

1 5.0 Alternatives

2 This chapter describes alternatives to the proposed program and compares
3 the environmental impacts of those alternatives. The alternatives generally
4 correspond to the preliminary approaches described in the CVFPP, and also
5 include two no-project scenarios. This chapter also briefly describes
6 alternatives that were considered but rejected. The various CVFPP
7 “approaches” are referred to as “alternatives” in this chapter; despite the
8 different terminology, these alternatives constitute alternatives as defined
9 under CEQA.

10 5.1 Introduction

11 The principles used to guide selection of the alternatives analyzed in this
12 PEIR are provided by Section 15126.6 of the CEQA Guidelines, which
13 specifies that an EIR must do all of the following:

- 14 • Describe a reasonable range of potentially feasible alternatives to the
15 project that could feasibly attain most of the basic objectives of the
16 project
- 17 • Consider alternatives that could reduce or eliminate any significant
18 environmental impacts of the proposed project, including alternatives
19 that may be more costly or could otherwise impede the project’s
20 objectives
- 21 • Evaluate the comparative merits of the alternatives

22 The focus and definition of the alternatives evaluated in this PEIR are
23 governed by the “rule of reason,” in accordance with Section 15126.6(f) of
24 the CEQA Guidelines. That is, the range of alternatives presented in this
25 PEIR must permit a reasoned choice by DWR and the Central Valley Flood
26 Protection Board (Board). The CEQA Guidelines (Section 15126.6) require
27 that an EIR evaluate at least one “No-Project Alternative,” evaluate a
28 reasonable range of alternatives to the project, identify alternatives that
29 were initially considered but then excluded from further evaluation, and
30 identify the “environmentally superior alternative.”

31 Although the CEQA Guidelines (Section 15126.6(d)) require that
32 alternatives be evaluated, they permit the evaluation to be conducted in less
33 detail than for the proposed project. Consistent with Section 15126.6(d) of

1 the CEQA Guidelines, the information provided in this PEIR about each
2 alternative is sufficient to allow for a meaningful evaluation, analysis, and
3 comparison of the alternatives with the proposed program.

4 The following discussion is intended to inform the public and decision
5 makers of potentially feasible alternatives to the proposed program that
6 could be implemented to attain the basic program objectives (summarized
7 in Section 2.1.2, “Program Objectives”) while substantially reducing one or
8 more of the program’s potentially significant effects.

9 **5.2 Alternatives Considered**

10 Development of the CVFPP involved formulating and evaluating
11 substantially different preliminary alternatives to address CVFPP goals.
12 The preliminary alternatives were used primarily to explore different
13 potential physical changes to the existing flood management system and to
14 assist in highlighting the need for policy changes or other management
15 actions.

16 The alternatives were derived from a list of more than 90 individual
17 management actions, developed through a collaborative stakeholder
18 process, which were identified and grouped into the following categories:

- 19 • Additional floodplain and reservoir storage
- 20 • Storage operations
- 21 • Flood protection system modifications
- 22 • Operations and maintenance
- 23 • Ecosystem functions
- 24 • Floodplain management
- 25 • Disaster preparedness and flood warning
- 26 • Flood fighting, emergency response, and flood recovery
- 27 • Policy and regulations
- 28 • Permitting
- 29 • Finance and revenue

1 The management actions generally encompass broad tactics or strategies,
2 rather than location-specific projects, and vary in their level of detail. They
3 range from physical and operational improvements to the flood
4 management system to residual risk management and overall program
5 implementation considerations.

6 Given the large number of possible permutations and combinations of these
7 management actions, DWR decided during the development of the CVFPP
8 to focus the analysis by developing three preliminary alternatives. These
9 preliminary alternatives were designed to inform flood management policy
10 development and to explore the potential accomplishments of different
11 combinations of physical investments in the flood management system.

12 The three preliminary alternatives were intended to bracket the potential
13 range of future flood management options in the Central Valley and
14 address flood problems in fundamentally different ways, not necessarily to
15 achieve the CVFPP goals to the same degree. Information provided through
16 these evaluations allowed DWR to select the better performing
17 characteristics and avoid the poorer performing characteristics of each
18 preliminary alternative to assemble the proposed program.

19 For the same reasons that the three primary alternatives effectively
20 bracketed the potential range of flood management options, they also
21 bracket key program parameters relevant to environmental effects. For
22 example, some environmental impacts will increase to the extent that the
23 “footprint” of the flood protection system is changed and/or enlarged.
24 Other environmental impacts will increase in relation to the overall
25 magnitude of construction activities. The preliminary alternatives in the
26 CVFPP were reviewed by DWR and found to effectively establish a
27 reasonable range for purposes of CEQA.

28 CEQA also requires that an EIR evaluate one or more “no-project”
29 alternatives (CEQA Guidelines, Section 15126.6). The no-project
30 alternative is to be based upon the existing conditions as of the date of the
31 notice of preparation (here October 27, 2010), as well as what would be
32 reasonably expected to occur in the foreseeable future if the project were
33 not approved. When the project is the revision of an existing land use or
34 regulatory plan, policy or ongoing operation, the “no-project” alternative
35 will be the continuation of the existing plan, policy or operation into the
36 future. Here, as described in the draft plan document, the CVFPP reflects
37 the ongoing planning, policy development, and operations of the State Plan
38 of Flood Control (SPFC).

39 In defining the no-project alternative, the lead agency must make
40 assumptions about what would reasonably be expected to occur in the

1 foreseeable future if the program were not approved, based on current plans
2 and consistent with available infrastructure and community services. With
3 respect to the CVFPP, a key variable in this regard is the availability of
4 funds. As explained in the draft CVFPP on page 4-38, Propositions 84 and
5 1E provided up to \$3.3 billion that could be used for flood risk reduction in
6 areas protected by facilities of the SPFC. Of these funds, the State has
7 already invested \$1.6 billion over the last 5 years. Accordingly,
8 approximately \$1.5 billion to \$1.7 billion of bond funding has already been
9 authorized for these activities going forward. The No-Project Alternative—
10 Continued Operations Scenario, described below, assumes that these funds
11 will remain available and be expended over approximately the next 5-year
12 period. The CVFPP also recognizes that local agencies will need to provide
13 approximately \$0.5 billion and that federal appropriations of approximately
14 \$1 billion will be needed to undertake activities anticipated during the next
15 5 years. The No-Project Alternative—Continued Operations Scenario
16 described below assumes that these funds will be forthcoming.

17 Once these funds are exhausted, the CVFPP acknowledges that the State
18 will need to present a general obligation bond measure to the voters to
19 provide an additional \$4 billion to \$5 billion to cover the remaining State’s
20 share of investment in the flood reduction projects outlined in the proposed
21 program. Substantial local and federal funding will also be necessary. The
22 willingness of State voters to approve such a bond measure and the
23 availability of additional local and federal funds are highly uncertain. For
24 purposes of developing the No-Project Alternative—Continued Operations
25 Scenario, DWR has assumed that these substantial additional funds will not
26 be forthcoming in the absence of a coherent and transparent plan such as
27 the CVFPP.

28 In certain circumstances, CEQA requires that the no-project alternative be
29 based upon a “no-build” scenario where the existing environmental setting
30 is maintained. Although DWR does not consider the evaluation of such a
31 scenario to be required in this circumstance, in light of the near-term
32 funding uncertainties described above, and in order to provide for a broader
33 range of alternatives offering better informed decision-making and public
34 participation, DWR has also considered a No-Project Alternative—No
35 Additional Activities Scenario as described below.

36 CEQA also requires, in appropriate circumstances, that alternative
37 locations to the project be considered where feasible. Here, flood protection
38 must generally be provided where the flood risk is based, which for
39 purposes of the CVFPP means in proximity to the rivers and tributaries in
40 the Sacramento and San Joaquin basins. As a result, it is apparent that flood
41 protection improvements cannot feasibly achieve the program objectives
42 unless undertaken in the general locations where the flood risk is generated

1 or presented. To an extent, some of the alternatives below (such as those
 2 involving new or expanded bypasses) consider alternative locations. Other
 3 alternative locations (such as locating future flood control improvements in
 4 entirely different locations) have been determined infeasible and are not
 5 evaluated further.

6 Taking all of these considerations into account, the following alternatives
 7 were considered for analysis in this PEIR:

- 8 • No-Project Alternative—Continued Operations Scenario
- 9 • No-Project Alternative—No Additional Activities Scenario
- 10 • Modified State Systemwide Investment Approach (SSIA) Alternative
- 11 • Achieve SPFC Design Flow Capacity Alternative
- 12 • Achieve SPFC Design Flow Capacity with Strict Engineering
 13 Technical Letter (ETL) Compliance Alternative
- 14 • Protect High-Risk Communities Alternative
- 15 • Enhance Flood System Capacity Alternative
- 16 • As indicated above, three of these alternatives were evaluated and
 17 described in the CVFPP: the Achieve SPFC Design Flow Capacity
 18 Alternative, Enhance Flood System Capacity Alternative, and Protect
 19 High Risk Communities Alternative. For a more detailed description of
 20 these Alternatives, please refer to the draft plan. In addition to the
 21 alternatives listed in the CVFPP, this PEIR also evaluates the Modified
 22 SSIA Alternative, Achieve SPFC Design Flow Capacity with Strict
 23 ETL Compliance Alternative, and the two no-project scenarios just
 24 described. Each of these alternatives is described briefly below, with
 25 those carried forward for further evaluation in this PEIR described in
 26 more detail in Section 5.4, “Alternatives Carried Forward for Analysis
 27 and Evaluation.”

28 **5.2.1 No-Project Alternative—Continued Operations** 29 **Scenario**

30 Under the No-Project Alternative—Continued Operations Scenario, and
 31 without a systemwide flood management plan such as the CVFPP, current
 32 flood management trends in the Central Valley would likely continue.
 33 Projects that are planned or under way and supported by reasonably
 34 anticipated funds would commence and/or continue to completion. The
 35 Federal Emergency Management Agency would continue to remap the

1 floodplains protected by the SPFC with less than 100-year flood protection.
2 Existing partnerships among the federal government, the State, and local
3 entities to implement flood risk reduction projects would continue.
4 However, this alternative assumes that funding beyond that currently
5 authorized under Propositions 84 and 1E would not be available,
6 substantially constraining the scale of construction and other activities
7 under this alternative. Local agencies' planning obligations that would be
8 triggered by adoption of the CVFPP would not be triggered under this
9 alternative, and system maintenance would still be challenged by the need
10 to complete annual maintenance activities. The vegetation management
11 strategy (VMS), including the life-cycle management (LCM) component,
12 would be implemented with or without the adoption of the CVFPP.

13 **5.2.2 No-Project Alternative—No Additional Activities** 14 **Scenario**

15 The No-Project Alternative—No Additional Activities Scenario is similar
16 to the No-Project Alternative—Continued Operations Scenario, except that
17 this scenario does not assume that projects not already under way will be
18 commenced, and further does not assume that funding will be forthcoming
19 for projects other than those already commenced. This scenario also
20 assumes that the component of the VMS reflected in *California's Central*
21 *Valley Flood System Improvement Framework* (Framework) (DWR, 2009),
22 adopted on February 27, 2009—vegetation management in the vegetation
23 management zone for purposes of visibility and access—will continue to be
24 implemented by maintaining agencies. However, it assumes that the LCM
25 component—long-term elimination of trees in the vegetation management
26 zone—will not be adopted or applied. Under this scenario, some
27 recruitment of new trees on SPFC levees will incidentally be prevented by
28 maintenance undertaken for purposes of visibility and access, but less
29 thoroughly and at a slower rate than would be the case with LCM, so that
30 some trees likely would remain.

31 **5.2.3 Modified State Systemwide Investment Approach** 32 **Alternative**

33 The Modified SSIA Alternative is similar to the proposed program in that it
34 is based on the urban protection provided by the Protect High-Risk
35 Communities Alternative and adds some small-community protection, but
36 with more limited construction activities than for other alternatives. The
37 alternative also includes expanding the Yolo Bypass and widening Fremont
38 Weir, but does not include any of the other bypass expansions and related
39 improvements contained in the proposed program. This alternative presents
40 a less construction-intensive alternative that addresses only the most critical
41 stressors on public safety, operations and maintenance, and ecosystem
42 function, while minimizing potential adverse environmental effects. Work

1 would focus on repairing and improving existing levees in urban areas with
2 only limited work on expanding floodways.

3 **5.2.4 Achieve SPFC Design Flow Capacity Alternative**

4 The Achieve SPFC Design Flow Capacity Alternative focuses on
5 addressing the condition of existing SPFC levees so that the channels
6 convey their design flows with a high degree of reliability based on current
7 engineering criteria. The system was largely constructed based on
8 geometric criteria using available soil materials without extensive
9 investigation of foundation conditions. The majority of SPFC levees do not
10 meet current engineering criteria. This alternative addresses an element of
11 the authorizing legislation (CWC Section 9614(g)), which requires that
12 DWR evaluate structural projects that could be undertaken to reconstruct
13 SPFC facilities to bring each of the facilities of the SPFC to within its
14 design standard. This alternative involves addressing levee conditions
15 primarily in place, without making major changes to the footprint or
16 operation of those facilities. Levee improvements would be made
17 regardless of the areas they protect or the level of protection they provide.
18 This alternative would provide little opportunity to incorporate benefits
19 beyond flood management.

20 **5.2.5 Achieve SPFC Design Flow Capacity with Strict** 21 **ETL Compliance Alternative**

22 The Achieve SPFC Design Flow Capacity with Strict ETL Compliance
23 Alternative is the same as the Achieve SPFC Design Flow Capacity
24 Alternative but presents a different method of addressing the issue of
25 vegetation on levees. The Achieve SPFC Design Flow Capacity with Strict
26 ETL Compliance Alternative involves meeting two goals simultaneously:

- 27 1. Improve existing SPFC levees so that they convey their design flow
28 capacities.
- 29 2. Ensure the strictest compliance with the U.S. Army Corps of Engineers
30 (USACE) guidance provided in ETL 1110-2-571, *Guidelines for*
31 *Landscape Planting and Vegetation Management at Levees,*
32 *Floodwalls, Embankment Dams, and Appurtenant Structures.*

33 (All references to the “ETL” in this chapter are specifically to ETL 1110-2-
34 571.)

35 This alternative assumes that DWR would not use USACE’s associated
36 draft policy guidance letter, *Process for Requesting a Variance from*
37 *Vegetation Standards for Levees and Floodwalls; Additional Findings (77*
38 *Federal Register 9637–9650, February 17, 2012) (PGL).* The variance

1 process allows for retention of some woody vegetation on or near levees
2 under certain very specific circumstances.

3 **5.2.6 Protect High-Risk Communities Alternative**

4 The Protect High-Risk Communities Alternative evaluates improvements
5 to levees to protect life safety and property for high-risk population centers,
6 including urban and small communities. Most levees in rural-agricultural
7 areas would remain in their existing configurations; however new training
8 levees, ring levees, or floodwalls immediately adjacent to the communities
9 may be constructed. This alternative would provide a minor opportunity to
10 incorporate benefits beyond flood management.

11 **5.2.7 The Enhanced Flood System Capacity Alternative**

12 The Enhanced Flood System Capacity Alternative involves seeking
13 opportunities to achieve multiple benefits by enhancing the flood system's
14 storage and conveyance capacity, protecting high-risk communities, and
15 fixing levees in place in rural-agricultural areas. This alternative combines
16 the features of other alternatives and provides greater capacity within flood
17 conveyance channels to lower flood stages in most of the system.

18 **5.3 Alternatives Considered but Rejected**

19 The alternatives described below were rejected from further consideration
20 and analysis because they failed to meet most of the basic program
21 objectives, were determined to be infeasible, would not avoid or
22 substantially lessen significant environmental impacts, and/or would be so
23 similar to another alternative that it would not add to expand the range of
24 alternatives evaluated in this PEIR. Factors taken into account when
25 addressing the feasibility of alternatives were site availability and
26 suitability, economic viability (i.e., project cost), availability of
27 infrastructure, regulatory constraints (i.e., ability to obtain permits), and
28 technical limitations (i.e., ability to reasonably construct and/or operate the
29 alternative).

30 **5.3.1 Achieve SPFC Design Flow Capacity with Strict** 31 **ETL Compliance Alternative**

32 As described above, the Achieve SPFC Design Flow Capacity with Strict
33 ETL Compliance Alternative is the same as the preliminary Achieve SPFC
34 Design Flow Capacity Alternative, but presents a different method of
35 addressing the issue of vegetation on levees. This alternative assumes strict
36 compliance with USACE's ETL and little to no pursuit of variances to
37 allow retention of some woody vegetation on or near levees. It would
38 therefore result in the near-term removal of all woody vegetation on all
39 parts of the levees, including the waterside slope below the vegetation

1 management zone (from the river up to a line 20 feet below the levee
2 crown).

3 This alternative was rejected from further analysis for several reasons.
4 Ensuring strict ETL compliance while making necessary improvements to
5 the SPFC would be cost prohibitive, primarily resulting from very high
6 mitigation costs to compensate for loss of riparian habitat and habitat for
7 threatened and endangered species. In addition, mitigating impacts
8 associated with strict ETL compliance would be nearly impossible due to
9 the limited availability of waterside acreage to provide compensatory
10 shaded riverine aquatic habitat (see Section 3.5, “Biological Resources—
11 Aquatic,” for information on shaded riverine aquatic habitat). This would
12 leave the State unable to gain the proper permits to implement this
13 alternative.

14 As discussed in greater detail in Section 2.3.7, “Vegetation Management
15 Strategy and Life-Cycle Management,” and Section 5.4.1, “No-Project
16 Alternative—Continued Operations Scenario,” the State recognizes that
17 woody vegetation on levees must be carefully managed. However, other
18 levee failure mechanisms (or risk factors), such as underseepage, through-
19 seepage, slope and structural instability, erosion, and deep rodent burrows,
20 have been demonstrated to have substantially greater adverse effects on
21 levee integrity and public safety. Science has shown that woody vegetation
22 has the potential to increase or reduce risk, depending on a variety of
23 factors; DWR believes that it is appropriate to characterize woody
24 vegetation as only a “potential risk factor” that should be considered
25 relative to unequivocal risk factors and site-specific conditions. One of the
26 findings of DWR’s *Flood Control System Status Report* (DWR, 2011) is
27 that although risk factors such as seepage, stability, and erosion were rated
28 as medium to high relative threats, levee vegetation was rated as a low
29 threat to levee integrity. This is consistent with the fact that no documented
30 levee failures in California have ever been attributed to vegetation.

31 The State’s levee VMS focuses on improving public safety by providing
32 for levee integrity, visibility, and accessibility for inspections, maintenance,
33 and flood-fight operations. At the same time, it protects important and
34 critical environmental resources, with a focus on protecting and enhancing
35 the remaining shaded riverine aquatic habitat associated with the SPFC.
36 From a flood threat perspective, lower waterside slope vegetation rarely
37 presents an unacceptable threat to levee integrity. Removing such
38 vegetation is a very low priority and generally is not justified until high
39 levee risk factors (as documented in the *Flood Control System Status
40 Report* (DWR, 2011)) are addressed.

1 These factors cause this alternative to be cost prohibitive and impossible to
2 implement under the existing regulatory framework. Consequently, this
3 alternative is not considered further because it (1) would not satisfy the
4 program objectives; (2) would be infeasible because of major cost
5 implications and regulatory constraints; and (3) would not avoid or lessen
6 significant environmental impacts, but actually would cause substantially
7 greater environmental impacts on biological resources.

8 **5.3.2 Protect High-Risk Communities Alternative**

9 The Protect High-Risk Communities Alternative was rejected from further
10 analysis because it would not satisfy most of the eight program objectives.
11 CEQA requires that the range of potential alternatives to the program
12 include those that could feasibly accomplish most of the basic objectives of
13 the program. The Protect High-Risk Communities Alternative is also very
14 similar to the Modified SSIA Alternative, which is carried forward in the
15 analysis. The Protect High-Risk Communities Alternative differs from the
16 Modified SSIA Alternative only in terms of minor increases in the
17 measures benefiting small communities, and by including an expanded
18 Yolo Bypass and modifications to the Fremont Weir. Accordingly, further
19 consideration and analysis of this alternative would not add to or expand
20 the range of alternatives considered in this PEIR.

21 The only material difference between the Protect High-Risk Communities
22 Alternative and the Modified SSIA Alternative is that the Protect High-
23 Risk Communities Alternative would include some impacts on agricultural
24 lands in an expanded Yolo Bypass. However, this feature of the alternative
25 is shared with both No-Project Alternative scenarios and is adequately
26 captured by those alternatives.

27 Consequently, this alternative is not considered further because it (1) would
28 not satisfy most of the program objectives and (2) would be so similar to
29 other alternatives that its inclusion in this PEIR for analysis would not add
30 to or expand the reasonable range of alternatives under consideration.

31 **5.4 Alternatives Carried Forward for Analysis and** 32 **Evaluation**

33 The following alternatives were carried forward for further analysis and
34 evaluation in this PEIR:

- 35 • No-Project Alternative—Continued Operations Scenario
- 36 • No-Project Alternative—No Additional Activities Scenario
- 37 • Modified SSIA Alternative

1 • Achieve SPFC Design Flow Capacity Alternative

2 • Enhance Flood System Capacity Alternative

3 Although they do not meet any of the program objectives, the two No-
4 Project Alternative scenarios were carried forward for further analysis and
5 evaluation because an EIR is required to evaluate at least one No-Project
6 Alternative. All other alternatives were determined to meet most of the
7 program objectives, were feasible, would avoid or substantially lessen
8 significant environmental impacts, and collectively provide a reasonable
9 range of feasible alternatives to evaluate in this PEIR.

10 The alternatives carried forward for analysis and evaluation are described
11 below using the following format:

- 12 • Each description first discusses the scale/magnitude of the proposed
13 Alternative, then discloses the estimated cost and time required to
14 implement the alternative and the percentage of activities that would
15 occur within or outside the footprint of the SPFC (onsite or offsite).
- 16 • Next, the description characterizes the features and expected
17 performance of the alternative.
- 18 • Lastly, the description discloses whether the alternative would meet all,
19 some, or none of the program objectives.

20 Table 5-1 presents a summary comparison of the proposed program and the
21 alternatives carried forward for analysis and evaluation.

22 Cost estimate information provided for each alternative includes initial
23 costs to implement physical on-the-ground improvements and ongoing
24 annual costs over 25 years to manage the residual flood management risk.
25 Note that cost estimates for all alternatives are based on 2011 price levels
26 and will differ in the future. Actual implementation costs will likely be
27 higher than the estimates because of inflation and the length of time needed
28 to implement the work. The estimates include costs associated with
29 planning studies, design, and permitting.

30 The estimates of time to implement each alternative described below are
31 based on experience with past flood risk reduction projects but also assume
32 more efficient execution of planning and design, engaged federal and local
33 partners, streamlined permitting, and available funding. In the past, many
34 flood risk reduction projects have remained in the feasibility study phase
35 for a decade or longer. Large, complicated projects have often taken several
36 decades to progress from initial concept to completion. Maintaining focus

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1 to complete projects in a timely manner is often difficult, especially given
2 changing commitments from State, federal, and local partners over long
3 periods.

4 Where “on-site” and “off-site” footprints are described, “on-site” represents
5 all activities on or directly adjacent to existing SPFC facilities, including
6 slurry cutoff walls in existing levees, adjustments to levee geometry,
7 seepage berms, relief wells, and similar facilities. “Off-site” facilities are
8 those that extend geographically away from existing SPFC facilities, such
9 as new bypasses and setback levees that result in significant floodway
10 expansions.

1 **Table 5-1. Summary of Proposed Program and Alternatives**

Alternative	Scale/Magnitude		Percentage of Footprint Onsite/Offsite	Features					Performance				Program Objectives	Feasible
	Cost	Time to Implement		Storage and Operations	Bypasses	Flood Structure Improvements	Urban/Small-Community/Rural Levee Improvements	Ecosystem Restoration Projects	Urban/Rural Flood Risk Reduction	Estimated Annual Damages	Ecosystem Restoration Opportunities	Other Benefits		
Proposed Program	\$13.9 to 16.9 billion	20–25 years	40/60	F-BO/F-CO	Yes	Yes (e.g., major structures, system erosion, bypass sediment removal)	200-year flood protection for urban areas; 100-year flood protection for small communities; design capacity elsewhere	Fish passage, conservation easements, local setbacks	<10% of total SPA population with less than 100-year flood protection	75% reduction	Enhanced opportunities (more than some/limited, less than substantial)	Increased opportunities	Meets objectives	Yes
No-Project Alternative—Continued Operations Scenario	\$3.3 billion	5 years	100/0	F-CO	No	Restricted to current emergency repairs process	Restricted to currently authorized and/or funded projects	Restricted to currently authorized and funded projects except as required for mitigation	84% of total SPA population with less than 100-year flood protection	\$329 million	Limited opportunities	Limited opportunities	Does not meet objectives	Yes
No-Project Alternative—No Additional Activities Scenario	<\$3.3 billion	5 years	100/0	F-CO, but not expanded	No	Restricted to current emergency repairs process	Restricted to projects already commenced	Restricted to projects already commenced except as required for mitigation	>84% of total SPA population with less than 100-year flood protection	>\$329 million	Very limited opportunities	Very limited opportunities	Does not meet objectives	Yes
Modified State Systemwide Investment Approach Alternative	\$8 to 12 billion	30–35 years	90/10	F-BO/F-CO	Limited to Fremont Weir and Yolo Bypass	None	Urban only; nonstructural for small communities/rural areas	Yolo Bypass only	8% of total SPA population with less than 100-year flood protection	65% reduction	Some opportunities	Limited opportunities	Meets most objectives—does not spread out benefits between Sacramento and San Joaquin river systems	Yes
Achieve SPFC Design Flow Capacity Alternative	\$19 to 23 billion	30–35 years	100/0	F-BO/F-CO	No	None	SPFC design capacity through urban/rural areas	None	46% of total SPA population with less than 100-year flood protection	49% reduction	Some opportunities	Limited opportunities	Meets some objectives	No (most projects would not meet cost-benefit tests)
Enhance Flood System Capacity Alternative	\$32 to 41 billion	35–40 years	30/70	F-BO/F-CO, new reservoirs, reservoir allocations, floodplain easements	Yes	Yes (e.g., major structures, addressing system erosion, bypass sediment removal)	200-year flood protection for urban areas; 100-year flood protection for small communities; design capacity elsewhere	Fish passage, conservation easements, substantial setbacks	5% of total SPA population with less than 100-year flood protection	80% reduction	Substantial opportunities	Increased opportunities	Meets most objectives	No (overall program would likely not be financially feasible)

Source: 2012 Central Valley Flood Protection Plan

Key:
 F-BO = Forecast-Based Operations
 F-CO = Forecast-Coordination Operations
 SPA = Systemwide Planning Area
 SPFC = State Plan of Flood Control

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5.4.1 No-Project Alternative—Continued Operations Scenario

Analysis of the No-Project Alternative allows decision makers to use this PEIR to compare the impacts of approving the proposed program with the future conditions that would result from not approving the program. Under CEQA, the No-Project Alternative is not the baseline for assessing the significance of impacts of the proposed project. Section 15126.6(e)(2) of the CEQA Guidelines indicates that no-project conditions include existing conditions and reasonably foreseeable changes that would occur without the project, based on current plans and consistent with available infrastructure and community services. The key limiting language in the Guidelines is the phrase “based on current plans and consistent with available infrastructure and community services.” This qualifying language limits the number of assumptions that a CEQA lead agency can make about potential future actions.

Under the No-Project Alternative—Continued Operations Scenario, and without a systemwide flood management plan such as the CVFPP, current flood management trends in the Central Valley would likely continue. The following are the most notable conditions:

- Projects currently planned or under way and supported by reasonably anticipated funds are assumed to commence and/or continue to completion. An example is the Marysville ring levee element of the Yuba River Project, which currently meets these criteria because it is planned and being implemented.
- The Federal Emergency Management Agency’s ongoing flood risk mapping program, conducted in coordination with State and local communities, would remap the floodplains protected by the SPFC with less than 100-year (1-percent-annual-chance) flood protection. This would impose substantial long-term burdens on farms, homeowners, and businesses in these areas, including higher flood insurance premiums and limitations on repairing, reconstructing, and expanding structures.
- The existing partnership among the federal government, the State, and local entities for implementing flood risk reduction projects would continue. Current federal regulations strongly favor flood management projects in urban areas. Primarily to demonstrate a federal interest, the flood damage reduction benefits of a project must exceed project costs. In other words, the benefit-to-cost ratio must be greater than 1. To be recommended for funding in the President’s budget, a more robust benefit-to-cost ratio is generally required. Although each of these

1 projects is implemented taking into consideration its effects on the
2 system as a whole, this process is by its very nature a piecemeal
3 alternative. These regulations also do not take into account the long-
4 term benefit of integrating environmental restoration projects, thus
5 undervaluing the importance of rural projects. The historical
6 federal/State/local partnership has created a dichotomous system in
7 which urban areas have a much higher level of protection than rural-
8 agricultural areas and receive the majority of available funding.
9 Recently, the State has taken a stronger leadership role in the project
10 delivery process, including project formulation, design, and advancing
11 of funds to cover much of what traditionally has been the federal cost
12 share, with the hope of obtaining credit against future State cost-sharing
13 obligations. An example of a project with stronger State leadership is
14 the American Rivers Common Features Remaining Sites.

15 • Local agency planning obligations that would be triggered by the
16 adoption of the CVFPP would not occur. Specifically, local agencies
17 would not be required to amend their general plans and zoning
18 ordinances to incorporate the information contained in the CVFPP, and
19 would not be required to make findings regarding an urban level of
20 flood protection when making project approvals. However, those local
21 agency planning obligations that do not depend on the adoption of the
22 CVFPP would continue. Examples of such obligations include the
23 requirements to (1) identify in the land use elements of local general
24 plans those areas subject to flooding, and (2) identify flood hazard
25 information upon the next revision of local general plans' housing
26 elements and establish goals, policies, and objectives and feasible
27 mitigation measures to protect communities from an unreasonable risk
28 of flooding.

29 • System maintenance would continue to be challenged by the need to
30 complete annual maintenance activities, such as mowing grass,
31 trimming trees and brush, filling animal burrows on levees, clearing
32 sediment, and restoring patrol roads, while minimizing impacts on
33 special-status terrestrial and aquatic species. The result would be a
34 combination of rapidly rising maintenance costs, shortening
35 maintenance windows, high mitigation costs, and uncertainty.

36 • For the reasons described in DWR's April 15, 2010 comments on
37 USACE's *Process for Requesting a Variance from Vegetation*
38 *Standards for Levees and Floodwalls* (75 *Federal Register* 6364–6368,
39 February 9, 2010), the State does not anticipate conforming under any
40 reasonable scenario to guidance provided by USACE in ETL 1110-2-
41 571 with respect to currently existing "legacy" levees in the SPFC. As
42 described in detail in DWR's April 15, 2010 comments, in the context

1 of the SPFC, vegetation removal at the scale and of the nature required
2 by the ETL would not provide public-safety benefits, would be
3 prohibitively expensive and divert finite financial resources from more
4 important activities, and would have significant and likely unmitigable
5 environmental effects. DWR has therefore determined, if necessary, to
6 forgo Public Law 84-99 funding if a precondition to that funding is the
7 wholesale removal of vegetation within the SPFC as prescribed by the
8 ETL. Instead, the CVFPP includes a VMS that is better tailored to the
9 Central Valley situation, as described in greater detail in the draft plan.
10 The VMS is based upon DWR's October 2007 "Interim Vegetation
11 Inspection Criteria," which in turn were incorporated into the
12 Framework in February 2009.

13 The VMS contains two principal components. First is a maintenance
14 protocol that has essentially been carried forward without modification
15 from the Framework. This maintenance protocol involves no vegetation
16 removal other than as necessary for critical safety reasons on the
17 waterside of levees more than 20 feet below the crown. Above that
18 point on the waterside, on the crown, and on the landside of the levee,
19 vegetation is to be removed to provide for visibility and access is
20 described in greater detail in the draft plan.

- 21 • DWR and other maintaining agencies began undertaking maintenance
22 in accordance with the 2007 interim inspection criteria and the 2009
23 Framework shortly after their adoption. As reflected in the December
24 2011 *Flood Control System Status Report* (DWR, 2011) (attached to the
25 draft CVFPP), based on site inspections through July 2010, all but
26 approximately 15 miles of the SPFC levees are now compliant with this
27 component of the VMS. The No-Project Alternative—Continued
28 Operations Scenario assumes that the remaining 15 miles of SPFC
29 levees would receive vegetation management consistent with this
30 component of the VMS, and that the SPFC overall would continue to be
31 maintained in accordance with the VMS.
- 32 • The VMS also includes an additional component labeled life-cycle
33 management (referred to in this PEIR as LCM), which involves focused
34 efforts to ensure that new trees do not become established on SPFC
35 levees. Existing trees not posing an unacceptable safety hazard are
36 allowed to remain, but will not be replaced upon their deaths. Over
37 time, the LCM component of the VMS will result in the gradual
38 elimination of this large woody vegetation from the SPFC levees. To
39 help provide the basis for an ETL variance from USACE, DWR has
40 determined to begin implementing this component of the VMS
41 regardless of whether the CVFPP is adopted. Accordingly, this

1 component of the VMS is included in the No-Project Alternative—
2 Continued Operations Scenario.

- 3 • Without improved alternatives to improve the effectiveness and
4 efficiency of the environmental regulatory process, the complexity of
5 meeting the variety of environmental regulations may continue to result
6 in project delays and costs and inadequate environmental
7 improvements. Continued collaboration at the local, State, and federal
8 levels will be important in navigating regulatory complexities and
9 crafting alternatives that will support the shift to long-term integrated
10 management of a system that serves both public safety and
11 environmental needs.

12 The assumptions used for the No-Project Alternative—Continued
13 Operations Scenario are limited to current and/or ongoing conditions and
14 activities: existing conditions, as described in Chapter 3.0, “Environmental
15 Setting, Impacts, and Mitigation Measures”; ongoing routine maintenance;
16 project-level maintenance activities, flood fighting (efforts made during a
17 high-water event to prevent or mitigate the effects of floodwaters), and
18 postflood repairs associated with the flood management system in the
19 Central Valley; and programs and plans that have been or are reasonably
20 anticipated to be adopted. The assumptions of the No-Project Alternative—
21 Continued Operations Scenario also reflect future trends in population,
22 water supply reliability, climate change, State and federal regulations, and
23 water quality.

24 ***Scale/Magnitude***

25 The SPFC contains more than a thousand miles of levees and associated
26 structures necessary to operate the system. Under the No-Project
27 Alternative—Continued Operations Scenario, DWR would continue to
28 operate the 118 different units that make up the SPFC, and routine
29 maintenance responsibilities of these units would continue to be divided
30 among DWR and 81 different local maintaining agencies (LMAs). These
31 LMAs are primarily levee districts and reclamation districts, but they also
32 consist of a variety of cities, counties, and other public agencies and
33 municipalities. The assignment of maintenance responsibilities varies
34 between the Sacramento River and San Joaquin River basins. In the
35 Sacramento River Basin, levee maintenance is split between DWR and the
36 LMAs. In the Sacramento River Flood Control Project, DWR is
37 responsible for levees identified in Section 8361 of the California Water
38 Code, State maintenance areas, and flood control channel conveyance.
39 However, LMAs are responsible for maintaining levees and flood control
40 channel conveyance in the San Joaquin River Basin.

1 **Cost**

2 Under the No-Project Alternative—Continued Operations Scenario, SPFC
3 improvements would be conducted and funded as they currently are.
4 Without a systemwide plan in place, it would become more difficult for the
5 State to secure funding for maintenance and repair projects.

6 **Time to Implement**

7 Under the No-Project Alternative—Continued Operations Scenario, the
8 timing of repairs and improvements to and maintenance of SPFC facilities
9 would not immediately change. However, the time required to implement
10 repairs, improvements, and maintenance may increase as funding becomes
11 more difficult to obtain and deferred flood risk reduction projects increase
12 in scope and become more constrained by regulations.

13 **Percentage of Footprint Onsite/Offsite**

14 One hundred percent of the activities proposed under this alternative would
15 occur within the current footprint of the SPFC.

16 **Features**

17 **Storage and Operations** The existing Forecast-Coordination Operations
18 (F-CO) Program would be implemented and possibly expanded at
19 reservoirs in the Sacramento River and San Joaquin River basins. (This
20 program is summarized for the proposed program in Section 2.4.2, “Near-
21 Term Storage-Related Management Activities.”) No other modifications to
22 the operation of existing facilities would be implemented and no additional
23 floodwater storage would be developed and implemented to achieve
24 systemwide benefits.

25 **Bypasses** No bypass modifications are included in this alternative.

26 **Flood Structure Maintenance, Repairs, and Improvements** The No-
27 Project Alternative—Continued Operations Scenario assumes a
28 continuation of current routine maintenance activities, including those
29 activities typically implemented every year to maintain the operation and
30 integrity of the flood management system. Routine maintenance falls into
31 three broad categories: levees, channels, and structures. Levee maintenance
32 typically includes vegetation management; rodent control (including
33 grouting of burrows); and minor repairs of erosion or revetment damage
34 (by rain or wave action), boils, seepage, or slumping. Channel maintenance
35 activities typically include vegetation management, channel bank
36 monitoring and repair of minor damage caused by erosion, and removal of
37 debris and sediment to maintain flow capacity. Structure maintenance
38 includes maintenance and minor repair of control structures, weirs, barriers,
39 flap gates, signs, and other appurtenant structures. Additionally, authorized
40 and/or funded Proposition 1E Early Implementation Projects planned or

1 under construction in the project area will be completed even without
2 implementation of the 2012 CVFPP.

3 Without a systemwide flood management plan and flood system
4 improvements, most urban, rural, and small communities would generally
5 continue to have their current levels of protection from floods, although
6 climate change over time may be expected to increase flood frequency,
7 duration, and magnitude.

