equal to that of the EIR/EIS and associated studies and reports.

All documents must be prepared in accordance with the *Authority Style and Branding Guide*. The guide is a compilation of best communication practices assembled to assist staff and consultants to meet the high standards of writing expected of this project. The document provides consistent guidelines regarding terminology, acronyms, grammar/punctuation and legal citations to reference when drafting, editing and proofing all official Authority communications, both internal and external. In addition, all environmental documents should follow the guidelines set forth in the *Project Environmental Document Style and Preparation Guidelines*. This guide is designed for the preparation of the EIR/EIS and all related documents. This guide should also be used in the preparation of Environmental Re-Examinations, supplemental EIR/EIS, Reports, Plans, and any other environmental documentation. All staff involved in the writing, editing, or reviewing of high-speed rail environmental documents should be familiar with these two style guides and associated reference materials.

For the submittal of reports and plans to Agencies, the Section level staff prepares a “Section Report/Plan Template” for each of the deliverables required for the Section. The template serves as the single plan or report that is updated each time that a Contractor prepares a CP-specific report/plan. The template will be divided into sections or chapters where each Contractor can submit its CP-specific plan, and each time this occurs, the DPM submits the “revised” plan to the Agencies. The template will also include an area map showing the status of each CP, allowing the Agencies to quickly see how each CP relates to the permitted Section. The Contractor is expected to prepare high-quality materials that have been professionally written, edited, and quality checked for inclusion in the plans. Failure to produce factual and useful documentation may result in the Authority issuing a Correction Notice or a Stop Work Order.

Any document specifically required in a GA should be emailed directly to the Agency for review and/or approval by the Section staff or others as delegated. In addition, documents described in permits or the MMEP should be uploaded to EMMA after completion.

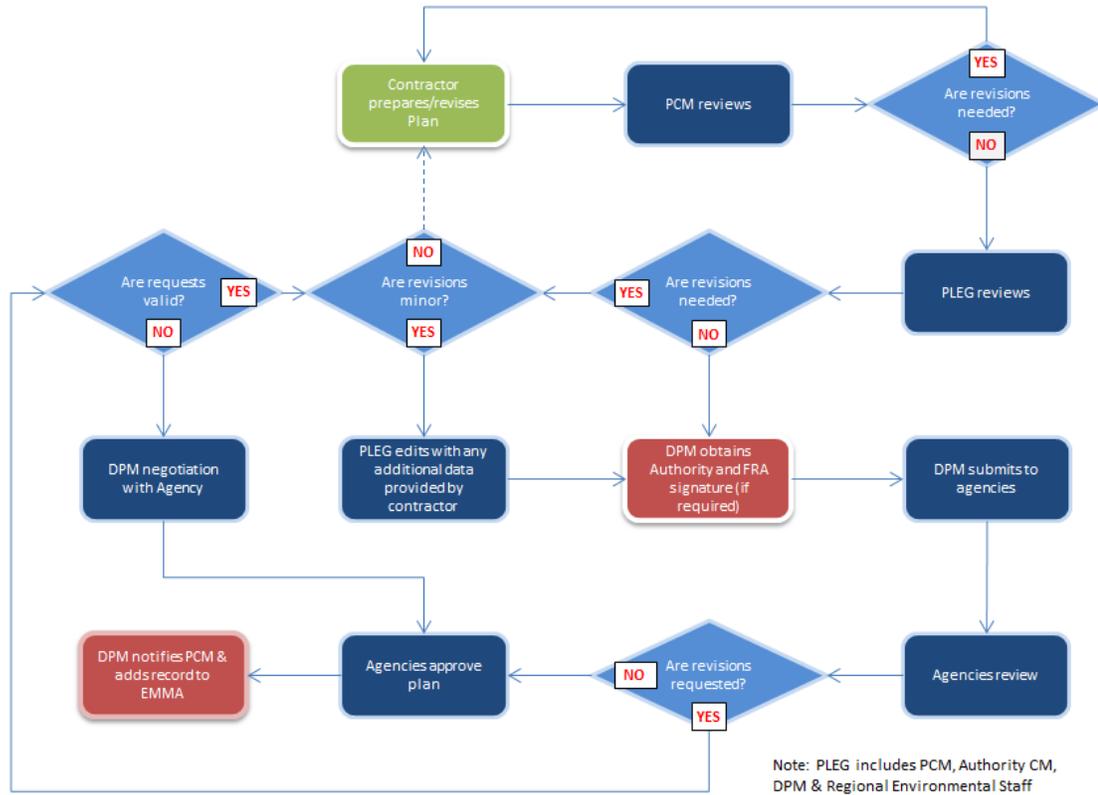


Figure 4-1 Plan review and approval process

All documents produced at the Construction level should be clear, concise, complete, correct and consistent. Clear writing communicates the purpose of the document in a way that can be easily understood by the target reader. Good writing clearly identifies the responsible parties for all phases of implementation and uses the “Active voice” whenever possible. The requirements, procedures or actions described in the document should be only those that are essential to evaluating the specific product. Excess off-topic material leads to confusion and extended review periods. Clear writing uses consistent terminology throughout the text and minimizes the interchanging of similar words. This is especially important for reviewers and readers who may not be as familiar with the activities being described. Words should be used in their true dictionary or technical meaning to avoid conflicts with ordinary or accepted usage. The documents should avoid having an “escape clause” that does not convey a measurable standard or leaves room for different levels of interpretation. All facts or subjects that may be unknown or uncommon should be referenced in the document so the reader can easily locate original text. Clear writing includes proper identification of abbreviations and acronyms and does not assume that all readers are familiar with the terminology of this project. If a pronoun could refer to more than one person or object in a sentence, repeat the name of the person or object instead of using the pronoun, or rewrite the sentence to add clarity. Recast the sentence if a change in punctuation might change the meaning. Place words carefully to avoid ambiguity. Keep subjects and objects close to their verbs. Place conditionals such as “only” or “always” and other modifiers next to the words they modify. Requirements should only be stated once to avoid the possibility of conflicts. In addition, visually appealing documents are easier to understand and help improve overall clarity. Replacing blocks of text with headings, tables, and white space will help create a clear and

uncrowded presentation, in which main points are readily apparent and related items are grouped together.

Concise writing uses the active voice to directly state essential directions and procedures. Active voice clearly identifies the responsible party and ensures greater specificity than the passive. Concise writing uses short sentences that break up information into smaller, easier-to-process units. Wordy phrases and adjectives and adverbs that do not add to meaning to a sentence should be avoided. Complete documents provide the information necessary to enable the reader to understand the issue or topic. Complete documents are those that are accurate and factual, and all data should be reliable and current. Lastly, documents should be consistent with other similar documents to help prevent conflicts and ambiguities.

The program-wide audit includes review of all plans, reports, and documentation and verification that EMMA has been updated. The auditor reviews the Contractor's monthly compliance report and checks that each commitment that the Contractor is reporting as in compliance is actually occurring on the construction site and has been reported in EMMA.

4.1 Plans Required for Compliance

The Construction Management level has primary responsibility for review and approval of the plans submitted by Construction level and the Section and/or Regional staff reviews plans for document and permit consistency.

For plans required by Agencies, after the Contractor's quality control check and editing has been completed, the document is submitted to the Construction Management level for the first "Authority" review. If the document meets the high quality standards, Construction Management provides the plan to the PLEG for review and approval. At the PLEG, the expectation is that the Section staff member should only need to conduct a brief high-level review to ensure consistency with the environmental documents and permits. If found to be adequate, the Section submits the plan to the Agency, keeping in mind workload issues of the Agency staff and other section or program-level priorities. This ensures that Agencies are not overwhelmed by individual submittals from CPs, and that they have a single point of contact. If Agency approval is required (some documents only require submittal, but not approval), the Agency may reject the plan and request additional information, or approve the plan as-is. If it is rejected, the Section level staff, with the help of the Program permitting specialists, will determine if the rejection is reasonable. If not reasonable, the Section will negotiate with the Agency a more reasonable solution. If the rejection is reasonable, the Section returns the document and rejection comments to the Construction Management and Construction level. The preparer of the document must make corrections and the cycle is repeated. After Agency approval, the Section sends the approval back to Construction Management who forwards it to Construction. The Construction team then uploads the approval into EMMA along with a copy of the approved plan.

For plans required as a mitigation measure but not required to be submitted to Agencies, after a careful review and approval, Construction Management staff submits the plan to the Section level for consistency review. If the plan is determined to meet the requirement of the mitigation measure, an approval is returned to the Construction Management Staff who in turn forwards the approval to the appropriate Construction staff. The Construction level staff then uploads both the approval and the document to EMMA.

After completion of the review cycle, the Contractor is then required to update its ECP to include any commitments made in the plan. Likewise, the Construction Management level identifies and tracks commitments in order to verify compliance. Construction Management should assign

specific staff to follow the progress of commitments, either as on-the-ground construction site BMP's, items that need to be incorporated into engineering drawings, compensatory mitigation measures requiring payment, or others. If any action items fall outside of the Construction level preview, the Construction Management level staff is responsible to notify other parties who may be responsible.

Table 4-1 lists some of the typical plans required for each Section in the environmental documents and permits.

Table 4-1 Typical plans required in MMEP and government approvals

Deliverable	Required by:	Prepared by:	Approved By:	Process
Weed Control Plan	MMEP, USFWS, SWRCB	Contractor	PCM	Monthly memorandum prepared by Contractor Biologist
Biological Resources Management Plan	MMEP, USFWS, SWRCB	Contractor	PCM, SWRCB	Approval required prior to start of construction
Restoration and Revegetation Plan	MMEP, USFWS	Contractor	PCM, USFWS	Contractor prepare compliance reports
Riparian Restoration Plan	CDFW	Contractor	CDFW	Approval required prior to start of construction when riparian impacts may occur
Avoidance and Minimization Plan for Wildlife Movement Areas	MMEP	Contractor	PCM	Contractor prepare compliance reports
Plan for Alternative Public Recreation	MMEP	Contractor	PCM	Prepare if closure occurs to parks
Fish Rescue Plan	MMEP, CDFW, NMFS	Contractor	PCM, CDFW	Submit with CDFW subnotification and to NMFS prior to in-stream work
Unanticipated Discoveries Plan	MMEP	Contractor	PCM, Authority, Consulting Parties	Describes the process if archaeological materials are found during construction
Plan for Repair of Inadvertent Damage	MMEP	Contractor	PCM, Property Owner	Developed prior to construction for treatment of inadvertent damage to historic properties/ historical resources
Monitoring, Salvage, Relocation, and Propagation of Special-status Plant Species	MMEP, USFWS	Contractor	PCM	Memorandum prepared by Contractor Biologist documenting compliance
SJKF Corridor Monitoring Program Plan	CDFW, USFWS	Contractor	PCM, CDFW	Submit plan to CDFW for approval
SJKF Den Replacement Plan	CDFW	Contractor	PCM, CDFW	Submit to CDFW 30 days before commencement covered activities

Deliverable	Required by:	Prepared by:	Approved By:	Process
Frac-Out Contingency Plan	CDFW	Contractor	PCM, CDFW	Submit with CDFW subnotification prior to any horizontal directional drilling
Habitat Mitigation and Monitoring Plan	MMEP	RC, Authority	CDFW, USFWS, SWRCB	Authority submits to Agencies if required in permits
Water Quality Management Plan	SWRCB	Contractor, Authority	PCM, SWRCB	
Long-Term Management Plan	SWRCB	RC, Authority	SWRCB	
Dewatering Plan	SWRCB	Contractor	PCM, SWRCB	
Storm Water Pollution Prevention Plan	RWQCB	Contractor	PCM, RWQCB	Contractor submits using SMARTS

Notes: Authority = California High-Speed Rail Authority; Caltrans = California Department of Transportation; CDFW = California Department of fish and Wildlife; MMEP = Mitigation Monitoring Enforcement Plan; NMFS = National Marine Fisheries Service; PCM = Project and Construction Management; RC = Regional Consultant; RWQCB = Regional Water Quality Control Board; SJKF = San Joaquin Kit Fox; SMARTS = Storm Water Multiple Application and Report Tracking System; SWRCB = State Water Resources Control Board; USFWS = U.S. Fish and Wildlife Service

The Environmental Audit conducted by the Program includes a brief review of all Contractor-submitted plans to provide programmatic consistency and feedback to the Construction and Construction Management levels. This audit includes a version control check to ensure that the plans submitted and approved are the same version as those commented on by the Section, Region or Program. Another important aspect of the audit is to verify that the commitments in the plan are being implemented on the construction site or being incorporated into construction plans. The auditor will create a brief table of all commitments made in the plan and conduct a site inspection or review documents in EMMA to verify. The auditor will verify that the ECP has been updated and Construction Management is using a system to track implementation.

4.2 Reports Required for Compliance

Many of the GAs require specific reports to be submitted to document compliance. When required in a permit, the report should be specifically tailored to each Agency even when jurisdictions overlap. The Construction level prepares the report using previously approved reports, if available, as a template. When using a template, the author is expected to carefully eliminate any information not specific to the Section or CP being discussed. After Construction completes a rigorous quality check, the report is submitted to Construction Management for review. Construction Management conducts a careful and detailed review to ensure it meets the high standards required for the Project. If the document does not meet a high standard, or if information is missing, the report is sent back to the preparer with comments. The preparer must then make corrections and resubmit for a second round of review and approval.

If the plan meets the high quality standards and fulfills the permit or mitigation commitment, it is approved by Construction Management. After being approved by Construction Management, if not required by Agency, the preparer uploads the approval letter and the report to EMMA. If the report is required by an agency, Construction Management coordinates with the Section (as part of the PLEG) to determine the best timing for submittal. After agreement on the best submittal date, Construction Management submits the report to the Agency. Most reports do not require Agency approval; however, if Agency approval is required, the Agency may reject the report and

request additional information, or approve the report as-is. If it is rejected, the preparer must make corrections and resubmit to Construction Management for another review and approval cycle. After approval, the contractor should upload the approval letter/email and the approved report to EMMA.

Table 4-2 lists some of the typical reports required for each Section as part of the environmental documents and permits.

Table 4-2 Typical reports required in MMEP and government approvals

Agency	Title	Compliance Requirement	Completion Date
CDFW	Annual Report	On or before January 15 of each calendar year, Permittee will submit an Annual Report	Insert date each time measure is completed
CDFW	Four-Year Status Report	Provide a status report to CDFW every four years from the effective date of this Agreement	Insert date each time measure is completed
CDFW	Monthly Compliance Report	Compile the observation and inspection records into a Monthly Compliance Report and submit to CDFW along with a copy of the MMEP	Insert date each time measure is completed
CDFW	Annual Status Report	Provide CDFW with an Annual Status Report no later than January 31st of every year	Insert date each time measure is completed
CDFW	Final Mitigation Report	Within 30 days of ITP expiration, Permittee will provide CDFW with a Final Mitigation Report	Insert date each time measure is completed
USFWS	Post-Construction Report	Post-construction report detailing compliance will be provided to the USFWS within 30 calendar days of completion of the Project	Insert date each time measure is completed
USFWS	Compliance Reports	After each construction period is completed, the USFWS-approved Project Biologist will submit post-construction compliance reports	Insert date each time measure is completed
SWRCB	As-Built Impacts	Submit a full "as-built" assessment of project impacts to waters of the state within 90 days of the end of project construction to verify the amount of impacts that actually occurred	Insert date each time measure is completed
USACE	As-Built Drawings	Within 60 days following completion, or at the expiration of this permit, whichever occurs first, submit as-built drawings	Insert date each time measure is completed
USACE	Photo-Documentation	Submit a description and photo-documentation of BMPs within 10 days of commencement of construction	Insert date each time measure is completed

Notes: BMP = best management practices; CDFW = California Department of Fish and Wildlife; ITP = Incidental Take Permit; MMEP = Mitigation Monitoring Enforcement Plan; O&M = operations and maintenance; SWRCB = State Water Resources Control Board; USACE = U.S. Army Corps of Engineers;

4.3 Other Documentation Required for Compliance

Implementation of any mitigation measure in the MMEP or condition of GAs requires that documentation be submitted to EMMA. The documentation for most conditions can be satisfied by completing a new record directly in EMMA using daily monitoring reports or survey notes as evidence. However, numerous conditions, especially for biological resources, require that a memorandum specific to the condition be prepared and attached to EMMA to document compliance. Failure to document these measures can lead to enforcement action by Agencies. In some cases the Agency may not have specifically required this documentation to be submitted but the permit may have incorporated the MMEP by reference. To understand the specific requirements, the Contractor should review the MMEP and GAs for the Section and create a list of all measures that require specific types of documentation. Table 4-3 lists examples of conditions that need specific documentation as required in the MMEP.

Table 4-3 Typical documentation required in MMEP and government approvals

Measure	Title	Text	Completion Date
Submittals from Biologist (Contractor) to Mitigation Manager (Contractor)			
BIO-MM	Delineate Environmentally Sensitive Areas (on plans and in field)	The Project Biologist will submit a memorandum regarding the field delineation and installation of all ESAs to the Mitigation Manager.	Insert date each time measure is completed
Bio-MM	Equipment Staging Areas	Staging areas for construction equipment outside sensitive biological resources. The Contractor's Biologist will submit memoranda to the Mitigation Manager documenting compliance.	Insert date each time measure is completed
Bio-MM	Restore Temporary Riparian Impacts	Revegetate all disturbed riparian areas. Contractor's Biologist will submit a memorandum to the Mitigation Manager documenting compliance.	Insert date each time measure is completed
Bio-MM	Post-Construction Compliance Reports	Submit post-construction compliance reports. Submit a memorandum to the Mitigation Manager documenting compliance.	Insert date each time measure is completed
Bio-MM	Conduct Pre-Construction Surveys for Special-Status Plant Species	Conduct pre-construction surveys for special-status plant species in suitable habitat areas. Contractor's Biologist will provide verification and report through memorandum to the Mitigation Manager.	Insert date each time measure is completed
Bio-MM	Seasonal Vernal Pool Work Restriction	Exclusion fencing and erosion-control measures will be placed at the vernal pools and other seasonal wetlands by the Contractor's Biologist. Contractor's Biologist will document compliance through a memorandum to the Mitigation Manager.	Insert date each time measure is completed
Bio-MM	Vehicle Traffic	Restrict project-related vehicle traffic within the construction area to established roads. Contractor's Biologist will submit a memorandum to the Mitigation Manager documenting compliance on a weekly basis.	Insert date each time measure is completed
Bio-MM	Implement Conservation	Implement the avoidance and minimization	Insert date each

Measure	Title	Text	Completion Date
	Guidelines during the Construction Period for Valley Elderberry Longhorn Beetle	measures detailed in the Conservation Guidelines for the Valley Elderberry Longhorn Beetle. Contractor's Biologist will submit a memorandum to the Mitigation Manager documenting compliance on a weekly basis or at other appropriate intervals.	time measure is completed
Bio-MM	Translocation of California Tiger Salamanders	Conduct a pre-construction survey and relocate any California tiger salamanders. Contractor's Biologist will submit a memorandum to the Mitigation Manager documenting compliance on a weekly basis or at other appropriate intervals.	Insert date each time measure is completed
Bio-MM	Conduct Pre-Construction Sampling and Assessment for Vernal Pool Fauna	Conduct pre-construction, non-protocol surveys in seasonally inundated habitats. Contractor's Biologist will submit a report within 1 month of completing the field work and submit to the Mitigation Manager and Authority.	Insert date each time measure is completed

Submittals from Contractor to Authority

AQ-MM	Reduce Criteria Exhaust Emissions	The Contractor will document efforts undertaken to locate newer equipment and provide documentation of such efforts, including correspondence and a copy of each unit's certified tier specification.	Insert date each time measure is completed
AQ-MM	Reduce Criteria Exhaust Emissions from On-Road Construction Equipment	The Contractor will provide documentation of average fleet mix of equipment model year 2010, or newer. Contractor will keep a written record of equipment usage during project construction for each piece of equipment.	Insert date each time measure is completed
Bio-MM	Restore Temporary Impacts on Jurisdictional Waters	Restore disturbed jurisdictional waters using stockpiled and DPM-regated soils. Contractor's Biologist will document compliance with memorandum submitted to the Authority.	Insert date each time measure is completed
Bio-MM	Entrapment Prevention	Cover all excavated, steep-sided holes or trenches. Contractor's Biologist will submit a memorandum to the Authority documenting compliance on a weekly basis.	Insert date each time measure is completed
Bio-MM	'Take' Notification and Reporting	Notify the USFWS and/or CDFW immediately in the case of an accidental death or injury to a federal or state-listed species. Contractor's Biologist will submit a memorandum to the Authority documenting compliance.	Insert date each time measure is completed
Bio-MM	Erect Amphibian Exclusion Fencing	Install exclusion barriers (i.e., silt fences) to influence the movement of California tiger salamander. Contractor's Biologist will submit a memorandum to the Authority documenting compliance.	Insert date each time measure is completed
Bio-MM	Conduct Emergence and Larval Surveys for Western Spadefoot Toad	Conduct pre-construction emergence and larval surveys for western spadefoot toad. Contractor's Biologist will submit a memorandum to the Authority documenting	Insert date each time measure is completed

Measure	Title	Text	Completion Date
		compliance after surveys are complete.	
Bio-MM	Install Wildlife Fencing	Install free-ranging mammal-proof fencing. Contractor will prepare and submit a memorandum to the Authority documenting compliance.	Insert date each time measure is completed
Bio-MM	Conduct Western Pond Turtle Pre-Construction Surveys and Relocation	Conduct pre-construction surveys for western pond turtles. Contractor's Biologist will submit a memorandum to the Authority documenting compliance.	Insert date each time measure is completed
Bio-MM	Conduct Western Pond Turtle Monitoring	Conduct daily clearance surveys prior to construction. The Contractor's Biologist will submit a memorandum to the Authority documenting compliance.	Insert date each time measure is completed
Bio-MM	Implement Western Pond Turtle Mitigation Measures	Mitigate the impacts on western pond turtle in accordance with the USFWS Biological Opinion and /or CDFW 2081(b). The Contractor will submit a memorandum documenting compliance to the Authority.	Insert date each time measure is completed
Bio-MM	Conduct Pre-Construction Surveys and Monitoring for Raptors	Conduct pre-construction surveys for nesting raptors. Contractor's Biologist will submit a memorandum to the Authority documenting compliance.	Insert date each time measure is completed
Bio-MM	Raptor Protection on Power Lines	Verify that the catenary system and masts are designed to be raptor-safe. Contractor's Biologist will submit a memorandum to the Authority documenting compliance.	Insert date each time measure is completed
Bio-MM	Conduct Pre-Construction Surveys for Swainson's Hawks	Conduct pre-construction surveys for Swainson's hawks during the nesting season. Contractor's biologist will submit a memorandum to the Authority documenting compliance.	Insert date each time measure is completed
Bio-MM	Conduct Pre-Construction Surveys for Other Breeding Birds	Establish suitable buffers. Contractor will submit a memorandum to the Authority documenting compliance.	Insert date each time measure is completed
Bio-MM	Conduct Pre-Construction Surveys for Bat Species	Conduct a visual and acoustic pre-construction survey for roosting bats. Contractor will submit a memorandum to the Authority documenting compliance.	Insert date each time measure is completed
Bio-MM	Bat Avoidance and Relocation	Avoid active hibernation roosts. Contractor will submit a memorandum to the Authority documenting compliance.	Insert date each time measure is completed
Bio-MM	Bat Exclusion and Deterrence	If non-breeding or non-hibernating individuals or groups of bats are found within the construction footprint, the bats will be safely excluded. Contractor will submit a memorandum to the Authority documenting compliance.	Insert date each time measure is completed

Measure	Title	Text	Completion Date
Bio-MM	Conduct Pre-Construction Surveys for American Badger	Conduct preconstruction surveys for American badger den sites. Contractor will submit a memorandum to the Authority documenting compliance.	Insert date each time measure is completed
Bio-MM	American Badger Avoidance	Establish a 50-foot buffer around occupied American badger dens. Adjustments to the buffer(s) will require prior approval by CDFW. The Contractor will submit a memorandum to the Authority documenting compliance.	Insert date each time measure is completed
Bio-MM	Conduct Pre-Construction Surveys for San Joaquin Kit Fox	Conduct pre-construction surveys in accordance with the USFWS' San Joaquin Kit Fox Survey Protocol. Contractor will submit a memorandum to the Authority documenting compliance.	Insert date each time measure is completed
Bio-MM#	Minimize Impacts on San Joaquin Kit Fox	Implement USFWS' Standard Measures for Protection of the San Joaquin Kit Fox. Contractor will submit a memorandum to the Authority documenting compliance.	Insert date each time measure is completed
Bio-MM	Conduct Delineation of Jurisdictional Waters and State Streambeds	Conduct a jurisdictional delineation documenting jurisdictional waters and state streambeds. Contractor will submit a memorandum to the Authority documenting compliance.	Insert date each time measure is completed
Bio-MM	Install Wildlife Fencing	Install free-ranging mammal-proof fencing. Contractor will submit a memorandum to the Authority documenting compliance.	Insert date each time measure is completed
Bio-MM	Conduct Pre-Construction Surveys for Other Breeding Birds	Establish the suitable buffers consistent with the intent of the MBTA. Contractor will submit a memorandum to the Authority documenting compliance.	Insert date each time measure is completed
Bio-MM#36:	Burrowing Owl Avoidance and Minimization	Implement burrowing owl avoidance and minimization measures. Contractor will submit a memorandum to the Authority documenting compliance on a weekly basis.	Insert date each time measure is completed
Bio-MM	Conduct Pre-Construction Surveys for Burrowing Owls	Conduct preconstruction surveys in accordance with CDFW's Staff Report on Burrowing Owl Mitigation. Submit a memorandum to the Authority documenting compliance on a weekly basis.	Insert date each time measure is completed
Bio-MM	Monitor Removal of Nest Trees for Swainson's Hawks	Monitor nest trees for Swainson's hawks in the construction footprint that are not removed. Contractor's Biologist will submit a memorandum to the Authority documenting compliance on a weekly basis.	Insert date each time measure is completed

Measure	Title	Text	Completion Date
Bio-MM	Swainson's Hawk Nest Avoidance	Implement buffers restricting construction activities around Swainson's Hawk. Contractor's Biologist will submit a memorandum to the Authority documenting compliance on a weekly basis.	Insert date each time measure is completed
Bio-MM	Implement Western Pond Turtle Avoidance and Relocation	The Contractor will avoid western pond turtle nesting areas. If avoidance is not feasible, as determined by the Authority, Contractor's Biologist will coordinate with CDFW. Contractor's Biologist will submit a memorandum to the Authority documenting compliance on a weekly basis or as determined appropriate.	Insert date each time measure is completed

Notes: Authority: California High-Speed Rail Authority; CDFW = California Department of Fish and Wildlife; ESA = Environmentally Sensitive Area; MBTA = Migratory Bird Treaty Act; USFWS = U.S. Fish and Wildlife Service

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5 INSPECTIONS AND AUDITS

The program-wide environmental assurance audit is a system by which the Authority and FRA verify that all environmental commitments are being adequately implemented by contractors and consultants across the entire project. The system includes inspections of active construction sites, review of document submittals and correspondence, verification that the EMMA database is being used correctly, evaluation of completed sites, assessment of training programs, and eventually analysis of the operational environmental activities. The audit uses representative samples to gather data, and only conducts detailed reviews when inconsistencies are found. The audit system serves as the checks and balances to other environmental compliance work executed by the various Contractor's environmental teams, PCM teams, Section staff, and Authority staff at different levels. The Audits serve to provide timely and unbiased reporting of actual environmental conditions to the leadership of the Authority, FRA, and permit Agencies.

Assurance audits are a vital component of any successful compliance program. A number of studies have shown that without this, compliance will not be achieved. The concept of self-audit is not effective without the 'threat' of discovery of noncompliance. For environmental compliance this means a field presence not associated with the Contractor that will report infractions and problems to the Agency or owner. It also includes other methods of auditing performance, including reviews of the tracking program and other reports for consistency. To be effective, assurance audits need to be random and unannounced.

Assurance audits are occasional inspections of construction sites and reviews of documents to gain a statistical representation of the adequacy of the environmental compliance program. Assurance audits can also include horizontal self-audits in which Construction or Construction Management uses an independent staff or organization to look at its own procedures and protocols, or it can be conducted vertically by a higher level of an organization on a lower branch. Audits are different from compliance or oversight monitoring which occurs on a regular basis as part of the daily tasks of Construction and Construction Management.

The Contractor is encouraged to conduct self-audits in the form of a formal check of its own processes to be sure it is complying with all commitments. This self-audit should involve staff or another organization that is not typically involved in the day to day operation of the Project. The self-audit will benefit the Contractor by reducing potential delays caused by inadvertent noncompliance. The PCM may also conduct a self-audit, but it does not audit Construction because it's task is the slightly different compliance oversight.

The following are examples of different audit scenarios:

- Contractor "self-audits" its own work.
- PCM "self-audits" its own work
- Program audits Construction and Construction Management
- Authority audits the RDP
- FRA audits the Authority

5.1 Audit Inspections

The Program level will establish a schedule of inspections and audits of the Contractor to ensure that established standards of environmental controls are being maintained by the Contractor and in accordance with the approved ECP. This will include a review of construction practices and implementation of BMPs in the field, checking that all workers have a hard-hat sticker indicating they attended a WEAP, verifying that biological and cultural resource monitors are on site, photo-

documenting the site conditions, and other conditions of approval. The Audit will be used to verify work has been performed in accordance with the contract documents, including all environmental documentation, permits, and approval requirements identified in the governmental approvals and permits, EMMA, and MMEP. The FRA is also at liberty to conduct compliance assurance audits at any time, with the purpose of providing technical assistance to its grantee and ensuring that federal project commitments are met.

5.2 EMMA Audit

The environmental assurance audit includes an evaluation of the frequency and quality of EMMA reporting being conducted by all levels of the Project. The auditor should review approximately 10% of all records submitted for each CP, or a minimum of 20 records, whichever is greater. The Auditor should create a rating system to numerically evaluate each record, and write qualitative notes that describe either positive compliance or any inadequacies if they exist.

The purpose of this audit is to document and report positive compliance to partner agencies and the public. The audit also identifies potential inconsistencies that could lead to noncompliance and reports these to the Construction Management teams so they can be efficiently resolved. This audit reduces staff time required to meet the NEPA/CEQA reporting requirements by allowing the program to hand over day-to-day approval of records to Construction Management and Section staff while still maintaining program consistency. The audit is also a reflection of the EMMA training provided by the Program level to the Construction and Construction Management teams. Poor quality records or infrequent use could point to a need for the Program to provide better or more frequent EMMA training.

5.3 Audit of Submittals and Correspondence in SharePoint

A review of the SharePoint document management system is another important aspect of the audit program. This activity involves a brief review of all environmental documents or correspondence submitted by the Contractor or Authority in the Construction area of SharePoint.

5.4 Environmental Performance Matrix

The Environmental Performance Matrix is a communication tool between the Authority and the Design-Builder's Environmental Team that includes a set of questions or topic areas that are evaluated and assigned a score based on the performance of the DB Contractor. The result is an Environmental Performance Report Card (see Table 5-1) for each DB and an ongoing Environmental Risk Statistical Analysis (see Figure 5-1). The report card should be completed by the PLEG as part of the annual auditing effort.

Table 5-1 Contractor Report Card

Issue/Activity	Discussion (describe performance and reason for the grade given)	Grade (A,B,C,D or F)
CEQA/NEPA		
Permit compliance - General		
MMEP compliance		
401/402/NPDES Permit compliance		
404 Permit compliance		
1600 Permit compliance		

Issue/Activity	Discussion (describe performance and reason for the grade given)	Grade (A,B,C,D or F)
Sect 7 Permit compliance		
2081 Permit compliance		
Sect 106 compliance		
EMMA reporting		
Adequacy of Environmental Management Plan		
Adequacy of other Contractor environmental submittals		
Adequacy of Monthly Compliance Report		
Sustainability reporting		
Environmental Re-Examinations		
Compliance with environmental provisions of Contract		
Communication and collaboration		
Environmental Staff/Team		
Overall Environmental Compliance Grade		

Notes: CEQA/NEPA = California Environmental Quality Act/National Environmental Policy Act; EMMA = Environmental Mitigation Management and Assessment; MMEP = Mitigation Monitoring and Enforcement Program/Mitigation Monitoring and Reporting Program; NPDES = National Pollutant Discharge Elimination System

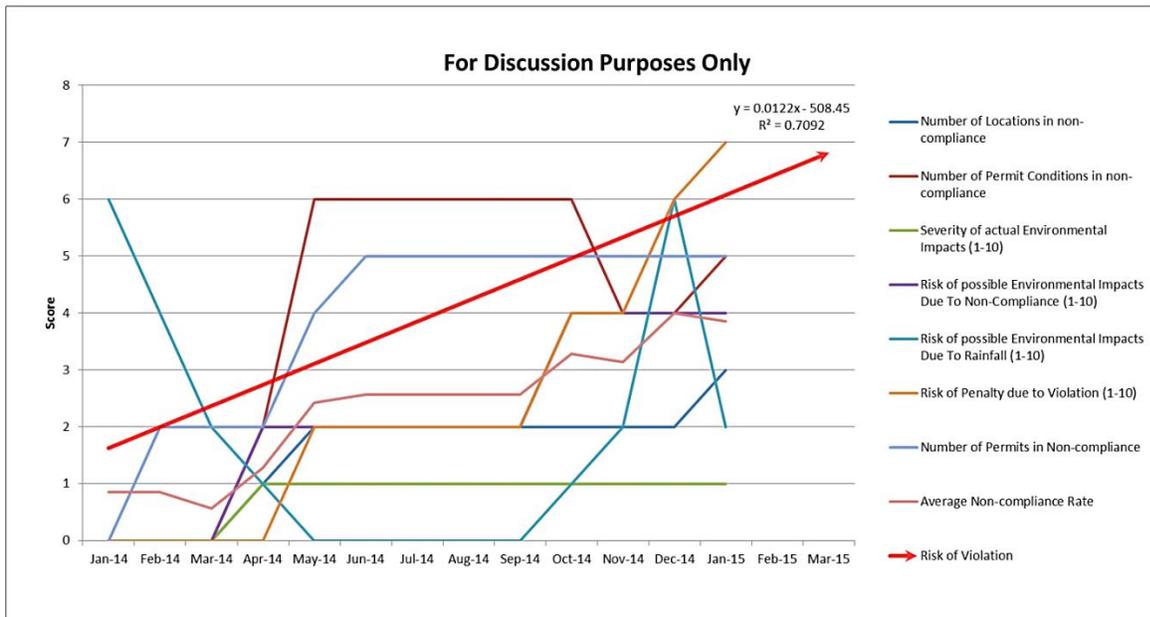


Figure 5-1 Sample risk analysis

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6 NONCOMPLIANCE EVENTS

Noncompliance occurs when an activity places sensitive resources at unnecessary risk, results in damage to resources, violates a permit condition or other condition of the law, or is a repeated scenario of low-risk actions that as a whole result in high risk or direct impact. Noncompliance may include deficient or non-existent implementation of mitigation measures, ultimately having the potential to result in irreversible environmental damage. Noncompliance can include not implementing mitigation measures in accordance with stipulated timing restrictions or not reporting on the implementation.

All noncompliance events will be documented by the Contractor in EMMA, or by Construction Management if the Contractor fails to do so, and reported to the PLEG, Program, and appropriate agencies (see Figure 6-1).

6.1 Recognizing Noncompliance

Noncompliance can be identified, ranked, and recorded at different levels. Once the level of noncompliance has been established, the appropriate actions are selected for resolving the noncompliance. The three levels of noncompliance are Level 1—Critical; Level 2—Moderate; and Level 3—Low. The following provides additional details and examples of different levels of noncompliance.

6.1.1 Level 1—Critical

A critical noncompliance situation typically includes material damage to, or a reasonable expectation of impending damage to, an environmental or historical resource. Critical noncompliance could result from intentional or accidental disregard of permits, MMEP, EIR/EIS, Contract, or project standards that may lead to a serious incident. This level of noncompliance needs immediate attention with all available resources because it could result in a Stop Work Order being issued by the Authority or Agency to Contractor and has the potential to result in penalties, fines, civil litigation, or criminal charges (See U.S. Endangered Species Act Section 11).

Examples of Level 1 noncompliance:

- Bulldozers leveling an area adjacent to a drainage ditch that runs to a creek channel with no temporary erosion control on a rainy day
- Excavator clearing and grubbing small trees and shrubs with no biological monitor on site
- Ground disturbance in archaeologically or paleontologically sensitive areas with no monitor on site
- Screening soil to remove rocks with a large plume of dust
- Starting construction without proper notification to permit Agencies
- Operating heavy equipment within flowing water
- Disposing of soil on a property that is not a legally existing and licensed site

Reporting:

- Must be reported immediately to PLEG and Program staff, and permit agency by phone or email. Should be submitted to EMMA.

