Appendix B

Errata to the CVFPP Plan

CENTRAL VALLEY
FLOOD MANAGEMENT
PLANNING PROGRAM

FloodSAFE
CALIFORNIA

Errata to the Public Draft

2012 Central Valley Flood Protection Plan

June 2012

STATE OF CALIFORNIA
THE NATURAL RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

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CENTRAL VALLEY FLOOD MANAGEMENT PLANNING PROGRAM

FloodSAFE CALIFORNIA

Errata to the Public Draft 2012 Central Valley Flood Protection Plan

1. **Table of Contents List of Figures, page VII**

   Figure 3-1. State Sytemwide Investment Approach – Sacramento River Basin Major Capital Improvements under Consideration

   Figure 3-2. State Systemwide Investment Approach – San Joaquin River Basin Major Capital Improvements under Consideration

2. **Table of Contents Attachments, page VIII**

   ~~NOTE: A number of technical attachments to the 2012 Central Valley Flood Protection Plan are forthcoming. They will be available in early 2012 to support review and adoption of the Central Valley Flood Protection Plan by the Central Valley Flood Protection Board.~~

   Volume II: Attachment 7

   Attachment 7: Plan Formulation Report

   Volume III: Attachment 8 through 8E

   Attachment 8: Technical Analysis Summary Report

   Attachment 8A: Hydrology

   Attachment 8B: Reservoir Analysis

   Attachment 8C: Riverine Channel Evaluations

   Attachment 8D: Estuary Channel Evaluations

   Attachment 8E: Levee Performance Curves

   Volume IV: Attachment 8F through 8L

   Attachment 8F: Flood Damage Analysis

   Attachment 8G: Life Risk Analysis

   Attachment 8H: Regional Economic Analysis for the State Systemwide Investment Approach

   Attachment 8I: Framework for Benefit Assessment

   Attachment 8J: Cost Estimates

   Attachment 8K: Climate Change Analysis

   Attachment 8L: Groundwater Recharge Opportunities Analysis

   Volume V – Part 1: Attachments 9A through 9C

   Attachment 9A: Regional Advance Mitigation Planning

   Attachment 9B: Status and Trends of the Riparian and Riverine Ecosystems of the Systemwide Planning Area

   Attachment 9C: Fish Passage Assessment

   Volume V – Part 2: Attachments 9D through 9G

Attachment 9D: Improving Vegetation Data

Attachment 9E: Existing Conservation Objectives from Other Plans

Attachment 9F: Floodplain Restoration Opportunity Analysis

Attachment 9G: Regional Permitting Options

3. **Section 1.2, page 1-5, first sentence of last paragraph**

   During major flood events, there is close coordination between State, federal, and local agencies to forecast weather and runoff conditions, manage and coordinate releases from the reservoir system, patrol and floodfight along the levee and bypass system, and operate ~~the Sacramento Weir~~ weirs, drainage pumps, and other flood control structures.

4. **Section 1.4, Table 1-1, Conditions, 4th bullet**

   Revise bullet to state:

   - Design profiles (e.g., 1955 and 1957)

5. **Section 1.4, page 1-12, last sentence of first paragraph**

   While the chance and frequency of flooding have decreased since construction of ~~the~~ SPFC facilities and other multipurpose reservoirs, the damages that would occur if a levee were to fail in one of the urban areas are much greater, resulting in a net long-term increase in cumulative damages if no action is taken to improve the flood management system and limit further development in these areas.

6. **Section 1.4, page 1-15, photo caption**

   Typical ~~r~~Rock ~~r~~Revetment ~~a~~Along Sacramento River

7. **Section 1.4, page 1-16, text box**

   "100-Year Flood" is a shorthand expression for a flood that has a 1 in 100 chance of being exceeded in any given year. This may also be expressed as the 1-% annual chance of exceedence flood, or "1-% annual chance flood" for short. Similarly, a 200-year flood has a 1 in 200 (or 0.5 %) chance of being exceeded in any given year.

8. **Section 1.4, page 1-16, last paragraph**

   For example, the 100-year and 200-year (1-% and 0.5-% annual chance) flood events, calculated based on historical flood events, may become larger for many watersheds, with long-term effects on National Flood Insurance Program map ratings, flood insurance costs, floodplain development, and the economic viability of floodplain communities.

9. **Section 1.6, page 1-21, third sentence of last paragraph**

   These include the ***State Plan of Flood Control Descriptive Document***, the ***Flood Control System Status Report***, and the ***CVFPP Final Program Environmental Impact Report*** ~~(DWR, anticipated 2012)~~.

10. **Section 1.6.1, page 1-26, text box title**

    COMMUNICATION AND ENGAGEMENT IN PLAN DEVELOPMENT

11. **Section 1.6.2, page 1-27, Improve Institutional Support Bullet**

    Remove hard return to move the word “operations” up one line.

12. **Section 1.6.3, page 1-27, first sentence of first paragraph of the section**

    Plan formulation for the 2012 CVFPP was a multi-step process.

13. **Section 1.6.3, page 1-28, last two sentences of second paragraph**

    The models took into account levee heights and ~~fragility~~ physical condition, weir spills, levee failures, and other dynamic processes that can occur during major floods. The output from these hydrologic and hydraulic models was used in additional models to estimate expected annual flood damages in the protected floodplains.

14. **Section 1.6.5, page 1-30, first paragraph**

    Remove the hyphen from the acronym CVFPP at the end of the paragraph.

15. **Section 1.6.5, page 1-30**

    Add the following to the end of the section:

    - **Attachment 7 - Plan Formulation Report** describes the plan formulation process for the 2012 CVFPP.
    - **Attachment 8: Technical Analysis Summary Report** describes the technical analyses completed for the 2012 CVFPP.
    - **Attachment 9: Supporting Documentation for Conservation Framework** describes the technical analysis approach, tools, and data supporting development of the Conservation Framework

16. Section 2.3.1, page 2-4, second sentence of second paragraph

This approach ~~does not~~ includes remediation of non-SPFC urban levees, ~~although~~ as it is recognized that some non-SPFC levees can affect flooding within the SPFC Planning Area.

17. Section 2.3.2, page 2-6, second sentence of first paragraph

This approach would provide an approximately ~~47~~ 43 percent reduction in annual flood damages compared to current conditions.

18. Section 2.4.1, page 2-7, last sentence of first paragraph

Also, this approach ~~does not~~ includes improvements to non-SPFC levees that protect some urban areas.

19. Section 2.4.1, page 2-7, first bullet

This would be accomplished via structural repairs, reconstruction, or improvements to about 160 miles of urban SPFC levees and about 120 miles of urban non-SPFC levees to protect a population of about 1 million.

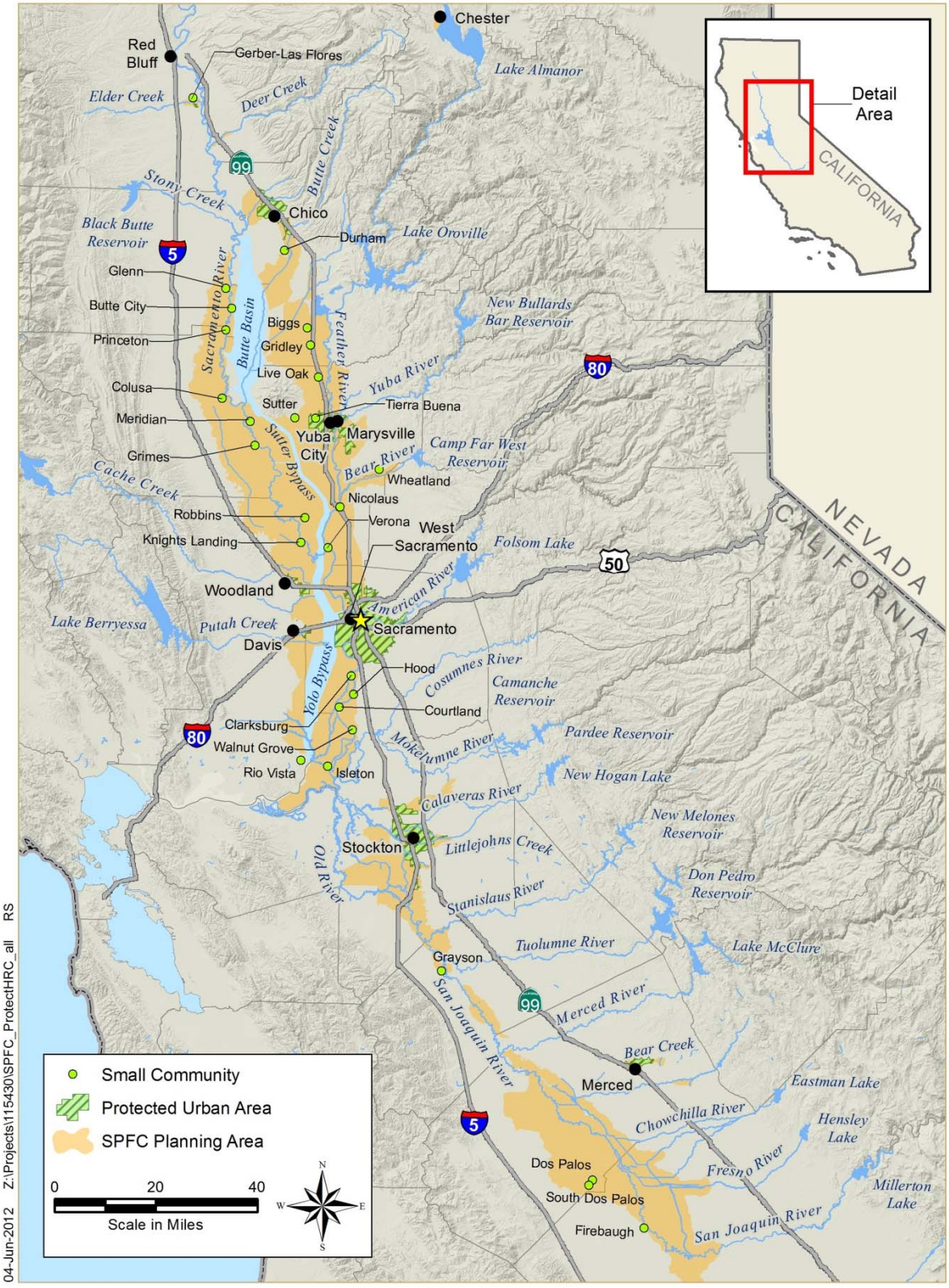
20. Section 2.4.1, page 2-7, last sentence of second bullet

A total of 27 small communities were included in this approach. Some of these small communities adjacent to existing urban areas may achieve a 100-year level of flood protection or higher as a result of improvements for the adjacent urban areas.

21. Section 2.4.1, page 2-8, Figure 2-2

Figure 2-2 “Urban Areas and Small Communities Included in Protect High Risk Communities Approach” is replaced by the following:

Errata to the Public Draft 2012 Central Valley Flood Protection Plan



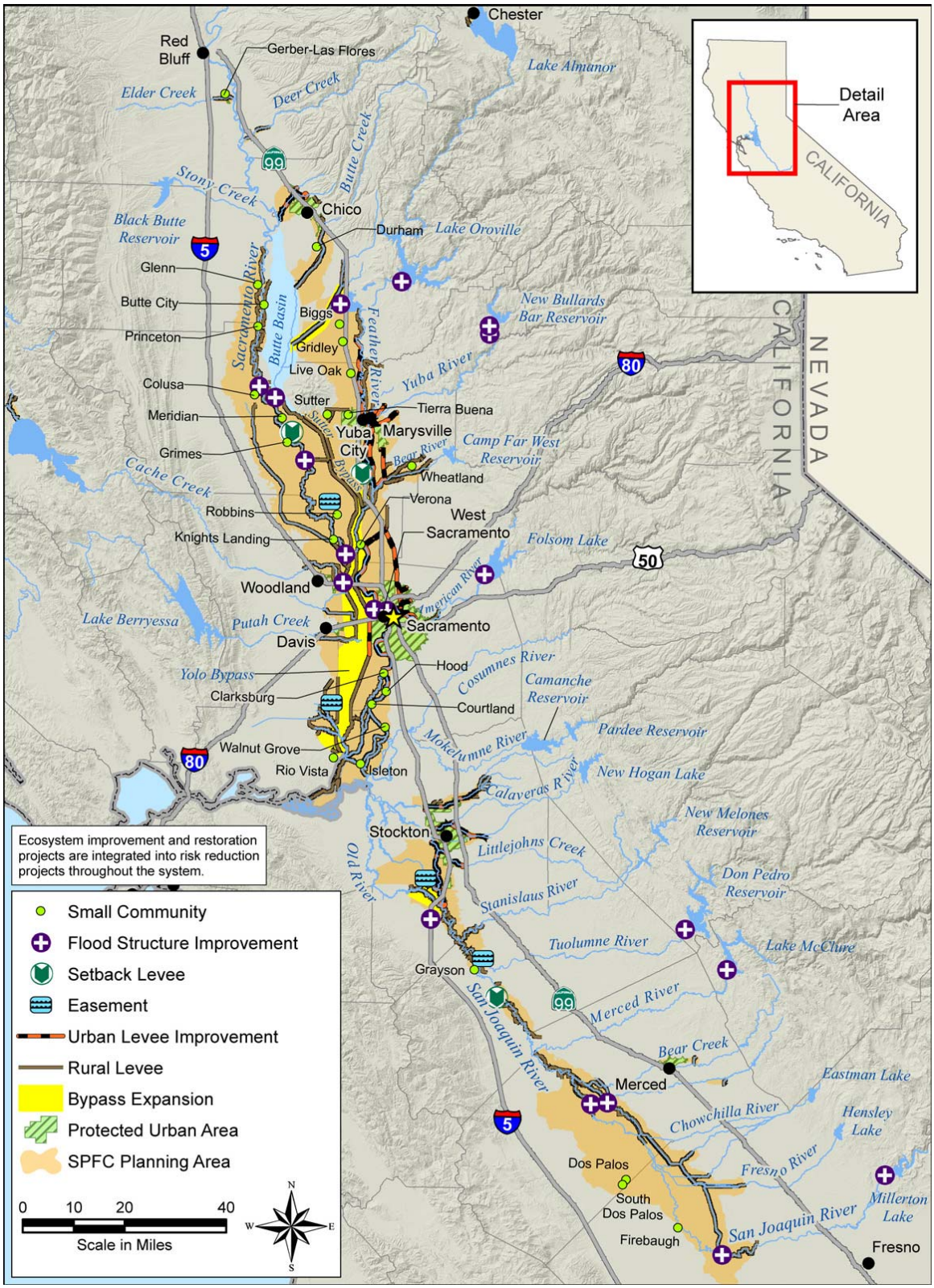
22. Section 2.5.1, page 2-10, last sentence of first paragraph

Also, this approach ~~does not~~ include~~s~~ improvements to non-SPFC levees that protect some urban areas.

23. Section 2.5.1, Page 2-11

Figure 2-3 “Improvements Included in Enhance Flood System Capacity Approach” is replaced by the following:

Errata to the Public Draft 2012 Central Valley Flood Protection Plan



24. Section 2.5.1, page 2-12, third major bullet

This approach includes floodway widening along smaller sections of ~~the~~ some rivers by setting back SPFC levees as follows:

25. Section 2.6.1, page 2-15, Table 2-1

- Tisdale Bypass and Colusa Bypass fish passage ~~Sutter east of Butte Basin~~
- Fremont Weir fish passage improvements
- ~~Yolo Bypass/Willow Slough Weir fish passage improvements~~
- Deer Creek

26. Section 2.6.1, page 2-15, Table 2-1, Note 3

3. Includes all small communities within the SPFC Planning Area.

27. Section 2.6.1, page 2-16, last line of first paragraph

The scale of the risk management actions vary among the ap-proaches.

28. Section 2.6, page 2-19, Figure 2-4 note

Note: Location of ~~P~~peak ~~F~~flow and ~~W~~water ~~S~~surface ~~E~~elevation ~~E~~estimates for 100-year ~~S~~storm ~~E~~event at selected monitoring locations in the Sacramento River Basin.

29. Section 2.6, page 2-20, Figure 2-5 note

Note: Location of ~~P~~peak ~~F~~flow and ~~W~~water ~~S~~surface ~~E~~elevation ~~E~~estimates for 100-year ~~S~~storm ~~E~~event at selected monitoring locations in the San Joaquin River Basin.

30. Section 2.6.1, page 2-21, Table 2-4, last row, Achieve SPFC Design Flow Capacity

~~47~~ 43% reduction in EAD

31. Section 2.7, page 2-26, first sentence of last paragraph

The SSIA begins with the Protect High Risk Communities Approach, but encompasses aspects of each of the ~~initial~~ preliminary approaches, to balance achievement…

32. Section 2.7, page 2-28, the second bullet from the top

The following bullet is deleted due to duplication (previously shown on page 2-27):

- ~~Would increase the population receiving at least a 100-year (1% annual chance) level of flood protection from about 25 percent to over 90 percent compared with existing conditions~~

33. Section 2.8, page 2-29, last sentence in the fourth bullet from the top

Where feasible, the State supports consideration of higher levels of flood protection, particularly for existing urban~~/~~ and adjacent urbanizing areas in deep floodplains (greater than 3 feet of flooding during a 200-year flood).

34. Section 2.8, page 2-29, second to last bullet

- New development in nonurbanized areas, including small communities, must meet the national FEMA standard of flood protection, per California Government Code Sections 65865.5, 65962, and 66474.5. ~~This corresponds to the minimum level of flood protection (100-year flood) required for participation in the National Flood Insurance Program.~~ This corresponds to the minimum level of flood protection (100-year flood) required to remove or exclude an area or community from a Special Flood Hazard Area as defined by FEMA.

35. Section 3.1, page 3-2, Table 3-1, Note 2

Includes Urban Levee Evaluations Project classifications ~~categories~~ "Marginal" and "Does Not Meet Criteria" and Non-Urban Levee Evaluations Project categories B (Moderate) and C (Low).

36. Section 3.1 page 3-4, Table 3-2, Notes 3 and 4

[3] Includes all small communities within the SPFC Planning Area.

[4] Includes selected small communities within the SPFC Planning Area.

37. Section 3.2, page 3-4, Table 3-2

- Tisdale Bypass and Colusa Bypass fish passage ~~Sutter east of Butte Basin~~
- Fremont Weir fish passage improvements
- ~~Yolo Bypass/Willow Slough Weir fish passage improvements~~
- ~~Yuba River fish passage and fish screen~~
- Deer Creek

38. Section 3.2, pages 3-5 and 3-6, Figures 3-1 and 3-2

Figure 3-1 and Figure 3-2 are replaced by the following:

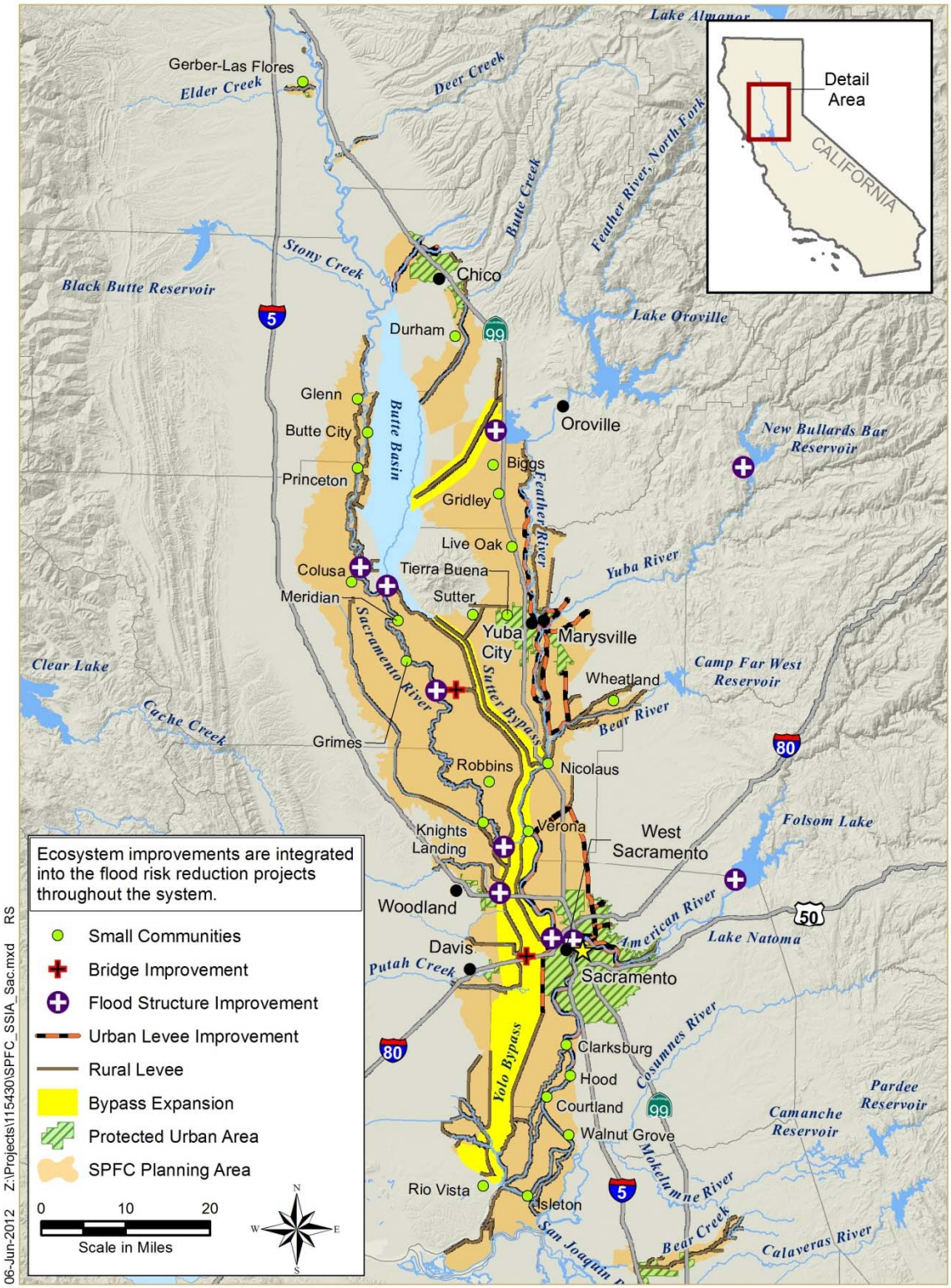


Figure 3-1. State Sytemwide Investment Approach – Sacramento River Basin Major Capital Improvements under Consideration