8 **Ecosystem Restoration** Many ecosystem restoration activities described
9 in the proposed program rely on expansions to the conveyance system that
10 would not occur under the No-Project Alternative—Continued Operations
11 Scenario. However, absent the CVFPP, it is still assumed that ecosystem
12 restoration projects already authorized and/or funded, such as the San
13 Joaquin River Restoration Program, would continue to move forward under
14 the No-Project Alternative—Continued Operations Scenario.

15 **Performance**

16 **Urban/Rural Flood Risk Reduction** Under the No-Project Alternative—
17 Continued Operations Scenario, many urban areas would remain without
18 an urban level of flood protection, and in rural areas and small communities
19 the level of flood protection would continue to vary widely. Flooding poses
20 a high risk to life, property, and public health and safety for many
21 communities, particularly those located in deep floodplains. The level of
22 protection may decrease in the future, as the system ages and current
23 piecemeal repair programs fail to provide needed maintenance. This would
24 leave approximately 84 percent of the total Systemwide Planning Area
25 (SPA) population with less than 100-year flood protection. The level of
26 flood protection may be affected by ongoing or already authorized and/or
27 funded Early Implementation Projects and ecosystem restoration projects in
28 the SPFC.

29 **Estimated Annual Damages** Under the No-Project Alternative—
30 Continued Operations Scenario, normal repairs and maintenance would
31 continue, but repairs would not be tailored to improving systemwide
32 operations. This alternative would result in expected annual damages of
33 approximately \$329 million. Estimated annual damages might be affected
34 by ongoing or already authorized and/or funded Early Implementation
35 Projects and ecosystem restoration projects in the SPFC.

36 **Ecosystem Restoration** Effects of the No-Project Alternative—
37 Continued Operations Scenario on aquatic and terrestrial biological
38 resources are discussed separately below. Future ecosystem conditions may
39 be affected by ongoing or already authorized and/or funded Early
40 Implementation Projects and ecosystem restoration projects in the SPFC.

1 **Other Benefits** The No-Project Alternative—Continued Operations
 2 Scenario would not include a coordinated alternative to increase resiliency
 3 in the design, operation, and regulation of flood protection facilities, thus
 4 leaving many communities at greater risk in the future. In addition, the
 5 more comprehensive habitat restoration that is envisioned as part of the
 6 CVFPP Conservation Strategy and that would sequester greenhouse gas
 7 (GHG) emissions would not be implemented under the No-Project
 8 Alternative—Continued Operations Scenario. It is assumed that local
 9 agencies implementing individual projects would perform habitat planting
 10 to mitigate project-specific effects; however, in the absence of the CVFPP
 11 Conservation Strategy, it is less likely that these plantings would be
 12 incorporated into project designs.

13 **Program Objectives**

14 The No-Project Alternative—Continued Operations Scenario does not meet
 15 any of the program objectives presented in Section 2.1.2 of this PEIR.

16 **5.4.2 No-Project Alternative—No Additional Activities** 17 **Scenario**

18 The No-Project Alternative—No Additional Activities Scenario is similar
 19 to the No-Project Alternative—Continued Operations Scenario except that
 20 it assumes only the completion of projects already commenced. It also does
 21 not include the LCM component of the VMS.

22 **Scale/Magnitude**

23 Because new projects are assumed not to be commenced, and because less
 24 intensive vegetation management is assumed, this alternative would
 25 involve less construction and allow more vegetation to remain than the No-
 26 Project Alternative—Continued Operations Scenario.

27 **Cost**

28 This alternative assumes that no additional funds beyond those already
 29 committed to specific projects currently under way would be available.
 30 Given the elimination of the LCM component of the VMS, the potential to
 31 obtain a USACE variance from ETL maintenance standards would be
 32 further reduced, and the potential loss of Public Law 84-99 funding would
 33 be correspondingly more likely.

34 **Time to Implement**

35 Under this alternative, the timing of repairs and improvements to and
 36 maintenance of SPFC facilities would not immediately change. However,
 37 the time required to implement repairs, improvements, and maintenance
 38 may increase as funding becomes more difficult to obtain and flood risk
 39 reduction projects become more constrained by regulations.

1 **Percentage of Footprint Onsite/Offsite**

2 One hundred percent of the activities proposed under this alternative would
3 occur within the current footprint of the SPFC.

4 **Features**

5 **Storage and Operations** The existing F-CO Program would continue to
6 be implemented, but it would not be expanded at reservoirs in the
7 Sacramento River and San Joaquin River basins. No other modifications to
8 the operation of existing facilities would be implemented, and no additional
9 floodwater storage would be developed and implemented to achieve
10 systemwide benefits.

11 **Bypasses** No bypass modifications are included in this alternative.

12 **Flood Structure Maintenance, Repairs, and Improvements** This
13 scenario assumes a continuation of current routine maintenance activities,
14 including those activities typically implemented every year to maintain the
15 operation and integrity of the flood management system. However, it does
16 not include the LCM component of the VMS. Only those projects currently
17 under way are assumed to be completed.

18 **Ecosystem Restoration** Only those ecosystem restoration projects
19 currently under way are assumed to be completed under this alternative,
20 except such projects required by regulatory agencies as mitigation for other
21 activities.

22 **Performance**

23 **Urban/Rural Flood Risk Reduction** Under this alternative, even fewer
24 flood risk reduction projects would be undertaken, with a corresponding
25 increase in flood risk. No estimate has been made of the percentage of the
26 total SPA population that would have less than 100-year flood protection
27 under this alternative. However, that percentage would likely be greater
28 than the 84 percent of the No-Project Alternative—Continued Operations
29 Scenario.

30 **Estimated Annual Damages** Annual damages under this alternative have
31 not been estimated, but they are anticipated to be greater than under any of
32 the other alternatives.

33 **Ecosystem Restoration** Because no new ecosystem restoration activities
34 would commence, this alternative offers fewer ecosystem benefits than any
35 of the other alternatives.

36 **Other Benefits** This alternative would not include a coordinated
37 alternative to increase resiliency in the design, operation, and regulation of
38 flood protection facilities, thus leaving many communities at greater risk in

1 the future. In addition, the more comprehensive habitat restoration that is
 2 envisioned as part of the CVFPP Conservation Strategy and that would
 3 sequester GHG emissions would not be implemented under this scenario. It
 4 is assumed that local agencies implementing individual projects would
 5 perform habitat planting to mitigate project-specific effects; however, in
 6 the absence of the CVFPP Conservation Strategy, it is less likely that these
 7 plantings would be incorporated into project designs.

8 ***Program Objectives***

9 The No-Project Alternative—No Additional Activities Scenario does not
 10 meet any of the program objectives presented in Section 2.1.2 of this PEIR.

11 **5.4.3 Modified Systemwide Investment Approach** 12 **Alternative**

13 The Modified SSIA Alternative is similar to the proposed program in that it
 14 is based on the urban protection provided by the Protect High-Risk
 15 Communities Alternative and adds some small-community protection, but
 16 with more limited construction activities than for other alternatives. The
 17 alternative also includes expanding the Yolo Bypass and widening Fremont
 18 Weir, but does not include any of the other bypass expansions and related
 19 improvements contained in the proposed program. The Modified SSIA
 20 Alternative thus contains several elements of the proposed program, but
 21 focuses more on critical repairs and actions that are less likely to improve
 22 flood management on a systemwide basis.

23 ***Scale/Magnitude***

24 The overall scale/magnitude of the Modified SSIA Alternative would be
 25 somewhat less than that of the proposed program and addresses critical
 26 stressors on public safety, operations and maintenance, and ecosystem
 27 function while minimizing potential adverse environmental effects.
 28 However, the off-site footprint for this alternative is smaller than the
 29 footprint for the proposed program because fewer modifications would be
 30 made to bypasses and floodways.

31 ***Cost***

32 Cost estimates for the Modified SSIA Alternative range from \$8 billion to
 33 \$12 billion.

34 ***Time to Implement***

35 The time required to implement repairs and maintenance under this
 36 alternative would range from 30 to 35 years.

37 ***Percentage of Footprint Onsite/Offsite***

38 Approximately 90 percent of the elements associated with the Modified
 39 SSIA Alternative would be located within the current SPFC footprint.

1 Repairs and improvements would be implemented within the footprints of
2 current facilities wherever feasible (in-place fixes). The off-site footprint
3 (10 percent) of this alternative encompasses the areas into which the Yolo
4 Bypass and Fremont Weir would be expanded.

5 **Features**

6 **Storage and Operations** The F-CO and Forecast-Based Operations (F-
7 BO) programs would be implemented at reservoirs in the Sacramento River
8 and San Joaquin River basins. No additional floodwater storage would be
9 developed and implemented to achieve systemwide flood risk reduction
10 benefits.

11 **Bypasses** Bypass elements included in this alternative are limited to
12 expanding the Yolo Bypass and widening Fremont Weir.

13 **Flood Structure Improvements** No flood structure improvements are
14 included in this alternative.

15 **Urban/Small-Community/Rural Levee Improvements** No initial
16 systemwide investment would be made to address identified deficiencies in
17 SPFC levees. The levees would continue to be repaired and maintained as
18 under the No-Project Alternative—No Additional Activities Scenario.

19 **Ecosystem Restoration** Physical improvements to the flood management
20 system under the Modified SSIA Alternative would provide opportunities
21 for ecosystem restoration; however, available land and other constraints
22 could limit the effectiveness of these efforts. The primary ecosystem
23 restoration opportunity associated with the Modified SSIA Alternative
24 would be the Yolo Bypass expansion area.

25 **Performance**

26 **Urban/Rural Flood Risk Reduction** Under the Modified SSIA
27 Alternative, urban areas would receive a 200-year level of protection by
28 means of structural repairs and improvements to levees and other facilities
29 (including levee raises). No additional construction measures would be
30 taken to protect small communities; those areas would be protected by
31 residual risk management only. This would leave approximately 8 percent
32 of the total SPA population with less than 100-year flood protection.

33 **Estimated Annual Damages** This alternative would provide an
34 approximately 65-percent reduction in annual flood damages compared to
35 existing conditions. Substantial reductions would occur throughout urban
36 areas, but little reduction would occur in rural areas and small
37 communities.

1 **Ecosystem Restoration** Physical improvements to the flood management
 2 system under the Modified SSIA Alternative would be designed and
 3 implemented in ways that would integrate achievement of conservation and
 4 environmental stewardship principles. The primary opportunity for
 5 ecosystem restoration associated with improvements to the flood
 6 management system would be the Yolo Bypass.

7 **Other Benefits** Because 90 percent of the elements associated with the
 8 Modified SSIA Alternative would be located within the current SPFC
 9 footprint, this alternative provides limited opportunities to achieve
 10 additional benefits.

11 **Program Objectives**

12 Because the Modified SSIA Alternative does not evenly distribute benefits
 13 between the Sacramento and San Joaquin River systems, it only partially
 14 meets the following program objectives presented in Section 2.1.2 of this
 15 PEIR, but does meet most of the program objectives as follows:

- 16 • Improve Flood Risk Management
- 17 • Improve Operations and Maintenance
- 18 • Promote Ecosystem Functions
- 19 • Improve Institutional Support
- 20 • Promote Multi-Benefit Projects
- 21 • Maximize Flood Risk Reduction Benefits Within the Practical
 22 Constraints of Available Funds
- 23 • Adopt the CVFPP by July 1, 2012
- 24 • Promote the Multiple Objectives Established in Water Code Section
 25 9616, as Feasible

26 **5.4.4 Achieve SPFC Design Flow Capacity Alternative**

27 This alternative focuses on reconstructing SPFC facilities to meet current
 28 engineering criteria without making major changes to the footprint or
 29 operation of those facilities. Engineering risk assessment, design, and
 30 construction methods have greatly evolved since the original construction
 31 of the SPFC facilities. Because the system was largely constructed based
 32 on geometric criteria using available soil materials without extensive
 33 investigation of foundation conditions, the majority of the SPFC levees are
 34 not capable of carrying their design flows with the degree of reliability

1 based on current engineering criteria. The Achieve SPFC Design Flow
2 Capacity Alternative focuses on reconstructing existing SPFC facilities
3 throughout the system so that they can reliably accommodate project
4 design flows or design water surface elevations. This alternative was
5 formulated to address legislation that requires DWR to consider structural
6 actions necessary to reconstruct SPFC facilities to their design standard
7 (California Water Code, Section 9614(g)).

8 This alternative includes major remedial actions to address medium and
9 high threats to facilities of the SPFC. These threats are identified and
10 described in the *Flood Control System Status Report* (DWR, 2011).
11 Remedial actions include major reconstruction of SPFC facilities. Medium-
12 and high-threat factors are those judged to pose the greatest potential threat
13 to SPFC facility integrity. These factors include inadequate levee
14 freeboard, inadequate levee geometry, structural instability, and excessive
15 seepage, as well as inadequate channel capacity to convey design flows.

16 This alternative also addresses requests from stakeholders to consider
17 reconstructing the existing flood management system in place or without
18 major modification to facility locations. It does not involve improving
19 SPFC facilities to carry flood flows greater than project design flows or
20 completing other enhancements (e.g., to levee height, width, or
21 footprint). This alternative also does not seek a specific level of flood
22 protection in any area.

23 This alternative was one of the “approaches” considered during the
24 development of the CVFPP. For a more detailed description of this
25 alternative, please refer to the draft plan.

26 **Scale/Magnitude**

27 This alternative involves reconstructing approximately 170 miles of urban
28 SPFC levees and 1,400 miles of nonurban SPFC levees. Repairs would be
29 made to address threats to SPFC facility integrity as identified and
30 described in the *Flood Control System Status Report* (DWR, 2011).

31 **Cost**

32 Cost estimates for this alternative range from \$19 billion to \$23 billion.
33 Investments in SPFC reconstruction would initially reduce SPFC
34 operations and maintenance costs. However, the long-term cost to maintain
35 the system would remain high (similar to current conditions) because
36 reconstruction alone would not address chronic erosion, sedimentation, or
37 other geomorphic conditions inherent to the current system configuration.

1 ***Time to Implement***

2 The time required to implement repairs and maintenance under this
3 alternative would range from 30 to 35 years.

4 ***Percentage of Footprint Onsite/Offsite***

5 One hundred percent of the activities proposed under the Achieve SPFC
6 Design Flow Capacity Alternative would occur within the current footprint
7 of the SPFC.

8 Repairs would primarily include modifications to levees in their current
9 locations, as follows:

- 10 • SPFC levees would be modified or reconstructed to address identified
11 adverse geotechnical conditions so that the levees would accommodate
12 design flows with a high degree of reliability.
- 13 • Levee height would be raised to achieve design freeboard, where
14 needed, to accommodate the design water surface elevation.

15 Remedial actions associated with this alternative would include
16 constructing different types of stability and seepage berms, constructing
17 cutoff walls, providing rock slope protection, increasing levee height and/or
18 improving levee geometry, and constructing replacement levees needed for
19 the system to convey design flows.

20 ***Features***

21 **Storage and Operations** The F-CO and F-BO programs would be
22 implemented at reservoirs in the Sacramento River and San Joaquin River
23 basins. No additional floodwater storage would be developed and
24 implemented to achieve systemwide benefits.

25 **Bypasses** No bypass modifications are included in this alternative.

26 **Flood Structure Improvements** No flood structure improvements are
27 included in this alternative.

28 **Urban/Small-Community/Rural Levee Improvements** Design
29 capacities of all SPFC facilities would be restored in urban and rural areas
30 protected by the SPFC. Levels of flood protection associated with SPFC
31 design flow capacities would continue to vary throughout the system.

32 **Ecosystem Restoration** Because the footprint and operation of an SPFC
33 facility would remain largely unchanged under this alternative,
34 opportunities to integrate ecosystem restoration and enhancement would be
35 limited and would not contribute to improved ecosystem functions on a
36 systemwide scale. Therefore, existing conflicts between environmental

1 stewardship and levee maintenance practices would continue to hamper the
2 improvement of ecosystem conditions and public safety.

3 **Performance**

4 **Urban/Rural Flood Risk Reduction** Implementing this alternative
5 would improve the level of flood risk reduction throughout the system, but
6 the improvements would be highly variable spatially, leaving 46 percent of
7 the total SPA population with less than 100-year flood protection. The
8 improvements would be made in some urban areas and in some small
9 communities protected by SPFC facilities.

10 **Estimated Annual Damages** This alternative would provide an
11 approximately 49-percent reduction in annual flood damages compared to
12 current conditions. The greatest level of flood risk reduction would occur
13 throughout rural areas; urban areas would have a lesser level of reductions.

14 **Ecosystem Restoration** Implementing this alternative would present
15 limited opportunities to integrate ecosystem restoration into in-place repairs
16 to SPFC facilities.

17 **Other Benefits** The Achieve SPFC Design Flow Capacity Alternative
18 offers limited opportunities to integrate other benefits into repairs to SPFC
19 facilities. Restoring SPFC design flow capacities would not substantially
20 improve flood system resiliency or adaptability to climate change.

21 **Program Objectives**

22 The Achieve SPFC Design Flow Capacity Alternative meets the following
23 program objectives presented in Section 2.1.2 of this PEIR:

- 24 • Improve Flood Risk Management
- 25 • Adopt the CVFPP by July 1, 2012
- 26 • However, this alternative fails to meet the other program objectives
27 presented in Section 2.1.2.

28 **5.4.5 Enhance Flood System Capacity Alternative**

29 The Enhance Flood System Capacity Alternative focuses on enhancing the
30 flood system's storage and conveyance capacity to achieve multiple
31 benefits. It includes several elements intended to reduce flood risks in
32 urban and small communities and to at least restore SPFC system capacity
33 to rural areas. Enhancements to flood system capacity would be designed
34 on a systemwide scale to integrate multiple benefits, including
35 environmental restoration and water supply reliability.

1 This alternative involves modifying the existing footprint and function of
2 the flood management system, primarily to increase overall conveyance
3 capacity and floodwater storage, but also to provide opportunities for
4 ecosystem restoration and related water resources benefits. This alternative
5 also involves protecting high-risk communities and fixing levees in place in
6 rural-agricultural areas to achieve design flow capacities. It does not
7 include improvements that may be needed to address interior drainage or
8 other local sources of flooding. This alternative also does not include
9 improvements to non-SPFC levees that protect some urban areas.

10 This alternative was one of the “approaches” considered during the
11 development of the CVFPP. For a more detailed description of this
12 alternative, please refer to the draft plan.

13 ***Scale/Magnitude***

14 In general, under this alternative, flood system capacity would be increased
15 by widening floodways and bypasses, setting back levees away from the
16 active river channel, and increasing floodwater storage. Floodwater storage
17 would be increased by making operational changes to existing reservoirs,
18 creating new reservoir storage, and modifying or creating new floodplain
19 storage.

20 Widening floodways and setting back levees along some reaches of major
21 rivers and tributaries also would provide substantial opportunities to restore
22 native habitat quantity, quality, and connectivity and to restore natural
23 processes necessary to support healthy ecosystems.

24 ***Cost***

25 Cost estimates for the Enhance Flood System Capacity Alternative range
26 from approximately \$32 billion to \$41 billion.

27 ***Time to Implement***

28 The time required to implement repairs and maintenance under this
29 alternative would range from 35 to 40 years.

30 ***Percentage of Footprint Onsite/Offsite***

31 Approximately 30 percent of the elements associated with the Enhance
32 Flood System Capacity Alternative would be located within the current
33 SPFC footprint. Most (70 percent) of the improvements would occur on
34 non-SPFC lands because they involve construction of new bypasses and
35 setback levees and expansion of current bypasses, weirs, and floodways.

1 **Features**

2 **Storage and Operations** The F-CO and F-BO programs would be
3 implemented at reservoirs in the Sacramento River and San Joaquin River
4 basins. Operational changes would include modifying the reservoir release
5 schedule and increasing the flood storage allocation of the Feather River to
6 effectively manage the 200-year event. In the San Joaquin River Basin, the
7 State would partner with interested reservoir operators to increase the flood
8 storage allocation to effectively manage the 100-year flood event. These
9 changes would be made to help manage the timing and magnitude of peak
10 flood flows before they enter the Sacramento and San Joaquin rivers.

11 Floodplain easements in both the Sacramento River and San Joaquin River
12 Basins would also be obtained.

13 **Bypasses** Existing weirs, bypass systems, and appurtenant SPFC facilities
14 would be modified to achieve a variety of benefits, such as increased
15 conveyance capacity, reduced water stages, and restored ecosystem
16 processes, where determined feasible. New bypasses or weirs would also
17 be constructed.

18 **Flood Structure Improvements** Flood system improvements would
19 include a combination of new construction, erosion management, and
20 bypass sediment removal at various locations.

21 **Urban/Small-Community/Rural Levee Improvements** Overall flood
22 protection would increase under the Enhance Flood System Capacity
23 Alternative, but specific levels of protection would continue to vary
24 throughout the system. The SPFC would also have an improved capacity to
25 manage flood peaks through enhanced storage and conveyance. Urban
26 areas would receive a 200-year level of protection, with 100-year
27 protection provided to small communities under this alternative.

28 **Ecosystem Restoration** Implementing this alternative would present
29 substantial opportunities to integrate ecosystem restoration into in-place
30 repairs to SPFC facilities.

31 **Performance**

32 **Urban/Rural Flood Risk Reduction** Flood risk reduction would vary
33 under this alternative, but improvements would be seen in urban areas,
34 small communities, and rural areas through a combination of conveyance,
35 storage, and in-place levee improvements. Implementing this alternative
36 would leave 5 percent of the total SPA population with less than 100-year
37 flood protection.

1 **Estimated Annual Damages** Under the Enhance Flood System Capacity
 2 Alternative, SPFC improvements related to increased storage and
 3 conveyance would result in an estimated 80-percent reduction in damages
 4 in urban and rural-agricultural areas.

5 **Ecosystem Restoration** Implementing this alternative would provide
 6 substantial opportunities to restore native habitats (aquatic, riparian, and
 7 floodplain habitats) and improve the quality and connectivity of
 8 environmental resources in the flood management system. Flood structure
 9 improvements would also support improved fish passage, conservation
 10 easements, and a large number of setback levees. Floodplain expansion
 11 associated with this alternative could occur at various locations and would
 12 improve ecosystem functions; fish passage; and the quantity, quality, and
 13 diversity of habitats.

14 **Other Benefits** Implementing the Enhance Flood System Capacity
 15 Alternative would provide enhanced opportunities for multi-benefit
 16 projects by increasing the number of opportunities to integrate water
 17 quality, recreation, power, and other benefits. In addition, it would provide
 18 opportunities to improve (1) water supply reliability through multipurpose
 19 reservoir storage projects, (2) conjunctive management of groundwater and
 20 surface water resources, and (3) groundwater recharge in floodplain storage
 21 areas. Implementing this alternative also would improve flood system
 22 resiliency and the system's ability to adapt to climate change by enhancing
 23 storage and conveyance.

24 ***Program Objectives***

25 The Enhance Flood System Capacity Alternative meets most of the
 26 program objectives presented in Section 2.1.2 of this PEIR as follows:

- 27 • Improve Flood Risk Management
- 28 • Improve Operations and Maintenance
- 29 • Promote Ecosystem Functions
- 30 • Improve Institutional Support
- 31 • Promote Multi-Benefit Projects
- 32 • Adopt the CVFPP by July 1, 2012
- 33 • Promote the Multiple Objectives Established in Water Code Section
 34 9616, as Feasible

1 However, this alternative fails to meet the other program objective
2 presented in Section 2.1.2 because it fails to account for the practical
3 constraints of reasonably anticipated funding. If sufficient funding were
4 made available for this alternative, it would then satisfy all of the program
5 objectives.

6 **5.5 Impact Analysis**

7 The following section compares the environmental impacts of each
8 alternative described above with the impacts of the proposed program (i.e.,
9 the CVFPP SSIA). Impacts are compared for each environmental issue area
10 addressed in Chapter 3.0 of this PEIR, “Environmental Setting, Impacts,
11 and Mitigation Measures.”

12 As discussed above, the CEQA Guidelines (Section 15126.6(d)) permit the
13 alternatives to be evaluated in less detail than the proposed project.
14 Consistent with Section 15126.6(d) of the CEQA Guidelines, the analysis
15 below provides a general comparison of the environmental effects of the
16 alternatives against the effects from the proposed program, focusing on
17 whether the alternative would result in effects greater than, less than, or
18 similar to those identified for the proposed program.

19 The comparative environmental impacts of the alternatives generally result
20 from differences in the following aspects of the activities anticipated under
21 each alternative:

- 22 • **Construction Impacts**—The alternatives vary in relation to the scale
23 and nature of the construction activities that would be involved. These
24 differences, in turn, affect the level of construction-related impacts,
25 such as air pollutant and GHG emissions from construction vehicles
26 and construction materials manufacturing, construction noise, and
27 construction traffic. These construction impacts are generally
28 temporary and localized; nonetheless, some may be considered
29 significant.
- 30 • **Operations and Maintenance Impacts**—Operations and maintenance
31 impacts vary relative to the scale and nature of any new facilities that
32 would need to be operated and maintained, and relative to any changes
33 to the ongoing operations and maintenance of existing facilities, such as
34 vegetation management and reservoir reoperations. These impacts
35 generally would be less intense than construction-period impacts, but
36 would occur for longer periods of time and over larger geographic
37 scales.

- 1 • **“Footprint” Effects**—The alternatives vary in terms of the degree to
 2 which they would involve the use of lands not currently part of the
 3 flood protection system. Where the “footprint” of flood protection
 4 system facilities would be expanded, effects on the current uses of
 5 those areas (such as agricultural uses) and on the environmental values
 6 of those areas (such as habitat, cultural resources, and mineral
 7 resources) could result. These impacts would generally be long-term,
 8 but may include both adverse and beneficial effects depending upon the
 9 nature of the activity and the environmental topic being addressed.
- 10 • **Habitat Enhancements**—The plan identifies several potential habitat
 11 enhancements. Additional habitat enhancements would be evaluated
 12 during project-level permitting processes and during the development
 13 of the CVFPP Conservation Strategy. The alternatives vary in the
 14 degree to which they would be able to accommodate or facilitate these
 15 habitat enhancements.
- 16 • **Beneficial Effects from Flood Protection**—Floods can have
 17 environmental effects in addition to their impacts on property and
 18 public safety. For example, reconstruction activities made necessary by
 19 the damage from a flood can create construction impacts. Floods can
 20 also damage habitats, cause the release of hazardous substances in the
 21 flooded area, impair existing land uses, and place water supplies at risk.
 22 As discussed in several sections of Chapter 3.0, “Environmental
 23 Setting, Impacts, and Mitigation Measures,” the beneficial effects of
 24 minimizing the frequency and intensity of flood events could offset, in
 25 whole or in part, some of the adverse affects of the program. The
 26 degree to which these beneficial effects could be considered to offset
 27 the program’s adverse effects would depend on assumptions about the
 28 likelihood and severity of the future flooding events that would be
 29 avoided. These beneficial effects also would generally be infrequent,
 30 episodic, and localized.
- 31 • In many cases, alternatives would result in both beneficial and adverse
 32 effects. For example, the creation of long-term habitat in expanded
 33 bypasses could cause the displacement of current agricultural uses.
 34 Also, the location, timing, likelihood, and/or scale of the beneficial and
 35 adverse effects may differ. Nonetheless, the analysis below attempts to
 36 identify the most likely “net” result of each alternative in each impact
 37 area. Generally, this is based on the most severe impact category
 38 identified for the environmental issue area.

39 As directed by CEQA, the analysis below focuses on the ability of each
 40 alternative to reduce impacts of the proposed program that are considered
 41 to be significant and unavoidable or potentially significant and

1 unavoidable. The following summary of those significant and unavoidable
2 and potentially significant and unavoidable impacts is intended to help
3 focus the analysis below:

- 4 • **Agriculture and Forestry Resources**—The proposed program would
5 involve either facility construction or management changes in some
6 areas currently subject to agricultural production. The program also
7 includes an extensive set of mitigation measures, such as avoidance of
8 Important Farmland where feasible and consideration of agricultural
9 conservation easements. However, given the nature and scale of certain
10 elements of the proposed program, particularly the proposed expansion
11 of bypasses and creation of additional habitat areas, this impact is
12 considered potentially significant and unavoidable. The scope of this
13 potentially significant and unavoidable impact is limited to those
14 situations where identified Important Farmlands cannot be avoided and
15 feasible mitigation is not adequate to address the impact.

- 16 • **Air Quality**—Construction-period air pollutant emissions for some of
17 the larger projects that are anticipated to occur could exceed the CEQA
18 thresholds established by certain air pollution control districts, even
19 after mitigation, resulting in a potentially significant and unavoidable
20 impact. The scope of this potentially significant and unavoidable
21 impact is temporary and limited to these larger projects exceeding
22 applicable air district CEQA thresholds.

- 23 • **Biological Resources—Aquatic**—The proposed program includes a
24 requirement that all activities be undertaken in compliance with all
25 applicable regulatory requirements, including requirements that
26 generally require full mitigation of any effects on aquatic habitats. The
27 program also includes enhancements to aquatic biological resources,
28 particularly under the CVFPP Conservation Framework. This PEIR
29 also establishes a set of mitigation measures designed to achieve an
30 overall performance standard of no net loss of biological resource
31 functions and values. As a result, impacts on aquatic biological
32 resources generally are anticipated to be less than significant. However,
33 given the scope and nature of the program, there may be situations in
34 which local or temporary effects could not be fully mitigated. If those
35 effects were of a sufficient scale, they could result in potentially
36 significant and unavoidable impacts.

- 37 • **Biological Resources—Terrestrial**—The proposed program includes a
38 requirement that all activities be undertaken in compliance with all
39 applicable regulatory requirements, including requirements that
40 generally require full mitigation of any effects on terrestrial habitats.
41 The program also includes enhancements to terrestrial biological

1 resources, particularly under the CVFPP Conservation Framework, and
2 including the riparian forest planting. This PEIR also establishes a set
3 of mitigation measures designed to achieve an overall performance
4 standard of no net loss of biological resource functions and values. As a
5 result, impacts on terrestrial biological resources generally are
6 anticipated to be less than significant. However, given the scope and
7 nature of the program, there may be situations in which local or
8 temporary effects could not be fully mitigated. If those effects were of a
9 sufficient scale, they could result in potentially significant and
10 unavoidable impacts.

- 11 • **Cultural and Historical Resources**—Much of the proposed program
12 would occur in areas that have already been disturbed by agricultural
13 and other activities and/or have been in flood protection uses for a long
14 time. However, it is anticipated that some cultural and historical
15 resources and/or traditional cultural properties may be encountered
16 during activities under the proposed program. The program includes
17 extensive mitigation measures requiring the identification and
18 avoidance of these resources, where feasible, and documentation
19 recording the resource whenever the resource cannot be avoided.
20 However, given the nature and scale of the proposed program, there
21 may be situations in which historic properties must be removed or
22 traditional cultural properties would be adversely affected in a way that
23 cannot be feasibly mitigated, resulting in potentially significant and
24 unavoidable impacts.
- 25 • **Mineral and Paleontological Resources**—Much of the proposed
26 program would occur in areas that have already been disturbed by
27 agricultural and other activities and/or have been in flood protection
28 uses for a long time. Mining activity is generally precluded within or in
29 the immediate vicinity of existing structures, such as levees, to preserve
30 the stability of those structures. However, widening floodways and
31 constructing weirs, new bypasses, or setback levees outside the existing
32 footprint or the immediate vicinity of the footprint of existing structures
33 could prevent access to locally valuable mineral resources (particularly
34 aggregate materials), resulting in potentially significant and
35 unavoidable impacts.
- 36 • **Land Use and Planning** —The significant and unavoidable impacts on
37 agricultural resources, described above are also considered to reflect
38 corresponding significant and unavoidable land use impacts of the same
39 nature and scope.
- 40 • **Transportation and Traffic**— Operation and maintenance of projects
41 under the proposed program would not generate substantial long-term

1 traffic. Also, construction traffic for most projects could be
2 accommodated by the existing circulation system without resulting in
3 significant impacts. However, for very large construction projects (i.e.,
4 those involving several million cubic yards of fill requiring transport
5 over public roads), significance thresholds recommended by the
6 Institute of Transportation Engineers could be exceeded and sufficient
7 reduction of peak hour construction traffic may not be feasible,
8 resulting in a potentially significant and unavoidable impact. In
9 addition, in rare situations projects could require transportation
10 infrastructure to be removed or disrupted for a substantial period of
11 time, and detours or alternate routes may not be feasible, resulting in a
12 potentially significant and unavoidable impact.

13 **5.5.1 Aesthetics**

14 The proposed program would not result in significant aesthetics impacts
15 after mitigation, as described in greater detail in Section 3.2, “Aesthetics.”
16 The following analysis compares the anticipated impacts of each alternative
17 to those of the proposed program.

18 The comparison generally assumes that the aesthetic benefits from flood
19 risk reduction would not compensate for the impacts of the proposed
20 program because those benefits would generally be short term (i.e., flooded
21 areas are anticipated to recover to pre-flood conditions as repairs are made
22 and vegetation returns) while many of the aesthetic impacts of the proposed
23 program would be permanent.

24 ***No-Project Alternative—Continued Operations Scenario***

25 Under the No-Project Alternative—Continued Operations Scenario, most
26 elements of routine operations and maintenance of flood control facilities
27 would continue following existing programs. However, as under the
28 proposed program, the VMS described in the CVFPP would continue to be
29 implemented as part of the No-Project Alternative—Continued Operations
30 Scenario. DWR intends to implement the VMS, and associated elements
31 such as LCM, whether or not the CVFPP is adopted. Therefore, changes in
32 visual conditions resulting from management and removal of vegetation
33 associated with levee maintenance would be the same for the No-Project
34 Alternative—Continued Operations Scenario and the proposed program.
35 However, the CVFPP Conservation Strategy, which would have beneficial
36 visual effects in some areas associated with habitat creation and vegetative
37 screening, would not be implemented under this alternative. It is assumed
38 that local agencies implementing individual projects would perform habitat
39 planting to mitigate project-specific effects under both the No-Project
40 Alternative—Continued Operations Scenario and the proposed program,
41 and that mitigation would also be provided by an appropriate agency for

1 riparian vegetation removal resulting from the VMS. Therefore, impacts on
2 aesthetic resources from system operations and maintenance would be
3 similar under both alternatives.

4 The visual impacts of project-level construction of new facilities and repair
5 and improvement of existing facilities would be less under the No-Project
6 Alternative—Continued Operations Scenario than under the proposed
7 program because there would be fewer and smaller projects. In addition, as
8 under the proposed program, activities occurring as part of this alternative
9 would require development and implementation of mitigation measures to
10 reduce significant or potentially significant visual impacts. Examples of
11 such measures include providing visual screening and conforming to
12 applicable lighting standards when needed. Mitigation measures would be
13 equally effective at reducing small-scale, localized visual impacts to a less-
14 than-significant level under either the No-Project Alternative—Continued
15 Operations Scenario or the proposed program.

16 With fewer improvements to the flood protection system under the No-
17 Project Alternative—Continued Operations Scenario, system failures and
18 associated damage from flooding would be more frequent and more severe
19 than under the proposed program. Therefore, impacts on aesthetic resources
20 via flooding and postflood repairs would be greater under this alternative.
21 As described above, impacts on aesthetic resources from system operations
22 and maintenance would be similar under the No-Project Alternative—
23 Continued Operations Scenario and the proposed program. Construction-
24 related impacts would initially be less under this alternative because fewer
25 projects would be constructed; however, aesthetic impacts could be equally
26 mitigated under both alternatives. There would be greater flood-related
27 visual impacts under the No-Project Alternative—Continued Operations
28 Scenario, but these would be infrequent and episodic. Given these
29 conditions, the overall impact of the No-Project Alternative—Continued
30 Operations Scenario on aesthetics is expected to be similar to that of the
31 proposed program. *[Similar]*

32 **No-Project Alternative—No Additional Activities Scenario**

33 The No-Project Alternative—No Additional Activities Scenario is similar
34 to the No-Project Alternative—Continued Operations Scenario, except that
35 fewer projects would be undertaken in the near term and the proposed
36 LCM component of the VMS would not be implemented. Most elements of
37 routine operations and maintenance of flood control facilities would
38 continue following existing programs. Therefore, changes in visual
39 conditions resulting from management and removal of vegetation for levee
40 maintenance would be similar under the No-Project Alternative—No
41 Additional Activities Scenario and the proposed program, except that over

1 time, more trees would likely be present on the levees under this
2 alternative, reducing aesthetic impacts somewhat.

3 The CVFPP Conservation Strategy, which would have beneficial visual
4 effects in some areas associated with habitat creation and vegetative
5 screening, would not be implemented under the No-Project Alternative—
6 No Additional Activities Scenario. It is assumed that local agencies
7 implementing individual projects would perform habitat planting to
8 mitigate project-specific effects under both this alternative and the
9 proposed program, and that mitigation would also be provided by an
10 appropriate agency for riparian vegetation removal resulting from the
11 VMS. Therefore, impacts of system operations and maintenance on
12 aesthetic resources would be similar for both alternatives.

13 The visual impacts of project-level construction of new facilities and of
14 repair and improvement of existing facilities would be less under the No-
15 Project Alternative—No Additional Activities Scenario than under the
16 proposed program because there would be fewer and smaller projects. In
17 addition, as under the proposed program, activities occurring as part of this
18 alternative would require development and implementation of mitigation
19 measures to reduce significant or potentially significant visual impacts.
20 Mitigation measures would be equally effective at reducing small-scale,
21 localized visual impacts to a less-than-significant level under either the No-
22 Project Alternative—No Additional Activities Scenario or the proposed
23 program.

