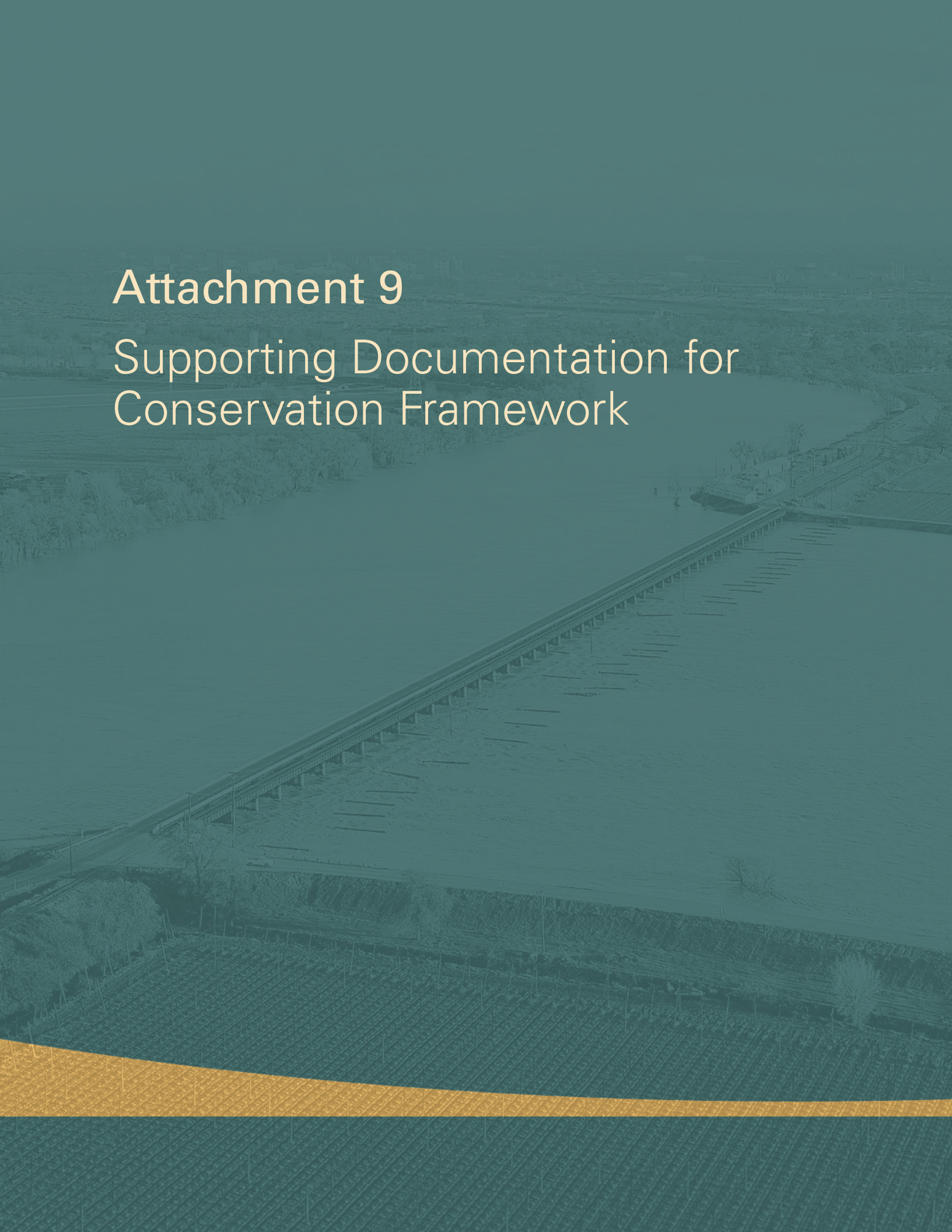
Attachment 9

Supporting Documentation for Conservation Framework



CENTRAL VALLEY
FLOOD MANAGEMENT
PLANNING PROGRAM

FloodSAFE
CALIFORNIA

2012 Central Valley Flood Protection Plan

Attachment 9: Supporting Documentation for Conservation Framework

June 2012

STATE OF CALIFORNIA
THE NATURAL RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

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Table of Contents

List of Figures

List of Attachments

1.0 Introduction

As part of the development of the Conservation Framework and the 2012 Central Valley Flood Protection Plan (CVFPP), supporting technical analyses and research efforts were conducted to evaluate conditions within the flood management system and to support formulation of conservation improvements. These efforts were conducted in the Sacramento River Basin, San Joaquin River Basin, and Sacramento-San Joaquin Delta (Delta).