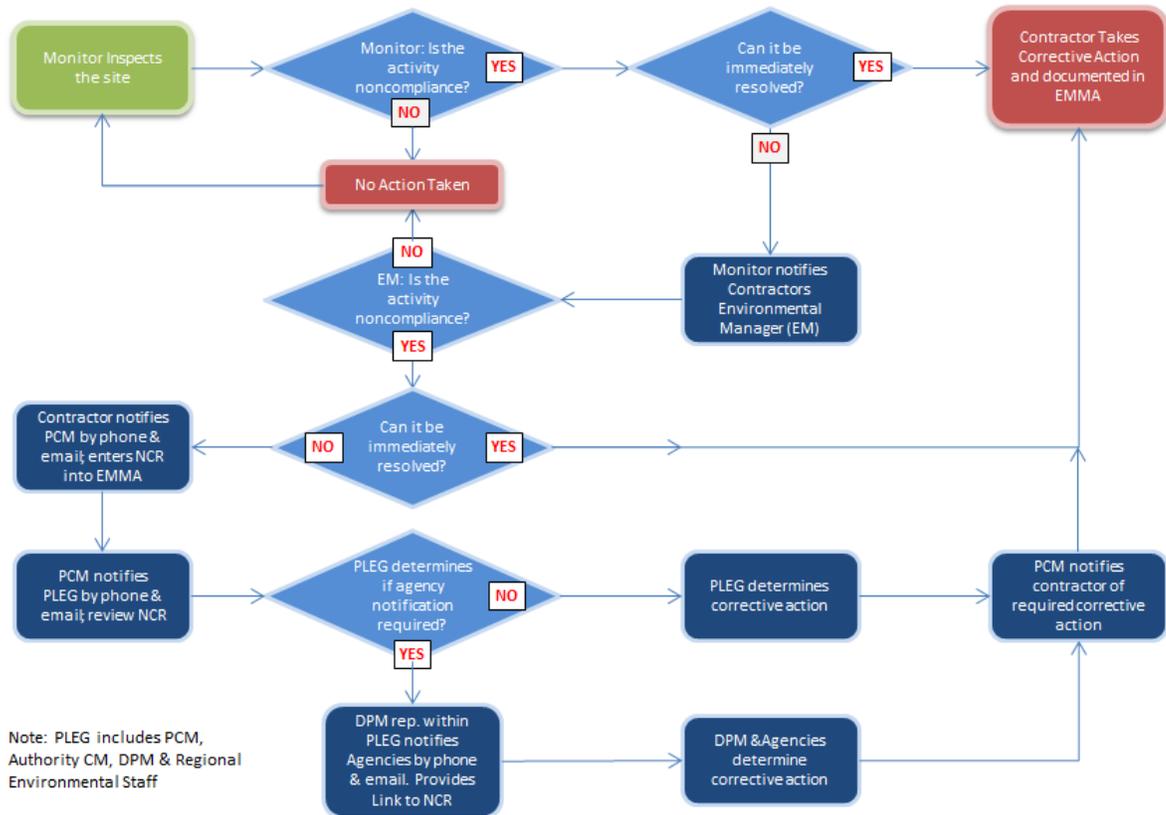


Figure 6-1 Notification of noncompliance

6.1.2 Level 2—Moderate

Moderate noncompliance includes a noncompliance situation that has not yet resulted in clearly identified damage or irreversible impact to a sensitive important resource but could cause damage if not corrected. Moderate noncompliance requires expeditious corrective action and site-specific attention to prevent such effects. Repeated Level II noncompliance may become Level I noncompliance if left unattended or are continuously recurring. This level of noncompliance could result in a Correction Notice being issued by Authority to Contractor.

Examples of Level 2 noncompliance:

- Grading an area outside the construction footprint where biological and archaeological surveys have already occurred and no threats to water resources exist
- Tracking soil onto a paved county road

Reporting:

- Should be reported as soon as convenient to PLEG and Program staff, and may need to be reported to permit agency by phone or email. Should be submitted to EMMA.

6.1.3 Level 3—Low

Low noncompliance includes a construction related activity not consistent with the requirements but not believed to present an immediate threat to an identified important resource. Repeated

Level III noncompliance may become Level II noncompliance if left unattended; therefore, should be corrected as soon as possible.

Examples of Level 3 noncompliance:

- Vegetation removal and grading in a flat area within the footprint that had biological and archaeological surveys but no temporary erosion control installed or Storm Water Pollution Prevention Plan, with no rain in the forecast
- Garbage left on the ground after lunch break or end of the work day
- Contractor not reporting implementation of mitigation measures in EMMA or not reporting implementation in a timely manner

Reporting:

- May need to be reported to PLEG but unlikely to be reported to permit agency. Should be submitted to EMMA.
- Such occurrences may result in a Request for Corrective Action being issued by the Authority.

6.2 Procedures for Resolution

These procedures outline how environmental noncompliance events during construction are identified and what procedures should be implemented following identification to ensure prompt notification and action by the Authority and agency staff. Noncompliance events are defined as actions that are not in compliance with environmental standards, permits, agreements, contracts, or laws.

Noncompliance events include (but not limited to) the following:

- Any action that may violate environmental permit conditions, agreements, or approvals for the Project, or other environmental laws, ordinances, or regulations
- Any construction activity that occurs outside of the environmental footprint as reviewed and approved in environmental documents and agency permits
- Any unauthorized work, activity, or fill in wetlands, shorelines, creek beds (including dry channels), waters of the state, or habitat for special status species
- Any discharge of sediment into waters of the state or into any conveyance or drainage structure that discharges to waters of the state
- Any spill or release of hazardous materials, such as petroleum products or chemicals
- Any “take” of threatened or endangered species
- Failure to implement Archaeological Treatment Plans and Build Environment Treatment Plans
- Failure to implement conditions of any plan that was approved by a permit agency
- Lack of reporting of compliance or noncompliance in the project database.

Notification should occur for the following:

- Any noncompliance event as observed by Contractor/PCM/RDP/Authority/ Agencies
- Verbal or written notice from a regulatory or permit agency, or receipt of any court order

- Any site inspection by a regulatory or permit agency
- Any action or project revision requested by an Agency, Tribe, or government entity

Steps to resolve noncompliance include the following:

1. Photo-document the site if possible and make detailed notes of the condition
2. For Contractor-observed noncompliance, Contractor will take immediate corrective action to resolve the noncompliance. Go to Step 5
3. For noncompliance observed by others, immediately notify the Contractor of the situation and request corrections to resolve the noncompliance
4. If the Contractor fails to quickly make requested corrections, the Authority will issue a Suspension of Work Order (Book 2, Part B - General Provisions, 39)
5. Immediately send an email notification describing the noncompliance to the Authority Design and Construction Manager, PCM Environmental Oversight Manager, the RDP Environmental Construction Manager, DPM Coordinator, and Director of Environmental Services
6. Submit an EMMA Non-Compliance Report
7. If required by permit condition or mitigation measure, the Authority will immediately contact the appropriate agency

6.3 Corrective Actions

6.3.1 Stop Work Order

In accordance with the “Suspension for Cause” clauses included in contracts, the Authority may at any time order the Contractor to suspend work due to a noncompliance event, as necessary to protect the environment and prevent further noncompliance. During a Stop Work Order, the Contractor is responsible to continue working on activities to bring the Project into compliance. On completion of corrective actions, the Contractor will notify Constructive Management that the corrective actions have been completed. Construction Management will verify that all corrective actions are closed out and completed to a high level of satisfaction. Once the corrective actions have been verified, the Authority/PCM will issue a verbal or email communication, followed by written Release of Stop Work Order, and work may commence.

The following are the basic elements of a Stop Work Order:

- Authority letterhead
- Date of order
- Date and time of noncompliance occurrence
- Description of noncompliance
- An order to stop work
- Measures needed to resume work with deadlines

Stop Work Orders should only be used when absolutely needed to ensure compliance.

6.3.2 Stop Work Procedure

The procedure to stop work is carried out by the Design and Construction Manager assigned to the specific CP or his/her assigned staff.

The Authority may order the Contractor in writing to suspend all or any part of the work for such period of time as determined appropriate by the Authority.

During periods that work is suspended, the Contractor will continue to be responsible for the work and will prevent damage or injury to the Project, provide for drainage, and erect necessary temporary structures, signs, or other facilities required to maintain the Project.

The Authority may reject or require the Contractor to remedy any nonconforming work and/or identify additional work that must be done to bring the Project into compliance with contract requirements at any time prior to Final Acceptance, whether or not previous oversight, spot checks, assessments, reviews, tests, inspections, acceptances, Statement of no objection, statements of objection, or approvals were conducted.

Before completing its technical and engineering reports and construction drawings, the Contractor will conduct a review of and ensure compliance with all Final Environmental Documents and Governmental Approvals. Compliance will be demonstrated through preparation of environmental compliance reports to be submitted with each design deliverable. The Contractor will comply with the requirements contained in the Final Environmental Documents and Governmental Approvals. The Contractor will comply with all conditions imposed by and undertake all actions required by all Governmental Approvals.

No adjustment will be made for suspensions required to comply with any Governmental Approval or law, or otherwise carry out the requirements of the Contract.

6.3.3 Correction Notice

A Correction Notice is issued when there is a moderate possibility of negative impacts to the environment or for construction activities that are either unpermitted or in violation of permits but where only minimal damage to the environment has occurred.

The process for issuing a Correction Notice is similar to that of a Stop Work Order, except that work is not being halted because the actual impacts are not severe and the Contractor is actively taking steps to correct the noncompliance. A Correction Notice can be verbal or emailed as long as it is followed up with written notice.

Correction Notices may be used whenever a noncompliance has occurred but shutting down the work will not bring the site back into compliance. Correction notices are like a “fix-it” ticket for the Contractor to help them avoid more severe compliance action.

6.3.4 Request for Corrective Action

A Request for Corrective Action is issued when there is a possibility of negative impacts to the environment, or for construction activities that are either unpermitted or in violation of permits but no damage to the environment has occurred.

A Request for Corrective Action is usually an email or verbal (followed by an email) request by the Authority/PCM to the Contractor to take action as soon as reasonably possible to correct a Level III (Minor) noncompliance. This will ensure that non compliances identified are recorded, resolved, and closed out in a consistent manner.

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7 COMMITMENT TRACKING

7.1 EMMA Database

All programs must have a method of tracking the commitments they wish to uphold. The system needs to mirror the complexity and robustness of the commitments being made. It serves to record the commitments and track them through time until the commitment is determined to be completed. It also becomes part of the auditing program and the documentation that commitments were accomplished.

EMMA is a database created to document compliance for the CHSR. The database allows users to record implementation of compliance through the use of record forms designed specifically for each discipline. The status of each Environmental Requirement is tracked in EMMA through phases of pre-initiation and in-process. Upon successful completion of each requirement, that requirement's status is noted as completed in the system. The system allows for various records documenting compliance to be aggregated into summaries showing a comprehensive record of all actions documenting compliance with the Environmental Requirements and, ultimately, the meaningful mitigation of impacts. EMMA also functions as a reference library of Environmental Requirements. Each requirement may be accessed for review of commitment text, reporting requirements, implementation mechanisms, and status of the requirement, as well as documents associated with requirements, such as permits and reporting programs. This reference library is available to all users.

EMMA was built on Microsoft SharePoint and therefore is best operated using Microsoft Internet Explorer (IE) version 10 or lower. IE 11, which is the most commonly found browser due to automatic updates, does not allow for some aspects of EMMA to function correctly, resulting in numerous requests sent to the help desk for assistance. Other browsers such as Chrome, may initially appear to function; however, may also contain some limits and loss of functionality.

7.2 Records and Forms

Compliance records entered and uploaded in EMMA by monitors require review and approval by supervisory staff prior to being made available for Authority review and approval. Once records are approved, they are made accessible for review by regulatory Agencies and stakeholders (see Figure 7-1).

Monitoring forms provided by EMMA will be completed as comprehensively as possible with details entered directly onto discipline- or activity-specific forms and corroborated with applicable maps, photos, logs, or other supporting documentation. Monitoring forms will be completed for each instance of construction monitoring, clearance survey, resource management, or completion of Environmental Requirements. The forms should be submitted to the Authority for review per reporting schedule requirements as directed by the MMEP, the terms and conditions of the Environmental Requirement, or upon completion of the compliance activity. Environmental Requirements associated with design require reporting corroborated with examples of design compliance and should be submitted with or prior to completion of final design. Documentation must be associated with the pertinent Environmental Requirements in order to be deemed complete.

EMMA forms can be submitted from jobsites where wifi or cellular data service is available. Remote data recordation in EMMA is optimized using Windows based tablets due to being a SharePoint application which is a Microsoft product. Other internet browsers may not display EMMA correctly or allow uploading of documents.



Figure 7-1 EMMA Workflow

7.3 EMMA Users

A list of the Contractor's initial EMMA users, including technical specialists, field leads, and monitors, will be provided by the Contractor at least 30 days prior to ground-disturbing activities, including geotechnical investigations. All of the Contractor's identified initial users will attend at least one EMMA training session with the Authority in person to be scheduled no later than 14 days prior to ground-disturbing activities.

All management plans will be entered and uploaded into the EMMA system and associated with pertinent requirements by the author of the document. Examples of the EMMA record forms are included in Appendix D: EMMA User Manual.

8 CONTRACT REVIEW

The basic goal of this component is to ensure that every environmental commitment is clearly and directly represented in the Contract and the enforcement mechanism is defined. This is critical because the foundation of good environmental compliance is built on a foundation of scope assignment and clear contract language. The goal is to make minor language changes to DB contracts in order to provide clarification of environmental compliance expectations, procedures, and policies while continuing to push as much risk and responsibility to the Contractor.

8.1 MMEP and Permits Crosswalk

During contract preparation, the contract review team should conduct a step-by-step review of the MMEP and permits (if available) and record in a copy of the MMEP the exact location in the Contract that requires the Contractor to implement each mitigation measure. This “crosswalk” can be provided to the Contractor to ensure that the Contractor is aware of the conditions and to reduce change orders that can occur when the Contract does not specify the implementation of a commitment. This crosswalk will also help reduce the potential for noncompliance as it demonstrates to the Contractor that the Authority has carefully designed the Contract to include all commitments.

8.2 Change Order Evaluation

A team of environmental compliance staff and contract development staff will meet prior to posting a Request for Qualifications or Request for Proposals to review all recently approved change orders in order to look for opportunities to clarify contract language. These clarifications will help reduce future change orders by giving the Contractor more information early in the process to better plan for environmental compliance needs and to give Construction Management staff additional tools to avoid claims by Contractors.

8.3 Noncompliance Evaluations

Similar to change order evaluations, the environmental team will evaluate previous noncompliance events and make minor changes to Request for Qualifications and contracts in order to clarify expectations to avoid future noncompliance.

8.4 Structure Change Clarifications

Changes made to the structure of the environmental compliance program, such as the addition of a Section Environmental Team and transfer of some tasks to this team, will be clarified in each round of Request for Qualifications and permit documents.

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9 TRAINING AND EDUCATION

Training and education is provided by each level or group to the others in order to improve overall understanding of the Project and to enhance communication. To ensure information, processes and procedures are implemented during construction, the Contractor is expected to request training from the Authority on environmental topics (see Figure 9-1).

9.1 Environmental Compliance Manual Training

In an effort to assist the Contractor with preparation of the ECM, the RDP offers a training session to the Contractor regarding the design and preparation of environmental compliance manuals.

9.2 EMMA Training

The RDP will provide training on the use of EMMA. The training is available for all users.

9.3 Re-Examination Training

The RDP offers to the PCM and Contractors training on the Re-Examination Process and on preparing a re-examination package.

9.4 Worker Environmental Awareness Program Training

The WEAP is provided by the Contractor to all staff who will work on the Project. The WEAP is guided by GAs and therefore it is important that the WEAP provider assemble a list of all commitments that require this training. In some cases, GAs require that a staff person who has been approved by the Agency deliver the training. The GAs may also have specific topics that need to be covered or they may require that an outline of the WEAP be approved by the Agency.

The basic elements of the WEAP are prepared by the DPM. This ensures permit-wide consistency, which is expected by the Agencies. The contractor must include all items included in the outline.

9.4.1 Cultural Resources Awareness Management Training

As part of the WEAP, all workers are required to attend Cultural Resources Awareness Training.

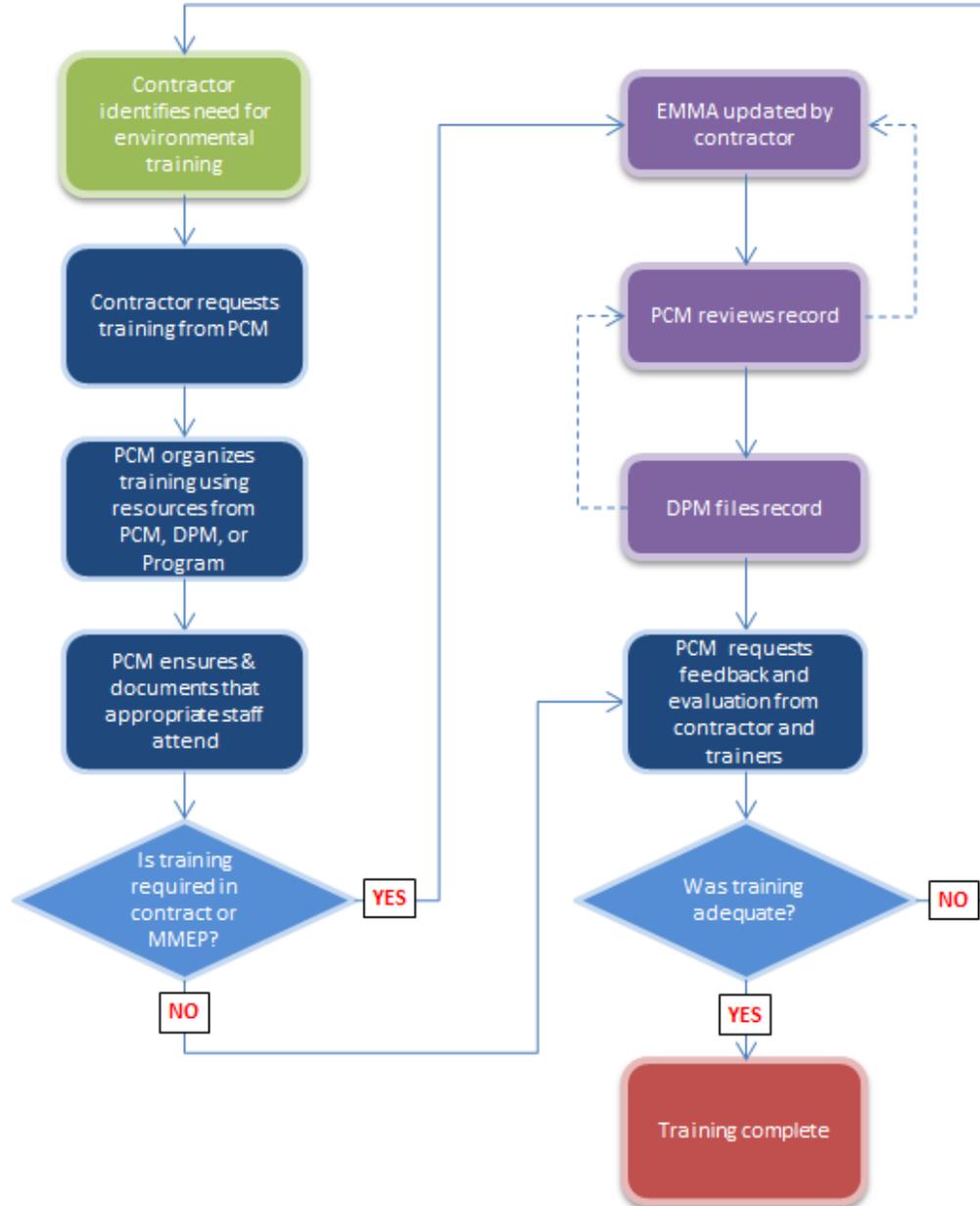


Figure 9-1 Environmental training communication

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10 ADAPTIVE MANAGEMENT

Adaptive management describes how Agencies use new information that is gathered through monitoring, evaluation, and other credible sources to evolve their management strategies and practices over time to better meet environmental management objectives. Adaptive management describes the Authority's system for identifying and resolving issues and adapting their procedures to capture these "lessons learned."

All levels of the organization are responsible for identifying problems and working with others to develop solutions. Once solutions are implemented, a memo should be prepared to notify Senior Environmental Staff, and this memo is then distributed to all staff who could be involved with similar issues.

If staff determines that an issue represents a possible risk of environmental noncompliance to other CP or Sections, the staff will prepare amendments to this manual. All environmental and construction managers will then be notified that an amendment has been prepared.

A formal adaptive management program is currently being developed by the Authority and will be included in future updates to this manual.

10.1 Environmental Issue and Escalation

This strategy involves working with the DB's ECM to resolve issues at the lowest level. The basic process is to follow the following sequence:

- Observe
- Advise
- Discuss
- Escalate (if necessary) to higher management level for resolution and endorsement
- Develop strategies and methods for improvement

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APPENDICIES

APPENDIX A: ENVIRONMENTAL RE-EXAMINATION GUIDANCE

APPENDIX B: GIS SPECIFICATIONS

APPENDIX C: CONTRACTOR'S ECP PREPARATION OUTLINE

APPENDIX D: EMMA USER MANUAL

**APPENDIX E: QUALIFICATIONS OF THE ENVIRONMENTAL COMPLIANCE
TEAM**

**California High-Speed Rail Project
Environmental Re-Examination Process Guidance
Version 1, April 2014**

The purpose of this Environmental Re-Examination Process Guidance document (Guidance) is to assist the California High Speed Rail Authority (Authority) and the Federal Railroad Administration (FRA), in complying with the requirements of the California Environmental Quality Act (CEQA)¹ and the National Environmental Policy Act (NEPA) generally during the post-approval project implementation phase. This Guidance may also assist the Authority and FRA in determining whether pending or approved applications for resource agency permits require revision.

This Guidance presents a standardized approach that the Authority, FRA, and the Authority's contractors/consultants² can follow to evaluate project changes, new information, changed circumstances, or design refinements that could result in impacts to the environment that are different from the impacts evaluated in the relevant Environmental Impact Report (EIR)/Environmental Impact Statement (EIS) and considered in the environmental permitting process. Examples of such project changes, new information, changed circumstances, or design refinements include the following: need for expanded right-of-way acquisition; alignment shifts; different size or type of structure; new road closure; new or different construction staging area; new or different construction method; or a change in the nature and severity of environmental impacts.

Any project changes, new information, changed circumstances, or design refinements (referred to collectively in this Guidance as variations) that were not previously evaluated in the relevant EIR/EIS and environmental permitting documents should be assessed. Typically, although not exclusively, this assessment would occur during project development at the following types of milestones: (a) prior to design/build contract award; (b) review and consideration for approval of design/build contractor baseline reports, in-progress engineering submittals and/or construction drawings, as might be required by the underlying contract; and (c) review and consideration of change orders (or design-refinement or alternative technical concept approval that does not require a change order) that involve physical components. However, in some circumstances, such an assessment may also be appropriate as directed by the Authority or FRA before the preparation of a Final EIR/EIS or during project construction.

The starting point for this assessment and evaluation of environmental impacts associated with the variation is the analysis contained in the EIR/EIS and the environmental/resource permitting documents. This Guidance can help ensure a consistent approach to the analysis of all variations so the Authority and FRA may determine:

- 1) Whether the variations would result in changes to the environmental impacts already analyzed in the relevant EIR/EIS and the type of environmental document that might be

¹ Whether CEQA, and potentially other state environmental permitting laws, apply to the project is currently under court review; users of this Guidance should assume these laws apply until instructed otherwise.

² Whether use of this Guidance is binding and required as a contractual matter as to any particular consultant or contractor will be determined in the contract between the Authority and the consultant or contractor (or related sub-contract). If a contractor or consultant is in doubt about whether this Guidance applies, the contractor or consultant should seek written confirmation from the Authority.

necessary to comply with CEQA and NEPA for decisions affecting or affected by the proposed variation; and

- 2) Whether implementation of the variations would require new permits or approvals or modifications to environmental applications, approvals, permits or related documents (e.g., permitting related analyses – such as Section 404(b)(1) or a Section 7 Biological Opinion.); and
- 3) Whether environmental matters justify or preclude authorization of a proposed design refinement (as applicable).

In order to effectively use this Guidance, it is necessary to understand the scope of the project evaluated in the EIR/EIS as well as the scope of the project covered by the permitting documentation.³ The relevant project elements and the location of those elements must also be known.

This Guidance or some of its elements may be followed prior to the completion of a Final EIR/EIS to assist the Authority and FRA in determining whether there are substantial changes in the proposed action that are relevant to environmental concerns or whether there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts. This Guidance is also useful for the consideration of variations at the post-EIR/EIS milestones noted above. In addition, review of variations using this Guidance could occur during project construction.

This Guidance is structured to support, not duplicate or replace the Authority's contract change control and configuration management processes.

Users of this Guidance should consult the Authority's environmental staff at any point in the process if questions develop. In-process consultations will help ensure that required analysis is performed and that excessive or incorrect analysis is not done.

This Guidance involves the following three steps:

Step 1. Conduct Preliminary Environmental Re-Examination of Variations.

Using available information, undertake a reconnaissance-level environmental assessment of the variations for submission to the Authority and FRA and prepare a description, along with the reason and timing of the design refinement for Authority review as described further in Section B below.

- A. Preliminary Environmental Re-Examination.** For every variation, complete a Preliminary Environmental Re-Examination using Attachment B1 – CEQA/Permitting Preliminary Environmental Re-Examination and Attachment B2 – NEPA/Permitting Preliminary Environmental Re-Examination as templates. Include the following information:

³ Permitting documentation can vary in both timing and scope from the preparation and approval of the EIR/EIS. Accordingly, there is a need to understand *both* the scope of the project evaluated in the CEQA/NEPA documentation and, independently, the scope of the project covered by the permitting documentation.

- Compare variations to existing environmental data, including existing EIR/EIS, issued or pending permits, and permit-related documents to determine the potential for new impacts and/or new parcels that are impacted that were not previously identified.
- Identify potential changes to permits or other approvals (e.g., Section 4(f) or change in the Least Environmentally Damaging Practicable Alternative (LEDPA)).
- Identify data gaps.
- Identify the potential for public controversy.

B. Variation Package. Whenever a variation is proposed, prepare a variation package to provide the basis for a Preliminary Environmental Re-Examination. The package should include the following information (see Attachment A – Variation Template):

1. Description of variation.
2. Reason for variation.
3. Time by which refinement needs to be implemented and the reason for the timing.
4. Recommended Approach.

C. Determination of Further Review. Submit the Preliminary Environmental Re-Examination (Attachments B-1 and B-2), and the Variation Packet (Attachment A- Step 1) if applicable, to the Authority to make a determination as to which course of action noted below to follow:

1. If the variation is a design refinement, either:
 - Advance the design refinement for additional environmental review or documentation,
 - Delay additional environmental review on the design refinement, and recommend when the design refinement should be reconsidered, or
 - Reject the design refinement.

The Authority determines whether to move each design refinement forward for a more detailed assessment prior to making a commitment to implementation (i.e., inclusion in an RFP, contract, or change order).

2. If the variation involves new information or changed circumstances and the Preliminary Environmental Re-Examination identifies the potential for environmental impacts that were not previously analyzed, inform FRA and proceed to Step 2.

Step 2: Conduct Any Necessary Environmental Analysis. Prior to commencing Step 2, the user of this Guidance should consult with Authority environmental staff to confirm the adequacy and appropriateness of the scope of the user's intended Step 2 analysis and documentation. For variations where the Preliminary Environmental Re-Examination (Attachments B1 and B2) indicates the variation is likely to result in environmental impacts that differ from those previously analyzed in the Draft or Final EIR/EIS, conduct an environmental analysis, including site surveys where necessary, and provide a brief written documentation of the analysis using



Attachment C- Environmental Re-Examination as a template. Apply the same methodology for determining impacts as was used in the analysis described in the EIR/EIS. The level of analysis for the variation should be the level that is necessary to answer the questions identified below. In general, the analysis of the variation should be conducted at the same level of detail, but no greater detail than the analysis in the EIR/EIS and applicable permit related documents.

The analysis shall answer the following questions:

- Does the variation present a distinct difference from the project impacts (including construction effects) as analyzed in the EIR/EIS, discussed in the CEQA Findings/ROD, or addressed in permit-related documents, including differences in impacts to regulated resources such as waters of the United States, Waters of the State, habitats or sensitive species, receiving waters, cultural or 4(f) resources, etc.?

If so, note the reference to where it is addressed, if at all, in the applicable environmental documentation, and identify specific additional technical studies that are needed. If not, explain why.
- Is the same type of impact caused by the variation already evaluated in the EIR/EIS and/or permit related documents?
- Do the EIR/EIS or project-related documents include mitigation measures for the impacts of the variations, and will these mitigation measures adequately address the impacts of the variations?
- Are there design features described in the EIR/EIS, or existing avoidance and minimization measures in permit-related documents, available to reduce additional, different or substantially more severe environmental impacts anticipated as a result of the variation?
- Are there any additional mitigation measures available to reduce additional, different or substantially more severe environmental impacts anticipated as a result of the variation?
- Would any necessary additional avoidance, minimization or mitigation measures cause new adverse impacts? If so, can these adverse effects be avoided or mitigated?
- Are additional or more severe impacts offset by other variations that have been approved or are being considered concurrently (e.g., a change in acreage of wetlands impacts may result in a net total that falls within permit thresholds)?
- Does the inclusion of the variation (1) alter the analysis in the Final EIR/EIS of whether a cumulatively considerable impact exists in a particular resource area, and (2) if a cumulatively considerable impact exists, does the variation alter the conclusion in the EIR/EIS of whether the project's incremental contribution to that impact is cumulatively considerable?

Note that Attachment C must include sufficient comparison, detail and analysis to establish the link between the evaluation of the environmental impacts of the variation and the conclusion set forth in Attachment D (see Step 3 below).

Step 3. FRA and Authority determine whether variations require additional CEQA or NEPA documentation and permit changes. Based on the analysis provided in Step 2, prepare three draft determinations: a CEQA Determinations and Conclusions, a NEPA Determinations and Conclusions, and a Permitting Determinations and Conclusions.

- A. CEQA Determinations and Conclusions:** The Authority makes a determination as to whether any additional CEQA documentation (including whether a subsequent EIR or supplemental EIR is required pursuant to Public Resources Code section 21166 and CEQA Guidelines sections 15162 and 15163) is required before proceeding with the variation. This determination shall be documented using the template provided in Attachment D1 – CEQA Determinations and Conclusions.
- B. NEPA Determinations and Conclusions:** The FRA makes a determination as to whether a supplement to the EIS is required pursuant to CEQ regulations (40 CFR 1502.9) This determination shall be documented using the template provided in Attachment D2 - NEPA Determinations and Conclusions.
- C. Permitting Determinations and Conclusions:** The Authority determines whether there are new significant or more severe impacts for the variations that would have regulatory permitting consequences, including new or more severe impacts to jurisdictional resources subject to environmental permitting, such as waters of the U.S., waters of the state, habitats of sensitive species, discharges to receiving waters, etc. and all other relevant resources evaluated under CEQA/NEPA. In making this determination, the Authority, in consultation with FRA, shall determine if an amendment to any project permit document is required as a result of the variations. This determination shall be documented using the template provided in Attachment E. This assessment shall be based on the information developed in Step 2.

For any design refinements, the Authority, in consultation with FRA, shall make a determination as to whether or not to pursue the design refinement following these determinations.

ATTACHMENTS

**ATTACHMENT A, STEP 1:
VARIATION PACKET TEMPLATE**

ENVIRONMENTAL RE-EXAMINATION PROCESS – STEP 1
ATTACHMENT A: VARIATION PACKET TEMPLATE - DRAFT

This template is for describing a proposed variation. Information to be supplied in completing **this template constitutes Step 1** described as part of the California High-Speed Rail Authority Environmental Re-examination Process Guidance. When completed for a particular variation, this template together with the templates in Attachments B1 and B2, jointly constitute the preliminary assessment package.

1. **Project Section:** _____
2. **Title of Variation:** _____
3. **Recommended Approach:** Describe what the recommended approach is for addressing the proposed variation _____
4. **Description of Variation:** Identify the proposed variation, including technical details such as changes to horizontal footprint, vertical profile, construction activities, and project features identified in the EIR/EIS and where the variation would occur. Also describe the potential implications of the change in terms of cost, schedule, environmental review, and ROW acquisition. Identify whether there are permit-related documents that will need to be revised or amended as a result of the variation, and if so, identify which permits are implicated. _____
5. **Reason/Need for Variation:** Identify the source of the proposed variation (e.g., local government or utility; proposal from D/B contractor; ROW acquisition related variation), why there is a change being proposed, and the justification/ benefit of the variation. _____
6. **Alternatives:** Discuss any alternative approaches for addressing the variation. _____
7. **Staff Involvement:** Provide the names of key staff (i.e., names, locations and disciplines) that have been involved in advancing the change for consideration. _____
8. **Time by Which Change Needs to be Implemented:** Provide a reason for the timing. _____
9. **Figures:** Include figures that show the original design and footprint compared against the variation and footprint of the proposed change. _____
10. **Attachments:** Include PDF/KMZ/GIS attachments depicting the variation to form a basis for the revised footprint. _____

**ATTACHMENTS B1 AND B2, STEP 1:
CEQA AND NEPA PRELIMINARY
ENVIRONMENTAL RE-EXAMINATIONS**

PRELIMINARY ENVIRONMENTAL EVALUATION CONSULTATION FOR THE CALIFORNIA HIGH-SPEED RAIL PROJECT

For the user following Step 1 of the Environmental Re-examination Process Guidance, this worksheet provides directions for the preliminary evaluation of variation that were not previously evaluated in a California High-Speed Rail project Draft or Final EIR/EIS required under the California Environmental Quality Act (CEQA). It is designed to provide the California High-Speed Rail Authority (Authority) and the Federal Railroad Administration (FRA) with the initial evaluation and information needed to make a determination as to whether variations should move forward into a more detailed environmental evaluation process.

DIRECTIONS

Please answer the following questions, fill out the checklists and attach maps showing the previously approved design and the proposed variation and the impact on project footprint and parcel acquisitions as defined in the previously approved environmental document.

PROJECT SECTION

LIST CURRENT, APPROVED ENVIRONMENTAL DOCUMENTS (e.g., EIR/NOD, Neg Dec/Mitigated Neg Dec, Subsequent EIR/NOD, Addendum) If Addendum, briefly describe.		
Title:	Date:	Type and Date of Last Discretionary Action
Title:	Date:	Type and Date of Last Discretionary Action
Title:	Date:	Type and Date of Last Discretionary Action

REASON FOR EVALUATION

BRIEF DESCRIPTION OF VARIATION RELEVANT TO ENVIRONMENTAL CONCERNS BEARING ON THE PROJECT SECTION (CEQA GUIDELINES SECTION 15162)

HAVE ANY NEW OR REVISED LAWS OR REGULATIONS AFFECTING THE ENVIRONMENTAL IMPACT ANALYSIS FOR THIS PROJECT BEEN ENACTED OR ADOPTED SINCE APPROVAL OF THE LAST ENVIRONMENTAL DOCUMENT? If yes, please explain.
--

ENVIRONMENTAL RE-EXAMINATION PROCESS – STEP 1
 ATTACHMENT B1: CEQA/PERMITTING PRELIMINARY ENVIRONMENTAL
 ASSESSMENT

- NO
 YES

WILL THE VARIATION HAVE THE POTENTIAL TO CAUSE A CHANGE IN THE DETERMINATION OF IMPACTS FROM WHAT WAS DESCRIBED IN THE ORIGINAL ENVIRONMENTAL DOCUMENT FOR ANY OF THE AREAS LISTED BELOW? For the topical areas listed below and checked “No,” please provide a brief written explanation and attach to this Preliminary Environmental Evaluation. Topical areas checked “Yes” are to be evaluated as part of Step 2 of the Environmental Re-examination Process Guidance.

Transportation	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Air Quality and Global Climate Change (Greenhouse Gas)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Noise & Vibration	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Electromagnetic Fields and Electromagnetic Interface	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Public Utilities and Energy	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Biological Resources and Wetlands	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Hydrology and Water Resources	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Energy and Public Utilities	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Geology, Soils, and Seismicity (i.e., Mineral Resources)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Hazardous Materials and Wastes	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Safety and Security (i.e., Public Services)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Socioeconomics and Communities (i.e., Population/Housing)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Station Planning, Land Use and Development	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Agricultural Lands	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Parks, Recreation, and Open Space	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Aesthetics and Visual Resources	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Cultural and Archaeological Resources	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Regional Growth	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Cumulative Impacts	<input type="checkbox"/> Yes	<input type="checkbox"/> No

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ENVIRONMENTAL RE-EXAMINATION PROCESS – STEP 1
 ATTACHMENT B1: CEQA/PERMITTING PRELIMINARY ENVIRONMENTAL
 ASSESSMENT

Will the variation result in the acquisition of properties not identified in the Final EIR/EIS? Yes No

Will the variation cause a change in construction impacts? Yes No

Have the following potential construction effects changed?

Construction timing commitments? Yes No

Temporary stream diversion? Yes No

Temporary delays and detours of traffic? Yes No

Temporary impacts on business? Yes No

Other construction impacts including noise? Yes No

Does the variation have the potential to result in revised permits or other approvals under the following state regulations?

CDFW Section 2081 Incidental Take Permit Yes No

California Endangered Species Act

CDFW Section 1602 Streambed and Lake Alteration Agreement Yes No

State Water Resources Control Board Section 401 Permit Yes No

State Water Resources Control Board Section 402 Permit Yes No

State or Local Encroachment Permits (Caltrans, city/county, Yes No

or Special Districts)

Use of Title 14 Lands Yes No

CPUC Approvals Yes No

Air District Construction Permits Yes No

Hazardous Materials Yes No

California Coastal Commission Permits Yes No

Bay Area Conservation and Development Commission Permits Yes No

State Water Resources Control Board Storm Water NPDES Permits Yes No

Regional Water Quality Control Board Dewatering Permits Yes No

Other Yes No

Will the variation likely result in substantial public controversy? Yes No

BRIEFLY EXPLAIN:

Will the Variation likely affect cost, schedule, or contractual due dates? Yes No

If Yes, briefly explain affect:

RECOMMENDATION FOR LEAD AGENCY CONSIDERATION

ENVIRONMENTAL RE-EXAMINATION PROCESS – STEP 1
ATTACHMENT B1: CEQA/PERMITTING PRELIMINARY ENVIRONMENTAL
ASSESSMENT

Does the variation warrant additional environmental evaluation?

Yes No

LIST OF ATTACHMENTS:

Submit two paper copies of this form, attachments, and a transmittal letter recommending a CEQA finding to the address below. Or you may submit one electronic version to the appropriate Authority environmental planner.

California High-Speed Rail Authority
770 L Street, Suite 800
Sacramento, CA 95814

phone: (916) 324-1541
fax: (916) 322-0827

SUBMITTED BY:

By signing this, I certify that to the best of my knowledge this document is complete and accurate.

Name [Title], [Organization]	Date
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WORKING DRAFT; CHANGES PENDING

RFP No.: HSR 14-32 – Addendum No. 2 – 10/09/2015

**PRELIMINARY ENVIRONMENTAL
RE-EXAMINATION CONSULTATION
FOR THE CALIFORNIA HIGH-SPEED RAIL PROJECT**

For the user following Step 1 of the Authority’s Environmental Re-examination Process Guidance, this worksheet provides directions for the preliminary evaluation of variations that were not previously evaluated in a California High-Speed Rail project (“Project”) Draft or Final EIS prepared in compliance with the National Environmental Policy Act (NEPA). It is designed to provide the Federal Railroad Administration (FRA) and the California High-Speed Rail Authority (Authority) with the initial evaluation and information needed to make a determination as to whether variations should move into a more detailed environmental evaluation process.