24 With fewer improvements to the flood protection system under the No-
25 Project Alternative—No Additional Activities Scenario, system failures
26 and associated damage from flooding would be more frequent and more
27 severe than under the proposed program. Therefore, impacts of flooding
28 and postflood repairs on aesthetic resources would be greater under this
29 alternative. Construction-related impacts would initially be less under this
30 alternative because fewer projects would be constructed; however, aesthetic
31 impacts could be equally mitigated under either alternative. There would be
32 greater flood-related visual impacts under the No-Project Alternative—No
33 Additional Activities Scenario, but these would be infrequent and episodic.
34 Given these conditions, the overall impact of the No-Project Alternative—
35 No Additional Activities Scenario on aesthetics is expected to be similar to
36 that of the proposed program. *[Similar]*

37 ***Modified State Systemwide Investment Approach Alternative***

38 The Modified SSIA Alternative would implement the same operations and
39 maintenance regime as the proposed program, and impacts of system
40 maintenance on aesthetic resources would be similar. The Modified SSIA
41 Alternative would address only the most critical stressors on public safety,

1 operations and maintenance, and ecosystem function; thus, the construction
2 and land disturbance footprint would be smaller under this alternative than
3 under the proposed program. This alternative also focuses on flood
4 protection in urban areas, which may have higher concentrations of
5 viewers; however, scenic viewsheds or areas where viewers expect
6 aesthetic conditions of higher quality are generally concentrated in rural,
7 undeveloped areas. Therefore, construction-related impacts on aesthetics
8 would be less under the Modified SSIA Alternative than under the
9 proposed program. Mitigation measures would be equally effective at
10 reducing small-scale, localized visual impacts to a less-than-significant
11 level under either the Modified SSIA Alternative or the proposed program.
12 This alternative would provide some opportunities for ecosystem
13 restoration, which would result in a beneficial effect on aesthetics;
14 however, the opportunities for larger scale restoration would be limited to
15 the Yolo Bypass, meaning that much fewer aesthetic benefits would occur.
16 This alternative would reduce the risk of flood-related impacts on
17 aesthetics at a level slightly less than that of the proposed program.
18 Because the ground disturbance footprint would be smaller, the overall
19 impact of the Modified SSIA Alternative on aesthetics would be less than
20 the impact of the proposed program. *[Lesser]*

21 ***Achieve SPFC Design Flow Capacity Alternative***

22 The Achieve SPFC Design Flow Capacity Alternative would only improve
23 existing levees to design capacity. This alternative would primarily fix
24 levees in place, without making major changes to the footprint or operation
25 of those facilities (i.e., no setback levees). It would implement the same
26 operations and maintenance regime as the proposed program, and impacts
27 of system operations and maintenance on aesthetic resources would be
28 similar. The Achieve SPFC Design Flow Capacity Alternative would result
29 in a smaller construction and land disturbance footprint than the proposed
30 program; therefore, construction-related impacts on aesthetics would be
31 less under this alternative. Mitigation measures would be equally effective
32 at reducing small-scale, localized visual impacts to a less-than-significant
33 level under either this alternative or the proposed program.

34 The Achieve SPFC Design Flow Capacity Alternative would provide a
35 much lower overall level of flood protection than the proposed program; as
36 a result, this alternative would not reduce the risk of flood-related impacts
37 on aesthetics as much as the proposed program. Because it would provide
38 few opportunities for ecosystem restoration, the benefits to aesthetics from
39 restoration would be more limited under this alternative than under the
40 proposed program. Because the ground disturbance footprint would be
41 smaller, the overall impact of the Achieve SPFC Design Flow Capacity
42 Alternative on aesthetics would be less than the impact of the proposed
43 program. *[Lesser]*

1 **Enhance Flood System Capacity Alternative**

2 The Enhance Flood System Capacity Alternative could involve
3 constructing new or expanded reservoirs and provides a greater emphasis
4 than the proposed program on constructing new bypasses, changing water
5 operations at existing reservoirs, and widening floodways. This alternative
6 would implement the same maintenance regime as the proposed program,
7 and impacts of system maintenance on aesthetic resources would be
8 similar. New reservoirs would have maintenance requirements not included
9 in the proposed program; however, impacts on aesthetic resources would
10 result primarily from constructing and operating a reservoir in a location
11 where one does not currently exist, and not necessarily from maintaining
12 that reservoir once it is in place.

13 The Enhance Flood System Capacity Alternative would provide a level of
14 flood protection slightly greater than that provided by the proposed
15 program (see Table 5-1); as a result, the reduction in potential flood-related
16 impacts on aesthetics would also be slightly greater. This alternative would
17 provide somewhat greater opportunities for ecosystem restoration than the
18 proposed program, which would result in correspondingly greater benefits
19 to aesthetics. However, more and larger new facilities could be constructed
20 under this alternative, resulting in greater impacts on aesthetics. Mitigation
21 measures similar to those recommended for the proposed program could be
22 implemented; however, it is uncertain whether those measures would be
23 sufficient to reduce all aesthetics impacts to a less-than-significant level for
24 reservoirs and all other large new facilities associated with this alternative.
25 Therefore, impacts on aesthetics would be greater under the Enhance Flood
26 System Capacity Alternative than under the proposed program. *[Greater]*

27 **5.5.2 Agriculture and Forestry Resources**

28 The proposed program would result in potentially significant and
29 unavoidable agricultural resources impacts after mitigation, as described in
30 greater detail in Section 3.3, “Agriculture and Forestry Resources.” The
31 scope of these potentially significant and unavoidable impacts is limited to
32 those situations in which identified Important Farmlands could not be
33 avoided and feasible mitigation would not be adequate to address the
34 impact. Impacts of the VMS on riparian forests, discussed in detail in
35 Section 3.5, “Biological Resources—Aquatic,” and Section 3.6,
36 “Biological Resources—Terrestrial,” are also considered to be of the same
37 nature and scope as impacts on forestry resources as broadly defined in the
38 CEQA Guidelines. The following analysis compares the anticipated
39 impacts of each alternative to those of the proposed program.

40 The comparison generally assumes that the benefits to agricultural
41 resources from flood risk reduction would not compensate for the impacts

1 of the proposed program because those benefits would generally be short
2 term (i.e., flooded areas are anticipated to recover to pre-flood conditions as
3 lands dry out and farming can resume), while many of the impacts of the
4 proposed program on agricultural resources would be permanent.

5 ***No-Project Alternative—Continued Operations Scenario***

6 Routine maintenance of flood control facilities has little effect on
7 agricultural resources, and maintenance effects from the No-Project
8 Alternative—Continued Operations Scenario would be similar to those
9 from the proposed program.

10 The impacts on agricultural lands from project-level construction of new
11 facilities and repair and improvement of existing facilities would be less
12 under the No-Project Alternative—Continued Operations Scenario than
13 under the proposed program because there would be fewer and smaller
14 projects. With a smaller cumulative project footprint, conversion of
15 agricultural land to nonagricultural use would be reduced. The proposed
16 program also includes a larger amount of habitat restoration and creation,
17 which would cause some amount of agricultural land to be converted to
18 nonagricultural use.

19 As under the proposed program, activities occurring as part of the No-
20 Project Alternative—Continued Operations Scenario would require
21 development and implementation of mitigation measures to reduce
22 significant or potentially significant impacts on agricultural resources.
23 Examples of such measures include preserving the agricultural productivity
24 of Important Farmland, complying with the Surface Mining and
25 Reclamation Act as applicable for reclamation of borrow sites, and
26 minimizing the effects of inundation and saturation. Mitigation measures
27 would be equally effective at reducing temporary impacts on agricultural
28 resources to a less-than-significant level under either the No-Project
29 Alternative—Continued Operations Scenario or the proposed program.
30 However, it would not be feasible to fully mitigate the conversion of
31 Important Farmland under either alternative.

32 Effects on agricultural resources from flood protection system failures
33 would be greater under the No-Project Alternative—Continued Operations
34 Scenario than under the proposed program because reductions in flood risk
35 would be smaller under this alternative. Although some improvements to
36 the flood protection system would occur this alternative, many areas would
37 experience nominal to no reductions in flood risk. Therefore, the potential
38 for adverse effects on agricultural land from a catastrophic flood event
39 would be greater.

1 Although the impacts of flooding would be greater under the No-Project
2 Alternative—Continued Operations Scenario than under the proposed
3 program, these impacts would be infrequent and generally temporary.
4 There would be greater permanent conversions of agricultural lands to
5 nonagricultural uses under the proposed program, both from facility
6 construction and from habitat restoration and creation. Therefore, the
7 overall impact of the No-Project Alternative—Continued Operations
8 Scenario on agricultural resources is expected to be less than that of the
9 proposed program. [*Lesser*]

10 ***No-Project Alternative—No Additional Activities Scenario***

11 Routine maintenance of flood control facilities has little effect on
12 agricultural resources, and maintenance effects from the No-Project
13 Alternative—No Additional Activities Scenario would be similar to those
14 from the proposed program.

15 The impacts on agricultural lands from project-level construction of new
16 facilities and repair and improvement of existing facilities would be less
17 under the No-Project Alternative—No Additional Activities Scenario than
18 under the proposed program because there would be fewer and smaller
19 projects. With a smaller cumulative project footprint, conversion of
20 agricultural land to nonagricultural use would be reduced. The proposed
21 program also includes a larger amount of habitat restoration and creation,
22 which would cause some amount of agricultural land to be converted to
23 nonagricultural use.

24 As under the proposed program, activities occurring as part of the No-
25 Project Alternative—No Additional Activities Scenario would require
26 development and implementation of mitigation measures to reduce
27 significant or potentially significant agricultural resources impacts.
28 Mitigation measures would be equally effective at reducing temporary
29 impacts on agricultural resources to a less-than-significant level under
30 either the No-Project Alternative—No Additional Activities Scenario or the
31 proposed program. However, it would not be feasible to fully mitigate the
32 conversion of Important Farmland under either alternative.

33 Effects on agricultural resources from failures of the flood protection
34 system would be greater under the No-Project Alternative—No Additional
35 Activities Scenario than under the proposed program because reductions in
36 flood risk would be smaller under this alternative. Although some
37 improvements to the flood protection system would occur under this
38 alternative, many areas would experience nominal to no reductions in flood
39 risk. Therefore, the potential for adverse affects on agricultural land from a
40 catastrophic flood event would be greater.

1 Although the impacts of flooding would be greater under the No-Project
2 Alternative—No Additional Activities Scenario, these impacts would be
3 infrequent and generally temporary. There would be greater permanent
4 conversions of agricultural lands to nonagricultural uses under the proposed
5 program, both from facility construction and from habitat restoration and
6 creation. Therefore, the overall impact of the No-Project Alternative—No
7 Additional Activities Scenario on agricultural resources is expected to be
8 less than that of the proposed program. [*Lesser*]

9 **Modified State Systemwide Investment Approach Alternative**

10 The Modified SSIA Alternative would implement the same maintenance
11 regime as the proposed program, and impacts of system maintenance on
12 agricultural resources would be similar. This alternative would address
13 only the most critical stressors on public safety, operations and
14 maintenance, and ecosystem function; thus, the footprint for facility
15 construction and habitat restoration and enhancement would be smaller
16 under this alternative than under the proposed program. As a result, it is
17 likely that less agricultural land would be converted to other uses. As under
18 the proposed program, activities occurring as part of the Modified SSIA
19 Alternative would require development and implementation of mitigation
20 measures to reduce significant impacts on agricultural resources. Mitigation
21 measures would be equally effective at reducing temporary impacts on
22 agricultural resources to a less-than-significant level under either the
23 Modified SSIA Alternative or the proposed program. However, it would
24 not be feasible to fully mitigate the conversion of Important Farmland
25 under either alternative.

26 Under the Modified SSIA Alternative, only minimal measures would be
27 taken to reduce flood risk for rural-agricultural areas. Flood protection in
28 agricultural areas would not increase to the same degree as under the
29 proposed program, and system failures resulting in inundation of
30 agricultural land would be greater than under the proposed program.
31 Although the impacts associated with flooding of agricultural land would
32 be greater under the Modified SSIA Alternative, these impacts would be
33 infrequent and generally temporary. There would be greater permanent
34 conversions of agricultural lands to nonagricultural uses under the proposed
35 program, both from facility construction and from habitat restoration and
36 creation. Therefore, the overall impact of the Modified SSIA Alternative on
37 agricultural resources is expected to be less than that of the proposed
38 program. [*Lesser*]

39 **Achieve SPFC Design Flow Capacity Alternative**

40 The Achieve SPFC Design Flow Capacity Alternative would only improve
41 existing levees to design capacity. This alternative would primarily fix
42 levees in place, without making major changes to the footprint or operation

1 of those facilities (i.e., no setback levees). The Achieve SPFC Design Flow
2 Capacity Alternative would implement the same maintenance regime as the
3 proposed program, and impacts of system maintenance on agricultural
4 resources would be similar. This alternative would result in a smaller
5 construction and land disturbance footprint than the proposed program;
6 therefore, conversion of agricultural land to accommodate new or modified
7 facilities and habitat restoration and creation would be less under this
8 alternative. Mitigation measures would be equally effective at reducing
9 temporary impacts on agricultural resources to a less-than-significant level
10 under either the Achieve SPFC Design Flow Capacity Alternative or the
11 proposed program. However, it would not be feasible to fully mitigate the
12 conversion of Important Farmland under either alternative.

13 The Achieve SPFC Design Flow Capacity Alternative would provide a
14 much lower overall level of flood protection than the proposed program; as
15 a result, this alternative would not reduce the risk of flood-related impacts
16 on agricultural resources as much as the proposed program. The impacts
17 associated with flooding of agricultural land would be greater under this
18 alternative, but these impacts would be infrequent and generally temporary.
19 There would be greater permanent conversions of agricultural lands to
20 nonagricultural uses under the proposed program, both from facility
21 construction and from habitat restoration and creation. Therefore, the
22 overall impact of the Achieve SPFC Design Flow Capacity Alternative on
23 agricultural resources is expected to be less than that of the proposed
24 program. [*Lesser*]

25 ***Enhance Flood System Capacity Alternative***

26 The Enhance Flood System Capacity Alternative could involve
27 constructing new or expanded reservoirs and provides a greater emphasis
28 than the proposed program on constructing new bypasses, changing water
29 operations at existing reservoirs, and widening floodways, which could
30 include constructing setback levees. This alternative would implement the
31 same maintenance regime as the proposed program, and impacts of system
32 maintenance on agricultural resources would be similar. New reservoirs
33 would have maintenance requirements not included in the proposed
34 program; however, impacts on agricultural resources would result primarily
35 from constructing and operating a reservoir on agricultural land, and not
36 necessarily from maintaining that reservoir once it is in place.

37 It is uncertain how changing the management and operation of storage
38 facilities under this alternative would affect agricultural lands. Depending
39 on the timing, duration, and locations of water reallocation, more or less
40 water could be available for agricultural irrigation.

1 The Enhance Flood System Capacity Alternative would provide a level of
 2 flood protection slightly greater than that provided by the proposed
 3 program (see Table 5-1); as a result, the reduction in potential flood-related
 4 impacts on agricultural resources would also be slightly greater. More and
 5 larger new facilities could be constructed under this alternative, resulting in
 6 greater conversion of agricultural land to nonagricultural use. Similarly,
 7 this alternative provides greater opportunities for habitat restoration and
 8 enhancement, potentially resulting in greater conversions of agricultural
 9 land. As under the proposed program, activities occurring as part of the
 10 Enhance Flood System Capacity Alternative would require development
 11 and implementation of mitigation measures to reduce significant impacts
 12 on agricultural resources. Mitigation measures would be equally effective
 13 at reducing temporary impacts on agricultural resources to a less-than-
 14 significant level under either the Enhance Flood System Capacity
 15 Alternative or the proposed program. However, it would not be feasible to
 16 fully mitigate the conversion of Important Farmland under either
 17 alternative. Given these conditions, impacts on agricultural resources
 18 would be greater under the Enhance Flood System Capacity Alternative
 19 than under the proposed program. [*Greater*]

20 **5.5.3 Air Quality**

21 The proposed program could have potentially significant and unavoidable
 22 air quality impacts, as described in greater detail in Section 3.4, “Air
 23 Quality.” These potentially significant and unavoidable impacts could
 24 occur in connection with the construction of relatively large projects,
 25 resulting in air pollutant emissions that could exceed the levels identified in
 26 applicable air district CEQA thresholds. The following analysis compares
 27 the anticipated impacts of each alternative to those of the proposed
 28 program.

29 The comparison generally assumes that the air quality benefits from flood
 30 risk reduction would not be materially different from the impacts of the
 31 proposed program. It is assumed that reconstruction efforts would involve
 32 comparable numbers of large projects exceeding applicable air district
 33 CEQA thresholds.

34 ***No-Project Alternative—Continued Operations Scenario***

35 Under the No-Project Alternative—Continued Operations Scenario, most
 36 elements of operations and routine maintenance of flood control facilities
 37 would continue following existing programs. Both the proposed program
 38 and the No-Project Alternative—Continued Operations Scenario include
 39 implementation of the VMS. The proposed program includes some new
 40 facilities that could cause air pollutant emissions from operations and
 41 maintenance to increase. However, the program also includes elements that

1 would reduce future maintenance requirements for existing facilities (e.g.,
2 by limiting ongoing erosion of facilities). Overall, air pollutant emissions
3 from operations and maintenance would be similar under the two
4 alternatives.

5 Because fewer and smaller facilities would be constructed under the No-
6 Project Alternative—Continued Operations Scenario, construction
7 emissions would be less than under the proposed program. Specifically,
8 construction of facilities resulting in air pollution emissions exceeding local
9 air district CEQA thresholds would be substantially reduced. Both
10 alternatives would require development and implementation of mitigation
11 measures to reduce significant or potentially significant air quality impacts
12 from construction emissions, such as using equipment with reduced
13 emissions and limiting idling times. Mitigation measures would be equally
14 effective at reducing short-term construction-related impacts on air quality
15 to a less-than-significant level under either the No-Project Alternative—
16 Continued Operations Scenario or the proposed program.

17 Because fewer improvements to the flood protection system would be
18 made under the No-Project Alternative—Continued Operations Scenario,
19 system failures and associated damage from flooding would occur more
20 frequently and would be more severe than under the proposed program.
21 Therefore, air pollutant emissions from recovery and repair after failures of
22 the flood protection system would be greater under this alternative than
23 under the proposed program. Although pollutant emissions associated with
24 recovery and repair from flood system failures would be greater under the
25 No-Project Alternative—Continued Operations Scenario, these impacts
26 would be infrequent. Emissions from facility operations and maintenance
27 would be similar under the two alternatives. Construction-related emissions
28 would be greater under the proposed program because of the larger number
29 of projects. Given these conditions, the overall impacts of the No-Project
30 Alternative—Continued Operations Scenario and the proposed program on
31 air quality would be similar. *[Similar]*

32 ***No-Project Alternative—No Additional Activities Scenario***

33 The No-Project Alternative—No Additional Activities Scenario is similar
34 to the No-Project Alternative—Continued Operations Scenario, except that
35 fewer projects would be undertaken in the near term and the proposed
36 LCM component of the VMS would not be implemented. Most elements of
37 routine operations and maintenance of flood control facilities would
38 continue following existing programs. The proposed program includes new
39 facilities that could cause air pollutant emissions from operations and
40 maintenance to increase. However, the program also includes elements that
41 would reduce future maintenance requirements for existing facilities (e.g.,
42 by limiting ongoing erosion of facilities). Overall, air pollutant emissions

1 from operations and maintenance would be less under the No-Project
2 Alternative—No Additional Activities Scenario than under the proposed
3 program.

4 Because fewer and smaller facilities would be constructed under the No-
5 Project Alternative—No Additional Activities Scenario, construction
6 emissions would be less than under the proposed program. Specifically,
7 construction of facilities resulting in air pollutant emissions exceeding local
8 air district CEQA thresholds would be substantially reduced. Both
9 alternatives would require development and implementation of mitigation
10 measures to reduce significant or potentially significant air quality impacts
11 from construction emissions. Mitigation measures would be equally
12 effective at reducing short-term construction-related impacts on air quality
13 to a less-than-significant level under either the No-Project Alternative—No
14 Additional Activities Scenario or the proposed program.

15 Because fewer improvements to the flood protection system would be
16 made under the No-Project Alternative—No Additional Activities
17 Scenario, system failures and associated damage from flooding would
18 occur more frequently and would be more severe than under the proposed
19 program. Therefore, air pollutant emissions from recovery and repair after
20 failures of the flood protection system would be greater under this
21 alternative than under the proposed program. Although pollutant emissions
22 associated with recovery and repair from flood system failures would be
23 greater under the No-Project Alternative—No Additional Activities
24 Scenario, these impacts would be infrequent. Emissions from facility
25 operations and maintenance would be less under this alternative than under
26 the proposed program. Construction-related emissions would be greater
27 under the proposed program because of the larger number of projects.
28 Given these conditions, the overall impacts of the No-Project Alternative—
29 No Additional Activities Scenario on air quality would be less than the
30 impacts of the proposed program. [*Lesser*]

31 ***Modified State Systemwide Investment Approach Alternative***

32 The Modified SSIA Alternative would implement the same operations and
33 maintenance regime as the proposed program, and impacts of system
34 operations and maintenance on air quality would be similar. This
35 alternative would address only the most critical stressors on public safety,
36 operations and maintenance, and ecosystem function; thus, the footprint for
37 facility construction and habitat restoration and enhancement would be
38 smaller under this alternative than under the proposed program. As a result,
39 emissions from construction-related activities would be expected to be less.
40 As under the proposed program, activities occurring as part of the Modified
41 SSIA Alternative would require development and implementation of
42 mitigation measures to reduce significant impacts from pollutant emissions.

1 Mitigation measures would be equally effective at reducing air quality
2 impacts to a less-than-significant level under either the Modified SSIA
3 Alternative or the proposed program.

4 The overall reduction in flood risk by the Modified SSIA Alternative would
5 be slightly less than the flood risk reduction of the proposed program.
6 Therefore, the potential for flooding from system failures during high-
7 water events would be slightly greater, as would pollutant emissions from
8 recovery and repair after failures of the flood protection system.

9 Emissions associated with operations and maintenance would be similar
10 under the proposed program and the Modified SSIA Alternative; however,
11 construction emissions would generally be anticipated to be less under this
12 alternative because the construction footprint would be smaller.
13 Specifically, under the Modified SSIA Alternative, there would be fewer
14 large projects likely to exceed local air district CEQA thresholds.
15 Therefore, impacts of the Modified SSIA Alternative on air quality are
16 expected to be less than those of the proposed program. *[Lesser]*

17 ***Achieve SPFC Design Flow Capacity Alternative***

18 The Achieve SPFC Design Flow Capacity Alternative would only improve
19 existing levees to design capacity. This alternative would primarily fix
20 levees in place, without making major changes to the footprint or operation
21 of those facilities (i.e., no setback levees). The Achieve SPFC Design Flow
22 Capacity Alternative would implement the same operations and
23 maintenance regime as the proposed program, and impacts on air quality
24 from system operations and maintenance would be similar. This alternative
25 would result in a smaller construction and land disturbance footprint than
26 the proposed program; therefore, construction emissions would be less.
27 Mitigation measures would be equally effective at reducing construction
28 emission impacts under either the Achieve SPFC Design Flow Capacity
29 Alternative or the proposed program.

30 The Achieve SPFC Design Flow Capacity Alternative would provide a
31 much lower overall level of flood protection than the proposed program; as
32 a result, this alternative would not reduce emissions from recovery and
33 repair of flood events as much as the proposed program. Although pollutant
34 emissions associated with recovery and repair from flood system failures
35 would be greater under this alternative, these impacts would be infrequent.
36 Emissions from facility operations and maintenance would be similar under
37 the two alternatives. Construction-related emissions would be anticipated to
38 be greater under the proposed program because the project footprint would
39 be larger. Specifically, under the Achieve SPFC Design Flow Capacities
40 Alternative, there would be fewer large projects likely to exceed local air
41 district CEQA thresholds. Given these conditions, the overall impact of the

1 Achieve SPFC Design Flow Capacity Alternative on air quality would be
2 expected to be less than that of the proposed program. [*Lesser*]

3 **Enhance Flood System Capacity Alternative**

4 The Enhance Flood System Capacity Alternative could involve
5 constructing new or expanded reservoirs and provides a greater emphasis
6 than the proposed program on constructing new bypasses, changing water
7 operations at existing reservoirs, and widening floodways, which could
8 include constructing setback levees. This alternative would implement the
9 same maintenance regime as the proposed program, and impacts of system
10 maintenance on air quality would be similar. New reservoirs would have
11 maintenance requirements not included in the proposed program, which
12 could result in increased pollutant emissions relative to the proposed
13 program.

14 The Enhance Flood System Capacity Alternative would provide a level of
15 flood protection slightly greater than that provided by the proposed
16 program (see Table 5-1); as a result, the reduction in potential flood-related
17 impacts on air quality would also be slightly greater. More and larger new
18 facilities could be constructed under this alternative, resulting in greater
19 construction emissions. Specifically, under the Enhance Flood System
20 Capacity Alternative, there would be more large projects likely to exceed
21 local air district CEQA thresholds. As under the proposed program,
22 activities occurring as part of this alternative would require development
23 and implementation of mitigation measures to reduce significant impacts
24 on air quality. Mitigation measures would be equally effective at reducing
25 construction emission impacts to a less-than-significant level under either
26 the Enhance Flood System Capacity Alternative or the proposed program.
27 Given these condition, impacts on air quality would be greater under the
28 Enhance Flood System Capacity Alternative than under the proposed
29 program. [*Greater*]

30 **5.5.4 Biological Resources—Aquatic**

- 31 • The proposed program could have potentially significant and
32 unavoidable aquatic biological resources impacts, as described in
33 greater detail in Section 3.5, “Biological Resources—Aquatic.” Most
34 impacts on aquatic biological resources are anticipated to be less than
35 significant after mitigation. However, given the scope and nature of the
36 program, there may be situations in which local or temporary effects
37 could not be fully mitigated; if those effects were of a sufficient scale,
38 they could result in potentially significant and unavoidable impacts.
39 The following analysis compares the anticipated impacts of each
40 alternative to those of the proposed program.

1 The comparison generally assumes that the benefits to aquatic biological
2 resources from flood risk reduction would compensate for the impacts of
3 the proposed program because the program impacts would generally be
4 minimal, well-planned, and substantially mitigated, while the adverse
5 habitat impacts from a major flood event would be unplanned and
6 unmitigated, and could be of significant scope.

7 The alternatives also vary substantially in the degree to which they would
8 include or accommodate habitat enhancements that go beyond the
9 requirements of applicable regulatory programs.

10 ***No-Project Alternative—Continued Operations Scenario***

11 Under the No-Project Alternative—Continued Operations Scenario, most
12 elements of routine operations and maintenance of flood control facilities
13 would continue following existing programs. However, as under the
14 proposed program, the VMS described in the CVFPP would be
15 implemented as part of this alternative. DWR intends to implement the
16 VMS and associated elements such as LCM whether or not the CVFPP is
17 adopted. Therefore, changes in general riparian habitat and shaded riverine
18 aquatic habitat caused by management and removal of vegetation for levee
19 maintenance would be the same under the No-Project Alternative—
20 Continued Operations Scenario as under the proposed program. However,
21 the CVFPP Conservation Strategy, which could have beneficial effects on
22 riparian and shaded riverine aquatic habitats in some areas from habitat
23 creation, would not be implemented under this alternative. It is assumed
24 that local agencies implementing individual projects would perform habitat
25 planting to mitigate project-specific effects under both the No-Project
26 Alternative—Continued Operations Scenario and the proposed program,
27 and that mitigation would also be provided by an appropriate agency for
28 riparian vegetation removal resulting from the VMS. However, the
29 elements of the CVFPP Conservation Strategy that would promote
30 restoration of ecosystem functions and other benefits beyond the minimum
31 needed for project-specific mitigation would not be implemented.
32 Therefore, impacts of system maintenance on aquatic biological resources
33 could be greater under the No-Project Alternative—Continued Operations
34 Scenario than under the proposed program.

35 The increased flexibility in reservoir operations included in the proposed
36 program would not be a part of the No-Project Alternative—Continued
37 Operations Scenario. As described in Subsection 3.5.5, “Environmental
38 Impacts and Mitigation Measures for LTMA,” of Section 3.5, “Biological
39 Resources—Aquatic,” it is unclear how reservoir reoperation and other
40 program elements that could affect flows (e.g., new bypasses redirecting
41 flows) would interact to affect aquatic biological resources. Net effects on
42 various waterways could be beneficial, adverse, or neutral depending on

1 the specific circumstances. Therefore, it is not known whether
2 implementing the No-Project Alternative—Continued Operations Scenario
3 would result in less of a beneficial effect, less of an adverse effect, or
4 similar effects relative to the proposed program.

5 The effects on aquatic biological resources from project-level construction
6 of new facilities and repair and improvement of existing facilities would be
7 less under the No-Project Alternative—Continued Operations Scenario
8 than under the proposed program because there would be fewer and smaller
9 projects. As under the proposed program, activities occurring as part of this
10 alternative would require development and implementation of mitigation
11 measures to reduce significant or potentially significant impacts on aquatic
12 biological resources. Examples of such measures include securing
13 applicable State and/or federal permits and implementing permit
14 requirements, completing inventories and replacing shaded riverine aquatic
15 habitat, conforming to National Marine Fisheries Service guidelines for
16 pile-driving activities, and replacing lost vegetation and instream woody
17 material. Mitigation measures would be equally effective at reducing small-
18 scale and short-term impacts on aquatic biological resources to a less-than-
19 significant level under either the No-Project Alternative—Continued
20 Operations Scenario or the proposed program.

21 Because fewer improvements to the flood protection system would be
22 made under the No-Project Alternative—Continued Operations Scenario,
23 system failures and associated damage from flooding would occur more
24 frequently and would be more severe than under the proposed program.
25 Therefore, impacts on aquatic biological resources caused by flooding of
26 urban and agricultural areas, such as contamination of floodwaters and fish
27 stranding after floodwaters recede, would be greater under this alternative.

28 As described above, impacts of system maintenance on aquatic biological
29 resources would be greater under the No-Project Alternative—Continued
30 Operations Scenario than under the proposed program. Construction-
31 related impacts would initially be less under this alternative because fewer
32 projects would be constructed; however, impacts on aquatic biological
33 resources could be equally mitigated under either alternative. Flood-related
34 impacts would be greater under the No-Project Alternative—Continued
35 Operations Scenario, although these would be infrequent and episodic.
36 Given these conditions, the overall impact of the No-Project Alternative—
37 Continued Operations Scenario on aquatic biological resources is expected
38 to be greater than that of the proposed program. [*Greater*]

39 **No-Project Alternative—No Additional Activities Scenario**

40 The No-Project Alternative—No Additional Activities Scenario is similar
41 to the No-Project Alternative—Continued Operations Scenario, except that

1 fewer projects would be undertaken in the near term and the proposed
2 LCM component of the VMS would not be implemented. Most elements of
3 routine operations and maintenance of flood control facilities would
4 continue following existing programs. However, without the LCM
5 component of the VMS, changes in general riparian habitat and shaded
6 riverine aquatic habitat resulting from management and removal of
7 vegetation for levee maintenance would be less than changes under the
8 proposed program. Additionally, the CVFPP Conservation Strategy, which
9 could have beneficial effects on riparian and shaded riverine aquatic
10 habitats in some areas associated with habitat creation, would not be
11 implemented under this alternative. It is assumed that local agencies
12 implementing individual projects would perform habitat planting to
13 mitigate project-specific effects under both this alternative and the
14 proposed program, and that mitigation would also be provided by an
15 appropriate agency for riparian vegetation removal resulting from the
16 VMS. Therefore, impacts of system maintenance on aquatic biological
17 resources would be less under the No-Project Alternative—No Additional
18 Activities Scenario.

19 The increased flexibility in reservoir operations included in the proposed
20 program would not be a part of the No-Project Alternative—No Additional
21 Activities Scenario. As described in Subsection 3.5.5, “Environmental
22 Impacts and Mitigation Measures for LTMAAs,” of Section 3.5, “Biological
23 Resources—Aquatic,” it is unclear how reservoir reoperation and other
24 program elements that could affect flows (e.g., new bypasses redirecting
25 flows) would interact to affect aquatic biological resources. Net effects on
26 various waterways could be beneficial, adverse, or neutral depending on
27 the specific circumstances. Therefore, it is not known whether
28 implementing the No-Project Alternative—No Additional Activities
29 Scenario would result in less of a beneficial effect, less of an adverse effect,
30 or similar effects relative to the proposed program.

31 The effects on aquatic biological resources from project-level construction
32 of new facilities and repair and improvement of existing facilities would be
33 less under the No-Project Alternative—No Additional Activities Scenario
34 than under the proposed program because there would be fewer and smaller
35 projects. As under the proposed program, activities occurring as part of this
36 alternative would require development and implementation of mitigation
37 measures to reduce significant or potentially significant impacts on aquatic
38 biological resources. Mitigation measures would be equally effective at
39 reducing small-scale and short-term impacts on aquatic biological
40 resources to a less-than-significant level under either the No-Project
41 Alternative—No Additional Activities Scenario or the proposed program.

1 Because fewer improvements to the flood protection system would be
 2 made under the No-Project Alternative—No Additional Activities
 3 Scenario, system failures and associated damage from flooding would
 4 occur more frequently and would be more severe than under the proposed
 5 program. Therefore, impacts on aquatic biological resources caused by
 6 flooding of urban and agricultural areas, such as contamination of
 7 floodwaters and fish stranding after floodwaters recede, would be greater
 8 under the No-Project Alternative—No Additional Activities Scenario.

9 As described above, impacts of system maintenance on aquatic biological
 10 resources would be less under the No-Project Alternative—No Additional
 11 Activities Scenario than under the proposed program because there would
 12 not be incremental impacts from LCM. The beneficial elements of the
 13 CVFPP Conservation Strategy would not be implemented under this
 14 alternative. Construction-related impacts would initially be less under this
 15 alternative because fewer projects would be constructed; however, impacts
 16 on aquatic biological resources could be equally mitigated under either
 17 alternative. There would be greater flood-related impacts under this
 18 alternative, although these would be infrequent and episodic. On balance,
 19 taking all of these factors into account, the overall impact of the No-Project
 20 Alternative—No Additional Activities Scenario on aquatic biological
 21 resources is expected to be greater than that of the proposed program.
 22 *[Greater]*

23 **Modified State Systemwide Investment Approach Alternative**

24 The Modified SSIA Alternative would implement the same overall
 25 operations and maintenance regime as the proposed program, and impacts
 26 on aquatic biological resources from system operations and maintenance
 27 would be similar. This alternative would address only the most critical
 28 stressors on public safety and ecosystem function; thus, the construction
 29 and land disturbance footprint would be smaller under this alternative than
 30 under the proposed program. As a result, construction-related impacts on
 31 aquatic biological resources would be less under the Modified SSIA
 32 Alternative than under the proposed program. Mitigation measures would
 33 be equally effective at reducing construction-related impacts to a less-than-
 34 significant level under either the Modified SSIA Alternative or the
 35 proposed program. This alternative would provide some opportunities for
 36 ecosystem restoration, which would result in a beneficial effect on aquatic
 37 biological resources; however, the opportunities for larger scale restoration
 38 would be limited to the Yolo Bypass, meaning that much fewer benefits
 39 would occur. This alternative would reduce the risk of flood-related
 40 impacts on aquatic biological resources at a level slightly less than the
 41 proposed program. Given these reduced benefits, the overall impact of the
 42 Modified SSIA Alternative on aquatic biological resources would be
 43 greater than the impact of the proposed program. *[Greater]*

1 ***Achieve SPFC Design Flow Capacity Alternative***

2 The Achieve SPFC Design Flow Capacity Alternative would only improve
3 existing levees to design capacity. This alternative would primarily fix
4 levees in place, without making major changes to the footprint or operation
5 of those facilities (i.e., no setback levees). The Achieve SPFC Design Flow
6 Capacity Alternative would implement the same operations and
7 maintenance regime as the proposed program, and impacts of system
8 operations and maintenance on aquatic biological resources would be
9 similar. The Achieve SPFC Design Flow Capacity Alternative would result
10 in a smaller construction and land disturbance footprint than under the
11 proposed program; therefore, construction-related impacts on aquatic
12 biological resources would be less. Mitigation measures would be equally
13 effective at reducing impacts to a less-than-significant level under either
14 this alternative or the proposed program.

15 The Achieve SPFC Design Flow Capacity Alternative would provide a
16 much lower overall level of flood protection than the proposed program; as
17 a result, this alternative would not reduce the risk of flood-related impacts
18 on aquatic biological resources as much as the proposed program. Because
19 this alternative would provide few opportunities for ecosystem restoration,
20 the benefits to aquatic biological resources from restoration would be more
21 limited under this alternative than under the proposed program. Primarily
22 because of the more limited benefits under the Achieve SPFC Design Flow
23 Capacity Alternative, impacts on aquatic biological resources would be
24 greater under this alternative than under the proposed program. ***[Greater]***

25 ***Enhance Flood System Capacity Alternative***

26 The Enhance Flood System Capacity Alternative could involve
27 constructing new or expanded reservoirs and provides a greater emphasis
28 than the proposed program on constructing new bypasses, changing water
29 operations at existing reservoirs, and widening floodways. This alternative
30 would implement the same maintenance regime as the proposed program,
31 and impacts of system maintenance on aquatic biological resources would
32 be similar. New reservoirs would have maintenance requirements not
33 included in the proposed program; however, impacts on aquatic biological
34 resources would result primarily from constructing and operating a
35 reservoir in a location where one does not currently exist, and not
36 necessarily from maintaining that reservoir once it is in place.

37 The Enhance Flood System Capacity Alternative would provide increased
38 flexibility in reservoir operations exceeding the greater flexibility included
39 in the proposed program, and new reservoirs would be operated. As
40 described for the proposed program in Subsection 3.5.5, “Environmental
41 Impacts and Mitigation Measures for LTMA’s,” of Section 3.5, “Biological
42 Resources—Aquatic,” it is unclear how modified flows below reservoirs

1 would affect aquatic biological resources. Net effects on various waterways
 2 could be beneficial, adverse, or neutral depending on the specific
 3 circumstances. Therefore, it is not known whether implementing the
 4 Enhance Flood System Capacity Alternative would result in less of a
 5 beneficial effect, less of an adverse effect, or similar effects relative to the
 6 proposed program.