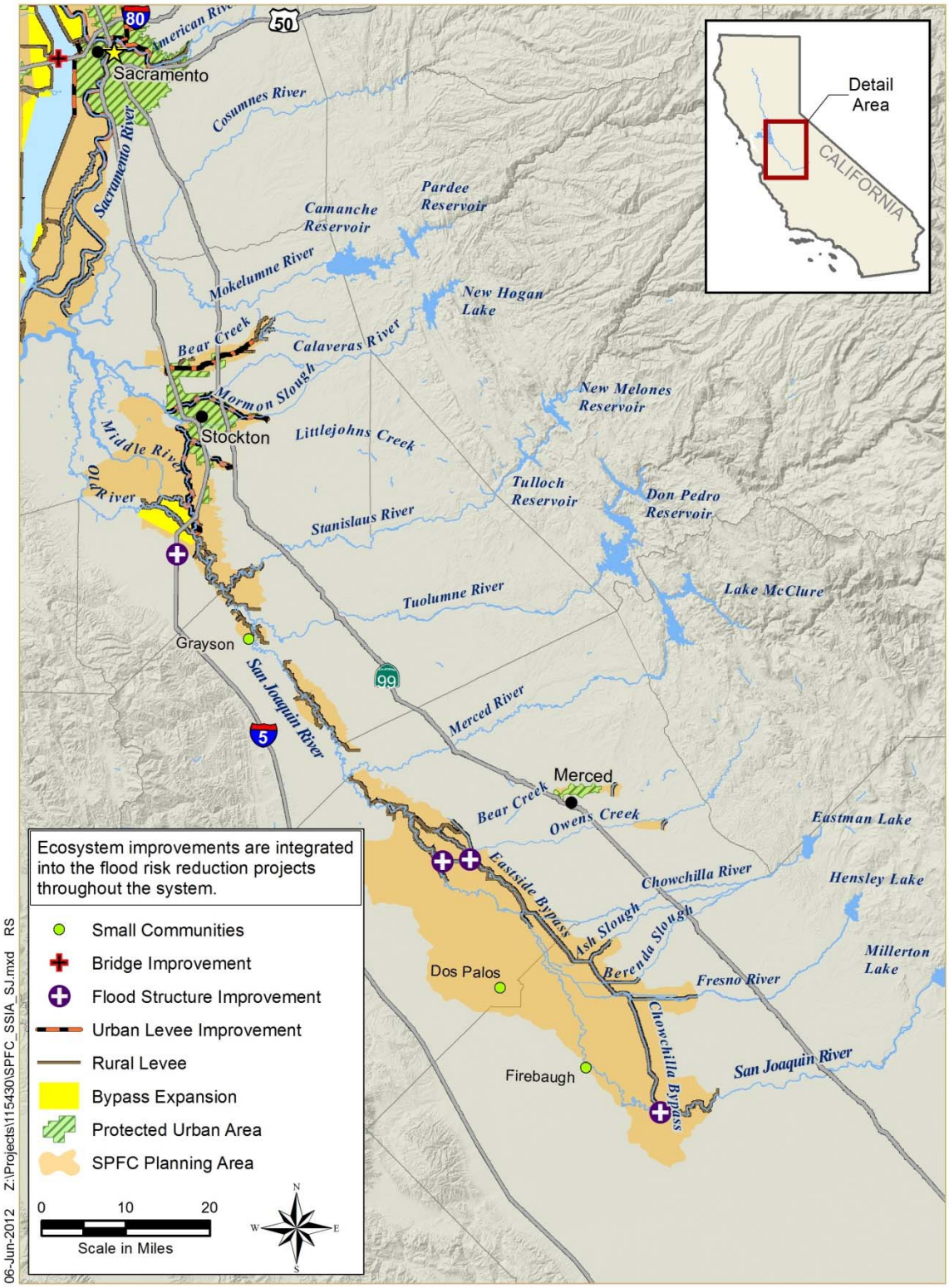


Figure 3-2. State Systemwide Investment Approach – San Joaquin River Basin Major Capital Improvements under Consideration

39. Section 3.2, page 3-7, first sentence of first paragraph

Improvements to urban levees or floodwalls should follow DWR's ***Urban Levee Design Criteria***, ~~(anticipated 2012),~~ at a minimum.

40. Section 3.2, page 3-7, side bar

…(Building a Stronger Corps: A Snapshot of How the Corps is Applying Lessons Learned from Katrina (USACE, 2009)).

41. Section 3.2, page 3-8, first bullet

- **Yuba City and City of Marysville** – Improvements for this metropolitan area and adjacent existing urbanizing corridor (along Highway 99 north of Yuba City, and along Highway 70 within and south of Marysville) include:

42. Section 3.2, page 3-8, second sub-bullet of first bullet

  - Continue to work with Sutter Butte Flood control Agency to develop and implement projects to achieve an urban level of flood protection for Yuba City and adjacent existing urbanizing areas.

43. Section 3.3, page 3-9, second sentence of first paragraph of the section

The State will evaluate investments to preserve small community development opportunities without providing an urban level of flood protection. However, some small communities adjacent to existing urban areas may achieve a 100-year level of flood protection or higher as a result of improvements for the adjacent urban areas.

44. Section 3.3, page 3-10, first sentence of last paragraph of the section

Improvements to ~~S~~small communities ~~improvements~~ should also be implemented and maintained consistent with the State's vegetation management approach (Attachment 2 – Conservation Framework).

45. Section 3.4.1, page 3-10, second sentence of first paragraph of the section

The State will work with rural-agricultural communities to develop applicable rural levee repair ~~standards~~ criteria for SPFC levees (see Section 4).

46. Section 3.5.2, page 3-14 and 3-15

New Bypasses: While they would primarily provide benefits to the urban areas of Yuba City/Marysville and Stockton, they are described here…

Lower San Joaquin Bypass: A south Delta bypass ~~will~~ would include habitat components. A gate structure or weir at Paradise Cut will be considered as part of the project. The new bypass would require construction of about eight miles of new levee. In combination with the bypass, the State will consider purchasing easements in the south Delta from willing sellers…

47. Section 3.5.1, page 3-14 , Yolo Bypass Expansion 3rd bullet

As described under Section 3.2 ~~Urban Flood Protection above~~, evaluate the Cache Creek Settling Basin to identify a long-term program for managing sediment and mercury to sustain the flood conveyance capacity of the Yolo Bypass.

48. Section 3.5.1, page 3-14 , 1st paragraph of Sacramento Bypass Expansion

As part of urban elements to reduce flood risks to the Sacramento/West Sacramento metropolitan area, future studies to refine specific project elements related to bypass expansion (also described ~~mentioned~~ under Section 3.2~~Urban Flood Improvements~~) will consider the following:

49. Section 3.5.6, page 3-17, third sentence of second paragraph

Proactive reservoir management through the use of ~~a~~ more flexible flood control diagrams would require extensive studies of the most feasible diagrams, environmental documentation for changing reservoir operations, and Congressional approval for ~~a~~ new dynamic flood control diagrams.

50. Section 3.6.1, page 3-19, last sentence of first paragraph

Remove hard return to move “State programs” up one line.

51. Section 3.7, page 3-21, last sentence of first paragraph

Remove hard return to move “flood” up one line.

52. Section 3.8, page 3-23, fourth sentence of second full paragraph

For the 2012 CVFPP, high tide conditions during the 1997 flood ~~(a strong El Nino event)~~ were used as the boundary conditions for hydraulic analysis and could be considered an initial, surrogate condition under climate change.

53. Section 3.9, page 3-24, first and fourth paragraphs

First paragraph: Land uses in the Delta outside the SPFC Planning Area are primarily rural and dominated by agriculture and open space…

Flood management responsibilities in Delta areas outside the SPFC Planning Area reside with a variety of local agencies…

Fourth paragraph: The State will continue to support Delta flood management improvements outside the SPFC Planning Area through existing programs and in coordination with ongoing multiagency Delta Planning efforts.

54. Section 3.9, page 3-24, last sentence of third paragraph

The SSIA includes management actions ~~(see Section 3.5.9)~~ (see Section 3.5.7), and a cost allowance, to lessen or mitigate the impacts compared with current conditions.

55. Section 3.10.1, page 3-27, second sentence of second paragraph

Move quotation marks at the end of the fifth line of the paragraph to the beginning of the sixth line, so the sixth line begins with "deferred maintenance".

56. Section 3.12, page 3-30, first Floodplain Management bullet in text box

- ~~Building code revision prepared~~ Approved building code amendment for single family residential occupancy

57. Section 3.13.1, page 3-32, last part of first paragraph

Flood stages in the San Joaquin River Basin ~~do~~ would not change much with respect to current conditions because large bypass expansions were not included, except near the Delta.

58. Section 3.13.1, page 3-33, Figure 3-4

~~Location of Peak Flow and Water Surface Elevation Estimates for 100-Year Storm Event at selected monitoring locations in the Sacramento River Basin.~~

Note: Figure presents peak flow and water surface elevation estimates for various frequency flood events (represented as percent chance exceedence, e.g., 1%) at selected monitoring locations in the Sacramento River Basin.

59. Section 3.13.1, page 3-34, Figure 3-5

~~Location of Peak Flow and Water Surface Elevation Estimates for 100-Year Storm Event at selected monitoring locations in the San Joaquin River Basin.~~

Note: Figure presents peak flow and water surface elevation estimates for various frequency flood events (represented as percent chance exceedence, e.g., 1%) at selected monitoring locations in the ~~Sacramento~~ San Joaquin River Basin.

60. Section 3.13.4, page 3-36, Table 3-7, fifth row and second column

$329 million in expected annual damages

61. Section 3.13.4, page 3-36, Table 3-7, fifth row and third column

Reduction of ~~67~~ 66 percent in expected annual damages

62. Section 3.14.1, page 3-38, second paragraph

Results of the modeling indicate an overall reduction in total expected annual damages of about ~~67~~ 66 percent, with specific reductions in damages and losses as follows:

- Structure and contents flood damages would be reduced by ~~72~~ 73 percent
- Crop damages due to flooding would be reduced by 6 percent
- Business production losses would be reduced by ~~72~~ 71 percent

63. Section 3.14.4, page 3-41, first sentence of first paragraph

~~Environmental~~ Ecosystem restoration is fully integrated with the flood risk reduction components of the SSIA.

64. Section 3.14.4, page 3-41, second bullet, second sentence

This includes connecting fishery habitat from the Delta to the Yolo and Sutter bypasses and to the Butte Basin.

65. Section 3.15, page 3-43, third sentence of second bullet

This would preserve small community development opportunities within specific boundaries without encouraging broader urban development. However, some small communities adjacent to existing urban areas may achieve a 100-year level of flood protection or higher as a result of improvements for the adjacent urban areas.

66. Section 3.15, page 3-43, text box, first bullet

- 100 percent of existing urban areas protected by SPFC facilities attain 200-year level of flood protection

67. Section 3.15, page 3-43, text box, second bullet first sentence

About 20 of the small communities in the SPFC Planning Area (from a total of 27) will attain 100-year level of flood protection, at a minimum.

68. Section 4.1, page 4-2, second sentence of first full paragraph

The last program is responsible for working with partnering agencies to implement on-the-ground projects that are included in ~~make up~~ the SSIA.

69. Section 4.1.1, page 4-2, third paragraph

Similarly, coordinated flood operations among local maintaining agencies, cities and counties, the California Emergency Management Agency, the State-Federal Flood Operations Center, and USACE are critically important in managing and fighting floods, and saving lives and properties.

70. Section 4.1.1, page 4-2, fourth paragraph, last sentence

In addition, through the State-Federal Flood Operations Center, DWR will continue to provide ~~floodfight~~ flood fight assistance in the field…

71. Section 4.1.1, page 4-3, second paragraph, second sentence

An important consideration in flood emergency preparation is the availability of strategically-located resources for ~~floodfight~~ flood fight activities. Local maintaining agencies, as the first responders, have the responsibility for stockpiling ~~floodfight~~ flood fight materials for timely response to flood threats before other ~~floodfight~~ flood fight assistance becomes available.

72. Section 4.1.2, page 4-3, section heading

Remove hard return to move “Operations and Maintenance Program” up one line.

73. Section 4.1.4, page 4-7, last sentence of first paragraph

In support of the CVFPP, this program will prepare two basin-wide feasibility studies, in partnership with USACE,~~,~~ as described in Section 4.4.4.

74. Section 4.1.4, page 4-10, first sentence of fourth paragraph on page

The State supports developing ~~a~~ rural levee repair ~~standard~~ criteria for rural-agricultural areas, in coordination with local and regional flood management agencies.

75. Section 4.1.4, page 4-11, third bullet on page

- Developing rural~~ agricultural area~~ levee repair ~~standards~~ criteria, in coordination with local and regional flood management agencies.

76. Section 4.1.5, page 4-12, text box, first sentence

The SSIA outlines improvements to SPFC facilities to achieve 200-year flood protection for existing urban and adjacent urbanizing areas.

77. Section 4.1.5, page 4-13, first sentence of first paragraph

constructing new ring levees around small communities and improvement of existing levees and floodwalls where feasible. Some small communities adjacent to existing urban areas may achieve a 100-year level of flood protection or higher as a result of improvements for the adjacent urban areas.

78. Section 4.2, page 4-13, third sentence of third paragraph

Given that USACE Engineer Research and Development Center's research report (July, 2011) has shown that woody vegetation has the potential to increase or reduce risk, depending on a variety of factors, DWR believes it is appropriate to characterize woody vegetation as only a "potential risk factor" that should be considered in relation to the unequivocal risk factors ~~and to site-specific conditions~~.

79. Section 4.3.1, page 4-17

Add to the end of the section:

Facilities recommended to be removed from the SPFC are listed and discussed in Section 3.4.4.

80. Section 4.3.2, page 4-18, text box, section (c)

(C) Upon completion of the Central Valley Flood Protection Plan pursuant to this part, the department may identify ~~the~~ and propose to the board additional structural and non-structural facilities that may become facilities of the State Plan of Flood Control…

81. Section 4.4, page 4-19, Figure 4-2

Assess problems ~~deficiencies~~ in Flood Protection Zones

Prepare Regional Financing ~~Financial~~ Plan

82. Section 4.4.1, page 4-20, last sentence of fourth paragraph

The information gathered for the regional flood management plans will be used to help develop ~~of~~ the State basin-wide feasibility studies scheduled for completion by 2017.

83. Section 4.4.1, page 4-21, Figure 4-3 title

Figure 4-3. Central Valley Flood Protection Plan Implementation Regions ~~and~~ based on Flood Protection Zones

84. Section 4.4.2, page 4-22, third bullet

Move word "assessment" to be on one line, and remove split.

85. Section 4.4.5, page 4-26, second main bullet

At the feasibility study level for specific projects, reasonable opportunities will be carefully evaluated for integrating ~~of~~ multiple objectives into project design.

86. Section 4.5.1, page 4-28, last bullet of Flood System Operations and Maintenance

- Initiated and coordinated the ~~i~~Interagency Flood Management Collaborative Program

87. Section 4.5.1, page 4-28, first bullet of Floodplain Management

Move "Parts 2" for single-family residential occupancy" down one line.

88. Section 4.5.1, page 4-28, second bullet of Floodplain Management

- Sent flood risk notification letters to 300,000 ~~e~~affected property owners in the Central Valley in 2010 and 2011

89. Section 4.5.1, page 4-29, first bullet list

- Prepared the ***State Plan of Flood Control Descriptive Document***, ~~2009~~ 2010

90. Section 4.5.1, page 4-29, second bullet list

- American River Common Features Project, to provide ~~200-year~~ an urban level of flood protection to ~~areas protected by levees along~~ the following ~~reaches~~ areas:
  - American River downstream from Folsom Dam
  - Sacramento River downstream from the American River
  - Natomas Basin

91. Section 4.5.1, page 4-31, first bullet of Flood Emergency Response Program

Remove hard returns to spread out the paragraph/fix margins.

92. Section 4.5.1, page 4-31, first bullet of Flood System Operations and Maintenance Program/Rural Agricultural Areas

- Work with rural-agricultural communities to develop rural levee repair ~~standards~~ criteria

93. Section 4.5.2, page 4-33, first bullet

- Continue to design and construct projects that are consistent with the SSIA, are ready to proceed, and are shown to be feasible, such as levee improvements for high-risk existing urban and adjacent urbanizing areas.

94. Section 4.9, page 4-41, third sentence of first bullet

An additional $11 to_$14 billion will be needed during the next 20 years from federal, State, and local sources.

95. Section 5.0, page 5-1

~~CWC……California Water Code~~

96. Section 5.0, page 5-1

~~O&M……operations and maintenance~~

CENTRAL VALLEY
FLOOD MANAGEMENT
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Errata to the Public Draft

2012 Central Valley Flood Protection Plan

Volume I – Attachments 1 through 6

June 2012

STATE OF CALIFORNIA
THE NATURAL RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

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CENTRAL VALLEY FLOOD MANAGEMENT PLANNING PROGRAM

FloodSAFE CALIFORNIA

Errata to the Public Draft 2012 Central Valley Flood Protection Plan Volume I – Attachments 1 through 6

1. **Volume I – Universally**

   Update headers and footers throughout Volume I as follows:

   ~~January~~ June 2012
   ~~Public Draft~~ Final

2. **Attachment 2 – Conservation Framework, Section 1.1.1, page 1-3**

   The CVFPP focused on the SPFC Planning Area ~~facilities~~; therefore, evaluations and analyses were conducted at a greater level of detail within the SPFC Planning Area than in the Systemwide Planning Area.

3. **Attachment 2 – Conservation Framework, Section 2.2.1, page 2-4, Figure 2-2 title**

   Figure 2-2. Constrained Reach of Sacramento River ~~Upstream~~ Downstream from Colusa

4. **Attachment 2 – Conservation Framework, Section 2.2.1, page 2-4, Figure 2-3 title**

   Figure 2-3. ~~River – Active Floodplain~~ Active Sacramento River Floodplain Upstream from Ord Ferry

5. **Attachment 2 – Conservation Framework, Section 2.2.3, page 2-15, Table 2-3**

   Replace status for Delta Smelt as follows:

Delta smelt	*Hypomesus transpacificus*	FT/CE	•			

6. **Attachment 2 – Conservation Framework, Section 4.2.6, page 4-15, first paragraph, first sentence**

   Current O&M levee maintenance and repair activities include manual and mechanical ~~controling~~ controlling vegetation (terrestrial and aquatic), mowing, dragging and grading, burning, livestock grazing, removing trees, applying rodenticide and herbicide, filling or grouting rodent burrows and other penetration gaps, and placing fill or rock slope.

7. **Attachment 2 – Conservation Framework, Section 4.2.10, page 4-22, first paragraph, last sentence**

   To date, USFWS and DWR have been unable to move forward with the Three Amigos project due to lack of established USACE ~~precedure~~ procedure for removal of the levees.

8. **Attachment 2 – Conservation Framework, Section 5.4.1, page 5-6, first paragraph, end of 4th sentence**

   Given that USACE Engineer Research and Development Center's (ERDC) research report (July 2011) shows that woody vegetation has the potential to increase or reduce risk, depending on a variety of factors, DWR believes it is appropriate to characterize woody vegetation as only a "potential risk factor" that should be considered in relation to the unequivocal risk factors ~~and to site-specific conditions~~.

9. **Attachment 2 – Conservation Framework, Section 5.4.2, page 5-7, first paragraph**

   The lower waterside slope is defined as the portion of the waterside slope that is below the vegetation management zone (which is typically the upper 20 feet (slope length), but may be less on short levees).

10. **Attachment 2 – Conservation Framework, Section 5.4.2, page 5-7, third bullet, last sentence**

    Exceptional roots of large cottonwoods may grow some distance into the levee, following beneath the ~~watereside~~ waterside slope surface, or following soil lenses, but roots do not go from water to landside.

11. **Attachment 2 – Conservation Framework, Section 5.4.2, page 5-7, last paragraph, last bullet**

    Correct font on the word "in" as follows:

    Woody vegetation may have beneficial functions, such as holding soil ~~in~~ in place to avoid erosion, recruiting sediment, and aiding slope stability.

12. **Attachment 2 – Conservation Framework, Section 5.4.3, page 5-9, text box, second paragraph**

    The vegetation management zone includes the entire landside levee slope (and berm) plus 15 feet…

13. Attachment 2 – Conservation Framework, Section 5.4.3, page 5-9, text box, third paragraph

For levees that have a waterside slope length of less than 20 feet…

14. Attachment 2 – Conservation Framework, Section 5.4.3, page 5-9, text box, fourth paragraph.

For levees that have a short waterside slope length above the water surface elevation…

15. Attachment 2 – Conservation Framework, Section 5.4.3, page 5-9, text box, fifth paragraph.

Replace fifth paragraph as follows:

~~For levees with a landside berm, the vegetation management zone is determined by using the projected landside levee slope instead of the actual landside levee slope.~~

For levees with a landside berm at least 3 feet thicker than required for structural integrity, the portion of the berm that is more than 15 feet from both the landside levee slope and the landward edge of the top of the berm is not included in the vegetation management zone; this area may be planted and allowed to naturally revegetate.

16. Attachment 2 – Conservation Framework, Section 5.4.3, page 5-13

Add new section as follows before the Levees with Preexisting "Legacy Levee Vegetation" section:

Vegetation Planting

Trees and other woody vegetation may be: (1) planted, and (2) allowed to naturally revegetate on a landside planting berm. Only the portion of the landside planting berm that is both 15 feet or more from the landside levee slope and 15 feet or more from the landward top of the planting berm may be planted and allowed to naturally revegetate. All trees and other woody vegetation in this area of the planting berm must be trimmed up 5 feet above the ground and thinned for visibility. Any landside berm can be a planting berm if its top is more than 30 feet wide (as measured perpendicular to the levee centerline) and the berm is at least 3 feet thicker than required for levee integrity (to account for potential overturning of trees from windthrow) (see Figure 5-1).

Trees and other woody vegetation may be planted on a waterside planting berm below the vegetation management zone, and on natural ground more than 20 feet (slope distance) waterward of the waterside levee crown hinge point.