DIRECTIONS

Please answer the following questions, fill out the checklists, and attach maps showing the previously approved design, the Variation, and the impact the Variation would have on the Project footprint and/or parcel acquisitions as defined in the previously approved environmental document(s) as specified herein.

PROJECT SECTION

LIST CURRENT APPROVED ENVIRONMENTAL DOCUMENTS (e.g., EIS/ROD, Supplemental EIS, etc.)		
Title:	Date:	Type and Date of Last Discretionary Action
Title:	Date:	Type and Date of Last Discretionary Action
Title:	Date:	Type and Date of Last Discretionary Action

REASON FOR EVALUATION

BRIEF DESCRIPTION OF VARIATION RELEVANT TO ENVIRONMENTAL CONCERNS BEARING ON THE PROJECT SECTION (40 CFR 1502.9)

HAVE ANY NEW OR REVISED LAWS OR REGULATIONS AFFECTING THIS PROJECT SECTION BEEN ENACTED OR ADOPTED SINCE APPROVAL OF THE LAST ENVIRONMENTAL DOCUMENT? If yes, please explain.
<input type="checkbox"/> NO

ENVIRONMENTAL RE-EXAMINATION PROCESS – STEP 1
 ATTACHMENT B2: NEPA PRELIMINARY ENVIRONMENTAL ASSESSMENT -
 DRAFT

YES

WILL THE VARIATION HAVE THE POTENTIAL TO CAUSE A CHANGE IN THE DETERMINATION OF ENVIRONMENTAL IMPACTS FROM WHAT WAS DESCRIBED IN THE ORIGINAL, OR AS NECESSARY, SUBSEQUENT, ENVIRONMENTAL DOCUMENT FOR ANY OF THE IMPACT CATEGORIES LISTED BELOW? For each impact category, please indicate whether there will be a change in impacts to that category. For the categories listed below and checked “No,” please provide a brief written explanation of how that conclusion was reached and attach the detailed explanation to this Preliminary Environmental Assessment. Categories checked “Yes” are to be evaluated as part of Step 2 of the Environmental Re-examination Process.

Transportation	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Air Quality and Global Climate Change	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Noise & Vibration	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Electromagnetic Fields and Electromagnetic Interface	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Public Utilities and Energy	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Biological Resources and Wetlands	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Hydrology and Water Resources	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Energy and Utilities	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Geology, Soils, and Seismicity	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Hazardous Materials and Wastes	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Safety and Security	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Socioeconomics and Communities	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Station Planning, Land Use and Development	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Agricultural Lands	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Parks, Recreation, and Open Space	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Aesthetics and Visual Resources	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Cultural and Archaeological Resources	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Regional Growth	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Environmental Justice	<input type="checkbox"/> Yes	<input type="checkbox"/> No

RFP No.: HSR 14-32 – Addendum No. 2 – 10/09/2015

ENVIRONMENTAL RE-EXAMINATION PROCESS – STEP 1
ATTACHMENT B2: NEPA PRELIMINARY ENVIRONMENTAL ASSESSMENT -
DRAFT

Cumulative Impacts

Yes No

Would the variation result in the acquisition of properties not identified in the Final EIR/EIS?

Yes No

Will the variation result in revised documentation or determination for permits or other approvals under the following federal regulations?

Endangered Species Act	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Magnuson-Stevens Act	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Farmland Preservation Act	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Section 404, Clean Water Act	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Section 401, Clean Water Act	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Section 408, Rivers & Harbors Act	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Floodplain Management Act	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Hazardous Materials	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Section 106, National Historic Preservation Act	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Uniform Relocation Act	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Section 4(f) Resources	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Section 6(f) Lands	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Wild & Scenic Rivers	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Coastal Barriers	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Coastal Zone	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Sole Source Aquifer	<input type="checkbox"/> Yes	<input type="checkbox"/> No
National Scenic Byways	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Other	<input type="checkbox"/> Yes	<input type="checkbox"/> No

Will this variation likely result in substantial public controversy?

Yes No

If yes, briefly explain any issues raised by the public:

Will the Variation likely affect cost, schedule, or contractual due dates? Yes No

If Yes, briefly explain affect:

CONCLUSIONS FOR PRELIMINARY ASSESSMENT AND INITIAL RECOMMENDATION

Does the variation warrant additional environmental evaluation?

Yes No

LIST OF ATTACHMENTS:

ENVIRONMENTAL RE-EXAMINATION PROCESS – STEP 1
ATTACHMENT B2: NEPA PRELIMINARY ENVIRONMENTAL ASSESSMENT -
DRAFT

Submit an electronic version of this form, attachments, and transmittal letter to the appropriate Authority and FRA environmental planner.

California High-Speed Rail Authority
770 L Street, Suite 800
Sacramento, CA 95814

phone: (916) 324-1541
fax: (916) 322-0827

Federal Railroad Administration
1200 New Jersey Avenue, SE
West Building/W31-225
Washington, DC 20590

phone: (202) 493-0388

SUBMITTED BY:

By signing this, I certify that to the best of my knowledge this document is complete and accurate.

Name	Date
[Title], [Organization]	

WORKING DRAFT; CHANGES PENDING

RFP No.: HSR 14-32 – Addendum No. 2 – 10/09/2015

**ATTACHMENT C, STEP 2:
ENVIRONMENTAL RE-EXAMINATION FORM**

MEMORANDUM

[Specify HSRA] Section – Environmental Re-Examination of the [Name of Variation] Variation

PREPARED FOR:

PREPARED BY: _____

DATE: _____

Following completion of Step 1 and preparation of the Variation Packet and Preliminary Environmental Assessment, the purpose of this memorandum is to succinctly describe the impacts analysis and mitigation strategy for the proposed variation, in sufficient detail to allow for an independent assessment of whether additional analysis or mitigation measures would be needed.

The analysis shall answer the following questions with regard to impacts or potential impacts of the variation as identified in Step 1, Attachments B1, and B-2:

- Does the variation result in a specific difference from the project impacts as analyzed in the EIR/EIS and discussed in the CEQA Findings/ROD, or addressed in permit-related documents, including differences in impacts to regulated resources such as waters of the United States, Waters of the State, habitats or sensitive species, receiving waters, cultural or 4(f) resources, etc.? If so, note the reference to where it is addressed, if at all, in the applicable environmental documentation, and identify specific additional technical studies that are needed. If not, explain why.
- Is the same type of impact caused by the variation already evaluated in the EIR/EIS and/or permit related documents?
- Are there applicable mitigation measures for the impacts of the variation already evaluated in the EIR/EIS or permit-related documents?
- Are there adopted design features from the EIR/EIS, or existing avoidance and minimization measures in permit-related documents, available to reduce additional, different or substantially more severe environmental impacts anticipated as a result of the variation?
- Are there any additional mitigation measures available to reduce additional, different or substantially more severe environmental impacts anticipated as a result of the variation?
- Would any additional avoidance, minimization or mitigation measures required to address the variation cause substantial new adverse impacts? If so, can these adverse effects be avoided or mitigated?
- Are additional or more severe impacts offset by other variations that have been approved or are being considered concurrently (e.g., a change in acreage of wetlands impacts may still come within habitat permit levels set by permitting agency)?
- Does the inclusion of the variation (1) alter the analysis in the Final EIR/EIS of whether a cumulatively considerable impact exists in a particular resource area for the project as modified by the variation, and (2) if a cumulatively considerable impact exists, does the variation alter the conclusion of whether the project's incremental contribution, as modified by the variation, to that impact is cumulatively considerable?
- Identify whether the variation and avoidance, minimization and mitigation measures in the existing EIR/EIS and in permit-related documents affect the new or more severe impacts of the variation?
- Does the project result in any impacts on schools that would differ at all from the impact on schools as compared to the original analysis in the existing EIR/EIS?
- Do the proposed property acquisitions differ at all from the proposed acquisitions described in the existing EIR/EIS?

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ENVIRONMENTAL RE-EXAMINATION PROCESS – STEP 2
ATTACHMENT C

In answering these questions, for each impacted resource area, discuss the both construction impacts that are temporary in nature, and the operations impacts (e.g., irreversible or continuing operational impacts), that are identified in the Final EIR/EIS and describe whether the impacts related to the variation were evaluated in Final EIR/EIS. Discuss how or why conclusions in the Final EIR/EIS were reached. Discuss any substantial new or more severe impacts, or previously identified impacts that would occur in new areas or impact previously unidentified receptors., Consider both the context and the intensity of the impact. Include reasoning to support any conclusions regarding the potential new impacts resulting from the variation. If the impacts were already assessed explain how the variation would fit within the framework of the original analysis, but take into account the newly impacted area or receptor. Include any reports developed to address the variation as an appendix or exhibit to this memorandum or as part of the project record.

If additional analysis or mitigation measures are required, a brief description of the analysis and the findings of that analysis should be presented as well as any additional mitigation measures. This memorandum should also include a summary of the implications for agency permits related to the proposed variation. This memorandum should focus on reasoning and analysis of impacts rather than conclusions. Provide a statement as to whether the variation would result in substantial new environmental impacts that were not previously addressed or would significantly increase the severity of the impacts analyzed in the Final EIR/EIS and state the reasoning for that assessment. Include citations for all sources cited in this memorandum.

WORKING DRAFT; CHANGES PENDING

**ATTACHMENTS D1 AND D2, STEP 3:
CEQA AND NEPA DETERMINATION AND
CONCLUSION FORMS**

**CEQA DETERMINATIONS AND CONCLUSIONS FOR [SPECIFY VARIATION]
IN THE [SPECIFY HSRA] SECTION OF THE
CALIFORNIA HIGH-SPEED RAIL PROJECT**

1.0 INTRODUCTION

For users following the California High-Speed Rail Authority's (Authority) Environmental Re-Examination Process Guidance, this memorandum documents the Authority's conclusion whether a subsequent or supplement to the Final EIR is required because of [SPECIFY VARIATION(S)] proposed by [who proposed change] subsequent to the publication of the [Draft/Final Environmental Impact Report/ Environmental Impact Statement (EIR/EIS)] [specify whether Draft or Final] [and issuance of the Notice of Determination (NOD)] [include if issued] for the [Specify HSRA] Section of the California High-Speed Train (HST) Project on [DATE].

This memorandum is based on the analysis completed in Attachment C – Environmental Re-Examination of the Proposed [SPECIFY VARIATION] (hereafter referred to as “environmental re-examination”).

As discussed in the environmental re-examination, the variation(s) would result in no change in impacts to the following resource areas: [SPECIFY RESOURCE AREAS]. Therefore, those resource areas are not discussed further in the Table accompanying this memo.

2.0 ENVIRONMENTAL RECOMMENDATIONS TO FURTHER AVOID, MINIMIZE OR MITIGATE IMPACTS

As stated in the environmental reexamination, the [SPECIFY VARIATION (S)] would utilize the project design features included in the project and mitigation measures listed in the Mitigation Monitoring and Enforcement Plan (MMEP), which was adopted at the time of the Board approval of the [HSRA Section]. Therefore, the Determinations and Conclusions in Section 3.0 below take into account project design features and mitigation measures included in the MMEP.

3.0 DETERMINATIONS AND CONCLUSIONS

Based on Attachment C, and pursuant to the criteria of CEQA Guidelines section 15162, no major revisions are necessary to the EIR due to changes in the project, changes in the circumstances, or due to new information.

Does the variation alter the analysis in the Final EIR of whether a cumulatively considerable impact exists [in a particular resource area], and if a cumulatively considerable impact exists, does the variation (together with the project as

ENVIRONMENTAL RE-EXAMINATION PROCESS - STEP 3
ATTACHMENT D1: CEQA DETERMINATIONS AND CONCLUSIONS

modified by the variation) change the conclusion in the Final EIR regard whether the project's incremental contribution is cumulatively considerable?

— Based on Attachment C, I find that changes to the Project and/or circumstances under which the Project would be undertaken have occurred, which may result in environmental impacts requiring a subsequent EIR as described under *CEQA Guidelines* Section 15162.

3.0 APPROVAL

Approved by:

[Individual]
[Title]
California High-Speed Rail Authority

Date: _____

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Impact Category	Impacts as Initially Disclosed	New Impacts	(1) Change in Impacts	(2) Change in Cumulative Impacts	(3) Conclusions
Sample—Water Resources/Impervious Surface/	Describe the impact, the applicable mitigation measure or project design feature, and its impact significance as described in the adopted EIR. See sample text below.	Describe the proposed design change or variation and identify its potential impact. See sample text below.	Describe the change in impacts that would result from implementing the proposed design change or variation. Also, characterize the effectiveness of the mitigation measure or project design feature to be implemented. Conclude by making a preliminary impact finding. See sample text below.	Summarize whether the project design feature (1) alters the analysis in the Final EIR/EIS of whether a cumulatively considerable impact exists in a particular resource area, and (2) if a cumulatively considerable impact exists with the change (or variation/additional activity), does the change (or variation/additional activity) alter the conclusion of whether the project's incremental contribution to that impact is cumulatively considerable. See sample text below.	Based on the change in impacts and change in cumulative impacts, make a new impact finding. See sample text below.
Transportation					
Air Quality and Global Climate Change					
Noise and Vibration	<p>Construction Impacts: There would be construction noise impacts at 4 industrial facilities, 12 residences (daytime), and 16 residences (nighttime).</p> <p>Applicable Mitigation Measures: N&V MM#1.</p> <p>Impact Significance: Less than</p>	There would be construction noise impacts at 3 industrial facilities, 12 residences (daytime), and 16 residences (nighttime).	There would be one less industrial construction noise impact. No new receptors would be affected.	No	Impact significance conclusions for noise would be the same as described in the Final EIR/EIS and NOD, and there would be no substantial increase in the severity of impacts associated with construction and project noise impacts, because of the temporary nature of construction activity and implementation of mitigation measures, and because future noise conditions are dependent on freight train operations, roadways that would not be physically altered by the project, and future HST operations; the design refinement would not affect future noise conditions.

Impact Category	Impacts as Initially Disclosed	New Impacts	(1) Change in Impacts	(2) Change in Cumulative Impacts	(3) Conclusions
	Significant.				
Electromagnetic Fields and Electromagnetic Interference					
Public Utilities and Energy					
Biological Resources and Wetlands					
Hydrology and Water Resources					
Geology, Soils, and Seismicity					
Hazardous Materials and Wastes					
Safety and Security					
Socioeconomics and Communities					

WORKING DRAFT; CHANGES PENDING

Impact Category	Impacts as Initially Disclosed	New Impacts	(1) Change in Impacts	(2) Change in Cumulative Impacts	(3) Conclusions
Station Planning, Land Use, and Development	<p>Project Impacts: Permanent conversion of 24.5 acres of existing land uses (commercial, vacant, and industrial) to a transportation related use.</p> <p>Applicable Mitigation Measure: NA</p> <p>Impact Significance: Less than Significant</p>	Permanent conversion of 30.1 acres of existing land uses (commercial, vacant and industrial) to a transportation related use.	Increase in permanent conversion of existing land uses by 5.6 acres.	No	Impact significance conclusions would be the same as described in the Final EIR/EIS and NOD because the design refinement would not adversely affect surrounding land uses, and lands changed to transportation-related uses for the entire Merced to Fresno Section are such a small percentage of the land in surrounding counties.
Agricultural Lands					
Parks, Recreation, and Open Space					
Aesthetics and Visual Resources					
Cultural and Archeological Resources					
Regional Growth					

WORKING DRAFT; CHANGES PENDING

Impact Category	Impacts as Initially Disclosed	New Impacts	(1) Change in Impacts	(2) Change in Cumulative Impacts	(3) Conclusions
Cumulative Impacts					

WORKING DRAFT; CHANGES PENDING

MEMORANDUM
NEPA DETERMINATIONS AND CONCLUSIONS FOR [SPECIFY VARIATION]
IN THE [SPECIFY HSRA] SECTION OF THE
CALIFORNIA HIGH-SPEED RAIL PROJECT

1.0 INTRODUCTION

For users following the California High-Speed Rail Authority's (Authority) Environmental Re-Examination Process Guidance, this memorandum documents the Federal Railroad Administration's (FRA) conclusion whether a supplement to the Final EIS is required because of [SPECIFY VARIATION(S)] proposed by the Authority subsequent to the publication of the [Draft/Final Environmental Impact Report/ Environmental Impact Statement (EIR/EIS)] [specify whether Draft or Final] [and issuance of the Record of Decision (ROD)] [include if issued] for the [Specify HSRA] Section of the California High-Speed Train (HST) Project on [DATE].

This memorandum is based on the analysis completed in Attachment C – Environmental Re-Examination of the Proposed [SPECIFY VARIATION] (hereafter referred to as “environmental re-examination”). The environmental re-examination was developed consistent with the Authority's guidance process to provide FRA with the information and analysis to determine whether new information, changes in circumstances, or design refinements (collectively referred to as Variations) require FRA to complete a supplement to the EIS consistent with the Council on Environmental Quality's regulations implementing the National Environmental Policy Act of 1969 (NEPA). See 40 C.F.R. §1502.9(c).

As discussed in the environmental re-examination, the variation(s) would result in no change in impacts to the following resource areas: [SPECIFY RESOURCE AREAS]. Therefore, those resource areas are not discussed further in the Table accompanying this memo.

2.0 ENVIRONMENTAL RECOMMENDATIONS TO FURTHER AVOID, MINIMIZE OR MITIGATE IMPACTS

As stated in the environmental reexamination, the [SPECIFY VARIATION (S)] would utilize the project design features and mitigation measures listed in the Mitigation Monitoring and Enforcement Plan (MMEP), which was approved with the ROD. Therefore, the Determinations and Conclusions in Section 3.0 below take into account project design features and mitigation measures included in the MMEP. [Include if applicable. If addressing pre-Final supplement, please reference measures included in Draft EIS.] [If applicable add “As discussed in the accompanying Table [insert table name], no additional project design features or mitigation measures are required to avoid or reduce impacts for the [SPECIFY VARIATION (S)]”].

3.0 DETERMINATIONS AND CONCLUSIONS

ENVIRONMENTAL RE-EXAMINATION PROCESS - STEP 3
ATTACHMENT D2: NEPA DETERMINATIONS AND CONCLUSIONS - DRAFT

Based on the environmental reexamination, the attached Table [insert table name table], and the design features and other measures discussed in Section 2.0 above, FRA makes the following determinations and conclusions pursuant to CEQ regulations and FRA's Procedures for Considering Environmental Impacts (64 FR 28545, May 26, 1999).

FRA finds that the variation(s) at [*SPECIFY VARIATION(S)*] do [not] constitute substantial changes in the proposed action that are relevant to the environmental concerns and/or raise significant new circumstances or new information that are relevant to environmental concerns. The changes in the environmental consequences of the proposed action as documented in the environmental reexamination s) for the variation(s) do [not] result in any new significant impacts and the conclusions in the [*SPECIFY HSRA SECTION EIR/EIS*] remain valid. For these reasons, [no] supplemental EIS is required.

In addition to considering the changes in the environmental consequences of the proposed action resulting from the variation(s), the potential change in cumulative effects since the ROD was issued have been considered. Based on the environmental reexamination(s) for the variation(s), the Table accompanying this memo and the cumulative effects analysis, FRA finds that the cumulative effects of the variation(s) do [not] require the completion of a supplemental EIS.

Approved by:

Division Chief
Environment and Systems Planning, FRA

Date: _____

TABLE 1: SUMMARY OF VARIATIONS, IMPACTS AND CONCLUSIONS

Impact Category	Impacts as Initially Disclosed	New Impacts	(1) Change in Impacts	(2) NEPA Significance Determination	(3) Change in Cumulative Impact Conclusion: Yes/No
Sample—Water Resources/Impervious Surface/	Describe the impact, the applicable mitigation measure or project design feature, and its impact significance as described in the adopted EIR/EIS. See sample text below.	Describe the proposed design change or variation and identify its potential impact. See sample text below.	Describe the change in impacts that would result from implementing the proposed design change or variation. Also, characterize the effectiveness of the mitigation measure or project design feature to be implemented. Conclude by making a preliminary impact finding. See sample text below.	Based on the change in impacts, state whether there is a difference in the NEPA significance determination for the impact from the EIR/EIS resulting from the variation and provide a reason supporting that statement. See sample text below	State whether there is a change in the cumulative impact conclusion from the impact for the EIR/EIS resulting from the variation.
Transportation					
Air Quality and Global Climate Change					
Noise and Vibration	Construction Impacts: There would be construction noise impacts at 4 industrial facilities, 12 residences (daytime), and 16 residences (nighttime). Applicable Mitigation Measures: N&V MM#1. Impact Significance: Negligible intensity; not significant.	There would be construction noise impacts at 3 industrial facilities, 12 residences (daytime), and 16 residences (nighttime).	There would be one less industrial construction noise impact. No new receptors would be affected.	Impact significance conclusions for noise would be the same as described in the Final EIR/EIS and ROD, and there would be no substantial increase in the severity of impacts associated with construction and project noise impacts, because of the temporary nature of construction activity and implementation of mitigation measures, and because future noise conditions are dependent on freight train operations, roadways that would not be physically altered by the project, and future HST operations; the design refinement would not affect future noise conditions.	No
Electromagnetic Fields and Electromagnetic					

Impact Category	Impacts as Initially Disclosed	New Impacts	(1) Change in Impacts	(2) NEPA Significance Determination	(3) Change in Cumulative Impact Conclusion: Yes/No
Interference					
Public Utilities and Energy					
Biological Resources and Wetlands					
Hydrology and Water Resources					
Geology, Soils, and Seismicity					
Hazardous Materials and Wastes					
Safety and Security					
Socioeconomics and Communities					
Station Planning, Land Use, and Development	Project Impacts: Permanent conversion of 24.5 acres of	Permanent conversion of 30.1 acres of existing land uses (commercial, vacant and industrial)	Increase in permanent conversion of existing land uses by 5.6 acres.	Impact significance conclusions would be the same as described in the Final EIR/EIS and ROD because the design refinement would not adversely affect surrounding land uses,	No

WORKING DRAFT; CHANGES PENDING

Impact Category	Impacts as Initially Disclosed	New Impacts	(1) Change in Impacts	(2) NEPA Significance Determination	(3) Change in Cumulative Impact Conclusion: Yes/No
	existing land uses (commercial, vacant, and industrial) to a transportation related use. Applicable Mitigation Measure: NA Impact Significance: Negligible intensity; not significant.	to a transportation related use.		and lands changed to transportation-related uses for the entire Merced to Fresno Section are such a small percentage of the land in surrounding counties.	
Agricultural Lands					
Parks, Recreation, and Open Space					
Aesthetics and Visual Resources					
Cultural and Archeological Resources					
Regional Growth					
Cumulative Impacts					

WORKING DRAFT; CHANGES PENDING

WORKING DRAFT; CHANGES PENDING

Impact Category	Impacts as Initially Disclosed	New Impacts	(1) Change in Impacts	(2) NEPA Significance Determination	(3) Change in Cumulative Impact Conclusion: Yes/No
Section 4(f)					
Environmental Justice					

**ATTACHMENT E, STEP 3:
ENVIRONMENTAL PERMITTING DETERMINATION
AND CONCLUSION FORM**

MEMORANDUM
DETERMINATIONS AND CONCLUSIONS AFFECTING PERMITTING
AND OTHER REGULATORY APPROVAL AND COORDINATION
FOR THE [SPECIFY HSRA] SECTION OF THE HIGH-SPEED RAIL PROJECT

1.0 INTRODUCTION

For users following the California High-Speed Rail Authority's (Authority) Environmental Re-Examination Process Guidance, this memorandum documents the Authority's permitting determinations and conclusions subsequent to issuance of the Record of Decision (ROD) and the certification of the Environmental Impact Report (EIR) for the [Specify HSRA] Section of the High-Speed Rail Project on [DATE]. This analysis was conducted to address implications for environmental permits and approvals associated with variations listed below subsequent to the ROD and EIR certification, including any changes to the project, including:

- Design variations¹;
- New circumstances relevant to environmental concerns;
- New information relevant to environmental concerns;
- Changes in applicable statutory and/or regulatory requirements;
- Changes in existing guidance or policies, or;
- Changes to environmental commitments, Project Design Features or Mitigation Measures.

The variations are described in the [DATE] [VARIATION] Environmental Re-Examination. Regardless of whether any variations described in the [DATE] Environmental Re-examination may require a subsequent or supplemental EIR/EIS, any change that would increase impacts to any resource within the jurisdiction of the regulatory agencies, including those listed below, may require a new permit or approval, an amendment to an existing permit or approval, modifications to documents and analyses related to or supporting permits and approvals or pending permit applications (e.g., Checkpoint C: LEDPA analyses, Section 7 Biological Opinions, Compensatory Mitigation Plans, etc.), an amendment to a pending permit application, or a new permit, changes or amendments to other agency approvals, or agency coordination.

The analysis which provides the basis for the determinations and conclusions is provided in the [DATE] Environmental Re-Examination prepared in Step 2 of the Authority's Environmental Re-examination Process Guidance, and the following summary table describing the variations to the and the potential effects on jurisdictional resources, permits or approvals.

¹ Variations are design refinements or changes that can be triggered by the identification of new information, changes in circumstances, or design modifications, that were not previously evaluated in the relevant environmental document.

2.0 PERMITS AND OTHER REGULATORY REQUIREMENTS TO BE UPDATED OR MODIFIED

Table 1, attached to the end of this document, summarizes variations and any impacts or conditions from the variation and/or changes that affect any existing permits and/or approvals, or any pending permit and/or approval application. The following permits, approvals, documents and analysis supporting permits and approvals, and pending permit applications were determined to need updates, modifications or amendments as a result of [INSERT] the variations.

Examples of Potential Permits, Approvals, and Pending Permit Applications²:

2.1 Federal

- USACE Section 404 Permit for Discharge of Dredge or Fill Materials into Waters of the U.S., including wetlands (and see related Section 401 Certification below) and related analyses and documents including the USACE Section 404(b)(1) Alternatives Analysis and LEDPA selection, and Compensatory Mitigation Plan;
- USACE Determination of minor Section 408 Rivers and Harbors Act authorization to proceed/no objection letter to the flood facility operator;
- U.S. Fish and Wildlife Service Section 7 Consultation and Biological Opinion and Incidental Take Statement or Section 10(a) Permit and Habitat Conservation Plan;
- National Marine Fisheries Service Section 7 Consultation and Biological Opinion and Incidental Take Statement. for Section 10(a) Permit and Habitat Conservation Plan³
- Section 106 National Historic Preservation Act approvals, MOU, APE determination and treatment plans; and
- Other (depending on the project, may include Floodplain Management Act, Hazardous Materials, Uniform Relocation Action, Section 6(f) Lands, Wild & Scenic Rivers Act, Coastal Zone Management Act, National Scenic Byways Act and other approvals.)

² This is not an exhaustive list of all the permits that may be required for every HST section. For example, if a section is located within, or may impact the Coastal Zone, a coastal development permit or, at a minimum, concurrence from the Coastal Commission that the development is consistent with California's Coastal Management Plan will be required.

³ If an HST section will have no effect on any listed species or protected habitat, FRA will make a determination to that effect and seek written confirmation from the relevant Service.

2.2 State

- CDFW Fish & Game Code Section 2081 (CESA) Incidental Take Permit and Mitigation Plan, or Section 2080.1 Consistency Determination;
- CDFW Fish and Game Code Section 1602 Lake and Streambed Alteration Agreement and Mitigation Plan;
- California Department of Transportation (Caltrans) Encroachment Permits;
- California Public Utilities Commission Approval for construction and operation of railroad crossing of public road and for construction of new transmission lines and substations;
- California State Lands Commission Lease for crossing state sovereign lands;
- State Water Quality Control Board for federal Clean Water Act Section 401 Water Quality Certification and related mitigation and water quality control plans;
- State Water Quality Control Board for Section 402 NPDES Permit;
- State Water Quality Control Board for Porter-Cologne Water Quality Control Act Waste Discharge Requirements (if applicable); and
- Other (depending on project may include CPUC approvals, Air District construction permits, Hazardous Materials permits, California Coastal Commission permits, Bay Area Conservation and Development Commission permits, etc.).

2.3 Regional

- Central Valley Flood Protection Board encroachment permit
- Others permits as identified.

3.0 DETERMINATIONS AND CONCLUSIONS

The changes to the project, including variations such as design changes or refinements; new circumstances or new information relevant to environmental concerns, changes in applicable statutory regulatory requirements, changes to or additional guidance or policies, or changes to environmental commitments, Project Design Features or Mitigation Measures:

_____ are consistent with the original scope of the permit approval, and permit related analyses, mitigation plans and documents remains valid. No net increase to temporary, permanent, direct, indirect or cumulative impacts to regulated resources would occur. No “new” type of impact to regulated resources would occur and no “new” regulated resources would be impacted, including constructed or natural aquatic resources, listed

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 ATTACHMENT E: PERMITTING DETERMINATIONS AND CONCLUSIONS

or sensitive species, suitable or critical habitat, runoff water quality, historic resource, or 4(f) resources.

_____ may require one of the following actions: a new permit or approval, an amendment or change to an existing permit or approval, an amendment to a pending application for a permit or approval, modifications to documents and analyses related to or supporting permits and approvals and/or pending permit applications (e.g., Checkpoint C: LEDPA analyses, Section 7 Biological Opinions, Compensatory Mitigation Plans, etc.), and/or agency coordination.

If an action may be needed as identified in the preceding paragraph for any permit or approval and/or pending permit application, identify which permits, or approvals, and/or permit applications the action(s) is needed, the regulatory agency responsible for issuance of the permit or approval, and the recommendation(s) for completing the action needed:

PERMIT OR APPROVAL	ACTION NEEDED	RECOMMENDATION FOR COMPLETING THE ACTION

If a new permit or approval may be needed, identify the permit or approval needed, the regulatory agency responsible for issuance of the permit or approval, and the recommendation for obtaining the permit or approval:

PERMIT OR APPROVAL NEEDED	RECOMMENDATION FOR OBTAINING THE PERMIT OR APPROVAL NEEDED

4.0 CONCURRENCE

Concurrence:

 [Individual]
 [Title]
 California High-Speed Rail Authority

Date: _____

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CALIFORNIA High-Speed Rail Authority

**California High-Speed Rail—Project Level
GIS Guidance and Standards**

Draft—Provisional Release Only

OCTOBER 2015



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1 PART I—OVERVIEW, PURPOSE, AND NEED

1.1 Overview

This guide contains the established standards and practices adopted by the California High-Speed Rail Authority (Authority) for managing Geographic Information System (GIS) data. These standards address the use of metadata, standards for data delivery, mapping standards and administrative record requirements. All GIS data delivered to the Authority by contracted entities will be required to follow these standards. The Authority's geospatial data standards closely follow the draft Minimum State standards set by the California Department of Technology, Office of the Geographic Information Officer. The State's standards are derived from the Federal Geographic Data Committee (FGDC) Standards. Upon approval, California's draft state standards will be included in the Statewide Information Management Manual (SIMM).

The GIS Guidance and Standards document is considered a living document. As information is identified and developed throughout the High-Speed Rail Program (Program), this document will be amended. It is the expectation that upon completion of any contract that involved the synthesis, generation, evaluation or implementation of GIS or geospatial data, firms under contract with the California High-Speed Rail Authority (Authority) will deliver all such geospatial data on external hard drive to the Authority's designee for continued use and updating.

1.2 Purpose and Need for GIS Standards

Purpose for Standardization

The purpose of these standards is to ensure consistent quality and compatibility among different datasets and different project segments. They also help to promote the understanding of geospatial data as it is disseminated among Authority's management, staff, consultants, contractors, policy makers, the media and the public. These standards are needed in order to provide common guidance to those collecting, creating, interpreting or otherwise working with GIS data associated with the Program. Common standards will allow for a more coordinated, comprehensive method of working with GIS data ensuring that it is compatible between projects segments, consultants and contractors.

Need for Standardization

Standardization of GIS data reduces discrepancies between the unique way each individual interprets and implements GIS data. This will streamline the level of effort, assist in maintaining the project schedule and ultimately reduce cost. Standardization will also provide guidance for documentation purposes as it is an integral part of the administrative record. In an effort to improve data transference and efficiency in dissemination, the Authority provides consultants with guidance in the form of templates and standards for using those templates.

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2 PART II—STANDARDS

2.1 Minimum GIS Software Standard

A GIS standard system and personnel skilled in its operation, functionality, and usage will be required in order to effectively synthesize, manage, and maintain the geospatial assets generated to support various aspects of the environmental, engineering, and planning studies necessary throughout the Program.

ArcGIS Desktop Version 10.1 from Esri is the Authority’s minimum standard for creating, editing, delivering, or otherwise working with GIS data. While in certain situations, it may be appropriate to work with other software and file types (For example, KML when preparing products for Google Earth), all GIS users must have the ability to work with GIS data in ArcGIS for Desktop, or a more recent version.

NOTE: Refer to this section for the latest information about software versions.

This standard will be updated periodically commensurate with advancements in ArcGIS software and GIS practices. Specific GIS deliverables will be organized and catalogued based on information found within this document.

2.2 Minimum Metadata Standard

The Authority’s Minimum Metadata Standards are derived from California Minimum Metadata Standards and will apply to all authoritative and finalized GIS data products including both Raster and Vector formats. All GIS products created or otherwise prepared for the Authority shall include relevant metadata. This will be tested for compliance by either Authority personnel or its Rail Delivery Partner’s (RDP) GIS Manager upon delivery to the Authority. The elements listed below cover the Authority’s minimum standard for metadata. Additional metadata elements should be included in GIS datasets as necessary and appropriate. See Metadata Template for more detailed information.

2.3 Metadata Template

Item Description	Title	(Required) Provide a descriptive title that uniquely identifies the dataset. (See Part III—File Naming Convention)	
	Topics and Tags	(Optional) Keywords	
	Abstract (Description)	(Required) Briefly describe what the dataset is about (who, what, where, when). Include any limitations of the dataset, assumptions made, and if there is anything special of which the user of these data should be aware.	
	Purpose (Summary)	(Required) Briefly describe why the dataset was created.	
	Date	(Required) The date or range of dates when the data, photos, maps, or other items at the core of the dataset were gathered or created.	
	Credits	(Required) Provide recognition of those who created or contributed to the resource. If not specified, use “California High-Speed Rail Authority” for all data that was created by or for the Authority.	
Contact Information	Individual or organization knowledgeable about the	Name:	(Required)
		Organization:	(Required)

	dataset	Unit, program, group	(Required)
		Email:	(Required)
		Address:	(Optional) City, State, Postal Code
		Phone Number:	(Required) Include area code
Data Quality	Scope level description	(Required) Describe the specific data to which the data quality information applies. For example, the features in a dataset may be derived from different sources with different dates, scales, and levels of accuracy.	
	Lineage	(Required) Lineage is often a useful indicator of data accuracy. It is a record of the data sources and of the operations which created the database. How was it digitized, and from what documents? When was the data collected? What agency collected the data? What steps were used to process the data? What is the computational precision?	
	Progress	Possible values are Complete or Incomplete. If incomplete, include the percent completed and the expected date of data completion, if known.	
Update Frequency (Maintenance)	Maintenance Frequency	(Required) Possible values include but are not limited to: Continually, Daily, Weekly, Monthly, Annually, Unknown, As Needed, Irregular, or None Planned.	
Data Sharing / Access/ Use Constraints	General Constraints	Identify who may see, read, or use the data. If there are no restrictions, put "None."	
	Legal Constraints	Identify any restrictions, limitations, or warnings on using the resource or metadata: for example, to assure the protection of privacy or intellectual property. If not, put "None."	
	Security Constraints	Identify any handling restrictions of the data or metadata. If not, put "None."	
Distribution	Defined Distribution Constraints	Designate the location of the data.	
		If the data is distributed as a web service or end point, provide the URL or link to the service.	
		Provide the name of the data format version and distributor information. For example, ArcGIS 9.3, 10.1.	
Projection and Datum	Projection	Provide the name of the Projected Coordinate System.	
	Units	Metric (Meters, Kilometers, etc.) or English (Feet, Miles, etc.)	
	Datum	(Required) Provide the Datum in which the data is the projected. (NAD83 is preferred)	
	Data Format	Vector or Raster (Image) data	
Definitions	Field and Attribute or Domain Definitions	List and define each field in the attribute table and the definition's source. Also include the domain and domain type allowed in each field. Refer to Part VII for example field, attribute, and domain definitions.	

	Abbreviation and Code Definitions	For any field or record that contains numeric or alphabetic codes (e.g., SAC = Sacramento County), list each code/abbreviation and provide an unabbreviated definition.
--	-----------------------------------	---

2.4 Projection and Coordinate Standard

A map projection is a way to represent the curved surface of the Earth on the flat surface of a map. A globe can provide the most accurate representation of the Earth. However, a globe isn't practical for many of the functions for which we require maps. Map projections allow us to represent some or the Earth's entire surface, at a wide variety of scales, on a flat, easily transportable surface, such as a sheet of paper. Map projections also apply to digital map data, which can be presented on a computer screen.

The process of transferring information from the curves, three-dimensional Earth to a flat, two-dimensional map causes every projection to distort at least one aspect of the real world—shape, area, distance, or direction.

Each map projection has advantages and disadvantages; the appropriate projection for a map depends on the scale of the map, and on the purposes for which it will be used. For example, a projection may have unacceptable distortions if used to map the entire continent, but may be an excellent choice for a large-scale (detailed) map of a county. The properties of a map projection may also influence some of the design features of the map. Some projections are good for small areas, some are good for mapping areas with a large east-west extent, and some are better for mapping areas with a large north-south extent.

All geospatial data delivered to the Authority must be referenced with a defined coordinate system and projection based on the information contained in the section below. Coordinate and projection information must also be captured in the applicable metadata section for each feature class developed and delivered. All geospatial data adhere to the following Coordinate Systems where applicable:

1. Horizontal Datum

North American Datum 1983 (NAD83)

The North American Datum is the datum used to define the geodetic network in North America. A datum is the formal description of the shape of the Earth along with an “anchor” point for the coordinate system. In surveying, cartography, and land-use planning, the North American Datum of 1983 (NAD83) is typically used. The older North American Datum of 1927 (NAD27) is still used occasionally but typically is not preferred by industry standards. Both are geodetic reference systems based on slightly different assumptions and measurements. Only under rare circumstances, and with prior permission from the RDP or Authority, will NAD27 be an acceptable datum for geospatial delivery. Note that when it becomes necessary to perform a coordinate transformation, moving data from one coordinate system to another (i.e., WGS 84 to NAD 83) the Authority advises to follow guidance provided by [ESRI Support Knowledge Base article 24159](#) for tips on how to determine which transformation to use between NAD 1983 and WGS 1984.