7 The Enhance Flood System Capacity Alternative would provide a level of
 8 flood protection slightly greater than that provided by the proposed
 9 program (see Table 5-1); as a result, the reduction in potential flood-related
 10 impacts on aquatic biological resources would also be slightly greater. This
 11 alternative would provide somewhat greater opportunities for ecosystem
 12 restoration than the proposed program, which would result in
 13 correspondingly greater benefits to aquatic biological resources. The
 14 greater level of floodplain expansion associated with the Enhance Flood
 15 System Capacity Alternative (via setback levees, bypass widening, and new
 16 bypasses) would improve ecosystem functions, fish passage, and the
 17 quantity, quality, and diversity of habitats to a greater degree than under the
 18 proposed program. However, more and larger new facilities could be
 19 constructed under this alternative, resulting in greater impacts on aquatic
 20 biological resources. Mitigation measures similar to those recommended
 21 for the proposed program could be implemented; however, it is uncertain
 22 whether those measures would be sufficient to reduce all impacts on
 23 aquatic biological resources to a less-than-significant level for reservoirs
 24 and all other large new facilities associated with this alternative.

25 The Enhance Flood System Capacity Alternative would result in greater
 26 benefits to aquatic biological resources than the proposed program, but also
 27 has a greater potential to result in adverse effects. Therefore, the overall
 28 impact of this alternative on aquatic biological resources would be greater
 29 than that of the proposed program. [*Greater*]

30 **5.5.5 Biological Resources—Terrestrial**

- 31 • The proposed program could result in potentially significant and
 32 unavoidable impacts on terrestrial biological resources, as described in
 33 greater detail in Section 3.6, “Biological Resources—Terrestrial.” Most
 34 impacts on terrestrial biological resources are anticipated to be less than
 35 significant after mitigation. However, given the scope and nature of the
 36 program, there may be situations in which local or temporary effects
 37 could not be fully mitigated; if those effects were of a sufficient scale,
 38 they could result in potentially significant and unavoidable impacts.
 39 The following analysis compares the anticipated impacts of each
 40 alternative to those of the proposed program.

1 The comparison generally assumes that the benefits to terrestrial biological
2 resources from flood risk reduction would compensate for the impacts of
3 the proposed program because the program impacts would generally be
4 minimal, well-planned, and substantially mitigated, while the adverse
5 habitat impacts from a major flood event would be unplanned and
6 unmitigated, and could be of significant scope.

7 The alternatives also vary substantially in the degree to which they would
8 include or accommodate habitat enhancements that go beyond the
9 requirements of applicable regulatory programs.

10 ***No-Project Alternative—Continued Operations Scenario***

11 Under the No-Project Alternative—Continued Operations Scenario, most
12 elements of routine operations and maintenance of flood control facilities
13 would continue following existing programs. However, as under the
14 proposed program, the VMS described in the CVFPP would be
15 implemented as part of this alternative. DWR intends to implement the
16 VMS and associated elements such as LCM whether or not the CVFPP is
17 adopted. Therefore, changes in the extent and location of riparian habitat
18 caused by management and removal of vegetation for levee maintenance
19 would be the same for the No-Project Alternative—Continued Operations
20 Scenario and the proposed program. However, the CVFPP Conservation
21 Strategy, which could have beneficial effects on riparian habitats in some
22 areas from habitat restoration and creation, would not be implemented
23 under this alternative. It is assumed that local agencies implementing
24 individual projects would perform habitat planting to mitigate project-
25 specific effects under both the No-Project Alternative—Continued
26 Operations Scenario and the proposed program, and that mitigation would
27 also be provided by an appropriate agency for riparian vegetation removal
28 resulting from the VMS. However, the elements of the CVFPP
29 Conservation Strategy that would promote restoration of ecosystem
30 functions and other benefits beyond the minimum needed for project-
31 specific mitigation would not be implemented. Therefore, impacts of
32 system maintenance on terrestrial biological resources could be greater
33 under the No-Project Alternative—Continued Operations Scenario than
34 under the proposed program.

35 The increased flexibility in reservoir operations included in the proposed
36 program would not be a part of the No-Project Alternative—Continued
37 Operations Scenario. As described in Subsection 3.6.5, “Environmental
38 Impacts and Mitigation Measures for LTMAAs,” of Section 3.6, “Biological
39 Resources—Terrestrial,” reservoir reoperation combined with other
40 program elements that could affect flows (e.g., new bypasses redirecting
41 flows) would not alter flows sufficiently to significantly adversely affect
42 the species and resources addressed in the analysis. As identified for

1 aquatic biological resources, program-related changes in flows could have
2 an overall adverse effect, beneficial effect, or neutral effect on a particular
3 area. However, for terrestrial species and habitats, which are typically
4 already subjected to similar variability in flows, any adverse effect of the
5 program that might occur would not be sufficient to exceed a threshold of
6 significance used in the PEIR. Given these conditions, the effects on
7 terrestrial biological resources from changes in river flows under the No-
8 Project Alternative—Continued Operations Scenario would be similar to
9 those from the proposed program.

10 The effects on terrestrial biological resources from project-level
11 construction of new facilities and repair and improvement of existing
12 facilities would be less under the No-Project Alternative—Continued
13 Operations Scenario than under the proposed program because there would
14 be fewer and smaller projects. As under the proposed program, activities
15 occurring as part of this alternative would require development and
16 implementation of mitigation measures to reduce significant or potentially
17 significant impacts on terrestrial biological resources. Examples of such
18 measures include conducting biological resources surveys, minimizing and
19 compensating for impacts on critical habitats and sensitive species, and
20 securing applicable State and/or federal permits and implementing permit
21 requirements. Mitigation measures would be equally effective at reducing
22 small-scale and short-term impacts on terrestrial biological resources to a
23 less-than-significant level under either the No-Project Alternative—
24 Continued Operations Scenario or the proposed program.

25 Because fewer improvements to the flood protection system would be
26 made under the No-Project Alternative—Continued Operations Scenario,
27 system failures and associated damage from flooding would occur more
28 frequently and would be more severe than under the proposed program.
29 Therefore, impacts on terrestrial biological resources resulting from
30 flooding of habitat areas would be greater under this alternative.

31 As described above, impacts of system maintenance on terrestrial
32 biological resources would be greater under the No-Project Alternative—
33 Continued Operations Scenario than under the proposed program. Impacts
34 from changes in downstream flows would be similar. Construction-related
35 impacts would initially be less under this alternative because fewer projects
36 would be constructed; however, impacts on terrestrial biological resources
37 could be equally mitigated under either alternative. There would be greater
38 flood-related impacts under the No-Project Alternative—Continued
39 Operations Scenario, although these would be infrequent and episodic.
40 Given these conditions, the overall impact of the No-Project Alternative—
41 Continued Operations Scenario on terrestrial biological resources is
42 expected to be greater than that of the proposed program. *[Greater]*

1 **No-Project Alternative—No Additional Activities Scenario**
2 The No-Project Alternative—No Additional Activities Scenario is similar
3 to the No-Project Alternative—Continued Operations Scenario, except that
4 fewer projects would be undertaken in the near term and the proposed
5 LCM component of the VMS would not be implemented. Most elements of
6 routine operations and maintenance of flood control facilities would
7 continue following existing programs. Therefore, changes in the extent and
8 location of riparian habitat caused by management and removal of
9 vegetation for levee maintenance would be less under the No-Project
10 Alternative—No Additional Activities Scenario than under the proposed
11 program. However, the CVFPP Conservation Strategy, which could have
12 beneficial effects on riparian habitats in some areas from habitat restoration
13 and creation, would not be implemented under this alternative. It is
14 assumed that local agencies implementing individual projects would
15 perform habitat planting to mitigate project-specific effects under both the
16 No-Project Alternative—No Additional Activities Scenario and the
17 proposed program. However, the elements of the CVFPP Conservation
18 Strategy that would promote restoration of ecosystem functions and other
19 benefits beyond the minimum needed for project-specific mitigation would
20 not be implemented. Therefore, impacts of system maintenance on
21 terrestrial biological resources would be less under the No-Project
22 Alternative—No Additional Activities Scenario than under the proposed
23 program.

24 The increased flexibility in reservoir operations included in the proposed
25 program would not be a part of the No-Project Alternative—No Additional
26 Activities Scenario. As identified for aquatic biological resources,
27 program-related changes in flows could have an overall adverse effect,
28 beneficial effect, or neutral effect on a particular area. However, for
29 terrestrial species and habitats, which are typically already subjected to
30 similar variability in flows, any adverse effect of the program that might
31 occur would not be sufficient to exceed a threshold of significance used in
32 the PEIR. Given these conditions, the effects on terrestrial biological
33 resources from changes in river flows under the No-Project Alternative—
34 No Additional Activities Scenario would be similar to those from the
35 proposed program.

36 The effects on terrestrial biological resources from project-level
37 construction of new facilities and repair and improvement of existing
38 facilities would be less under the No-Project Alternative—No Additional
39 Activities Scenario than under the proposed program because there would
40 be fewer and smaller projects. As under the proposed program, activities
41 occurring as part of this alternative would require development and
42 implementation of mitigation measures to reduce significant or potentially
43 significant impacts on terrestrial biological resources. Mitigation measures

1 would be equally effective at reducing small-scale and short-term impacts
2 on terrestrial biological resources to a less-than-significant level under
3 either the No-Project Alternative—No Additional Activities Scenario or the
4 proposed program.

5 Because fewer improvements to the flood protection system would be
6 made under this alternative, system failures and associated damage from
7 flooding would occur more frequently and would be more severe than
8 under the proposed program. Therefore, impacts on terrestrial biological
9 resources resulting from flooding of habitat areas would be greater under
10 the No-Project Alternative—No Additional Activities Scenario.

11 As described above, impacts of system maintenance on terrestrial
12 biological resources would be less under the No-Project Alternative—No
13 Additional Activities Scenario than under the proposed program. Impacts
14 from changes in downstream flows would be similar. Construction-related
15 impacts would initially be less under this alternative because fewer projects
16 would be constructed; however, impacts on terrestrial biological resources
17 could be equally mitigated under either alternative. There would be greater
18 flood-related impacts under the No-Project Alternative—No Additional
19 Activities Scenario, although these would be infrequent and episodic.
20 Given these conditions, the overall impact of the No-Project Alternative—
21 No Additional Activities Scenario on terrestrial biological resources is
22 expected to be greater than that of the proposed program. [*Greater*]

23 ***Modified State Systemwide Investment Approach Alternative***

24 The Modified SSIA Alternative would implement the same overall
25 operations and maintenance regime as the proposed program, and impacts
26 of system operations and maintenance on terrestrial biological resources
27 would be similar. This alternative would address only the most critical
28 stressors on public safety and ecosystem function; thus, the construction
29 and land disturbance footprint would be smaller under this alternative than
30 under the proposed program. Therefore, construction-related impacts on
31 terrestrial biological resources would be less under the Modified SSIA
32 Alternative than under the proposed program. Mitigation measures would
33 be equally effective at reducing construction-related impacts to a less-than-
34 significant level under either this alternative or the proposed program. The
35 Modified SSIA Alternative would provide some opportunities for
36 ecosystem restoration, which would result in a beneficial effect on
37 terrestrial biological resources; however, the opportunities for larger scale
38 restoration would be limited to the Yolo Bypass, meaning that fewer
39 benefits would occur. This alternative would reduce the risk of flood-
40 related impacts on terrestrial biological resources at a level slightly less
41 than the proposed program. Given these reduced benefits, the overall

1 impact of the Modified SSIA Alternative on terrestrial biological resources
2 would be greater than the impact of the proposed program. [*Greater*]

3 ***Achieve SPFC Design Flow Capacity Alternative***

4 The Achieve SPFC Design Flow Capacity Alternative would only improve
5 existing levees to design capacity. This alternative would primarily fix
6 levees in place, without making major changes to the footprint or operation
7 of those facilities (i.e., no setback levees). It would implement the same
8 operations and maintenance regime as the proposed program, and impacts
9 of system operations and maintenance on terrestrial biological resources
10 would be similar. The Achieve SPFC Design Flow Capacity Alternative
11 would result in a smaller construction and land disturbance footprint than
12 the proposed program; therefore, construction-related impacts on terrestrial
13 biological resources would be less than under the proposed program.
14 Mitigation measures would be equally effective at reducing impacts to a
15 less-than-significant level under either this alternative or the proposed
16 program.

17 The Achieve SPFC Design Flow Capacity Alternative would provide a
18 much lower overall level of flood protection than the proposed program; as
19 a result, this alternative would not reduce the risk of flood-related impacts
20 on terrestrial biological resources as much as the proposed program.
21 Because this alternative would provide few opportunities for ecosystem
22 restoration, the benefits to terrestrial biological resources from restoration
23 would be more limited than under the proposed program. Primarily because
24 of the more limited benefits under the Achieve SPFC Design Flow
25 Capacity Alternative, impacts on terrestrial biological resources would be
26 greater under this alternative than under the proposed program. [*Greater*]

27 ***Enhance Flood System Capacity Alternative***

28 The Enhance Flood System Capacity Alternative could involve
29 constructing new or expanded reservoirs and provides a greater emphasis
30 than the proposed program on constructing new bypasses, changing water
31 operations at existing reservoirs, and widening floodways. This alternative
32 would implement the same maintenance regime as the proposed program,
33 and impacts of system maintenance on terrestrial biological resources
34 would be similar. New reservoirs would have maintenance requirements
35 not included in the proposed program; however, impacts on terrestrial
36 biological resources would result primarily from constructing and operating
37 a reservoir in a location where one does not currently exist, and not
38 necessarily from maintaining that reservoir once it is in place.

39 The Enhance Flood System Capacity Alternative would provide increased
40 flexibility in reservoir operations exceeding the greater flexibility included
41 in the proposed program, and new reservoirs would be operated. It is

1 unclear how possible substantial modifications to flows below new and
 2 existing reservoirs would affect terrestrial biological resources. Net effects
 3 in various waterways could be beneficial, adverse, or neutral depending on
 4 the specific circumstances. Therefore, it is not known whether
 5 implementing the Enhance Flood System Capacity Alternative would result
 6 in less of a beneficial effect, less of an adverse effect, or similar effects
 7 relative to the proposed program.

8 This alternative would provide a level of flood protection slightly greater
 9 than that provided by the proposed program (see Table 5-1); as a result, the
 10 reduction in potential flood-related impacts on terrestrial biological
 11 resources would also be slightly greater. The Enhance Flood System
 12 Capacity Alternative would provide somewhat greater opportunities for
 13 ecosystem restoration than the proposed program, which would result in
 14 correspondingly greater benefits to terrestrial biological resources. The
 15 greater level of floodplain expansion associated with the Enhance Flood
 16 System Capacity Alternative (via setback levees, bypass widening, and new
 17 bypasses) would improve ecosystem functions and the quantity, quality,
 18 and diversity of habitats to a greater degree than under the proposed
 19 program. However, more and larger new facilities could be constructed
 20 under this alternative, resulting in greater impacts on terrestrial biological
 21 resources. Mitigation measures similar to those recommended for the
 22 proposed program could be implemented; however, it is uncertain whether
 23 those measures would be sufficient to reduce all impacts on terrestrial
 24 biological resources to a less-than-significant level for new reservoirs and
 25 all other large new facilities associated with this alternative.

26 The Enhance Flood System Capacity Alternative would result in greater
 27 benefits to terrestrial biological resources than the proposed program, but
 28 also has a greater potential to result in adverse effects. Therefore, the
 29 overall impact of this alternative on terrestrial biological resources would
 30 be greater than that of the proposed program. *[Greater]*

31 **5.5.6 Climate Change and Greenhouse Gas Emissions**

32 The proposed program would not result in significant impacts related to
 33 climate change and GHG emissions, as described in greater detail in
 34 Section 3.7, "Climate Change and Greenhouse Gas Emissions." The
 35 following analysis compares the anticipated impacts of each alternative to
 36 those of the proposed program.

37 The comparison generally assumes that the climate change benefits from
 38 flood risk reduction would compensate for the impacts of the proposed
 39 program because the avoided GHG emissions from reconstruction
 40 following a major flood event are anticipated to be greater than the GHG
 41 emissions from construction activities under the proposed program.

1 **No-Project Alternative—Continued Operations Scenario**
2 Under the No-Project Alternative—Continued Operations Scenario, most
3 elements of routine operations and maintenance of flood control facilities
4 would continue following existing programs. The proposed program
5 includes new facilities that could result in a net systemwide increase in
6 maintenance effort and associated GHG emissions. However, it could also
7 result in increased maintenance efficiency at existing facilities, generating a
8 net reduction in systemwide GHG emissions. Therefore, it is unknown
9 whether the maintenance-generated GHG emissions would be more or less
10 under the No-Project Alternative—Continued Operations Scenario than
11 under the proposed program.

12 Although the proposed program includes modifications to reservoir
13 operations, these would not alter overall hydropower production (see
14 Section 2.6, “No Near- or Long-Term Reduction in Water or Renewable
15 Electricity Deliveries,” in Chapter 2.0, “Program Description”).
16 Implementing the No-Project Alternative—Continued Operations Scenario
17 also would not alter hydropower production relative to existing conditions.
18 Therefore, neither the proposed program nor this alternative would alter
19 GHG emissions related to the increased or decreased use of fossil fuel–
20 generated electricity that might result from changes in hydropower
21 production.

22 As under the proposed program, the VMS described in the CVFPP would
23 be implemented as part of the No-Project Alternative—Continued
24 Operations Scenario. DWR intends to implement the VMS, and associated
25 elements such as LCM, whether or not the CVFPP is adopted. Therefore,
26 GHG emissions associated with implementation of this program would be
27 roughly the same as the proposed program and this alternative. However,
28 the CVFPP Conservation Strategy, which could increase the overall extent
29 of riparian forest habitat and therefore increase CO₂ sequestration, would
30 not be implemented under the No-Project Alternative—Continued
31 Operations Scenario. It is assumed that local agencies implementing
32 individual projects would perform habitat planting to mitigate project-
33 specific effects under both the No-Project Alternative—Continued
34 Operations Scenario and the proposed program. However, the elements of
35 the CVFPP Conservation Strategy that would promote habitat restoration
36 and creation beyond the minimum needed for project-specific mitigation
37 would not be implemented. Therefore, the potential for CO₂ sequestration
38 from restoration and creation of riparian forest habitat would be less under
39 the No-Project Alternative—Continued Operations Scenario than under the
40 proposed program.

41 GHG emissions resulting from project-level construction of new facilities
42 and repair and improvement of existing facilities would be less under the

1 No-Project Alternative—Continued Operations Scenario than under the
 2 proposed program because there would be fewer and smaller projects. As
 3 described in Section 3.7, “Climate Change and Greenhouse Gas
 4 Emissions,” impacts of construction-related GHG emissions under the
 5 proposed program would be less than significant. The same would be true
 6 of construction-related emissions under this alternative.

7 Because fewer improvements to the flood protection system would be
 8 made under the No-Project Alternative—Continued Operations Scenario,
 9 system failures and associated damage from flooding would occur more
 10 frequently and would be more severe than under the proposed program.
 11 Therefore, GHG emissions associated with recovery and repair after flood
 12 system failures would be greater under the No-Project Alternative—
 13 Continued Operations Scenario.

14 As described above, it is unclear whether system maintenance under the
 15 No-Project Alternative—Continued Operations Scenario would result in
 16 greater or lesser GHG emissions than the proposed program. Changes in
 17 reservoir operations would not affect GHG emissions under either
 18 alternative. Construction-related GHG emissions would be less under this
 19 alternative because fewer projects would be constructed, although the
 20 impact of GHG emissions under the proposed program would be less than
 21 significant. There would be greater flood-related impacts under the No-
 22 Project Alternative—Continued Operations Scenario, and although these
 23 would be infrequent and episodic, GHG emissions associated with flood
 24 system failures would be substantial. Given these conditions, the overall
 25 impact of the No-Project Alternative—Continued Operations Scenario
 26 related to GHG emissions is expected to be greater than that of the
 27 proposed program. *[Greater]*

28 **No-Project Alternative—No Additional Activities Scenario**

29 The No-Project Alternative—No Additional Activities Scenario is similar
 30 to the No-Project Alternative—Continued Operations Scenario, except that
 31 fewer projects would be undertaken in the near term and the proposed
 32 LCM component of the VMS would not be implemented. Most elements of
 33 routine operations and maintenance of flood control facilities would
 34 continue following existing programs. The proposed program includes new
 35 facilities that could result in a net systemwide increase in maintenance
 36 effort and associated GHG emissions, along with increased maintenance
 37 efficiency at existing facilities that would generate a net reduction in
 38 systemwide GHG emissions. Because there would be substantially fewer
 39 facilities under the No-Project Alternative—No Additional Activities
 40 Scenario, this alternative would result in fewer net GHG emissions than the
 41 proposed program.

1 Although the proposed program includes modifications to reservoir
2 operations, these would not alter overall hydropower production.
3 Implementing the No-Project Alternative—No Additional Activities
4 Scenario also would not alter hydropower production relative to existing
5 conditions. Therefore, neither the proposed program nor this alternative
6 would alter GHG emissions related to the increased or decreased use of
7 fossil fuel-generated electricity that might result from changes in
8 hydropower production.

9 Because the VMS described in the CVFPP would not be implemented as
10 part of the No-Project Alternative—No Additional Activities Scenario, the
11 associated GHG emissions would not occur. However, the CVFPP
12 Conservation Strategy, which could increase the overall extent of riparian
13 forest habitat and therefore increase CO₂ sequestration, would also not be
14 implemented under this alternative. It is assumed that local agencies
15 implementing individual projects would perform habitat planting to
16 mitigate project-specific effects under both the No-Project Alternative—No
17 Additional Activities Scenario and the proposed program, and that
18 mitigation would also be provided by an appropriate agency for riparian
19 vegetation removal resulting from the VMS. However, the elements of the
20 CVFPP Conservation Strategy that would promote habitat restoration and
21 creation beyond the minimum needed for project-specific mitigation would
22 not be implemented. Therefore, the potential for CO₂ sequestration from
23 restoration and creation of riparian forest habitat would be less under the
24 No-Project Alternative—No Additional Activities Scenario than under the
25 proposed program.

26 GHG emissions resulting from project-level construction of new facilities
27 and repair and improvement of existing facilities would be less under the
28 No-Project Alternative—No Additional Activities Scenario than under the
29 proposed program because there would be fewer and smaller projects. The
30 impacts of construction-related GHG emissions would be less than
31 significant under both the proposed program and this alternative.

32 Because fewer improvements to the flood protection system would be
33 made under the No-Project Alternative—No Additional Activities
34 Scenario, system failures and associated damage from flooding would
35 occur more frequently and would be more severe than under the proposed
36 program. Therefore, GHG emissions associated with recovery and repair
37 after flood system failures would be greater under this alternative.

38 As described above, system maintenance would result in lesser GHG
39 emissions under the No-Project Alternative—No Additional Activities
40 Scenario than the proposed program. Changes in reservoir operations
41 would not affect GHG emissions under either alternative. Construction-

1 related GHG emissions would be less under the No-Project Alternative—
 2 No Additional Activities Scenario because fewer projects would be
 3 constructed, although the impact of GHG emissions under the proposed
 4 program would be less than significant. There would be greater flood-
 5 related impacts under the No-Project Alternative—No Additional Activities
 6 Scenario, and although these would be infrequent and episodic, GHG
 7 emissions associated with flood system failures would be substantial.
 8 Given these conditions, the overall impact of the No-Project Alternative—
 9 No Additional Activities Scenario related to GHG emissions is expected to
 10 be greater than that of the proposed program. *[Greater]*

11 ***Modified State Systemwide Investment Approach Alternative***

12 The Modified SSIA Alternative would implement the same operations and
 13 maintenance regime as the proposed program, and effects of system
 14 operations and maintenance on net GHG emissions (including
 15 consideration of hydropower production) would be similar. This alternative
 16 would address only the most critical stressors on public safety, operations
 17 and maintenance, and ecosystem function; thus, the footprint for facility
 18 construction and habitat restoration and enhancement would be smaller
 19 under this alternative than under the proposed program. As a result, GHG
 20 emissions from construction-related activities would be expected to be less.
 21 As described in Section 3.7, “Climate Change and Greenhouse Gas
 22 Emissions,” impacts of construction-related GHG emissions under the
 23 proposed program would be less than significant. The same would be true
 24 of construction-related emissions under the Modified SSIA Alternative.
 25 However, any reduced levels of habitat restoration under this alternative
 26 could also result in reduced opportunities for carbon sequestration from net
 27 increases in riparian forest habitat. The overall reduction in flood risk by
 28 the Modified SSIA Alternative would be slightly less than the flood risk
 29 reduction of the proposed program. Therefore, the potential for flooding
 30 from system failures during high-water events would be slightly greater, as
 31 would GHG emissions from recovery and repair after failures of the flood
 32 protection system.

33 GHG emissions associated with operations and maintenance would be
 34 similar under the proposed program and the Modified SSIA Alternative;
 35 however, construction emissions would generally be anticipated to be less
 36 under this alternative because the construction footprint would be smaller.
 37 Given these factors, GHG emissions from the Modified SSIA Alternative
 38 that would affect climate change are expected to be similar to those of the
 39 proposed program. *[Similar]*

40 ***Achieve SPFC Design Flow Capacity Alternative***

41 The Achieve SPFC Design Flow Capacity Alternative would only improve
 42 existing levees to design capacity. This alternative would primarily fix

1 levees in place, without making major changes to the footprint or operation
2 of those facilities (i.e., no setback levees). The Achieve SPFC Design Flow
3 Capacity Alternative would implement the same operations and
4 maintenance regime as the proposed program, and GHG emissions from
5 system operations and maintenance (including consideration of hydropower
6 production) would be similar. This alternative would result in a smaller
7 construction and land disturbance footprint than the proposed program;
8 therefore, GHG emissions from construction would be less. As described in
9 Section 3.7, “Climate Change and Greenhouse Gas Emissions,” impacts of
10 construction-related GHG emissions under the proposed program would be
11 less than significant. The same would be true of construction-related
12 emissions under the Achieve SPFC Design Flow Capacity Alternative. This
13 alternative would also provide less opportunity for ecosystem restoration
14 activities. Any reduced levels of habitat restoration under the Achieve
15 SPFC Design Flow Capacity Alternative could also result in reduced
16 opportunities for carbon sequestration from net increases in riparian forest
17 habitat.

18 The Achieve SPFC Design Flow Capacity Alternative would provide a
19 much lower overall level of flood protection than the proposed program; as
20 a result, GHG emissions associated with recovery and repair from flood
21 system failures would be greater under this alternative. Although repair and
22 recovery from flood system failures would be infrequent and episodic,
23 GHG emissions associated with these events would be substantial.

24 As described above, GHG emissions from facility operations and
25 maintenance would be similar under the Achieve SPFC Design Flow
26 Capacity Alternative and the proposed program. Construction-related
27 emissions would be anticipated to be greater under the proposed program
28 because the project footprint would be larger, although this alternative
29 would provide less opportunity for carbon sequestration via restoration and
30 creation of riparian forest habitat. The SPFC Design Flow Capacity
31 Alternative would result in greater GHG emissions from recovery and
32 repair after flood system failures. Given these conditions, the overall
33 impact of the SPFC Design Flow Capacity Alternative on GHG emissions
34 would be expected to be greater than that of the proposed program.

35 *[Greater]*

36 ***Enhance Flood System Capacity Alternative***

37 The Enhance Flood System Capacity Alternative could involve
38 constructing new or expanded reservoirs and provides a greater emphasis
39 than the proposed program on constructing new bypasses, changing water
40 operations at existing reservoirs, and widening floodways. This alternative
41 would implement the same maintenance regime as the proposed program,
42 and impacts of maintenance of existing facilities on GHG emissions would

1 be similar. However, new reservoirs would have maintenance requirements
 2 not included in the proposed program, which could result in increased
 3 GHG emissions relative to the proposed program. It is unknown whether
 4 the combination of new reservoirs and reoperation of existing reservoirs
 5 under this alternative would result in greater or lesser overall generation of
 6 hydropower. Other new facilities such as bypasses and setback levees could
 7 result in a net systemwide increase in maintenance effort and associated
 8 GHG emissions. However, these new facilities could also result in
 9 increased maintenance efficiencies where they replace existing facilities or
 10 result in the overall system operation improvements, which would generate
 11 a net reduction in systemwide GHG emissions. Therefore, it is unknown
 12 whether the overall maintenance-generated GHG emissions would be more
 13 or less under the Enhance Flood System Capacity Alternative than under
 14 the proposed program.

15 This alternative would provide greater opportunity for ecosystem
 16 restoration activities than the proposed program and therefore could result
 17 in higher levels of carbon sequestration from net increases in riparian forest
 18 habitat. The Enhance Flood System Capacity Alternative would provide a
 19 level of flood protection slightly greater than that provided by the proposed
 20 program (see Table 5-1); as a result, the reduction in potential flood-related
 21 impacts on GHG emissions would also be slightly greater. More and larger
 22 new facilities could be constructed under this alternative, resulting in
 23 greater construction GHG emissions. As described in Section 3.7, “Climate
 24 Change and Greenhouse Gas Emissions,” impacts of construction-related
 25 GHG emissions under the proposed program would be less than significant.
 26 It is unclear whether the same would be true of construction-related
 27 emissions under the Enhance Flood System Capacity Alternative. If
 28 construction GHG emissions were significant under this alternative, various
 29 mitigation options are available that could reduce the impact to a less than
 30 significant level. Given the conditions described above, and in particular
 31 the substantial uncertainties associated with operation, maintenance, and
 32 hydropower generation from new reservoirs, it is unknown whether net
 33 GHG emissions would be greater or lesser under the Enhance Flood
 34 System Capacity Alternative compared to the proposed program.

35 *[Unknown]*

36 **5.5.7 Cultural and Historic Resources**

- 37 • The proposed program could result in potentially significant and
 38 unavoidable impacts on cultural and historic resources, as described in
 39 greater detail in Section 3.8, “Cultural and Historic Resources.” Most
 40 cultural and historic resources impacts are anticipated to be less than
 41 significant after mitigation. However, given the nature and scale of the
 42 proposed program, there may be situations in which historic properties

1 must be removed or traditional cultural properties would be adversely
2 affected in a way that could not be feasibly mitigated, resulting in
3 potentially significant and unavoidable impacts. The following analysis
4 compares the anticipated impacts of each alternative to those of the
5 proposed program.

6 The comparison generally assumes that the benefits to cultural and historic
7 resources from flood risk reduction would not be materially different from
8 the impacts of the proposed program. It is assumed that construction would
9 cause a greater level of potentially permanent, adverse change to cultural
10 and/or historic resources.

11 ***No-Project Alternative—Continued Operations Scenario***

12 Under the No-Project Alternative—Continued Operations Scenario, most
13 elements of routine maintenance of flood control facilities would continue
14 following existing programs. However, as under the proposed program, the
15 VMS described in the CVFPP would be implemented as part of the No-
16 Project Alternative. DWR intends to implement the VMS, and associated
17 elements such as LCM, whether or not the CVFPP is adopted. Therefore,
18 potential impacts on cultural and historic resources caused by levee
19 maintenance (e.g., damage to or destruction of known and unknown
20 historic and prehistoric resources, disturbance of human burials) would be
21 the same under the No-Project Alternative—Continued Operations
22 Scenario as under the proposed program.

23 Potential impacts on cultural and historic resources from project-level
24 construction of new facilities and repair and improvement of existing
25 facilities would be less under the No-Project Alternative—Continued
26 Operations Scenario than under the proposed program because there would
27 be fewer and smaller projects. The impact mechanisms would remain the
28 same under this alternative (e.g., damage to or destruction of known and
29 unknown historic and prehistoric resources, disturbance of human burials).
30 However, the lower level of construction activity would minimize the
31 potential for adverse effects.

32 As under the proposed program, activities occurring as part of the No-
33 Project Alternative—Continued Operations Scenario would require
34 development and implementation of mitigation measures for significant
35 and potentially significant impacts. Examples of such measures include
36 conducting cultural resources studies and avoiding effects on
37 archaeological resources, immediately halting construction if cultural
38 resources are discovered and implementing an emergency discovery plan,
39 capping archaeological sites to protect deposits, and following the
40 Secretary of the Interior’s standards for the treatment of historic properties.
41 Mitigation measures would be equally effective at reducing most impacts

1 on cultural resources to a less-than-significant level under either the No-
 2 Project Alternative—Continued Operations Scenario or the proposed
 3 program. However, impacts related to damage to or destruction of historic
 4 structures and traditional cultural properties may be potentially significant
 5 and unavoidable under either this alternative or the proposed program.

6 Because fewer improvements to the flood protection system would be
 7 made under the No-Project Alternative—Continued Operations Scenario,
 8 system failures and associated damage from flooding would occur more
 9 frequently and would be more severe than under the proposed program.
 10 Therefore, flooding impacts on cultural resources, primarily historic
 11 structures and architectural resources, would be greater under this
 12 alternative.

13 As described above, impacts of system maintenance on cultural resources
 14 under the No-Project Alternative—Continued Operations Scenario would
 15 be similar to those for the proposed program. Construction-related impacts
 16 would initially be less under this alternative because fewer projects would
 17 be constructed; however, impacts on cultural resources could be equally
 18 mitigated under either alternative. There would be greater flood-related
 19 impacts under the No-Project Alternative—Continued Operations Scenario;
 20 however, these would be infrequent and episodic. Given these conditions,
 21 the overall impact of the No-Project Alternative—Continued Operations
 22 Scenario on cultural resources is expected to be less than that of the
 23 proposed program. [*Lesser*]

24 **No-Project Alternative—No Additional Activities Scenario**

25 The No-Project Alternative—No Additional Activities Scenario is similar
 26 to the No-Project Alternative—Continued Operations Scenario, except that
 27 fewer projects would be undertaken in the near term and the proposed
 28 LCM component of the VMS would not be implemented. Most elements of
 29 routine operations and maintenance of flood control facilities would
 30 continue following existing programs. Therefore, potential impacts on
 31 cultural and historic resources caused by levee maintenance (e.g., damage
 32 to or destruction of known and unknown historic and prehistoric resources,
 33 disturbance of human burials) would be similar under the No-Project
 34 Alternative—No Additional Activities Scenario and the proposed program.

35 Potential impacts on cultural and historic resources from project-level
 36 construction of new facilities and repair and improvement of existing
 37 facilities would be less under the No-Project Alternative—No Additional
 38 Activities Scenario than under the proposed program because there would
 39 be fewer and smaller projects. The impact mechanisms would remain the
 40 same (e.g., damage to or destruction of known and unknown historic and
 41 prehistoric resources, disturbance of human burials). However, the lower

1 level of construction activity would minimize the potential for adverse
2 effects.

3 As under the proposed program, activities occurring as part of the No-
4 Project Alternative—No Additional Activities Scenario would require
5 development and implementation of mitigation measures for significant
6 and potentially significant impacts. Mitigation measures would be equally
7 effective at reducing most impacts related to cultural resources to a less-
8 than-significant level under either this alternative or the proposed program.
9 However, impacts related to damage to or destruction of historic structures
10 and traditional cultural properties may be significant and unavoidable under
11 either the No-Project Alternative—No Additional Activities Scenario or the
12 proposed program.

13 Because fewer improvements to the flood protection system would be
14 made under the No-Project Alternative—No Additional Activities
15 Scenario, system failures and associated damage from flooding would
16 occur more frequently and would be more severe than under the proposed
17 program. Therefore, impacts on cultural resources, primarily historic
18 structures and architectural resources, would be greater under this
19 alternative.

20 As described above, impacts of system maintenance on cultural resources
21 under the No-Project Alternative—No Additional Activities Scenario
22 would be similar to those for the proposed program. Construction-related
23 impacts would initially be less under this alternative because fewer projects
24 would be constructed; however, impacts on cultural resources could be
25 equally mitigated under either alternative. There would be greater flood-
26 related impacts under the No-Project Alternative—No Additional Activities
27 Scenario, although these would be infrequent and episodic. Given these
28 conditions, the overall impact of the No-Project Alternative—No
29 Additional Activities Scenario on cultural resources is expected to be lesser
30 than that of the proposed program. [*Lesser*]

31 ***Modified State Systemwide Investment Approach Alternative***

32 The Modified SSIA Alternative would implement the same maintenance
33 regime as the proposed program, and impacts of system maintenance on
34 cultural and historic resources would be similar. This alternative would
35 address only the most critical stressors on public safety, operations and
36 maintenance, and ecosystem function; thus, the footprint for facility
37 construction and habitat restoration and enhancement would be smaller
38 under this alternative than under the proposed program. As a result, impacts
39 on cultural and historic resources would be expected to be less under this
40 alternative. As under the proposed program, activities occurring as part of
41 the Modified SSIA Alternative would require development and

1 implementation of mitigation measures to reduce significant impacts on
2 cultural and historic resources. Mitigation measures would be equally
3 effective at reducing most impacts on cultural resources to a less-than-
4 significant level under either the Modified SSIA Alternative or the
5 proposed program. However, impacts related to damage to or destruction of
6 historic structures and traditional cultural properties may be potentially
7 significant and unavoidable in either case.

8 Under the Modified SSIA Alternative, the overall risk of flooding would be
9 slightly greater than the risk under the proposed program; therefore, a
10 slightly lesser reduction in impacts on cultural and historic resources from
11 flooding and flood-related cleanup activities would occur. Because fewer
12 and/or smaller components would be constructed under the Modified SSIA
13 Alternative, the overall impact of this alternative on cultural and historic
14 resources would be less than that of the proposed program. [*Lesser*]

15 ***Achieve SPFC Design Flow Capacity Alternative***

16 The Achieve SPFC Design Flow Capacity Alternative would only improve
17 existing levees to design capacity. This alternative would primarily fix
18 levees in place, without making major changes to the footprint or operation
19 of those facilities (i.e., no setback levees). It would implement the same
20 maintenance regime as the proposed program, and impacts of system
21 maintenance on cultural and historic resources would be similar. The
22 Achieve SPFC Design Flow Capacity Alternative would result in a smaller
23 construction and land disturbance footprint than the proposed program;
24 therefore, impacts on cultural and historic resources would be less under
25 this alternative. Mitigation measures would be equally effective at reducing
26 construction-related and operational impacts on cultural and historic
27 resources to a less-than-significant level under either this alternative or the
28 proposed program. Because of its limited nature and its primary objective
29 of fixing levees in place, the Achieve SPFC Design Flow Capacity
30 Alternative would likely avoid impacts related to damage to or destruction
31 of historic structures and traditional cultural properties that could be
32 potentially significant and unavoidable under the proposed program.