This Supporting Technical Documentation for Conservation Framework provides an overview of the technical analyses and research efforts supporting the formulation and evaluation of the Conservation Framework that, in turn, supports formulation of the State Systemwide Investment Approach presented in the 2012 CVFPP. Detailed descriptions of these supporting documents are attached.

1.1 Background

As authorized by Senate Bill 5, also known as the Central Valley Flood Protection Act of 2008, the California Department of Water Resources (DWR) has prepared a sustainable, integrated flood management plan called the CVFPP, for adoption by the Central Valley Flood Protection Board (Board). The 2012 CVFPP provides a systemwide approach to protecting lands currently protected from flooding by existing facilities of the State Plan of Flood Control (SPFC), and will be updated every 5 years.

The Conservation Framework is an integral part of the State of California's (State's) preferred approach to flood management in the Central Valley. To help meet the required objectives of the Central Valley Flood Protection Act of 2008 and the goals of the CVFPP (particularly regarding public safety), the Conservation Framework outlines the State's intent to accomplish the following:

- Improve and enhance natural dynamic hydrologic (flow) and geomorphic processes in the flood management system

- Increase and improve the quantity, diversity, quality, and connectivity of riverine habitats in the flood management system

- Contribute to the recovery and stability of native species populations and overall biotic community diversity associated with the flood management system

The Conservation Framework is the first phase of more comprehensive and integrated planning within the flood management system, leading to a longer term Central Valley Flood System Conservation Strategy (Conservation Strategy). The Conservation Strategy will be consistent with the Conservation Framework and will provide more specifics about integrating flood and conservation actions. This Conservation Strategy may include regional permitting plans, such as Natural Community Conservation Plans or Habitat Conservation Plans.

1.2 CVFPP Planning Areas

For planning and analysis purposes, and consistent with legislative direction, two geographical planning areas were important for CVFPP development (Figure 1-1):

- **SPFC Planning Area –** This area is defined by the lands currently receiving flood protection from facilities of the SPFC (see *State Plan of Flood Control Descriptive Document* (DWR, 2010)). The State of California's (State) flood management responsibility is limited to this area.

- **Systemwide Planning Area –** This area includes the lands that are subject to flooding under the current facilities and operation of the Sacramento-San Joaquin River Flood Management System (California Water Code Section 9611). The SPFC Planning Area is completely contained within the Systemwide Planning Area which includes the Sacramento River Basin, San Joaquin River Basin, and Delta regions.

Planning and development for the CVFPP occurs differently in these planning areas. The CVFPP focused on SPFC facilities; therefore, evaluations and analyses were conducted at a greater level of detail within the SPFC Planning Area than in the Systemwide Planning Area.