2. Vertical Datum

The National Geodetic Vertical Datum of 1988 (NGVD88)

NAVD88 is a vertical datum that consists of a leveling network on the North American Continent affixed to a single origin point on the continent. A vertical datum is technically, a surface of zero elevation to which heights of various points are referred in order that those heights be in a consistent system. More broadly, a vertical datum is the entire system of the zero elevation surface and methods of determining heights relative to that surface. This datum is particularly useful in projecting lidar data, which is made of points each with an X, Y, and Z coordinate.

Applying vertical datum to Z aware feature classes (i.e., 3D enabled alignment polylines) generated to support various aspects of the High-Speed Rail Program may be necessary. The Authority advises to follow guidance provided by [ESRI Support Resource Center](#) for tips on how to create 3D polylines with z-values.

3. Units

- English (Feet, Miles, etc.)

4. Projection

California State Plane in NAD83 (State Plane Coordinate System):

This projection is commonly used by surveying professionals and within local municipalities (cities, counties, regional governments). The California State Plane Coordinate System (SPCS) has 6 zones in NAD83. Coordinate values (units of measure) should be U.S. Survey Feet. The Authority realizes that not all HSR project sections fall within a single State Plane Zone.

In cases where an HSR section (e.g., Merced to Fresno) spans multiple zones, it may be incumbent upon the GIS practitioner to re-project data intended for GIS purposes into the defined State Plane zone per the preferred GIS projection by HSR section (see Table 2-1). The Authority advises to follow guidance provided by [ESRI Support Resource Center](#) for the necessary steps and best practices used within the ArcGIS for Desktop product suite on how to define and/or re-project geospatial data.



Table 2-1. Preferred GIS Projection Zones

HSR Project Sections and Codes	Preferred GIS Projection
San Francisco to San Jose (FJ)	NAD83, State Plane Zone 3, feet
San Jose to Merced (JM)	NAD83, State Plane Zone 3, feet
Central Valley Wye (CVY)	NAD83, State Plane Zone 3, feet
San Jose to Gilroy (J2G)	NAD83, State Plane Zone 3, feet
Gilroy to the Wye (G2Y)	NAD83, State Plane Zone 3, feet
Merced to Fresno (MF)	NAD83, State Plane Zone 3, feet
Fresno to Bakersfield (FB)	NAD83, State Plane Zone 4, feet
Bakersfield F Street Station Alignment (FSS)	NAD83, State Plane Zone 5, feet
Bakersfield to Palmdale (BP)	NAD83, State Plane Zone 5, feet
Palmdale to Los Angeles (PL)	NAD83, State Plane Zone 5, feet

HSR Project Sections and Codes	Preferred GIS Projection
Palmdale to Burbank (P2K)	NAD83, State Plane Zone 5, feet
Burbank to Los Angeles (K2L)	NAD83, State Plane Zone 5, feet
Express West Wye (EWY)	NAD83, State Plane Zone 5, feet
L.A. Union Station to Anaheim (LO)	NAD83, State Plane Zone 5, feet
Los Angeles Wye (LAY)	NAD83, State Plane Zone 5, feet
Los Angeles to Anaheim (L2O)	NAD83, State Plane Zone 5, feet
Los Angeles to San Diego (LD)	NAD83, State Plane Zone 6, feet
Merced to Sacramento (MS)	NAD83, State Plane Zone 3, feet
Altamont Pass (AJ)	NAD83, State Plane Zone 3, feet

2.5 Data Delivery Standard

All geospatial data will be delivered in the following formats:

Vector Data

Vector data consist of point, line, or polygon features stored in file formats such as the Esri shapefile or file geodatabase. The following formats are acceptable for the delivery of vector data.

- ESRI Geodatabase Formats
 - SDE Geodatabase
 - File Geodatabase
 - Personal Geodatabase
- Map Package (.mpk)
- Layer Package (.lpk)
- Keyhole Markup Language (OGC-KML)
- Shapefile (.shp)
- XML Workspace Document

Raster (Image) Data

Raster datasets represent geographic features by dividing the world into discrete square or rectangular cells laid out in a grid. Each cell has a value that is used to represent some characteristic of that location, such as temperature, elevation, or a spectral value. Raster datasets are commonly used for representing and managing imagery, digital elevation models, and numerous other phenomena. Often rasters are used as a way to represent point, line, and polygon features.

The following formats are acceptable for the delivery of raster data.

- ECW (Preferred file format)
- GeoTIFF
- JPEG(.jpg) accompanying World file (.jgw)
- ESRI Grid
- IMG
- JPEG2000
- DTM/DEM

All associated database tables will be delivered in the following formats:

- dBase (.dbf)
- Microsoft Access (.mdb)
- ASCII delimited
- Microsoft Excel formats
- Point Cloud (.csv, txt, las, xyz)

2.6 Symbology

There are two types of feature class categories to be taken into consideration when selecting symbology. These are general feature classes and specific feature classes. To the maximum extent possible, feature class symbology should be consistent among all segments and maps. This is much easier to accomplish with general feature classes than with the specific feature classes as they are common throughout California and the High-Speed Rail System. Their symbology should remain consistent throughout all segments in the high-speed rail system. Examples of a general type of feature class include highways, roads, city limits, grasslands, cropland, almond orchards, canals, rivers, mountains, fault lines, and etcetera.

Refer to the Authority's *Graphic and Exhibit Guidelines* documentation for more guidance on symbology and styling. The document is located on SharePoint.

2.7 Minimum Map Element Standard

The Authority will provide GIS figure templates to all contractors and interested parties via the Authority's website in .mxd format. Figure templates will be categorized by type (environmental, planning, and etcetera) and will be provided in different sizes. All figures and cartographic products submitted to the Authority will use these templates whenever applicable. These templates and the guidelines found within them conform to the Authority's map and exhibit element standards which can be referenced within the Authority's *Graphic and Exhibit Guidelines* documentation. They were developed to ensure that graphic products created for and by the Authority have a consistent format. Refer to Appendix A for examples of the Authority's GIS Figure template standards. MXD versions of these figures can be downloaded for your use by accessing the following link to the GIS Portal on SharePoint: [GIS Figure Templates](#).

The elements defined in the Authority's *Graphic and Exhibit Guidelines* document will help both the users and producers of official High-Speed Rail Authority GIS-based figures. Refer to the Authority's *Graphic and Exhibit Guidelines* for detailed guidance in order to:

- Better understand the map information
- Identify the standards, practices and source of data used in developing the map
- Create consistency in published mapping products for the Program
- Define standards by which contractors and consultants deliver printed map products to the Authority

3 PART III—FILE NAMING CONVENTION

3.1 First File Naming Rule: Conventions & Hierarchy

The first rule of the Program’s GIS file naming convention is to ensure that your geospatial assets follow the prescribed file naming convention and utilize the correct hierarchy. This hierarchy is illustrated below in Figure 3-1 File Naming Convention. HSR section or construction package acronym is based on the Program’s assigned alpha-numeric corresponding with a project section or construction package. For example, a GIS feature class representative of the alignment for that section would start with “FB”; a feature class representative of work performed by the design build team would instead use “CP1” at the start of the name for the same feature class.

As files of thematic coverages are created and named, use the filename conventions discussed here for transferring any files to members of the team, and when referring to files in correspondence or project documents. In other words, use the wetlands example described above and be consistent.

3.2 Second File Naming Rule: Concise, Obvious and Consistent

The second rule in naming files that will be entered into the GIS database is to use concise, obvious and consistent names. For instance, if attributes about wetlands are provided in an Excel file, the name of the excel file should be *wetlands.xls*. If these attributes are provided separately by city, a name such as *wetlands_LA.xls* or *wetlands_SF.xls* would be easily understandable as wetland sites in Los Angeles and San Francisco. Note that the word “wetlands” was used first in the filename to enable users to alphabetically sort file names that are related to each other. Please refrain from any special characters within file names (e.g. “-”, “/”, “&”). While no spaces are permitted, underscores are an acceptable alternative. For additional rules, see the following Esri documentation located here: [Defining Feature Class Properties](#). Additionally, utilize the following date format when feature classes that require iterative date tracking are required: *yyyymmdd*. Appending the date format to other non-iterative (static) feature classes is left to the local GIS Manager’s discretion.

3.3 Third File Naming Rule: Associated Files

The third rule in file naming is to use exactly the same name for associated files, regardless of file type, (unless separate as in the above wetlands example). The file extension will vary, such as *.xlsx*, *.doc*, *.dxf*. For example, you may have a feature class called “FB_Williamson_Act_Lands_Master_20150123” retains the same name if exported to a different file format, such as Excel (*.xlsx*).

3.4 File Naming Convention Illustration

EXAMPLE NAME	BP_ENG_SAA_ALIGN_20131120				
	1	2	3	4	5
	SECTION OR CONSTRUCTION PACKAGE	FUNCTIONAL AREA OR DISCIPLINE	PROJECT MILESTONE	FEATURE CLASS DESCRIPTOR	DATE
1	WHERE SECTION OR CONSTRUCTION PACKAGE FJ San Francisco to San Jose JM San Jose to Merced CNY Central Valley Wye J2G San Jose to Gilroy G2Y Gilroy to the Wye MF Merced to Fresno FB Fresno to Bakersfield FSS Bakersfield F Street Station Alignment	BP Bakersfield to Palmdale PL Palmdale to Los Angeles P2K Palmdale to Burbank K2L Burbank to Los Angeles EWY Express West Wye LO L.A. Union Station to Anaheim LAY Los Angeles Wye L2O Los Angeles to Anaheim	LD Los Angeles to San Diego MS Merced to Sacramento AJ Altamont Pass CP1 Construction Package 1 CP23 Construction Package 2-3 CP4 Construction Package 5 CP5 Construction Package 5		
2	WHERE FUNCTIONAL AREA OR DISCIPLINE PL Planning ENG Engineering ENV Environmental ROW Right of Way PA Public Affairs ADM Administrative AVR Aesthetics and Visual Resources AGL Agricultural Lands AQ Air Quality and Global Climate Change ARCHEO Archaeological ARCHIT Architectural BIO Biological Resources BOT Botany	CIA Community Impact Assessment CMP Compensatory Mitigation Plan CR Cultural Resources CI Cumulative Impacts EMFI Electromagnetic Fields and Interference EJ Environmental Justice GSS Geology, Soils, and Seismicity GEO Geotechnical HAZ Hazardous Materials and Wastes HYD Hydrology and Water Resources LUD Land Use and Development NAV Noise and Vibration PALEO Paleontological	PROS Parks, Recreation, and Open Space POL Political PL Public Lands PUE Public Utilities and Energy RG Regional Growth SS Safety and Security S4F Section 4(f) S6F Section 6(f) SOC Socioeconomics STA Station Planning TRNP Transportation WW Waters and Wetlands WILD Wildlife		
3	WHERE PROJECT MILESTONE AA Alternatives Analysis SAA Supplemental Alternatives Analysis DEIR Draft Environmental Impact Report FEIR Final Environmental Impact Report TR Technical Report PRED Project Report Environmental Document (Caltrans) RS Record Set	AR Administrative Record PE4P Preliminary Engineering for Procurement PP1 Permitting Phase 1 REX Reexamination CKA Checkpoint A CKB Checkpoint B CKC Checkpoint C	PCP Biological Opinion P404 404 Permit P401 401 Permit P1602 1602 Permit P2081 2081 Permit S106 Section 106		
4	WHERE FEATURE CLASS DESCRIPTOR ALIGN Alignments ALT Alternative ANNO Annotation FP Footprint STRCTR Structure HAB Habitat PTE Permission to Enter WAL Williamson Act Lands ERSA Environmental Resource Study Area	KVP Key Viewpoint LSU Landscape Unit MBG Mapbook Grid CNDDb California Natural Diversity Database CRTHAB Critical Habitat POTHAB Potential Habitat APE Area of Potential Effects FOE Finding of Effect	HASR Historic Architectural Survey Report HPSR Historic Property Survey Report PALEO Paleontological SR Sensitive Receptors BNSF Burlington Northern Santa Fe UPRR Union Pacific Rail Road LOS Level of Service VP Vernal Pool		
5	WHERE DATE (YYYYMMDD) The date of data download or production. Required for Alignments and Footprints. Accurate to at least the 4 digit year.				

Figure 3-1 File Naming Convention

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4 PART IV—GIS STORAGE, MANAGEMENT, AND DATA SOURCES

4.1 Data Storage, Management, and Oversight

Publicly available GIS data will be catalogued on the California GeoPortal. Through the GeoPortal, GIS data may be shared with other interested State agencies, federal agencies, regional governments, and the public as appropriate. GIS data should be organized in a way that is intuitive and easy to navigate. It will be incumbent upon a firm in contract with the Authority to ensure compliance with the guidelines and standards set forth in this document. These firms should identify an individual within their organization who is responsible for ensuring consistency with established standards for GIS products and geospatial deliverables to the Authority. Once consultant work is complete, either Authority personnel or the RDP’s GIS Manager will be responsible for ensuring GIS data preservation, dissemination, interpretation, updates, and overall GIS asset management. The GIS Manager will also monitor consultant work and make updates to the Authority’s GIS standards as appropriate.

4.2 Authoritative Data Sources

It will be the responsibility of the GIS practitioner to identify and develop/procure geospatial data sources deemed necessary to complete environmental, planning, and engineering studies or analyses necessary to support the Program.

When gathering existing GIS data, it is important to identify the most appropriate agency as the authoritative source of that data. There are often many different sources for similar data that have discreet variations. Identifying an authoritative source for specified data types on all project sections and/or construction packages will help ensure that the numerous entities working on the HSR project have data derived from identical sources, helping to ensure consistency, reduce confusion, and improve accuracy. OTech maintains the [California GeoPortal](#), which is a clearinghouse of statewide datasets derived from various government agencies that are responsible for maintaining authoritative geospatial data. For example, highway and roadway data should be obtained from the California Department of Transportation (Caltrans). If additional data is required but cannot be found per list of websites below, consult with the subject matter expert for other geospatial data providers.

Resource, permitting, and partner agencies should be consulted to help determine the authoritative data source. Sometimes a permitting agency may require a certain data source be used. Early consultation with all stakeholder agencies and the Authority is important in order to ensure the data is acceptable and resources do not have to be spent to redo work later. Once an authoritative data source is determined, this source needs to be clearly communicated in the metadata. Below is a sample listing of websites that contain links to geospatial datasets commonly employed to assist with the GIS-based analyses used throughout the Program, with the expected authoritative data sources in italics. The Authority recommends the usage of these datasets in order to identify and build a geospatial data catalog.

4.3 Authoritative Websites

Type	Agency	Link	Key Discipline(s)
Authoritative	California Department of Fish and Wildlife (CDFW)	https://www.dfg.ca.gov/biogeodata/gis/clearinghouse.asp	Biology, Botany, Wetlands, Wildlife
Authoritative	U.S. Bureau of Land Management (BLM)	https://www.dfg.ca.gov/biogeodata/gis/clearinghouse.asp	Land Use, Geology, Public Lands
Authoritative	FEMA National Flood Hazard Layers	www.floodmaps.fema.gov/NFHL/status.shtml	Hydrology
Authoritative	Federal Rail Administration (FRA):	http://fragis.fra.dot.gov/GISFRASafety/	Right of Way, Transportation, Land Use

Type	Agency	Link	Key Discipline(s)
Authoritative	National Transportation Atlas	www.rita.dot.gov/bts/sites/rita.dot.gov/bts/files/publications/national_transportation_atlas_database/2014/index.html	Right of Way, Transportation
Authoritative	U.S. Environmental Protection Agency (EPA)	www.epa.gov/nerlesd1/land-sci/default.htm	Biology, Botany, Wetlands, Wildlife
Authoritative	Federal Geographic Data Committee GeoPlatform	www.geoplatform.gov/home2	Biology, Geology, Hydrology, Land Use
Authoritative	National Oceanic and Atmospheric Administration (NOAA) Data Access Viewer	http://coast.noaa.gov/dataviewer/?redirect=301ocm#app=f8ce&6ba3-selectedIndex=2	Biology, Land Use, Imagery, LiDAR
Authoritative	U.S. Interagency Elevation Inventory	http://coast.noaa.gov/inventory/?redirect=301ocm#	DTM, LiDAR, Imagery
Authoritative	U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Soil Survey	www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/survey/geo/?cid=nrcs142p2_053627	Geology, Soils
Authoritative	U.S. Census Selected Demographic and Economic Data:	https://www.census.gov/geo/maps-data/data/tiger-data.html	Socioeconomics, Demographics
Authoritative	U.S. Census Tiger Products	https://www.census.gov/geo/maps-data/data/tiger.html	Political, Administrative
Authoritative	California Department of Conservation Farmland Mapping and Monitoring Program	www.conservation.ca.gov/dlrp/FMMP/Pages/Index.aspx	Agriculture, Land Use
Authoritative	California Department of Conservation Division of Oil, Gas, and Geothermal Resources GIS Data	www.conservation.ca.gov/dog/Pages/Wellfinder.aspx	Wells, Utilities, Geology, Geotechnical
Authoritative	California Department of Transportation GIS Data Library	www.dot.ca.gov/hq/tsip/gis/datalibrary/	Transportation, Political, Administrative
Authoritative	California Department of Forestry and Fire Protection Fire and Resource Assessment Program	http://frap.fire.ca.gov/	Safety, Security, Land Use, Biology

Type	Agency	Link	Key Discipline(s)
Authoritative	U.S. Fish and Wildlife Service Critical Habitat GIS Data Portal	http://ecos.fws.gov/crithab/	Biology, Wildlife, Botany
Authoritative	U.S. Geological Survey National Hydrography Dataset	http://nhd.usgs.gov/	Hydrology, Wetlands
Authoritative	U.S. Fish and Wildlife Service National Wetlands Inventory	www.fws.gov/Wetlands/NWI/index.html	Wetlands, Biology
Authoritative	California Air Resources Board GIS Library	www.arb.ca.gov/ei/gislib/gislib.htm	Air Quality
Authoritative	National Park Service Register of Historic Places Program GIS Data	www.nps.gov/nr/research/data_downloads.htm	Cultural Resources
Authoritative	California Department of Fish & Wildlife (CDFW) Vernal Pool Reports and Mapping Information	www.dfg.ca.gov/biogeodata/wetlands/	Wetlands, Biology
Authoritative	Cal-Atlas Geospatial Clearinghouse	www.atlas.ca.gov/download.html	Political, Administrative, Land Use, Transportation
Authoritative	U.S. Geological Survey Quaternary Fault and Fold GIS Data	http://earthquake.usgs.gov/hazards/qsfaults/	Geology
Authoritative	U.S. Geological Survey National Seismic Hazard GIS Datasets	http://earthquake.usgs.gov/hazards/products/conterminous/index.php#2014	Geology

4.4 Helpful Websites

California County/City GIS web sites list—www.coordinatedlegal.com/gis.html

Data.gov Data Catalog—<http://catalog.data.gov/dataset>

National Oceanic and Atmospheric Administration (NOAA) National Geodetic Survey (NGS) Continuously Operating Reference Station Data Viewer—www.ngs.noaa.gov/CORS_Map/

U.S. Geological Survey Historical Topographic Map Collection—<http://geonames.usgs.gov/apex/f?p=262:1:0>

California Protected Area Data (CPAD) Portal—www.calands.org/

Esri Knowledge Base—<http://support.esri.com/de/knowledgebase/techarticles>

GIS Dictionary—<http://support.esri.com/en/knowledgebase/Gisdictionary/browse>

ArcGIS Help Resources (Current and Previous Releases)—<http://resources.arcgis.com/en/help/>

California State Parks Office of Historic Preservation—http://ohp.parks.ca.gov/?page_id=27555
U.S. Geological Survey Earth Explorer—<http://earthexplorer.usgs.gov/>
U.S. Army Corps of Engineers Geospatial Platform—<http://geoplatform.usace.army.mil/home/>
Urban and Regional Systems Information Systems Association—www.urisa.org/
GIS Management Institute—www.urisa.org/main/gis-management-institute/
Bay Area Automated Mapping Association—www.baama.org/
California Geographic Information Association—<http://cgia.org/>
Southern California Association of Governments GIS and Data Services—
<http://gisdata.scag.ca.gov/Pages/SocioEconomicLibrary.aspx>
Association of Bay Area Governments Map Portal—<http://gis.abag.ca.gov/>
Sacramento Area Council of Governments GIS & Mapping Services—
www.sacog.org/infocenter/gis/

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5 PART V—GEODATABASE PROTOCOLS AND SCHEMA

A GIS geodatabase has a structural organization that determines how its data contents are related and accessed. This structure, also known as database schema, defines limitations in how the data can be analyzed and presented. The structure of the example geodatabase for the Authority, as well as procedures for cataloguing data and naming files, are described elsewhere in this document. Establishing these standards is intended to facilitate sharing the geodatabase among team members, and to serve as guidelines for team members as they prepare data for transmittal to the Authority or its authorized agents.

Establishing geodatabase standards, protocols, and guidelines for the Program is critical to the successful implementation and management of project geospatial assets throughout all phases of the project. Because much of the geospatial data gathering, mining, and synthesis start during the analysis phases of the project, the geodatabases will be a tool for identifying and mapping issues within the study context and will serve as the basis or platform for which any additional geospatial datasets are analyzed, modified, or added to.

To meet these needs, the geodatabase must be clearly organized, accessible, and flexible for varying applications. The GIS protocol is intended for use by the project team members and the Authority. It documents the standards for database structure, thematic organization, spatial reference, and implementation. See Database Hierarchical Schema, HSR Example Geodatabase Schema Diagram, HSR Example Geodatabase Hierarchy Schema 1.

The purpose of developing and complying with these standards is to inform team members about details of the geodatabases and to ensure that data are captured and utilized appropriately. It is important that upon contract closeout the spatial assets generated to support conclusions made in Program deliverables (e.g., EIR Document or technical appendices) is consistent across all firms under contract with the California High-Speed Rail Authority involved with generating geospatial data.

The geodatabase contains both graphic (geographic coverages) and tabular data in a database schema (structure) designed to be easily understood and accessed by all team members for the duration of the study. A base of data is being provided but is not all-inclusive or was it intended as such. It will be the responsibility of each of the Regional Consultant or Design Build Teams to identify and develop/procure other data sources deemed necessary to complete analyses as part of the Program Environmental Impact Report/Statement (EIR/EIS), Design Build, Permitting, Right-of-way, or Operations and Maintenance phases.

A file geodatabase (fgdb) is the Authority's preferred container for GIS feature class data and should be used to store, manipulate, analyze, display, plot, and deliver geospatial assets to the Authority. While SDE geodatabases (sgdb) are acceptable, they are not required for delivery of Program geospatial assets due to the decentralized nature of the Project. Personal geodatabases (pgdb) and/or shape files do not meet the Authority's minimum standards and will not be accepted as a deliverable. Database analysis and manipulation functions that are required for High-Speed Rail and are beyond the capabilities of an fgdb will be performed using a sgdb utilizing a Spatial Database Engine (SDE) and SQL. If your team encounters difficulties with the utilization of an fgdb to store and manage the geospatial assets developed to support this work please contact the Authority.

Data may also be prepared for publication in ArcGIS for Desktop via ArcGIS for Server at which point a map or feature service will be generated for consumption through a browser or tablet based application for visualization, field reconnaissance, analysis, or data collection purposes. Additionally, decentralized environments in which replication, versioning, or multi-user geodatabases are required in order to accomplish complex workflows can also be implemented according to your team's needs and resource availability.

5.1 Database Hierarchical Schema

Data stored in an fgdb can be vector or raster data, (e.g., polygons or images) or tabular data (e.g., relational tables). All data, regardless of file type, are organized in a hierarchical schema (organizational structure) as outlined below:

<ul style="list-style-type: none"> ▪ Feature Datasets 	<p>Feature Datasets are the broad groups of related data within which any number of environmental, planning, or engineering datasets, such as Biology, Land Use, or ROW are categorized. Feature classes found within each feature dataset are related to the parent feature dataset in which they reside.</p>
<ul style="list-style-type: none"> ▪ Feature Classes 	<p>A Feature Class is a collection of geographic features with the same geometry type (such as point, line, polygon), the same attributes, and the same spatial reference. Feature classes allow homogeneous features to be grouped into a single unit for data storage purposes. For example, highways, primary roads, and secondary roads can be grouped into a line feature class named “roads.” In a geodatabase, feature classes can also store annotation and dimensions.</p>
<ul style="list-style-type: none"> ▪ Fields 	<p>A Field is a column in a table that stores the values for a single attribute. Also, the place in a database record where data can be entered.</p>
<ul style="list-style-type: none"> ▪ Attributes 	<p>Attributes are non-spatial descriptive characteristics of the entity and contain information about a geographic feature in a GIS, usually stored in a table and linked to the feature by a unique identifier. For example, attributes of a river might include its name, length, and sediment load at a gauging station.</p>
<ul style="list-style-type: none"> ▪ Attribute Domains 	<p>Attribute domains are rules that describe the legal values of a field type, providing a method for enforcing data integrity. Attribute domains are used to constrain the values allowed in any particular attribute for a table or feature class.</p> <p>If the features in a feature class or nonspatial objects in a table have been grouped into subtypes, different attribute domains can be assigned to each of the subtypes. A domain is a declaration of acceptable attribute values. Whenever a domain is associated with an attribute field, only the values within that domain are valid for the field. In other words, the field will not accept a value that is not in that domain. Using domains helps ensure data integrity by limiting the choice of values for a particular field.</p>

5.1.1 HSR Example Geodatabase Schema Diagram

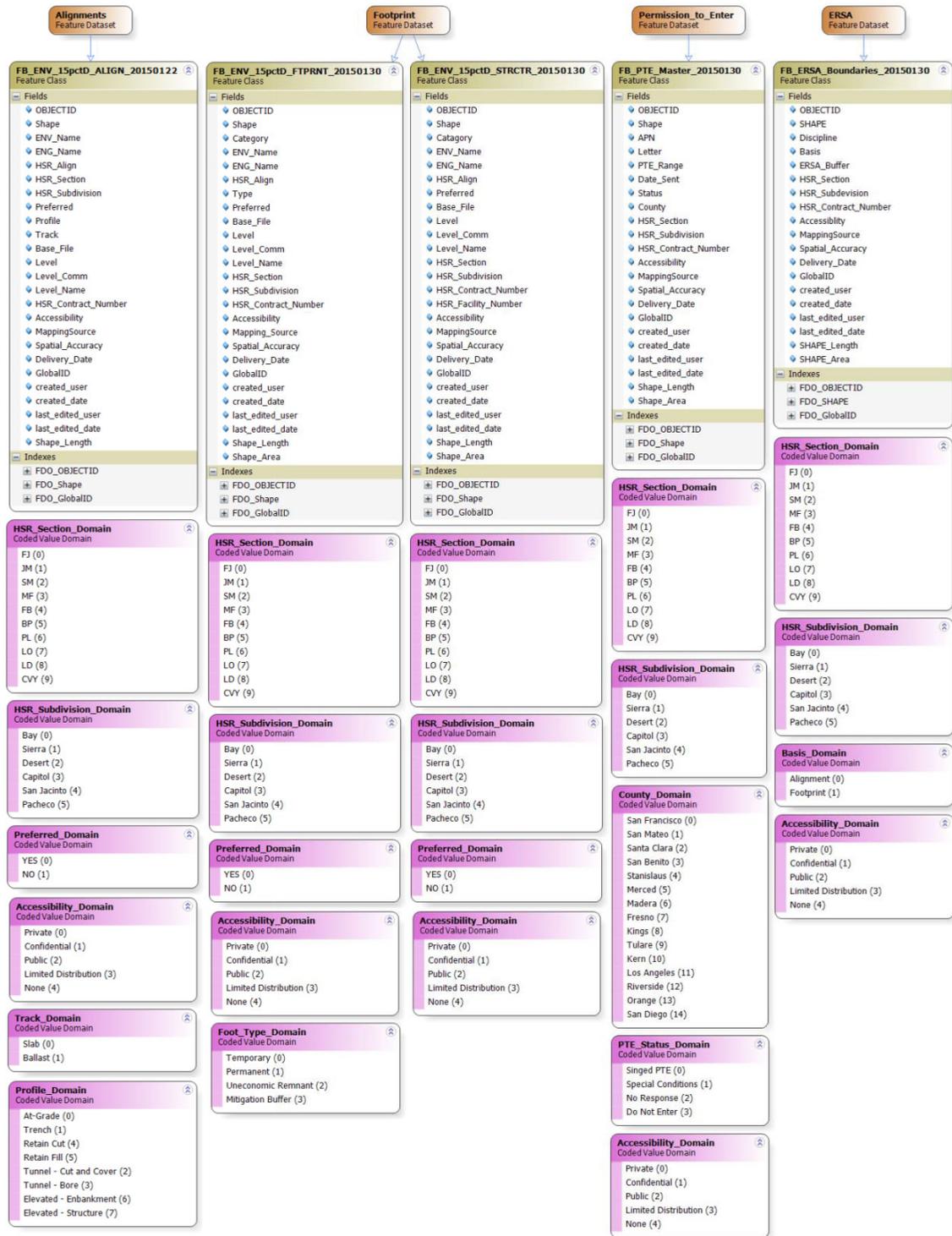


Figure 5-1 HSR Example Geodatabase Schema Diagram
Please refer to Appendix B for detailed graphic

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5.1.2 HSR Example Geodatabase Hierarchy Schema 1

Feature Dataset	Feature Classes	Field (example)	Attribute (example)	Domain
Transportation (example category and coverages, not meant to be comprehensive)	TRNP Roads	Class	Minor	Yes
			Major	
			Collector	
			Arterial	
			Interstate	
			Highway	
		FCC	A5	
			A10	
			A20	
			A44	
			A51	
			A74	
	Name	Calloway	No	
		Golden State		
		Buena Vista		
		47th		
		Broadway		
		Main		
	TRNP Rail	Sudivision	Napa	Yes
			Shellville	
			West Valley	
Owner		UP		
		BNSF		
		SJVR		
Type		Freight		
		Passenger		
		Mixed		

Figure 5-2 HSR Example Geodatabase Hierarchy Schema 1

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5.1.3 HSR Example Geodatabase Hierarchy Schema 2

Example Geodatabase Schema Feature Datasets

Name	Type
Administrative	File Geodatabase Feature Dataset
Aesthetics/VisualResources	File Geodatabase Feature Dataset
Agriculture	File Geodatabase Feature Dataset
AirQuality	File Geodatabase Feature Dataset
Alignments	File Geodatabase Feature Dataset
Alternatives	File Geodatabase Feature Dataset
Annotation	File Geodatabase Feature Dataset
Biology	File Geodatabase Feature Dataset
Botany	File Geodatabase Feature Dataset
Buffers	File Geodatabase Feature Dataset
Checkpoints	File Geodatabase Feature Dataset
CMP	File Geodatabase Feature Dataset
Cultural	File Geodatabase Feature Dataset
EMFRFI	File Geodatabase Feature Dataset
ERSA	File Geodatabase Feature Dataset
Footprints	File Geodatabase Feature Dataset
Geology	File Geodatabase Feature Dataset
Geotechnical	File Geodatabase Feature Dataset
Hazmat	File Geodatabase Feature Dataset
Hydrology	File Geodatabase Feature Dataset
LandUse	File Geodatabase Feature Dataset
Mapbooks	File Geodatabase Feature Dataset
NoiseVibration	File Geodatabase Feature Dataset
Parcels	File Geodatabase Feature Dataset
Permitting	File Geodatabase Feature Dataset
Political	File Geodatabase Feature Dataset
PTE	File Geodatabase Feature Dataset
PublicAffairs	File Geodatabase Feature Dataset
PublicLands	File Geodatabase Feature Dataset
PublicUtilities	File Geodatabase Feature Dataset
ROW	File Geodatabase Feature Dataset
Socioeconomics	File Geodatabase Feature Dataset
Transportation	File Geodatabase Feature Dataset
Utilities	File Geodatabase Feature Dataset
Wells	File Geodatabase Feature Dataset
Wetlands	File Geodatabase Feature Dataset
Wildlife	File Geodatabase Feature Dataset

Example Geodatabase Schema Transportation Feature Classes

- Transportation
 - TRNP_Circulation
 - TRNP_Level_of_Service
 - TRNP_Mitigation_Measure_Polygons
 - TRNP_Mitigation_Measures_Lines
 - TRNP_Railroads
 - TRNP_Road_Conditions
 - TRNP_Roads
 - TRNP_Spur_Track_Master

Example Geodatabase Schema TRNP Roads Fields & Attributes

NAME	FCC	CLASS	MILES
47th	A60	Minor	0.00743
47th	A60	Minor	0.0086
47th	A60	Minor	0.0083
47th	A60	Minor	0.00751
47th	A60	Minor	0.00721
47th	A60	Minor	0.01006
47th	A60	Minor	0.00795
47th	A60	Minor	0.00644
47th	A63	Minor	0.15294
47th	A63	Minor	0.35348
47th	A60	Minor	0.01011
Somerton	A31	Minor	0.08389
Calloway	A60	Major	0.00866
Calloway	A60	Major	0.00536
Calloway	A60	Major	0.0124
Calloway	A60	Major	0.00718
Calloway	A60	Major	0.00754
Calloway	A60	Major	0.0061
Calloway	A60	Major	0.00616
Ramp	A63	Major	0.30969
Ramp	A63	Major	0.09136
Ramp	A60	Major	0.00647
Ramp	A60	Major	0.00631
Ramp	A60	Connector	0.01615
Ramp	A60	Connector	0.00751
Ramp	A60	Connector	0.016
Ramp	A60	Connector	0.00854
Ramp	A60	Connector	0.00638
Ramp	A60	Connector	0.00599
Ramp	A60	Connector	0.00621
Exit 14	A63	Connector	0.25248
Exit 14	A63	Connector	0.23735
Exit 2	A63	Connector	0.25664
Exit 2	A63	Connector	0.02233
Ramp	A60	Connector	0.00979
Broadway	A60	Arterial	0.01075
Broadway	A60	Arterial	0.00649

Figure 5-3 HSR Example Geodatabase Hierarchy Schema 2

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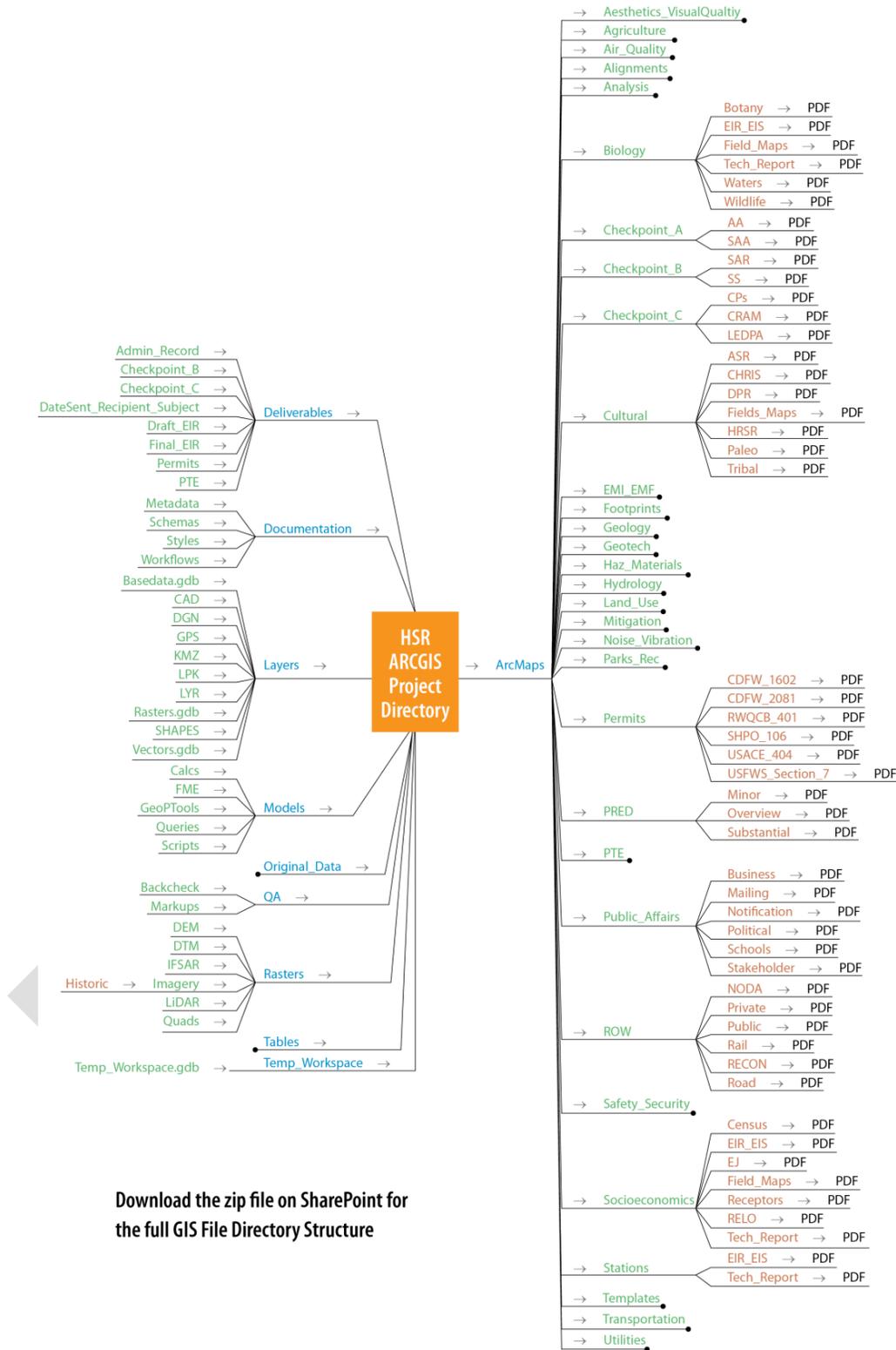
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6 PART VI—EXAMPLE OF GIS PROJECT DIRECTORY STRUCTURE

GIS data delivered to the Authority should be in a consistent project directory structure. A consistent project directory structure will greatly assist with Authority in data organization and management. See Figure 6-1 Examples GIS Project Directory Structure.