33 The Achieve SPFC Design Flow Capacity Alternative would provide a
34 much lower overall level of flood protection than the proposed program;
35 however, flooding would continue in existing areas that are already flood-
36 prone. Implementing this alternative would not cause or result in any
37 “new” flooding in different areas that are not already flood-prone or are
38 projected to be flood-prone in the future.

39 Because fewer and smaller facilities would be constructed under this
40 alternative than under the proposed program, the overall impact of the

1 Achieve SPFC Design Flow Capacity Alternative on cultural and historic
2 resources would be less than that of the proposed program. [*Lesser*]

3 **Enhance Flood System Capacity Alternative**

4 The Enhance Flood System Capacity Alternative could involve
5 constructing new or expanded reservoirs and provides a greater emphasis
6 than the proposed program on constructing new bypasses, changing water
7 operations at existing reservoirs, and widening floodways, which could
8 include constructing setback levees. This alternative would implement the
9 same maintenance regime as the proposed program, and impacts of system
10 maintenance on cultural and historic resources would be similar.

11 More and larger new facilities could be constructed under the Enhance
12 Flood System Capacity Alternative than under the proposed program,
13 resulting in greater potential for disturbance or destruction of historic and
14 prehistoric resources, including human burials. As under the proposed
15 program, activities occurring as part of this alternative would require
16 development and implementation of mitigation measures to reduce
17 significant impacts on cultural and historic resources. Mitigation measures
18 would be equally effective at reducing most cultural and historic resources
19 impacts to a less-than-significant level under either the Enhance Flood
20 System Capacity Alternative or the proposed program. However, impacts
21 related to damage to or destruction of historic structures and traditional
22 cultural properties may be potentially significant and unavoidable in either
23 case.

24 The Enhance Flood System Capacity Alternative would provide a level of
25 flood protection slightly greater than that provided by the proposed
26 program (see Table 5-1); as a result, there would be a slightly greater
27 reduction in potential flood-related impacts on cultural and historic
28 resources under this alternative.

29 In summary, because more and larger facilities would be constructed under
30 this alternative than under the proposed program, the overall impact of the
31 Enhance Flood System Capacity Alternative on cultural and historic
32 resources would be greater than that of the proposed program. [*Greater*]

33 **5.5.8 Energy**

34 The proposed program would not result in significant energy impacts, as
35 described in greater detail in Section 3.9, "Energy." The following analysis
36 compares the anticipated impacts of each alternative to those of the
37 proposed program.

38 The comparison generally assumes that the benefits to energy resources
39 from flood risk reduction would not be materially different from the

1 impacts of the proposed program. It is not anticipated that reconstruction
2 efforts would involve the inefficient, wasteful, or unnecessary use of
3 energy or cause a substantial reduction in the generation of renewable
4 energy.

5 ***No-Project Alternative—Continued Operations Scenario***

6 Under the No-Project Alternative—Continued Operations Scenario, most
7 elements of routine maintenance of flood control facilities would continue
8 following existing programs. However, as under the proposed program, the
9 VMS described in the CVFPP would be implemented as part of this
10 alternative. DWR intends to implement the VMS, and associated elements
11 such as LCM, whether or not the CVFPP is adopted. Therefore, the
12 potential for energy impacts caused by levee maintenance (e.g., wasteful or
13 inefficient use of petroleum products and electricity) would be the same
14 under the No-Project Alternative—Continued Operations Scenario as under
15 the proposed program.

16 The potential for energy impacts from project-level construction of new
17 facilities and repair and improvement of existing facilities would be less
18 under the No-Project Alternative—Continued Operations Scenario than
19 under the proposed program because there would be fewer and smaller
20 projects. The impact mechanisms would remain the same under this
21 alternative (e.g., wasteful or inefficient use of petroleum products and
22 electricity). However, the lower level of construction activity would
23 minimize the potential for adverse effects. As under the proposed program,
24 activities occurring as part of the No-Project Alternative—Continued
25 Operations Scenario would require development and implementation of
26 mitigation measures for potentially significant impacts. Examples of such
27 measures include using energy-efficient processes and equipment, using
28 equipment exhaust controls, and scheduling activities to reduce energy
29 usage during periods of peak energy demand (as feasible). Mitigation
30 measures would be equally effective at reducing energy impacts to a less-
31 than-significant level under either the No-Project Alternative—Continued
32 Operations Scenario or the proposed program.

33 Operational energy impacts that would occur under the proposed program
34 (i.e., reduced generation of renewable energy because of altered flow
35 releases at hydropower facilities caused by changes in reservoir operations)
36 are not likely to occur under the No-Project Alternative—Continued
37 Operations Scenario. Therefore, the operational impacts of this alternative
38 would be less than those of the proposed program.

39 Because fewer improvements to the flood protection system would be
40 made under the No-Project Alternative—Continued Operations Scenario,
41 system failures and associated damage from flooding would be more

1 frequent than under the proposed program. However, flood events would
2 have little effect on the wasteful or inefficient use of energy.

3 As described above, impacts of system maintenance on energy under the
4 No-Project Alternative—Continued Operations Scenario would be similar
5 to impacts under the proposed program. Construction-related impacts
6 would initially be less under this alternative because fewer projects would
7 be constructed; however, energy impacts could be equally mitigated under
8 either alternative. Operational impacts of the No-Project Alternative—
9 Continued Operations Scenario would be less than those of the proposed
10 program. Flooding would have little effect on energy resources. Given
11 these conditions, the overall impact of the No-Project Alternative—
12 Continued Operations Scenario on energy is expected to be less than that of
13 the proposed program. [*Lesser*]

14 **No-Project Alternative—No Additional Activities Scenario**

15 The No-Project Alternative—No Additional Activities Scenario is similar
16 to the No-Project Alternative—Continued Operations Scenario, except that
17 fewer projects would be undertaken in the near term and the proposed
18 LCM component of the VMS would not be implemented. Most elements of
19 routine operations and maintenance of flood control facilities would
20 continue following existing programs. Therefore, the potential for energy
21 impacts caused by levee maintenance (e.g., wasteful or inefficient use of
22 petroleum products and electricity) under the No-Project Alternative—No
23 Additional Activities Scenario would be similar to the potential for such
24 impacts under the proposed program.

25 The potential for energy impacts from project-level construction of new
26 facilities and repair and improvement of existing facilities would be less
27 under the No-Project Alternative—No Additional Activities Scenario than
28 under the proposed program because there would be fewer and smaller
29 projects. The impact mechanisms would remain the same under this
30 alternative (e.g., wasteful or inefficient use of petroleum products and
31 electricity). However, the lower level of construction activity would
32 minimize the potential for adverse effects. As under the proposed program,
33 activities occurring as part of the No-Project Alternative—No Additional
34 Activities Scenario would require development and implementation of
35 mitigation measures for potentially significant impacts. Mitigation
36 measures would be equally effective at reducing energy impacts to a less-
37 than-significant level under either this alternative or the proposed program.

38 Operational energy impacts that would occur under the proposed program
39 (i.e., reduced generation of renewable energy because of altered flow
40 releases at hydropower facilities caused by changes in reservoir operations)
41 would not occur under the No-Project Alternative—No Additional

1 Activities Scenario. Therefore, operational impacts of this alternative
2 would be less than those of the proposed program.

3 Because fewer improvements to the flood protection system would be
4 made under the No-Project Alternative—No Additional Activities
5 Scenario, system failures and associated damage from flooding would be
6 more frequent than under the proposed program. However, flood events
7 would have little effect on the wasteful or inefficient use of energy.

8 As described above, impacts of system maintenance on energy under the
9 No-Project Alternative—No Additional Activities Scenario would be
10 similar to impacts under the proposed program. Construction-related
11 impacts would initially be less under this alternative because fewer projects
12 would be constructed; however, energy impacts could be equally mitigated
13 under either alternative. Operational impacts of the No-Project
14 Alternative—No Additional Activities Scenario would be less than those of
15 the proposed program. Flooding would have little effect on energy
16 resources. Given these conditions, the overall impact of the No-Project
17 Alternative—No Additional Activities Scenario on energy is expected to be
18 less than that of the proposed program. [*Lesser*]

19 ***Modified State Systemwide Investment Approach Alternative***

20 The Modified SSIA Alternative would implement the same maintenance
21 regime as the proposed program, and impacts of system maintenance on
22 energy would be similar. This alternative would address only the most
23 critical stressors on public safety, operations and maintenance, and
24 ecosystem function; thus, the footprint for facility construction and habitat
25 restoration and enhancement would be smaller under this alternative than
26 under the proposed program. As a result, impacts from wasteful or
27 inefficient usage of energy would be less. As under the proposed program,
28 activities occurring as part of the Modified SSIA Alternative would require
29 development and implementation of mitigation measures to reduce
30 construction-related and operational energy impacts. Mitigation measures
31 would be equally effective at reducing energy impacts to a less-than-
32 significant level under either this alternative or the proposed program.

33 Under the Modified SSIA Alternative, the overall risk of flooding would be
34 slightly greater than the risk under the proposed program; however, flood
35 events would have little effect on the wasteful or inefficient use of energy.

36 Because fewer and/or smaller components would be constructed, impacts
37 related to the potential for wasteful or inefficient use of energy from
38 constructing and operating project components would be less under this
39 alternative than under the proposed program. Therefore, the overall impact

1 of the Modified SSIA Alternative on energy resources is expected to be
2 less than that of the proposed program. [*Lesser*]

3 ***Achieve SPFC Design Flow Capacity Alternative***

4 The Achieve SPFC Design Flow Capacity Alternative would only improve
5 existing levees to design capacity. This alternative would primarily fix
6 levees in place, without making major changes to the footprint or operation
7 of those facilities (i.e., no setback levees). The Achieve SPFC Design Flow
8 Capacity Alternative would implement the same maintenance regime as the
9 proposed program, and impacts of system maintenance on energy would be
10 similar. This alternative would result in a smaller construction and land
11 disturbance footprint than the proposed program; therefore, the potential
12 for construction activities to result in wasteful or inefficient use of energy
13 would be less. Mitigation measures would be equally effective at reducing
14 energy impacts from construction to a less-than-significant level under
15 either the Achieve SPFC Design Flow Capacity Alternative or the proposed
16 program.

17 Operational energy impacts of the proposed program (i.e., reduced
18 generation of renewable energy because of altered flow releases at
19 hydropower facilities caused by changes in reservoir operations) are not
20 likely to occur under the Achieve SPFC Design Flow Capacity Alternative.
21 Therefore, operational impacts of this alternative would be less than those
22 of the proposed program.

23 Under the Achieve SPFC Design Flow Capacity Alternative, the overall
24 risk of flooding would be similar to the risk under the proposed program;
25 however, flood events would have little effect on the wasteful or inefficient
26 use of energy.

27 Because fewer and/or smaller components would be constructed, the
28 potential for wasteful or inefficient use of energy caused by construction
29 and operation of project components would be less under this alternative
30 than under the proposed program. Therefore, the overall impact of the
31 Achieve SPFC Design Flow Capacity Alternative on energy resources is
32 expected to be less than that of the proposed program. [*Lesser*]

33 ***Enhance Flood System Capacity Alternative***

34 The Enhance Flood System Capacity Alternative could involve
35 constructing new or expanded reservoirs and provides a greater emphasis
36 than the proposed program on constructing new bypasses, changing water
37 operations at existing reservoirs, and widening floodways, which could
38 include constructing setback levees. This alternative would implement the
39 same maintenance regime as the proposed program, and impacts of system

1 maintenance related to wasteful or inefficient use of energy would be
2 similar.

3 More and larger new facilities could be constructed under the Enhance
4 Flood System Capacity Alternative, resulting in greater potential for
5 wasteful or inefficient use of energy during construction and operation.
6 There would also be greater potential for reduced generation of renewable
7 energy because of altered flow releases at hydropower facilities caused by
8 changes in reservoir operations. As under the proposed program, activities
9 occurring as part of this alternative would require development and
10 implementation of mitigation measures to reduce significant energy
11 impacts. Mitigation measures would be equally effective at reducing
12 construction-related and operational energy impacts to a less-than-
13 significant level under either the Enhance Flood System Capacity
14 Alternative or the proposed program.

15 The Enhance Flood System Capacity Alternative would provide a level of
16 flood protection slightly greater than that provided by the proposed
17 program (see Table 5-1); however, flood events would have little effect on
18 the wasteful or inefficient use of energy.

19 Construction and operation of components under the Enhance Flood
20 System Capacity Alternative would be greater than under the proposed
21 program, potentially resulting in greater potential for wasteful or inefficient
22 use of energy. However, mitigation measures would be equally effective at
23 reducing energy impacts to a less-than-significant level under either this
24 alternative or the proposed program. In addition, this alternative would
25 enhance opportunities to promote multi-benefit projects by fostering
26 integration of benefits to water quality, recreation, power, and other
27 resources. Therefore, the overall level of impact of the Enhance Flood
28 System Capacity Alternative on energy resources would be similar to that
29 of the proposed program. *[Similar]*

30 **5.5.9 Geology, Soils, and Seismicity (Including Mineral** 31 **and Paleontological Resources)**

32 The proposed program generally would not result in significant impacts on
33 geology, soils, and seismicity after mitigation, as described in greater detail
34 in Section 3.10, “Geology, Soils, and Seismicity (Including Mineral and
35 Paleontological Resources).” However, it may not be possible during
36 widening floodways and constructing weirs, new bypasses, or setback
37 levees outside the existing footprint or the immediate vicinity of the
38 footprint of existing structures to avoid mineral resources or prevent access
39 to locally valuable mineral resources (particularly aggregate materials),
40 resulting in potentially significant and unavoidable impacts. The following

1 analysis compares the anticipated impacts of each alternative to those of the
2 proposed program.

3 The comparison generally assumes that the benefits to mineral resources
4 from flood risk reduction would not compensate for the impacts of the
5 proposed program because those benefits would generally be short term
6 (i.e., flooded areas are anticipated to recover to preflood conditions as lands
7 dry out and mining can resume), while the mineral resources impacts of the
8 proposed program would generally be permanent.

9 ***No-Project Alternative—Continued Operations Scenario***

10 Under the No-Project Alternative—Continued Operations Scenario, most
11 elements of routine maintenance of flood control facilities would continue
12 following existing programs. However, as under the proposed program, the
13 VMS described in the CVFPP would be implemented as part of this
14 alternative. DWR intends to implement the VMS, and associated elements
15 such as LCM, whether or not the CVFPP is adopted. Therefore, the
16 potential for impacts on geology, soils, and seismicity caused by levee
17 maintenance (e.g., damage from seismic activity and construction in
18 expansive soils, erosion, damage to unique paleontological resources)
19 would be the same under the No-Project Alternative—Continued
20 Operations Scenario as under the proposed program.

21 Potential impacts on geology, soils, and seismicity from project-level
22 construction of new facilities and repair and improvement of existing
23 facilities would be less under the No-Project Alternative—Continued
24 Operations Scenario than under the proposed program because there would
25 be fewer and smaller projects. The impact mechanisms would remain the
26 same under this alternative (e.g., damage to or destruction of unique
27 paleontological resources, loss of mineral resources). However, the lower
28 level of construction activity would minimize the potential for adverse
29 effects.

30 As under the proposed program, activities occurring as part of the No-
31 Project Alternative—Continued Operations Scenario would require
32 development and implementation of mitigation measures for potentially
33 significant impacts. Examples of such measures include preparing a
34 paleontological resources assessment, conducting construction worker
35 education, stopping work if paleontological resources are encountered
36 during earth-moving activities, and implementing recovery plans.
37 Mitigation measures would be equally effective at reducing construction
38 impacts on paleontological resources to a less-than-significant level under
39 either the No-Project Alternative—Continued Operations Scenario or the
40 proposed program. However, operational impacts related to loss of mineral

1 resources could be potentially significant and unavoidable under the
2 proposed program.

3 Because fewer improvements to the flood protection system would be
4 made under the No-Project Alternative—Continued Operations Scenario,
5 system failures and associated flood-related erosion impacts would occur
6 more frequently and would be more severe than under the proposed
7 program. Therefore, the impacts of flooding and postflood repairs on
8 geology, soils, and seismicity would be greater under this alternative.

9 As described above, impacts of system operations and maintenance on
10 geology, soils, and seismicity under the No-Project Alternative—Continued
11 Operations Scenario would be similar to impacts under the proposed
12 program. Construction-related impacts would initially be less under this
13 alternative because fewer projects would be constructed, and this
14 alternative would avoid the potentially significant and unavoidable impact
15 related to loss of mineral resources. There would be greater flood-related
16 erosion impacts under the No-Project Alternative—Continued Operations
17 Scenario; these impacts would be infrequent but would be more likely to
18 result in long-term continuing damage to existing levees. However, this
19 alternative would involve no project construction on new footprints that
20 could restrict access to mineral resources. As a result, the overall impact of
21 the No-Project Alternative—Continued Operations Scenario on geology,
22 soils, and seismicity is expected to be less than that of the proposed
23 program. [*Lesser*]

24 **No-Project Alternative—No Additional Activities Scenario**

25 The No-Project Alternative—No Additional Activities Scenario is similar
26 to the No-Project Alternative—Continued Operations Scenario, except that
27 fewer projects would be undertaken in the near term and the proposed
28 LCM component of the VMS would not be implemented. Most elements of
29 routine operations and maintenance of flood control facilities would
30 continue following existing programs. Therefore, the potential for impacts
31 on geology, soils, and seismicity caused by levee maintenance (e.g.,
32 damage from seismic activity and construction in expansive soils, erosion,
33 damage to unique paleontological resources) would be similar under the
34 No-Project Alternative—No Additional Activities Scenario and the
35 proposed program.

36 Potential impacts on geology, soils, and seismicity from project-level
37 construction of new facilities and repair and improvement of existing
38 facilities would be less under the No-Project Alternative—No Additional
39 Activities Scenario than under the proposed program because there would
40 be fewer and smaller projects. The impact mechanisms would remain the
41 same under this alternative (e.g., damage to or destruction of unique

1 paleontological resources, loss of mineral resources). However, the lower
2 level of construction activity would minimize the potential for adverse
3 effects.

4 As under the proposed program, activities occurring as part of the No-
5 Project Alternative—No Additional Activities Scenario would require
6 development and implementation of mitigation measures for potentially
7 significant impacts. Mitigation measures would be equally effective at
8 reducing construction impacts on paleontological resources to a less-than-
9 significant level under either this alternative or the proposed program.
10 However, operational impacts related to loss of mineral resources could be
11 significant and unavoidable under the proposed program.

12 Because fewer improvements to the flood protection system would be
13 made under the No-Project Alternative—No Additional Activities
14 Scenario, system failures and associated flood-related erosion impacts
15 would occur more frequently and would be more severe than under the
16 proposed program. Therefore, impacts of flooding and postflood repairs on
17 geology, soils, and seismicity would be greater under the No-Project
18 Alternative—No Additional Activities Scenario.

19 As described above, impacts of system operations and maintenance on
20 geology, soils, and seismicity under the No-Project Alternative—No
21 Additional Activities Scenario would be similar to impacts under the
22 proposed program. Construction-related impacts would initially be less
23 under this alternative because fewer projects would be constructed, and this
24 alternative would avoid the potentially significant and unavoidable impact
25 related to loss of mineral resources. There would be greater flood-related
26 erosion impacts under the No-Project Alternative —No Additional
27 Activities Scenario; these impacts would be infrequent but would be more
28 likely to result in long-term continuing damage to existing levees.
29 However, this alternative would involve less project construction on new
30 footprints that could restrict access to mineral resources. As a result, the
31 overall impact of the No-Project Alternative—No Additional Activities
32 Scenario on geology, soils, and seismicity is expected to be less than that of
33 the proposed program. [*Lesser*]

34 ***Modified State Systemwide Investment Approach Alternative***

35 The Modified SSIA Alternative would implement the same maintenance
36 regime as the proposed program, and impacts of system maintenance on
37 geology, soils, and seismicity would be similar. This alternative would
38 address only the most critical stressors on public safety, operations and
39 maintenance, and ecosystem function; thus, the footprint for facility
40 construction and habitat restoration and enhancement would be smaller
41 under this alternative than under the proposed program. As a result, impacts

1 related to loss or destruction of unique paleontological resources and loss
2 of mineral resources would be expected to be less. As under the proposed
3 program, activities occurring as part of the Modified SSIA Alternative
4 would require development and implementation of mitigation measures to
5 reduce significant impacts on paleontological and mineral resources.
6 Mitigation measures would be equally effective at reducing construction
7 impacts on paleontological resources to a less-than-significant level under
8 either the Modified SSIA Alternative or the proposed program. However,
9 operational impacts related to potential loss of mineral resources could be
10 potentially significant and unavoidable under either this alternative or the
11 proposed program.

12 Under the Modified SSIA Alternative, the overall risk of flooding would be
13 slightly greater than the risk under the proposed program; therefore, a
14 slightly lesser reduction in erosion resulting from flooding would occur.

15 Because fewer and/or smaller components would be constructed,
16 construction-related and operational impacts from loss of mineral resources
17 and damage or destruction of paleontological resources would be less than
18 those of the proposed program. Therefore, the overall impact of the
19 Modified SSIA Alternative on geology, soils, and paleontological resources
20 would be less than that of the proposed program. *[Lesser]*

21 ***Achieve SPFC Design Flow Capacity Alternative***

22 The Achieve SPFC Design Flow Capacity Alternative would only improve
23 existing levees to design capacity. This alternative would primarily fix
24 levees in place, without making major changes to the footprint or operation
25 of those facilities (i.e., no setback levees). The Achieve SPFC Design Flow
26 Capacity Alternative would implement the same maintenance regime as the
27 proposed program, and impacts of system maintenance on geology, soils,
28 and seismicity would be similar. This alternative would result in a smaller
29 construction and land disturbance footprint than the proposed program;
30 therefore, construction-related and operational impacts on geology, soils,
31 and seismicity would be less. Mitigation measures would be equally
32 effective at reducing construction impacts (potential damage or destruction
33 of paleontological resources) to a less-than-significant level under either
34 the Achieve SPFC Design Flow Capacity Alternative or the proposed
35 program.

36 Because of the nature of the activities that would be implemented under the
37 Achieve SPFC Design Flow Capacity Alternative, this alternative would
38 likely avoid the proposed program's potentially significant and unavoidable
39 operational impact, loss of mineral resources.

1 The Achieve SPFC Design Flow Capacity Alternative would provide a
2 lower overall level of flood protection than the proposed program;
3 however, this alternative would address the problem of flood-related levee
4 erosion. Therefore, the impacts of the Achieve SPFC Design Flow
5 Capacity Alternative on geology, soils, and seismicity would be less than
6 those of the proposed program. *[Lesser]*

7 ***Enhance Flood System Capacity Alternative***

8 The Enhance Flood System Capacity Alternative could involve
9 constructing new or expanded reservoirs and provides a greater emphasis
10 than the proposed program on constructing new bypasses, changing water
11 operations at existing reservoirs, and widening floodways, which could
12 include constructing setback levees. This alternative would implement the
13 same maintenance regime as the proposed program, and impacts of system
14 maintenance on geology, soils, and seismicity would be similar.

15 More and larger new facilities could be constructed under this alternative,
16 resulting in greater potential for damage or destruction of paleontological
17 resources and loss of access to mineral resources. As under the proposed
18 program, activities occurring as part of the Enhance Flood System Capacity
19 Alternative would require development and implementation of mitigation
20 measures to reduce significant impacts on paleontological and mineral
21 resources. Mitigation measures would be equally effective at reducing
22 construction-related impacts on paleontological resources to a less-than-
23 significant level under either the Enhance Flood System Capacity
24 Alternative or the proposed program. However, operational impacts related
25 to potential loss of mineral resources could be potentially significant and
26 unavoidable under either alternative.

27 The Enhance Flood System Capacity Alternative would provide a level of
28 flood protection slightly greater than that provided by the proposed
29 program (see Table 5-1); as a result, there would be a slightly greater
30 reduction in potential flood-related impacts from levee erosion.

31 In summary, impacts of system maintenance on geology, soils, and
32 seismicity would be similar and mitigation measures would be equally
33 effective at reducing impacts on paleontological resources under the
34 Enhance Flood System Capacity Alternative or the proposed program.
35 However, operational impacts related to loss of mineral resources could be
36 potentially significant and unavoidable under either alternative. The
37 Enhance Flood System Capacity Alternative would result in only a slightly
38 greater reduction in flood-related erosion of levees. However, given the
39 increased scale of construction activity on new footprints, the potential to
40 impair access to mineral resources would be greater than that of the
41 proposed program. As a result, the overall impact of the Enhance Flood

1 System Capacity Alternative on geology, soils, and seismicity would be
2 greater than that of the proposed program. [*Greater*]

3 **5.5.10 Groundwater Resources**

4 The proposed program would not result in significant impacts on
5 groundwater resources after mitigation, as described in greater detail in
6 Section 3.11, “Groundwater Resources.” The following analysis compares
7 the anticipated impacts of each alternative to those of the proposed
8 program.

9 The comparison generally assumes that the benefits to groundwater
10 resources from flood risk reduction would compensate for the impacts of
11 the proposed program because the program impacts would generally be
12 minimal, well-planned, and substantially mitigated, while the adverse
13 impacts on groundwater resources from a major flood event would be
14 unplanned and unmitigated, and could be of a relatively greater scope.

15 ***No-Project Alternative—Continued Operations Scenario***

16 Under the No-Project Alternative—Continued Operations Scenario, most
17 elements of routine maintenance of flood control facilities would continue
18 following existing programs. However, as under the proposed program, the
19 VMS described in the CVFPP would be implemented as part of this
20 alternative. DWR intends to implement the VMS, and associated elements
21 such as LCM, whether or not the CVFPP is adopted. Therefore, potential
22 groundwater impacts caused by levee maintenance (e.g., localized
23 degradation of groundwater quality from construction activities) would be
24 the same under the No-Project Alternative—Continued Operations
25 Scenario as under the proposed program.

26 The potential for impacts on groundwater from project-level construction
27 of new facilities and repair and improvement of existing facilities would be
28 less under the No-Project Alternative—Continued Operations Scenario
29 than under the proposed program because there would be fewer and smaller
30 projects. The impact mechanisms would remain the same under this
31 alternative (e.g., localized degradation of groundwater quality from
32 construction activities). However, the lower level of construction activity
33 would minimize the potential for adverse effects. As under the proposed
34 program, construction activities occurring as part of the No-Project
35 Alternative—Continued Operations Scenario would be less than
36 significant.

37 The proposed program’s operational impacts on groundwater from
38 modifying reservoir operations and implementing a groundwater banking
39 program would not occur under this alternative. Therefore, the effects of
40 operation of the No-Project Alternative—Continued Operations Scenario

1 on existing groundwater conditions would be less than those of the
2 proposed program.

3 Because fewer improvements to the flood protection system would be
4 made under the No-Project Alternative—Continued Operations Scenario,
5 system failures and associated decreases in groundwater quality from
6 contaminated floodwaters would be more frequent.

7 As described above, impacts on groundwater from system maintenance
8 under the No-Project Alternative—Continued Operations Scenario would
9 be similar to impacts under the proposed program. Construction-related
10 impacts would initially be less under this alternative because fewer projects
11 would be constructed; however, groundwater quality impacts from
12 construction would be less than significant under both alternatives.
13 Potential adverse effects on groundwater quality from floods resulting from
14 system failures would be greater under this alternative. Given these
15 conditions, the overall impact of the No-Project Alternative—Continued
16 Operations Scenario on groundwater is expected to be greater than that of
17 the proposed program. [*Greater*]

18 ***No-Project Alternative—No Additional Activities Scenario***

19 The No-Project Alternative—No Additional Activities Scenario is similar
20 to the No-Project Alternative—Continued Operations Scenario, except that
21 fewer projects would be undertaken in the near term and the proposed
22 LCM component of the VMS would not be implemented. Most elements of
23 routine operations and maintenance of flood control facilities would
24 continue following existing programs. Therefore, potential groundwater
25 impacts caused by levee maintenance (e.g., localized degradation of
26 groundwater quality from construction activities) would be similar under
27 the No-Project Alternative—No Additional Activities Scenario and the
28 proposed program.

29 The potential for impacts on groundwater from project-level construction
30 of new facilities and repair and improvement of existing facilities would be
31 less under the No-Project Alternative—No Additional Activities Scenario
32 than under the proposed program because there would be fewer and smaller
33 projects. The impact mechanisms would remain the same under this
34 alternative (e.g., localized degradation of groundwater quality from
35 construction activities). However, the lower level of construction activity
36 would minimize the potential for adverse effects. As under the proposed
37 program, construction activities occurring as part of the No-Project
38 Alternative—No Additional Activities Scenario would be less than
39 significant.

1 The proposed program's operational impacts on groundwater from
 2 modifying reservoir operations and implementing a groundwater banking
 3 program would not occur under the No-Project Alternative—No Additional
 4 Activities Scenario. Therefore, the effects of operation of this alternative on
 5 existing groundwater conditions would be less than those of the proposed
 6 program.

7 Because fewer improvements to the flood protection system would be
 8 made under the No-Project Alternative—No Additional Activities
 9 Scenario, system failures and associated decreases in groundwater quality
 10 from contaminated floodwaters would be more frequent.

11 As described above, impacts on groundwater from system maintenance
 12 under the No-Project Alternative—No Additional Activities Scenario
 13 would be similar to impacts under the proposed program. Construction-
 14 related impacts would initially be less under this alternative because fewer
 15 projects would be constructed; however, groundwater quality impacts from
 16 construction would be less than significant under both alternatives.
 17 Potential adverse effects on groundwater quality from floods resulting from
 18 system failures would be greater under the No-Project Alternative—No
 19 Additional Activities Scenario. Given these conditions, the overall impact
 20 of the No-Project Alternative—No Additional Activities Scenario on
 21 groundwater is expected to be greater than that of the proposed program.
 22 *[Greater]*

23 ***Modified State Systemwide Investment Approach Alternative***

24 The Modified SSIA Alternative would implement the same maintenance
 25 regime as the proposed program, and impacts of system maintenance on
 26 groundwater would be similar. This alternative would address only the
 27 most critical stressors on public safety, operations and maintenance, and
 28 ecosystem function; thus, the footprint for facility construction and habitat
 29 restoration and enhancement would be smaller under this alternative than
 30 under the proposed program. As a result, construction-related impacts on
 31 groundwater quality would be expected to be less. As under the proposed
 32 program, construction activities occurring as part of the Modified SSIA
 33 Alternative would be less than significant.

34 The Modified SSIA Alternative would not include a groundwater banking
 35 program, and would only provide opportunities for groundwater recharge
 36 through expansion of the Yolo Bypass. The proposed program's potentially
 37 significant impacts from operation of a groundwater banking program
 38 would not occur under this alternative, but those impacts could be
 39 mitigated to a less-than-significant level. Furthermore, this alternative
 40 would reduce the overall amount of flooding to a slightly lesser degree than
 41 the proposed program; therefore, there would be a slightly greater potential

1 for adverse effects on groundwater quality from flood system failures.
2 Given these conditions, the overall impact of the Modified SSIA
3 Alternative on groundwater would be greater than that of the proposed
4 program. *[Greater]*

5 ***Achieve SPFC Design Flow Capacity Alternative***

6 The Achieve SPFC Design Flow Capacity Alternative would only improve
7 existing levees to design capacity. This alternative would primarily fix
8 levees in place, without making major changes to the footprint or operation
9 of those facilities (i.e., no setback levees). The Achieve SPFC Design Flow
10 Capacity Alternative would implement the same maintenance regime as the
11 proposed program, and impacts of system maintenance on groundwater
12 would be similar. This alternative would result in a smaller construction
13 and land disturbance footprint than the proposed program; therefore,
14 construction-related impacts on groundwater would be less.

15 The Achieve SPFC Design Flow Capacity Alternative would not include a
16 groundwater banking program; therefore, the new opportunities for
17 groundwater recharge created by the proposed program would not occur
18 under this alternative. The proposed program's potentially significant
19 impacts from operating a groundwater banking program would not occur
20 under the Achieve SPFC Design Flow Capacity Alternative, but those
21 impacts could be mitigated to a less-than-significant level.

22 The Achieve SPFC Design Flow Capacity Alternative would provide a
23 much lower overall level of flood protection than the proposed program; as
24 a result, the potential adverse effects on groundwater quality from flood
25 system failures would be greater. Given these conditions, the impacts of the
26 Achieve SPFC Design Flow Capacity Alternative on groundwater would be
27 greater than those of the proposed program. *[Greater]*

28 ***Enhance Flood System Capacity Alternative***

29 The Enhance Flood System Capacity Alternative could involve
30 constructing new or expanded reservoirs and provides a greater emphasis
31 than the proposed program on constructing new bypasses, changing water
32 operations at existing reservoirs, and widening floodways, which could
33 include constructing setback levees. This alternative would implement the
34 same maintenance regime as the proposed program, and the impacts of
35 system maintenance on groundwater would be similar.

36 More and larger new facilities could be constructed under the Enhance
37 Flood System Capacity Alternative, resulting in greater potential for
38 degradation of groundwater quality during construction. However,
39 construction-related impacts on groundwater under either this alternative or
40 the proposed program would be less than significant.

1 Both the Enhance Flood System Capacity Alternative and the proposed
 2 program would implement a groundwater banking program. However, this
 3 alternative would enhance opportunities to promote multi-benefit projects
 4 by fostering integration of benefits to water quality, recreation, power, and
 5 other resources. In addition, opportunities would exist to improve (1) water
 6 supply reliability (through multipurpose reservoir storage projects), (2)
 7 conjunctive management of groundwater and surface water resources, and
 8 (3) groundwater recharge within floodplain storage areas. Operational
 9 impacts on groundwater under either the Enhance Flood System Capacity
 10 Alternative or the proposed program could be mitigated to less-than-
 11 significant levels.

12 The Enhance Flood System Capacity Alternative would provide a level of
 13 flood protection slightly greater than that provided by the proposed
 14 program (see Table 5-1); as a result, there would be a slightly greater
 15 reduction in potential adverse effects on groundwater quality from flood
 16 system failures. Given the conditions described above, the overall impacts
 17 of the Enhance Flood System Capacity Alternative on groundwater would
 18 be less than those of the proposed program. *[Lesser]*

19 **5.5.11 Hazards and Hazardous Materials**

20 The proposed program would not result in significant impacts related to
 21 hazards and hazardous materials after mitigation, as described in greater
 22 detail in Section 3.12, “Hazards and Hazardous Materials.” The following
 23 analysis compares the anticipated impacts of each alternative to those of the
 24 proposed program.

25 The comparison generally assumes that the benefits related to hazards and
 26 hazardous materials from flood risk reduction would compensate for the
 27 impacts of the proposed program because the program impacts would
 28 generally be minimal, well-planned, and substantially mitigated, while the
 29 adverse impacts related to hazards and hazardous materials from a major
 30 flood event would be unplanned and unmitigated, and could be of
 31 significant scope. Specifically, the volumes and toxicity of hazardous
 32 materials that could be released into the environment after a major flood
 33 event (e.g., pesticides, fuels) would likely be substantially greater than
 34 those involved in construction activities under the program. In addition, the
 35 program would directly reduce flood risk hazards.

36 ***No-Project Alternative—Continued Operations Scenario***

37 Under the No-Project Alternative—Continued Operations Scenario, most
 38 elements of routine maintenance of flood control facilities would continue
 39 following existing programs. However, as under the proposed program, the
 40 VMS described in the CVFPP would be implemented as part of this
 41 alternative. DWR intends to implement the VMS, and associated elements

1 such as LCM, whether or not the CVFPP is adopted. Therefore, the
2 potential for hazardous materials impacts from levee maintenance (e.g.,
3 accidental fuel spills when using motorized equipment) would be the same
4 under the No-Project Alternative—Continued Operations Scenario and the
5 proposed program.

6 The potential for impacts associated with hazards and hazardous materials
7 from project-level construction of new facilities and repair and
8 improvement of existing facilities would be less under the No-Project
9 Alternative—Continued Operations Scenario than under the proposed
10 program because there would be fewer and smaller projects. The impact
11 mechanisms would remain the same under this alternative (e.g., potential to
12 encounter existing hazardous materials during construction, accidental
13 spills of hazardous materials during construction). However, the lower
14 level of construction activity would minimize the potential for adverse
15 effects.

16 As under the proposed program, activities occurring as part of the No-
17 Project Alternative—Continued Operations Scenario would require
18 development and implementation of mitigation measures for significant
19 and potentially significant impacts. Examples of such measures include
20 avoiding contact with contaminated areas, locating oil and gas wells and
21 transmission lines and coordinating with owner/operators to avoid conflicts
22 with existing infrastructure, and training construction workers on hazardous
23 materials. Mitigation measures would be equally effective at reducing
24 impacts related to hazards and hazardous materials to a less-than-
25 significant level under either the No-Project Alternative—Continued
26 Operations Scenario or the proposed program.

27 Because fewer improvements to the flood protection system would be
28 made under the No-Project Alternative—Continued Operations Scenario,
29 system failures and associated release and spread of hazardous materials
30 from flooding would occur more frequently and would be more severe than
31 under the proposed program. Therefore, impacts of flooding and postflood
32 repairs related to hazards and hazardous materials would be greater under
33 the No-Project Alternative—Continued Operations Scenario.