17. Attachment 2 – Conservation Framework, Section 5.4.3, page 5-13

Replace Figures 5-1 through 5-2 and the figure titles with the following:

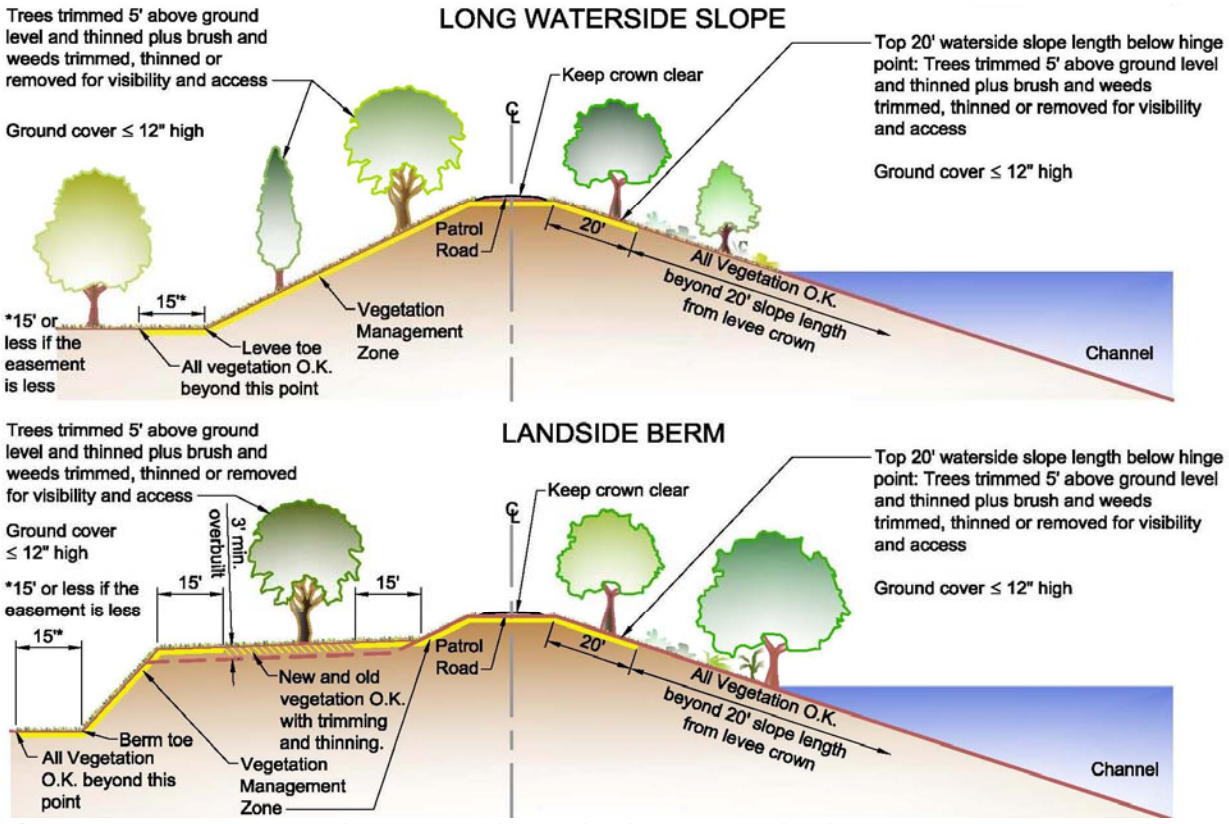

Figure 5-1. ~~DWR Vegetation Inspection Criteria for Standard Levees – Long Waterside Slope and Landside Berm~~ Vegetation Management for Existing Levees – Long Waterside Slope and Landside Berm

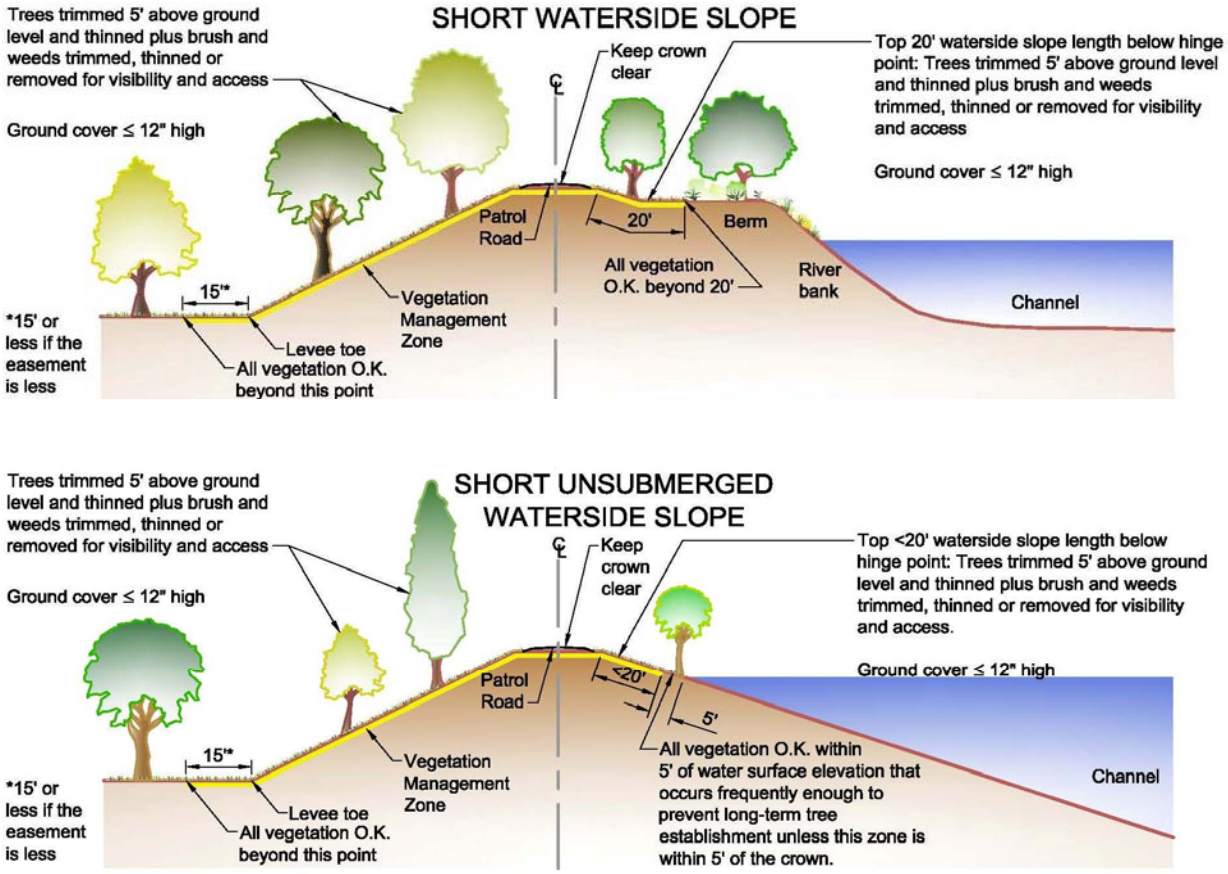

Figure 5-2. ~~DWR Vegetation Inspection Criteria for Standard Levees – Short Waterside Slope and Short Unsubmerged Waterside Slope~~ Vegetation Management for Existing Levees – Short Waterside Slope and a Short Waterside Slope Above the Water Surface Elevation that Frequently Submerges the Lower Waterside Slope

18. Attachment 3 – Documents Incorporated by Reference, Section1.0, page 1-1, first paragraph

~~*Criteria for Demonstrating*~~ *Urban Level of Flood Protection Criteria* (DWR, 2012b), and *Urban Levee Design Criteria* (DWR, 2012a).

19. Attachment 3 – Documents Incorporated by Reference, Section 1.1, page 1-4, fifth sub-bullet

The ~~E~~*Early Implementation Program*

20. Attachment 3 – Documents Incorporated by Reference, Section 1.3, page 1-9

1.3 Summary: Draft ~~Criteria for Demonstrating~~ Urban Level of Flood Protection Criteria

21. Attachment 3 – Documents Incorporated by Reference, Section 1.3, page 1-9

The draft criteria ~~are being~~ were developed through a collaborative process, with input from engineering and planning experts from cities and counties and other organizations.

22. Attachment 3 – Documents Incorporated by Reference, Universally

Update document name and reference throughout the attachment as follows:

Draft ~~Criteria for Demonstrating~~ Urban Level of Flood Protection Criteria (DWR, 2012b)

23. Attachment 3 – Documents Incorporated by Reference, Figure 1-1, page 1-11

Replace Figure 1-1 with the following:

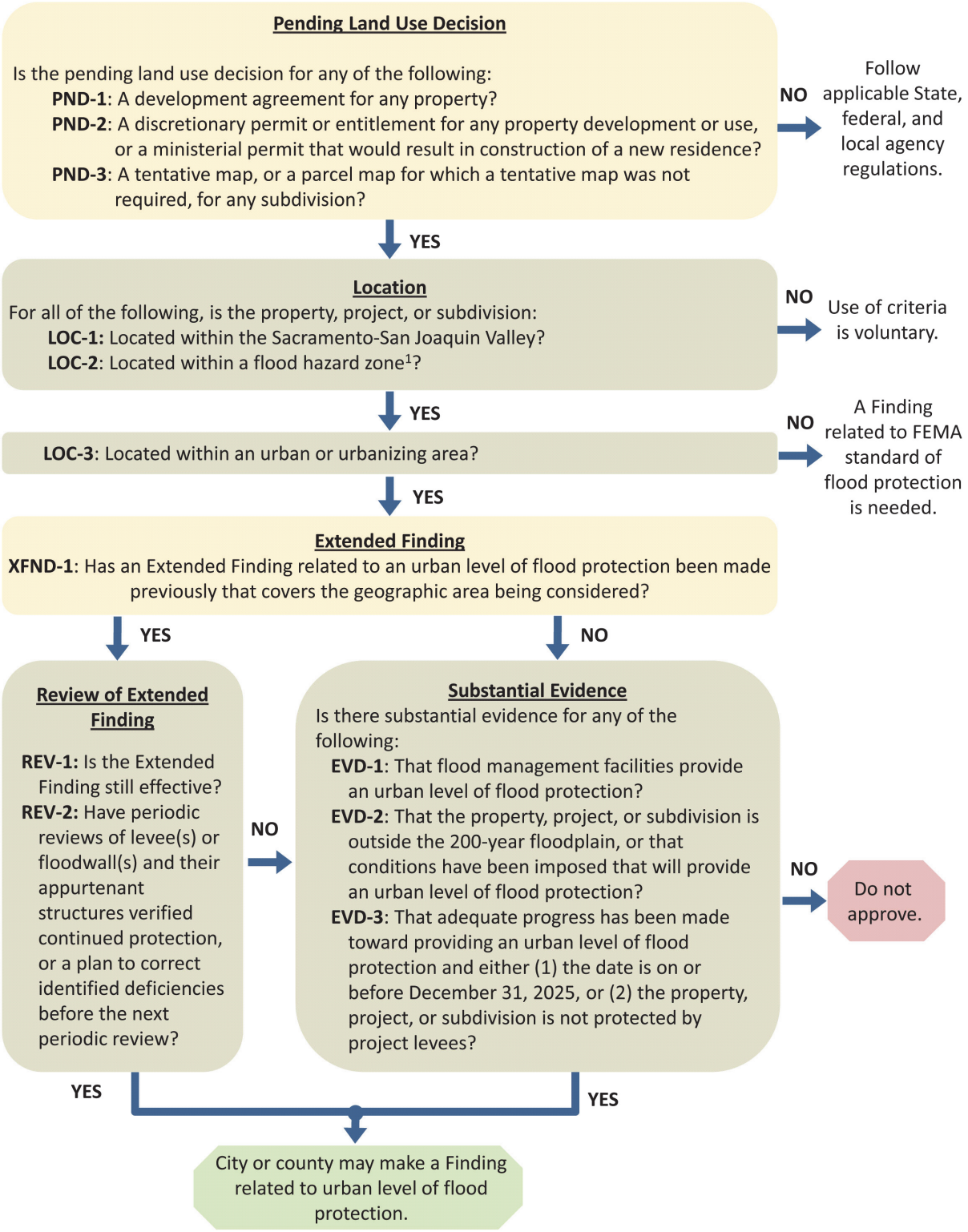

Figure 1-1. Flowchart for Cities and Counties to Make~~ing~~ Findings Related to an Urban Level of Flood Protection

24. Attachment 3 – Documents Incorporated by Reference, Section 1.4, page 1-12

The Urban Levee Design Criteria (ULDC) (DWR, 2012a) ~~is intended to~~ provides engineering criteria and guidance for the design, evaluation, and O&M of levees and floodwalls that provide an urban level of flood protection in California, as well as for determining design water surface elevation (DWSE) along leveed and unleveed streams. Other topics beyond design and evaluation ~~(e.g., O&M, inspection, monitoring, and remediation of poor performance)~~ are presented ~~in the ULDC~~ to provide reasonable assurance that once a levee or floodwall is found to provide an urban level of flood protection, it will continue to do so.

The ULDC was developed through a collaborative stakeholder involvement process with representatives from cities, counties, flood agencies, and State and federal agencies ~~stakeholders and subject matter experts~~. The purpose of the ULDC is to provide engineering criteria and guidance ~~interim analytical and procedural criteria~~ to civil engineers~~, cities, and counties in the Sacramento-San Joaquin Valley to help them~~ to follow in meeting the requirements of California Government Code Sections 65865.5, 65962, and 66474.5, with respect to ~~which require those entities to make a f~~Finding that levees and floodwalls provide protection against a flood that has a 1-in-200 chance of occurring in any given year. The ULDC also provides engineering criteria and guidance for DWR's urban levee evaluations and participation in urban levee projects. ~~In addition, the ULDC is designed to provide guidance to engineers, cities, and counties throughout California.~~ The ULDC may be updated from time to time, either in its current form or ~~will serve as guidance until~~ as regulations ~~are adopted~~ in the California Code of Regulations (CCR) ~~on this topic~~. The ULDC is summarized below.

25. Attachment 3 – Documents Incorporated by Reference, Section 1.4.1, page 1-12

The ULDC provides design criteria for two types of levees: intermittently loaded and frequently loaded. A frequently loaded levee is defined as a levee that experiences a water surface elevation of 1 foot or higher above the elevation of the landside levee toe at least once a day for more than 36 days per year, on average.

Design criteria are summarized in Tables 1-2 and 1-3 for each type of levee. In Table 1-2, Options 1 and 2 represent two options for calculating the design water surface elevation ~~(DWSE)~~: the Federal Emergency Management Agency (FEMA) ~~a~~Approach, and the U.S. Army Corps of Engineers (USACE~~Corps~~) ~~a~~Approach. Criteria in Table 1-3 are additions or exceptions to the criteria in Table 1-2~~3~~ to include more stringent requirements for design of frequently loaded levees.

26. Attachment 3 – Documents Incorporated by Reference, Section 1.4.1, page 1-13 and 1-14

Replace Tables 1-2 and 1-3 with the versions on the following pages:

Table 1-2. Urban Levee Design Criteria Summary for Intermittently Loaded Levees

Parameter	Criteria			
DWSE (Option 1)	Median 200-year WSE			
DWSE (Option 2)	90% assurance 200-year WSE			
MTOL (Option 1)	Median 200-year WSE + higher of (1) 3 feet, or (2) height for wind setup and wave runup			
MTOL (Option 2)	Lower of A or B, where: • A is the higher of (1) 90% assurance 200-year WSE, (2) median 200-year WSE plus 3 feet, or (3) median 200-year WSE plus height for wind setup and wave runup • B is the higher of (1) 95% assurance 200-year WSE, (2) median 200-year WSE plus 2 feet, or (3) median 200-year WSE plus height for wind setup and wave runup			
HTOL (Option 1)	Lower of (1) median 200-year WSE plus 3 feet, or (2) median 500-year WSE			
HTOL (Option 2)	Higher of A or B, where: • A is the lower of (1) median 200-year WSE plus 3 feet, (2) median 500-year WSE, or (3) MTOL (Option 2) • B is the DWSE			
Seepage - Exit Gradient at Levee Toe	For DWSE		For HTOL	
	γ ≥ 112 pcf	γ < 112 pcf	γ ≥ 112 pcf	γ < 112 pcf
	i ≤ 0.5	FS ≥ 1.6	i ≤ 0.6	FS ≥ 1.3
Seepage - Exit Gradient at Seepage Berm Toe	i ≤ 0.8	FS ≥ 1.0	<20% FS degradation for berms less than 100 feet	<10% FS degradation for berms less than 100 feet
Steady-State Slope Stability (Landside)	FS ≥ 1.4		FS ≥ 1.2	
Rapid Drawdown Slope Stability (Waterside)	FS ≥ 1.2 (prolonged high stage) FS ≥ 1.0 (short lasting high stage)			
Seismic Vulnerability	Restore grade and dimensions for at least 10-year WSE plus 3 feet of freeboard or higher for wind setup and wave runup within 8 weeks			
Levee Geometry	For new or extensive reconstruction on a major stream, minimum 20-foot-wide crown, 3h:1v waterside and landside slopes for all levees except bypass levees (4h:1v waterside slope)			

Notes:

- This table only includes criteria that are easily quantified.
- The median 200-year WSE, the 90 percent assurance 200-year WSE, and the 95 percent assurance 200-year WSE in this table are assumed to have been increased appropriately.
- Whichever option is selected, that same option is to be used for the DWSE, MTOL, and HTOL.

Key:
Option 1 = FEMA Approach
Option 2 = USACE Approach
DWSE = design water surface elevation
FS = factor of safety
HTOL = hydraulic top of levee
i = exit gradient
pcf = pounds per cubic foot
MTOL = minimum top of levee
WSE = water surface elevation
γ = saturated unit weight of soil (blanket layer)

Table 1-3. Urban Levee Design Criteria Summary for Frequently Loaded Levees

Parameter	Criteria	
	For DWSE	For HTOL
Steady-State Slope Stability (Landside)	FS ≥ 1.5	FS ≥ 1.3
Minimum Allowable Rapid Drawdown Slope Stability (Waterside)	FS ≥ 1.2*	
Frequent, Large, Tidal Fluctuations Rapid Drawdown Slope Stability (Waterside)	FS ≥ 1.4**	
Seismic Vulnerability	No significant deformation, usually limited to 3 feet maximum with 1 foot of vertical settlement.	

Notes:
These criteria are additions or exceptions to the criteria presented for intermittently loaded levees.
*Applies for the DWSE.
**Additional criterion that applies for the range of tidal fluctuation, not the DWSE.
Key:
DWSE = design water surface elevation
FS = factor of safety
HTOL = hydraulic top of levee

27. Attachment 3 – Documents Incorporated by Reference, Section 1.4.2, page 1-14 and 1-15

- The levee system must have an ~~O&M~~ operation and maintenance manual consistent with USACE requirements (except as may be appropriate to ~~add to~~ deviate from those requirements to ~~meet the purpose of~~ comply with the ULDC). In developing or updating the operation and maintenance manual, the civil engineer and/or the levee maintaining agency should consider guidance contained in DWR's Superintendent's Guide to Operation & Maintenance of California's Flood Control Projects (undated).

- All facilities necessary for providing ~~an~~the urban level of flood protection must be operated and maintained by an identified public agency with the authority and resources to do so. Where the levee system has more than one agency with ~~O&M~~ operation and maintenance responsibilities, they will need to coordinate the responsibilities.

- ~~Corps~~ USACE standard inspection requirements for project levees are applicable for all levees and floodwalls considered to provide ~~an~~ the urban level of flood protection, including that a public agency (or agencies) routinely operates and maintains the levee system and inspects the entire levee system at least every 90 days and after every high water event. ~~Damage and maintenance inadequacies identified from these inspections should be prioritized and repaired in a timely manner.~~

- Damage and maintenance inadequacies identified from inspections should be prioritized and addressed in a timely manner, not awaiting the periodic review process.

- ~~With regard to waiting for the periodic review process to take action, i~~It is almost never practical or possible to completely know all of the engineering properties of levees and their foundations. Consequently, there will almost always be some degree of uncertainty

that justifies both robust regular inspections and ~~flood stage~~ high water monitoring programs for levees and floodwalls protecting urban and urbanizing areas, with all of the attendant appurtenances and features (such as all-weather access roads on levee crowns and near the toe of wide landside berms).

- Monitoring during high water needs to provide for a thorough visual inspection of both the waterside and landside levee slope (and landside berm toe area) at intervals of no more than 1 hour.
- ~~The levee system must have an emergency safety plan.~~
- The levee system must have a levee security plan that meets the requirements described in Section 7.18.
- The levee system must have a flood safety plan that meets the requirements described in Section 7.20.

Other requirements, such as for a post-earthquake remediation plan, right-of-way plan, encroachment remediation plan, penetration remediation plan, or ~~a levee relief cut plan,~~ flood relief plan – may also apply, depending on the situation.

28. Attachment 3 – Documents Incorporated by Reference, Section 1.4.3, page 1-15

Delete section and remove from the Table of Contents as follows:

~~1.4.3 Procedural Criteria Summary~~

~~The ULDC will rely upon procedures contained in the *Urban Level of Flood Protection Criteria* for making and maintaining a finding that a levee or floodwall provides an urban level of flood protection.~~

29. Attachment 4 – Glossary, page 2

Add the following term to the glossary:

annual exceedence probability	A measure of the likelihood of exceeding a specified target in any year. For example, the annual exceedence probability of a 10-m levee might be 0.01. That implies that the annual maximum stage in any year has a 1-percent chance (0.01 probability) of exceeding the elevation of the top of the levee.

U.S. Army Corps of Engineers
Risk-based Analysis for Flood Damage Reduction Studies
Manual No. 110-2-1619

30. Attachment 4 – Glossary, page 5

Add the following term to the glossary:

environmental justice	The fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and polices.

California Government Code Section 65040.12 (c)

31. Attachment 5 – Engagement Record, page 4-15

Remove section.