An example GIS file directory structure is located on SharePoint in the GIS Portal for further reference. For access to the GIS Portal on SharePoint please contact the Authority.

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Download the zip file on SharePoint for the full GIS File Directory Structure

Figure 6-1 Examples GIS Project Directory Structure
Please refer to Appendix C for detailed graphic

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7 PART VII—EXAMPLE HSR FIELD, ATTRIBUTE, AND DOMAIN DEFINITIONS

It is important to clearly define field and attribute definitions. Those reviewing geospatial work need to understand the meanings of terms and abbreviations, and how they are important to the project. The same is true for decision makers. Without attribute and domains clearly defined, the possibility for questions regarding data or misinterpretation is great. It is not uncommon for the same terms, symbols, or acronyms to have multiple meanings, depending on the background of the audience and the context that the terms and symbols are being used.

The following pages in this appendix contain tables of commonly used field and attributes associated with the Program and their definitions. GIS project teams should use these tables as a guide to define their geospatial fields and attributes as much as possible.

GIS project teams may add or modify as appropriate to their respective project segment or phase. See Figure 7-1 Example HSR GIS Field Definitions and Attribute Table.

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7.1 Example HSR GIS Field Definitions and Attribute Table

Feature Class Name	Field Name	Data Type	Field Definition	Field Domain	
"FB_ENV_15pctD_FTPRNT_20140130"	Category	String	Category of footprint feature construction activity. Examples: Access Road, Temporary Construction Easement, Canal Relocation, Construction Area, Drainage Basin, etc. These could be domains.		
	ENV_Name	String	Environmental name		
	ENG_Name	String	Engineering name		
	HSR_Align	String	Name of the HSR alignment segment for a given HSR alignment section. For example the Fresno to Bakersfield project section contains alphanumeric subsection alternatives A1, A2, B1, B2, etc.		
	Type	String	Type of footprint feature record	Domain values: Temporary, Permanent, Mitigation Buffer, Uneconomic Remnant	
	Preferred	String	Field that describes whether or not the record is part of the preferred alignment	Domain values: YES, NO	
	Base_File	String	The name of the DGN file from which the feature record is derived. Footprints are never created in GIS and always have a DGN file parent		
	Level	String	The DGN level the GIS feature record was placed on in the originating DGN file, usually a number		
	CATEGORY		DEFINITION		
		Access Road	Identifies the preliminary environmental impacts for access roads associated with HST track and tunnel portals. This access will be used during construction and will remain as permanent access for maintenance and emergency evacuation.	FJ, JM, SM, MF, FB, BP, PL, LO, LD, CVY	
		BNSF Yard Relocation	Identifies the preliminary permanent environmental impacts of the area associated with the relocation of the BNSF siding tracks within the BNSF Yard.	Bay, Sierra, Desert, Tongva, Capitol, San Jacinto, Pacheco	
		Canal Relocation	Identifies preliminary permanent environmental impacts in order to relocate existing canal infrastructure.	Private, Confidential, Public, Limited Distribution, and	
		Construction Area	Identifies the preliminary temporary environmental impacts that are associated with construction laydown areas where they will place construction offices, store supplies and construction equipment, etc.		
		Drainage Basin	Identifies the preliminary permanent environmental impacts of any area that is associated with drainage across an HST alignment.		
		Freight Rail Relocation	Identifies the preliminary permanent environmental impacts of the area associated with the relocation of the BNSF mainline tracks.		
	HST Tracks	Identifies the preliminary limits of environmental impacts that is based on the permanent ROW for the HST alignments.			
	Interlocking Site	Identifies the preliminary permanent environmental impacts for the proposed interlocking house site.			
	Maintenance of Infrastructure	Identifies the preliminary permanent environmental impacts for the proposed Maintenance of Infrastructure sites.			
	Maintenance of Way Facility	Identifies the preliminary permanent environmental impacts for the proposed Heavy Maintenance Facility sites.			
	Natural Gas Line Relocation	Identifies preliminary temporary environmental impacts in order to relocate existing natural gas line utility due to proposed HST construction activities.			
	Petroleum Line Relocation	Identifies preliminary temporary environmental impacts in order to relocate existing petroleum line utilities due to proposed HST construction activities.			
	Radio Site	Identifies the preliminary permanent environmental impacts for the proposed stand-alone or tunnel portal radio site.			
	Remove Base and Surfacing	Identifies preliminary temporary environmental impacts to impervious surfaces (e.g., pavement) that will be converted to pervious surfaces (e.g., original ground).			
	Roadway	Identifies preliminary permanent environmental impacts for any road closure, realignment or grade separation as a result of impacts with the HST alignments.			
	Roadway (Underpass)	Identifies preliminary permanent environmental impacts for any road closure, realignment or grade separation as a result of impacts with the HST alignments.			
	Station	Identifies preliminary permanent environmental impacts associated with the HST station site.			
	Temporary Construction Easement	Identifies a preliminary area that will sustain temporary environmental impacts during the construction of an HST structure.			
	Track Access Easement	Identifies the preliminary limits of environmental impacts that are based on easements for access along the HST alignments.			
	Traction Power Facility	Identifies the preliminary permanent environmental impacts for the proposed paralleling station, switching station or traction power substation site.			
	Transmission Line Relocation	Identifies preliminary temporary environmental impacts in order to relocate existing electric transmission line utilities due to proposed HST construction activities.			
	Utility Easement	Identifies preliminary temporary environmental impacts that are based on easement in order to relocate existing utilities due to proposed HST construction activities.			
	Utility Relocation	Identifies preliminary temporary environmental impacts in order to relocate existing utilities due to proposed HST construction activities.			
	Water Line Relocation	Identifies preliminary temporary environmental impacts in order to relocate existing water line utilities due to proposed HST construction activities.			

Figure 7-1 Example HSR GIS Field Definitions and Attribute Table
Please refer to Appendix D for detailed graphic

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8 PART VIII—PROJECT FOOTPRINT DEVELOPMENT PROCESS

The project footprint is defined as the boundary for planned permanent and temporary construction features (See Figure 9-3 HSR Environmental Resource Study Area—Project Centerline Dimensions and Applications), and forms the basis from which direct and indirect environmental effects are determined. Coordination of the project footprint with ROW acquisition and the environmental impact assessment and processes related to the design and construction of the project is essential to avoid rework of engineering and environmental tasks and project delays. The project footprint is initially developed by the regional consultant engineering team based on a preliminary 15% design. Once developed it is used by members of the regional consultant team as necessary to inform the environmental impact assessment, analysis, and permitting phases or tasks. As such, the development is a collaborative process that requires discussion of the basis for defining the construction limits and providing for changes as the project evolves.

For instance, the project footprint is evaluated by the ROW acquisition team, and adjusted to incorporate partial and full property takes, including temporary easements, property needed to restore severed access and remnant, economically damaged parcels, based on the temporary and permanent project impacts identified within the Project Footprint. The ROW adjustments to the footprint form the final project footprint which is then applied to Phase 1 Permitting.

The regional consultant environmental team uses the project footprint to assess permanent or temporary direct and indirect impacts on environmental resources, and to determine the extent of specific environmental resource study areas (a buffered area generated in GIS based on a predefined environmental resource study area distance from the edge of the Project Footprint or Project Alignment Centerline for each of the affected resources (see HSR Environmental Resource Study Area Based on Centerlines—Project Elements Definitions and Applications & HSR Environmental Resource Study Area Based on Project Footprint—Project Elements Definitions and Applications). For each resource category evaluated in the EIS/EIR document (e.g., biological resources, cultural resources, noise and vibration, safety and security, etc.), a discipline-specific environmental resource study area around the project footprint or project centerline is defined as the basis for defining the affected environment within which project impacts could occur. (Further definition of the project footprint and its relationship to environmental resource study areas and other key points of terminology can be found in version 5 of the *Environmental Methodology Guidelines, Appendix B: Environmental Resource Study Area Definitions*.)

8.1 Evolution of the Construction Footprint

The project footprint is developed and evolves through the following engineering phases:

- Alternatives Development Concepts
- Draft 15% Design
- Record Set 15% Design
- Record Set Drawings for EIR/EIS Volume III
- Preliminary Engineering for Procurement (PEP) Design (basis for Design/Build Contract Requests for Proposal)
- Bid Support
- Post-EIR/EIS or post-ROD Design Changes

At the start of each of these phases, there will usually be changes to the project footprint that may occur for reasons described below. As the project footprint changes throughout engineering design development, environmental impacts must be reassessed. If the project footprint increases substantially, additional environmental analysis—and possibly additional field studies—may be required. As a minimum, any change to the project footprint requires a verification and

recalculation of previously identified impact areas and associated effects (both permanent or temporary and direct or indirect).

Ideally, project footprint development and updates occur systematically by design phase, but changes may also occur in response to the following project considerations:

- **ROW Acquisition**—questions arise as to whether the project footprint can be optimized to facilitate property acquisition, (i.e., some partial takes may best be shown as full takes). Also the assessment of construction adjacent to streets and buildings may indicate larger property takes, therefore a wider project footprint that must be environmentally cleared. Instances where parcel driveways or access roads are severed by project construction may require additional project footprint to restore access.
- **Stakeholder Goals/Requirements**—as the program process refines the designs for the benefit of gaining stakeholder acceptance of the project, the project footprint may change.
- **Internal team (RC/DB/RDP) Design Development**—as the design for various facilities and systems are further defined throughout the project, footprint changes may occur in related disciplines (i.e., if a system site is relocated, a new or realigned access road may be needed).
- **New Design Direction**—the EMT may issue new or revised design guidance and criteria that affect the layout of project components, which in turn may affect the project footprint.
- **Litigation**—legal action may trigger redesign of project components.

8.2 Goal of the Project Footprint Development Process

The goal of the Project Footprint Development Process depicted in Figure 8-2 HSR Footprint Development Process is to help ensure that all known construction features are completely and accurately included in the project footprint at each stage of engineering development. This requires following a set of criteria for defining the footprint for each facility type and to also coordinate the design of all facilities (i.e., coordinate utility relocations with road widening). A second goal is to ensure that the key project managers are directly aware of the information contained in the footprint so that potential changes can be rapidly and thoroughly evaluated and that decisions to implement changes are well-informed.

8.3 Project Footprint Development Process

In the footprint development process workflow diagram, flow of information is shown as being developed by the engineering team, quality checked by a project footprint coordinator (typically a member of the engineering team), and then handed over to the GIS team, which converts engineering drawing line work into GIS feature classes that are stored in a geodatabase. This line work is composed of the alignment centerline (polyline) as well as all of the construction features (polygons) that have been identified as necessary to build and operate the project by the environmental, engineering, ROW, and RDP teams at 15% design. These construction feature types include:

- | | |
|------------------------------|-----------------------------------|
| ▪ Access Road | ▪ Pedestrian Bridge |
| ▪ Bridge Access | ▪ Petroleum Line Relocation |
| ▪ Railroad Yard Relocation | ▪ Radio Site |
| ▪ Canal Relocation | ▪ Remove Base and Surfacing |
| ▪ Construction Area | ▪ Roadway |
| ▪ Drainage Basin | ▪ Roadway Underpass |
| ▪ Freight Rail Relocation | ▪ Proposed Station Site |
| ▪ Heavy Maintenance Facility | ▪ Switching Station |
| ▪ Track ROW | ▪ Temporary Construction Easement |
| ▪ Interlocking Site | ▪ Traction Power Facility |

- Maintenance of Infrastructure
- Maintenance of Way Facility
- Natural Gas Line Relocation
- Paralleling Station
- Transmission Line Relocation
- Tunnel Portal
- Utility Easement
- Water Line Relocation

The line work developed by the engineering team for project alignment centerlines (can be 2D or 3D, depending on the level of engineering design being developed) are converted to a GIS polyline feature class and a topology check is performed by the GIS operator to verify that spatial symmetry and accurate geometry has been maintained.

The line work provided by the engineering team for project footprint compilation and assemblage into GIS polygon feature classes are also converted and the same topology check is performed and verified that that each polygon is being treated as a closed shape. Once these conversions and topology checks are performed, the GIS operator will begin the feature class attribution process, compiling and standardizing the construction feature types found within the GIS project footprint file, as listed above. These steps, as well as additional steps taken within the GIS environment, are also summarized below in Step 4. Additional steps include feature class migration into the GIS geodatabase, web service publication via ArcGIS for Server for dissemination of data to end users of the project footprint and alignment centerline.

At each stage quality assurance reviews will be conducted and documented to help ensure that the information is correct and complete and that the responsible managers are fully informed of the basis for the information.

Step 1—Initiating a request for Project Footprint (New or Changed)

The project footprint development process begins with the Alternatives Analysis phase. Elements considered new to each design phase can also be introduced throughout the project footprint development process. Planned updates of the project footprint are initiated by the Authority, RDP, Design Builder, or Regional Consultant. Once a project footprint change request is verified and authorized by the appropriate task manager, Engineering begins its development/revision process.

Step 2—Engineering Development and Checking

Engineering development usually begins with the track alignment, but may also be initiated with changes in roadways, systems, utilities, hydrology, ROW, etc. The engineering development process requires that the changes to all disciplines (engineering, environmental, etc.) be evaluated and captured in updated plan and profile drawings. These drawings may form the basis for a project footprint update. The Engineering team conducts a review process that identifies conflicts or changes which may affect other disciplines. It is important that new design or ROW changes that reconfigure the footprint are tightly coordinated with other potentially impacted disciplines. This process should be integrated across a multi-disciplinary project team.

Step 3—Engineering Manager Review

As the project footprint is a digital representation of the space required to construct the project and is initially created by the engineering team, all inputs to the footprint must be reviewed by the Section Manager and approved by the Engineering Manager prior to submission to GIS. This enables the Engineering Manager to inform the Environmental Manager of the reasoning and need for the construction improvements and to help assure that unplanned changes to the project footprint due to environmental constraints will be minimized. This protocol also enables a more reliable, quicker response to questions that may later arise about modifications made to the project footprint.

Adjustments to the engineering line work identified as a result of the engineering management review will be made and back-checked by the ROW manager before the line work is issued to the GIS Team.

Step 4—Conversion and Assembly of GIS Files

The project footprint is assembled by converting engineering drawing files (typically Microstation .dgn files) into GIS feature classes. Due the volume of project footprint changes that are introduced during the project footprint development lifecycle a data model or ETL (extract, transform, and load) tool like FME is highly recommended at this phase in order to automate the file format conversion and assembly workflow (between Microstation .dgn files and Esri GIS feature classes stored in a geodatabase). Additionally, topology, geometry, and attributes are checked for accuracy and consistency.

Once these quality assurance checks and processes have been successfully completed, the GIS project footprint feature class is uploaded and migrated into the project section's GIS geodatabase. Once the upload is completed, the Project team is notified that a new or updated project footprint is ready for review. If the GIS-based quality assurance checks identify any issues during the conversion and assembly phase, then the GIS manager will notify the engineering manager of the identified issues in order for them to be addressed by the appropriate engineering team members.

Step 5—Team Review Meeting

Once the GIS project footprint feature classes are assembled and both the engineering project footprint coordinator and GIS manager have completed the required QA/QC protocols, the completed draft GIS project footprint is ready for presentation and review. Members of the regional consultant project team conduct a Project Footprint Review Meeting. The RC Project Footprint Review Team Meeting serves to inform the RC Project Team leadership of how the project footprint is capturing the planned project along the entire alignment. The RC leadership team may elect to modify the project footprint in areas where there are newly identified constraints were or unresolved issues in order to guide the environmental studies to accommodate future changes. Certain areas of the project footprint may be reduced, in order to eliminate excessive environmental study work.

The RC Project Footprint Review Team Meeting includes:

- Project Manager
- Engineering Manager
- Environmental Manager
- Right of Way Manager
- Integration Manager
- GIS Manager
- QA Managers—Engineering and Environmental
- Engineering and/or Environmental Task Managers—dependent on issue or need

During or following the project footprint review team meeting, changes or revisions to the project footprint may be identified by the Engineering, Environmental, or ROW teams, and re-initiation of Step 1 above will be triggered.

This processes must be repeated for each project footprint revision to engineering information (i.e., any changes to the previously validated files must be approved by the Engineering, Footprint Coordinator, and GIS Manager).

Step 6—Environment Review

The Environmental Team will review the project footprint, with each resource discipline applying their required environmental resource study area to the project footprint or project centerline as defined in the Environmental Methodology Guidelines Document. This review may suggest further revisions to the project footprint before Environmental Impact Analysis Studies are commenced. If such revisions are agreed upon by the Management Team, they will be prior to use by the Environmental Team. In extreme cases, if there are unmitigable or avoidable adverse impacts identified in this step of the process, the alignment(s) may need to be revised.

Step 7—Footprint Used by the Environmental Team

The final step in the footprint development process is for the Environment Team to proceed with their work. Experience has shown that during this process, further detailed examination of the affected resources may lead to the need for alignment or other project footprint changes that were not identified in Step 6.

An additional project footprint review will occur as part of the Section 404 permitting process. This process examines and determines the project impacts on waters of the U.S. Also, the potential for minimization of impacts is assessed and order-of-magnitude costs associated with minimization efforts are estimated.

DRAFT

8.5 HSR Footprint Creation Workflow

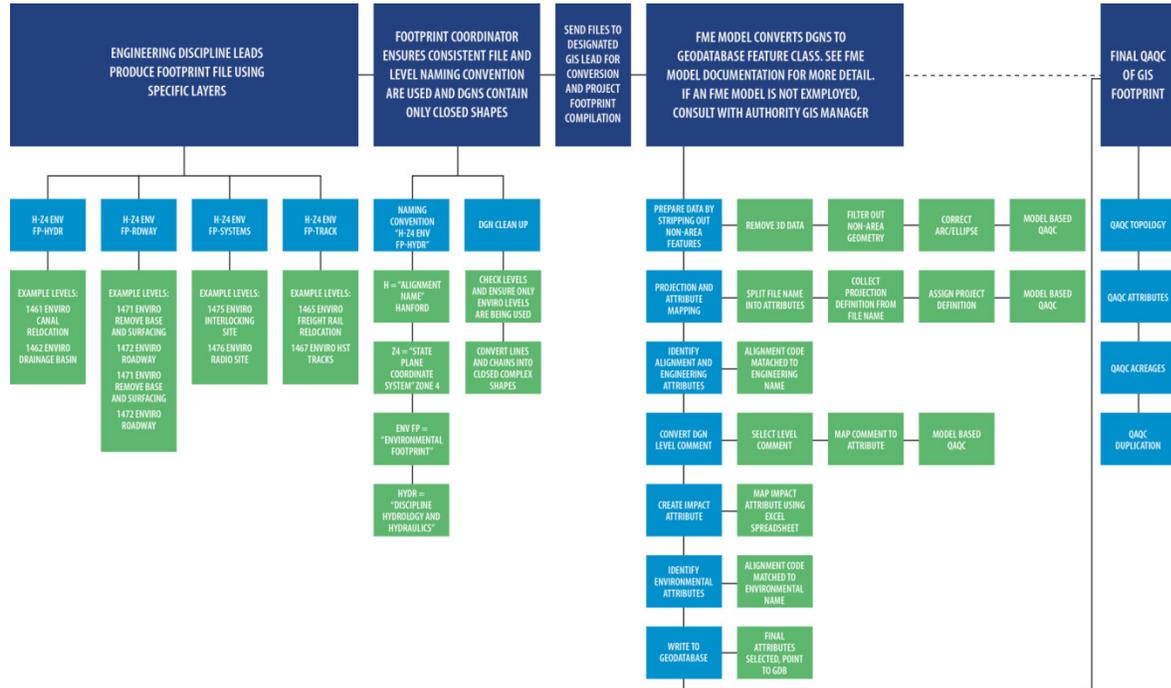


Figure 8-1 HSR Footprint Creation Workflow
Please refer to Appendix E for detailed graphic

8.7 HSR Footprint Development Process

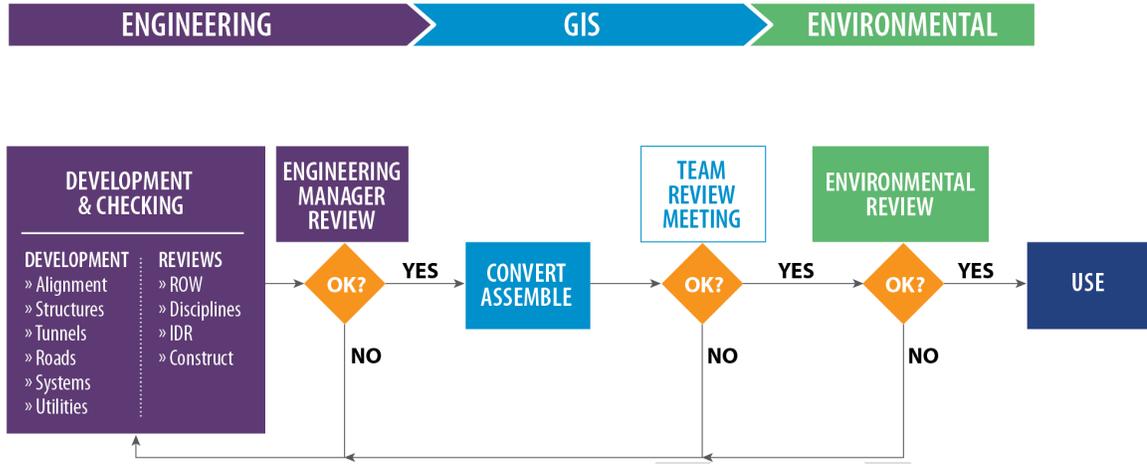


Figure 8-2 HSR Footprint Development Process

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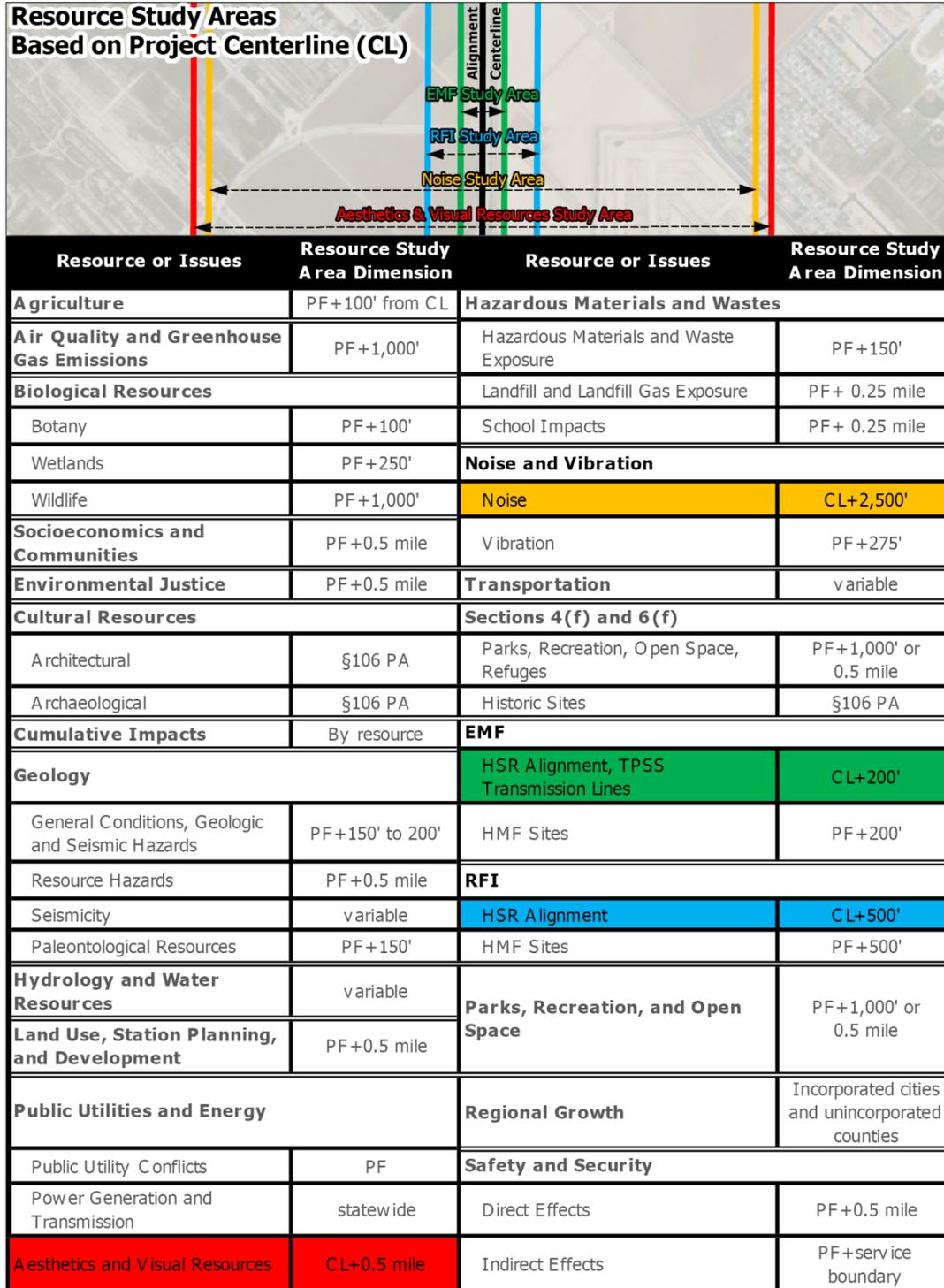
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9 PART IX—ENVIRONMENTAL RESOURCE STUDY AREA DEFINITIONS, DIMENSIONS, AND APPLICATIONS

The environmental resource study area definitions schematics are a tools used to determine the extent of project impacts. There are multiple impact types, both permanent and temporary, that require study and mitigation. Project impacts may be within the ROW, within a buffer around the alignment, or in offsite locations. See Figure 9-1 HSR Environmental Resource Study Area Based on Centerlines—Project Elements Definitions and Applications, Figure 9-2 HSR Environmental Resource Study Area Based on Project Footprint—Project Footprint Dimensions and Applications and Figure 9-3 HSR Environmental Resource Study Area—Project Centerline Dimensions and Applications. These schematics can assist the GIS practitioner in determining areas that warrant study for each impact type by environmental discipline.

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9.1 HSR Environmental Resource Study Area—Project Elements Definitions and Applications

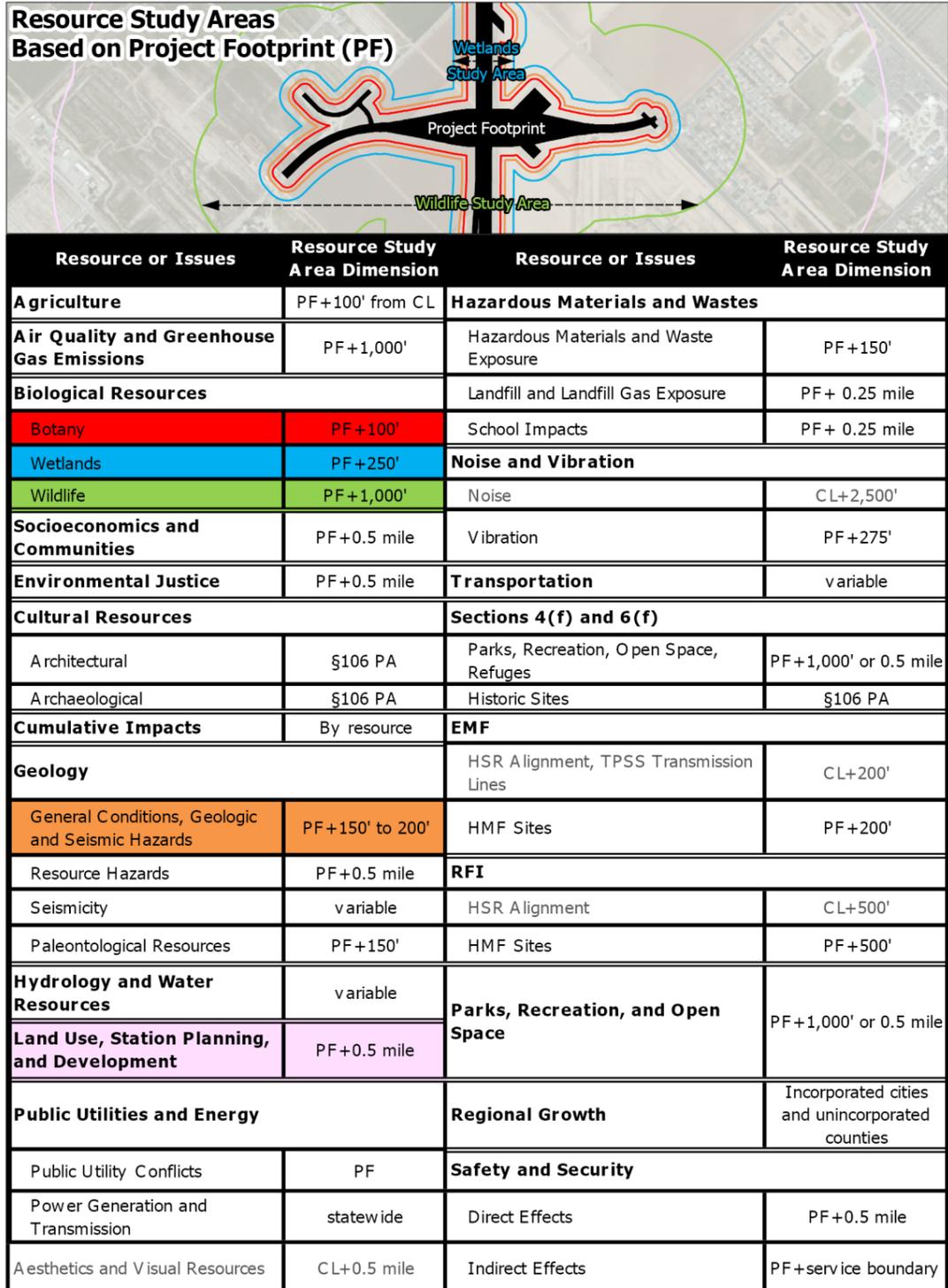


Note: Colors used in the table are coded to the example project alignment environmental resource study area dimensions used in figure at top. Please see additional notes found in the Environmental Methodology Guidelines, Version 5, Appendix B: Environmental Resource Study Area Definitions for each of the Environmental Resources or Issues listed in the table above.

Figure 9-1 HSR Environmental Resource Study Area Based on Centerlines—Project Elements Definitions and Applications

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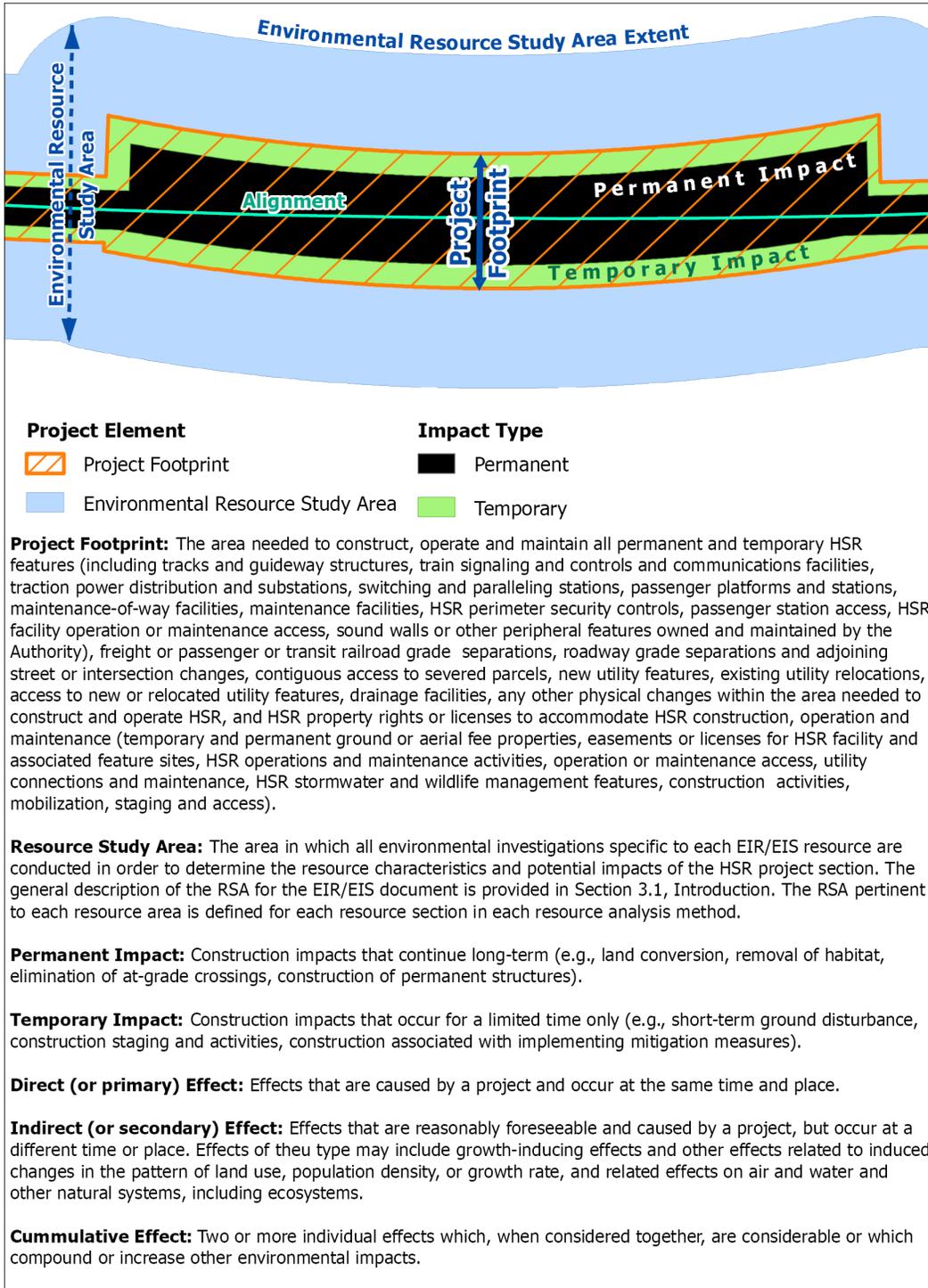
9.2 HSR Environmental Resource Study Area—Project Footprint Dimensions and Applications



Note: Colors used in the table are coded to the example project footprint environmental resource study area dimensions used in figure at top. Please see additional notes found in the Environmental Methodology Guidelines, Version 5, Appendix B: Environmental Resource Study Area Definitions for each of the Environmental Resources or Issues listed in the table above.

Figure 9-2 HSR Environmental Resource Study Area Based on Project Footprint—Project Footprint Dimensions and Applications

9.3 HSR Environmental Resource Study Area—Project Centerline Dimensions and Applications



Note: Definitions for Project Footprint, Resource Study Area, Permanent Impact, and Temporary Impact are referenced from the Environmental Methodology Guidelines, Version 5, Appendix B: Environmental Resource Study Area Definitions. Definitions for Direct, Temporary, and Cumulative Effects are referenced from: http://www.dot.ca.gov/ser/cumulative_guidance/ceqa_guidelines.htm

Figure 9-3 HSR Environmental Resource Study Area—Project Centerline Dimensions and Applications

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10 PART X—QUALITY ASSURANCE / QUALITY CONTROL CHECKLIST

The quality assurance (QA) plan and a corresponding Quality Control (QC) checklist is important in geospatial projects because it allows the project team to identify potential problems that may be encountered on a project. Once problems are identified, solutions are developed to work around or solve those problems before they become critical to timelines, budgets, or final product quality. Lack of planning and detailed knowledge about data needs can cost a project a great deal of time and effort. A carefully crafted QA project plan and QC checklist increases efficiency because they help ensure project elements are planned commensurate with the scope, magnitude, or importance of the project.

The HSR GIS Detail Check Report Checklist should be used to guide project teams in development of their own QC checklists suitable to the specific nature of their work and project sections.

A good QA plan and QC checklist is valuable to a geospatial project because the document fully describes the plans for the project in the following ways:

- It leads to a project with more transparency.
- It leads to better communication among the project team members.
- It leads to better results for the decision makers.
- It reduces the risk of schedule and budget overruns.
- It leads to a more defensible outcome than a project without proper planning documentation.
- It documents the criteria and assumptions for easy review and referral by anyone interested in the process.
- It uses a consistent format, making it easy for others to review the procedures and ensuring that individual steps are not overlooked in the planning phase.
- A project with a well-defined QA plan and QC checklist often takes less time and effort to complete than a project without these documents. Projects without these documents are more likely to need additional cost and time to correct or redo collection, analysis, or processing of environmental data. The savings resulting from good planning typically outweighs the time and effort spent to develop the QA plan and QC checklist. Poor quality planning often results in poor decisions.

A sound, quality-based geospatial QA plan and QC checklist generally:

1. Provides documentation of the outcome of the systematic planning process.
2. Are developed using a process designed to minimize errors.
3. Documents the standard operating procedures to be followed.
4. Documents the data sources, format, and status of the existing data to be used during the project.
5. Are frequently updated as new information becomes available or as changes in methodology are requested.
6. Provides for the documentation of any changes from the original plan.

The purpose of providing this guidance is to provide quality control and assurance procedures for GIS work products and data delivered by firms under contract with the HSRA.