34 As described above, impacts of system operations and maintenance on
35 hazardous materials under the No-Project Alternative—Continued
36 Operations Scenario would be similar to impacts under the proposed
37 program. Construction-related impacts would initially be less under this
38 alternative because fewer projects would be constructed; however,
39 hazardous materials impacts could be equally mitigated under either
40 alternative. There would be greater flood-related hazardous materials
41 impacts under the No-Project Alternative—Continued Operations Scenario.

1 These impacts would be infrequent, but they would be more likely to result
2 in long-term damage to the environment as hazardous materials were
3 released and spread over a wider area. Given these conditions, the overall
4 impact of the No-Project Alternative—Continued Operations Scenario
5 related to hazardous materials is expected to be greater than that of the
6 proposed program. *[Greater]*

7 **No-Project Alternative—No Additional Activities Scenario**

8 The No-Project Alternative—No Additional Activities Scenario is similar
9 to the No-Project Alternative—Continued Operations Scenario, except that
10 fewer projects would be undertaken in the near term and the proposed
11 LCM component of the VMS would not be implemented. Most elements of
12 routine operations and maintenance of flood control facilities would
13 continue following existing programs. Therefore, the potential for
14 hazardous materials impacts from levee maintenance (e.g., accidental fuel
15 spills when using motorized equipment) would be similar under the No-
16 Project Alternative—No Additional Activities Scenario and the proposed
17 program.

18 The potential for impacts associated with hazards and hazardous materials
19 from project-level construction of new facilities and repair and
20 improvement of existing facilities would be less under the No-Project
21 Alternative—No Additional Activities Scenario than under the proposed
22 program because there would be fewer and smaller projects. The impact
23 mechanisms would remain the same under this alternative (e.g., potential to
24 encounter existing hazardous materials during construction, accidental
25 spills of hazardous materials during construction). However, the lower
26 level of construction activity would minimize the potential for adverse
27 effects.

28 As under the proposed program, activities occurring as part of the No-
29 Project Alternative—No Additional Activities Scenario would require
30 development and implementation of mitigation measures for significant
31 and potentially significant impacts. Mitigation measures would be equally
32 effective at reducing impacts related to hazards and hazardous materials to
33 a less-than-significant level under either the No-Project Alternative—No
34 Additional Activities Scenario or the proposed program.

35 Because fewer improvements to the flood protection system would be
36 made under the No-Project Alternative—No Additional Activities
37 Scenario, system failures and associated release and spread of hazardous
38 materials from flooding would occur more frequently and would be more
39 severe than under the proposed program. Therefore, impacts of flooding
40 and postflood repairs related to hazards and hazardous materials would be
41 greater under this alternative.

1 As described above, impacts of system operations and maintenance on
2 hazardous materials under the No-Project Alternative—No Additional
3 Activities Scenario would be similar to impacts under the proposed
4 program. Construction-related impacts would initially be less under this
5 alternative because fewer projects would be constructed; however,
6 hazardous materials impacts could be equally mitigated under either
7 alternative. There would be greater flood-related hazardous materials
8 impacts under the No-Project Alternative—No Additional Activities
9 Scenario. These impacts would be infrequent, but they would be more
10 likely to result in long-term damage to the environment as hazardous
11 materials were released and spread over a wider area. Given these
12 conditions, the overall impact of the No-Project Alternative—No
13 Additional Activities Scenario related to hazardous materials is expected to
14 be greater than that of the proposed program. *[Greater]*

15 ***Modified State Systemwide Investment Approach Alternative***

16 The Modified SSIA Alternative would implement the same maintenance
17 regime as the proposed program, and impacts of system maintenance
18 related to hazardous and hazardous materials would be similar. This
19 alternative would address only the most critical stressors on public safety,
20 operations and maintenance, and ecosystem function; thus, the footprint for
21 facility construction and habitat restoration and enhancement would be
22 smaller than under the proposed program. As a result, impacts from
23 accidental spills of hazardous materials during construction and operation
24 and from hazardous materials encountered during construction would be
25 expected to be less. As under the proposed program, activities occurring as
26 part of the Modified SSIA Alternative would require development and
27 implementation of mitigation measures to reduce significant impacts on
28 hazardous materials. Mitigation measures would be equally effective at
29 reducing hazardous materials impacts to a less-than-significant level under
30 either this alternative or the proposed program.

31 Under the Modified SSIA Alternative, only minimal measures would be
32 taken to reduce flood risk for rural-agricultural areas. Flood protection in
33 agricultural areas would not increase to the same degree as under the
34 proposed program, and system failures resulting in inundation of
35 agricultural land would be greater than under the proposed program. Both
36 underground storage tanks containing hazardous materials and private
37 septic systems may be present on agricultural land; fertilizers, pesticides,
38 and other agricultural chemicals are typically stored above ground in
39 agricultural areas. A flood event in an agricultural area could cause
40 hazardous materials to be released from these and other sources. The flood-
41 related impacts of the Modified SSIA Alternative would occur
42 infrequently, but they would be more likely to result in long-term damage
43 to the environment as hazardous materials were released and spread over a

1 wider area. Therefore, the Modified SSIA Alternative would have greater
 2 impacts related to hazards and hazardous materials than the proposed
 3 program. *[Greater]*

4 ***Achieve SPFC Design Flow Capacity Alternative***

5 The Achieve SPFC Design Flow Capacity Alternative would only improve
 6 existing levees to design capacity. This alternative would primarily fix
 7 levees in place, without making major changes to the footprint or operation
 8 of those facilities (i.e., no setback levees). This alternative would
 9 implement the same maintenance regime as the proposed program, and
 10 impacts of system maintenance related to hazards and hazardous materials
 11 would be similar. The Achieve SPFC Design Flow Capacity Alternative
 12 would result in a smaller construction and land disturbance footprint than
 13 the proposed program; therefore, the construction-related and operational
 14 impacts related to hazards and hazardous materials would be less.
 15 Mitigation measures would be equally effective at reducing hazardous
 16 materials impacts from construction and operation to a less-than-significant
 17 level under either the Achieve SPFC Design Flow Capacity Alternative or
 18 the proposed program.

19 The Achieve SPFC Design Flow Capacity Alternative would provide a
 20 much lower overall level of flood protection than the proposed program; as
 21 a result, the overall potential for flood damage to result in hazardous
 22 materials spills or exposure to hazardous substances would be much greater
 23 under this alternative than under the proposed program. These impacts
 24 would occur infrequently, but they would be more likely to result in long-
 25 term damage to the environment as hazardous materials were released and
 26 spread over a wider area. Therefore, the Achieve SPFC Design Flow
 27 Capacity Alternative would have greater impacts related to hazards and
 28 hazardous materials than the proposed program. *[Greater]*

29 ***Enhance Flood System Capacity Alternative***

30 The Enhance Flood System Capacity Alternative could involve
 31 constructing new or expanded reservoirs and provides a greater emphasis
 32 than the proposed program on constructing new bypasses, changing water
 33 operations at existing reservoirs, and widening floodways, which could
 34 include constructing setback levees. This alternative would implement the
 35 same maintenance regime as the proposed program, and impacts on hazards
 36 from system maintenance would be similar.

37 More and larger new facilities could be constructed under this alternative
 38 than under the proposed program, resulting in greater potential for
 39 accidental spills of hazardous materials during construction and operation
 40 and greater potential to encounter contaminated soils or hazardous
 41 materials during construction activities. As under the proposed program,

1 activities occurring as part of the Enhance Flood System Capacity
2 Alternative would require development and implementation of mitigation
3 measures to reduce significant impacts related to hazardous materials.
4 Mitigation measures would be equally effective at reducing hazardous
5 materials impacts to a less-than-significant level under either this
6 alternative or the proposed program.

7 The Enhance Flood System Capacity Alternative would provide a level of
8 flood protection slightly greater than that provided by the proposed
9 program (see Table 5-1); as a result, there would be a greater reduction in
10 potential flood-related impacts from releases of hazardous materials.

11 In summary, impacts of system maintenance related to hazards and
12 hazardous materials would be similar and mitigation measures would be
13 equally effective at reducing hazardous materials impacts under either the
14 Enhance Flood System Capacity Alternative or the proposed program. This
15 alternative would result in a somewhat greater reduction in flood-related
16 releases of hazardous materials. Therefore, the overall impact on hazardous
17 materials would be less than that of the proposed program. [*Lesser*]

18 **5.5.12 Hydrology**

19 The proposed program would not result in significant hydrology impacts
20 after mitigation, as described in greater detail in Section 3.13,
21 “Hydrology.” The following analysis compares the anticipated impacts of
22 each alternative to those of the proposed program.

23 The comparison generally assumes that the hydrology benefits from flood
24 risk reduction would not compensate for the impacts of the proposed
25 program because those benefits would generally be short term (i.e., flooded
26 areas are anticipated to recover to pre-flood conditions), while many of the
27 impacts of the proposed program would be permanent.

28 ***No-Project Alternative—Continued Operations Scenario***

29 Hydrologic resources include surface water (hydraulic), water supply, and
30 flood management resources. Under the No-Project Alternative—
31 Continued Operations Scenario, most elements of routine maintenance of
32 flood control facilities would continue following existing programs.
33 However, as under the proposed program, the VMS described in the
34 CVFPP would be implemented as part of the No-Project Alternative—
35 Continued Operations Scenario. DWR intends to implement the VMS, and
36 associated elements such as LCM, whether or not the CVFPP is adopted.
37 Therefore, the potential for impacts on hydrology from levee maintenance
38 (e.g., increased erosion and siltation, increased flooding caused by project
39 activities or facilities, placement of housing within a floodplain, risk of
40 inundation by seiche) would be the same under the No-Project

1 Alternative—Continued Operations Scenario as under the proposed
2 program.

3 The potential for impacts on hydrology from project-level construction of
4 new facilities and repair and improvement of existing facilities would be
5 less under the No-Project Alternative—Continued Operations Scenario
6 than under the proposed program because there would be fewer and smaller
7 projects. The impact mechanisms would remain the same under this
8 alternative (e.g., increased erosion and siltation, increased flooding caused
9 by project activities or facilities, risk of inundation by seiche). However,
10 the lower level of construction activity would minimize the potential for
11 adverse effects. Construction impacts would be less than significant under
12 both the No-Project Alternative—Continued Operations Scenario and the
13 proposed program. Furthermore, the proposed program includes large-scale
14 modifications to benefit or improve conditions for hydraulic conveyance,
15 flood management, or water supply throughout the system; those
16 modifications would not occur under the No-Project Alternative—
17 Continued Operations Scenario.

18 The proposed program's significant operational impacts on hydrology from
19 modifying reservoir operations and altering floodplain inundation patterns
20 are not likely to occur under the No-Project Alternative—Continued
21 Operations Scenario. Therefore, operational impacts of this alternative
22 would be less than those of the proposed program.

23 Because fewer improvements to the flood protection system would be
24 made under the No-Project Alternative—Continued Operations Scenario,
25 system failures and associated effects on hydrology (from erosion,
26 sedimentation, and increased likelihood of flooding) would occur more
27 frequently, would be more severe, and would occur over a larger area than
28 under the proposed program. Furthermore, because this alternative does not
29 entail changes to the requirements for findings of local agencies related to
30 land use changes, more housing at risk of 100-year flooding could be
31 approved. Therefore, impacts of flooding and postflood repairs on
32 hydrology would be greater under the No-Project Alternative—Continued
33 Operations Scenario.

34 As described above, impacts of system operations and maintenance on
35 hydrology under the No-Project Alternative—Continued Operations
36 Scenario would be similar to impacts under the proposed program.
37 Construction-related impacts would initially be less under this alternative
38 because fewer projects would be constructed; however, construction-
39 related hydrology impacts would be less than significant. Operational
40 hydrology impacts of the proposed program could be mitigated. There
41 would be greater flood-related hydrology impacts under the No-Project

1 Alternative—Continued Operations Scenario: continued potential for
2 placement of housing within 100-year floodplains and flood-related
3 erosion, siltation, and modification of stream channels. Given these
4 conditions, the overall impact of the No-Project Alternative—Continued
5 Operations Scenario on hydrology is expected to be greater than that of the
6 proposed program. *[Greater]*

7 ***No-Project Alternative—No Additional Activities Scenario***

8 Hydrologic resources include surface water (hydraulic), water supply, and
9 flood management resources. The No-Project Alternative—No Additional
10 Activities Scenario is similar to the No-Project Alternative—Continued
11 Operations Scenario, except that fewer projects would be undertaken in the
12 near term and the proposed LCM component of the VMS would not be
13 implemented. Most elements of routine operations and maintenance of
14 flood control facilities would continue following existing programs.
15 Therefore, the potential for impacts on hydrology from levee maintenance
16 (e.g., increased erosion and siltation, increased flooding caused by project
17 activities or facilities, placement of housing within a floodplain, risk of
18 inundation by seiche) would be similar under the No-Project Alternative—
19 No Additional Activities Scenario and the proposed program.

20 The potential for impacts on hydrology from project-level construction of
21 new facilities and repair and improvement of existing facilities would be
22 less under the No-Project Alternative—No Additional Activities Scenario
23 than under the proposed program because there would be fewer and smaller
24 projects. The impact mechanisms would remain the same under this
25 alternative (e.g., increased erosion and siltation, increased flooding caused
26 by project activities or facilities, risk of inundation by seiche). However,
27 the lower level of construction activity would minimize the potential for
28 adverse effects. Construction impacts would be less than significant under
29 both the No-Project Alternative—No Additional Activities Scenario and
30 the proposed program. Furthermore, the proposed program includes large-
31 scale modifications to benefit or improve conditions for hydraulic
32 conveyance, flood management, or water supply throughout the system;
33 those modifications would not occur under the No-Project Alternative—No
34 Additional Activities Scenario.

35 The proposed program's significant operational impacts on hydrology from
36 modifying reservoir operations and altering floodplain inundation patterns
37 are not likely to occur under the No-Project Alternative—No Additional
38 Activities Scenario. Therefore, operational impacts of this alternative
39 would be less than those of the proposed program.

40 Because fewer improvements to the flood protection system would be
41 made under the No-Project Alternative—No Additional Activities

1 Scenario, system failures and associated effects on hydrology (from
2 erosion, sedimentation, increased likelihood of flooding, and continued
3 placement of housing within 100-year floodplains) would occur more
4 frequently, would be more severe, and would occur over a larger area than
5 under the proposed program. Therefore, impacts of flooding and postflood
6 repairs on hydrology would be greater under this alternative.

7 As described above, impacts of system operations and maintenance on
8 hydrology under the No-Project Alternative—No Additional Activities
9 Scenario would be similar to impacts under the proposed program.
10 Construction-related impacts would initially be less under this alternative
11 because fewer projects would be constructed; however, construction-
12 related hydrology impacts would be less than significant. Operational
13 hydrology impacts of the proposed program could be mitigated. There
14 would be greater flood-related hydrology impacts under the No-Project
15 Alternative—No Additional Activities Scenario: continued potential for
16 placement of housing within 100-year floodplains and flood-related
17 erosion, siltation, and modification of stream channels. Given these
18 conditions, the overall impact of the No-Project Alternative—No
19 Additional Activities Scenario on hydrology is expected to be greater than
20 that of the proposed program. *[Greater]*

21 ***Modified State Systemwide Investment Approach Alternative***

22 The Modified SSIA Alternative would implement the same maintenance
23 regime as the proposed program, and impacts of system maintenance on
24 hydrology would be similar. This alternative would address only the most
25 critical stressors on public safety, operations and maintenance, and
26 ecosystem function; thus, the footprint for facility construction and habitat
27 restoration and enhancement would be smaller under this alternative than
28 under the proposed program. As a result, hydrology impacts during
29 construction and operation would be expected to be less. As under the
30 proposed program, activities occurring as part of the Modified SSIA
31 Alternative would require development and implementation of mitigation
32 measures to reduce potentially significant impacts on hydrology. Mitigation
33 measures would be equally effective at reducing hydrology impacts to a
34 less-than-significant level under either the Modified SSIA Alternative or
35 the proposed program.

36 Under the Modified SSIA Alternative, the overall risk of flooding would be
37 slightly greater than the risk under the proposed program; therefore, a
38 lesser reduction in hydrology impacts from flooding would occur.

39 Because fewer and/or smaller components would be constructed under this
40 alternative, construction-related and operational impacts of project
41 components on hydrology would be less than those of the proposed

1 program. Therefore, the overall impact of the Modified SSIA Alternative
2 on hydrology would be less than that of the proposed program. [*Lesser*]

3 ***Achieve SPFC Design Flow Capacity Alternative***

4 The Achieve SPFC Design Flow Capacity Alternative would only improve
5 existing levees to design capacity. This alternative would primarily fix
6 levees in place, without making major changes to the footprint or operation
7 of those facilities (i.e., no setback levees). The Achieve SPFC Design Flow
8 Capacity Alternative would implement the same maintenance regime as the
9 proposed program, and impacts of system maintenance on hydrology
10 would be similar. This alternative would result in a smaller construction
11 and land disturbance footprint than the proposed program; therefore,
12 construction-related and operational impacts on hydrology would be less
13 under this alternative. Impacts of construction on hydrology would be less
14 than significant, and mitigation measures would be equally effective at
15 reducing hydrology impacts from operation to a less-than-significant level
16 under either the Achieve SPFC Design Flow Capacity Alternative or the
17 proposed program.

18 The Achieve SPFC Design Flow Capacity Alternative would provide a
19 much lower overall level of flood protection than the proposed program; as
20 a result, the overall potential for housing to continue being placed in a 100-
21 year flood zone would be greater under this alternative. In the long term,
22 this alternative would result in greater flood damage to housing and
23 potential loss of life and property. Therefore, the Achieve SPFC Design
24 Flow Capacity Alternative would have greater impacts on hydrology than
25 the proposed program. [*Greater*]

26 ***Enhance Flood System Capacity Alternative***

27 The Enhance Flood System Capacity Alternative could involve
28 constructing new or expanded reservoirs and provides a greater emphasis
29 than the proposed program on constructing new bypasses, changing water
30 operations at existing reservoirs, and widening floodways, which could
31 include constructing setback levees. This alternative would implement the
32 same maintenance regime as the proposed program, and impacts of system
33 maintenance on hydrology would be similar.

34 More and larger new facilities could be constructed under this alternative
35 than under the proposed program, resulting in greater potential for
36 hydrology impacts from erosion and sedimentation caused by project-
37 related modifications to the flood conveyance system. As under the
38 proposed program, activities occurring as part of the Enhance Flood
39 System Capacity Alternative would require development and
40 implementation of mitigation measures to reduce significant impacts on
41 hydrology. Mitigation measures would be equally effective at reducing

1 hydrology impacts to a less-than-significant level under either this
2 alternative or the proposed program.

3 The Enhance Flood System Capacity Alternative would provide a level of
4 flood protection slightly greater than that provided by the proposed
5 program (see Table 5-1); as a result, there would be a slightly greater
6 reduction in potential flood-related impacts on hydrology.

7 In summary, impacts of system maintenance on hydrology would be
8 similar and mitigation measures would be equally effective at reducing
9 hydrology impacts under either the Enhance Flood System Capacity
10 Alternative or the proposed program. This alternative would result in only a
11 slightly greater reduction in flood-related impacts on hydrology.
12 Furthermore, the Enhance Flood System Capacity Alternative would
13 enhance opportunities to promote multi-benefit projects by fostering
14 integration of benefits to water quality, recreation, power, and other
15 resources. In addition, opportunities would exist to improve (1) water
16 supply reliability (through multipurpose reservoir storage projects), (2)
17 conjunctive management of groundwater and surface water resources, and
18 (3) groundwater recharge within floodplain storage areas. Therefore, the
19 overall impact of the Enhance Flood System Capacity Alternative on
20 hydrology would be less than that of the proposed program. *[Lesser]*

21 **5.5.13 Land Use and Planning**

22 The proposed program generally would not result in significant impacts on
23 land use and planning after mitigation, as described in greater detail in
24 Section 3.14, "Land Use and Planning." However, the significant and
25 unavoidable impacts on agricultural resources described above in Section
26 5.5.2, "Agriculture and Forestry Resources," are also considered to reflect
27 corresponding significant and unavoidable land use impacts of the same
28 nature and scope. The following analysis compares the anticipated impacts
29 of each alternative to those of the proposed program.

30 The comparison generally assumes that the land use and planning benefits
31 from flood risk reduction would compensate for the impacts of the
32 proposed program because the program impacts would generally be
33 indirect and result from State law and policies discouraging development in
34 floodplains, while the adverse impacts from a major flood event would be
35 unplanned and unmitigated, could be of significant scope, and could
36 adversely affect land use and planning options for a lengthy period.

37 However, for the significant and unavoidable impacts on agricultural
38 resources, the comparison generally assumes that the benefits to
39 agricultural resources from flood risk reduction would not compensate for
40 the impacts of the proposed program because those benefits would

1 generally be short term (i.e., flooded areas are anticipated to recover to
2 pre-flood conditions as lands dry out and farming can resume), while many
3 of the impacts of the proposed program on agricultural resources would be
4 permanent.

5 ***No-Project Alternative—Continued Operations Scenario***

6 Under the No-Project Alternative—Continued Operations Scenario, most
7 elements of routine operations and maintenance of flood control facilities
8 would continue following existing programs. However, as under the
9 proposed program, the VMS described in the CVFPP would be
10 implemented as part of this alternative. DWR intends to implement the
11 VMS, and associated elements such as LCM, whether or not the CVFPP is
12 adopted. Managing vegetation on flood control facilities consistent with the
13 VMS would not physically separate an established community, nor would
14 it result in alterations of land uses or patterns of land use in a way that
15 would cause substantial adverse physical environmental effects. Therefore,
16 vegetation management on flood system facilities would have no effect on
17 land use under either the No-Project Alternative—Continued Operations
18 Scenario or the proposed program.

19 Land use effects of project-level construction of new facilities and repair
20 and improvement of existing facilities would be less under the No-Project
21 Alternative—Continued Operations Scenario than under the proposed
22 program because there would be fewer and smaller projects. Neither
23 alternative would create conditions that would physically separate an
24 established community; however, construction under this alternative is less
25 likely to result in displacement of some isolated developed uses (e.g.,
26 homes, businesses, recreational facilities) because of the smaller
27 cumulative project footprint. With a smaller project footprint, there also
28 would be reduced conversion of agricultural land to a nonagricultural land
29 use. The proposed program also includes a greater amount of habitat
30 restoration and creation, which would result in some level of conversion of
31 existing land uses (including agricultural land uses) to habitat.

32 As under the proposed program, activities occurring as part of the No-
33 Project Alternative—Continued Operations Scenario would require
34 development and implementation of mitigation measures to reduce
35 significant or potentially significant land use impacts. Examples of such
36 measures include providing financial compensation for property losses and
37 relocation assistance for displaced development, and replacing displaced
38 recreational facilities. Mitigation measures would be equally effective at
39 reducing impacts on displaced development and recreational facilities to a
40 less-than-significant level under either the No-Project Alternative—
41 Continued Operations Scenario or the proposed program. However, it

1 would not be feasible to fully mitigate for conversion of agricultural land
2 uses to habitat under either alternative.

3 Under the No-Project Alternative—Continued Operations Scenario, the
4 CVFPP would not be adopted; therefore, the trigger initiating legislative
5 requirements related to the urban level of flood protection would not occur
6 under this alternative. As described in Impact LU-7 (NTMA) in Subsection
7 3.14.4, “Environmental Impacts and Mitigation Measures for NTMAs,” of
8 Section 3.14, “Land Use and Planning,” assessing the environmental effect
9 of redirecting land use and development to comply with the urban level of
10 flood protection is too speculative to make a significance determination.
11 However, the impact mechanisms described in Impact LU-7 (NTMA)
12 would not occur under the No-Project Alternative—Continued Operations
13 Scenario.

14 Because fewer improvements to the flood protection system would be
15 made under the No-Project Alternative—Continued Operations Scenario,
16 system failures and associated damage from flooding would occur more
17 frequently and would be more severe than under the proposed program.
18 Therefore, the potential for flood damage to result in the physical division
19 of an established community (e.g., incomplete postflood repairs and
20 recovery resulting in separation of portions of a community) would be
21 greater under the No-Project Alternative—Continued Operations Scenario.
22 The potential for changes in land use or patterns of land use after a flood
23 that would cause a substantial adverse physical environmental effect would
24 also be greater. However, both of these impact mechanisms would require
25 postflood land uses to differ substantially from preflood land uses, which
26 would be unlikely.

27 Overall, impacts of system operations and maintenance on land use under
28 the No-Project Alternative—Continued Operations Scenario would be
29 similar to impacts under the proposed program. Significant and
30 unavoidable impacts associated with implementing the urban level of flood
31 protection (i.e., the conversion of agricultural land to urban uses) would not
32 occur under the No-Project Alternative—Continued Operations Scenario.
33 Construction-related impacts would initially be less under this alternative
34 because fewer projects would be constructed; however, land use impacts
35 could be equally mitigated under either alternative. There would be greater
36 potential for flood-related land use impacts under the No-Project
37 Alternative—Continued Operations Scenario, in particular given the lack of
38 development restrictions that would be triggered by adoption of the
39 CVFPP, and a corresponding continuation of development in floodplains.
40 Given these conditions, the overall impact of the No-Project Alternative—
41 Continued Operations Scenario on land use is expected to be less than that
42 of the proposed program. [*Lesser*]

1 **No-Project Alternative—No Additional Activities Scenario**
2 The No-Project Alternative—No Additional Activities Scenario is similar
3 to the No-Project Alternative—Continued Operations Scenario, except that
4 fewer projects would be undertaken in the near term and the proposed
5 LCM component of the VMS would not be implemented. Most elements of
6 routine operations and maintenance of flood control facilities would
7 continue following existing programs. However, vegetation management
8 on flood system facilities would have no effect on land use under either the
9 No-Project Alternative—No Additional Activities Scenario or the proposed
10 program.

11 The land use effects of project-level construction of new facilities and
12 repair and improvement of existing facilities would be less under the No-
13 Project Alternative—No Additional Activities Scenario than under the
14 proposed program because there would be fewer and smaller projects.
15 Neither alternative would create conditions that would physically separate
16 an established community; however, construction under this alternative is
17 less likely to result in displacement of some isolated developed uses (e.g.,
18 homes, businesses, recreational facilities) because of the smaller
19 cumulative project footprint. With a smaller footprint, there also would be
20 less conversion of agricultural land to a nonagricultural land use. The
21 proposed program also includes a greater amount of habitat restoration and
22 creation, which would result in some level of conversion of existing land
23 uses (including agricultural land uses) to habitat.

24 As under the proposed program, activities occurring as part of the No-
25 Project Alternative—No Additional Activities Scenario would require
26 development and implementation of mitigation measures to reduce
27 significant or potentially significant land use impacts. Mitigation measures
28 would be equally effective at reducing impacts on displaced development
29 and recreational facilities to a less-than-significant level under either this
30 alternative or the proposed program. However, it would not be feasible to
31 fully mitigate the conversion of agricultural land uses to habitat under
32 either alternative.

33 Under the No-Project Alternative—No Additional Activities Scenario, the
34 CVFPP would not be adopted; therefore, the trigger initiating legislative
35 requirements related to the urban level of flood protection would not occur
36 under this alternative. As described in Impact LU-7 (NTMA) in Subsection
37 3.14.4, “Environmental Impacts and Mitigation Measures for NTMAs,” of
38 Section 3.14, “Land Use and Planning,” assessing the environmental effect
39 of redirecting land use and development to comply with the urban level of
40 flood protection is too speculative to make a significance determination.
41 However, the impact mechanisms described in Impact LU-7 (NTMA)

1 would not occur under the No-Project Alternative—No Additional
2 Activities Scenario.

3 Because fewer improvements to the flood protection system would be
4 made under the No-Project Alternative—No Additional Activities
5 Scenario, system failures and associated damage from flooding would
6 occur more frequently and would be more severe than under the proposed
7 program. Therefore, the potential for flood damage to result in the physical
8 division of an established community (e.g., incomplete postflood repairs
9 and recovery resulting in separation of portions of a community) would be
10 greater under this alternative. The potential for changes in land use or
11 patterns of land use after a flood that would cause a substantial adverse
12 physical environmental effect would also be greater. However, both of
13 these impact mechanisms would require postflood land uses to differ
14 substantially from preflood land uses, which would be unlikely.

15 Overall, impacts of system operations and maintenance on land use under
16 the No-Project Alternative—No Additional Activities Scenario would be
17 similar to impacts under the proposed program. Significant and
18 unavoidable impacts from implementing the urban level of flood protection
19 (i.e., conversion of agricultural land to urban land uses) would not occur
20 under this alternative. Construction-related impacts would initially be less
21 under the No-Project Alternative—No Additional Activities Scenario
22 because fewer projects would be constructed; however, land use impacts
23 could be equally mitigated under either alternative. There would be greater
24 potential for flood-related land use impacts under the No-Project
25 Alternative—No Additional Activities Scenario, in particular given the lack
26 of development restrictions that would be triggered by adoption of the
27 CVFPP, and a corresponding continuation of development in floodplains.
28 Given these conditions, the overall impact of the No-Project Alternative—
29 No Additional Activities Scenario on land use is expected to be lesser than
30 that of the proposed program. [*Lesser*]

31 ***Modified State Systemwide Investment Approach Alternative***

32 The Modified SSIA Alternative would implement the same maintenance
33 regime as the proposed program, and impacts of system maintenance on
34 land use would be similar (i.e., little to no impact). Both alternatives would
35 also trigger implementation of requirements related to the urban level of
36 flood protection; impacts via this mechanism would be the same for this
37 alternative and the proposed program. The Modified SSIA Alternative
38 would address only the most critical stressors on public safety, operations
39 and maintenance, and ecosystem function; thus, the footprint for facility
40 construction and habitat restoration and enhancement would be smaller
41 under this alternative than under the proposed program. As a result, the

1 potential for land use impacts would be expected to be less under this
2 alternative.

3 As under the proposed program, activities occurring as part of the Modified
4 SSIA Alternative would require development and implementation of
5 mitigation measures to reduce significant land use impacts. Mitigation
6 measures would be equally effective at reducing most significant land use
7 impacts to a less-than-significant level under either this alternative or the
8 proposed program. However, it would not be feasible to fully mitigate the
9 conversion of agricultural lands to another land use under either alternative.

10 Under the Modified SSIA Alternative, the overall reduction in flood risk
11 would be slightly less than that of the proposed program. Therefore, the
12 potential for flooding from system failures during high-water events would
13 be slightly greater. However, requirements related to the urban level of
14 flood protection would be implemented under the Modified SSIA
15 Alternative, as under the proposed program; therefore, the potential for
16 adverse land use effects would likewise be similar. Primarily because of the
17 smaller overall project footprint under this alternative and the
18 correspondingly lower potential for conversion of agricultural land, the
19 potential for adverse land use impacts is expected to be less under the
20 Modified SSIA Alternative. [*Lesser*]

21 ***Achieve SPFC Design Flow Capacity Alternative***

22 The Achieve SPFC Design Flow Capacity Alternative would only improve
23 existing levees to design capacity. This alternative would primarily fix
24 levees in place, without making major changes to the footprint or operation
25 of those facilities (i.e., no setback levees). It would implement the same
26 operations and maintenance regime as the proposed program, and impacts
27 of system operations and maintenance on land use would be similar. Both
28 alternatives would also trigger implementation of requirements related to
29 the urban level of flood protection; impacts via this mechanism would be
30 the same for the Achieve SPFC Design Flow Capacity Alternative and the
31 proposed program.

32 The Achieve SPFC Design Flow Capacity Alternative would result in a
33 smaller construction and land disturbance footprint than the proposed
34 program. Therefore, the potential for land use impacts would be expected
35 to be less under this alternative.

36 As under the proposed program, activities occurring as part of the Achieve
37 SPFC Design Flow Capacity Alternative would require development and
38 implementation of mitigation measures to reduce significant land use
39 impacts. Mitigation measures would be equally effective at reducing most
40 significant land use impacts to a less-than-significant level under either this

1 alternative or the proposed program. However, it would not be feasible to
2 fully mitigate the conversion of agricultural lands to another land use under
3 either alternative.

4 Because fewer improvements to the flood protection system would be
5 made under the Achieve SPFC Design Flow Capacity Alternative, system
6 failures and associated damage from flooding would occur more frequently
7 and would be more severe than under the proposed program. Therefore, the
8 potential for flood damage to result in the physical division of an
9 established community (e.g., incomplete postflood repairs and recovery
10 resulting in separation of portions of a community) would be greater under
11 this alternative. The potential for changes in land use or patterns of land use
12 after a flood that would cause a substantial adverse physical environmental
13 effect would also be greater. However, both of these impact mechanisms
14 would require postflood land uses to differ substantially from preflood land
15 uses, which would be unlikely. The requirements related to the urban level
16 of flood protection would be implemented under the Achieve SPFC Design
17 Flow Capacity Alternative, as under the proposed program; therefore, the
18 potential for adverse land use effects would likewise be similar. Primarily
19 because of the smaller overall project footprint under this alternative and
20 the correspondingly lower potential for conversion of agricultural land, the
21 potential for adverse land use impacts is expected to be less under the
22 Achieve SPFC Design Flow Capacity Alternative than under the proposed
23 program. [*Lesser*]

24 ***Enhance Flood System Capacity Alternative***

25 The Enhance Flood System Capacity Alternative could involve
26 constructing new or expanded reservoirs and provides a greater emphasis
27 than the proposed program on constructing new bypasses, changing water
28 operations at existing reservoirs, and widening floodways, which could
29 include constructing setback levees. This alternative would implement the
30 same maintenance regime as the proposed program, and impacts of system
31 maintenance on land use would be similar. New reservoirs would have
32 maintenance requirements not included in the proposed program; however,
33 potential land use impacts would result primarily from constructing and
34 operating a reservoir in a location where one currently does not exist, and
35 not necessarily from maintaining that reservoir once it is in place. Both the
36 proposed program and the Enhance Flood System Capacity Alternative
37 would trigger implementation of requirements related to the urban level of
38 flood protection, and impacts via this mechanism would be the same for
39 both alternatives.

40 It is uncertain how changes in the management and operation of water
41 storage facilities under this alternative would affect land use. Depending on
42 the timing, duration, and locations of water reallocation, more or less water

1 could be available to support various land uses, which could alter existing
2 and planned land use patterns.

3 The Enhance Flood System Capacity Alternative would provide a level of
4 flood protection slightly greater than that provided by the proposed
5 program (see Table 5-1); as a result, the potential for flood-related land use
6 impacts would be slightly less. More and larger new facilities could be
7 constructed under this alternative, resulting in greater potential to
8 physically separate an established community or result in alterations to land
9 uses or patterns of land use that would cause a substantial adverse physical
10 environmental effect. Similarly, the Enhance Flood System Capacity
11 Alternative would provide greater opportunities for habitat restoration and
12 enhancement, potentially resulting in greater conversions of existing land
13 uses (particularly agricultural land) to habitat. As under the proposed
14 program, activities occurring as part of this alternative would require
15 development and implementation of mitigation measures to reduce
16 significant land use impacts. Mitigation measures would be equally
17 effective at reducing most land use impacts to a less-than-significant level
18 under either the Enhance Flood System Capacity Alternative or the
19 proposed program. However, it would not be feasible to fully mitigate the
20 conversion of agricultural land to another use under either alternative.
21 Given these conditions, land use impacts would be greater under the
22 Enhance Flood System Capacity Alternative than under the proposed
23 program. *[Greater]*

24 **5.5.14 Noise**

25 The proposed program would not result in significant noise impacts after
26 mitigation, as described in greater detail in Section 3.15, "Noise." The
27 following analysis compares the anticipated impacts of each alternative to
28 those of the proposed program.

29 The comparison generally assumes that the noise benefits from flood risk
30 reduction would not be materially different from the impacts of the
31 proposed program. It is not anticipated that reconstruction efforts would
32 involve materially different noise impacts from those of the proposed
33 projects, and the impacts of the proposed program and reconstruction
34 would both be temporary.

35 ***No-Project Alternative—Continued Operations Scenario***

36 Under the No-Project Alternative—Continued Operations Scenario, most
37 elements of routine maintenance of flood control facilities would continue
38 following existing programs. However, as under the proposed program, the
39 VMS described in the CVFPP would be implemented as part of this
40 alternative. DWR intends to implement the VMS, and associated elements
41 such as LCM, whether or not the CVFPP is adopted. Therefore, the

1 potential for noise impacts caused by levee maintenance activities would be
2 the same under the No-Project Alternative—Continued Operations
3 Scenario as under the proposed program.

4 The potential for noise and vibration impacts from project-level
5 construction of new facilities and repair and improvement of existing
6 facilities would be less under the No-Project Alternative—Continued
7 Operations Scenario than under the proposed program because there would
8 be fewer and smaller projects. The impact mechanisms would remain the
9 same under this alternative (e.g., increased noise and vibration generated by
10 construction equipment and by operational features such as water pumps).
11 However, the lower level of construction activity would minimize the
12 potential for adverse effects.

13 As under the proposed program, activities occurring as part of the No-
14 Project Alternative—Continued Operations Scenario would require
15 development and implementation of mitigation measures for significant
16 and potentially significant impacts. Examples of such measures include
17 implementing noise- and vibration-reducing construction practices and
18 implementing design techniques to lessen operational noise. Mitigation
19 measures would be equally effective at reducing noise and vibration
20 impacts to a less-than-significant level under either the No-Project
21 Alternative—Continued Operations Scenario or the proposed program.

22 Because fewer improvements to the flood protection system would be
23 made under the No-Project Alternative—Continued Operations Scenario,
24 system failures and associated flood-related cleanup activities would occur
25 more frequently and would be more severe than under the proposed
26 program. Therefore, impacts of flood-related cleanup activities and
27 postflood repairs on noise and vibration would be greater under this
28 alternative.