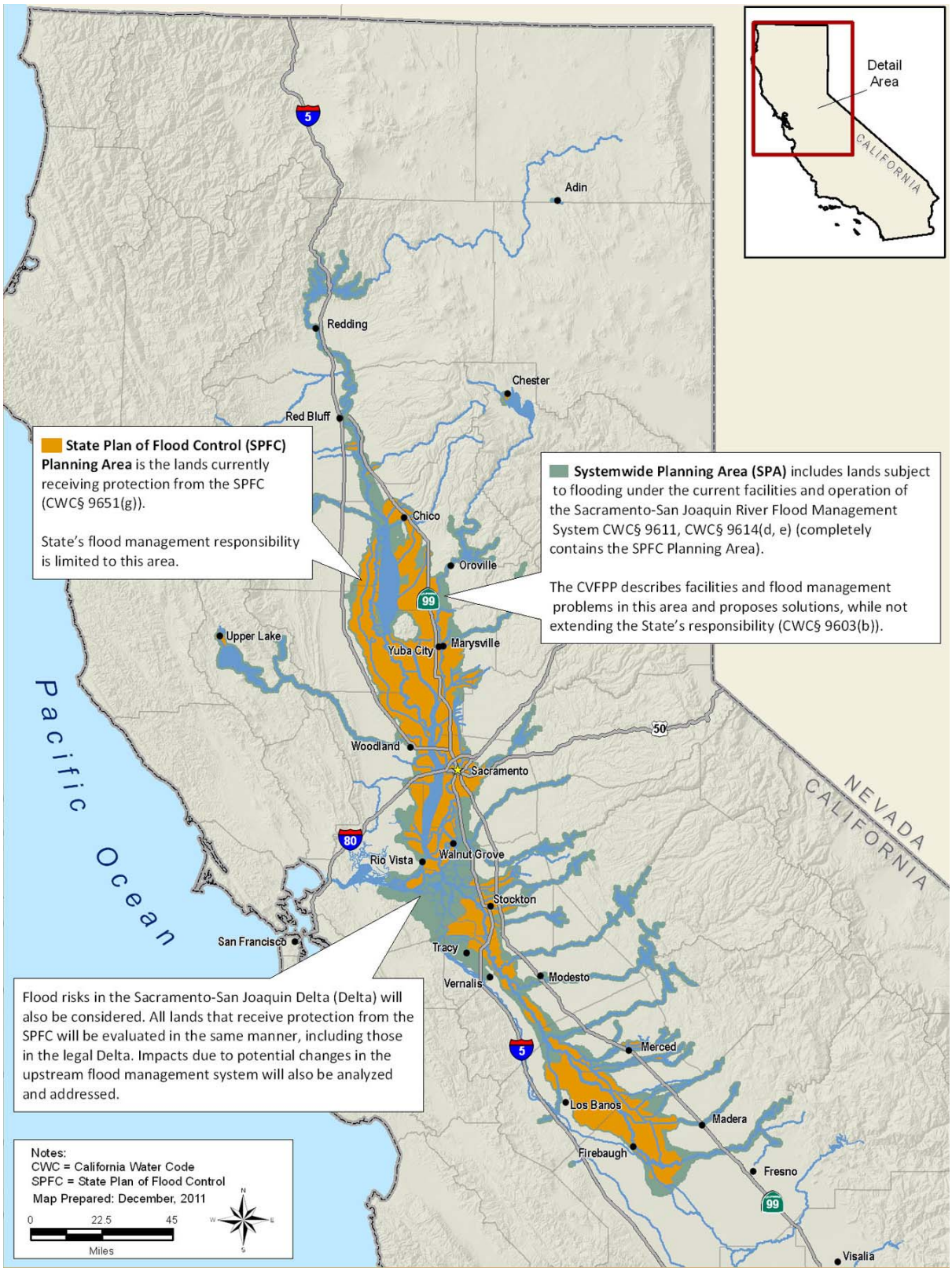

Figure 1-1. Central Valley Flood Protection Plan Planning Areas

1.3 2012 CVFPP Planning Goals

To help direct CVFPP development to meet legislative requirements and address identified flood-management-related problems and opportunities, a primary and four supporting goals were developed:

- **Primary Goal** – Improve Flood Risk Management
- **Supporting Goals**:
  - Improve Operations and Maintenance
  - Promote Ecosystem Functions
  - Improve Institutional Support
  - Promote Multi-Benefit Projects

1.4 2012 CVFPP Planning Approaches

In addition to **No Project**, three fundamentally different approaches to flood management were initially compared to explore potential improvements in the Central Valley. These approaches are not alternatives; rather, they bracket a range of potential actions and help explore trade-offs in costs, benefits, and other factors important in decision making. The approaches are as follows:

- **Achieve SPFC Design Flow Capacity** – Address capacity inadequacies and other adverse conditions associated with existing SPFC facilities, without making major changes to the footprint or operation of those facilities.
- **Protect High Risk Communities** – Focus on protecting life safety for populations at highest risk, including urban areas and small communities.
- **Enhance Flood System Capacity** – Seek various opportunities to achieve multiple benefits through enhancing flood system storage and conveyance capacity.