~~A CVFPP Phase 3/4 Assessment and Stakeholder Assessment Executive Summary is planned for development during the Board's adoption process of the CVFPP. This report will be updated once the assessment and summary is completed.~~

32. Attachment 5 – Engagement Record, page 4-15

The Board, with support by DWR, ~~plans to~~ conducted a series of public meetings and public hearings for adoption of the 2012 CVFPP and the Program~~matic~~ Environmental Impact Report (PEIR). ~~This report will be updated during the Board adoption process.~~

33. Attachment 6 – Contributing Authors and Work Group Members List, pages 44-45

Replace work group list with version below:

Balakrishnan, Ariya	California Department of Water Resources
Banning, Brian	California Emergency Management Agency
Bartlett, Joseph	California Department of Water Resources
Chainey, Steve	EDAW
Connelly, Mark	San Joaquin County Public Works
Costa, Ray	Consulting Engineer
Cox, Katie	Center for Collaborative Policy at CSUS
Edell, Stuart	Butte County Public Works
Ford, David	David Ford Consulting Engineers
Fougeres, Dorian	Center for Collaborative Policy at CSUS
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34. Attachment 6 – Contributing Authors and Work Group Members List, pages 52-53

Replace work group list with version below:

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Mayer, Rod	California Department of Water Resources
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Punyamurthula, Sujan	URS Corporation
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Rodriguez, Vincent	California Department of Water Resources
Tootle, Joe	Reclamation District 17
Zhong, Ke	California Department of Water Resources

35. Attachment 6 – Contributing Authors and Work Group Members List, pages 54-57

Replace work group list with version below:

Arrich, Jeremy	California Department of Water Resources
Bergson, Charles	City of Williams
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Cain, John	American Rivers
Childress-Byers, Jami	California Emergency Management Agency
Davies, Paul	Caltrans Division of Design
Dean, Bill	City of Tracy
DeCou, Glenn	Caltrans Division of Design
DeVore, Ryan	City of Sacramento
Echiburu, Taro	City of Elk Grove
Elias, Eric	City of Stockton
Fitzgerald, Paula	City of Los Banos
Fossum, Tom	County of Butte
Freitas, Angela	County of Stanislaus
Gebhardt, Glenn	City of Lathrop
Guo, Rebecca	MWH Americas, Inc.
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Hegedus, Pal	Floodplain Management Association
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Kutsuris, Catherine	Contra Costa County
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Lorenzo-Lee, Maria	California Department of Water Resources

Ludy, Jessica	American Rivers
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Maguire, John	San Joaquin County Public Works, Flood Management Division
Marshall, Will	City of Davis
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McDougall, Paul	California Department of Housing and Community Development
McDowell, Mike	City of Stockton
McKenzie, Cynthia	Federal Emergency Management Agency, Region 9
Mendez, Michael	City of Sacramento, American Planning Association, California Chapter
Morgan, Scott	Governor's Office of Planning and Research
Nelson, Jim	City of Tracy
Oto, Allan	California Department of Water Resources
Palmer, Dave	City of Rocklin
Pease, Kathy	City of Roseville
Perkins, Connie	City of Sacramento
Peterson, David	San Joaquin Area Flood Control Agency, San Joaquin County Flood Control and Water Conservation District, Sutter Butte Flood Control Agency
Pineda, Ricardo	California Department of Water Resources
Powderly, John	City of West Sacramento
Powell, Ellen	League of California Cities
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Rie, Teri	Central Valley Flood Protection Board
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Sandmeier, Corinna	County of Sacramento
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Shpak, Dave	City of West Sacramento
Simmons, Mindy	Office of Senator Wolk
Smith, Brian	California Department of Water Resources
Snellings, Tim	County of Butte
Soutiere, Judy	U.S. Army Corps of Engineers
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Sullivan, Kerry	San Joaquin County Public Works, Flood Management Division
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Terry, Melinda	California Central Valley Flood Control Association
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Turner, Claire-Marie	U.S. Army Corps of Engineers
Webb, Michael	City of Davis
Williams, Stu	City of Sacramento
Willis, Rebecca	City of Oakley
Wilson, Darren	City of Elk Grove
Wilson, Lisa	County of Sutter
Yagade, Gary	Atkins

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CENTRAL VALLEY
FLOOD MANAGEMENT
PLANNING PROGRAM

FloodSAFE
CALIFORNIA

Errata to the Public Draft

2012 Central Valley Flood Protection Plan

Volume II – Attachment 7

June 2012

STATE OF CALIFORNIA
THE NATURAL RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

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CENTRAL VALLEY FLOOD MANAGEMENT PLANNING PROGRAM

FloodSAFE CALIFORNIA

Errata to the Public Draft 2012 Central Valley Flood Protection Plan Volume II – Attachment 7

1. **Attachment 7 – Plan Formulation Report, Universally**

   Update attachment title throughout as follows:

   Attachment 8J: ~~Designs and Costs~~ Cost Estimates

2. **Attachment 7 – Plan Formulation Report, Table of Contents List of Figures, page xi**

   Figure 8-1. State Sytemwide Investment Approach – Sacramento River Basin Major Capital Improvements under Consideration

   Figure 8-2. State Systemwide Investment Approach – San Joaquin River Basin Major Capital Improvements under Consideration

3. **Attachment 7 – Plan Formulation Report, Section 2.4, page 2-12, Table 2-1, 2nd row, 2nd column**

   Change reference date in table and throughout the attachment as follows:

CVFPP Program Environmental Impact Report	DWR, ~~anticipated~~ 2012a

4. **Attachment 7 – Plan Formulation Report, Section 2.4, page 2-12, Table 2-1, 8th row, 2nd column**

   Change reference date in table and throughout the attachment as follows:

Urban Level Design Criteria	DWR, ~~2011a (update anticipated~~ 2012b~~)~~

5. **Attachment 7 – Plan Formulation Report, Section 2.4, page 2-12, Table 2-1, 9th row**

   Change reference date in table and throughout the attachment as follows:

Draft Urban Level of Flood Protection Criteria	~~Development underway~~ DWR, 2012c

6. **Attachment 7 – Plan Formulation Report, Section 2.4, page 2-13, Table 2-2, 12th row**

~~Frazier Creek/Strathmore Creek Feasibility Study~~	~~USACE~~

Errata to the Public Draft 2012 Central Valley Flood Protection Plan Volume II – Attachment 7

7. Attachment 7 – Plan Formulation Report, Section 2.4, page 2-13, Table 2-2, 25th row

~~White River/Deer Creek Feasibility Study~~	~~USACE~~

8. Attachment 7 – Plan Formulation Report, Section 3.1, page 3-5, Table 3-1, Conditions, 4th bullet

Revise bullet as follows:

- Design profiles (e.g., 1955 and 1957)

9. Attachment 7 – Plan Formulation Report, Section 7.1.1, page 7-5, Table 7-1, Row 13, Column 2

- Tisdale Bypass and Colusa Bypass fish passage ~~Sutter Bypass and fish passage east of Butte Basin~~
- Free~~e~~mont Weir fish passage improvements
- ~~Yolo Bypass/Willow Slough Weir fish passage improvements~~
- Deer Creek

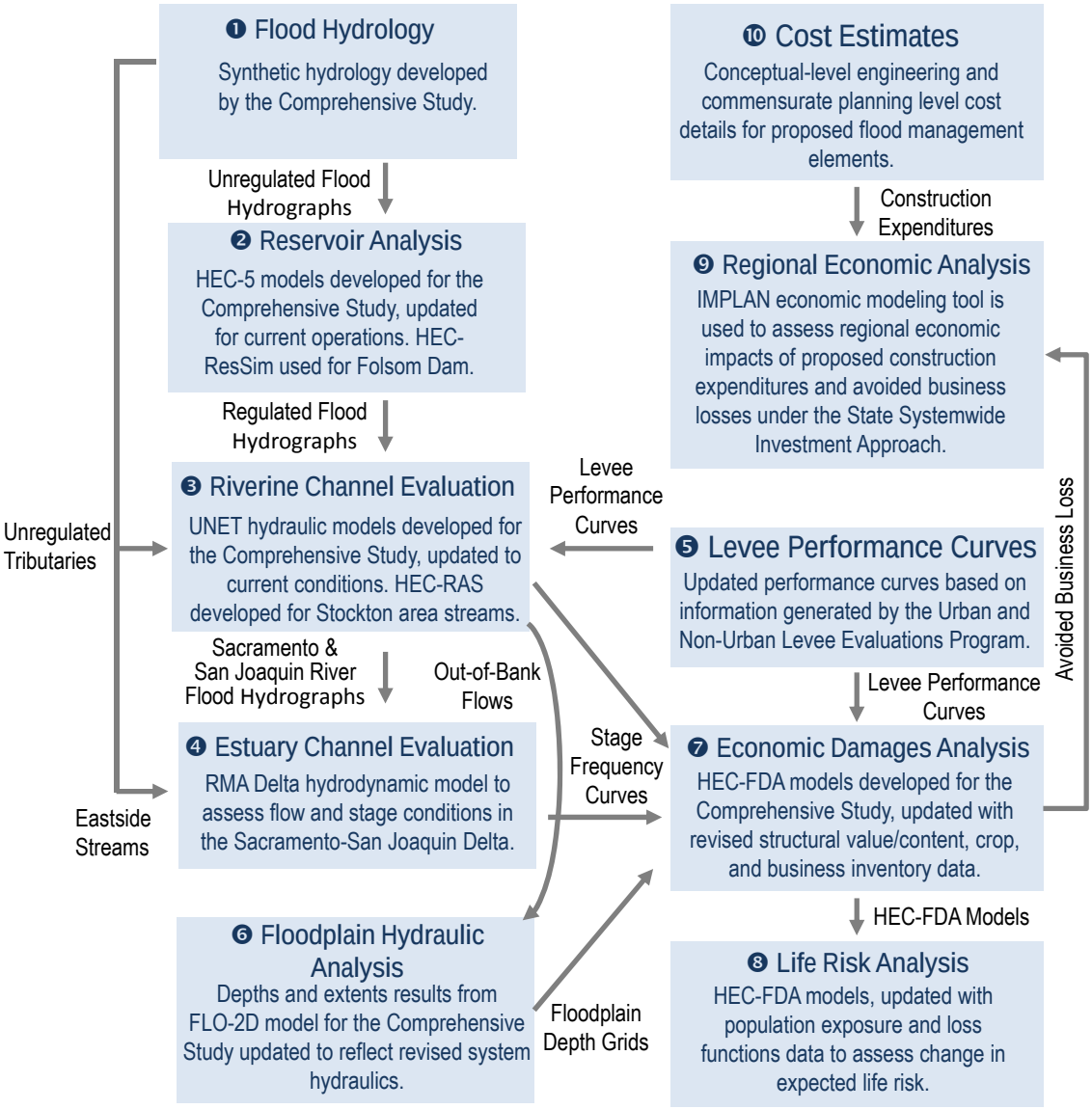
10. Attachment 7 – Plan Formulation Report, Section 7.1.1, page 7-5, Table 7-1, Note 3

3. Includes all small communities within the SPFC Planning Area.

11. Attachment 7 – Plan Formulation Report, Section 7.1.3, Figure 7-1, page 7-8

Replace Figure 7-1 "Technical Analyses and Tools Supporting 2012 CVFPP Development" with the following for color consistency:

Errata to the Public Draft 2012 Central Valley Flood Protection Plan Volume II – Attachment 7



Legend:

Comprehensive Study	*Sacramento and San Joaquin River Basins Study Comprehensive Study (USACE, 2002)*
HEC	USACE Hydrologic Engineering Center
HEC-FDA	HEC Flood Damage Analysis model
FLO-2D	Fullerton, Lenzotti, and O'Brien – Two Dimensional model
HEC-RAS	HEC River Analysis System model
HEC-ResSim	HEC Reservoir Operations Simulation model
HEC-5	HEC Reservoir Operations Simulation model (predecessor to HEC-ResSim)
~~MPLAN~~ IMPLAN	Impact Analysis for Planning
RMA	RMA Finite Element Model of Sacramento-San Joaquin Delta hydrodynamics
UNET	One-Dimensional Unsteady Network Flow model (predecessor to HEC-RAS)
USACE	U.S. Army Corps of Engineers

12. Attachment 7 – Plan Formulation Report, Section 7.2, page 7-10, bulleted list

Add a new bullet as follows:

- Feather-Yuba F-CO by the Yuba County Water Agency (YCWA), DWR, the National Oceanic and Atmospheric Administration, and USACE (YCWA, 2008)

13. Attachment 7 – Plan Formulation Report, Section 7.3.1, page 7-11, last sentence of second paragraph

This approach ~~does not~~ includes remediation of non-SPFC urban levees, ~~although~~ as it is recognized that some non-SPFC levees can affect flooding within the SPFC Planning Area.

14. Attachment 7 – Plan Formulation Report, Section 7.3.2, Page 7-18, text box

Remove highlight from text box.

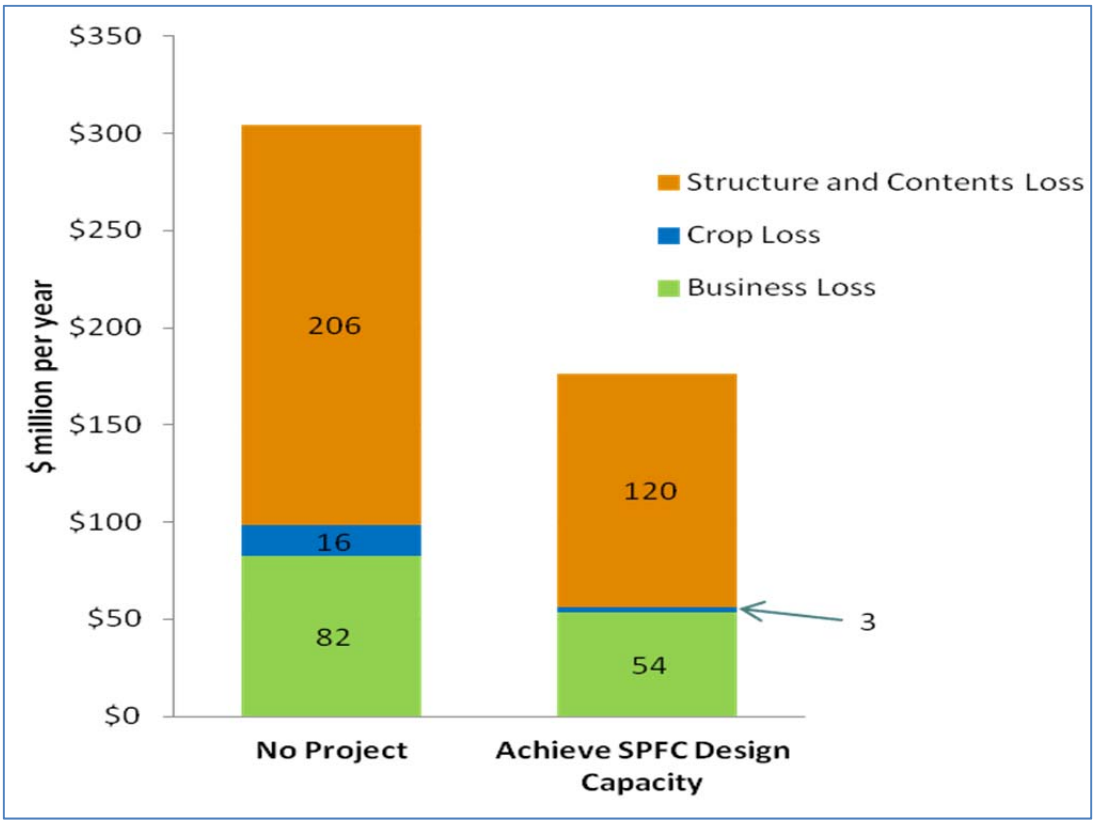
15. Attachment 7 – Plan Formulation Report, Section 7.3.4, page 7-24, 1st paragraph

This approach would provide an approximate ~~47~~ 43 percent reduction in annual flood damages compared to current conditions.

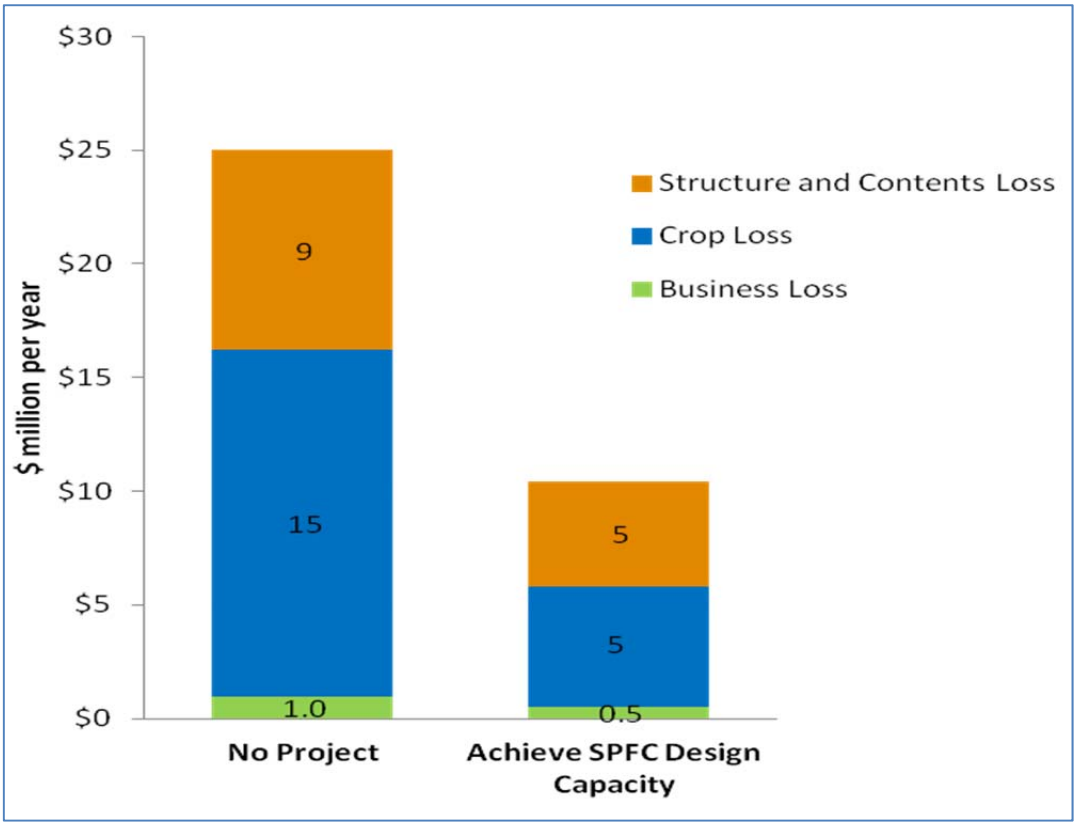
16. Attachment 7 – Plan Formulation Report, Section 7.3.4, page 7-29, figures 7-12 and 7-13

Replace Figure 7-12 “Expected Annual Damages from Flooding: Achieve State Plan of Flood Control Design Flow Capacity Approach Compared to No Project for the Sacramento Basin” with the following:

Errata to the Public Draft
2012 Central Valley Flood Protection Plan
Volume II – Attachment 7



Replace Figure 7-13 "Expected Annual Damages from Flooding: Achieve State Plan of Flood Control Design Flow Capacity Approach Compared to No Project for the San Joaquin Basin" with the following:

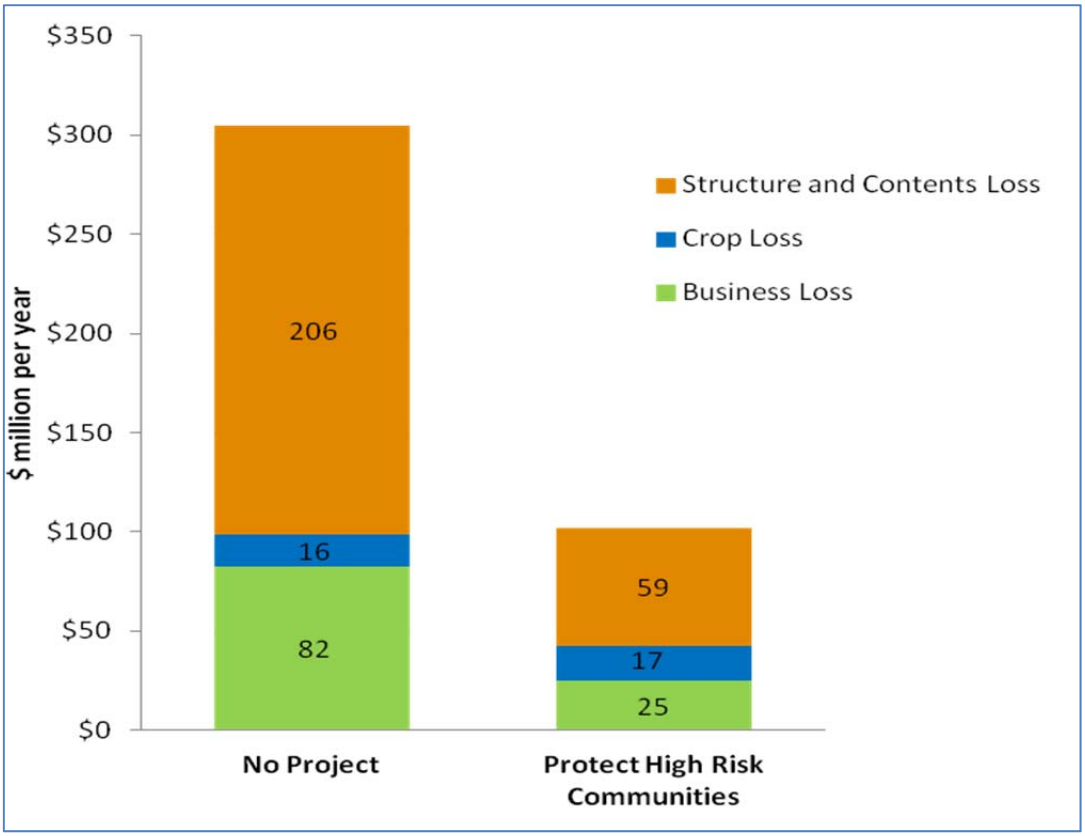


17. Attachment 7 – Plan Formulation Report, Section 7.4.3, page 7-47, 1st paragraph

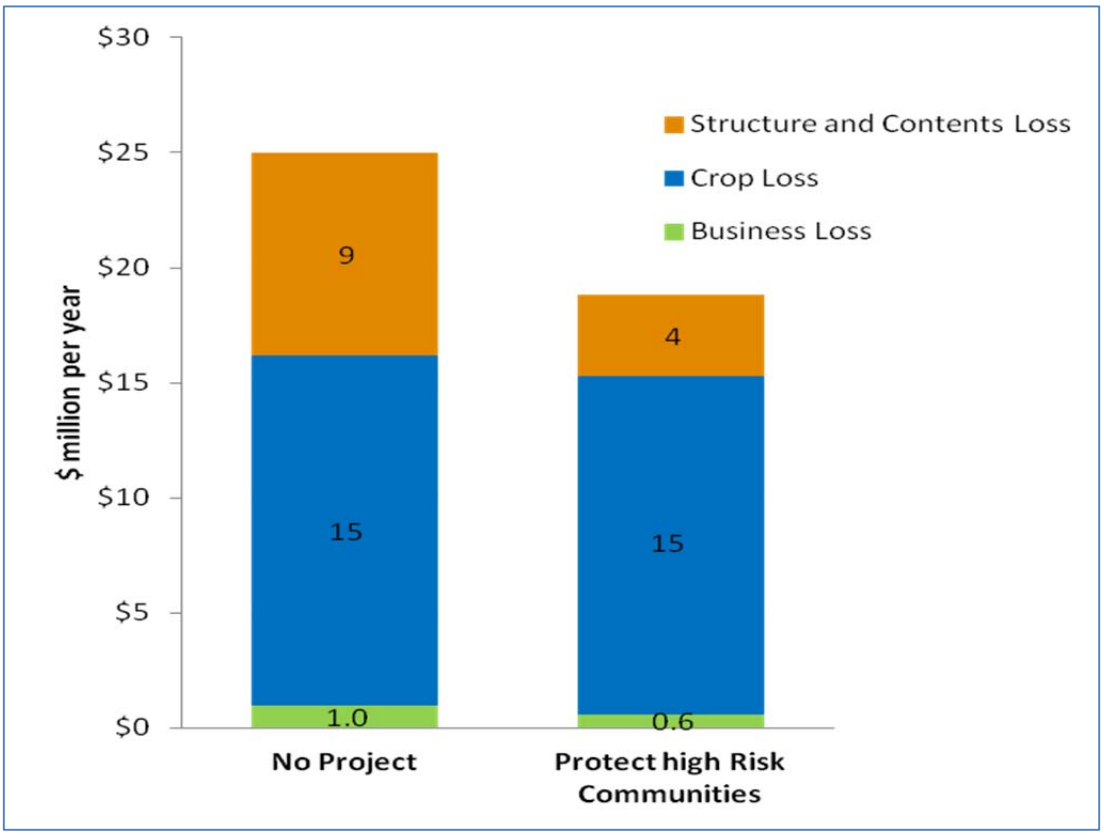
No changes in reservoir operations rules or how existing weirs and other control structures function compared to No Project were considered as part of this approach.

18. Attachment 7 – Plan Formulation Report, Section 7.4.4, page 7-51, figures 7-21 and 7-22

Replace Figure 7-21 "Expected Annual Damages from Flooding: Protect High Risk Communities Approach Compared to No Project for the Sacramento Basin" with the following:



Replace Figure 7-22 "Expected Annual Damages from Flooding: Protect High Risk Communities Approach Compared to No Project for the San Joaquin Basin" with the following:



19. Attachment 7 – Plan Formulation Report, Section 7.5.3, page 7-60, last sentence of first paragraph

Also, this approach ~~does not~~ includes improvements to non-SPFC levees that protect some urban areas.