29 As described above, impacts of system operations and maintenance related
30 to noise and vibration under the No-Project Alternative—Continued
31 Operations Scenario would be similar to impacts under the proposed
32 program. Construction-related noise and vibration impacts would initially
33 be less under this alternative because fewer projects would be constructed;
34 however, noise and vibration impacts could be equally mitigated under
35 either alternative. There would be greater flood-related noise and vibration
36 impacts under the No-Project Alternative—Continued Operations Scenario,
37 but these would be infrequent and episodic. Given these conditions, the
38 overall impact of the No-Project Alternative—Continued Operations
39 Scenario related to noise and vibration is expected to be less than that of
40 the proposed program. [*Lesser*]

1 **No-Project Alternative—No Additional Activities Scenario**
2 Hydrologic resources include surface water (hydraulic), water supply, and
3 flood management resources. The No-Project Alternative—No Additional
4 Activities Scenario is similar to the No-Project Alternative—Continued
5 Operations Scenario, except that fewer projects would be undertaken in the
6 near term and the proposed LCM component of the VMS would not be
7 implemented. Most elements of routine operations and maintenance of
8 flood control facilities would continue following existing programs.
9 Therefore, the potential for noise impacts caused by levee maintenance
10 activities would be similar under the No-Project Alternative—No
11 Additional Activities Scenario and the proposed program.

12 The potential for noise and vibration impacts from project-level
13 construction of new facilities and repair and improvement of existing
14 facilities would be less under the No-Project Alternative—No Additional
15 Activities Scenario than under the proposed program because there would
16 be fewer and smaller projects. The impact mechanisms would remain the
17 same under this alternative (e.g., increased noise and vibration generated by
18 construction equipment and by operational features such as water pumps).
19 However, the lower level of construction activity would minimize the
20 potential for adverse effects.

21 As under the proposed program, activities occurring as part of the No-
22 Project Alternative—No Additional Activities Scenario would require
23 development and implementation of mitigation measures for significant
24 and potentially significant impacts. Mitigation measures would be equally
25 effective at reducing noise and vibration impacts to a less-than-significant
26 level under either this alternative or the proposed program.

27 Because fewer improvements to the flood protection system would be
28 made under the No-Project Alternative—No Additional Activities
29 Scenario, system failures and associated flood-related cleanup activities
30 would occur more frequently and would be more severe than under the
31 proposed program. Therefore, impacts of flood-related cleanup activities
32 and postflood repairs on noise and vibration would be greater under this
33 alternative.

34 As described above, impacts of system operations and maintenance related
35 to noise and vibration under the No-Project Alternative—No Additional
36 Activities Scenario would be similar to impacts under the proposed
37 program. Construction-related noise and vibration impacts would initially
38 be less under this alternative because fewer projects would be constructed;
39 however, noise and vibration impacts could be equally mitigated under
40 either alternative. There would be greater flood-related noise and vibration
41 impacts under the No-Project Alternative—No Additional Activities

1 Scenario, but these would be infrequent and episodic. Given these
2 conditions, the overall impact of the No-Project Alternative—No
3 Additional Activities Scenario related to noise and vibration is expected to
4 be less than that of the proposed program. [*Lesser*]

5 ***Modified State Systemwide Investment Approach Alternative***

6 The Modified SSIA Alternative would implement the same maintenance
7 regime as the proposed program, and impacts of system maintenance
8 related to noise and vibration would be similar. This alternative would
9 address only the most critical stressors on public safety, operations and
10 maintenance, and ecosystem function; thus, the footprint for facility
11 construction and habitat restoration and enhancement would be smaller
12 under this alternative than under the proposed program. As a result, impacts
13 related to noise and vibration levels during construction and operation
14 would be expected to be less. As under the proposed program, activities
15 occurring as part of the Modified SSIA Alternative would require
16 development and implementation of mitigation measures to reduce
17 significant impacts related to noise and vibration. Mitigation measures
18 would be equally effective at reducing noise and vibration impacts to a
19 less-than-significant level under either this alternative or the proposed
20 program.

21 Under the Modified SSIA Alternative, the overall risk of flooding would be
22 slightly greater than the risk under the proposed program; therefore, a
23 slightly lesser reduction in noise and vibration levels from flood-related
24 cleanup activities would occur.

25 Because fewer and/or smaller components would be constructed under this
26 alternative, construction-related and operational noise impacts would be
27 less than those of the proposed program. Therefore, the overall impact of
28 the Modified SSIA Alternative related to noise would be less than that of
29 the proposed program. [*Lesser*]

30 ***Achieve SPFC Design Flow Capacity Alternative***

31 The Achieve SPFC Design Flow Capacity Alternative would only improve
32 existing levees to design capacity. This alternative would primarily fix
33 levees in place, without making major changes to the footprint or operation
34 of those facilities (i.e., no setback levees). This alternative would
35 implement the same maintenance regime as the proposed program, and
36 impacts of system maintenance related to noise and vibration would be
37 similar. The Achieve SPFC Design Flow Capacity Alternative would result
38 in a smaller construction and land disturbance footprint than the proposed
39 program; therefore, construction-related and operational impacts related to
40 noise and vibration would generally be less. Mitigation measures would be
41 equally effective at reducing noise and vibration levels from construction

1 and operation to a less-than-significant level under either the Achieve
2 SPFC Design Flow Capacity Alternative or the proposed program.

3 The Achieve SPFC Design Flow Capacity Alternative would provide a
4 much lower overall level of flood protection than the proposed program; as
5 a result, the potential for flood-related cleanup and repair activities to
6 increase noise and vibration levels would be greater under this alternative.
7 However, these effects would be infrequent and episodic. Therefore, the
8 overall impact of the Achieve SPFC Design Flow Capacity Alternative
9 related to noise would be similar to that of the proposed program. *[Similar]*

10 ***Enhance Flood System Capacity Alternative***

11 The Enhance Flood System Capacity Alternative could involve
12 constructing new or expanded reservoirs and provides a greater emphasis
13 than the proposed program on constructing new bypasses, changing water
14 operations at existing reservoirs, and widening floodways, which could
15 include constructing setback levees. The Enhance Flood System Capacity
16 alternative would implement the same maintenance regime as the proposed
17 program, and impacts of system maintenance related to noise and vibration
18 would be similar.

19 More and larger new facilities could be constructed under this alternative,
20 resulting in greater potential for increases in noise and vibration levels
21 during construction and operation. As under the proposed program,
22 activities occurring as part of the Enhance Flood System Capacity
23 Alternative would require development and implementation of mitigation
24 measures to reduce significant impacts related to noise and vibration.
25 Presumably, larger new facilities such as new reservoirs would be
26 constructed in rural areas away from sensitive receptors; therefore,
27 mitigation measures would be equally effective at reducing noise and
28 vibration impacts to a less-than-significant level under either the Enhance
29 Flood System Capacity Alternative or the proposed program.

30 The Enhance Flood System Capacity Alternative would provide a level of
31 flood protection slightly greater than that provided by the proposed
32 program (see Table 5-1); as a result, a slightly greater overall reduction in
33 noise and vibration levels from potential flood-related cleanup and repair
34 would occur.

35 In summary, impacts of system maintenance related to noise and vibration
36 would be similar, and mitigation measures would be equally effective at
37 reducing noise and vibration impacts from construction and operation to a
38 less-than-significant level, under either the Enhance Flood System Capacity
39 Alternative or the proposed program. This alternative would result in a
40 somewhat greater reduction in flood-related noise and vibration levels;

1 however, these effects would be infrequent and episodic. Therefore, the
2 overall impact of the Enhance Flood System Capacity Alternative related to
3 noise and vibration would be similar to that of the proposed program.

4 *[Similar]*

5 **5.5.15 Population, Employment, and Housing**

6 The proposed program would not result in significant impacts on
7 population, employment, and housing, as described in greater detail in
8 Section 3.16, “Population, Employment, and Housing.” The following
9 analysis compares the anticipated impacts of each alternative to those of the
10 proposed program.

11 The comparison generally assumes that the benefits to population,
12 employment, and housing from flood risk reduction would compensate for
13 the impacts of the proposed program because the program impacts would
14 generally be minimal, well-planned, and substantially mitigated, while the
15 adverse impacts from a major flood event would be unplanned and
16 unmitigated, and could be of significant scope. Specifically, recovery from
17 a major flood event could take considerable time and full recovery of
18 employment opportunities and housing availability may not occur in some
19 situations.

20 ***No-Project Alternative—Continued Operations Scenario***

21 Under the No-Project Alternative—Continued Operations Scenario, most
22 elements of routine maintenance of flood control facilities would continue
23 following existing programs. However, as under the proposed program, the
24 VMS described in the CVFPP would be implemented as part of this
25 alternative. DWR intends to implement the VMS, and associated elements
26 such as LCM, whether or not the CVFPP is adopted. Therefore, the
27 potential for impacts on population, employment, and housing caused by
28 routine maintenance would be the same under the No-Project Alternative—
29 Continued Operations Scenario as under the proposed program.

30 The potential for impacts on population, employment, and housing from
31 project-level construction of new facilities and repair and improvement of
32 existing facilities would be less under the No-Project Alternative—
33 Continued Operations Scenario than under the proposed program because
34 there would be fewer and smaller projects. The impact mechanisms would
35 remain the same under this alternative (e.g., inducement of substantial
36 population growth, displacement of substantial numbers of people, or
37 inducement of substantial unemployment as a result of project construction,
38 operation, or long-term land use policy changes). However, the lower level
39 of construction activity would minimize the potential for adverse effects.

40 As under the proposed program, activities occurring as part of the No-

1 Project Alternative—Continued Operations Scenario would likely result in
2 less-than-significant impacts.

3 Because fewer improvements to the flood protection system would be
4 made under the No-Project Alternative—Continued Operations Scenario,
5 system failures and associated damage from flooding would occur more
6 frequently and would be more severe than under the proposed program.
7 Under this alternative, population increases would likely drive changes in
8 land use patterns in flood-prone areas, increasing the populations at risk of
9 flooding. Continued urban development within floodplains would also
10 make future changes to the footprint of the flood management system
11 progressively more costly, and would exacerbate consequences (life safety
12 and damages) when flooding events occur. A greater risk of flooding would
13 have a greater socioeconomic impact related to displacement of residents
14 and property damage from flooding. Therefore, the No-Project
15 Alternative—Continued Operations Scenario could have a significant
16 impact on population and housing; however, the extent of impacts under
17 this alternative is unknown and feasible mitigation may not be sufficient to
18 reduce impacts to a less-than-significant level.

19 The construction-related and operational impacts of both the No-Project
20 Alternative—Continued Operations Scenario and the proposed program are
21 expected to be less than significant; however, this alternative could have
22 significant population and housing impacts associated with an increased
23 risk of flooding. Thus, the overall impact of the No-Project Alternative—
24 Continued Operations Scenario on population, employment, and housing is
25 expected to be greater than that of the proposed program. [*Greater*]

26 ***No-Project Alternative—No Additional Activities Scenario***

27 The No-Project Alternative—No Additional Activities Scenario is similar
28 to the No-Project Alternative—Continued Operations Scenario, except that
29 fewer projects would be undertaken in the near term and the proposed
30 LCM component of the VMS would not be implemented. Most elements of
31 routine operations and maintenance of flood control facilities would
32 continue following existing programs. Population increases under this
33 alternative would likely drive changes in land use patterns in flood-prone
34 areas, increasing the populations at risk of flooding. Continued urban
35 development within floodplains would also make future changes to the
36 footprint of the flood management system progressively more costly, and
37 would exacerbate consequences (life safety and damages) when flooding
38 events occur. Increased needs for postflood repairs under the No-Project
39 Alternative—No Additional Activities Scenario could cause more jobs to
40 be created for postflood repairs and cleanup. However, a greater risk of
41 flooding would have a greater socioeconomic impact related to
42 displacement of residents and property damage from flooding. The short-

1 and long-term creation of jobs associated with large projects that could
2 occur under the proposed program would not be created under the No-
3 Project Alternative—No Additional Activities Scenario.

4 The proposed program is not expected to have a significant impact on
5 population, employment, or housing; therefore, no mitigation measures
6 would be needed to reduce socioeconomic impacts to a less-than-
7 significant level. The No-Project Alternative—No Additional Activities
8 Scenario could have a significant impact on population and housing;
9 however, the extent of impacts under this alternative is unknown and
10 feasible mitigation may not be sufficient to reduce impacts to a less-than-
11 significant level.

12 In contrast to the proposed program, the No-Project Alternative—No
13 Additional Activities Scenario could have socioeconomic impacts
14 associated with an increased risk of flooding. Thus, the overall impact of
15 the No-Project Alternative—No Additional Activities Scenario on
16 socioeconomics is expected to be greater than that of the proposed
17 program. *[Greater]*

18 ***Modified State Systemwide Investment Approach Alternative***

19 The Modified SSIA Alternative would implement the same maintenance
20 regime as the proposed program, and impacts of system maintenance on
21 population, employment, and housing would be similar. This alternative
22 would address only the most critical stressors on public safety, operations
23 and maintenance, and ecosystem function; thus, the footprint for facility
24 construction and habitat restoration and enhancement would be smaller
25 than under the proposed program. Because fewer and/or smaller
26 components would be constructed under this alternative, the impact on
27 population, employment, and housing would be less. However, impacts
28 from construction and operation are expected to be less than significant
29 under both the Modified SSIA Alternative and the proposed program.

30 The Modified SSIA Alternative would result in an overall level of flood
31 protection less than that provided by the proposed program in rural areas;
32 however, the level of flood protection in urban areas would be similar. As
33 population growth continues, a larger percentage of development is
34 expected to occur farther from city centers and in rural areas; thus, over
35 time, this alternative could result in greater socioeconomic impacts on
36 people in rural areas. Given the conditions described above, the overall
37 impact of the Modified SSIA Alternative on population, employment, and
38 housing would be greater than that of the proposed program. *[Greater]*

1 **Achieve SPFC Design Flow Capacity Alternative**

2 The Achieve SPFC Design Flow Capacity Alternative would only improve
3 existing levees to design capacity. This alternative would primarily fix
4 levees in place, without making major changes to the footprint or operation
5 of those facilities (i.e., no setback levees). The Achieve SPFC Design Flow
6 Capacity Alternative would implement the same maintenance regime as the
7 proposed program, and impacts of system maintenance on population,
8 employment, and housing would be similar.

9 The Achieve SPFC Design Flow Capacity Alternative would result in a
10 smaller construction and land disturbance footprint than the proposed
11 program; therefore, construction-related and operational impacts on
12 population, employment, and housing would be less under this alternative.
13 However, impacts from construction and operation are expected to be less
14 than significant under both the Achieve SPFC Design Flow Capacity
15 Alternative and the proposed program.

16 The Achieve SPFC Design Flow Capacity Alternative would provide a
17 much lower overall level of flood protection than the proposed program. As
18 population growth continues, an increasing number of people will have
19 insufficient flood protection; thus, over time, this alternative could result in
20 greater socioeconomic impacts on people in both urban and rural areas.
21 This alternative could also have a greater potential than the proposed
22 program to displace housing or people over time. Therefore, the overall
23 impact of the Achieve SPFC Design Alternative on population,
24 employment, and housing would be greater than that of the proposed
25 program. *[Greater]*

26 **Enhance Flood System Capacity Alternative**

27 The Enhance Flood System Capacity Alternative could involve
28 constructing new or expanded reservoirs and provides a greater emphasis
29 than the proposed program on constructing new bypasses, changing water
30 operations at existing reservoirs, and widening floodways, which could
31 include constructing setback levees. This alternative would implement the
32 same maintenance regime as the proposed program, and impacts of system
33 maintenance on population, employment, and housing would be similar.

34 More and larger new facilities could be constructed under this alternative
35 than under the proposed program; however, the current and future projected
36 labor pool is expected to be sufficient to supply any new temporary
37 construction jobs and long-term operation jobs that could be created. It is
38 unlikely that constructing large new facilities such as reservoirs would
39 displace substantial numbers of people or housing, simply because placing
40 such facilities in developed areas is cost prohibitive and too difficult from a
41 land acquisition standpoint. Therefore, impacts from construction and

1 operation are expected to be less than significant under both the Enhance
2 Flood System Capacity Alternative and the proposed program.

3 The Enhance Flood System Capacity Alternative would provide a level of
4 flood protection slightly greater than that provided by the proposed
5 program (see Table 5-1); as a result, a slightly greater reduction in potential
6 flood-related impacts from displacement of people and housing would
7 occur.

8 In summary, impacts of system maintenance on population, employment,
9 and housing would be similar, and mitigation measures would be equally
10 effective at reducing these impacts from construction and operation to a
11 less-than-significant level, under either the Enhance Flood System Capacity
12 Alternative or the proposed program. This alternative would result in only a
13 slightly greater reduction in flood-related population and housing levels.
14 Therefore, the overall impact of the Enhance Flood System Capacity
15 Alternative on population, employment, and housing would be less than
16 that of the proposed program. [*Lesser*]

17 **5.5.16 Public Services**

18 The proposed program would not result in significant impacts on public
19 services, as described in greater detail in Section 3.17, “Public Services.”
20 The following analysis compares the anticipated impacts of each alternative
21 to those of the proposed program.

22 The comparison generally assumes that the public services benefits from
23 flood risk reduction would compensate for the impacts of the proposed
24 program because the program impacts would generally be minimal, well-
25 planned, and substantially mitigated, while the public services impacts
26 from a major flood event would be unplanned and unmitigated, and could
27 be of significant scope.

28 ***No-Project Alternative—Continued Operations Scenario***

29 Under the No-Project Alternative—Continued Operations Scenario, most
30 existing elements of routine maintenance of flood control facilities would
31 remain in place. However, as under the proposed program, the VMS
32 described in the CVFPP would be implemented as part of the No-Project
33 Alternative—Continued Operations Scenario. DWR intends to implement
34 the VMS, and associated elements such as LCM, whether or not the
35 CVFPP is adopted. Therefore, the potential for public services impacts
36 caused by levee maintenance (e.g., physical effects resulting in the need for
37 new or altered law enforcement or fire protection facilities) would be the
38 same under the No-Project Alternative—Continued Operations Scenario
39 and the proposed program.

1 The potential for impacts on public services from project-level construction
2 of new facilities and repair and improvement of existing facilities would be
3 less under the No-Project Alternative—Continued Operations Scenario
4 than under the proposed program because there would be fewer and smaller
5 projects. The impact mechanisms would remain the same under this
6 alternative (e.g., physical effects resulting in the need for new or altered
7 law enforcement or fire protection facilities). However, the lower level of
8 construction activity would minimize the potential for adverse effects.
9 Impacts on public services are expected to be less than significant under
10 either the No-Project Alternative—Continued Operations Scenario or the
11 proposed program.

12 Because fewer improvements to the flood protection system would be
13 made under the No-Project Alternative—Continued Operations Scenario,
14 system failures and associated cleanup and postflood repair activities would
15 result in greater impacts on public services under this alternative. The scale
16 of the repairs could be larger, depending on the extent or magnitude of
17 flood damage, resulting in greater demand on emergency fire and police
18 services than under the proposed program.

19 As described above, impacts of system operations and maintenance on
20 public services under the No-Project Alternative—Continued Operations
21 Scenario would be similar to impacts under the proposed program.
22 Construction-related impacts would initially be less under this alternative
23 because fewer projects would be constructed; however, public services
24 impacts would be less than significant under both alternatives. There would
25 be greater flood-related impacts on public services under the No-Project
26 Alternative—Continued Operations Scenario. Although these impacts
27 would be infrequent, the overall demand for emergency police and fire
28 services under the No-Project Alternative—Continued Operations Scenario
29 would be greater than that of the proposed program. *[Greater]*

30 ***No-Project Alternative—No Additional Activities Scenario***

31 The No-Project Alternative—No Additional Activities Scenario is similar
32 to the No-Project Alternative—Continued Operations Scenario, except that
33 fewer projects would be undertaken in the near term and the proposed
34 LCM component of the VMS would not be implemented. Most elements of
35 routine operations and maintenance of flood control facilities would
36 continue following existing programs. Therefore, the potential for public
37 services impacts caused by levee maintenance (e.g., physical effects
38 resulting in the need for new or altered law enforcement or fire protection
39 facilities) would be similar for the No-Project Alternative—No Additional
40 Activities Scenario and the proposed program.

1 The potential for impacts on public services from project-level construction
2 of new facilities and repair and improvement of existing facilities would be
3 less under the No-Project Alternative—No Additional Activities Scenario
4 than under the proposed program because there would be fewer and smaller
5 projects. The impact mechanisms would remain the same under this
6 alternative (e.g., physical effects resulting in the need for new or altered
7 law enforcement or fire protection facilities). However, the lower level of
8 construction activity would minimize the potential for adverse effects.
9 Impacts on public services are expected to be less than significant under
10 either the No-Project Alternative—No Additional Activities Scenario or the
11 proposed program.

12 Because fewer improvements to the flood protection system would be
13 made under the No-Project Alternative—No Additional Activities
14 Scenario, system failures and associated cleanup and postflood repair
15 activities would result in greater impacts on public services under this
16 alternative. The scale of the repairs could be larger, depending on the
17 extent or magnitude of flood damage, resulting in greater demand on
18 emergency fire and police services than under the proposed program.

19 As described above, impacts of system operations and maintenance on
20 public services under the No-Project Alternative—No Additional Activities
21 Scenario would be similar to impacts under the proposed program.
22 Construction-related impacts would initially be less under this alternative
23 because fewer projects would be constructed; however, public services
24 impacts would be less than significant under both alternatives. There would
25 be greater flood-related impacts on public services under the No-Project
26 Alternative—No Additional Activities Scenario. Although these impacts
27 would be infrequent, the overall demand for emergency police and fire
28 services under the No-Project Alternative—No Additional Activities
29 Scenario would be greater than that of the proposed program. *[Greater]*

30 ***Modified State Systemwide Investment Approach Alternative***

31 The Modified SSIA Alternative would implement the same maintenance
32 regime as the proposed program, and impacts related to public services
33 from system maintenance would be similar. This alternative would address
34 only the most critical stressors on public safety, operations and
35 maintenance, and ecosystem function; thus, the footprint for facility
36 construction and habitat restoration and enhancement would be smaller
37 than under the proposed program. Therefore, impacts on public services
38 during construction and operation would be expected to be less under this
39 alternative. As under the proposed program, activities occurring as part of
40 the Modified SSIA Alternative are expected to be less than significant.

1 Under the Modified SSIA Alternative, only minimal measures would be
2 taken to reduce flood risk for rural-agricultural areas. Because most public
3 services are concentrated in urban areas, the overall impact of this
4 alternative on public services would be similar to that of the proposed
5 program. Given the conditions described above, the overall effects of the
6 Modified SSIA Alternative on public services would be similar to those
7 under the proposed program. *[Similar]*

8 ***Achieve SPFC Design Flow Capacity Alternative***

9 The Achieve SPFC Design Flow Capacity Alternative would only improve
10 existing levees to design capacity. This alternative would primarily fix
11 levees in place, without making major changes to the footprint or operation
12 of those facilities (i.e., no setback levees). This alternative would
13 implement the same maintenance regime as the proposed program, and
14 impacts of system maintenance on public services would be similar. The
15 Achieve SPFC Design Flow Capacity Alternative would result in a smaller
16 construction and land disturbance footprint than the proposed program;
17 therefore, construction-related and operational impacts on public services
18 would be less under this alternative. However, public services impacts are
19 expected to be less than significant under both the Achieve SPFC Design
20 Flow Capacity Alternative and the proposed program.

21 The Achieve SPFC Design Flow Capacity Alternative would provide a
22 much lower overall level of flood protection than the proposed program; as
23 a result, the potential for flood damage to result in impacts on public
24 services would be much greater than under the proposed program. The
25 scale of the repairs could be larger, depending on the extent or magnitude
26 of flood damage, resulting in greater demand on emergency fire and police
27 services. Therefore, the Achieve SPFC Design Flow Capacity Alternative
28 would have greater overall impacts on public services than the proposed
29 program. *[Greater]*

30 ***Enhance Flood System Capacity Alternative***

31 The Enhance Flood System Capacity Alternative could involve
32 constructing new or expanded reservoirs and provides a greater emphasis
33 than the proposed program on constructing new bypasses, changing water
34 operations at existing reservoirs, and widening floodways, which could
35 include constructing setback levees. This alternative would implement the
36 same maintenance regime as the proposed program, and impacts of system
37 maintenance on public services would be similar.

38 More and larger new facilities could be constructed under this alternative,
39 resulting in greater potential for demand for new fire and police services.
40 For example, constructing new reservoirs could result in the need for new
41 police services—both patrol boats on the water and patrol cars along the

1 shoreline. However, police and fire services at reservoirs are generally
 2 provided by existing facilities as needed; new facilities are generally not
 3 constructed. Although new police and fire facilities may not be required,
 4 the Enhance Flood System Capacity Alternative could increase demand for
 5 new police officers, firefighters, and associated equipment, which could
 6 result in a significant impact.

7 The Enhance Flood System Capacity Alternative would provide a level of
 8 flood protection slightly greater than that provided by the proposed
 9 program (see Table 5-1); as a result, a slightly greater reduction in potential
 10 flood-related impacts on public services would occur.

11 In summary, maintenance and flood protection impacts on public services
 12 from the Enhance Flood System Capacity Alternative would be similar to
 13 impacts from the proposed program, but this alternative could result in
 14 significant impacts on public services from construction and operation of
 15 new and larger facilities. Therefore, the Enhance Flood System Capacity
 16 Alternative would have a greater overall impact on public services than the
 17 proposed program. [*Greater*]

18 **5.5.17 Recreation**

19 The proposed program would not result in significant recreation impacts
 20 after mitigation, as described in greater detail in Section 3.18,
 21 “Recreation.” The following analysis compares the anticipated impacts of
 22 each alternative to those of the proposed program.

23 The comparison generally assumes that the recreation benefits from flood
 24 risk reduction would not compensate for the impacts of the proposed
 25 program because those benefits would generally be short term (i.e., flooded
 26 areas are anticipated to recover to pre-flood conditions so that recreational
 27 activities can resume, and damaged recreational facilities are reasonably
 28 expected to be replaced), while many of the recreation impacts of the
 29 proposed program would be permanent.

30 ***No-Project Alternative—Continued Operations Scenario***

31 Under the No-Project Alternative—Continued Operations Scenario, most
 32 elements of routine maintenance of flood control facilities would continue
 33 following existing programs. However, as under the proposed program, the
 34 VMS described in the CVFPP would be implemented as part of this
 35 alternative. DWR intends to implement the VMS, and associated elements
 36 such as LCM, whether or not the CVFPP is adopted. Therefore, the
 37 potential for recreation impacts caused by levee maintenance (e.g.,
 38 decreased access to recreational facilities and decreased recreation quality
 39 as a result of removal of woody vegetation) would be the same under the

1 No-Project Alternative—Continued Operations Scenario and the proposed
2 program.

3 The potential for impacts on recreation from project-level construction of
4 new facilities and repair and improvement of existing facilities would be
5 less under the No-Project Alternative—Continued Operations Scenario
6 than under the proposed program because there would be fewer and smaller
7 projects. Many of the impact mechanisms would be similar under this
8 alternative (e.g., decreased access to recreational facilities, increased
9 boating safety hazards from construction barge traffic). However, the lower
10 level of construction activity would minimize the potential for adverse
11 effects.

12 The permanent loss of access to recreational facilities and decreased
13 recreational quality from changes in reservoir operations that would occur
14 under the proposed program are not likely to occur under the No-Project
15 Alternative—Continued Operations Scenario. Therefore, operational
16 impacts of this alternative would be less than those of the proposed
17 program.

18 As under the proposed program, activities occurring as part of the No-
19 Project Alternative—Continued Operations Scenario would require
20 development and implementation of mitigation measures for significant
21 and potentially significant impacts. Examples of such measures include
22 avoiding construction activities and staging near recreational facilities,
23 avoiding construction during the high-use recreation season, and
24 maintaining safe boat passage. Because of the much more limited scale of
25 activities under the No-Project Alternative—Continued Operations
26 Scenario, it is anticipated that mitigation measures would be effective at
27 reducing impacts on recreation to a less-than-significant level.

28 Because fewer improvements to the flood protection system would be
29 made under the No-Project Alternative—Continued Operations Scenario,
30 system failures and associated postflood cleanup activities could result in
31 temporary loss of access to some recreational facilities, depending on the
32 location and severity of the flood event. Therefore, impacts of flooding and
33 postflood repairs on recreation would be greater under this alternative than
34 under the proposed program.

35 As described above, impacts of system operations and maintenance on
36 recreation under the No-Project Alternative—Continued Operations
37 Scenario would be similar to those under the proposed program.
38 Construction-related and operational impacts would be less under the No-
39 Project Alternative—Continued Operations Scenario because fewer
40 projects would be constructed, and because mitigation measures would

1 reduce all recreation impacts to a less-than-significant level. There would
2 be greater flood-related recreation impacts under this alternative, but these
3 would be infrequent and episodic. Given these conditions, the overall
4 impact of the No-Project Alternative—Continued Operations Scenario on
5 recreation is expected to be less than that of the proposed program. [*Lesser*]

6 **No-Project Alternative—No Additional Activities Scenario**

7 The No-Project Alternative—No Additional Activities Scenario is similar
8 to the No-Project Alternative—Continued Operations Scenario, except that
9 fewer projects would be undertaken in the near term and the proposed
10 LCM component of the VMS would not be implemented. Most elements of
11 routine operations and maintenance of flood control facilities would
12 continue following existing programs. Therefore, the potential for
13 recreation impacts caused by levee maintenance (e.g., decreased access to
14 recreational facilities and decreased recreation quality as a result of
15 removal of woody vegetation) would be similar for the No-Project
16 Alternative—No Additional Activities Scenario and the proposed program.

17 The potential for impacts on recreation from project-level construction of
18 new facilities and repair and improvement of existing facilities would be
19 less under the No-Project Alternative—No Additional Activities Scenario
20 than under the proposed program because there would be fewer and smaller
21 projects. Many of the impact mechanisms would be similar under this
22 alternative (e.g., decreased access to recreational facilities, increased
23 boating safety hazards from construction barge traffic). However, the lower
24 level of construction activity would minimize the potential for adverse
25 effects.

26 The permanent loss of access to recreational facilities and decreased
27 recreational quality from changes in reservoir operations that would occur
28 under the proposed program would not occur under the No-Project
29 Alternative—No Additional Activities Scenario. Therefore, operational
30 impacts of this alternative would be less than those of the proposed
31 program.

32 As under the proposed program, activities occurring as part of the No-
33 Project Alternative—No Additional Activities Scenario would require
34 development and implementation of mitigation measures for significant
35 and potentially significant impacts. Because of the much more limited scale
36 of activities under this alternative, it is anticipated that mitigation measures
37 would be effective at reducing impacts on recreation to a less-than-
38 significant level. However, the proposed program would result in
39 significant and unavoidable recreation impacts.

1 Because fewer improvements to the flood protection system would be
2 made under the No-Project Alternative—No Additional Activities
3 Scenario, system failures and associated postflood cleanup activities could
4 result in temporary loss of access to some recreational facilities, depending
5 on the location and severity of the flood event. Therefore, impacts of
6 flooding and postflood repairs on recreation would be greater under this
7 alternative than under the proposed program.

8 As described above, impacts of system operations and maintenance on
9 recreation under the No-Project Alternative—No Additional Activities
10 Scenario would be similar to those under the proposed program.
11 Construction-related and operational impacts would be less under this
12 alternative because fewer projects would be constructed, and because
13 mitigation measures would reduce all recreation impacts to a less-than-
14 significant level. There would be greater flood-related recreation impacts
15 under the No-Project Alternative—No Additional Activities Scenario, but
16 these would be infrequent and episodic. Given these conditions, the overall
17 impact of the No-Project Alternative—No Additional Activities Scenario
18 on recreation is expected to be less than that of the proposed program.
19 *[Lesser]*

20 ***Modified State Systemwide Investment Approach Alternative***

21 The Modified SSIA Alternative would implement the same maintenance
22 regime as the proposed program, and impacts of system maintenance on
23 recreation would be similar. This alternative would address only the most
24 critical stressors on public safety, operations and maintenance, and
25 ecosystem function; thus, the footprint for facility construction and habitat
26 restoration and enhancement would be smaller under this alternative than
27 under the proposed program. Therefore, impacts on recreation during
28 construction and operation would be expected to be less. As under the
29 proposed program, activities occurring as part of the Modified SSIA
30 Alternative would require development and implementation of mitigation
31 measures to reduce significant impacts on recreation, which would reduce
32 those impacts to a less-than-significant level. Mitigation measures would
33 be able to reduce impacts on recreation under both this alternative and the
34 proposed program. However, these impacts would occur to a lesser degree
35 under the Modified SSIA Alternative than under the proposed program.

36 The Modified SSIA Alternative would provide an overall level of flood
37 protection slightly less than that provided by the proposed program.
38 Therefore, a smaller reduction in flood-related loss of access to recreational
39 facilities would occur under this alternative than under the proposed
40 program.

1 Overall, maintenance- and flood-related impacts of the Modified SSIA
2 Alternative would be similar to impacts of the proposed program, as would
3 construction-related and operational impacts. Flooding effects would be
4 only slightly greater. Therefore, the overall impact of the Modified SSIA
5 Alternative on recreation would be similar to that of the proposed program.
6 *[Similar]*

7 ***Achieve SPFC Design Flow Capacity Alternative***

8 The Achieve SPFC Design Flow Capacity Alternative would only improve
9 existing levees to design capacity. This alternative would primarily fix
10 levees in place, without making major changes to the footprint or operation
11 of those facilities (i.e., no setback levees). The Achieve SPFC Design Flow
12 Capacity Alternative would implement the same maintenance regime as the
13 proposed program, and impacts on recreation from system maintenance
14 would be similar.

15 The Achieve SPFC Design Flow Capacity Alternative would result in a
16 much smaller construction and land disturbance footprint than the proposed
17 program; therefore, construction-related and operational impacts on
18 recreation would be less. As under the proposed program, activities
19 occurring as part of this alternative would require development and
20 implementation of mitigation measures for significant and potentially
21 significant impacts. Because of the more limited scale of activities under
22 this alternative, it is anticipated that mitigation measures would be effective
23 at reducing impacts on recreation to a less-than-significant level.

24 The Achieve SPFC Design Flow Capacity Alternative would provide a
25 much lower overall level of flood protection than the proposed program; as
26 a result, the potential for flooding and postflood cleanup activities to result
27 in the loss of access to some recreational facilities is greater under this
28 alternative than under the proposed program.

29 Overall, impacts of system operations and maintenance on recreation under
30 the Achieve SPFC Design Flow Capacity Alternative would be similar to
31 impacts of the proposed program. Construction-related and operational
32 impacts would be less under this alternative because fewer projects would
33 be constructed, and because mitigation measures would reduce all
34 recreation impacts to a less-than-significant level. There would be greater
35 flood-related recreation impacts under this alternative, but these would be
36 infrequent and episodic. Given these conditions, the overall impact of the
37 Achieve SPFC Design Flow Capacity Alternative on recreation is expected
38 to be less than that of the proposed program. *[Lesser]*

1 **Enhance Flood System Capacity Alternative**

2 The Enhance Flood System Capacity Alternative could involve
3 constructing new or expanded reservoirs and provides a greater emphasis
4 than the proposed program on constructing new bypasses, changing water
5 operations at existing reservoirs, and widening floodways, which could
6 include constructing setback levees. This alternative would implement the
7 same maintenance regime as the proposed program, and impacts on
8 recreation from system maintenance would be similar.

9 More and larger new facilities could be constructed under this alternative,
10 resulting in greater potential for decreased recreation access and decreased
11 quality of recreation from changes in reservoir operations. As under the
12 proposed program, activities occurring as part of the Enhance Flood
13 System Capacity Alternative would require development and
14 implementation of mitigation measures to reduce significant impacts on
15 recreation. Mitigation measures would be equally effective at reducing
16 some recreation impacts to a less-than-significant level under either this
17 alternative or the proposed program; however, given the larger scale of
18 construction activities, including the construction of new or expanded
19 reservoirs, the Enhance Flood System Capacity Alternative could result in
20 potentially significant and unavoidable recreation impacts.

21 The Enhance Flood System Capacity Alternative would provide a level of
22 flood protection slightly greater than that provided by the proposed
23 program (see Table 5-1); as a result, a slightly greater reduction in potential
24 flood-related impacts on recreation would occur.

25 In summary, impacts of system operations and maintenance on recreation
26 under the Enhance Flood System Capacity Alternative would be similar to
27 impacts under the proposed program. However, this alternative would
28 enhance opportunities to promote multi-benefit projects by fostering
29 integration of benefits to water quality, recreation, power, and other
30 resources. Construction and operation of components would be greater than
31 under the proposed program, resulting in decreased access to recreational
32 facilities in the short term, and in potentially significant and unavoidable
33 impacts in the long term (similar to the proposed program). Therefore, the
34 impact of the Enhance Flood System Capacity Alternative on recreation
35 would be similar to that of the proposed program. *[Similar]*

36 **5.5.18 Transportation and Traffic**

37 The proposed program generally would not result in significant
38 transportation and traffic impacts after mitigation, as described in greater
39 detail in 3.19, “Transportation and Traffic.” However, for very large
40 construction projects involving large amounts of fill requiring transport
41 over public roads, construction traffic impacts could be potentially

1 significant and unavoidable. In addition, some projects could require
2 transportation infrastructure to be removed or disrupted for a substantial
3 period of time without available mitigation, resulting in a potentially
4 significant and unavoidable impact. The following analysis compares the
5 anticipated impacts of each alternative to those of the proposed program.

6 The comparison generally assumes that the benefits to transportation and
7 traffic from flood risk reduction would not be materially different from the
8 impacts of the proposed program. It is anticipated that reconstruction
9 efforts would generate construction traffic to a similar degree as the
10 proposed program.

11 ***No-Project Alternative—Continued Operations Scenario***

12 Under the No-Project Alternative—Continued Operations Scenario, most
13 elements of routine maintenance of flood control facilities would continue
14 following existing programs. However, as under the proposed program, the
15 VMS described in the CVFPP would be implemented as part of this
16 alternative. DWR intends to implement the VMS, and associated elements
17 such as LCM, whether or not the CVFPP is adopted. Therefore, the
18 potential for transportation and traffic impacts caused by levee maintenance
19 (e.g., increased construction traffic and decreased level of service on
20 roadways) would be the same under the No-Project Alternative—
21 Continued Operations Scenario as under the proposed program.