Comparing these approaches helped identify the advantages and disadvantages of different combinations of management actions, and demonstrated opportunities to address the CVFPP goals to different degrees.

Based on this evaluation, a **State Systemwide Investment Approach** was developed that encompasses aspects of each of the approaches to balance achievement of the goals from a systemwide perspective, and includes integrated conservation elements. Figure 1-2 illustrates this plan formulation process.

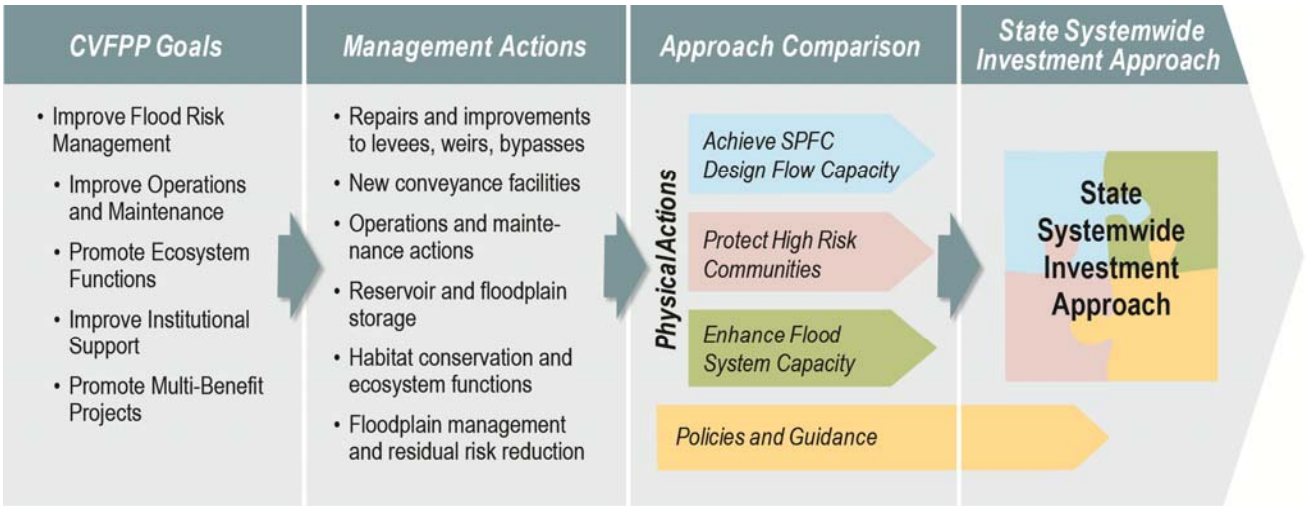

Figure 1-2. Formulation Process for State Systemwide Investment Approach

1.5 Report Organization

Organization of this document is as follows:

- Section 1 introduces and describes the purpose of this report.
- Section 2 briefly summarizes each of the attachments.
- Section 3 contains references for the sources cited in this document.
- Section 4 lists acronyms and abbreviations used in this document.

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2.0 Attachment Summary

This section summarizes the supporting attachments informing development of the Conservation Framework and the Conservation Strategy.