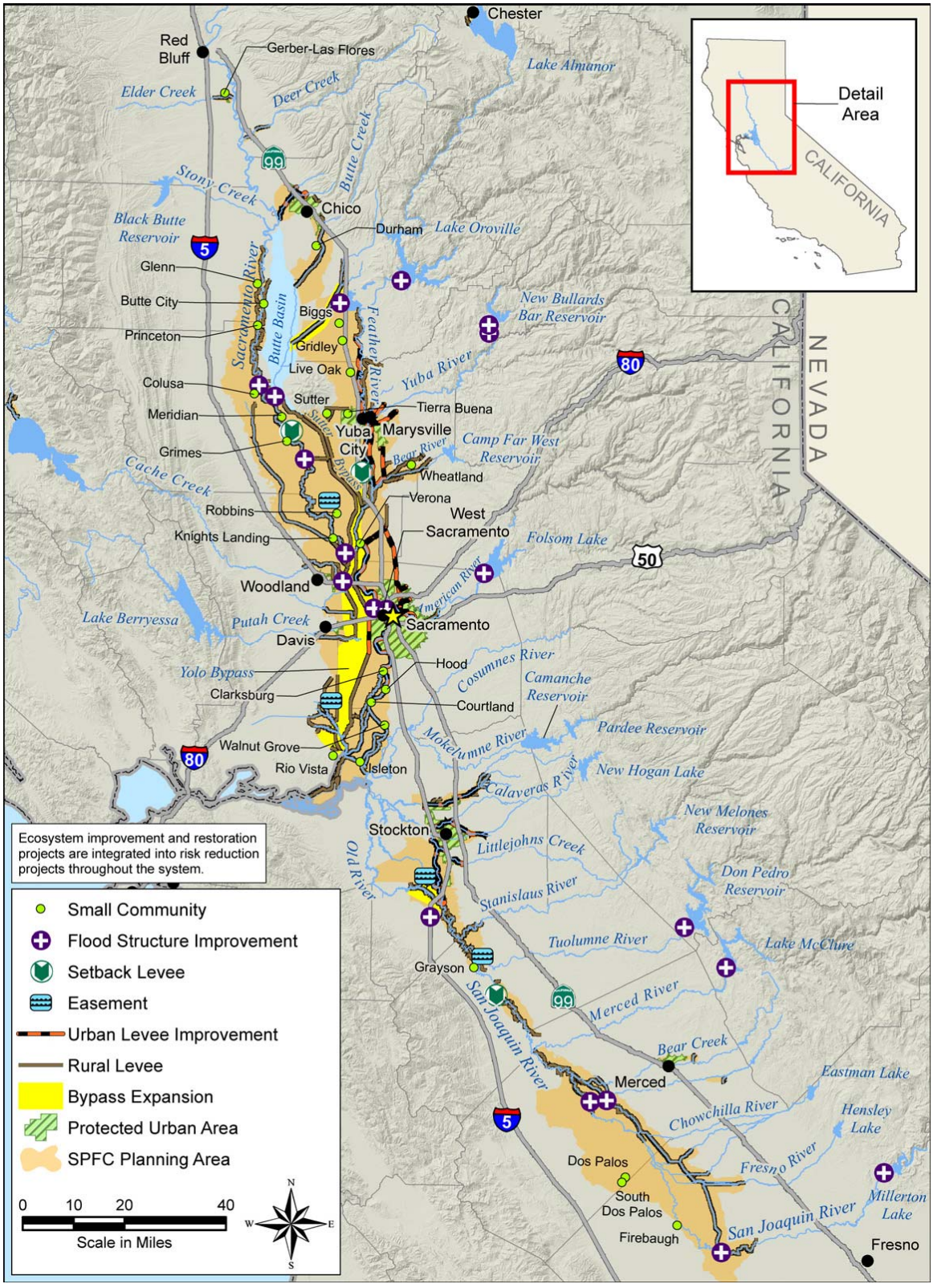
20. Attachment 7 – Plan Formulation Report, Section 7.5.3, page 7-61, third major bullet

This approach includes floodway widening along smaller sections of ~~the~~ some rivers by setting back SPFC levees as follows:

21. Attachment 7 – Plan Formulation Report, Section 7.5.3, Page 7-62

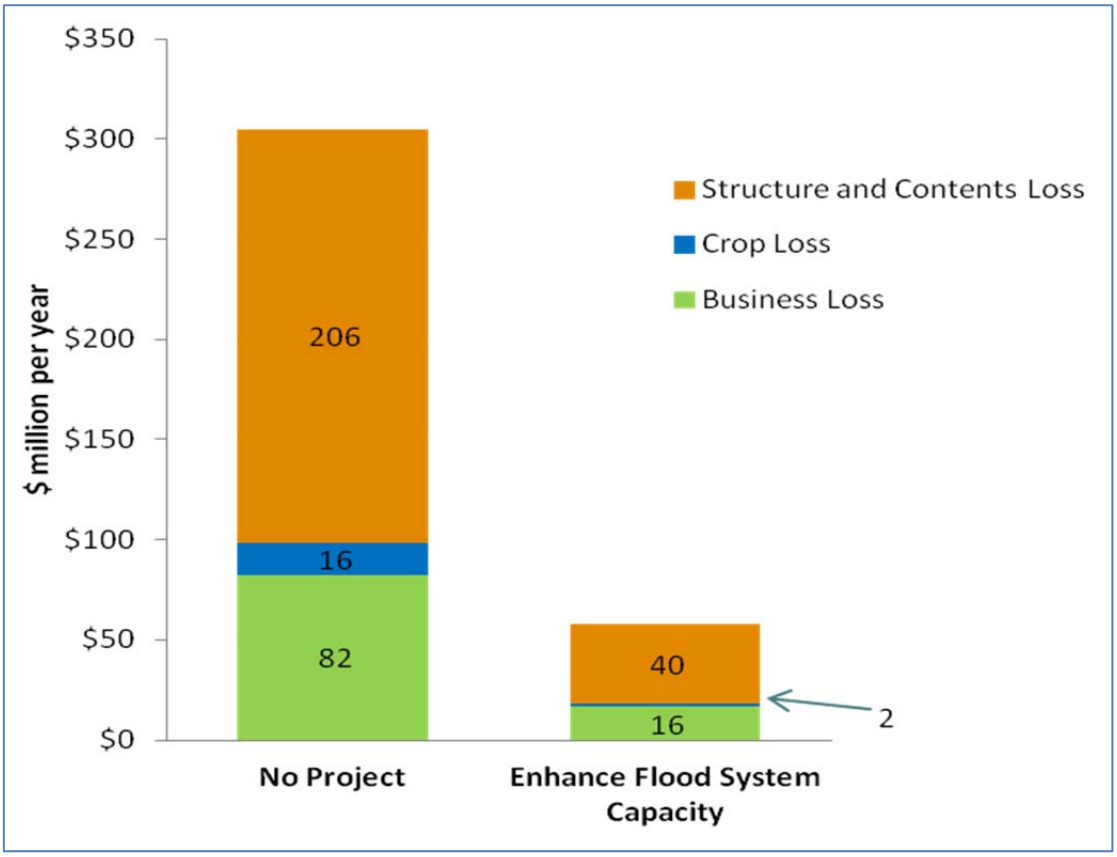
Figure 7-25 "Improvements Included in Enhance Flood System Capacity Approach" is replaced by the following:

Errata to the Public Draft
2012 Central Valley Flood Protection Plan
Volume II – Attachment 7

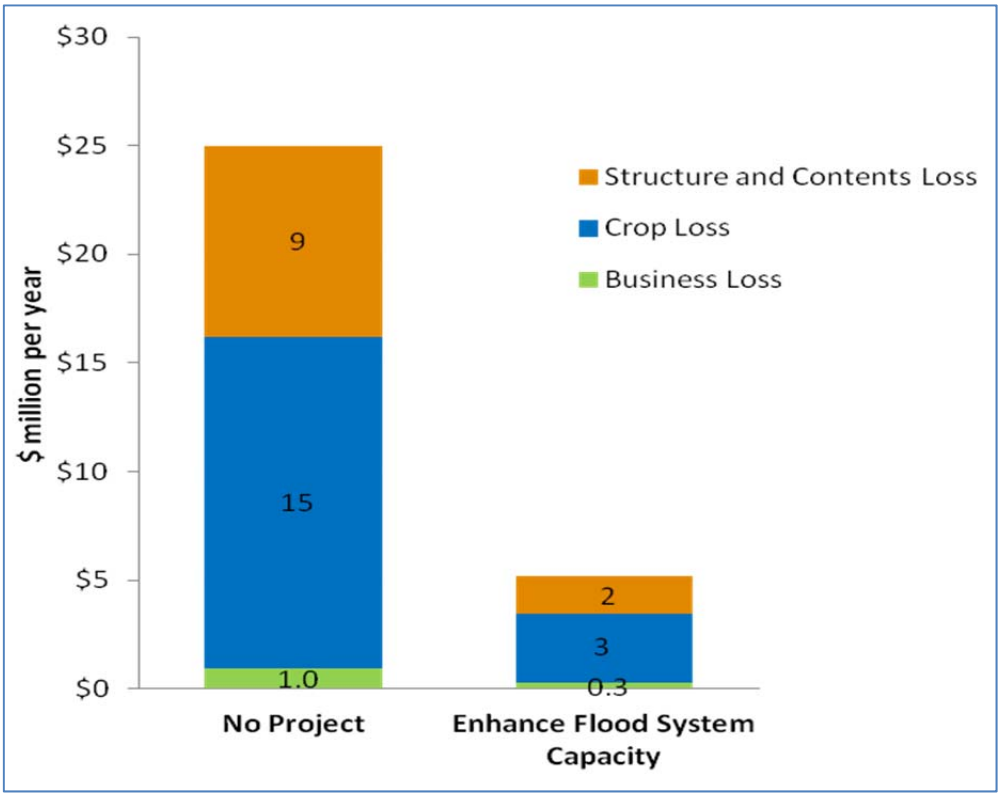


22. Attachment 7 – Plan Formulation Report, Section 7.5.4, page 7-67, figures 7-28 and 7-29

Replace Figure 7-28 "Expected Annual Damages from Flooding: Enhance Flood System Capacity Approach Compared to No Project for the Sacramento Basin" with the following:



Replace Figure 7-29 "Expected Annual Damages from Flooding: Enhance Flood System Capacity Approach Compared to No Project for the San Joaquin Basin" with the following:



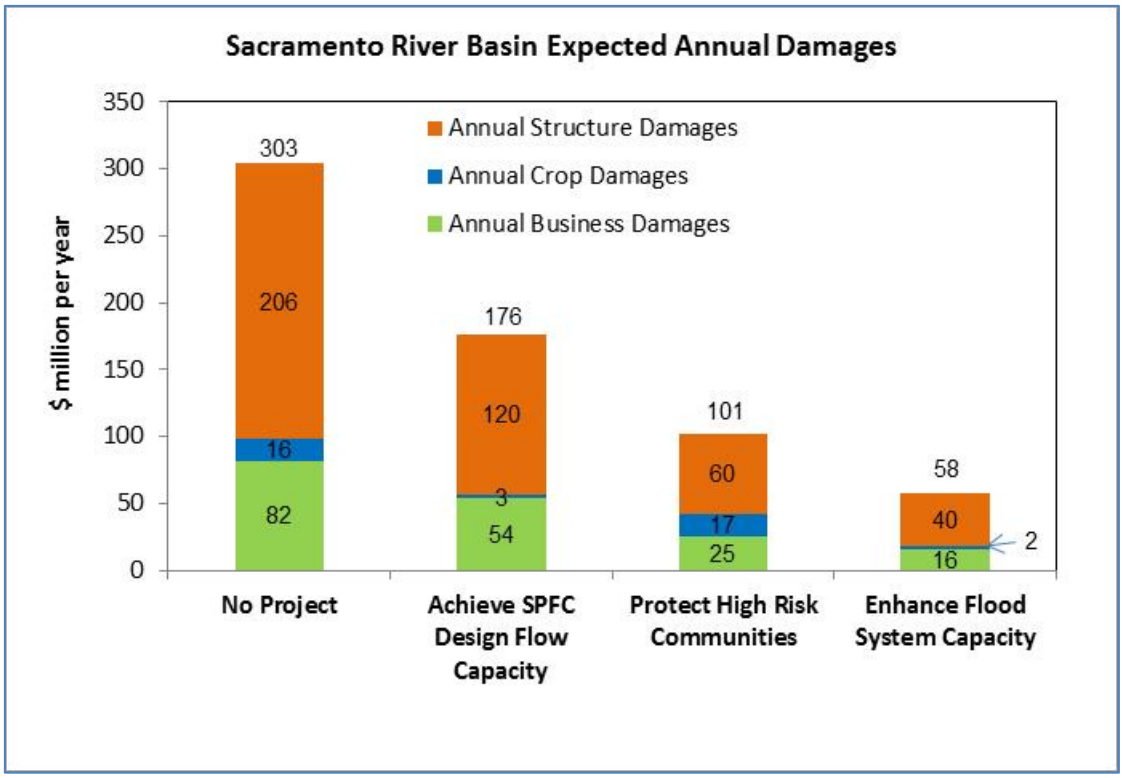
23. Attachment 7 – Plan Formulation Report, Section 7.6.2, page 7-74, Table 7-17

Table 7-17. ~~Percent Reduction in~~ Summary of Life Risk Values: Sacramento and San Joaquin River Basins

Study Approaches	Sacramento River Basin ~~(Percent Reduction)~~	San Joaquin River Basin ~~(Percent Reduction)~~	Stockton Area ~~(Percent Reduction)~~	Total ~~(Percent Reduction)~~

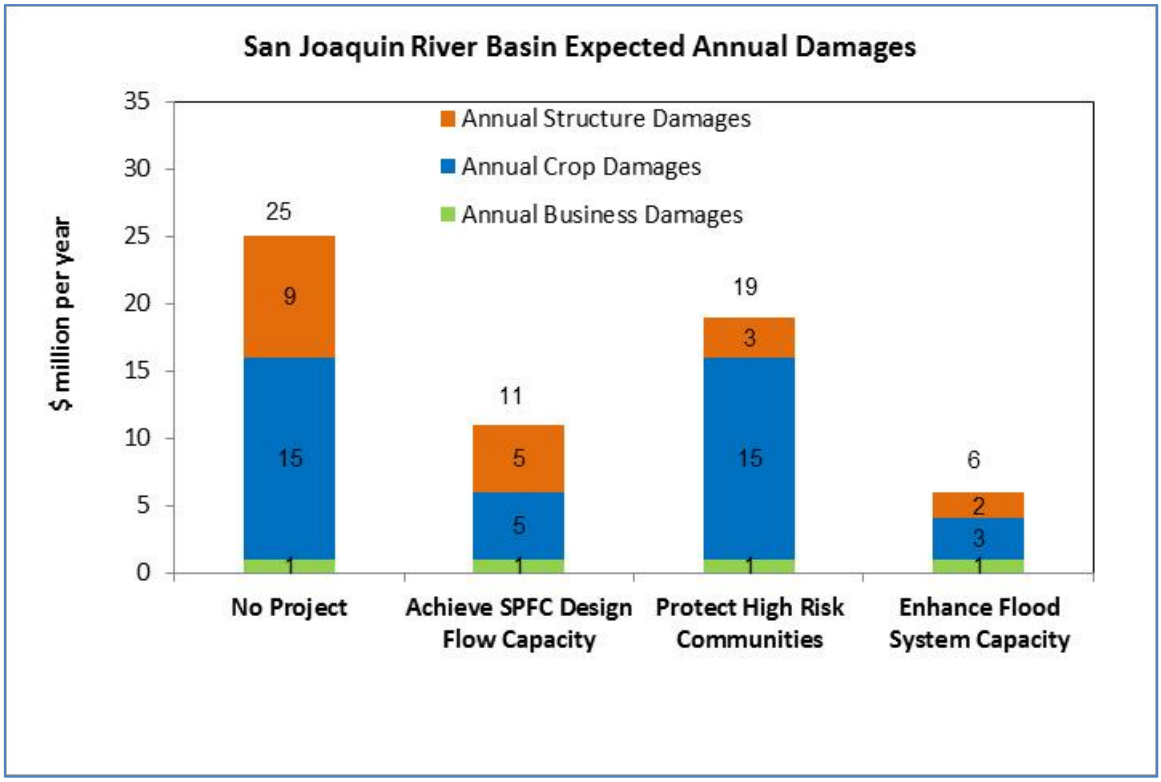
24. Attachment 7 – Plan Formulation Report, Section 7.6.2, pages 7-75 and 7-76, figures 7-32 and 7-33

Replace Figure 7-32 "Summary of Potential Annual Direct Impacts of Flooding in the Sacramento River Basin" with the following:



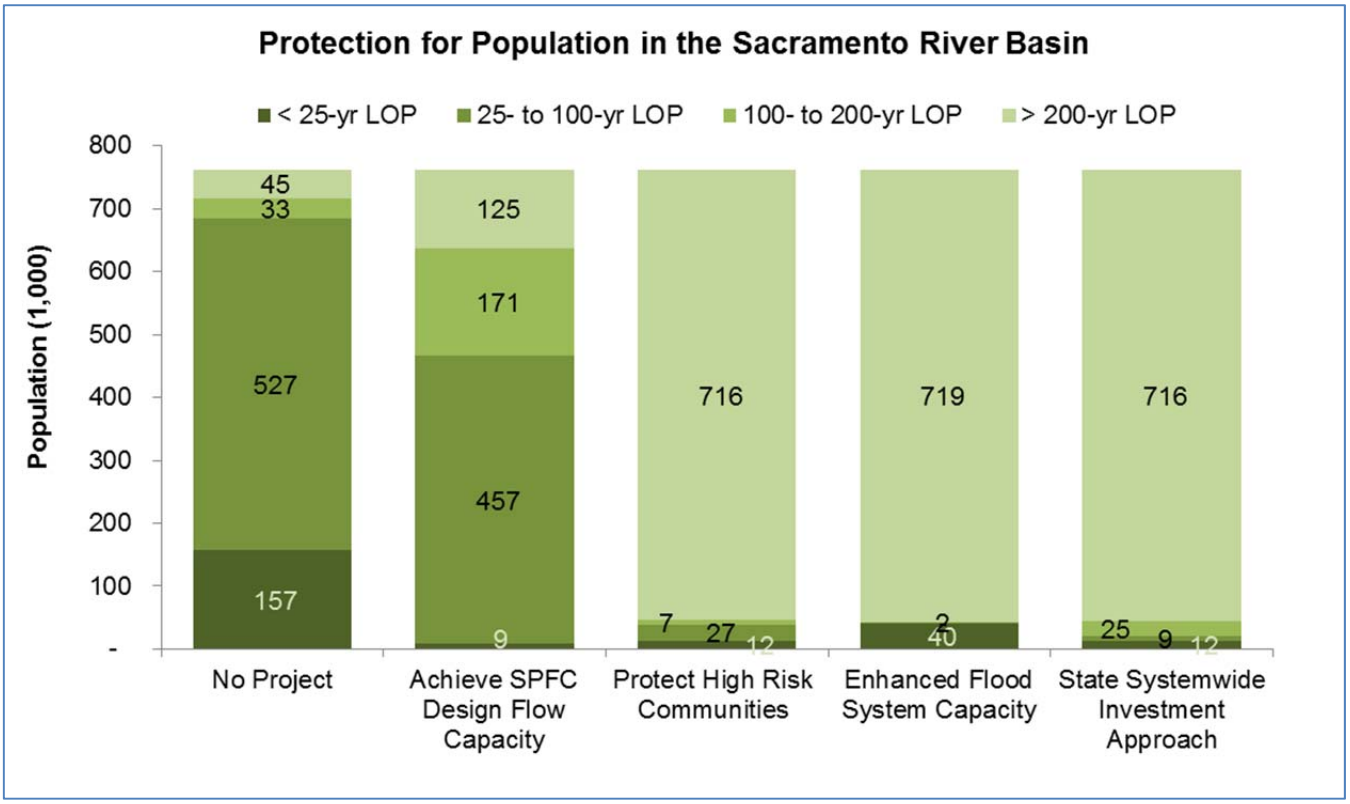
Errata to the Public Draft 2012 Central Valley Flood Protection Plan Volume II – Attachment 7

Replace Figure 7-33 "Summary of Potential Annual Direct Impacts of Flooding in the San Joaquin River Basin" with the following:

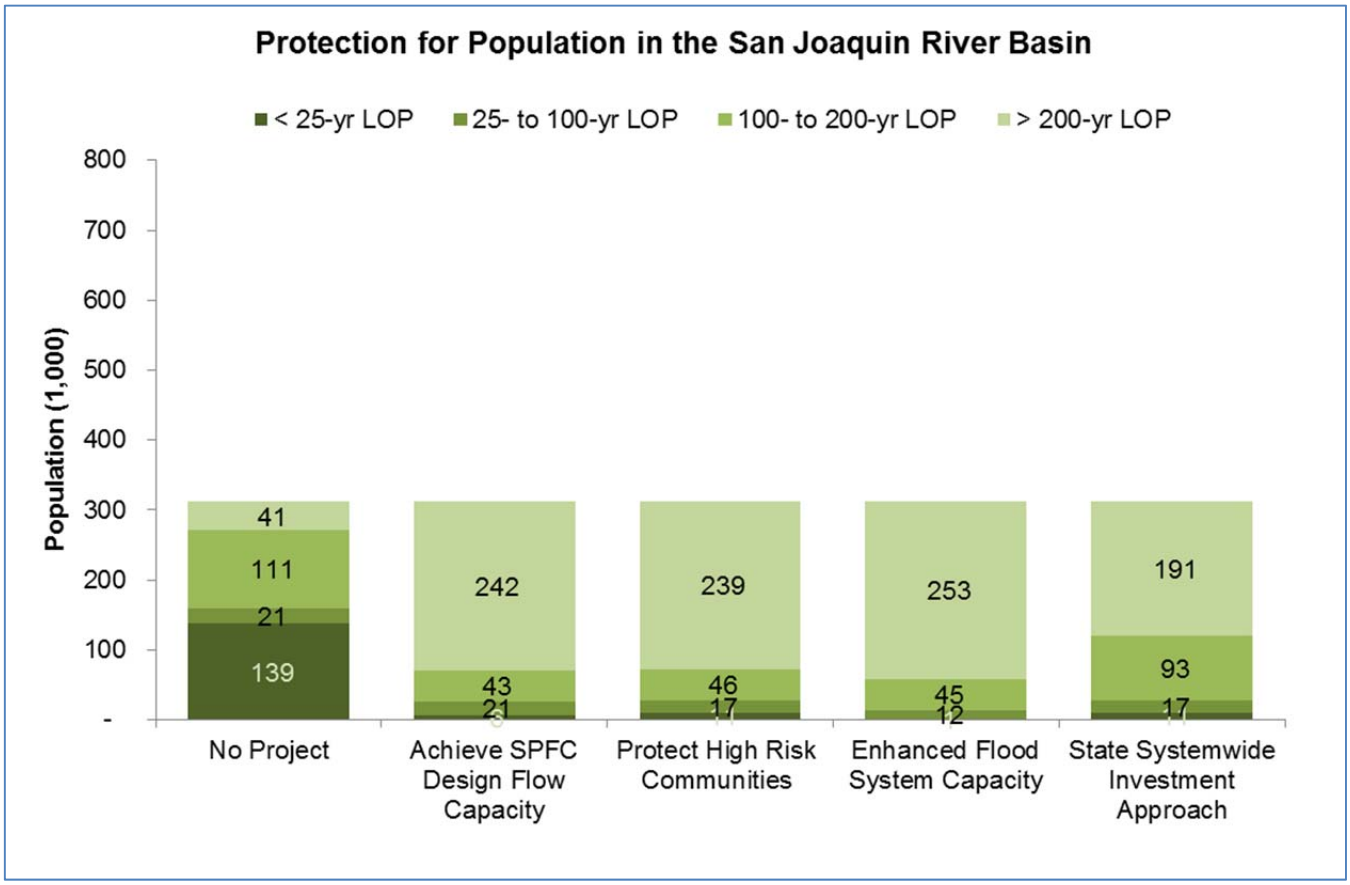


25. Attachment 7 – Plan Formulation Report, Section 7.6.2, Page 7-77, Figure 7-34, and 7-35.

Replace Figure 7-34 "Protection for Population in Sacramento River Basin" with the following:



Replace Figure 7-35 "Protection for Population in San Joaquin River Basin" with the following:



26. Attachment 7 – Plan Formulation Report, Section 7.6.3, page 7-79, Figure 7-36 note

Note: Location of ~~P~~peak ~~F~~flow and ~~W~~water ~~S~~surface ~~E~~elevation ~~E~~estimates for 100-year ~~S~~storm ~~E~~event at selected monitoring locations in the Sacramento River Basin.