22 The potential for impacts on transportation and traffic from project-level
23 construction of new facilities and repair and improvement of existing
24 facilities would be less under the No-Project Alternative—Continued
25 Operations Scenario than under the proposed program because there would
26 be fewer and smaller projects. The impact mechanisms would remain the
27 same under this alternative (e.g., increased construction traffic, potential to
28 remove or disrupt current transportation infrastructure, decreased level of
29 service on roadways). However, the lower level of construction activity and
30 smaller projects would minimize the potential for adverse effects.

31 As under the proposed program, activities occurring as part of the No-
32 Project Alternative—Continued Operations Scenario would require
33 development and implementation of mitigation measures for significant
34 and potentially significant impacts. Examples of such measures include
35 implementing a traffic management plan; providing traffic detour routes;
36 and adding turn lanes, traffic signals, or stop signs. Mitigation measures
37 would be equally effective at reducing impacts on transportation and traffic
38 to a less-than-significant level under either the No-Project Alternative—
39 Continued Operations Scenario or the proposed program. However, the
40 proposed program could result in significant and unavoidable impacts—

1 namely, short-term construction traffic on large projects and permanent
2 loss of existing roadway infrastructure.

3 Because fewer improvements to the flood protection system would be
4 made under the No-Project Alternative—Continued Operations Scenario,
5 system failures—and the lack of emergency access and blockage of
6 roadways caused by the associated flooding and postflood repairs—would
7 occur more frequently and would be more severe than under the proposed
8 program. Therefore, impacts of flooding and postflood repairs on
9 transportation and traffic would be greater under the No-Project
10 Alternative—Continued Operations Scenario.

11 As described above, impacts of system operations and maintenance on
12 transportation and traffic under the No-Project Alternative—Continued
13 Operations Scenario would be similar to impacts under the proposed
14 program. Construction-related and operational impacts would be less under
15 the No-Project Alternative—Continued Operations Scenario because fewer
16 and smaller projects would be constructed; therefore, the significant and
17 unavoidable impacts of the proposed program would likely be avoided.
18 There would be greater flood-related transportation and traffic impacts
19 under the No-Project Alternative—Continued Operations Scenario, but
20 these would be infrequent and episodic. Given these conditions, the overall
21 impact of the No-Project Alternative—Continued Operations Scenario on
22 transportation and traffic is expected to be less than that of the proposed
23 program. *[Lesser]*

24 ***No-Project Alternative—No Additional Activities Scenario***

25 The No-Project Alternative—No Additional Activities Scenario is similar
26 to the No-Project Alternative—Continued Operations Scenario, except that
27 fewer projects would be undertaken in the near term and the proposed
28 LCM component of the VMS would not be implemented. Most elements of
29 routine operations and maintenance of flood control facilities would
30 continue following existing programs. Therefore, the potential for
31 transportation and traffic impacts caused by levee maintenance (e.g.,
32 increased construction traffic and decreased level of service on roadways)
33 would be the same under the No-Project Alternative—No Additional
34 Activities Scenario as under the proposed program.

35 The potential for impacts on transportation and traffic from project-level
36 construction of new facilities and repair and improvement of existing
37 facilities would be less under the No-Project Alternative—No Additional
38 Activities Scenario than under the proposed program because there would
39 be fewer and smaller projects. The impact mechanisms would remain the
40 same under this alternative (e.g., increased construction traffic, potential to
41 remove or disrupt current transportation infrastructure, decreased level of

1 service on roadways). However, the lower level of construction activity and
2 smaller projects would minimize the potential for adverse effects.

3 As under the proposed program, activities occurring as part of the No-
4 Project Alternative—No Additional Activities Scenario would require
5 development and implementation of mitigation measures for significant
6 and potentially significant impacts. Mitigation measures would be equally
7 effective at reducing many impacts on transportation and traffic to a less-
8 than-significant level under either the No-Project Alternative—No
9 Additional Activities Scenario or the proposed program. However, the
10 proposed program could result in significant and unavoidable impacts—
11 namely, short-term construction traffic on large projects and permanent
12 loss of existing roadway infrastructure.

13 As described above, impacts of system operations and maintenance on
14 transportation and traffic under the No-Project Alternative—No Additional
15 Activities Scenario, system failures would be similar to impacts under the
16 proposed program. Construction-related and operational impacts would be
17 less under the No-Project Alternative—No Additional Activities Scenario,
18 system failures because fewer and smaller projects would be constructed;
19 therefore, the significant and unavoidable impacts of the proposed program
20 would likely be avoided. There would be greater flood-related
21 transportation and traffic impacts under the No-Project Alternative—No
22 Additional Activities Scenario, system failures, but these would be
23 infrequent and episodic. Given these conditions, the overall impact of the
24 No-Project Alternative—No Additional Activities Scenario, system failures
25 on transportation and traffic is expected to be less than that of the proposed
26 program. [*Lesser*]

27 ***Modified State Systemwide Investment Approach Alternative***

28 The Modified SSIA Alternative would implement the same maintenance
29 regime as the proposed program, and impacts of system maintenance on
30 transportation and traffic would be similar. This alternative would address
31 only the most critical stressors on public safety, operations and
32 maintenance, and ecosystem function; thus, the footprint for facility
33 construction and habitat restoration and enhancement would be smaller
34 under this alternative than under the proposed program. As under the
35 proposed program, activities occurring as part of the Modified SSIA
36 Alternative would require development and implementation of mitigation
37 measures to reduce significant impacts on transportation and traffic.
38 Mitigation measures would reduce impacts on transportation and traffic
39 under both the Modified SSIA Alternative and the proposed program;
40 however, because of its size, the Modified SSIA could still cause
41 significant and unavoidable impacts—namely, construction traffic and the
42 potential permanent loss of existing roadway infrastructure. However, these

1 impacts would occur to a lesser degree under this alternative than under the
2 proposed program.

3 Under the Modified SSIA Alternative, the overall risk of flooding would be
4 slightly greater than the risk under the proposed program; however, the
5 increased flood risks would be concentrated primarily in rural areas.
6 Because the roadway network is generally smaller in rural areas, the impact
7 of flooding and flood-related cleanup activities on traffic and transportation
8 would not be substantially greater under the Modified SSIA Alternative.

9 As described above, impacts of system operations and maintenance on
10 transportation and traffic under the Modified SSIA Alternative would be
11 similar to impacts under the proposed program. Both the Modified SSIA
12 Alternative and the proposed program would likely result in significant and
13 unavoidable construction-related and operational impacts, but these
14 impacts would occur to a lesser degree under the Modified SSIA
15 Alternative. There would be slightly greater flood-related transportation
16 and traffic impacts under this alternative. Therefore, the overall impact of
17 the Modified SSIA Alternative on traffic and transportation would be
18 similar to that of the proposed program. *[Similar]*

19 ***Achieve SPFC Design Flow Capacity Alternative***

20 The Achieve SPFC Design Flow Capacity Alternative would only improve
21 existing levees to design capacity. This alternative would primarily fix
22 levees in place, without making major changes to the footprint or operation
23 of those facilities (i.e., no setback levees). It would implement the same
24 maintenance regime as the proposed program, and impacts of system
25 maintenance on transportation and traffic would be similar.

26 The Achieve SPFC Design Flow Capacity Alternative would result in a
27 much smaller construction and land disturbance footprint than under the
28 proposed program; therefore, construction-related and operational impacts
29 on transportation and traffic would be less under this alternative. Because
30 of the smaller scale, mitigation measures would likely reduce all
31 transportation and traffic impacts of the Achieve SPFC Design Flow
32 Capacity Alternative to a less-than-significant level. The proposed program
33 would result in significant and unavoidable impacts—namely, construction
34 traffic and the potential permanent loss of existing roadway infrastructure.

35 The Achieve SPFC Design Flow Capacity Alternative would provide a
36 much lower overall level of flood protection than the proposed program. As
37 a result, there would be greater flood-related transportation and traffic
38 impacts under this alternative, but these would be infrequent and episodic.
39 Therefore, the overall impact of the Achieve SPFC Design Flow Capacity

1 Alternative on traffic and transportation would be similar to that of the
2 proposed program. [*Similar*]

3 **Enhance Flood System Capacity Alternative**

4 The Enhance Flood System Capacity Alternative could involve
5 constructing new or expanded reservoirs and provides a greater emphasis
6 than the proposed program on constructing new bypasses, changing water
7 operations at existing reservoirs, and widening floodways, which could
8 include constructing setback levees. This alternative would implement the
9 same maintenance regime as the proposed program, and impacts of system
10 maintenance on transportation and traffic would be similar.

11 More and larger new facilities could be constructed under this alternative,
12 resulting in greater potential for construction traffic, decreased levels of
13 service, decreased access for emergency vehicles, and permanent loss of
14 existing roadway infrastructure. As under the proposed program, activities
15 occurring as part of the Enhance Flood System Capacity Alternative would
16 require development and implementation of mitigation measures to reduce
17 significant impacts on transportation and traffic. Mitigation measures
18 would reduce some impacts on transportation and traffic under both the
19 Enhance Flood System Capacity Alternative and the proposed program;
20 however, this alternative entails construction and operation of more and
21 larger facilities. Therefore, the Enhance Flood System Capacity Alternative
22 would still cause significant and unavoidable impacts—namely,
23 construction traffic and potential permanent loss of existing roadway
24 infrastructure.

25 The Enhance Flood System Capacity Alternative would provide a level of
26 flood protection slightly greater than that provided by the proposed
27 program (see Table 5-1); as a result, a slightly greater reduction in potential
28 flood-related impacts on transportation and traffic would occur.

29 In summary, impacts of system operations and maintenance on
30 transportation and traffic under the Enhance Flood System Capacity
31 Alternative would be similar to impacts under the proposed program.
32 Transportation and traffic impacts from construction and operation under
33 this alternative would be significant and unavoidable and would occur to a
34 greater degree than under the proposed program. This alternative would
35 result in only a slightly greater reduction in flood-related transportation and
36 traffic impacts. Therefore, the overall impact of the Enhance Flood System
37 Capacity Alternative on traffic and transportation would be greater than
38 that of the proposed program. [*Greater*]

1 **5.5.19 Utilities and Service Systems**

2 The proposed program would not result in significant impacts on utilities
3 and service systems after mitigation, as described in greater detail in
4 Section 3.20, “Utilities and Service Systems.” The following analysis
5 compares the anticipated impacts of each alternative to those of the
6 proposed program.

7 The comparison generally assumes that the benefits to utilities and service
8 systems from flood risk reduction would compensate for the impacts of the
9 proposed program because the program impacts would generally be
10 minimal, well-planned, and substantially mitigated, while the adverse
11 impacts from a major flood event would be unplanned and unmitigated,
12 and could be of significant scope. Specifically, substantial damage to
13 utilities and service systems could occur as a result of a major flood event,
14 resulting in their unavailability for what could be a lengthy period of time.

15 ***No-Project Alternative—Continued Operations Scenario***

16 Under the No-Project Alternative—Continued Operations Scenario, most
17 elements of routine maintenance of flood control facilities would continue
18 following existing programs. However, as under the proposed program, the
19 VMS described in the CVFPP would be implemented as part of this
20 alternative. DWR intends to implement the VMS, and associated elements
21 such as LCM, whether or not the CVFPP is adopted. Therefore, potential
22 impacts on utilities caused by levee maintenance (e.g., disruption of utility
23 services during construction) would be the same under the No-Project
24 Alternative—Continued Operations Scenario as under the proposed
25 program.

26 Potential impacts on utilities from project-level construction of new
27 facilities and repair and improvement of existing facilities would be less
28 under the No-Project Alternative—Continued Operations Scenario than
29 under the proposed program because there would be fewer and smaller
30 projects. The impact mechanisms would remain the same under this
31 alternative (e.g., disruption of utility services during construction and
32 relocation of utilities during operation). However, the lower level of
33 construction activity and operation of fewer and smaller facilities would
34 minimize the potential for adverse effects.

35 As under the proposed program, activities occurring as part of the No-
36 Project Alternative—Continued Operations Scenario would require
37 development and implementation of mitigation measures for potentially
38 significant impacts. Examples of such measures include coordinating with
39 utility providers to avoid damage to existing utility infrastructure, or
40 relocating or flood-proofing such infrastructure. Mitigation measures
41 would be equally effective at reducing impacts on utilities to a less-than-

1 significant level under either the No-Project Alternative—Continued
2 Operations Scenario or the proposed program.

3 Because fewer improvements to the flood protection system would be
4 made under the No-Project Alternative—Continued Operations Scenario,
5 system failures—and associated interruption in utility service and extensive
6 repairs necessitated by flooding—would occur more frequently and would
7 be more severe than under the proposed program. Relocating utility
8 facilities may result in significant environmental impacts. Therefore,
9 impacts of flooding and postflood repairs on utilities would be greater
10 under the No-Project Alternative—Continued Operations Scenario.

11 As described above, impacts of system operations and maintenance on
12 utilities under the No-Project Alternative—Continued Operations Scenario
13 would be similar to impacts under the proposed program. Construction-
14 related impacts would initially be less under this alternative because fewer
15 projects would be constructed; however, utilities impacts could be equally
16 mitigated under both alternatives. There would be greater flood-related
17 impacts on utilities under the No-Project Alternative—Continued
18 Operations Scenario than under the proposed program. These effects would
19 be infrequent, but they would be more likely to result in widespread
20 adverse impacts as utility services were interrupted and utility facilities
21 would require repairs or relocation. Given these conditions, the overall
22 impact of the No-Project Alternative—Continued Operations Scenario on
23 utilities is expected to be greater than that of the proposed program.
24 *[Greater]*

25 **No-Project Alternative—No Additional Activities Scenario**

26 The No-Project Alternative—No Additional Activities Scenario is similar
27 to the No-Project Alternative—Continued Operations Scenario, except that
28 fewer projects would be undertaken in the near term and the proposed
29 LCM component of the VMS would not be implemented. Most elements of
30 routine operations and maintenance of flood control facilities would
31 continue following existing programs. Therefore, potential impacts on
32 utilities caused by levee maintenance (e.g., disruption of utility services
33 during construction) would be similar for the No-Project Alternative—No
34 Additional Activities Scenario and the proposed program.

35 Potential impacts on utilities from project-level construction of new
36 facilities and repair and improvement of existing facilities would be less
37 under the No-Project Alternative—No Additional Activities Scenario than
38 under the proposed program because there would be fewer and smaller
39 projects. The impact mechanisms would remain the same under this
40 alternative (e.g., disruption of utility services during construction and
41 relocation of utilities during operation). However, the lower level of

1 construction activity and operation of fewer and smaller facilities would
2 minimize the potential for adverse effects.

3 As under the proposed program, activities occurring as part of the No-
4 Project Alternative—No Additional Activities Scenario would require
5 development and implementation of mitigation measures for potentially
6 significant impacts. Mitigation measures would be equally effective at
7 reducing impacts on utilities to a less-than-significant level under either
8 this alternative or the proposed program.

9 Because fewer improvements to the flood protection system would be
10 made under the No-Project Alternative—No Additional Activities
11 Scenario, system failures—and associated interruption in utility service and
12 extensive repairs necessitated by flooding—would occur more frequently
13 and would be more severe than under the proposed program. Relocating
14 utility facilities may result in significant environmental impacts. Therefore,
15 impacts of flooding and postflood repairs on utilities would be greater
16 under the No-Project Alternative—No Additional Activities Scenario.

17 As described above, impacts of system operations and maintenance on
18 utilities under the No-Project Alternative—No Additional Activities
19 Scenario would be similar to impacts under the proposed program.
20 Construction-related impacts would initially be less under this alternative
21 because fewer projects would be constructed; however, utilities impacts
22 could be equally mitigated under either alternative. There would be greater
23 flood-related impacts on utilities under the No-Project Alternative—No
24 Additional Activities Scenario than under the proposed program. These
25 effects would be infrequent, but they would be more likely to result in
26 widespread adverse impacts as utility services were interrupted and utility
27 facilities would require repairs or relocation. Given these conditions, the
28 overall impact of the No-Project Alternative—No Additional Activities
29 Scenario on utilities is expected to be greater than that of the proposed
30 program. *[Greater]*

31 ***Modified State Systemwide Investment Approach Alternative***

32 The Modified SSIA Alternative would implement the same maintenance
33 regime as the proposed program, and impacts of system maintenance on
34 utilities would be similar. This alternative would address only the most
35 critical stressors on public safety, operations and maintenance, and
36 ecosystem function; thus, the footprint for facility construction and habitat
37 restoration and enhancement would be smaller under this alternative than
38 under the proposed program. Therefore, the Modified SSIA Alternative
39 would be expected to cause less of an interruption of utility service during
40 construction and relocation of utility facilities. As under the proposed
41 program, activities occurring as part of this alternative would require

1 development and implementation of mitigation measures to reduce
2 potentially significant impacts on utilities. Mitigation measures would be
3 equally effective at reducing utilities impacts to a less-than-significant level
4 under either the Modified SSIA Alternative or the proposed program.

5 Under the Modified SSIA Alternative, most of the flood improvements
6 would occur in urban areas, which is also where most utilities are located.
7 Therefore, this alternative and the proposed program would reduce flood-
8 related disruption of utility services by a similar amount.

9 Overall, maintenance- and flood-related impacts of the Modified SSIA
10 Alternative would be similar to impacts of the proposed program, while
11 construction-related and operational impacts would be slightly less than
12 impacts of the proposed program. Therefore, the overall impact of the
13 Modified SSIA Alternative on utilities and service systems would be
14 similar to that of the proposed program. *[Similar]*

15 ***Achieve SPFC Design Flow Capacity Alternative***

16 The Achieve SPFC Design Flow Capacity Alternative would only improve
17 existing levees to design capacity. This alternative would primarily fix
18 levees in place, without making major changes to the footprint or operation
19 of those facilities (i.e., no setback levees). This alternative would
20 implement the same maintenance regime as the proposed program, and
21 impacts of system maintenance on utilities would be similar. The Achieve
22 SPFC Design Flow Capacity Alternative would result in a smaller
23 construction and land disturbance footprint than the proposed program;
24 therefore, the construction-related and operational impacts on utilities
25 would be less under this alternative. Mitigation measures would be equally
26 effective at reducing impacts on utilities to a less-than-significant level
27 under either the Achieve SPFC Design Flow Capacity Alternative or the
28 proposed program.

29 The Achieve SPFC Design Flow Capacity Alternative would provide a
30 lower overall level of flood protection than the proposed program; as a
31 result, the potential for flood damage to cause service interruptions and
32 generate the need for extensive repairs would be much greater under this
33 alternative than under the proposed program. Although these impacts
34 would occur infrequently, they would be more likely to result in
35 widespread service interruptions and repairs that would entail physical
36 environmental impacts from relocation of facilities. Therefore, the Achieve
37 SPFC Design Flow Capacity Alternative would have greater overall
38 impacts on utilities and service systems than the proposed program.
39 *[Greater]*

1 **Enhance Flood System Capacity Alternative**

2 The Enhance Flood System Capacity Alternative could involve
3 constructing new or expanded reservoirs and provides a greater emphasis
4 than the proposed program on constructing new bypasses, changing water
5 operations at existing reservoirs, and widening floodways, which could
6 include constructing setback levees. This alternative would implement the
7 same maintenance regime as the proposed program, and impacts on utilities
8 from system maintenance would be similar.

9 More and larger new facilities could be constructed under the Enhance
10 Flood System Capacity Alternative, resulting in greater potential for
11 service interruptions during construction and for relocation of utilities
12 during project operation. However, large new facilities such as reservoirs
13 are more likely to be constructed in rural areas, where there are fewer
14 existing utilities. As under the proposed program, activities occurring as
15 part of this alternative would require development and implementation of
16 mitigation measures to reduce potentially significant impacts on utilities.
17 Mitigation measures would be equally effective at reducing utilities
18 impacts to a less-than-significant level under either the Enhance Flood
19 System Capacity Alternative or the proposed program.

20 The Enhance Flood System Capacity Alternative would provide a level of
21 flood protection slightly greater than that provided by the proposed
22 program (see Table 5-1); as a result, a slightly greater reduction in potential
23 flood-related impacts from interruptions in utility service and repairs to
24 utility facilities would occur.

25 In summary, maintenance- and flood-related impacts would be similar and
26 mitigation measures would be equally effective at reducing construction-
27 related and operational utilities impacts to a less-than-significant level
28 under either the Enhance Flood System Capacity Alternative or the
29 proposed program. Therefore, the overall impacts of the Enhance Flood
30 System Capacity Alternative on utilities would be similar to those of the
31 proposed program. *[Similar]*

32 **5.5.20 Water Quality**

33 The proposed program would not result in significant impacts on water
34 quality after mitigation, as described in greater detail in Section 3.21,
35 “Water Quality.” The following analysis compares the anticipated impacts
36 of each alternative to those of the proposed program.

37 The comparison generally assumes that the water quality benefits from
38 flood risk reduction would compensate for the impacts of the proposed
39 program because the program impacts would generally be minimal, well-
40 planned, and substantially mitigated, while the adverse water quality

1 impacts from a major flood event would be unplanned and unmitigated,
2 and could be of significant scope. Specifically, water quality conditions
3 that could be affected after a major flood event (e.g., potential increased
4 constituent loading associated with stormwater runoff and increased
5 sediment loading and turbidity as a result of bank and bed erosion) would
6 likely be substantially greater than those involved in construction activities
7 under the program.

8 ***No-Project Alternative—Continued Operations Scenario***

9 Under the No-Project Alternative—Continued Operations Scenario, most
10 elements of routine maintenance of flood control facilities would continue
11 following existing programs. However, as under the proposed program, the
12 VMS described in the CVFPP would be implemented as part of this
13 alternative. DWR intends to implement the VMS, and associated elements
14 such as LCM, whether or not the CVFPP is adopted. Therefore, potential
15 water quality impacts caused by levee maintenance (e.g., construction
16 activities that could result in erosion, sedimentation, or accidental fuel
17 spills when motorized equipment is used) would be the same for the No-
18 Project Alternative—Continued Operations Scenario as for the proposed
19 program.

20 Potential water quality impacts from project-level construction of new
21 facilities and repair and improvement of existing facilities would be less
22 under the No-Project Alternative—Continued Operations Scenario than
23 under the proposed program because there would be fewer and smaller
24 projects. The impact mechanisms (summarized above in the discussion of
25 impacts caused by levee maintenance) would remain the same under this
26 alternative. However, the lower level of construction activity would
27 minimize the potential for adverse effects. Impacts of both the No-Project
28 Alternative—Continued Operations Scenario and the proposed program
29 would be less than significant.

30 The proposed program's operational impacts on water quality from
31 modifying reservoir operations and altering floodplain inundation patterns
32 are not likely to occur under the No-Project Alternative—Continued
33 Operations Scenario. Therefore, operational impacts of this alternative
34 would be less than those of the proposed program.

35 Because fewer improvements to the flood protection system would be
36 made under the No-Project Alternative—Continued Operations Scenario,
37 system failures—and associated decreases in water quality from erosion,
38 sedimentation, and accidental spills of hazardous substances during
39 postflood cleanup activities—would be more frequent and more severe and
40 would occur over a larger area than under the proposed program.
41 Therefore, impacts of flooding and postflood repairs on water quality

1 would be greater under the No-Project Alternative—Continued Operations
2 Scenario.

3 As described above, impacts of system maintenance on water quality under
4 the No-Project Alternative—Continued Operations Scenario would be
5 similar to impacts under the proposed program. Construction-related
6 impacts would initially be less under this alternative because fewer projects
7 would be constructed; however, water quality impacts would be less than
8 significant under both alternatives. Operational impacts of the No-Project
9 Alternative—Continued Operations Scenario would be less than impacts of
10 the proposed program. There would be greater flood-related impacts on
11 water quality under this alternative. These effects would be infrequent, but
12 they would be more likely to result in long-term damage as hazardous
13 materials were released and spread in floodwaters over a wider area. Given
14 these conditions, the overall impact of the No-Project Alternative—
15 Continued Operations Scenario on water quality is expected to be greater
16 than that of the proposed program. [*Greater*]

17 ***No-Project Alternative—No Additional Activities Scenario***

18 The No-Project Alternative—No Additional Activities Scenario is similar
19 to the No-Project Alternative—Continued Operations Scenario, except that
20 fewer projects would be undertaken in the near term and the proposed
21 LCM component of the VMS would not be implemented. Most elements of
22 routine operations and maintenance of flood control facilities would
23 continue following existing programs. Therefore, potential water quality
24 impacts caused by levee maintenance (e.g., construction activities that
25 could result in erosion, sedimentation, or accidental fuel spills when
26 motorized equipment is used) would be similar for the No-Project
27 Alternative—No Additional Activities Scenario and the proposed program.

28 Potential water quality impacts from project-level construction of new
29 facilities and repair and improvement of existing facilities would be less
30 under the No-Project Alternative—No Additional Activities Scenario than
31 under the proposed program because there would be fewer and smaller
32 projects. The impact mechanisms would remain the same under this
33 alternative (e.g., construction activities that could result in erosion,
34 sedimentation, or accidental fuel spills when using motorized equipment).
35 However, the lower level of construction activity would minimize the
36 potential for adverse effects. Impacts of both the No-Project Alternative—
37 No Additional Activities Scenario and the proposed program would be less
38 than significant.

39 The proposed program's operational impacts on water quality from
40 modifying reservoir operations and altering floodplain inundation patterns
41 would not occur under the No-Project Alternative—No Additional

1 Activities Scenario. Therefore, operational impacts of this alternative
2 would be less than those of the proposed program.

3 Because fewer improvements to the flood protection system would be
4 made under the No-Project Alternative—No Additional Activities
5 Scenario, system failures—and associated decreases in water quality from
6 erosion, sedimentation, and accidental spills of hazardous substances
7 during postflood cleanup activities—would be more frequent and more
8 severe and would occur over a larger area than under the proposed
9 program. Therefore, impacts of flooding and postflood repairs on water
10 quality would be greater under the No-Project Alternative—No Additional
11 Activities Scenario.

12 As described above, impacts of system maintenance on water quality under
13 the No-Project Alternative—No Additional Activities Scenario would be
14 similar to impacts under the proposed program. Construction-related
15 impacts would initially be less under this alternative because fewer projects
16 would be constructed; however, water quality impacts would be less than
17 significant under both alternatives. Operational impacts of the No-Project
18 Alternative—No Additional Activities Scenario would be less than impacts
19 of the proposed program. There would be greater flood-related impacts on
20 water quality under this alternative. These effects would be infrequent, but
21 they would be more likely to result in long-term damage as hazardous
22 materials were released and spread in floodwaters over a wider area. Given
23 these conditions, the overall impact of the No-Project Alternative—No
24 Additional Activities Scenario on water quality is expected to be greater
25 than that of the proposed program. [*Greater*]

26 ***Modified State Systemwide Investment Approach Alternative***

27 The Modified SSIA Alternative would implement the same maintenance
28 regime as the proposed program, and impacts of system maintenance on
29 water quality would be similar. This alternative would address only the
30 most critical stressors on public safety, operations and maintenance, and
31 ecosystem function; thus, the footprint for facility construction and habitat
32 restoration and enhancement would be smaller under this alternative than
33 under the proposed program. Therefore, erosion and sedimentation impacts
34 and accidental spills of hazardous materials during construction and
35 operation would be expected to be less under this alternative. As under the
36 proposed program, activities occurring as part of the Modified SSIA
37 Alternative would require development and implementation of mitigation
38 measures to reduce potentially significant impacts on water quality.
39 Mitigation measures would be equally effective at reducing water quality
40 impacts to a less-than-significant level under either the Modified SSIA
41 Alternative or the proposed program.

1 Under the Modified SSIA Alternative, only minimal measures would be
2 taken to reduce flood risk for rural-agricultural areas. Flood protection in
3 agricultural areas would not increase to the same degree as under the
4 proposed program, and system failures resulting in inundation of
5 agricultural land would be greater than under the proposed program.
6 Underground storage tanks containing hazardous materials and private
7 septic systems may be located on agricultural land; fertilizers, pesticides,
8 and other agricultural chemicals are typically stored above ground in
9 agricultural areas. A flood event in an agricultural area could cause
10 hazardous materials to be released from these and other sources, reducing
11 water quality. The flood-related impacts of the Modified SSIA Alternative
12 would occur infrequently, but they would be more likely to result in long-
13 term decreases in water quality as hazardous materials were released and
14 spread over a wider area. Therefore, the Modified SSIA Alternative would
15 have greater impacts on water quality than the proposed program. [*Greater*]

16 ***Achieve SPFC Design Flow Capacity Alternative***

17 The Achieve SPFC Design Flow Capacity Alternative would only improve
18 existing levees to design capacity. This alternative would primarily fix
19 levees in place, without making major changes to the footprint or operation
20 of those facilities (i.e., no setback levees). It would implement the same
21 maintenance regime as the proposed program, and impacts of system
22 maintenance on water quality would be similar.

23 The Achieve SPFC Design Flow Capacity Alternative would result in a
24 smaller construction and land disturbance footprint than under the proposed
25 program; therefore, construction-related and operational impacts on water
26 quality would be less. Construction-related impacts on water quality would
27 be less than significant, and mitigation measures would be equally effective
28 at reducing operational impacts to a less-than-significant level under either
29 the Achieve SPFC Design Flow Capacity Alternative or the proposed
30 program.

31 The Achieve SPFC Design Flow Capacity Alternative would provide a
32 much lower overall level of flood protection than the proposed program. As
33 a result, the potential for flood damage to cause the release and spread of
34 hazardous materials—and the resulting decrease in water quality—would
35 be greater under this alternative than under the proposed program. These
36 impacts would occur infrequently, but they would be more likely to result
37 in long-term decreases in water quality as hazardous materials were
38 released and spread in floodwaters over a wider area. Therefore, the
39 Achieve SPFC Design Flow Capacity Alternative would have greater
40 impacts on water quality than the proposed program. [*Greater*]

1 **Enhance Flood System Capacity Alternative**

2 The Enhance Flood System Capacity Alternative could involve
 3 constructing new or expanded reservoirs and provides a greater emphasis
 4 than the proposed program on constructing new bypasses, changing water
 5 operations at existing reservoirs, and widening floodways, which could
 6 include constructing setback levees. This alternative would implement the
 7 same maintenance regime as the proposed program, and impacts of system
 8 maintenance on water quality would be similar.

9 More and larger new facilities could be constructed under this alternative,
 10 resulting in greater potential for water quality impacts from erosion,
 11 sedimentation, and accidental spills of hazardous materials during
 12 construction and operation. As under the proposed program, activities
 13 occurring as part of the Enhance Flood System Capacity Alternative would
 14 require development and implementation of mitigation measures to reduce
 15 significant impacts on water quality. Mitigation measures would be equally
 16 effective at reducing water quality impacts to a less-than-significant level
 17 under either the Enhance Flood System Capacity Alternative or the
 18 proposed program.

19 The Enhance Flood System Capacity Alternative would provide a level of
 20 flood protection slightly greater than that provided by the proposed
 21 program (see Table 5-1); as a result, there would be a slightly greater
 22 reduction in potential flood-related impacts on water quality.

23 In summary, impacts of system maintenance on water quality would be
 24 similar and mitigation measures would be equally effective at reducing
 25 water quality impacts under either the Enhance Flood System Capacity
 26 Alternative or the proposed program. This alternative would result in only a
 27 slightly greater reduction in flood-related impacts on water quality.
 28 Furthermore, this alternative would enhance opportunities to promote
 29 multi-benefit projects by fostering integration of benefits to water quality,
 30 recreation, power, and other resources. In addition, opportunities would
 31 exist to improve (1) water supply reliability (through multipurpose
 32 reservoir storage projects), (2) conjunctive management of groundwater
 33 and surface water resources, and (3) groundwater recharge within
 34 floodplain storage areas. Therefore, the overall impact of the Enhance
 35 Flood System Capacity Alternative on water quality would be less than that
 36 of the proposed program. [*Lesser*]

37 **5.6 Environmentally Superior Alternative**

38 Table 5-2 provides a summary comparison of the impact levels of the
 39 proposed program and alternatives. The impact levels listed for the

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- 1 proposed program in Table 5-2 reflect the most substantial environmental
- 2 effects identified for each environmental resource area.

1 **Table 5-2. Comparison of Impact Levels of the Proposed Program and the Alternatives**

Environmental Resource	Proposed Program¹	No-Project—Continued Operations Scenario	No-Project—No Additional Activities Scenario	Modified SSIA	Achieve SPFC Design Flow Capacity	Enhance Flood System Capacity
Aesthetics	Less than significant after mitigation	Similar	Similar	Lesser	Lesser	Greater
Agriculture and Forestry Resources	Potentially Significant and unavoidable	Lesser	Lesser	Lesser	Lesser	Greater
Air Quality	Potentially significant and unavoidable	Similar	Lesser	Lesser	Lesser	Greater
Biological Resources—Aquatic	Potentially significant and unavoidable	Greater	Greater	Greater	Greater	Greater
Biological Resources—Terrestrial	Potentially significant and unavoidable	Greater	Greater	Greater	Greater	Greater
Climate Change and Greenhouse Gas Emissions	Less than significant	Greater	Greater	Similar	Greater	Unknown
Cultural and Historic Resources	Potentially significant and unavoidable	Lesser	Lesser	Lesser	Lesser	Greater
Energy	Less than significant	Lesser	Lesser	Lesser	Lesser	Similar
Geology, Soils, and Seismicity (Including Mineral and Paleontological Resources)	Potentially significant and unavoidable	Lesser	Lesser	Lesser	Lesser	Greater
Groundwater Resources	Less than significant after mitigation	Greater	Greater	Greater	Greater	Lesser
Hazards and Hazardous Materials	Less than significant after mitigation	Greater	Greater	Greater	Greater	Lesser
Hydrology	Less than significant after mitigation	Greater	Greater	Lesser	Greater	Lesser

2

1 **Table 5-2. Comparison of Impact Levels of the Proposed Program and the Alternatives (contd.)**

Environmental Resource	Proposed Program ¹	No-Project—Continued Operations Scenario	No-Project—No Additional Activities Scenario	Modified SSIA	Achieve SPFC Design Flow Capacity	Enhance Flood System Capacity
Land Use and Planning	Significant and unavoidable (agricultural impacts)	Lesser	Lesser	Lesser	Lesser	Greater
Noise	Less than significant after mitigation	Lesser	Lesser	Lesser	Similar	Similar
Population, Employment, and Housing	Less than significant	Greater	Greater	Greater	Greater	Lesser
Public Services	Less than significant	Greater	Greater	Similar	Greater	Greater
Recreation	Less than significant after mitigation	Lesser	Lesser	Similar	Lesser	Similar
Transportation and Traffic	Potentially significant and unavoidable	Lesser	Lesser	Similar	Similar	Greater
Utilities and Service Systems	Less than significant after mitigation	Greater	Greater	Similar	Greater	Similar
Water Quality	Less than significant after mitigation	Greater	Greater	Greater	Greater	Lesser
Totals		8 Lesser 2 Similar 10 Greater	9 Lesser 1 Similar 10 Greater	9 Lesser 5 Similar 6 Greater	9 Lesser 2 Similar 10 Greater	5 Lesser 4 Similar 10 Greater 1 Unknown

Source: Data compiled by AECOM in 2012

Notes:

¹ Impact categories listed for the Proposed Program provide the most severe impact category identified for the environmental issue area. If there is one or more significant and unavoidable impacts, then “Significant and unavoidable” is placed in the column. If there is one or more potentially significant and unavoidable impacts, then “Potentially significant and unavoidable” is placed in the column. If the most severe impact within the environmental issue area is “Less than significant after mitigation,” then this designation is placed in the column. If every impact for the environmental issue area is less than significant, then “Less than significant” is placed in the column.

Key:

Modified SSIA = Modified State Systemwide Investment Approach

SPFC = State Plan of Flood Control

1 As shown in Table 5-2, the Modified SSIA Alternative would be the
2 Environmentally Superior Alternative. This alternative provides the
3 greatest opportunity for avoidance and/or substantial reduction in the
4 significant environmental impacts of the project.

5 As described above in Section 5.4, “Alternatives Carried Forward for
6 Further Evaluation,” the Modified SSIA Alternative is similar to the
7 proposed program in that it is based on the urban protection provided by
8 the Protect High-Risk Communities Alternative and adds some small-
9 community protection, but with limited construction activities as compared
10 to other alternatives. This alternative also includes expanding the Yolo
11 Bypass and widening Fremont Weir, but does not include any of the other
12 bypass expansions and related improvements contained in the proposed
13 program. In addition, the opportunities for ecosystem restoration would be
14 limited to the Yolo Bypass. The Modified SSIA Alternative thus contains
15 several elements of the proposed program but focuses more on critical
16 repairs and actions that are less likely to improve flood management on a
17 systemwide basis.

18 It is likely that greater than 8 percent of the total SPA population would
19 have less than 100-year flood protection under the Modified SSIA
20 Alternative. Although the F-CO and F-BO programs would be
21 implemented at reservoirs in the Sacramento River and San Joaquin River
22 basins, no additional floodwater storage would be developed and
23 implemented. Therefore, the benefits of systemwide flood risk reduction
24 would occur. Thus, although this alternative does meet some of the
25 objectives of the CVFPP in certain areas of the Central Valley, it does not
26 meet the stated overall purpose of the CVFPP to develop and implement a
27 sustainable, integrated flood management plan for the entire Central Valley
28 that recognizes the importance of evaluating opportunities and potential
29 impacts from a systemwide perspective, as well as the importance of
30 coordinating across geographic and agency boundaries to treat hydrologic
31 units. The Modified SSIA Alternative also does not fully meet the stated
32 objectives to improve institutional support, promote multi-benefit projects,
33 and maximize flood risk reduction benefits within the practical constraints
34 of available funds.

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**2012 Central Valley Flood Protection Plan
Draft Program Environmental Impact Report**

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