2.1 Regional Advance Mitigation Planning

Attachment 9A: Regional Advance Mitigation Planning focuses on efforts to develop a mitigation approach that (1) integrates project-specific mitigation with regional and statewide conservation priorities, and (2) offsets unavoidable impacts of planned infrastructure projects before the projects are constructed. Regional Advance Mitigation Planning (RAMP) has been in preparation by a multiagency work group since 2008. To develop advance mitigation in the Systemwide Planning Area, the State would work with regulatory agencies to estimate potential mitigation needs early in the timelines of multiple projects. This process minimizes permitting and regulatory delays and reduces mitigation costs by securing and conserving valuable natural resources at an economically efficient scale and before potential mitigation lands are converted to incompatible land uses. Having RAMP-sponsored mitigation sites in strategic locations throughout the Systemwide Planning Area could speed approvals for the State's infrastructure agencies when the agencies seek permits for "take" of endangered species, fill of wetlands, or disturbance to streambeds and their banks. Adopting a strategic, forward-looking, and regional approach, in which natural resources agencies are encouraged to identify mitigation needs early, can provide a vehicle for identifying solutions that address conservation priorities in ways that are coordinated and take into account agricultural communities and land uses.

2.2 Status and Trends of the Riparian and Riverine Ecosystems of the Systemwide Planning Area

Attachment 9B: Status and Trends of the Riparian and Riverine Ecosystems of the Systemwide Planning Area summarizes the current status and historical trends of riparian and riverine ecosystems in the Systemwide Planning Area for the CVFPP. The summary of status and trends in this report is intended to document the need for and support the

development of the Conservation Framework that will be a component of the 2012 CVFPP and the Conservation Strategy. This attachment accomplishes the following:

- Describes the ecological history of the Sacramento Valley's and San Joaquin Valley's riparian and riverine ecosystems, how these ecosystems historically functioned, and early stressors on these ecosystems that have contributed to their current status and observed trends.

- Describes the ecological relevance of the hydrologic and geomorphic processes emphasized in the report and the mechanisms by which these processes interact with each other and affect the ecosystem functions of Sacramento Valley and San Joaquin Valley riparian and riverine habitats. Additionally, it describes the mechanisms by which specific stressors negatively affect hydrologic, geomorphic, and ecosystem processes.

- Assesses the status and trends of Sacramento Valley and San Joaquin Valley hydrologic and geomorphic processes, and related habitats through a series of metrics calculated from readily available data. Each metric is described in a concise summary that identifies the rationale for selecting that metric to illustrate a particular process or habitat status, trend, or stressor; describes how the metric was developed and analyzed; and identifies the primary conclusion that can be drawn from each metric. The assessment relies heavily on graphical representations of each metric (e.g., charts or maps).

- Summarizes data gaps documented during the analysis of status, trends, and stressor metrics and highlights the potential for conceptual ecological models as planning tools for the Conservation Strategy.

2.3 Fish Passage Assessment

Attachment 9C: Fish Passage Assessment identifies fish passage obstacles and recommends actions for modifying the Central Valley flood management system that could contribute to the recovery of native anadromous[1] fish in the Central Valley. Within the geographical context of the CVFPP Systemwide Planning Area, this report discusses the following:

- Importance of ecological flows and floodplain flooding for fish

[1] Anadromous fish hatch from eggs laid in freshwater streams, migrate as juveniles to saltwater, and after living and growing in ocean waters, then return as adults to spawn in freshwater to complete their life cycle.

- Anadromous species present
- Anadromous fish population status and the reduction from their historical ranges
- Reasons for their decline, with a particular focus on physical passage barriers and stranding related to flood management
- Implications of passage barriers under climate change effects
- Identification and ranking of passage barriers and stranding areas
- Description of tested approaches for improving passage around major dams

Fish passage barriers can include, but are not limited to, dams, weirs, grade control structures, pumping stations, flood control gates, levees that cross or block stream channels, road crossings, and features of the flood control channels and bypasses that strand fish. Fish passage actions include identifying barriers, evaluating the magnitude that each barrier impedes migration, and modifying barriers to allow unimpeded migration. These actions will assist in increasing and improving habitat connectivity and promoting the recovery of anadromous fish populations in the Sacramento-San Joaquin River Flood Management System.

2.4 Improving Vegetation Data

Attachment 9D: Improving Vegetation Data describes the importance of high-quality vegetation data for improving flood management and ecosystem conditions in the Central Valley; summarizes other related mapping efforts; and describes DWR's approach, progress, and future steps for improving the quality of vegetation data.