1. Internal QA/QC reviews must be conducted for all maps and geospatial data delivered to the RDP or the Authority.
2. All reviews require a Detail Check Report (DCR). The DCR template and DCR Checklist associated with the QA/QC guidance found in this section.
3. Allow sufficient time for internal QA/QC review and necessary follow-up.
4. Inform your internal GIS/Task/Discipline Lead or Manager of GIS internal QA/QC review requirements.
5. Internal QA/QC review will include a dialogue between GIS staff and the reviewer to determine the steps necessary for approval (i.e., performing a back check against any markups/edits/comments provided and ensuring incorporation accordingly).
6. Maps
 - a. An assigned GIS practitioner should review maps.
 - b. **Draft review** will be performed before or concurrently with draft review by the GIS/Task/Discipline Lead or Manager. Draft maps must have a draft stamp indicating draft status.
 - c. **Final review** will be performed before delivery of the final product to the internal Project/Task Manager or other assigned project designee.
 - d. Paper copies of maps are required for internal review (PDF if larger than 11x17).
 - e. A group or series of maps for a single task may only require one DCR. Discuss the task with your GIS lead to determine review needs.
7. Geospatial data
 - a. An assigned GIS practitioner should review geospatial data; plan ahead
 - b. Only **final review** is required; **draft review** is encouraged
 - c. Only actual geospatial data (shapefiles, GDB, GRID, KML, etc.) delivered to the RDP or the Authority needs a DCR.
 - d. Tabular data being generated to support draft or final tables found in EIR documentation or technical reports need to have a Calculation Delivery Coversheet (CDP) completed.
 - e. If new data only appears on a map, then only a DCR for that map is required.
8. If the assigned GIS practitioner is unavailable to perform the review, then another GIS staff member may perform the final review. Note substitutions on the DCR.
9. Review by the GIS/Task/Discipline Lead or Manager is very important to assure map/data accuracy and appropriateness.
10. Completed DCR's must be scanned and saved in the project's GIS QA project file folder directory.
11. The GIS lead will keep the completed hard-copy DCR on file and easily accessible.
12. If you have any questions regarding calculation delivery procedures, contact Chris Bente, Supervising GIS Planner, HSRA RDP, 916-384-9978 or bentec@pbworld.com.

10.1 HSR GIS Calculation Delivery Cover Sheet

	
GIS Calculation Delivery Cover Sheet (Company & Location) GIS Team	
Date:	<i>X/X/2015</i>
Project:	<i>Project name</i>
Project number:	<i>Project number</i>
Requestor:	<i>Requestor's name</i>
Project manager:	<i>PM's name</i>
GIS originator:	<i>GIS staff that performed this analysis</i>
GIS project lead:	<i>GIS project lead's name</i>
GIS internal reviewer:	<i>Reviewer's name</i>
Date review completed:	<i>X/X/2015</i>
<i>Note: This is a GIS internal review of the data presented herein. Standard (fill in with company name) review (e.g., Detail Check) of any modification of the data beyond what is presented herein is the responsibility of the Requestor/Project Manager.</i>	
Brief description of analysis:	<i>Description</i>
Number of sheets:	<i>1</i>
Reference MXD:	<i>MXD containing data layers used</i>
Primary layer(s) used:	<i>Layer name including path</i>

Figure 10-1 HSR GIS Calculation Delivery Cover Sheet

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10.2 HSR GIS Calculation Procedures



(Company & Location) GIS Team · Calculation Delivery Procedures
Version 1 May 2015

1. All GIS-based calculations (i.e., results of analysis for project deliverable) must be delivered in a Calculation Delivery Package (CDP) using the template *HSR_GIS_Calculation_Delivery_vX.xls*.
2. Any GIS Team staff member can conduct internal review of a CDP.
3. All fields on the CDP Cover Sheet must be filled-in prior to delivery to the Project/Task Manager.
4. HSR GIS Internal Review Form is not needed for calculation review; the name of the reviewer and review completion date are indicated on the CDP.
5. Completed CDPs are to be kept in a project's "QA" folder.
6. Inform Project/Task Managers of CDP requirements.
7. The reference MXD indicated in the CDP should contain the layers vital to deriving the calculations.
8. **Important:** GIS internal review of the CDP applies only to the data as it appears in the CDP. Standard review (e.g., Detail Check) of any further modification of the data beyond what is presented in the CDP is the sole responsibility of the original requestor/Project Manager. Your organization may have additional GIS review procedures for GIS data deliverables. Please consult with original requestor/Project Manager or Quality Control lead within your organization for additional procedures or protocols specific to your organization that must be maintained or adhered to.
9. If you have any questions regarding calculation delivery procedures, please contact Chris Bente, Supervising GIS Planner, High-Speed Rail Authority Program Management Team, 916-384-9978 or bentec@pbworld.com.

Guidelines for formatting GIS-based calculations within a CDP:

- A. All values must be "hardwired," i.e., no embedded formulas or pivots (exceptions on a case-by-case basis).
- B. Only include the values requested by the requestor or that you think may be useful to the requestor. Consult with requestor as necessary in order to define output.
- C. Column and row headings must be clearly titled and include an indication of units when areas or lengths are being required in the output (e.g., feet, meters, acres).
- D. Make sure all calculated geometries are current.
- E. Make sure that the layer being used to calculate geometries is using a projected coordinate system.
- F. Format fields so no more than three decimal places are visible.
- G. For area measurements in acres, actual values (not just display) are to be at two decimal places and total-up properly. To do this, use a rounding function to hardwire values in either ArcGIS or Excel.

Figure 10-2 HSR GIS Calculation Procedures

10.3 HSR GIS Detail Check Report Checklist



HSR *Insert Project Section Name Here* GIS Data Deliverable QA/QC Checklist

Deliverable (Name)

Reviewer (FirstName LastName)

Date (mm/dd/yyyy)

Figure:

- Fonts
 - Arial font family is used globally
 - No graphic annotation over data frame
- Legend
 - Centered below data frame
 - Does not include the word "Legend"
- Symbology is correct, clear, and matches legend
- Date last revised is accurate
- MXD name must contain figure # and figure name
- Path name on map is white and is located correctly (bottom left side of figure)
- Coordinate system is correct and based on defined project section state plane zone, units in feet
- Figure header is accurate and present
- Tag Lines
 - Should be dynamic
 - NO initials and NO dates
 - Should have relative path name, not UNC path
 - Check that tagline matches MXD name
- All logos are embedded in MXD
- Editorial comments remain outside Layout Frame for all maps. Red text is acceptable
- Nothing is selected in the MXD
- Relative path name checkbox
- Map Document Properties
 - Title
 - Summary
 - Author
 - Relative pathname to data sources is checked
- Insure all base data is present, accounted for and the right version
 - Be sure to check layer groups
- Project data is present, accounted for and the right version
 - Be sure to check layer groups
- Check for broken Links
- Check for unused graphic Annotation groups within data frame properties
- Check MXD against PDF.
- Check there are no open dialog boxes
- Check data frame is not focused
- Check all layers in TOC are collapsed

Figure 10-3 HSR GIS Detail Check Report Checklist

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10.4 HSR GIS Detail Check Report



CALIFORNIA
High-Speed Rail Authority

(Company & Location) GIS Team · Detail Check Report

GIS Team staff: _____

Map(s) – title: _____

Geospatial data – name/type: _____

Task name: _____

Task/Project Manager: _____

Draft review	Initial _____	Date _____
Final review	Initial _____	Date _____

COMPLETED INTERNAL REVIEW FORM MUST BE SCANNED & KEPT IN PROJECT'S GIS QA DIRECTORY
ORIGINAL TO BE KEPT ON FILE BY PROJECT'S GIS LEAD



CALIFORNIA
High-Speed Rail Authority

(Company & Location) GIS Team · Detail Check Report

GIS Team staff: _____

Map(s) – title: _____

Geospatial data – name/type: _____

Task name: _____

Task/Project Manager: _____

Draft review	Initial _____	Date _____
Final review	Initial _____	Date _____

COMPLETED INTERNAL REVIEW FORM MUST BE SCANNED & KEPT IN PROJECT'S GIS QA DIRECTORY
ORIGINAL TO BE KEPT ON FILE BY PROJECT'S GIS LEAD

Figure 10-4 HSR GIS Detail Check Report

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11 PART XI—GIS DATA SUBMITTALS

Vendors under contract with the Authority shall submit GIS data to the Authority and the RDP at defined project milestones so that the Authority will have GIS records representing discrete moments in the project lifecycle. Timing for submittals may vary depending on variables specific to the project segment or phase of work. Generally, the timing of GIS submittals will coincide with the tasks identified in the Annual Work Plan (AWP), and may be consistent with the engineering-based Bentley MicroStation design (.dgn) delivery milestones.

The following GIS submittals are intended to provide a snapshot in time.

- Alternatives Analysis (AA)
- Draft Environmental Impact Report/Statement (EIR/EIS)
- Final Environmental Impact Report/Statement (EIR/EIS). This GIS data will be considered the Administrative Record.
- Supplemental/Subsequent EIR/EIS

The GIS submittals for the following activities are dynamic and will require multiple GIS deliveries to the Authority/RDP as data is updated to reflect changing conditions.

- Permission to Enter (PTE)
- Right-of-Way (ROW)
- Permitting Applications (PA)

Each GIS Tasks submittal will include all relevant and applicable GIS deliverables. Deliverables will include complete metadata consistent with the standards described in this document. Deliverables may also include the following.

- Spatial Analyses / Tabular Results
- Map Exhibits
- Models
- Workflow Diagrams
- Geodatabases

Upon contract closeout, it will be necessary for all firms under contract with the High-Speed Rail Authority to identify the following GIS datasets, items, and documentation developed to support various aspects of the Project in order to facilitate and successfully transition Program GIS data assets to the RDP and/or another consultant.

- All GIS data (vector, raster, and tabular) acquired or synthesized to support draft or final report and task deliverables. A geodatabase is the Authority's preferred container for GIS feature class data and should be used to deliver geospatial assets to the Authority.
- All map documents (MXD's) generated to support draft or final report and task deliverables.
- Aerial/Satellite Imagery (including historic); purchased for the project or processed as an imagery derivative for use in ArcGIS Desktop.
- Digital Terrain Models, LiDAR, or GIS contour data; purchased for the project or processed as a data derivative for use in ArcGIS Desktop.
- Existing Railroad Track Charts (generally used to establish existing railroad right of way) and any vector data derivatives for use in ArcGIS Desktop.
- 7.5 minute (or greater) USGS Quadrangle Maps; include any original CHRIS (California Historical Resources Information System) maps and any vector data derivatives for use in ArcGIS Desktop.

- Data models, scripts (python, ModelBuilder, or other), expressions, queries, FME models, custom calculations, style files, fonts, cartographic conventions, templates, or custom workflows generated to support the project.
- Visual diagram of the GIS file directory structure and database schema. See Figure 11-1 for a representative example of what this should look like.
- Narrative description or visual aid illustrating the GIS-based file naming convention employed. See Figure 3-1 in this document for additional reference and preferred Program GIS Naming Convention Standard to employ.
- A GIS data source list (if not already included in the metadata for each feature class).
- The ESRI Item Description Standard Metadata Template (at minimum) should be used and completed for each feature class prior to closeout or transfer. Complete the Summary, Description (Abstract), Credits (Source & Vintage), Use Limitations, and any known Constraints (e.g., spatial data resolution and/or fidelity).
- Any additional metadata specific to county land use codes, zoning, utilities, permission to enter, etc. that is not readily identifiable in the native files.
- A "ReadMe" or "StartHere" file introducing the inheritor of these files to its contents This should provide a general overview of what's included in the GIS deliverable, the structure, content locations, and whom to contact for questions. See Figure 10-3 for a representative example of what this should look like.

11.1 Python Script Functionality and Use

The Authority and RDP GIS Team realized that not all firms under contract with the Authority will manage the Program's GIS data resources and assets in the same way. Due to the nature and extent of this Program, GIS operators may exist across multiple firms doing work under one contract for a single project section. This can create a decentralized GIS data management structure, which will require additional coordination between those firms where GIS production is occurring, the Authority, and the RDP. Especially critical is the coordination that must occur before, during, and after contract closeout in order to efficiently identify, compile, and transmit all GIS data assets synthesized or generated to support deliverables per scopes of work found in the AWP. The following python scripts were developed in order to automate the movement of data across a decentralized network and to facilitate QA/QC as the data was being transferred to a centralized location in preparation for a GIS data deliverable closeout or transfer of assets. The python scripts referenced below are available on ProjectWise in the [GIS Portal](#) on SharePoint.

The following scripts as the foundation or jumping point in order customize the GIS data deliverable closeout may be used to process specific to the internal functions of your organization. Note that this process begins with identifying all map exchange documents (mxd) that are relevant to the GIS closeout and transition process. The mxd identification process may require further investigation with help from discipline specific subject matter experts, depending on the specifics of the data being closed out and delivered or how well managed the Program's GIS data assets are implemented and maintained.

Step 1—Relevant mxds are Identified and Checked

All relevant mxds are identified and the data contained in the mxds are checked for broken links using the **Identify Broken Links and Copy Files.py** script. If it finds any broken links it copies them to a new location. This enables the user to keep track of any missing data.

Step 2—The mxds are Copied

The mxds are copied to a GIS Closeout directory and a list of all the data sources contained in the mxds are generated using the **MXDs and Data Sources.py** script. The output spreadsheet can form the bases for a separate tracking mechanism that links all transferred mxds and data generated to support an EIR document by figure reference.

Step 3—Duplicate Records are Removed

The resulting spreadsheet is culled to remove duplicate records and used to copy the remaining features to the closeout geodatabase using the **Copy MXD Data Sources to Specified Location.py** script. This step has the added functionality of renaming feature classes, as needed, with a standardized naming convention.

Step 4—The mxds are relinked

After moving the data to the closeout database the aforementioned mxds are relinked to the Closeout Geodatabase (GDB) using the **Update Data Sources.py** script. The **Update Data Sources.py** script also set all mxds to use relative pathways, allowing the data to be transferred without breaking links within the mxds.

Step 5—Script is Used to Check for Broken Links

The **Confirm Links and Sources.py** script is used to check for broken links within the Closeout directory. This is treated as a QA/QC step to ensure that steps employed earlier were completed correctly.

The process outlined above will allow the GIS team to largely automate the consolidation of GIS data across several offices (especially if working in a decentralized fashion) for the purpose of delivering concise, high-quality, and functional GIS data assets to the RDP and CHSRA while adhering to the Program’s GIS standards for data delivery. Below is further description of each python script’s functionality and usage.

1. **Identify Broken Links and Copy Files.py:** The broken links function is inserted into this script; it searches for the broken link files in the directory or directories specified, if it finds them, it copies them to a new location. This enables the user to keep track of any missing data.
2. **MXDs and Data Sources.py:** Reports all the data sources for all mxds in the specified directory/directories. This script also reports the number of mxds and number of unique feature classes. This is an accounting script that keeps track of the final data deliverable. This script will also output a table of its results, which is then used to generate an excel file to track GIS feature class data back to any mxd, for future reference purposes.
3. **Copy MXD Data Sources to Specified Location.py:** Copies all valid linked data sources in the mxds in the specified directory or directories to a new location (gdb), also deals with renaming files that begin with numeric characters (since geodatabase can’t support this). This script is used to begin the data migration process.
4. **Update Data Sources.py:** Updates the data sources for all mxds in the specified directory or directories to point to the new location, also sets the mxd paths to relative. This script is used to relink mxds that have been moved to a centralized location with data that has also been moved to a centralized location.
5. **Confirm Links and Sources.py:** This script is a function that iterates through a specified directory, searches all mxds and comes up with a list of unique broken links. This Script can be used as a QA/QC tool. Broken links are fixed before data transfer and this script is used after transfer to insure all relevant data was captured before data is transmitted.

- Raster data processed, generated, or synthesized by the Regional Consultant is located here: \Layers\HSR_FB_GIS_Rasters.gdb. This is a 10.1 version geodatabase.
- A KMZ file of the Alignment and Footprint generated to support the Final Fresno to Bakersfield EIR document is located here: \Layers\KMZ\HSR FB—FEIR Alignment and Footprint 20140130.kmz
- GIS based models generated to automate workflows and to support various environmental, alternative analysis, or engineering based disciplines are located here: E:\Documentation\Models
- Tabular data generated to support various environmental, alternative analyses, or engineering based disciplines are located here: \Tables
- Metadata has been included for all GIS feature class contained within this deliverable. Access to this metadata is provided by ArcGIS for Desktop's Item Description function or within ArcCatalog by clicking on the Description tab. Metadata has also been provided on specific topics such as utilities (points of contact, etc.), land use (county land use codes), PTE methodology, and wells (Division of Oil, Gas, and Geothermal Resources, Districts 4 & 5 [DOGGR; www.conservation.ca.gov/dog/Pages/Index.aspx]). The metadata for non GIS feature class data (the latter described above) is located here: \Documentation\Metadata
- Environmental Footprint category definitions can be found by referencing the following document located here: \Documentation\Data_Models\HSR FB—Footprint Category Definitions.xlsx
- An overview of the Environmental Footprint Creation Workflow is located here: \Documentation\Workflows\HSR FB—Footprint Creation Workflow.pdf
- An overview of the Feature Manipulation Engine [FME] tool employed to generate the FB Project Section FEIR Footprint is located here: \Documentation\Workflows\HSR FB—FME Model.pdf
- Step by step guides documenting the FME models used to convert the alignment and footprint DGN's to GIS feature classes while maintaining necessary attributes used to support the environmental analysis process can be referenced here: \Documentation\Workflows\HSR FB—FME Workflow Alignment.docx and here: \Documentation\Workflows\HSR FB—FME Workflow Footprint.docx
- NOTICE OF DISCLAIMER:

The URS/HMM/Arup Joint Venture (Joint Venture) makes these files or documents available on an “as is” basis. The Joint Venture makes no warranties or representations of any kind with regard to these files or documents for any specific or general use. Any use of any kind and/or changes to these files or documents will be at the sole risk of the user and without liability, risk, or legal exposure to Joint Venture. Any person or entity using these files or documents agrees to release and, to the fullest extent permitted by law, defend and indemnify Joint Venture, its shareholders, agents, officers, directors and employees from and against any and all claims, demands, losses, expenses, damages, penalties, and liabilities of any kind, including, without limitation attorneys' fees, arising out of or relating in any way to any such use of or change to these files or documents. The use of any of these files or documents for work which is under contract or agreement with the Joint Venture, does not relieve the contractor or consultant from any obligations assumed by the contract or agreement, or from complete and proper fulfillment of the terms of the contract or agreement, nor does it entitle the contractor or consultant to compensation for damages or loss which could be attributed to such use.

- For any questions or additional clarification about the data or contents found herein, contact:

Name (first and last name of preparer)

Title (aka GIS Manager)

Company

Address

Phone number

Email

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12 PART XII—BENEFIT OF GIS TO AN ORGANIZATION

GIS is an essential tool for internal and external stakeholders, including partner agencies, and the general public. When developing GIS data, it is important to consider the needs of each functional unit, partner agencies, and the public. It should be understood early on what each of these stakeholders need GIS data to do for them and what information needs to be communicated. It should be organized and displayed in an easily understandable way. Careful thought about GIS data early can promote easier understanding of the data and reduce misunderstandings.

Management	Management needs GIS data to aid in making high level and political decisions about the HSR program. They use GIS data to inform elected and appointed leaders at all levels of government.
Legal	Legal staff has requested GIS data as part of the administrative record request in lawsuit situations. GIS data behind each map must be stored in a way to make it easy to understand to the prosecuting attorney. It shows how geospatial information is used for informed decision making. Authority and consultant staff must be careful to differentiate the exact data at the time of publication. Incomplete data can portray an inaccurate picture.
Planners	GIS is an analytical and mapping tool which helps planners to make informed decision making at various levels. It informs local and state agencies, as well as the public in areas of project planning, impact analysis, and station area planning. GIS helps with analyzing connectivity to and from stations. It also helps in the analysis of public and private development and investment potential in areas around or affected by HSR stations.
Engineers	Engineers record work done by the regional consultants and the design build contractors. Engineers look at route alignment, sensitive areas to avoid, project mitigation, right of way information, and general project design information.
Regional Consultants (RC)	Regional Consultants discovers, tracks, and develops data sets on project alternatives analysis, including environmental analysis. The maps created as a result of this effort support environmental analysis, engineering, right-of-way, and public outreach. Regional Consultants communicate with Authority and RDP staff.
Design Build (DB) Contractors	GIS helps Design Build Contractors to make more informed project level decisions. It help the contractor understand the findings of the regional consultants, shows where sensitive areas are located such as to predict, identify, and avoid utility conflicts and to assist with associated relocation. GIS also is used to identify environmental boundaries and to provide the contractor with right of way information. GIS data also helps with identifying the location of elements in as-built plans.
Other State agencies	GIS data enables efficient data sharing and communication between state agencies. These agencies can make more informed decisions about subject matter under their purview as affected by the HSR project.
Federal Agencies	GIS data enables efficient data sharing and communication between federal agencies. These agencies can make more informed decisions about subject matter under their purview as affected by the HSR project.
Local Agencies	GIS enables efficient data sharing and communication. Local agencies can make more informed decisions about subject matter under their purview as affected by the HSR project.
Right-of-Way Agents	GIS data identifies the location of and attribute information about parcels. Agents inform affected or potentially affected individuals, partner agencies, and the media of impacts to public and private infrastructure.

Environmental Planners / Scientists	Environmental planners and scientists identify, track, and record attribute information about mitigation measures, sensitive locations, endangered species, polluted, and/or otherwise hazardous areas. They also track location and impacts of other areas of concern and their implications to the HSR program.
Public	Keeping the public informed is essential to the success of the HSR program. Many community organizations request GIS data from the Authority. Providing project and programmatic level information along with providing information for academic research and study keeps needed transparency of the HSR project and of the Authority. Web mapping services are an effective way to display program data. GIS data helps the Authority manage information and avoid misinformation.
Media/ Press	Keeping the media informed is also essential to the success of the HSR program. GIS data should provide project and programmatic level information to ensure freedom of press and the public's right to know how their money is being spent and how their state government is functioning. The GIS data needs to be easily understood to keep needed transparency of the HSR program and of the Authority. GIS helps the Authority manage information avoid misinformation. Web mapping services are an effective way to display program data. GIS data can also help the Authority to comply with California Public Records Act requests.

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13 GLOSSARY OF TERMS

Abstract—A brief written statement that summarizes and concentrates the characteristics and purpose of data or a dataset.

Aerial Structure—Trackway section placed on a structure, other than a culvert, which spans above earthen, paved, or water surfaces including roadways, railroads, and water channels. It can also be called an elevated guideway.

Albers Conical Equal Area Projection—A conic, equal area map projection that uses two standard parallels. Distortion is minimal between the standard parallels. This preserves area measure, but causes distortion of scale and shape.

Alternatives Analysis (AA)—A process and subsequent document used to screen project-level alignment options in order to determine which alternatives merit detailed study in project-level environmental documents for each section of the California High-Speed Rail system.

Attribute—Non-spatial information about a geographic feature in a GIS, usually stored in a table and linked to the feature by a unique identifier. For example, attributes of a river might include its name, length, and sediment load at a gauging station.

Authoritative Data Source—The repository or system that contains the data and attributes about a feature that are considered to be the primary source for this information. If two data sources have mismatched information, the authoritative data source is used as the most correct.

Authority—See California High Speed Rail Authority.

Ballasted Track—Track constructed with ties supported by and normally embedded in ballast.

CAD—Acronym for Computer-Aided Design. It is a software used by architects, engineers, drafters, artists, and others to create precision or technical illustrations. CAD software can be used to create two-dimensional (2-D) drawings or three-dimensional (3-D) models.

California High-Speed Rail Authority (CAHSRA)—The California State Authority responsible for planning, designing, building, and operation of the first high-speed rail system in the nation.

California Teale-Albers Equal-Area Projection—An adaptation of the Albers Conical Equal Area projection that is optimized for area calculations in California. Coordinate values are in meters from the origin point of the projection (0,0) near the center of the state and divides California into four quadrants.

California UTM (UTM 10.5)—A UTM projection appropriate for most of California, especially when mapping large portions or the entire state. (See entry for UTM).

Coordinate System—A reference framework consisting of a set of points, lines, and/or surfaces, and a set of rules, used to define the positions of points in space in either two or three dimensions.

Data—Any collection of related facts arranged in a particular format; often, the basic elements of information that are produced, stored, or processed by a computer.

Database—One or more structured sets of persistent data, managed and stored as a unit and generally associated with software to update and query the data. A simple database might be a single file with many records, each of which references the same set of fields. A GIS database includes data about the spatial locations and shapes of geographic features recorded as points, lines, areas, pixels, grid cells, or TINs, as well as their attributes.

Data Format—A standard way that geographical information is encoded for storage in a computer file.

Dataset—Any collection of related data usually grouped or stored together.

Datum—The reference specifications of a measurement system, usually a system of coordinate positions on a surface (a horizontal datum) or heights above or below a surface (a vertical datum).

Esri—Esri is an international supplier of GIS software, web GIS, and geodatabase management applications, headquartered in Redlands, California. It is originally an acronym for Environmental Systems Research Institute.

Feature Class—A collection of geographic features with the same geometry type (such as point, line, polygon), the same attributes, and the same spatial reference. Feature classes allow homogeneous features to be grouped into a single unit for data storage purposes. For example, highways, primary roads, and secondary roads can be grouped into a line feature class named “roads.” In a geodatabase, feature classes can also store annotation and dimensions. ArcGIS data layers are called feature classes when contained within a geodatabase.

FGDC—Acronym for *Federal Geographic Data Committee*. An organization established by the United States Federal Office of Management and Budget responsible for coordinating development, use, sharing, and dissemination of surveying, mapping, and related spatial data. The committee is comprised of representatives from federal and state government agencies, academia, and the private sector. The FGDC defines spatial data metadata standards for the United States in its Content Design for Digital Geospatial Metadata and manages the development of the National Spatial Data Infrastructure (NSDI).

Field—A column in a table that stores the values for a single attribute. Also, the place in a database record where data can be entered.

Format—In computing, the structure and organization of digital information.

ISO—Abbreviation for *International Organization for Standardization*. A federation of national standards institutes from 145 countries that works with international organizations, governments, industries, businesses, and consumer representatives to define and maintain criteria for international standards.

Geodatabase—A common data storage and management framework used in GIS applications to create a central data repository for spatial data storage and management.

Geodesy—The science of measuring and representing the shape and size of the earth, and the study of its gravitational and magnetic fields.

Geoid—A model of global mean sea level that is used to measure precise surface elevations.

Geospatial—Data that has a geographical or some other spatial aspect.

GIS—Acronym for *Geographic Information System*. An integrated collection of computer software and data used to view and manage information about geographic places, analyze spatial relationships, and model spatial processes. A GIS provides a framework for gathering and organizing spatial data and related information so that it can be displayed and analyzed.

GIS Manager—A person designated as a central point to contact for all GIS related activities associated the HSR project. The GIS manager is responsible for ensuring standards are upheld, assisting GIS users, provide GIS products as needed, and performs the general day to day oversight of the Authority’s GIS program.

Graticule—A network of longitude and latitude lines on a map or chart that relates points on a map to their true locations on the earth.

GRS80—Acronym for *Geodetic Reference System of 1980*. This is the standard measurements of the earth’s shape and size adopted by the International Union of Geodesy and Geophysics in 1979.

Hydrography—The measurement and description of water features and their related land areas for the purpose of safe marine navigation.

Latitude—The angular distance, usually measured in degrees north or south of the equator. Lines of latitude are also referred to as parallels.

Lidar—Acronym for *Light Detection and Ranging*, or a combination of *Light + Radar*. A remote-sensing technique that uses lasers to measure distances to reflective surfaces.

Lineage—A collection of states representing the changes that have occurred over time in a versioned geodatabase.

Longitude—The angular distance, usually expressed in degrees, minutes, and seconds, of the location of a point on the earth's surface east or west of an arbitrarily defined meridian (usually the Greenwich prime meridian). All lines of longitude are great circles that intersect the equator and pass through the North and South Poles.

Map—A graphic representation of the spatial relationships of entities within an area. Any graphical representation of geographic or spatial information.

Metadata—Information that describes the content, quality, condition, origin, and other characteristics of data or other pieces of information. Metadata for spatial data may describe and document its subject matter; how, when, and by whom the data was collected; availability and distribution information; its projection, scale, resolution, and accuracy; and its reliability with regard to some standard. Metadata consists of properties and documentation. Properties are derived from the data source (for example, the coordinate system and projection of the data), while documentation is entered by a person (for example, keywords used to describe the data).

MicroStation—A CAD software product for two and three dimensional design and drafting, developed and sold by Bentley Systems.

NAD27—Acronym for *North American Datum of 1927*. The primary local horizontal geodetic datum and geographic coordinate system used to map the United States during the middle part of the twentieth century. NAD27 is referenced to the Clarke spheroid of 1866 and an origin point at Meades Ranch, Kansas. Features on USGS topographic maps, including the corners of 7.5-minute quadrangle maps, are referenced to NAD27. It is gradually being replaced by the North American Datum of 1983.

NAD83—Acronym for *North American Datum of 1983*. A geocentric datum and graphic coordinate system based on the Geodetic Reference System of 1980 ellipsoid (GRS80). Mainly used in North America, its measurements are obtained from both terrestrial and satellite data.

NAVD88—Acronym for North American Vertical Datum of 1988. It is the vertical datum of orthometric height established for vertical control surveying in the United States. Most lidar data references NAVD88. See lidar.

North Arrow—A map symbol that shows the direction of north on a map, thereby showing how the map is oriented.

Parcel—A piece of unit or land, defined by a series of measured straight or curved lines that connect to form a polygon.

Program—The California High-Speed Rail Program that is responsible for planning, designing, building, and operation of the first high-speed rail system in the nation.

Projection—A method by which the curved surface of the earth is portrayed on a flat surface. This generally requires a systematic mathematical transformation of the earth's graticule of lines of longitude and latitude onto a plane. Some projections can be visualized as a transparent globe with a light bulb at its center (though not all projections emanate from the globe's center) casting lines of latitude and longitude onto a sheet of paper. Generally, the paper is either flat and placed tangent to the globe (a planar or azimuthal projection) or formed into a cone or cylinder and placed over the globe (cylindrical and conical projections). Every map projection distorts distance, area, shape, direction, or some combination thereof.

Raster—A spatial data model that defines space as an array of equally sized cells arranged in rows and columns, and composed of single or multiple bands. Each cell contains an attribute value and location coordinates. Unlike a vector structure, which stores coordinates explicitly, raster coordinates are contained in the ordering of the matrix. Groups of cells that share the same value represent the same type of geographic feature.

Record—A set of related data fields, often in a row in a database or a table, containing all the attribute values for a single feature. For example, in an address database, the fields that together provide the address for a specific individual comprise one record.

Retained Cut—Trackway section where tracks are placed uncovered, below existing ground level and where adjacent soil is supported with retaining walls above top of rail elevation.

Retained Fill—Trackway section where tracks are placed on embankment material contained by retaining walls above existing ground.

Right of Way—The legal right to pass along a specific route over a piece of land.

Scale—The ratio or relationship between a distance or area on a map and the corresponding distance or area on the ground, commonly expressed as a fraction or ratio. A map scale of 1/100,000 means that one unit of measure on the map equals 100,000 of the same unit on the earth.

Shapefile—A vector data storage format for storing the location, shape, and attributes of geographic features. A shapefile is stored in a set of related files and contains one feature class.

SIMM—Acronym for *Statewide Information Management Manual*. It contains standards, instructions, forms, and templates that California State agencies **must use** to comply with Information Technology (IT) policy.

Spheroid—When used to represent the earth, a three-dimensional shape obtained by rotating an ellipse about its minor axis, with dimensions that either approximate the earth as a whole, or with a part that approximates the corresponding portion of the geoid.

Standard—A rule or guide set up and established by an authority as a model or example that facilitates the development, sharing, and use of geospatial data.

State Plane Coordinate System—A group of planar coordinate systems based on the division of the United States into more than 130 zones to minimize distortion caused by map projections. Each zone has its own map projection and parameters and uses either the NAD27 or NAD83 horizontal datum. The Lambert conformal conic projection is used for states that extend mostly east-west, while the transverse Mercator is used for those that extend mostly north-south.

Symbology—The set of conventions, rules, or encoding systems that define how geographic features are represented with symbols on a map. A characteristic of a map feature may influence the size, color, and shape of the symbol used.

Table—A set of data elements arranged in rows and columns. Each row represents a single record. Each column represents a field of the record. Rows and columns intersect to form cells, which contain a specific value for one field in a record. A table stores attribute data.

Template—A document that has the basic format of something (such as a chart, graph, table, etc.) and that can be used many different times. It is something used as an example for how to do, make, or achieve something.

Topography—The study and mapping of land surfaces, including relief (relative positions and elevations) and the position of natural and constructed features.

URL—Acronym for *Uniform Resource Locator*. It is a standard format for the addresses of Web sites.

UTM—Acronym for *Universal Transverse Mercator*. A projected coordinate system that divides the world into 60 north and south zones, each six degrees wide.

Vector Data—A coordinate-based data model that represents geographic features as points, lines, and polygons. Each point feature is represented as a single coordinate pair, while line and polygon features are represented as ordered lists of vertices. Attributes are associated with each vector features, as opposed to a raster data model, which associates attributes with grid cells.

WGS84—Acronym for *World Geodetic System of 1984*. The most widely used geocentric datum and geographic coordinate system today, designed by the U.S. Department of Defense to replace WGS72. GPS measurements are based on WGS84

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Appendix A—GIS Figure Template Standards

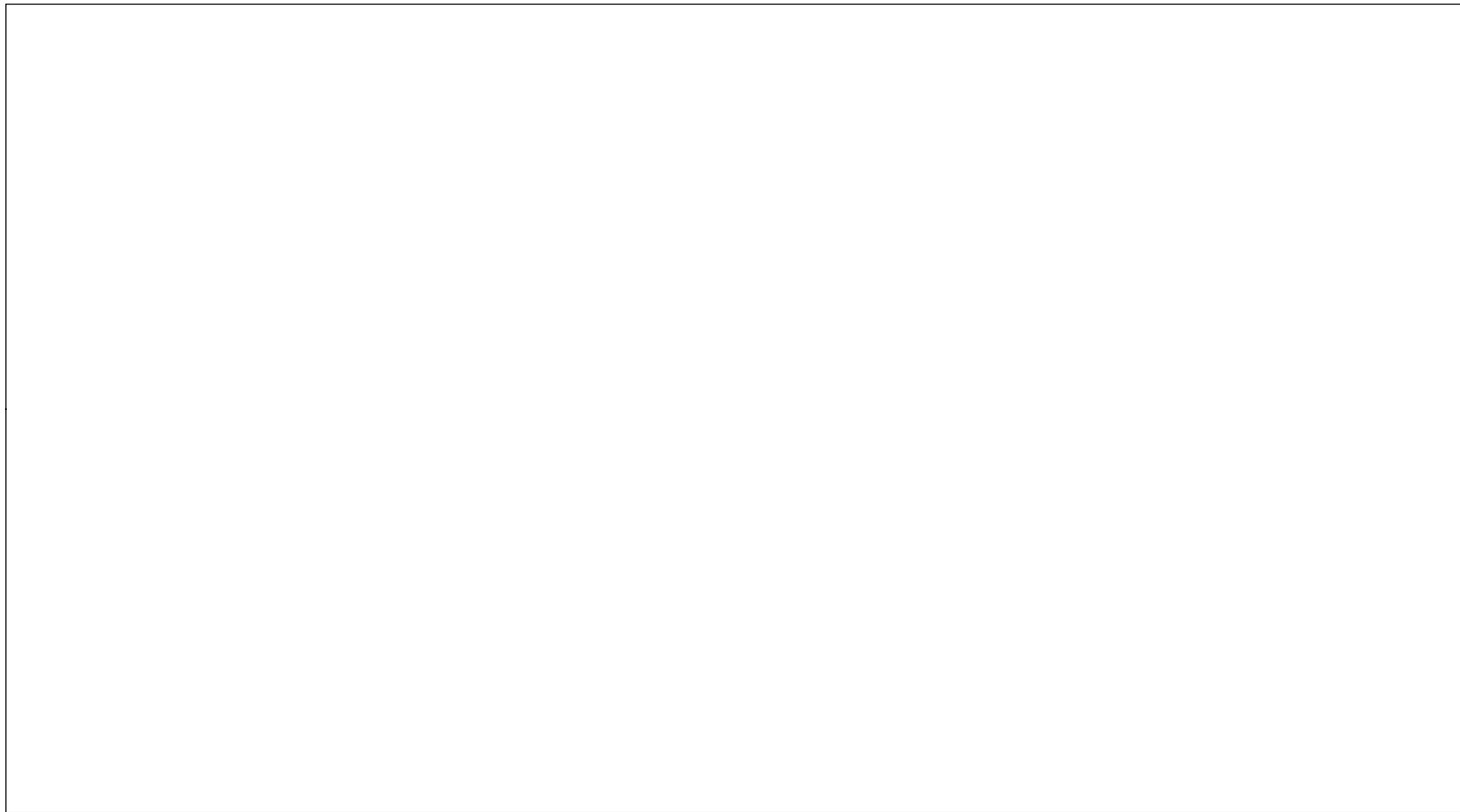
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Source: Data source information goes in this text box using Arial 6-pt normal. Allow the text to wrap naturally; only add carriage returns for new sources if appropriate.