27. Attachment 7 – Plan Formulation Report, Section 7.6.3, page 7-80, Figure 7-37 Note

Note: Location of ~~P~~peak ~~F~~flow and ~~W~~water ~~S~~surface ~~E~~elevation ~~E~~estimates for 100-year ~~S~~storm ~~E~~event at selected monitoring locations in the San Joaquin River Basin.

28. Attachment 7 – Plan Formulation Report, Section 7.6.5, page 7-82, Table 7-18, Row 5

Column 3, second Bullet

- ~~47~~ 43% reduction in total EAD

Column 5, second bullet

- ~~66~~ 80% reduction in total EAD

29. Attachment 7 – Plan Formulation Report, Section 7.6.7, page 7-86, Figure 7-38

Replace Figure 7-38 "Performance Comparison for Preliminary Approaches" with the following:

PERFORMANCE CATEGORY	ACHIEVE SPFC DESIGN FLOW CAPACITY	PROTECT HIGH RISK COMMUNITIES	ENHANCE FLOOD SYSTEM CAPACITY
Flood Risk Reduction Benefit	◑	◕	●
Level of Flood Protection	◔	◑	●
Life Safety	◔	◕	◕
Reduction in Economic Damages	◑	◕	◕
Regional Economics	◑	◕	●
Integration and Sustainability	○	◔	●
Promote Ecosystem Functions	○	○	●
Promote Multi-Benefit Projects	○	◔	●
Sustainable Land Uses	○	◔	●
Cost	$$$	$$	$$$
Capital Costs	$$$	$	$$$$
Operations & Maintenance	$$	$$$$	$

BENEFIT KEY

○ Low
◔ Low-Moderate
◑ Moderate
◕ Moderate-High
● High

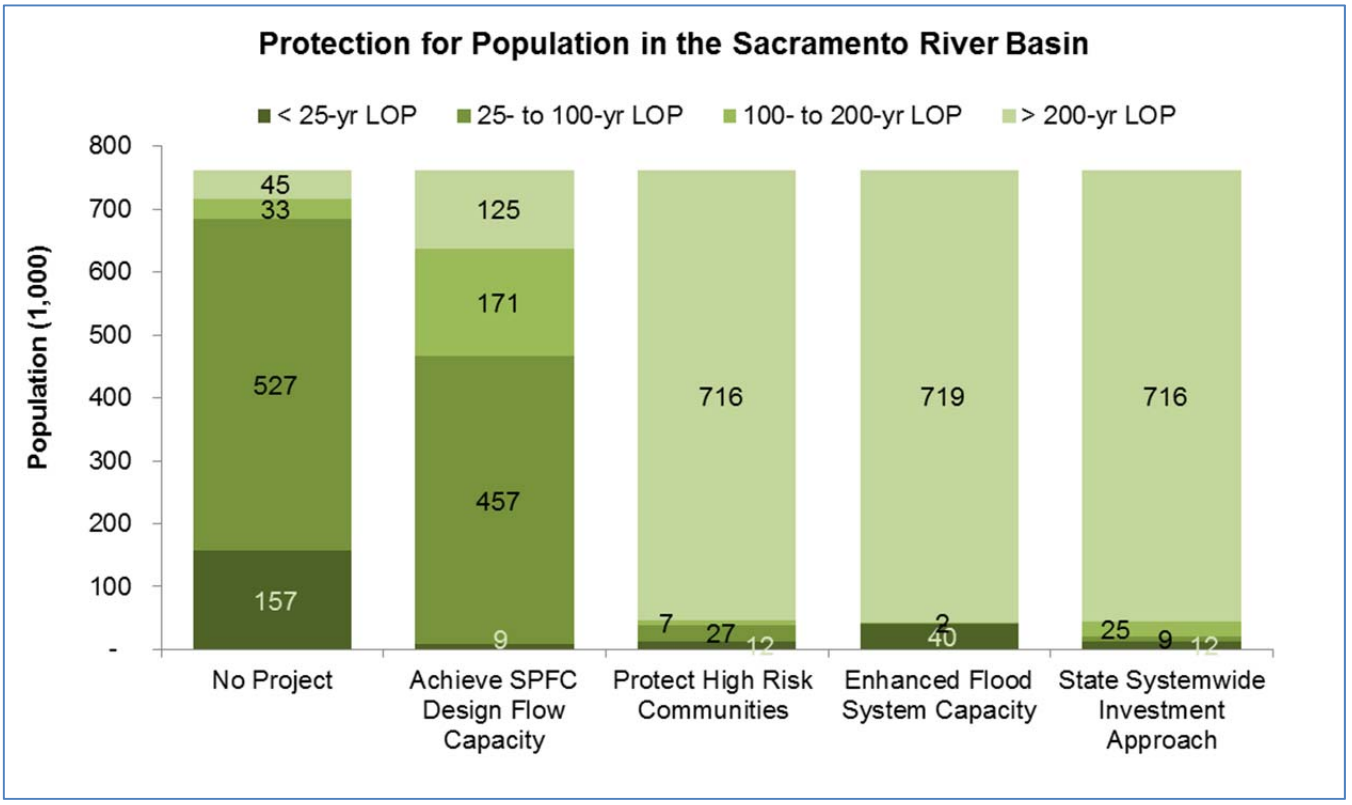
COST KEY

$ Low-Moderate
$$ Moderate
$$$ Moderate-High
$$$$ High

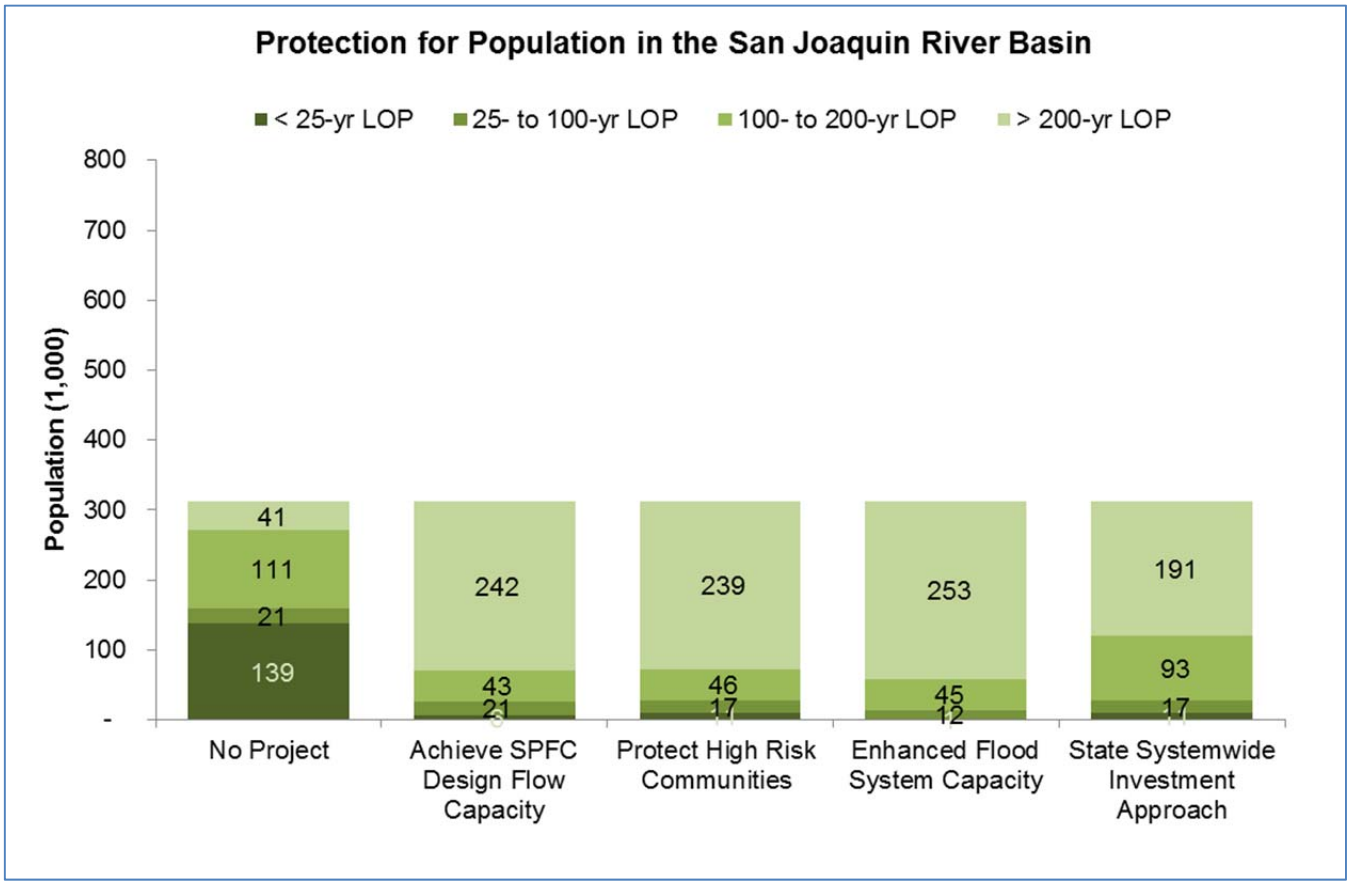
Key: SPFC = State Plan of Flood Control

30. Attachment 7 – Plan Formulation Report, Section 7.6.2, Page 7-77, Figure 7-34, and 7-35.

Replace Figure 7-34 "Protection for Population in Sacramento River Basin" with the following:



Replace Figure 7-35 "Protection for Population in San Joaquin River Basin" with the following:



31. Attachment 7 – Plan Formulation Report, Section 7.7, Page 7-89, 10th bullet

Delete duplicated bullet:

- ~~Would increase the population receiving at least a 100-year (1% annual chance) level of flood protection from about 25 percent to over 90 percent compared with existing conditions~~

32. Attachment 7 – Plan Formulation Report, Section 8-1, page 8-2, Table 8-1, Note 2

Includes Urban Levee Evaluations Project classifications ~~categories~~ "Marginal" and "Does Not Meet Criteria" and Non-Urban Levee Evaluations Project categories B (Moderate) and C (Low).

33. Attachment 7 – Plan Formulation Report, Section 8.1, page 8-4, Table 8-2, Row 13, Column 2

- Tisdale Bypass and Colusa Bypass fish passage ~~Sutter Basin and fish passage east of Butte Basin~~
- Fremont Weir fish passage improvements
- ~~Yolo Bypass/Willow Slough Weir fish passage improvements~~
- ~~Yuba River fish passage and fish screen~~
- Deer Creek

34. Attachment 7 – Plan Formulation Report, Section 8.1, page 8-4, Table 8-2, Notes

[3] Includes all small communities within the SPFC Planning Area.

[4] Includes selected small communities within the SPFC Planning Area.

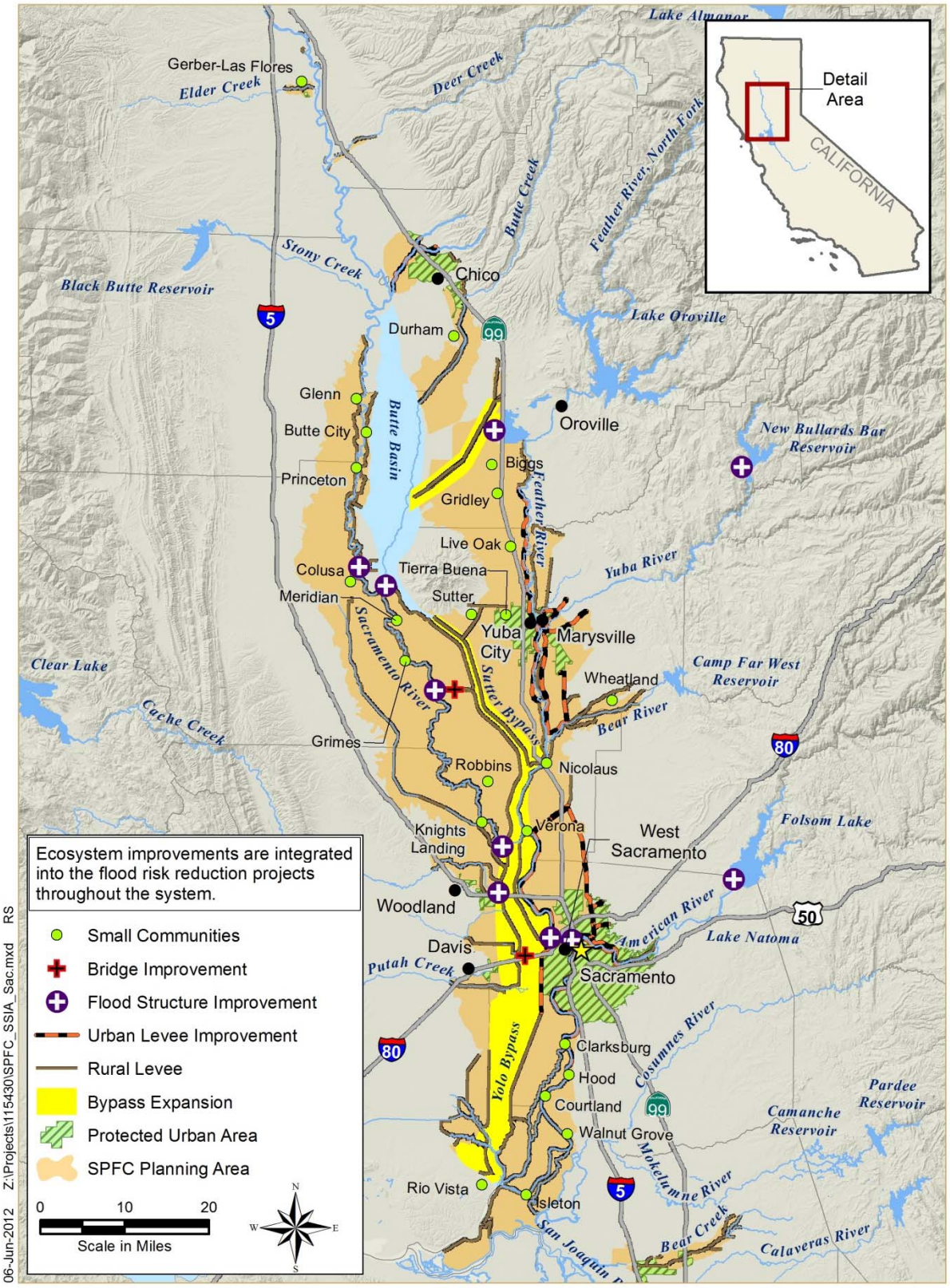
35. Attachment 7 – Plan Formulation Report, Section 8.2, pages 8-5 and 8-6, Figures 8-1 and 8-2

Figure 8-1 and Figure 8-2 have revised titles and are replaced by the following, respectively:

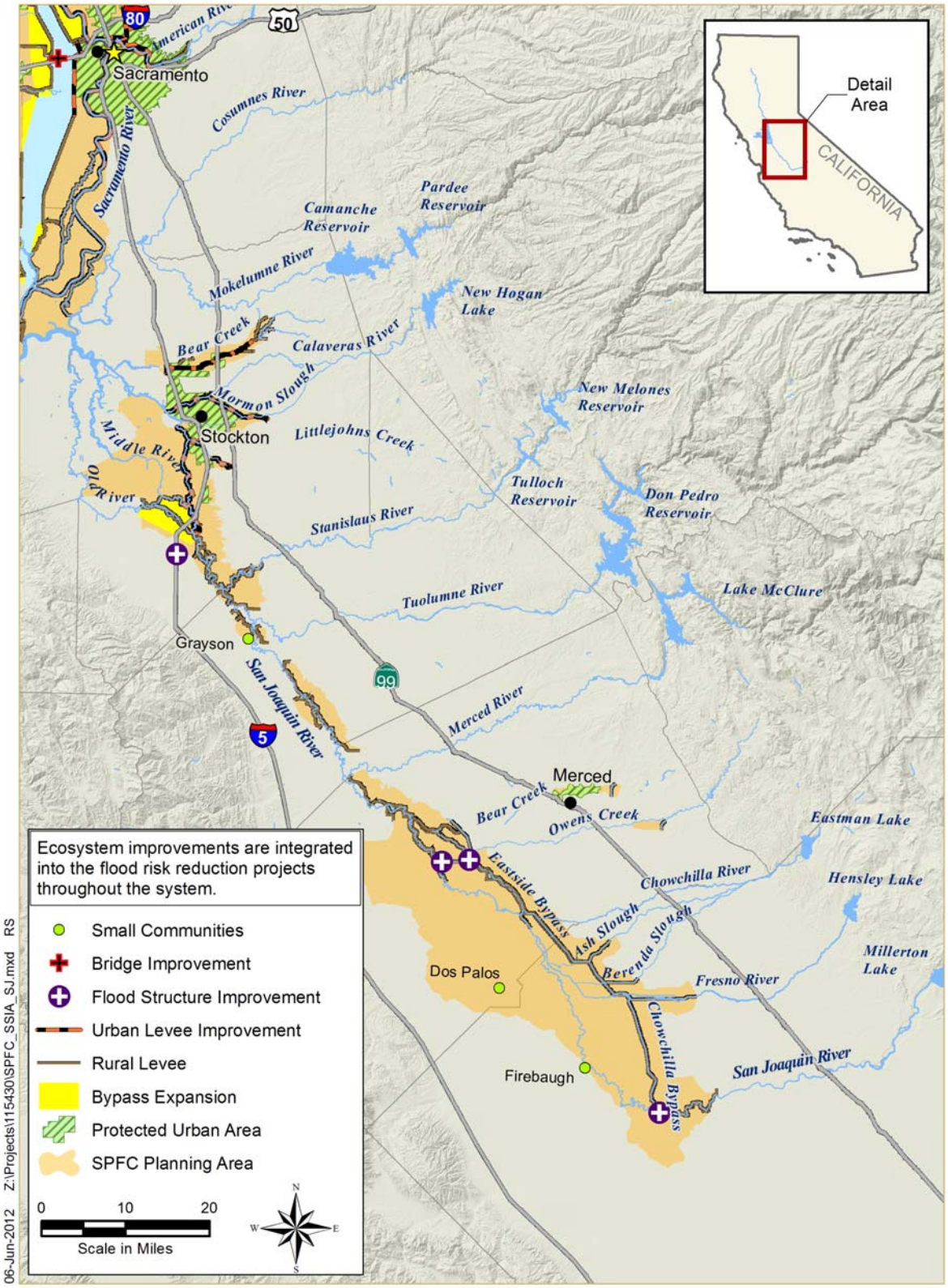
Figure 8-1. State Sytemwide Investment Approach – Sacramento River Basin Major Capital Improvements under Consideration

Figure 8-2. State Systemwide Investment Approach – San Joaquin River Basin Major Capital Improvements under Consideration

Errata to the Public Draft 2012 Central Valley Flood Protection Plan Volume II – Attachment 7



Errata to the Public Draft 2012 Central Valley Flood Protection Plan Volume II – Attachment 7



36. Attachment 7 – Plan Formulation Report, Section 8.2, page 8-7, first sentence of second paragraph

Improvements to urban levees or floodwalls should follow DWR's ***Urban Levee Design Criteria*** (~~anticipated~~ 2012), at a minimum.

37. Attachment 7 – Plan Formulation Report, Section 8.2, page 8-8, second bullet

- **Yuba City and City of Marysville** – Improvements for this metropolitan area and adjacent existing urbanizing corridor (along Highway 99 north of Yuba City, and along Highway 70 within and south of Marysville) include:

38. Attachment 7 – Plan Formulation Report, Section 8.2, page 8-9, first paragraph

- Continue to work with Sutter Butte Flood control Agency to develop and implement projects to achieve an urban level of flood protection for Yuba City and adjacent existing urbanizing areas.

39. Attachment 7 – Plan Formulation Report, Section 8.3, page 8-10, second sentence of first paragraph of the section

The State will evaluate investments to preserve small community development opportunities without providing an urban level of flood protection. However, some small communities adjacent to existing urban areas may achieve a 100-year level of flood protection or higher as a result of improvements for the adjacent urban areas.

40. Attachment 7 – Plan Formulation Report, Section 8.3, page 8-11, first sentence of last paragraph

Improvements to ~~S~~small communities~~' improvements~~ should also be implemented and maintained consistent with the State's vegetation management approach (Attachment 2 – Conservation Framework).

41. Attachment 7 – Plan Formulation Report, Section 8.4.1, page 8-13, second sentence of first paragraph of the section

The State will work with rural-agricultural communities to develop applicable rural levee repair ~~standards~~ criteria for SPFC levees (see Section 4).

42. Attachment 7 – Plan Formulation Report, Section 8.5.1, page 8-17, Yolo Bypass Expansion 3rd bullet

As described under Section 8.2 ~~Urban Flood Protection above~~, evaluate the Cache Creek Settling Basin to identify a long-term program for managing sediment and mercury to sustain the flood conveyance capacity of the Yolo Bypass.