DWR is in the process of completing a seamless riparian vegetation map for the Sacramento and San Joaquin main-stems and tributaries within the CVFPP Systemwide Planning Area. Before this effort, most vegetation data for these areas was incomplete, or conducted at a variety of scales and resolutions. This mapping effort provides baseline data for impact analysis, and conservation and restoration area planning.

2.5 Existing Conservation Objectives from Other Plans

Attachment 9E: Existing Conservation Objectives from Other Plans contains information on other conservation planning efforts (both completed and ongoing) with regional, geographically based, and/or quantifiable conservation measures potentially relevant to the Conservation Strategy. The Conservation Strategy, in conjunction with the CVFPP, will overlap with multiple regional and collaborative conservation plans that have either been previously implemented or are planned for the Sacramento and San Joaquin valleys. Regional planning is most effective when coordinated with similar programs and plans to the maximum extent possible. Coordination among the Conservation Strategy and similar, related conservation and collaborative planning efforts is essential to determine if the Conservation Strategy, in meeting its conservation objectives, can contribute to the shared conservation objectives of other plans or programs. Plans and programs were selected for inclusion that overlapped at least partially with the SPFC Planning Area or Systemwide Planning Area, and that included conservation objectives likely to be related to the Conservation Strategy. The list is not comprehensive, but includes examples of the types of efforts that should be considered in developing the Conservation Strategy.

2.6 Floodplain Restoration Opportunity Analysis

Ecosystem restoration is a key component of the CVFPP, and management actions related to habitat restoration have been drafted as part of the CVFPP planning process. Further refinement of these management actions will be informed by an understanding of habitat restoration opportunities, in terms of the location, acreage, and expected ecosystem benefits of each management action that are possible within the context of the SPFC.

Attachment 9F: Floodplain Restoration Opportunities Analysis (FROA) supports this refinement of management actions by identifying areas with the greatest and/or most extensive potential opportunities for floodplain restoration. To identify and quantify potential opportunities for floodplain restoration, the following process has been followed:

- Identification of areas of physical suitability using the Floodplain Inundation Potential (FIP) tool

- Identification of other opportunities and constraints using land use-land cover data, conserved areas, location and physical condition of project and non-project levees, locations of other major infrastructure, and

areas planned or desired for restoration, as identified by other plans or stakeholder interest

- Evaluation of relationships among physical suitability and other opportunities and constraints

- Identification of river reaches with the greatest and/or most extensive potential opportunities for floodplain restoration

Results of the FROA support the identification, prioritization, and further development of specific restoration opportunities. In conjunction with the Conservation Strategy, these specific opportunities will be identified, prioritized, and developed on the basis of their potential ecological, flood management, and other benefits (e.g., reduced maintenance and regulatory compliance costs); cost; and regulatory, institutional, technological, and operational feasibility.

2.7 Regional Permitting Options

Programmatic approaches to permitting and other regulatory authorizations for flood management activities (e.g., regional permitting mechanisms) are an important part of improving and integrating flood management and ecosystem conservation in the Central Valley. To support both the CVFPP and the linked Conservation Strategy, Attachment 9G: Regional Permitting Options, does the following:

- Describes the benefits of programmatic authorizations (as compared to project-by-project permitting)

- Identifies the types of flood management activities that could potentially be covered by such programmatic authorizations

- Describes and evaluates several options for developing programmatic authorization mechanisms for the flood management system, and identifies other important environmental regulations that apply

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3.0 References

California Department of Water Resources (DWR). 2010. State Plan of Flood Control Descriptive Document. November.

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4.0 Acronyms and Abbreviations

Board ..... Central Valley Flood Protection Board

Conservation Strategy..... Central Valley Flood System Conservation Strategy

CVFPP ..... Central Valley Flood Protection Plan

Delta..... Sacramento-San Joaquin Delta

DWR ..... California Department of Water Resources

FIP ..... Floodplain Inundation Potential

FROA ..... Floodplain Restoration Opportunities Analysis

RAMP ..... Regional Advance Mitigation Planning

SPFC ..... State Plan of Flood Control

State..... State of California

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