February 16, 2015

Legend place-holder (remove this text after adding-
legend items) Make sure all items use Arial font

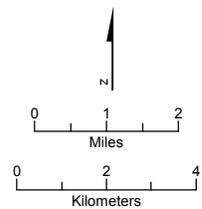
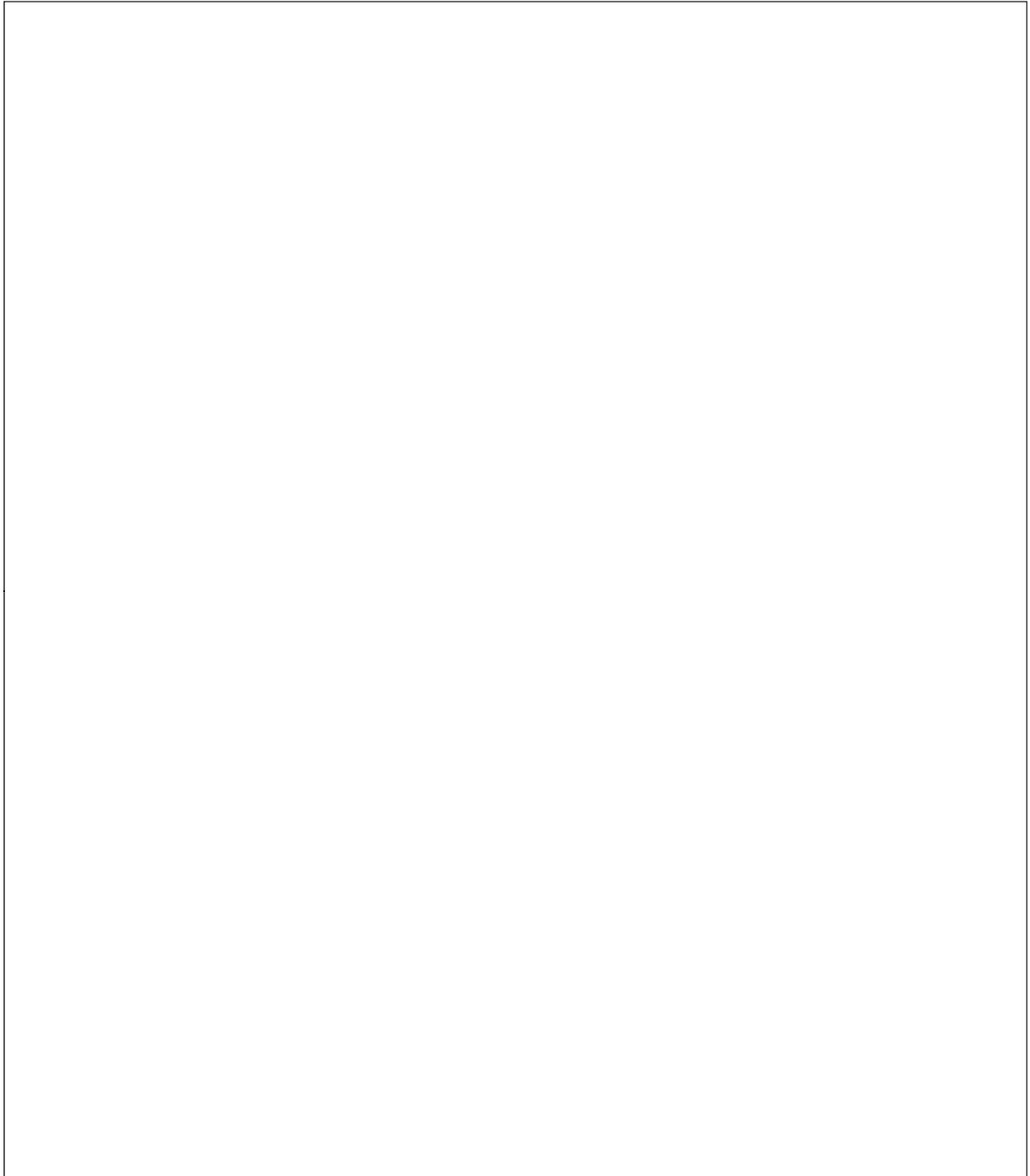
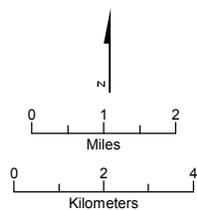


Figure #
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use multiple lines if needed



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February 16, 2015



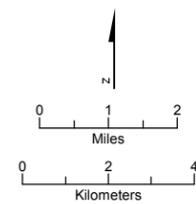
Legend place-holder (remove this text after adding-
legend items) Make sure all items use Arial font

Figure #
Figure title in sentence case
use multiple lines if needed



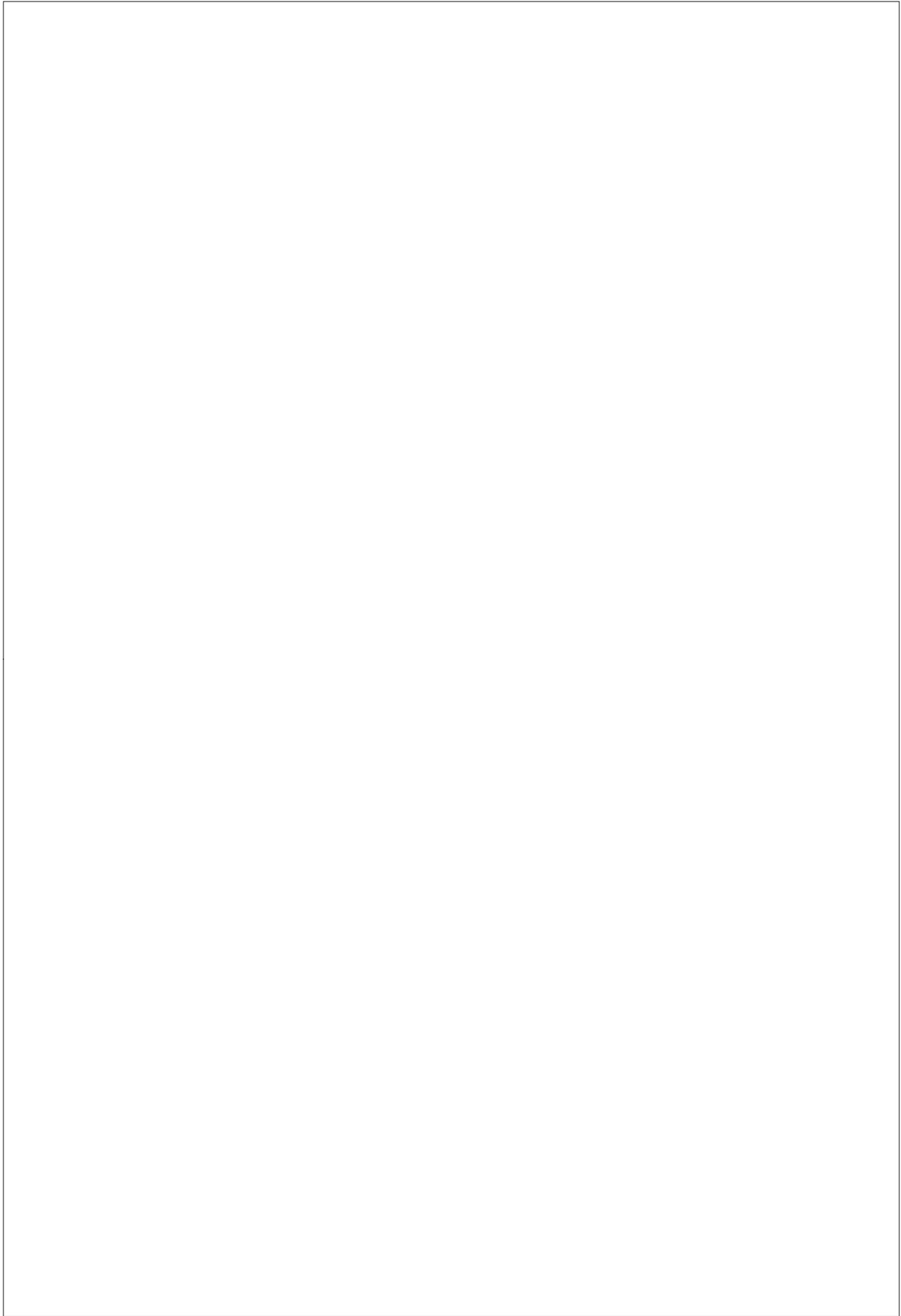
PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
Source: Data source information goes in this text box using Arial 6-pt normal. Allow the text to wrap naturally; only add carriage returns for new sources if appropriate.

February 16, 2015



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legend items) Make sure all items use Arial font

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Source: Data source information goes in this text box using Arial 6-pt normal. Allow the text to wrap naturally; only add carriage returns for new sources if appropriate.

February 16, 2015

Legend place-holder (remove this text after adding-
legend items) Make sure all items use Arial font

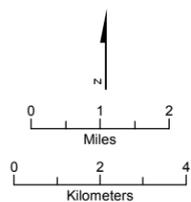


Figure #
Figure title in sentence case
use multiple lines if needed

Appendix B—HSR Example Geodatabase Schema Diagram

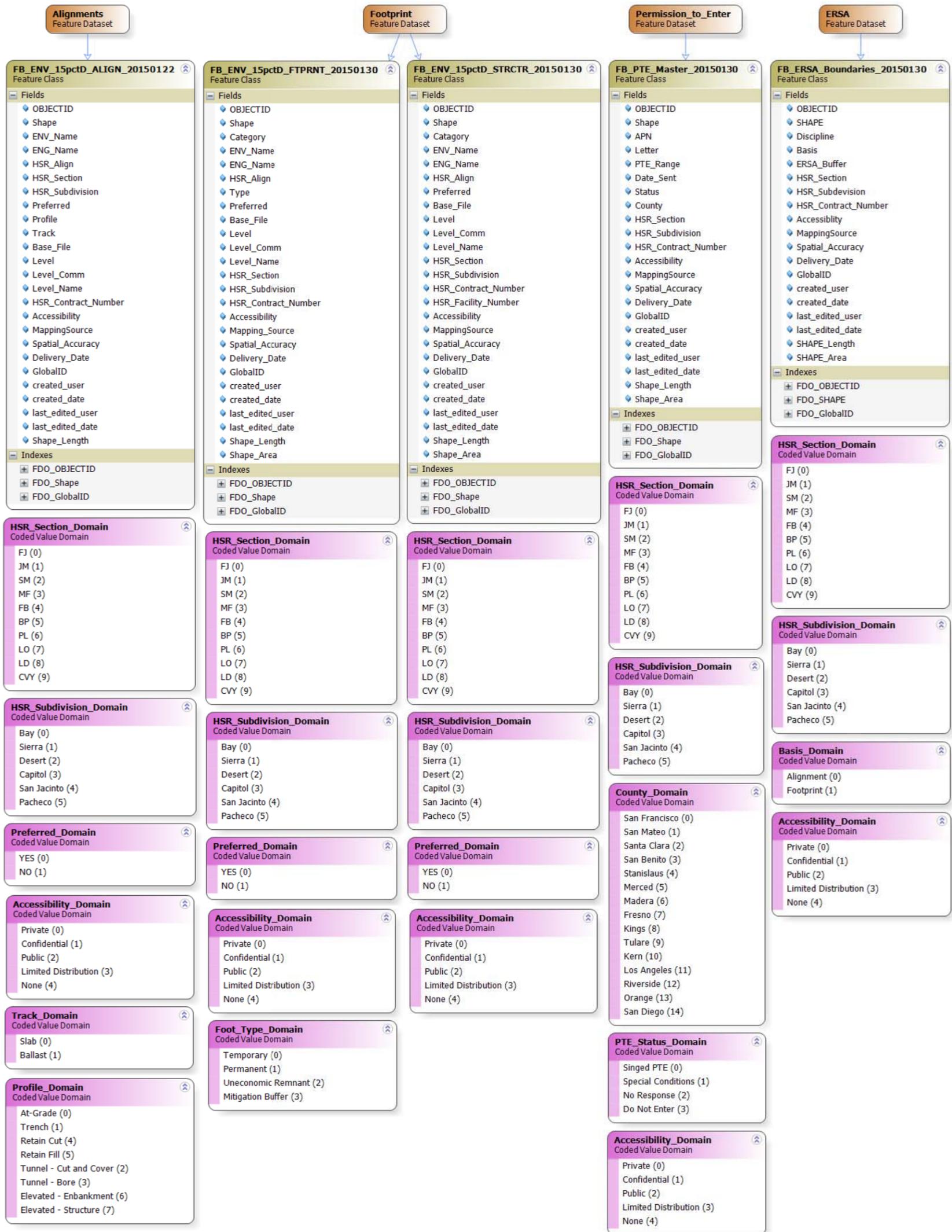
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Appendix C— Examples GIS Project Directory Structure

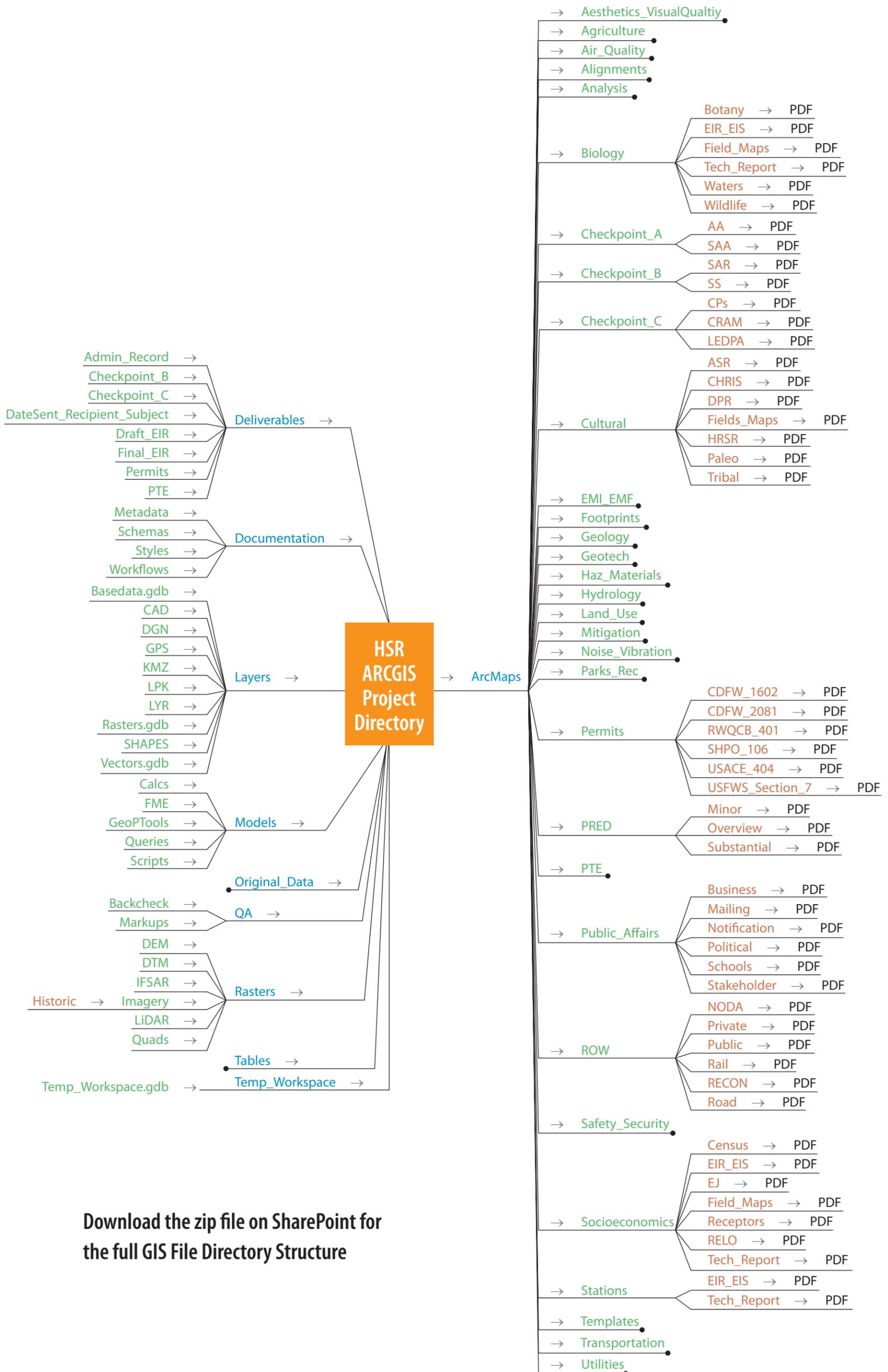
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Download the zip file on SharePoint for the full GIS File Directory Structure

Appendix D—Example HSR GIS Field Definitions and Attribute Table

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Feature Class Name	Field Name	Data Type	Field Definition	Field Domain
"FB_ENV_15pctD_FTPRNT_20140130"	Category	String	Category of footprint feature construction activity. Examples: Access Road, Temporary Construction Easement, Canal Relocation, Construction Area, Drainage Basin, etc. These could be domains.	
	ENV_Name	String	Environmental name	
	ENG_Name	String	Engineering name	
	HSR_Align	String	Name of the HSR alignment segment for a given HSR alignment section. For example the Fresno to Bakersfield project section contains alphanumeric subsection alternatives A1, A2, B1, B2 etc.	
	Type	String	Type of footprint feature record	Domain values: Temporary, Permanent, Mitigation Buffer, Uneconomic Remnant
	Preferred	String	Field that describes whether or not the record is part of the preferred alignment	Domain values: YES, NO
	Base_File	String	The name of the DGN file from which the feature record is derived. Footprints are never created in GIS and always have a DGN file parent	
	Level	String	The DGN level the GIS feature record was placed on in the originating DGN file, usually a number	
		CATEGORY	DEFINITION	
		Access Road	Identifies the preliminary environmental impacts for access roads associated with HST track and tunnel portals. This access will be used during construction and will remain as permanent access for maintenance and emergency evacuation.	FJ, JM, SM, MF, FB, BP, PL, LO, LD, CVY
		BNSF Yard Relocation	Identifies the preliminary permanent environmental impacts of the area associated with the relocation of the BNSF siding tracks within the BNSF Yard.	Bay, Sierra, Desert, Tongva, Capitol, San Jacinto, Pacheco
		Canal Relocation	Identifies preliminary permanent environmental impacts in order to relocate existing canal infrastructure.	Private, Confidential, Public, Limited Distribution, and
		Construction Area	Identifies the preliminary temporary environmental impacts that are associated with construction laydown areas where they will place construction offices, store supplies and construction equipment, etc.	
		Drainage Basin	Identifies the preliminary permanent environmental impacts of any area that is associated with drainage across an HST alignment.	
		Freight Rail Relocation	Identifies the preliminary permanent environmental impacts of the area associated with the relocation of the BNSF mainline tracks.	
		HST Tracks	Identifies the preliminary limits of environmental impacts that is based on the permanent ROW for the HST alignments.	
		Interlocking Site	Identifies the preliminary permanent environmental impacts for the proposed interlocking house site.	
		Maintenance of Infrastructure	Identifies the preliminary permanent environmental impacts for the proposed Maintenance of Infrastructure sites.	
		Maintenance of Way Facility	Identifies the preliminary permanent environmental impacts for the proposed Heavy Maintenance Facility sites.	
		Natural Gas Line Relocation	Identifies preliminary temporary environmental impacts in order to relocate existing natural gas line utility due to proposed HST construction activities.	
		Petroleum Line Relocation	Identifies preliminary temporary environmental impacts in order to relocate existing petroleum line utilities due to proposed HST construction activities.	
		Radio Site	Identifies the preliminary permanent environmental impacts for the proposed stand-alone or tunnel portal radio site.	
		Remove Base and Surfacing	Identifies preliminary temporary environmental impacts to impervious surfaces (e.g., pavement) that will be converted to pervious surfaces (e.g., original ground).	
	Roadway	Identifies preliminary permanent environmental impacts for any road closure, realignment or grade separation as a result of impacts with the HST alignments.		
	Roadway (Underpass)	Identifies preliminary permanent environmental impacts for any road closure, realignment or grade separation as a result of impacts with the HST alignments.		
	Station	Identifies preliminary permanent environmental impacts associated with the HST station site.		
	Temporary Construction Easement	Identifies a preliminary area that will sustain temporary environmental impacts during the construction of an HST structure.		
	Track Access Easement	Identifies the preliminary limits of environmental impacts that are based on easements for access along the HST alignments.		
	Traction Power Facility	Identifies the preliminary permanent environmental impacts for the proposed paralleling station, switching station or traction power substation site.		
	Transmission Line Relocation	Identifies preliminary temporary environmental impacts in order to relocate existing electric transmission line utilities due to proposed HST construction activities.		
	Utility Easement	Identifies preliminary temporary environmental impacts that are based on easement in order to relocate existing utilities due to proposed HST construction activities.		
	Utility Relocation	Identifies preliminary temporary environmental impacts in order to relocate existing utilities due to proposed HST construction activities.		
	Water Line Relocation	Identifies preliminary temporary environmental impacts in order to relocate existing water line utilities due to proposed HST construction activities.		

Appendix E—HSR Footprint Creation Workflow

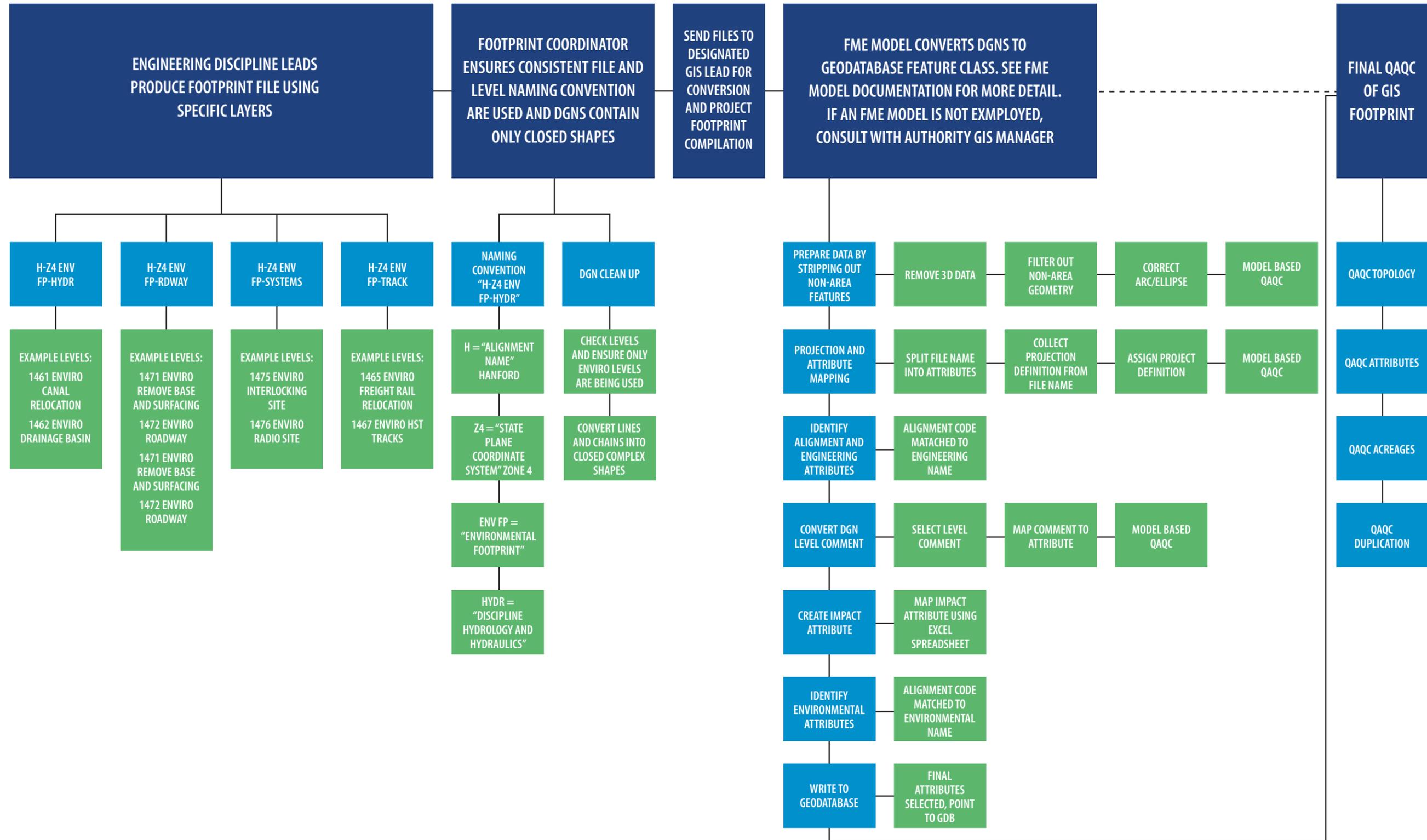
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Appendix F—Example HSR GIS Closeout File Directory Structure

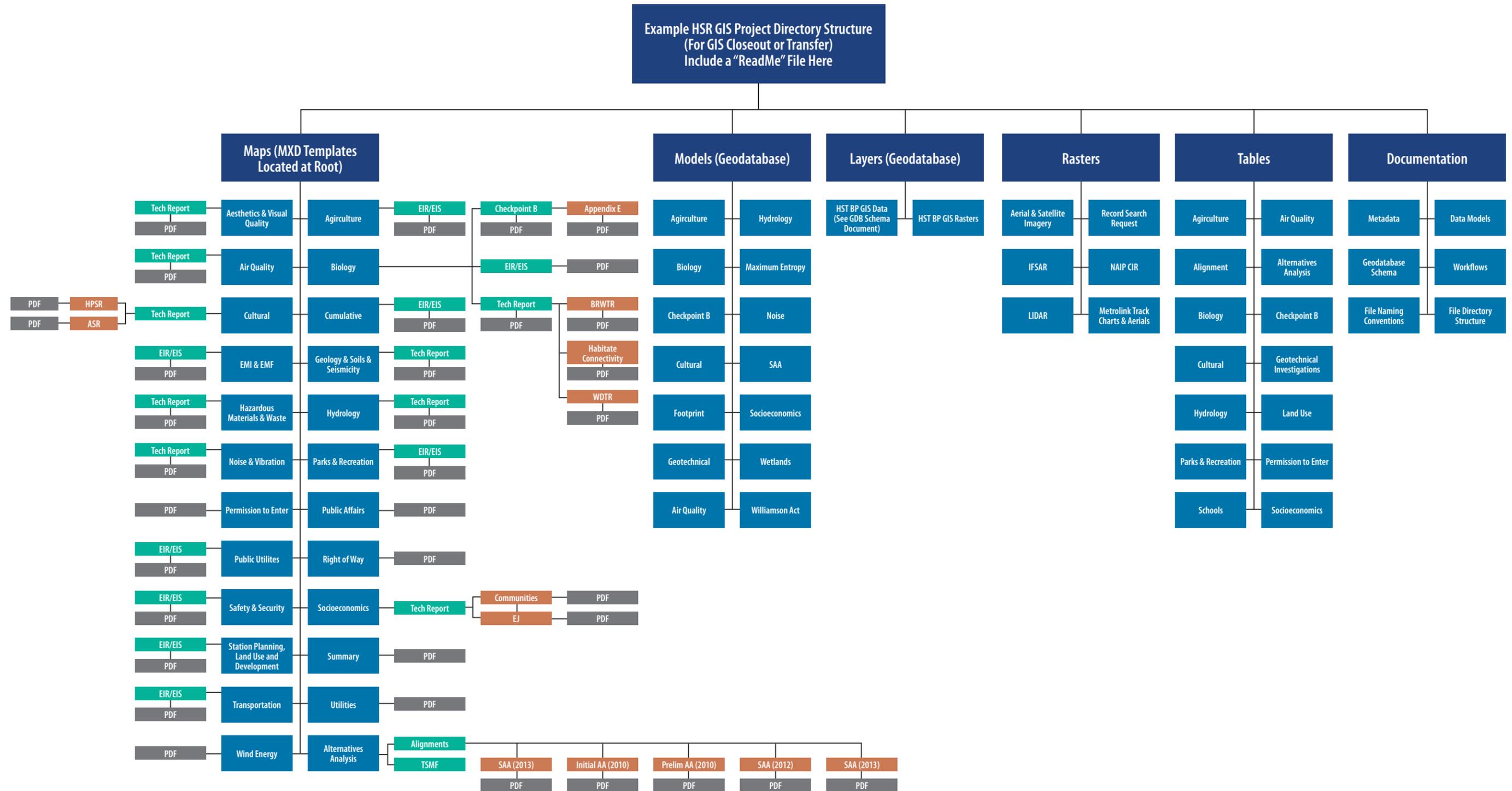
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Appendix C

Environmental Compliance Program Manual

Contractors Environmental Compliance Plan (C-ECP) Sample Outline

1. Purpose
2. Approach
 - a. Description of Major Milestones
 - b. Key Environmental Issues
 - c. Measures of Success
3. Team Organization
 - a. DB Team Structure
 - i. DB
 - ii. Subs
 - b. Personnel
 - i. DB
 - ii. Subs
 - iii. PCM
 - iv. Authority/PMT
 - c. Roles and Responsibilities
 - i. DB
 - ii. Subs
 - iii. PCM
 - iv. Authority/PMT
4. Compliance Planning
 - a. Training
 - i. General environmental training
 - ii. Specific training as called for in MMRP/MMEP
 - b. Communication Plan
 - c. Ensuring subcontractor compliance
5. Compliance Implementation
 - a. Procedures for Complying with Existing Requirements (Contract, MMRP/EP, Permits, Section 106 Documents)
 - b. Addition Preconstruction Field Studies/Preconstruction Surveys
 - i. Biology
 - ii. Cultural (Archaeology/Native American/Built Environment)
 - iii. Other
 - c. Construction Monitoring
 - i. Biology
 - ii. Cultural (Archaeology/Native American/Built Environment)
 - iii. Water Quality
 - iv. Other

- d. Implementation and Maintenance of Protective Measures During Construction (Fencing, ESAs, BMP's, etc)
- e. Management of Mitigation Measures for Noise, Vibration, etc.
- f. Resources Data Collection and Management (GIS, etc)
- g. Reporting (EMMA)
6. Environmental Compliance Resulting from Design
 - a. Design Review for Environmental Compliance
 - b. Additional Technical Studies and Documentation
 - i. Biological Permitting
 - ii. Section 106 Compliance
 1. Studies
 2. Reporting
 3. Consultation
 - iii. Environmental Documentation
 - c. Resources Data Collection and Management (GIS, etc)
 - d. EMMA Updates Resulting from New Mitigation
7. Submittals/Deliverables
8. Emergency Response Process (Cultural, Biology, Pollution Control, etc)
9. Quality Control Process
10. Environmental Compliance Assurance/Audit Process
 - a. Compliance/Non-compliance Reporting
 - b. Corrective Action Procedures
 - c. Management Review of Corrective Actions
 - d. Self-audit and Reporting of Environmental Compliance
11. Schedule for Compliance

Attachments

- Contact List
 - References for Relevant Documents (MMRP/MMEP, permits, MOA and treatment plans)
- Process Flowcharts

CALIFORNIA HIGH-SPEED RAIL

Environmental Mitigation
Management & Assessment
(EMMA)

EMMA User Manual: Contractor User

Version 2

June 2015



CALIFORNIA HIGH-SPEED RAIL PROGRAM

EMMA Contractor User Manual
Version 2

Prepared by:
California High-Speed Rail Authority
and
Parsons Brinckerhoff

June 2015

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 - 3.1 Environmental Monitoring Guidance
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 - 3.1.4 Variance Records
 - 3.1.5 Management Plan Submittals and Commitment Reference
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- 6.0 Environmental Commitment Reference Library
- 7.0 Generating Reports
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- Attachment A: User Request Form

List of Acronyms:

HSR	High-Speed Rail
EIR/EIS	Environmental Impact Report/ Environmental Impact Statement
EMMA	Environmental Mitigation Management and Assessment
MMEP	Mitigation Management Enforcement Plan

1.0 EMMA: What is it and how is it being used for the High-Speed Rail Program?

EMMA is the Environmental Mitigation Management & Assessment web application created to document compliance with mitigation measures prescribed by the EIR/EIS and MMEP as well as conditions outlined in various environmental permits, treatment plans, regulatory assessments and other environmental commitments. The database allows users to document the implementation of compliance through the use of record forms designed specifically for each discipline. The status of each environmental commitment is tracked in EMMA through phases of pre-initiation, in-process, and upon successful completion of each commitment, that commitment's status is noted as completed in the system. The system allows for various records documenting compliance to be aggregated into summaries showing a comprehensive record of all actions documenting compliance with commitments and ultimately, the meaningful mitigation of impacts.

While the fulfillment of most commitments occur during the construction phase of the project, EMMA is also set up to track commitments during pre-construction, post construction and operations phases of the project as well as compensatory funding for agricultural or Habitat Management lands and permit fees.

EMMA also functions as a reference library of environmental commitments. Each commitment may be accessed for review of commitment text, reporting requirements, implementation mechanisms and status of the commitment as well as documents associated with commitments such as permits and reporting programs. This reference library is available to all users.

This EMMA User Manual for a High-Speed Rail Program Staff (“Users”) details how to use EMMA to meet the project’s environmental compliance needs.

The California High-Speed Rail Authority is the state agency responsible for planning, designing and building the first high-speed rail system in the nation. California high-speed rail will connect the mega-regions of the state, contribute to economic development and a cleaner environment, create jobs and preserve agricultural and protected lands. By 2029, the system will run from San Francisco to the Los Angeles basin in under three hours at speeds capable of over 200 miles per hour. The system will eventually extend to Sacramento and San Diego, totaling 800 miles with up to 24 stations. In addition, the Authority is working with regional partners to implement a state-wide rail modernization plan that will invest billions of dollars in local and regional rail lines to meet the state’s 21st century transportation needs.

1.1 EMMA Contractor-User Types

EMMA contractor-user roles may include **Monitor**, **Specialist**, or **Environmental Manager** and all three have access to and may prepare records and record summaries. A monitor is generally defined as an individual possessing specialized knowledge in a certain environmental discipline who monitors activities including, but not limited to, observing construction activities, tracking impact intensity or fulfilling a commitment. A specialist is generally defined as an individual possessing expertise in a certain environmental discipline and serves as a lead, supervisor or manager within that discipline. An Environmental Manager is generally defined as the lead inter-disciplinary manager for the project.

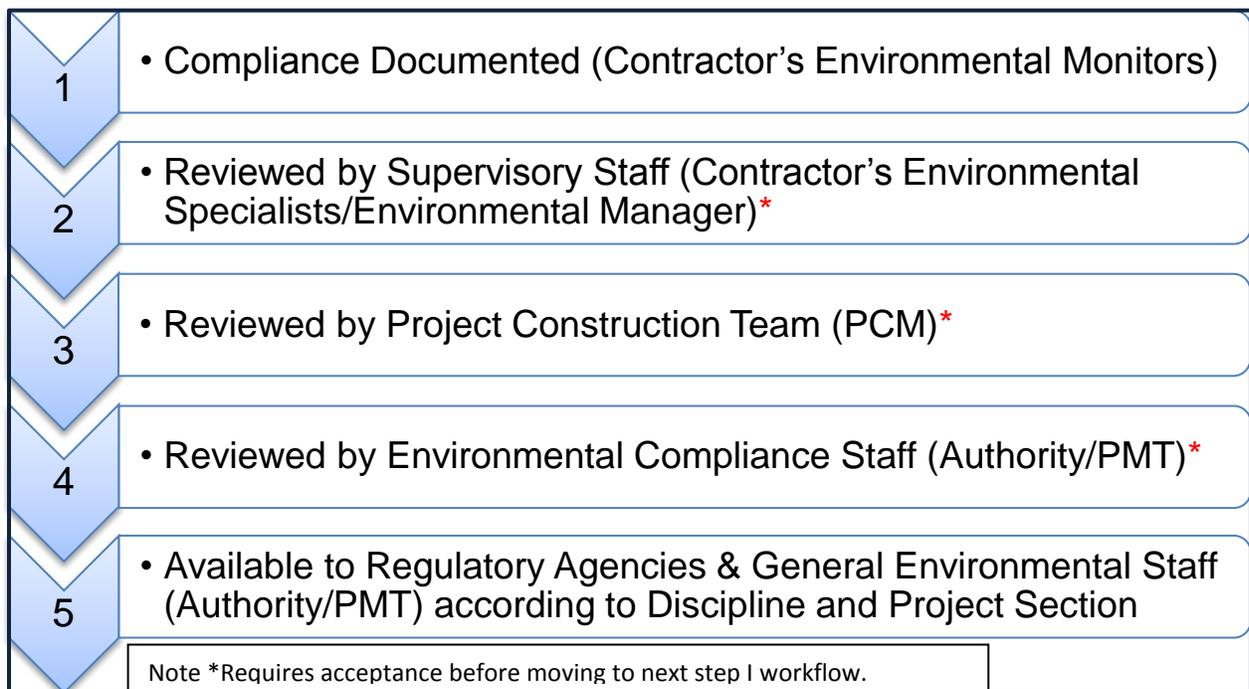
For a user to gain access to EMMA, a **User Access Request Form** or a completed spreadsheet containing all of the request form fields must be submitted to the Authority (see Attachment A). Only users specifically identified as requiring access to Cultural Resources and/or Paleontology forms will have access to those specific disciplines.

1.2 EMMA Workflow

EMMA is designed so that all records require review and acceptance before submittal to the Authority. Records submitted by Monitors and Specialists are received by the Environmental Manager as a task on his or her EMMA Dashboard.

Once the Environmental Manager has reviewed the record for accuracy and completion and has accepted the record, it becomes available to the PCM for additional review and acceptance and is then finally received by Authority where it may be viewed by Authority Environmental Staff and Regulatory Agency Environmental Staff from various agencies including the Federal Railroad Administration, Army Corps of Engineers, Environmental Protection Agency, United States Fish & Wildlife Service, California Department of Fish and Wildlife and State Historic Preservation Office as well as local municipalities and other partnering agencies.

Figure 1: EMMA Workflow



1.3 EMMA User Training & Support

The contractor shall use the **User Access Request Form** (Attachment A) to identify all EMMA users including environmental monitors for all disciplines and environmental managers who are responsible for reviewing records. Each of these users will be expected to attend user training where basic system navigation will be explained as well as expectations for the content of submittals. The Authority will provide this training as well as provide technical support and content guidance to users for the duration of the project.

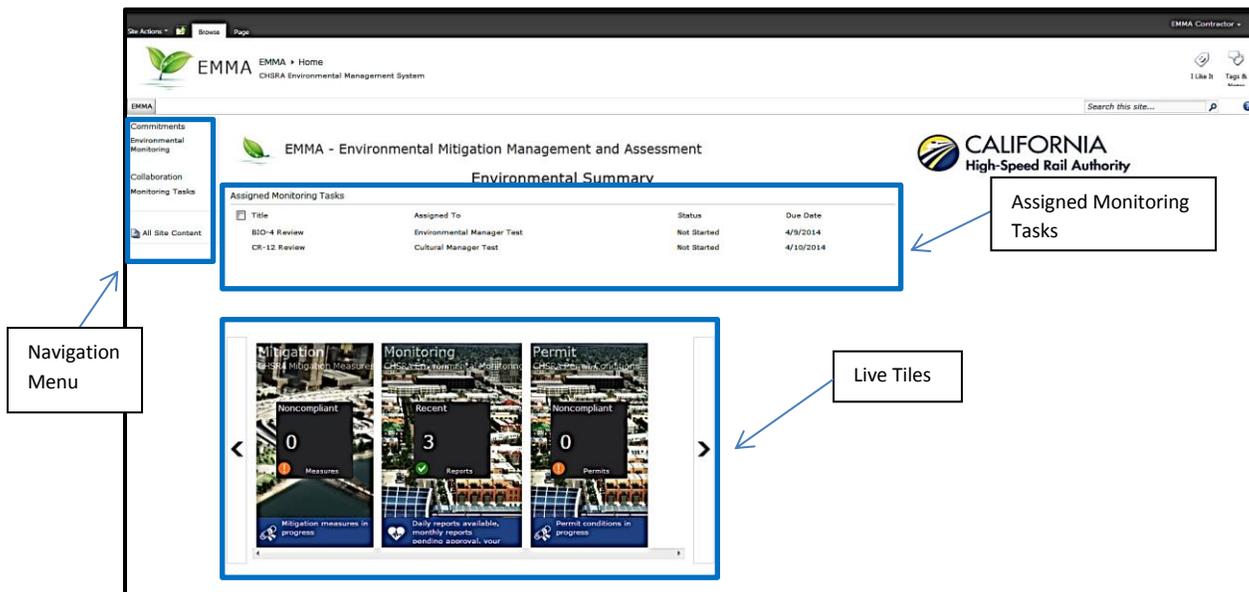
The contractor should identify users as early as possible following contract execution because users will need to have completed training prior to commencing any preconstruction activities for which compliance must be monitored and documented. Preconstruction activities that require monitoring, include

geoboring investigations, resource surveys, utility relocation, test pile installation, demolition, and other activities. As new users are identified, the contractor may request additional training or the users may be able to attend training being provided to other groups within the project.