43. Attachment 7 – Plan Formulation Report, Section 8.5.1, page 8-17, 1st paragraph of Sacramento Bypass Expansion

As part of urban elements to reduce flood risks to the Sacramento/West Sacramento metropolitan area, future studies to refine specific project elements related to bypass expansion (also described ~~mentioned~~ under Section 8.2~~Urban Flood Improvements~~) will consider the following:

44. Attachment 7 – Plan Formulation Report, Section 8.5.2, page 8-17 and 8-18

New Bypasses: While they would primarily provide benefits to the urban areas of Yuba City/Marysville and Stockton, they are described here…

Lower San Joaquin Bypass: A south Delta bypass ~~will~~ would include habitat components. A gate structure or weir at Paradise Cut will be considered as part of the project. The new bypass would require construction of about eight miles of new levee. In combination with the bypass, the State will consider purchasing easements in the south Delta from willing sellers…

45. Attachment 7 – Plan Formulation Report, Section 8.5.6, page 8-20, third sentence of last paragraph

Proactive reservoir management through the use of ~~a~~ more flexible flood control diagrams would require extensive studies of the most feasible diagrams, environmental documentation for changing reservoir operations, and Congressional approval for ~~a~~ new dynamic flood control diagrams.

46. Attachment 7 – Plan Formulation Report, Section 8.8, page 8-28, fourth sentence of last paragraph

For the 2012 CVFPP, high tide conditions during the 1997 flood ~~(a strong El Nino event)~~ were used as the boundary conditions for hydraulic analysis and could be considered an initial, surrogate condition under climate change.

47. Attachment 7 – Plan Formulation Report, Section 8.9, page 8-30, first and fourth paragraphs

First paragraph: Land uses in the Delta outside the SPFC Planning Area are primarily rural and dominated by agriculture and open space…

Flood management responsibilities in Delta areas outside the SPFC Planning Area reside with a variety of local agencies…

Fourth paragraph: The State will continue to support Delta flood management improvements outside the SPFC Planning Area through existing programs and in coordination with ongoing multiagency Delta Planning efforts.

48. Attachment 7 – Plan Formulation Report, Section 8.12, page 8-38, first Floodplain Management bullet in text box

~~Building code revision prepared~~ Approved building code amendment for single family residential occupancy

49. Attachment 7 – Plan Formulation Report, Section 8.13.1, page 8-46, first paragraph

Remove the following paragraph:

~~The 2012 CVFPP has a goal for urban areas to achieve a level of (LOP) against a 0.5 percent AEP flood event (200-year LOP). The goal for rural areas is to achieve a level of protection against a 1 percent AEP flood event (100-year LOP).~~

50. Attachment 7 – Plan Formulation Report, Section 8.13.1, page 8-47, last part of first paragraph

Flood stages in the San Joaquin River Basin ~~do~~would not change much with respect to current conditions because large bypass expansions were not included, except near the Delta.

51. Attachment 7 – Plan Formulation Report, Section 8.13.1, page 8-48, Figure 8-10

~~Location of Peak Flow and Water Surface Elevation Estimates for 100-Year Storm Event at selected monitoring locations in the Sacramento River Basin.~~

Note: Figure presents peak flow and water surface elevation estimates for various frequency flood events (represented as percent chance exceedence, e.g., 1%) at selected monitoring locations in the Sacramento River Basin.

52. Attachment 7 – Plan Formulation Report, Section 8.13.1, page 8-49, Figure 8-11

~~Location of Peak Flow and Water Surface Elevation Estimates for 100-Year Storm Event at selected monitoring locations in the San Joaquin River Basin.~~

Note: Figure presents peak flow and water surface elevation estimates for various frequency flood events (represented as percent chance exceedence, e.g., 1%) at selected monitoring locations in the ~~Sacramento~~ San Joaquin River Basin.

53. Attachment 7 – Plan Formulation Report, Section 8.13.3, page 8-51, Table 8-9, fifth row and third column

Reduction of ~~67~~ 66 percent in expected annual damages

54. Attachment 7 – Plan Formulation Report, Section 8.14.1, page 8-54, second paragraph

Results of the modeling indicate an overall reduction in total expected annual damages of about ~~67~~ 66 percent, with specific reductions in damages and losses as follows:

- Structure and contents flood damages would be reduced by ~~72~~ 73 percent
- Crop damages due to flooding would be reduced by 6 percent
- Business production losses would be reduced by ~~72~~ 71 percent

55. Attachment 7 – Plan Formulation Report, Section 8.14.4, page 8-57, first sentence of first paragraph

~~Environmental~~ Ecosystem restoration is fully integrated with the flood risk reduction components of the SSIA.

56. Attachment 7 – Plan Formulation Report, Section 8.14.4, page 8-57, second bullet, second sentence

This includes connecting fishery habitat from the Delta to the Yolo and Sutter bypasses and to the Butte Basin.

57. Attachment 7 – Plan Formulation Report, Section 8-14, page 8-59, text box, first bullet

- 100 percent of existing urban areas protected by SPFC facilities attain 200-year level of flood protection

58. Attachment 7 – Plan Formulation Report, Section 8-14, page 8-59, text box, first bullet

About 20 of the small communities in the SPFC Planning Area (from a total of 27) will attain 100-year level of flood protection, at a minimum.

59. Attachment 7 – Plan Formulation Report, Section 8.15, page 8-61, second full sentence of first paragraph

This would preserve small community development opportunities within specific boundaries without encouraging broader urban development. However, some small communities adjacent to existing urban areas may achieve a 100-year level of flood protection or higher as a result of improvements for the adjacent urban areas.

60. Attachment 7 – Plan Formulation Report, Section 9.0, page 9-1 3rd Paragraph

90 ~~P~~proposed projects and project concepts were collected during the communication and engagement process and are listed in Table 9-1. In addition, summary forms for 56 project concepts for which information has already been gathered are also included in Attachment 7a: Local and Regional Project Summaries. These projects are indicated with an asterisk (*) on Table 9-1.

61. Attachment 7 – Plan Formulation Report, Section 9.0, page 9-2, Table 9-1

Table 9-1 “Local and Regional Project Concept – Summary Status” is revised as follows:

Table 9-1. Local and Regional Project Concepts ~~– Summary Status~~

Project Name	Planning Area
Complete Middle Creek project by completing land acquisition, environmental restoration, and levee decommissioning*	Lower Sacramento
Fix Cache Creek Settling basin to secure another 50 to 100 years life in the project*	Lower Sacramento
Stabilize Cache Creek through grade control structures and other measures*	Lower Sacramento
Consider additional floodplain storage within Cosumnes River preserve	Lower Sacramento
Consider Sacramento DWSC or construct peripheral canal along DWSC as bypass	Lower Sacramento
Consider Stone Lakes Refuge Bypass	Lower Sacramento
Rehabilitate and provide operable gates for Sacramento Weir*	Lower Sacramento
Rehabilitate Knights Landing Outfall structure and provide for fish exclusion	Lower Sacramento
Acquire flood easement over Conaway Ranch*	Lower Sacramento
Remove sediment and rehab structure as necessary at Fremont Weir*	Lower Sacramento
Remove Yolo Short Line RR as obstruction in Yolo Bypass flow	Lower Sacramento
Review and modify bypass channel vegetation as necessary to maintain proper balance of storage and conveyance in upper Butte Basin*	Upper Sacramento
Stabilize Cherokee Canal watershed to reduce sediment transport and long-term O&M costs*	Upper Sacramento
Modifications to the 3Bs Flood Relief Structure *	Upper Sacramento
Construct peak overflow detention basins in the Colusa Basin Drainage Area. *	Upper Sacramento
Colusa Drain improvements*	Upper Sacramento
Protect M&T pumping facilities*	Upper Sacramento
Secure meander zones along upper Sacramento River where infrastructure is threatened*	Upper Sacramento
Remove sediment and rehab structure as necessary at Moulton Weir	Upper Sacramento
Remove sediment and rehab structure as necessary at Colusa Weir*	Upper Sacramento
Raise Woodson Bridge	Upper Sacramento
Construct peak overflow detention basins on streams in Tehama County*	Upper Sacramento
Construct peak overflow detention basins on streams in Glenn County*	Upper Sacramento
Construct peak overflow detention basins on streams in Butte County	Upper Sacramento
Construct peak overflow detention basins on streams in Shasta County	Upper Sacramento
Gravel augmentation at Cottonwood Creek*	Upper Sacramento
Construction of control structures along Burch and Jewett creeks	Upper Sacramento
Stabilize Sycamore Creek erosion through construction of grade control structures*	Upper Sacramento
Rehabilitate Chico Creek Diversion Structure*	Upper Sacramento
Deer Creek Levee Setback and Environmental Enhancement Project; Lower Deer Creek Flood Reduction and Fisheries Restoration Project*	Upper Sacramento
Remove sediment and rehab structure as necessary at Tisdale Weir*	Upper Sacramento
Protect Woodson Bridge hard point*	Upper Sacramento
Acquire or expand on Egbert Tract to secure overflow capacity	Delta

Table 9-1. Local and Regional Project Concepts ~~– Summary Status~~ (contd.)

Project Name	Planning Area
Acquisition and complete restoration of Prospect Island*	Delta
Acquisition and complete restoration of Liberty Island*	Delta
Removing sunken ships in the channel/dredging	Delta
Modify marina to south of McCormack-Williamson Tract in north Delta	Delta
Bank stabilization in Delta	Delta
Clifton Court Forebay operations	Delta
Staten Island Bypass	Delta
Consider McCormack-Williamson as bypass	Delta
Silt/sand bar removal along lower San Joaquin river*	Lower San Joaquin
Modifications to previous seismic projects on the Stanislaus River near San Joaquin River confluence	Lower San Joaquin
Vegetation removal along Mokelumne River*	Lower San Joaquin
Vegetation removal and bank stabilization in the Coral Hall Road area, San Joaquin County*	Lower San Joaquin
Restore existing bypass on Mormon Channel from Calaveras River	Lower San Joaquin
Divert flow from Stockton Diverting Canal to Mormon Channel	Lower San Joaquin
New control structure on Dry Creek below Don Pedro and/or at Tuolumne confluence	Lower San Joaquin
Construct setback levees at Reclamation District 17	Lower San Joaquin
Construct wing levees (WaltHall levee)	Lower San Joaquin
Channel modifications to Tuolumne River downstream from Dry Creek	Lower San Joaquin
Protect cultural resources (i.e. Parkway – Dumna Tribal village site)	Upper San Joaquin
Consider dredging Chowchilla Bypass	Upper San Joaquin
Consider dredging Mendota Pool	Upper San Joaquin
Consider dredging San Joaquin River below Washington Road	Upper San Joaquin
Consider bank stabilization along Chowchilla Bypass	Upper San Joaquin
Consider bank stabilization near Mendota and Firebaugh	Upper San Joaquin
Reduce flow constrictions along Ash Slough and Berenda Slough*	Upper San Joaquin
Repair/modify Los Banos Creek culverts*	Upper San Joaquin
Consider Mendota Pool bypass*	Upper San Joaquin
Consider structural modifications to Mariposa bypass*	Upper San Joaquin
Consider modifying Kings River Bypass near San Mateo Road	Upper San Joaquin
Consideration of Bear Creek and Black Rascal Creek bypasses	Upper San Joaquin
Consider Westside IRWM projects*	Upper San Joaquin
Pioneer Site seepage berm*	Lower Sacramento
Levee repair of 25 erosion sites Sacramento River Bank Protection Project*	Upper and Lower Sacramento
South Sacramento County Streams Project Union House Creek channel upgrades*	Lower Sacramento

Table 9-1. Local and Regional Project Concepts ~~– Summary Status~~ (contd.)

Project Name	Planning Area
San Joaquin Area Flood Control Agency Smith Canal closure conceptualization*	Lower San Joaquin
Lower San Joaquin River Feasibility Study*	Lower San Joaquin
American River Common Features PAC and GRR*	Lower Sacramento
Frazier Creek/Strathmore Creek Feasibility Study*	Upper San Joaquin
Woodland/Lower Cache Creek General Investigation*	Lower Sacramento
Merced County Streams Feasibility Study and GRR*	Upper San Joaquin
Rock Creek/Keefer Slough Feasibility Study*	Upper Sacramento
Sutter Basin Feasibility Study *	Lower Sacramento
West Sacramento Area Flood Control Agency Project and GRR*	Lower Sacramento
West Stanislaus County/Orestimba Creek Feasibility Study *	Lower San Joaquin
White River/Deer Creek Feasibility Study *	Upper San Joaquin
Yuba River Basin Project GRR *	Lower Sacramento
Mid-Valley Area Reconstruction Project*	Lower Sacramento
Sacramento River Flood Control System Evaluation*	Upper and Lower Sacramento
Hamilton City Flood Damage Reduction and Ecosystem Restoration*	Upper Sacramento
Putah Creek Flood Reduction and Habitat Improvement Project*	Lower Sacramento
Floodplain Expansion and Ecosystem Restoration at Dos Rios Ranch*	Lower San Joaquin
Elk Slough Area Flood and Habitat Improvement Project*	Lower Sacramento
Sutter Basin Flood Corridor Conservation Project*	Lower Sacramento
Colusa Ring Levee Flood Protection and Wildlife Benefit Project*	Lower Sacramento
The Lower San Joaquin River Flood Bypass*	Lower San Joaquin
Elkhorn Basin Ecosystem Restoration Project	Lower Sacramento
Koptka Slough Restoration Project	Upper Sacramento

62. Attachment 7 – Plan Formulation Report, Section 9.0, page 9-2, Table 9-1 Notes

~~Key:~~ Notes:
* = Project Summary is included in Attachment 7A: Local and Regional Project Summaries

63. Attachment 7 – Plan Formulation Report, Section 10.0, page 10-3

Add/revise the following DWR references as follows:

———. 2012a. Program Environmental Impact Report.

———. 2012b. Urban Levee Design Criteria.

———. 2012. Draft Urban Level of Flood Protection Criteria

64. Attachment 7 – Plan Formulation Report, Section 10.0, page 10-8

The following reference will be added:

Yuba County Water Agency (YCWA). 2008. Forecast-Coordinated Operations of Lake Oroville and New Bullards Bar Reservoir for Managing Major Flood Events. January 2008 Update.

65. Attachment 7A – Local and Regional Project Summaries, Project Summary Template

The following changes will be made to the Project Summary Template, and in all instances where the USACE is identified as a potential Partner, the organization will be identified as the Lead Federal Agency.

Project Proponents:

- **Lead Non-Federal Agency –**
- **Lead Federal Agency –**
- **Potential Partners –**

66. Attachment 7A – Local and Regional Project Summaries, Section 1.42, page 1-141

Contact Information –

- ~~David Vanrijn~~ Brandon Muncy

67. Attachment 7A – Local and Regional Project Summaries, Section 1.43, page 1-144

Contact Information –

- ~~William Edgar~~ Mike Inamine, Sutter-Butte Flood Control Agency

68. Attachment 7A – Local and Regional Project Summaries, Section 1.45, page 1-150

- Potential Partners – USACE, City of ~~Woodland~~ Newman, Board, Stanislaus County

69. Attachment 7A – Local and Regional Project Summaries, Section 1.45, page 1-152

Redirected Hydraulic Impacts – ~~Increased channel flow in Orestimba Creek during flood events could have potential negative impacts downstream.~~ Localized increases in the depth of flooding up to half a foot may occur in areas outside of the chevron levee.

70. Attachment 7A – Local and Regional Project Summaries, Section 1.45, page 1-152

Adverse Environmental Impact and Regulatory Issues – A combined ~~EIS/EIR~~ EA/IS is being developed for this study. ~~The current selected alternative requires a large amount of mitigation for environmental impacts within Orestimba Creek. Refinements to design aspects are being done to maintain an economically justifies alternative.~~ Potential impacts will be identified through this process.

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CENTRAL VALLEY
FLOOD MANAGEMENT
PLANNING PROGRAM

FloodSAFE
CALIFORNIA

Errata to the Public Draft

2012 Central Valley Flood Protection Plan

Volume III – Attachments 8 through 8E

June 2012

STATE OF CALIFORNIA
THE NATURAL RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

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CENTRAL VALLEY FLOOD MANAGEMENT PLANNING PROGRAM

FloodSAFE CALIFORNIA

Errata to the Public Draft 2012 Central Valley Flood Protection Plan Volume III – Attachments 8 through 8E

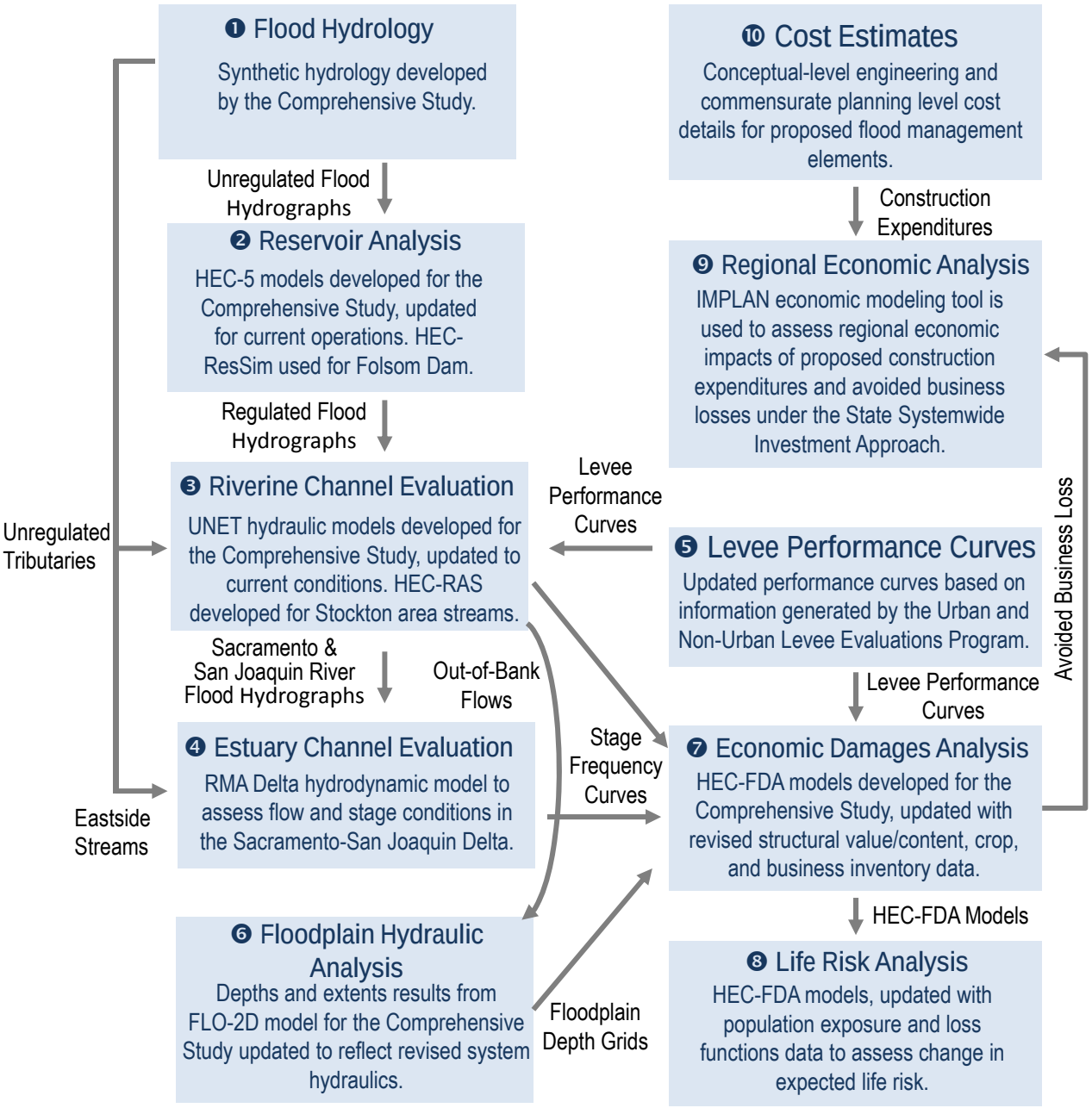
1. **Attachment 8 – Technical Analysis Summary Report, Section 2.0, page 2-1, second sentence of first paragraph**

   Evaluation and comparison of the approaches focused primarily on the physical and operational elements of the approaches.

2. **Attachment 8 – Technical Analysis Summary Report, Figure 3-1, page 3-2**

   Replace Figure 3-1 "Technical Analyses and Tools Supporting 2012 CVFPP Development" with the following for color consistency.

Errata to the Public Draft 2012 Central Valley Flood Protection Plan Volume III – Attachments 8 through 8E



Legend:

Comprehensive Study	*Sacramento and San Joaquin River Basins Study Comprehensive Study (USACE, 2002)*
HEC	USACE Hydrologic Engineering Center
HEC-FDA	HEC Flood Damage Analysis model
FLO-2D	Fullerton, Lenzotti, and O'Brien – Two Dimensional model
HEC-RAS	HEC River Analysis System model
HEC-ResSim	HEC Reservoir Operations Simulation model
HEC-5	HEC Reservoir Operations Simulation model (predecessor to HEC-ResSim)
IMPLAN	Impact Analysis for Planning
RMA	RMA Finite Element Model of Sacramento-San Joaquin Delta hydrodynamics
UNET	One-Dimensional Unsteady Network Flow model (predecessor to HEC-RAS)
USACE	U.S. Army Corps of Engineers

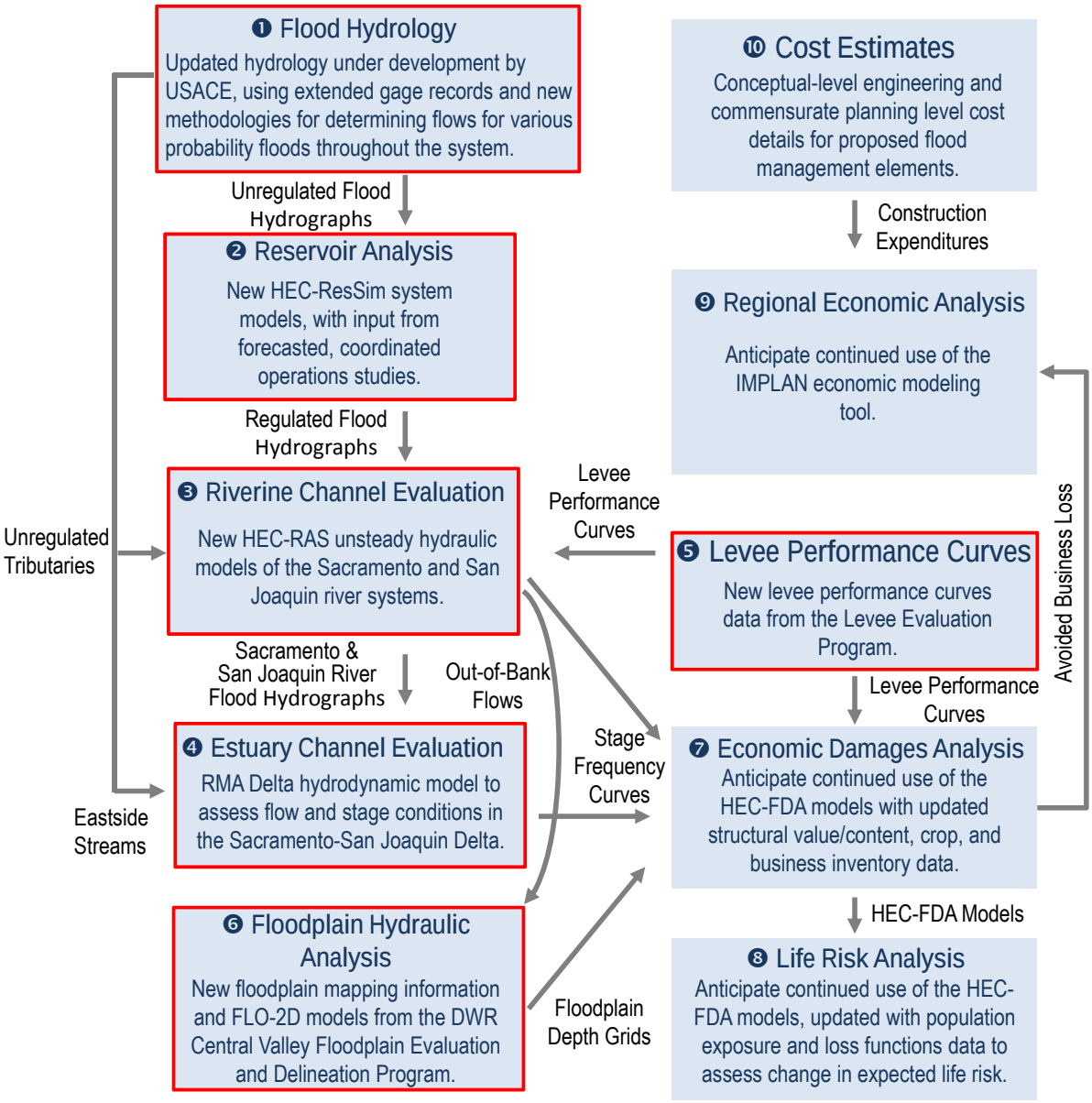
3. **Attachment 8 – Technical Analysis Summary Report, Section 4.1, page 4-2**

   Floodplain restoration opportunity analysis is documented in Attachment 9F of the Supporting Documentation for the Conservation Framework.