2.0 Getting Started and Logging In

- Log-on to <https://chsra.pbid.com/sites/environmental/SitePages/Home.aspx>. The system works best using Microsoft Internet Explorer version 10 or earlier or FireFox version 31 or earlier.
- Enter your unique login information into the popup window (enter characters directly, do not copy and paste)

Figure 2: EMMA Dashboard



The EMMA homepage is called the Dashboard. The Dashboard contains a Navigation Menu located along the left-hand column, a central listing of Assigned Monitoring Tasks and three Live Tiles that summarize recent activity and indicate whether any records have been tagged as non-compliant. “Assigned tasks” are tasks automatically assigned to you based on your supervisory level and your position in the workflow. The task involves reviewing records for accuracy, completion, appropriate level of detail, and verification of the commitments being fulfilled. The record is then either accepted for advancement to next step in workflow, or it is denied and sent back to the previous level of workflow for corrections (see Reviewing and Approving Records and Summary Records below).

3.0 Environmental Monitoring Record Forms

Each discipline contains a form that doubles as a monitoring log, survey log, resource record or report submittal form. To enter a record, first click on **Environmental Monitoring** on the Navigation Menu then select **Add New Record**, and finally select a discipline. It is extremely important that record fields be completed with the greatest detail possible in order to ensure that meaningful data can populate output reports. If a user is unsure of what kind of detail should be documented in a particular field, clicking the

green ‘?’ link to the right of the field will direct the user to a help page that provides examples of the type of information expected.

Figure 3: Environmental Monitoring Page

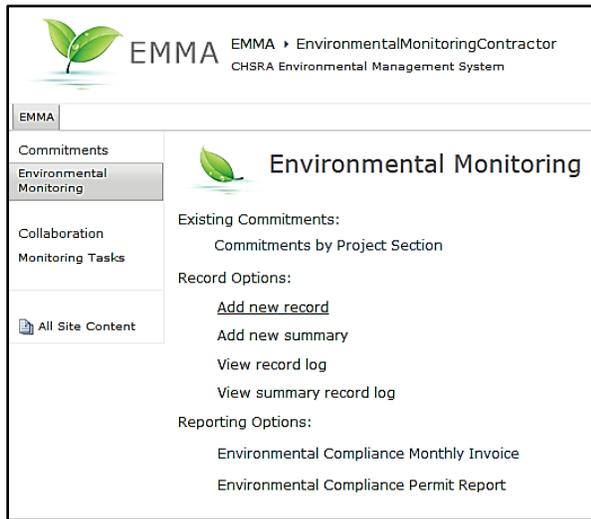
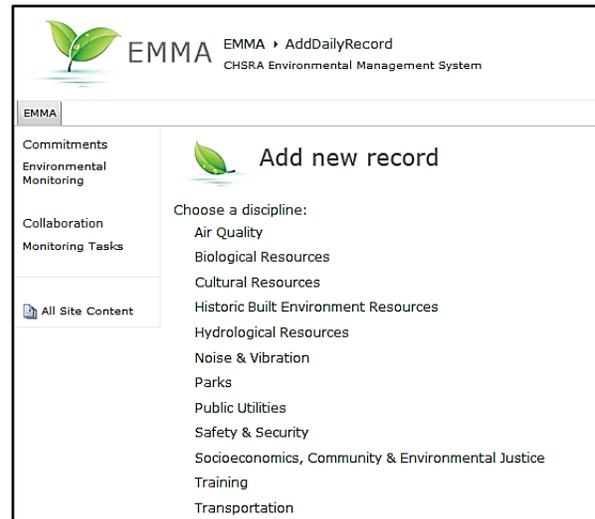


Figure 4: Add a New Record Page



3.1.1 Environmental Monitoring Record Submittal Guidance

Contractors must monitor their own compliance and each environmental compliance monitor should produce a daily compliance record. All monitors, including but not limited to archaeological monitors, biological monitors, environmental staff conducting site survey work, personnel ensuring the security of environmental barriers and agents making any professional observations associated with environmental commitments contained within mitigation measures, permits, treatment plans or other commitment documents may be provided access to EMMA to directly enter their compliance observations. Compliance monitors should document *positive compliance* on a regular basis as it is observed. Examples of *positive compliance* may include the employment of best management practices, good housekeeping, proactive communications and training, voluntary assistance in ensuring compliance, etc. Lack of compliance must also be reported (see Non-Compliance Records in Section 3.1.3 below).

There are two types of record forms that may be used to document compliance. The standard record is selected by clicking on *Add a new record* on the Environmental Monitoring page. This record serves as a digital format for a standard daily record. Field personnel and others documenting compliance observances shall expect to need to complete a standard record documenting each instance of compliance monitoring.

Summary records serve to summarize and compile standard records and are used for weekly, monthly and annual compliance documentation. For example, if an environmental commitment requires weekly compliance reporting, a user would first select the option to add a new summary. The user then completes a narrative summary of compliance observations for that week and selects those standard records which provide backup evidence for the statements made in the narrative summary. Essentially, the summary record is used like a digital memo cover sheet and the standard records are then used as a digital appendices.

To start a new record, EMMA users must enter general details such as Project Section (i.e., Merced-Fresno, Fresno-Bakersfield, etc.) and Construction Package¹, Author Name², Author Role and Date of the record then select the type of activity for which they are submitting a record such as **Monitoring**, **Survey** and/or **Resource Tracking**. Files such as documents and photos may be uploaded to the form for additional documentation. The types of activity fields present are specific to each discipline’s needs.

Upon selecting **Monitoring** as the type of activity for which a user is reporting, a “monitoring form” loads on the screen. This form requests details such as start and end times, construction activities observed, equipment used, locational data, any compliance concerns noted, and additional fields to note observations about monitoring. Should a user have monitored multiple locations during a single day, the option to add up to three additional monitoring forms to a single record may be loaded for completion.

Monitoring activities include all commitments for which the user is documenting witness to the implementation of a commitment. This may include construction activities monitored by users in the field (i.e. dirt moving, trenching, demolition work), field conditions (i.e. documenting appropriate visual screening and fencing at site locations, spot checks for dust management, noise readings, direction of lighting at night, maintenance of sensitive resource buffers, etc.), and best management practices employed.

Upon selecting **Survey** as the type of activity, a “survey form” loads on the screen. This form requests details such as start and end times, type of survey, locational data and a field to note observations made during the survey. Similar to Monitoring, it is possible to add up to three additional survey forms to a single record.

The survey activity form is used to document surveys conducted to complete mitigation, permit, treatment plan or management plan requirements including ground surveys to identify previously undetected resources such as species or artifacts, seasonal survey requirements, conditions assessments of known resources such as historic buildings or clearance surveys for previously unsurveyed project areas.

Upon selecting **Resource Tracking** as the type of activity, a “resource tracking form” loads on the screen. This form requests details such as whether the user is tracking a new discovery or tracking the ongoing status of a previous discovery, the resource’s unique identification number, a description of the resource, it’s context, locational data (including UTMs) and whether the resource requires additional management or evaluation as well as a field to note other observations about the resource. Should multiple resources require tracking, the option exists to add up to five additional resource tracking forms.

The Resource Tracking form is used to document the detection of new resources (i.e. archaeological sites and isolates or burrows, dens or nests) as well as monitoring the conditions of previously identified resources (i.e. erected buffer maintenance around sensitive resources). The Resource Tracking form is best used when each environmentally sensitive resource or area is issued a unique identifier. As compliance personnel document compliance with maintained exclusion areas or changes in status of sensitive resources (examples may include when the status of an active nest changes from *nesting* to *hatched* or the status of a cultural resources site changes from *excluded/barrier erected* to *undergoing data recovery* or *cleared*).

Should a user need to report on an activity other than Monitoring, Survey and/or Resource Tracking, the **Other** activity option may be selected which provides generic fields to record the activity and a memo field to note information about the activity. This activity should be selected to submit resource specialist

¹ A Construction Package MUST be selected in order for environmental commitments to load.

² Author Name should be the individual documenting compliance regardless of who enters the data.

resumes or other supporting documentation that do not apply to the other activity types available on the record form.

On occasions in which there are associated activities and too few form opportunities, complete additional record forms then summarize the forms using the **Record Summary** feature (see Add New Summary instructions).

Environmental Commitments such as Mitigation Measures, Permit Conditions, and other commitments are loaded onto the Record Form by discipline upon the selection of a project section and construction package. The user selects commitments associated with the record form being submitted. Multiple commitments may pertain to a single activity or to multiple activities recorded on the forms, the user should select all applicable commitments. When observations result in the issuance of a **Non-Compliance** evaluation, records may be associated using the **Non-Compliance** record form (see below).

3.1.2 Training Records

EMMA has a specific form used for uploading WEAP, tailgate, or other associated training records. This record form may be used by all environmental disciplines and associated with multiple disciplines.

To enter a Training Record, Click on Environmental Monitoring in the Navigation Menu then select *Add New Record* followed by *Training*. Enter a brief description of the training (i.e. *Tailgate meeting to remind crew about housekeeping or September 2019 new personnel WEAP Training*), associate the training with the appropriate disciplines and measures/conditions and upload a scan of the signature sheet or associated training materials.

3.1.3 Resume Submittals

To submit a resume for agency review as required by contractual or environmental commitments, use the discipline-specific record form for the personnel whose resume is being reviewed. For example, to comply with a CDFW requirement for resume review, select the Biological Resources record. In the *Brief Description* field enter the personnel member's name (i.e. *Jon Doe – Resume*), select **Other** for the Activity type being recorded and upload a the resume as an attachment. Use only one record form per resume – this allows resume's to be searchable. Multiple records may be compiled into a 'packet' of resumes by adding a new **Record Summary**.

3.1.3 Non-Compliance Records

Contractors must monitor their own compliance for both *positive compliance* and for instances of non-compliance. Contractors shall document instances of non-compliance using the non-compliance record form. Non-compliance forms shall include a description summary of the instance, associate the instance with any standard records that have documented an associated compliance concern, and shall identify a non-compliance resolution proposal and a non-compliance resolution date.

Each record form has a section for non-compliance “concerns”; however, only managerial users have the ability to issue a record of Non-Compliance. Concerns about compliance may be noted in record forms by users and a recommendation of Non-Compliance violation may be made. The Compliance Concern field alerts the reviewing Environmental Manager to concerns that the manager may resolve directly and immediately to avoid the need to issue a Non-Compliance. Expedient and efficient management of compliance concerns and avoidance of Non-compliance issuance communicates to the Authority and oversight agencies that a proactive environmental approach has been managed by the contractor and

engenders a stronger sense of trust to allow the contractor oversee its own work with less oversight involved. Failure to resolve an instance of Non-Compliance or failure to self-report on the instance of Non-Compliance may result in the issuance of a Non-Compliance violation from oversight agencies which may result in stop-work orders, construction delays and/or fines.

Reviewing users will complete a Non-Compliance Record upon review and concurrence of recommendations. Once the Non-Compliance record has been completed and associated with records with non-compliance concerns and recommendations, the record form will be automatically populated with a non-compliance flag.

To record Non-Compliance, managerial users select Environmental Monitoring in the left hand navigation column then select *Add Non-Compliance Record*. First, the user must fill in the associated Project Section, Construction Package(s), and Discipline. This will load all records fitting that filter and the user can then select the records providing background information leading to recording Non-Compliance as well as include memos for a summary of the issues, recommendations for resolution and associated commitments. The Non-Compliance record may be updated at a later date to detail Non-Compliance resolutions.

3.1.4 Variance Records

To document variance acceptances from agencies or variance memorandum submittals, use the standard record form associated with the discipline for which a variance is being requested, enter a description of the variance, upload the variance as an attachment and note any associated regulatory agencies. Compliance with a variance will not be tracked separately in EMMA; however, the variance will be associated with the revised environmental commitment through a commitment update. The changed permit or mitigation condition will be viewable as an attachment to the environmental commitment within the commitment library.

4.0 Summary Records

Summary Records allow users to compile multiple standard records and provide a narrative summary of the compiled records. Summary Records are useful for timely compliance reporting or for summarizing an ongoing concern (i.e. tracking a specific resource such as a bird nest or treatment of an archaeological site). This feature is used to provide a summary narrative that ties multiple user records. An example of when a Summary Record should be submitted include weekly, monthly and annual compliance documentation in which multiple daily records provide the support documentation for the summary submitted. Summary Records may also be used to tie an ongoing compliance concern such the documentation of a sensitive resource area over time or a survey effort that required iterative efforts over time.

Figure 5: Environmental Monitoring Page

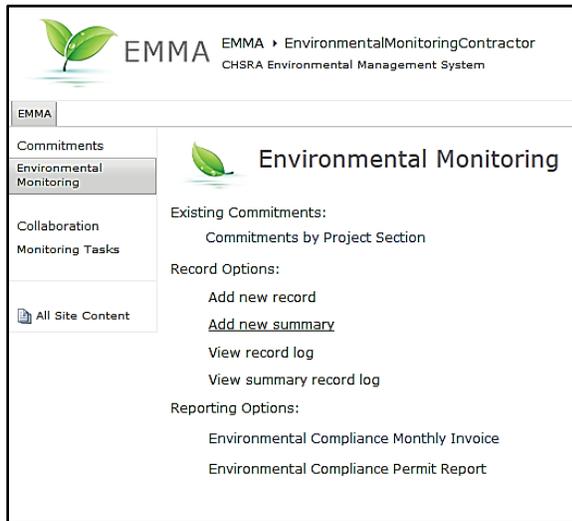
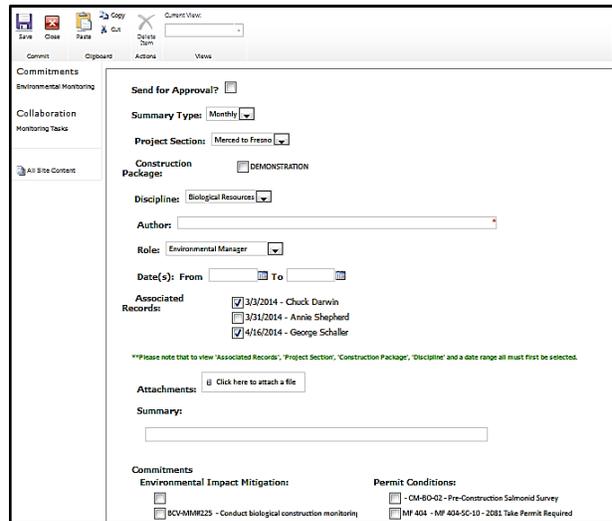


Figure 6: Summary Record form



To enter a Summary Record, select *Add new summary* on the Environmental Monitoring Page. This will open the Summary Record form. Select the Summary Type, Project Section and Construction Package. Selection of the Discipline will load standard records associated with that discipline; select only those records associated with the narrative the user provides in the Summary field. Finally, select the associated commitments for which the Summary record is associated.

5.0 Reviewing and Approving Records and Summary Records

After records have been submitted for managerial review, they appear as an Assigned Monitoring Task in the Environmental Summary section of the Manager User’s Dashboard. Clicking on the title of the record navigates to the Monitoring Task page where the user can either review the record and then respond to the record, or can bypass the review and directly respond to the task.

Figure 7: Monitoring Tasks

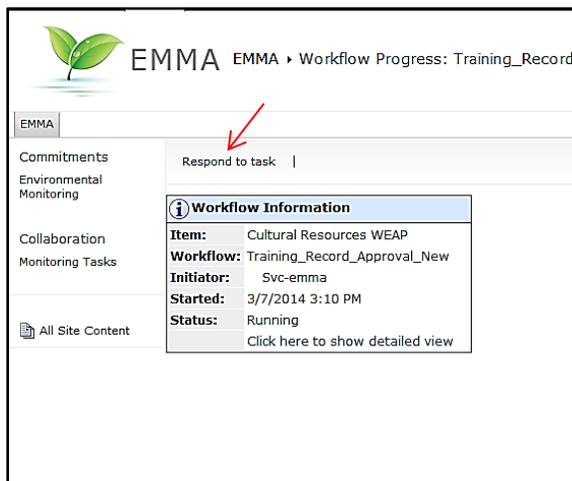


Figure 8: Respond to Task



Once the record has been reviewed, return to the Monitoring Task page by clicking the browser back button, then select the second option to respond to the record. Click on *Respond to task* (note: it does not

immediately appear to be a link). This will lead to a page with radio buttons for acceptance or return (select only one) and a box to note comments. The comment box is especially useful in providing feedback when returning the record for editing and listed as an assigned task on the user's dashboard. Returned records will always need to pass through each phase of the workflow to be returned to the record creator but only the record creator has editing rights. Once the records have been accepted they are made available for PCM review.

6.0 Environmental Commitment Reference Library

From the Dashboard select Environmental Monitoring from the left-hand column then select *Commitments by Project Section* on the Environmental Monitoring Page. Select your project section and then select the type of commitment to view. This will open a sortable listing of commitments. Click on the column header to sort and filter for directed browsing.

7.0 Generating Reports

To run a report, first click on *Environmental Monitoring* on the Navigation Menu then select from the list of reporting options. Once a report is selected, use the right-hand menu to determine parameters for the report such as Project Section, Construction Package and starting and ending dates. Click the *Apply* button at the bottom of the parameter column to generate a formatted report.

Reports are pre-formatted and designed to compile relevant data. If a consistent set of data needs a formatted report created on a reoccurring basis, contact the EMMA administrator to have one designed.

Figure 9: Report Parameter Selection

The screenshot displays the 'Specify Parameter Values' dialog box within the Microsoft SQL Server Reporting Services environment. The main area contains the text: 'Report parameter values must be specified before the report can be displayed. Choose parameter values in the parameters area and click the Apply button.' The 'Parameters' section on the right includes a 'Project Section' dropdown menu with 'Merced to Fresno' selected. Below this are 'From Date' and 'To Date' fields, each accompanied by a calendar icon. An 'Apply' button is positioned at the bottom right of the parameters area.

8.0 Sustainability Monitoring

The Sustainability Monitoring feature in EMMA tracks compliance with Sustainability reporting requirements. The users who document sustainability compliance must be specifically identified by the Contractor, Environmental Monitoring users do not have access to Sustainability Monitoring unless specified. Sustainability Monitoring and Reporting users do not have access to Environmental Monitoring.

Figure 10: Sustainability Monitoring Dashboard

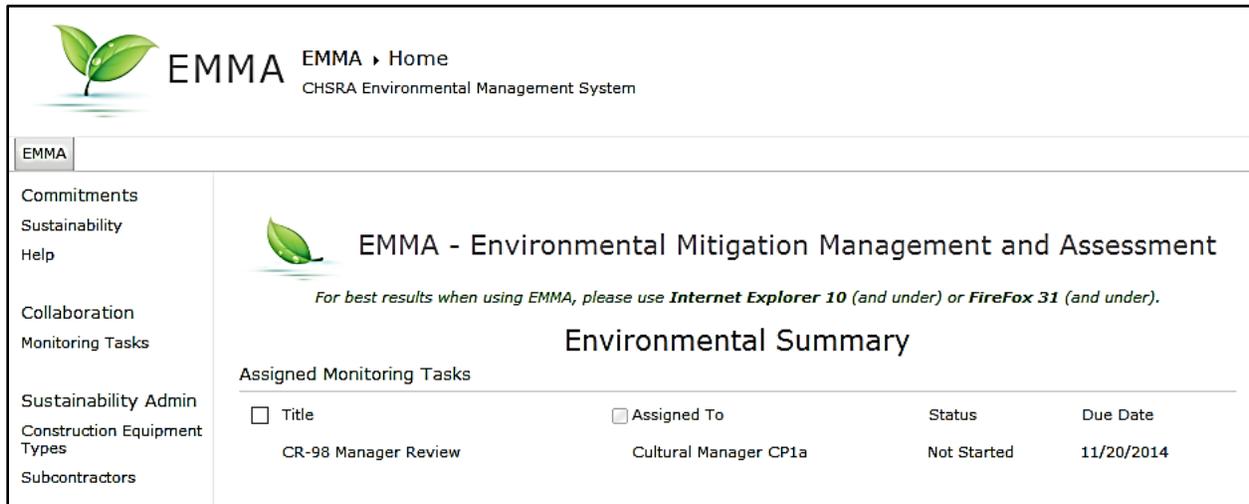


Figure 11: Sustainability Commitments

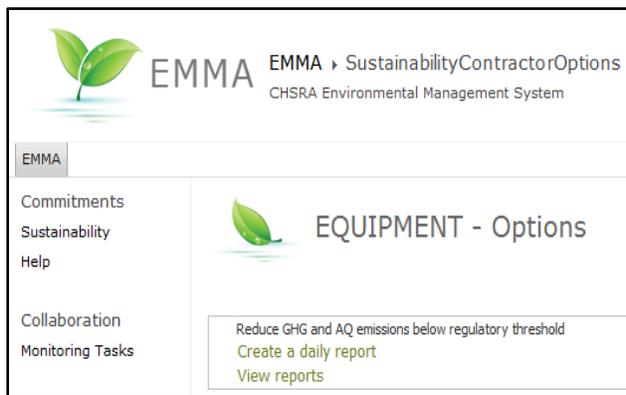


Figure 12: Create a Daily Sustainability Record



Sustainability Commitments reflect agreements between the Authority and regional partners, such as regional air districts, policy objectives, and reporting required to comply with Government Code Section 16428.9 and other subsequent California Code requirements.

8.1 Sustainability Monitoring Record Forms

Each sustainability commitment contains a form to collect data documenting compliance with the commitment.

8.2 Special Instructions for using the Equipment Commitment

Step 1

Due to the unique nature of each contractor’s fleet and subcontractors fleet, for both on-road and off-road equipment, the contractor user must first set up a fleet register by clicking on the “Construction Equipment Types”. Set up a unique registers for each contractor and subcontractor, by clicking “Add New Item”, and filling in the form. Repeat this step for every fleet vehicle or piece of equipment.

Figure 13: Sustainability Commitments

ID	Title	Target	ConstructionPackage
1	EQUIPMENT	Reduce GHG and AQ emissions below regulatory threshold	CP1a; CP1b
2	Water Use	Use fixtures and employ strategies generally	CP1a
3	Recycling, Materials Reuse, and Waste Disposal	Recycle all concrete and steel Divert 75 percent of non-hazardous waste from landfill	CP1a
4	Unique or Additional Pollution Controls	Use pollution controls	CP1a
6	Recycled Content of Materials	Where practicable	CP1a
7	Renewable Energy Produced On-Site or Purchased	evaluate feasibility	CP1a
8	Innovation	onsite reuse waste minimization strategies cool or green roofs for temp structures reusable formwork packaging take-back selection of compostable or re-usable erosion control devices minimize site travel green fleet FSC certified timber for site work recycling and composting facilities recycled paper for site office document low- or no-VOC electronic reference standards paperless documentation	CP1a
9	Education Delivered on Sustainability and Environmental Practices	Do outreach and education	CP1a
10	Environmentally Preferred Products Used	Buy products	CP1a
17	OFF-SITE TRIPS		CP1a
18	FUEL DELIVERIES		CP1a
19	Tree Planting		CP1a
21	Employee Commute Survey		CP1a

Equipment can be added later as new equipment is brought to the project site. In the Attachments section of the equipment record, complete fields for the following:

- On-Road Vehicles: Photos or a PDF of the ARB fleet certificate, and a photo of the engine label.
- Off-Road Equipment: Provide the DOORS number.

Step 2

Once the initial set up of a fleet register is complete, then the completion of monthly use reports can be done. The contractor should create a new record for each month. To enter a record, first click on **Sustainability** on the Navigation Menu then select **Equipment**. The first step in creating the record is creating a parent record which provides a platform to document the activities on the ‘child’ forms. To create the parent record, select “Create a Monthly Report”. This will load a form that establishes the project section, construction packages, reporting date and construction activity. When the form is complete, select **Save**. If the month’s work was substantially similar to a previous month’s work, then the contractor can select **Copy Previous**. This will load a previous month’s record (list of equipment) into the new record.

Step 3

Once a parent record is complete, it will appear in a list on the main Equipment Record page. To select a parent record to enter data, click on **View Detail** in the first column. This will open the record where users may add all of the pieces of equipment used throughout that month. If the user has copied a previous record, then only new equipment used that month needs to be added, and the user can zero out the hours for equipment not used.

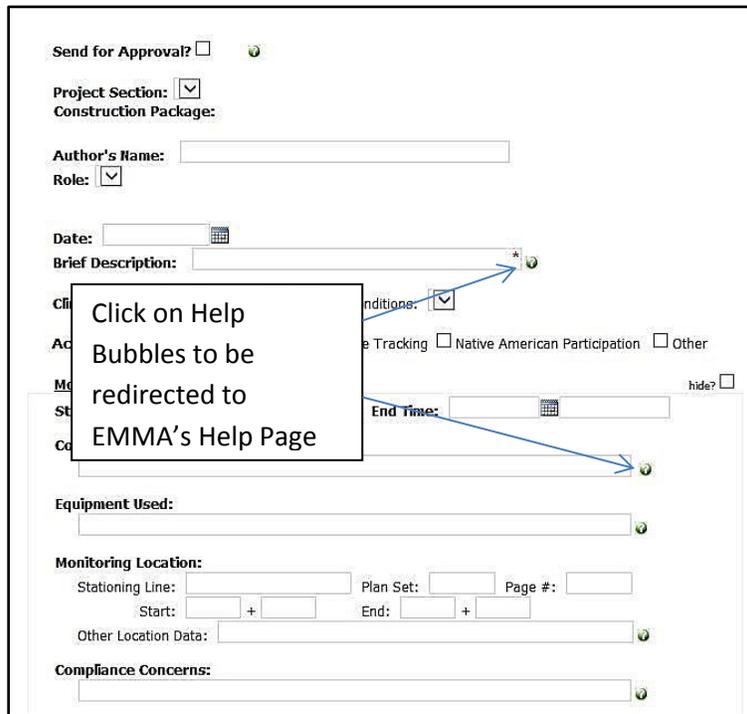
8.3 All Other Sustainability Commitments

The two-step record creation process is consistent for all other sustainability commitments. To create a monthly record, first select the commitment, then complete the parent record form and select **Save**. When the parent record is saved in the system, then the detailed ‘child’ record can be filled in by selecting the **Add Detailed Record** from the parent record screen, or by selecting the parent record from the list on the commitment page.

9.0 Help

EMMA users may access the Help feature by clicking on the green question mark Help Bubbles provided throughout record forms (see Figure 14).

Figure 14: Help Bubbles



Clicking on the Help Bubbles will open a secondary browser tab displaying a Help page that provides details and examples about the type of information expected in various fields.

Figure 15: Help Page

Survey
<ol style="list-style-type: none">1. Type<ol style="list-style-type: none">1. Meandering2. Preconstruction3. Protocol4. Spot-check5. Transect2. Results<ol style="list-style-type: none">1. Resource<ol style="list-style-type: none">1. Indicate the presence of an isolate, feature, site or other resource and create a unique Resource ID3. Start & End Time4. Survey Location<ol style="list-style-type: none">1. Stationing<ol style="list-style-type: none">1. Line2. Start3. End2. Other Location Data<ol style="list-style-type: none">1. May include street addresses, APN's or distance and directional data (i.e. 2-miles ENE of NB entrance to CA-99 at Blank Street)5. Observations Memo<ol style="list-style-type: none">1. Record miscellaneous survey observations.2. Example: <i>Modern debris mixed with historic debris evidencing episodic dumping.</i>6. Additional Survey<ol style="list-style-type: none">1. Check this box if additional surveys are needed<ol style="list-style-type: none">1. Allows for up to 3 total surveys to be recorded2. Another set of identical, blank fields will appear below the current fields7. hide?<ol style="list-style-type: none">1. Check this box to collapse the fields. This is for usability if entering multiple locations to prevent having to scroll through previously entered data.

Assistance using EMMA or to report technical concerns, users may contact the EMMA team at emma@support.pbid.com.



CALIFORNIA High-Speed Rail Authority



EMMA Contractor User Request Form

User Name: _____

User Affiliation (Company): _____

Email Address: _____

Construction Package:

- CP-01a
- CP-01b
- CP-01c
- CP-02
- CP-03

User Role:

- Field Monitor
- Field Supervisor/Lead

User Discipline:

- Air Quality
- Biology/Wetlands
- Cultural Resources/Built Environment
- Paleontology
- Other: _____

Appendix E

Environmental Compliance Program Manual

Qualifications of the Environmental Compliance Team

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Qualified Personnel

In the ECP, the Contractor may identify the members of an Environmental Compliance Team, as described below. The Environmental Compliance Team may be engaged during early design phases following NTP and further engaged prior to construction in the creation of the ECP and technical management plans as required by the Environmental Requirements, including the FEDs, MMEP/MMRP, and associated GAs. The entire staff may not be required at all times; rather, may be on-call to provide specialist services as needed. Other staff will likely be required full-time during the majority of the project implementation.

General Environmental Personnel

Environmental Compliance Manager

The Environmental Compliance Manager is responsible for the overall environmental compliance for the Project, and will function as principal technical advisor and coordinator for environmental issues. The ECP would identify all critical roles, responsibilities, and authorities of the Environmental Compliance Manager. The ECP would identify how the Environmental Compliance Manager will interact with the Authority's environmental compliance program staff. The Environmental Compliance Manager will be assigned to the Project full time through completion of the Project. The Contractor may replace the Environmental Compliance Manager.

The Environmental Compliance Manager may also be responsible for the following:

- Developing the submittals described in this section necessary to support the efforts to obtain and comply with the Environmental Requirements.
- Integrating with the design team during plan preparation to ensure compliance with the Environmental Requirements as well as the implications of changes to design that may result in Variations that require additional CEQA/NEPA review and documentation or SAGAs.
- Coordinating with engineers early in the design stages to ensure they are aware of Environmental Requirements related to their discipline.
- Facilitating weekly Environmental Compliance Team meetings to coordinate with the Authority's environmental compliance program staff about critical permitting and compliance issues.
- Meeting with the Contractor's management staff on a weekly basis to ensure the Project schedule reflects timing restrictions consistent with those identified in the Environmental Requirements.
- Ensuring the Work complies with all Environmental Requirements, included those set forth in the FEDs, GAs, and any SAGAs.
- Acting as a liaison between the Authority, the design team and the construction personnel (e.g., submitting reports, discussing changes to the Project, communicating compliance issues).
- Identifying when a non-compliance event is occurring or has occurred and ensuring the Authority's notification procedure is implemented.

Specialist Personnel

The following staff roles would enhance the Project as part of the Contractor's Environmental Compliance Team. They would not all be engaged full time; however, all of them are expected to be knowledgeable about the Project specifically within their individual discipline areas and to be available to assist at any time during the Project. One or more of these specialist positions may be filled by one single individual provided that (a) the individual meets the qualifications of each of the positions he/she will fill; and (b) it does not result in any scheduling conflicts and/or simultaneous duties that result in lack of compliance. This list should not be considered exhaustive and the contractor may need additional specialists depending on specific project needs. Some of the following positions may be required by permits or the environmental document and others are recommended to design and construct a project of this complexity.

Geographic Information Systems (GIS) Specialist

The Contractor may identify a GIS Specialist responsible for processing and interpreting, as necessary, all GIS-related environmental files provided by the Authority and preparing GIS files related to environmental resources managed by the Contractor's Environmental Compliance Team.

Regulatory Specialist – Waters

It is recommended that the Contractor designate a Regulatory Specialist – Waters to be responsible and advise on matters related to water regulations (Section(s) 401 and 404, Porter-Cologne Act, CDFW 1602).

Regulatory Specialist – Special-Status Species

It is recommended that the Contractor shall designate a Regulatory Specialist – Special-Status Species to be responsible and provide advice on matters related to special-status species regulations (ESA and CESA).

Project Paleontologist

Contractor shall designate a qualified Project Paleontologist with a minimum of five years of experience managing paleontological resources during active construction to prepare paleontological resources management plans, manage paleontological compliance including implementation of mitigation and permit conditions, coordinate construction activities and to liaise with regulatory oversight agency representatives. The Project Paleontologist will comply with the Environmental Requirements, including the obligations as stated in the associated FEDs and GAs.

Paleontological Monitors

The Contractor may hire additional qualified Paleontological Monitors, as needed, when construction activities occur in more than one sensitive area simultaneously. Qualified monitors would have at minimum a Bachelor's Degree in Geology, Paleontology or related discipline. Monitors will be directed by the Project Paleontologist.

Project Biologist

The Contractor shall designate a Project Biologist meeting qualifications as stipulated by the USFWS minimum academic qualifications for a Wildlife Biologist. The Project Biologist will comply with the Environmental Requirements, including the obligations stated in the FEDs and GAs.

Project Botanist

The Contractor may designate a qualified Project Botanist to prepare botanical resources management plans, manage botanical compliance including implementation of mitigation and permit conditions, coordinate construction monitoring and re-vegetation activities and to liaise with regulatory oversight agency representatives. The Project Botanist will comply with the Environmental Requirements, including the obligations stated in the FEDs and GAs.

Biological Monitors

The Contractor may hire additional qualified Biological Monitors, as needed, when construction activities occur in more than one area simultaneously. Monitors will be directed by the Project Biologist.

Cultural Resources Compliance Manager

Within 30 days of NTP, the Contractor will designate a Cultural Resources Compliance Manager (CRCM). In accordance with Programmatic Agreement (PA) Stipulation III, the CRCM must meet the qualifications of a historian, architectural historian, or archaeologist as set forth in the U.S. Secretary of the Interior's professional qualification standards and as required by the PA. Note that the CRCM could also serve as the Principal Investigator Archaeologist or the Principal Architectural Historian, as appropriate.

The Contractor's CRCM will prepare and submit to the Authority weekly compliance reports in accordance with the requirements of the Archaeological Treatment Plan (ATP) and Built Environment Treatment Plan (BETP). The Contractor's CRCM will prepare and submit to the Authority, for review and comment, semi-annual status reports in accordance with the schedule for submittal that are provided for in the MOA from NTP until Final Acceptance. The Authority will have 30 days to review and comment on these reports. Reports will be revised based on comments received.

Principal Investigator Archaeologist

Contractor will designate a Principal Investigator Archaeologist meeting the U.S. Secretary of the Interior's Professional Qualifications Standards (36 C.F.R. Part 61) to provide expertise in completing the inventory, evaluation, and mitigation of archaeological resources, as well as coordinating the construction monitoring activities that may impact cultural resources throughout the duration of the Project. The Principal Investigator Archaeologist will adhere to the requirements and obligations of the ATP.

Archaeological Monitors

Contractor will hire qualified Archaeological Monitors, in compliance with the monitoring requirements outlined below under Section 10.2 and in the ATP and in the Contractor-prepared Archaeological Monitoring Plan. Qualified monitors will have at minimum an Associate's Degree in Anthropology and one year of experience monitoring construction sites or a Bachelor's Degree in Anthropology and six months of experience monitoring active construction sites. Monitoring will follow the procedures outlined in the ATP.

Native American Monitors

Contractor will retain the services of Native American Monitors identified by the Authority as having a traditional affiliation to the Project area and/or signatories to the Section 106 MOA in accordance with specification outlined under Section 10.2 below and in the ATP.

Principal Architectural Historian

Contractor will designate a Principal Architectural Historian meeting the U.S. Secretary of the Interior's Professional Qualifications Standards (36 C.F.R. Part 61) to provide expertise in conducting inventories, evaluations, mitigation and monitoring construction activities for built environment historic resources. The Contractor shall provide expertise in completing the

mitigation of adverse effects to historic properties throughout the Project. Additional experts may be retained as necessary to fulfill mitigation obligations, such as, but not limited to, photographers for Historic American Building Survey/Historic American Engineering Record/Historic American Landscapes Survey (HABS/HAER/HALS), or historical architects and structural engineers for stabilization of historic buildings. In accordance with PA Stipulation III, all work will be carried out by or under the direct supervision of persons meeting the U.S. Secretary of the Interior's Professional Qualifications Standards and who will be approved by the Authority.

All work related to cultural resource will be conducted in accordance with the requirements of the MOA ATP, and BETP, and be directly overseen by the CRCM.

Qualified Stormwater Pollution Prevention Plan Developer

As required by the Construction General Permit (as defined in Section 10.3), Contractor will designate and retain on staff at all times a Qualified Storm Water Pollution Prevention Plan (SWPPP) Developer (QSD). The QSD shall be responsible for oversight and review of the preparation, accuracy, site specificity, and completeness of all analyses and work necessary to develop Permit Regulatory Documents (PRDs) that comply with all Water Quality Conditions, as further set forth in Section 10.3. The Authority shall have the right to approve the Contractor's QSD.

Qualified Stormwater Pollution Prevention Plan Practitioner

As required by the Construction General Permit (as defined in Section 10.3), Contractor will designate and retain on staff at all times a Qualified SWPPP Practitioner (QSP). The QSP shall be responsible for oversight, review, preparation or implementation, accuracy, completeness, and compliance with the Water Quality Conditions of all analyses, BMPs, inspections, monitoring, reports and work necessary to implement the Construction General Permit, the SWPPP, and the other Water Quality Conditions, as further set forth in Section 10.3. The Authority shall have the right to approve the Contractor's QSP.

Water Quality Engineer

As required by the Construction General Permit (as defined in Section 10.3), Contractor will designate and retain on staff at all times one or more qualified California licensed engineer(s) to perform all engineering work required by the Construction General Permit.