4. **Attachment 8 – Technical Analysis Summary Report, Figure 5-1, page 5-2**

   Replace Figure 5-1 "New Technical Data and Tools Being Developed to Support the 2017 CVFPP Update" is replaced by the revised version in the following page for color consistency.

Errata to the Public Draft 2012 Central Valley Flood Protection Plan Volume III – Attachments 8 through 8E



Legend:

Comprehensive Study	*Sacramento and San Joaquin River Basins Study Comprehensive Study (USACE, 2002)*
HEC	USACE Hydrologic Engineering Center
HEC-FDA	HEC Flood Damage Analysis model
FLO-2D	Fullerton, Lenzotti, and O'Brien – Two Dimensional model
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HEC-ResSim	HEC Reservoir Operations Simulation model
HEC-5	HEC Reservoir Operations Simulation model (predecessor to HEC-ResSim)
IMPLAN	Impact Analysis for Planning
RMA	RMA Finite Element Model of Sacramento-San Joaquin Delta hydrodynamics
UNET	One-Dimensional Unsteady Network Flow model (predecessor to HEC-RAS)
USACE	U.S. Army Corps of Engineers

5. **Attachment 8A – Hydrology, Section 2.2, page 2-6, last sentence in fifth bullet**

   …objective release (maximum allowable flow downstream from a reservoir ~~before the beginning of flooding~~)…

6. **Attachment 8B – Reservoir Analysis, Section 1.7.5, page 1-14, fourth paragraph**

   Change subheading format.

   1.7.6 San Joaquin River Restoration Program

7. **Attachment 8B – Reservoir Analysis, Section 1.7.6, page 1-15**

   Update subheading numbering.

   1.7.~~6~~7 Surface Storage Investigations

8. **Attachment 8B – Reservoir Analysis, Section 1.7.7, page 1-15**

   Update subheading numbering.

   1.7.~~7~~8 Federal Energy Regulatory Commission Relicensing

9. **Attachment 8C – Riverine Channel Evaluations, Section 3.8, page 3-16**

   3.8 Model Assumptions: En~~c~~hance Flood System Capacity Approach

10. **Attachment 8E – Levee Performance Curves, Section 1.6, page 1-6, last sentence of first paragraph**

    The approach used to develop levee performance curves herein generally follows a process similar to that described in the *USACE Manual Engineering Technical Letter (ETL) ~~1102~~1110-2-556* (USACE, 1999).

11. **Attachment 8E – Levee Performance Curves, Section 3.1.1, page 3-1, last sentence of fifth paragraph**

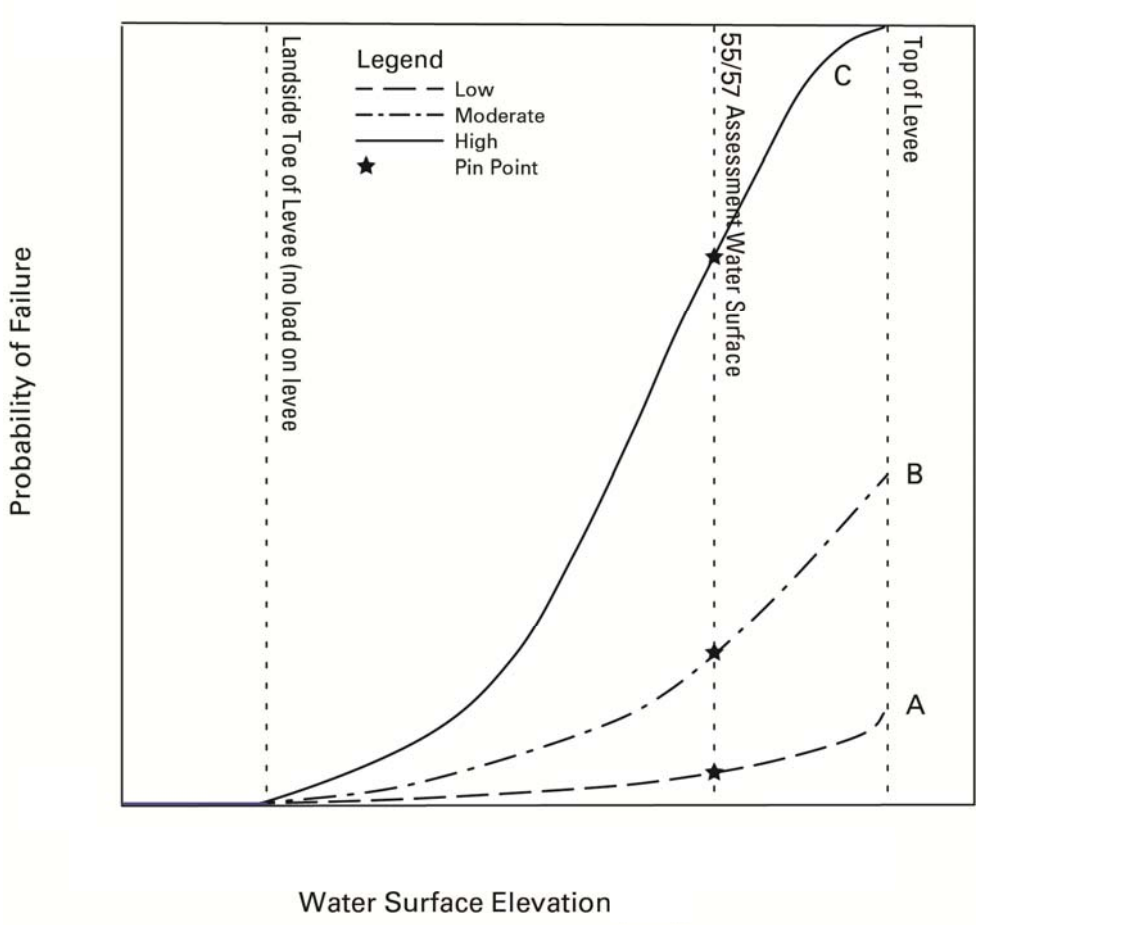
    The approach used to develop levee performance curves generally follows a process similar to that described in *USACE Manual ~~Engineering Technical Letter (~~ETL~~)~~ ~~1102~~1110-2-556* (USACE, 1999).

12. Attachment 8E – Levee Performance Curves, Section 3.2.1, page 3-3, second paragraph

For the ULE study areas, the ULE teams reviewed data and analysis results from the ULE Technical Review Memoranda (URS, 2007-2010); Phase 1 Geotechnical Data Reports (URS, 2008-2009); Phase 1 Geotechnical Evaluation Reports (URS, 2008); and where already prepared, Supplemental Geotechnical Data Reports (URS, 2010c).

13. Attachment 8E – Levee Performance Curves, Section 3.3, page 3-6, Figure 3-1

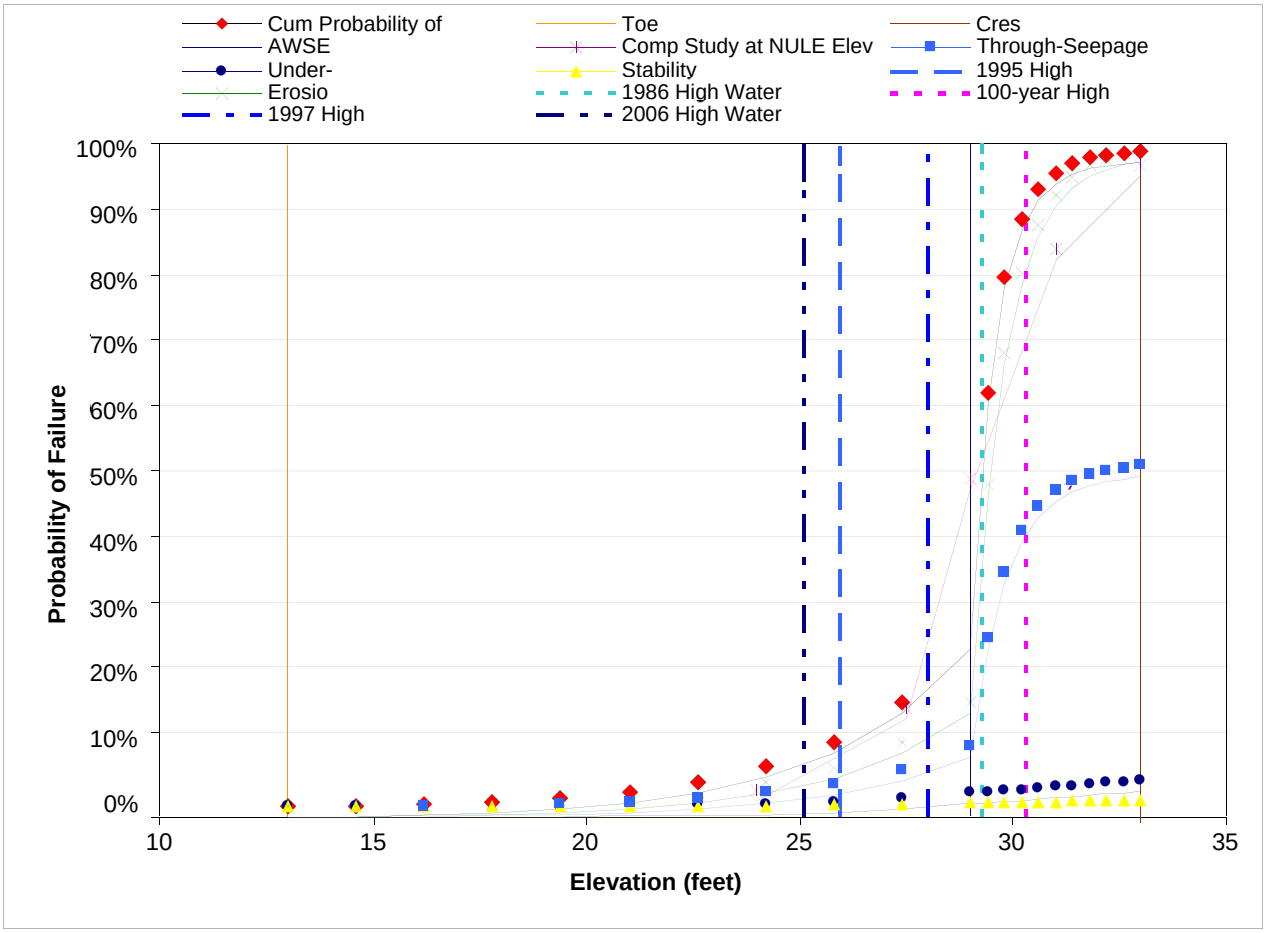
Replace Figure 3-1 "Conceptual NULE Levee Performance Curves for Hazard Categories Low (A), Moderate (B), and High (C)" with the following:



Note: Values in figure are not to scale

14. Attachment 8E – Levee Performance Curves, Section 3.3, page 3-8, Figure 3-2

Replace Figure 3-2 "Example NULE Levee Performance Curve" with the following:



Note: These curves represent a levee segment with the following hazard categories from the GAR: Moderate (B) for underseepage, Low (A) for stability, LD (Moderate (B) or High (C)) for through-seepage, and High (C) for erosion.
Key:
AWSE = assessment water surface elevation
Cum = cumulative
Elev = elevation
NULE = Non-Urban Levee Evaluations

15. Attachment 8E – Levee Performance Curves, Section 4.1, page 4-1

This section presents the levee performance curves developed using the techniques described above for use in systemwide SPFC hydraulic (UNET) and economic damage (HEC-FDA) modeling and for preparing the 2012 CVFPP. Table 4-1 contains only the levee performance curves at the HEC-FDA index points for the Sacramento River Basin and Table 4-2 contains only the levee performance curves at the HEC-FDA index points for the San Joaquin River Basin.

16. Attachment 8E – Levee Performance Curves, Section 4.1, pages 4-2 through 4-13, Table 4-1

In the heading row of Table 4.1, replace the term "SA" with "SAC" (see example below).

Table 4-1. Sacramento River Basin Levee Performance Curves

ID	SAC1	SAC2	SAC3	SAC4	SAC5	SAC6
Name	Woodson Bridge East	Woodson Bridge West	Hamilton City	Capay	Butte Basin	Butte City

17. Attachment 8E – Levee Performance Curves, Section 5.0, page 5-1

URS Corporation (URS). 2007-2010. Technical Review Memorandum: American River Study Area; Davis Study Area; Natomas NWS Study Area; RD404 Study Area; RD784 Study Area; Sacramento River Levee Study Area; San Joaquin Area Flood Control Agency Area Levees; and West Sacramento Study Area.

———. 2008. Phase 1 Preliminary Geotechnical Evaluation Report (P1GRD) Marysville Study Area. August.

———. 2008-2009. Phase 1 Geotechnical Data Report: Davis Study Area; RD17 Study Area; RD404 Study Area; Reclamation District 404 ; Sacramento River Study Area; San Joaquin Area Flood Control Agency Study Area Bear Creek Drainage; San Joaquin Area Flood Control Agency Calaveras River Drainage; Sutter Study Area; West Sacramento Study Area; Woodland Study Area; and RD17 Study Area.

———. 2010a. Flood Control System Status Report Tables and Maps, Sacramento and San Joaquin River Basin Study Areas. Unpublished consulting report submitted to the California Department of Water Resources, Division of Flood Management. August.

———. 2010b. Geotechnical Assessment Report, North NULE Study Area. Unpublished consulting report submitted to the California Department of Water Resources, Division of Flood Management. June.

———. 2010c. Supplemental Geotechnical Data Report: American River Study Area; RD17 Study Area; and Sutter Study Area.

USACE. See U.S. Army Corps of Engineers

U.S. Army Corps of Engineers (USACE). 1996. Engineers Manual (EM) 1110-2-1619. Risk-Based Analysis for Flood Damage Reduction Studies. August 1.

———. 1999. Risk-Based Analysis in Geotechnical Engineering for Support of Planning Studies. U.S. Army Corps of Engineers, ~~Manual~~ Engineering Technical Letter (ETL) ~~1102~~*1110*-2-556. Includes appendices. May.

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CENTRAL VALLEY
FLOOD MANAGEMENT
PLANNING PROGRAM

FloodSAFE
CALIFORNIA

Errata to the Public Draft

2012 Central Valley Flood Protection Plan

Volume IV – Attachments 8F through 8L

June 2012

STATE OF CALIFORNIA
THE NATURAL RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

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CENTRAL VALLEY FLOOD MANAGEMENT PLANNING PROGRAM

FloodSAFE CALIFORNIA

Errata to the Public Draft 2012 Central Valley Flood Protection Plan Volume IV – Attachments 8F through 8L

1. **Attachment 8F – Flood Damage Analysis, Section 3.8, page 3-44**

   Of the total 2.2 million acres of the CVFPP HEC-FDA planning area (floodplains) in the Sacramento and San Joaquin river basins, about 1.6 million acres are irrigated crop land. Crop flood damages under the CVFPP No Project condition were evaluated using the same approach as in the Comprehensive Study (i.e., using the Comprehensive Study Agricultural Damage Spreadsheet (Ag damage spreadsheet) as the tool to estimate damage values for the Sacramento and San Joaquin river basins (USACE, 2010b)).

2. **Attachment 8H – Regional Economic Analysis for the State Systemwide Investment Approach, Universally**

   Update attachment title throughout as follows:

   Attachment 8J: ~~Designs and Costs~~ Cost Estimates

3. **Attachment 8H – Regional Economic Analysis for the State Systemwide Investment Approach, Section 2.1, page 2-1, footnote**

   Replace Footnote 2 as follows:

   ~~All jobs are converted to equivalent annual full-time jobs for reporting purposes.~~ Employment values represent annual full-time, part-time, and temporary positions.

4. **Attachment 8H – Regional Economic Analysis for the State Systemwide Investment Approach, Table 2-1, page 2-2**

   Replace Table 2-1 Footnote 3 as follows:

   ~~All jobs are converted to equivalent annual full-time jobs for reporting purposes.~~ Employment values represent annual full-time, part-time, and temporary positions.

5. **Attachment 8H – Regional Economic Analysis for the State Systemwide Investment Approach, Table 2-2, page 2-3**

   Replace Table 2-2 Footnote 2 as follows:

   ~~All jobs are converted to equivalent annual full-time jobs for reporting purposes.~~ Employment values represent annual full-time, part-time, and temporary positions.

6. **Attachment 8H – Regional Economic Analysis for the State Systemwide Investment Approach, Section 3.0, page 3-1, second bullet**

   U.S. ~~Army Corps of Engineers (USACE)~~ Water Resources Council. 1983. Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies

7. **Attachment 8H – Regional Economic Analysis for the State Systemwide Investment Approach, Section 3.0, page 3-1, third bullet**

   ~~USACE~~ U.S. Army Corp of Engineers (USACE). 2000. Planning Guidance Notebook

8. **Attachment 8H – Regional Economic Analysis for the State Systemwide Investment Approach, Section 3.1.1, page 3-2, third bullet**

   Employment is measured by the number of ~~equivalent annual full-time jobs. One annual job is equivalent to one person being employed during a single year. One person being employed for 5 years is equal to five equivalent annual full-time jobs.~~ annual full-time, part-time, and temporary positions. Estimated changes in employment are tied to economic relationships between industry output and labor productivity, regardless of availability and fluidity in the local labor force.

9. **Attachment 8H – Regional Economic Analysis for the State Systemwide Investment Approach, Section 3.4, page 3-13, first sentence of third paragraph**

   For this regional economic impact analysis, indirect and induced economic effects were not quantified for avoided ~~content and~~ structure and content, and agricultural production damages, as well as avoided loss of life.

10. **Attachment 8H – Regional Economic Analysis for the State Systemwide Investment Approach, Section 3.4.2, page 3-15**

    Replace section text with the following:

    Avoided agricultural production and commodity damages, which represent an avoided loss of agricultural output within a region, are a direct economic effect to the region. This direct economic effect in agricultural production has a multiplier effect throughout the regional economy, impacting jobs and output in other supporting sectors. Direct agricultural production damages expected to be avoided with implementation of the SSIA were estimated and documented in Attachment 8F: Flood Damage Analysis.

    This analysis did not estimate the indirect and induced effects, or ripple effects, of direct, avoided agriculture damages because direct agriculture damages estimated in the flood damage analysis are based on a net income approach which only allows induced economic effects to be estimated with IMPLAN.

11. Attachment 8H – Regional Economic Analysis for the State Systemwide Investment Approach, Table 4-2, page 4-4

Replace Table 4-2 Footnote 3 as follows:

~~Jobs are equivalent annual full-time jobs. One annual job is equivalent to one person being employed during a single year. One person being employed for 5 years is equal to five equivalent annual full-time jobs.~~ Employment values represent annual full-time, part-time, and temporary positions.

12. Attachment 8H – Regional Economic Analysis for the State Systemwide Investment Approach, Section 4.2.2, page 4-8, Table 4-5

Replace Table 4-5 Footnote 1 as follows:

~~Jobs are equivalent annual full-time jobs. One annual job is equivalent to one person being employed during a single year. One person being employed for 5 years is equal to five equivalent annual full-time jobs.~~ Employment values represent annual full-time, part-time, and temporary positions.

13. Attachment 8H – Regional Economic Analysis for the State Systemwide Investment Approach, Section 4.2.2 , page 4-10, Table 4-6

Update the avoided loss of output for the regional economic impact study area for accuracy.

~~$100.86~~$103.87

14. Attachment 8H – Regional Economic Analysis for the State Systemwide Investment Approach, Section 4.3.1, page 4-10

Replace section text with the following:

Employment values represent annual full-time, part time, and temporary positions that can be converted to full-time annual equivalent jobs with ratios based on national averages from the BEA. Full-time annual equivalent jobs represent positions that involve 2,080 hours of work in a standard year. It is expected that the application of full-time annual equivalent conversion ratios to employment value results of this analysis would result in approximately a ten percent reduction in the number of jobs reported.

Estimated changes in employment are tied to economic relationships between industry output and labor productivity, regardless of availability and fluidity in the local labor force. In reality, hiring decisions are complex and typically take into account the duration of anticipated changes in production. Jobs reported for this analysis may be new, or created, jobs within each region or jobs simply supported in the industries affected by implementation of the SSIA. Project construction and flooding are short-term events that may not necessarily result in hiring of new employees; instead, existing employee work patterns may be adjusted in response to fluctuations in demands.

15. Attachment 8H – Regional Economic Analysis for the State Systemwide Investment Approach, Section 4.3.4, page 4-12

Replace section text with the following:

Regional economic effects related to avoided structure and content damages expected with implementation of the SSIA were not quantified in this analysis because detailed information and analyses were not available for determining the potentially offsetting nature of flood damages and reconstruction and replacement effects.

Direct agricultural production damages expected to be avoided with implementation of the SSIA were estimated and documented in Attachment 8F: Flood Damage Analysis. This analysis did not estimate the indirect and induced effects, or ripple effects, of direct, avoided agriculture damages because direct agriculture damages estimated in the flood damage analysis are based on a net income approach which only allows induced economic effects to be estimated with IMPLAN.

Regional economic effects related to transportation and energy disruptions, emergency services, and population displacement due to flooding were not analyzed for this high level regional economic impact analysis. These analyses may be completed for future State basin-wide feasibility studies to support regional planning activities.

Regional economic effects of recreation disruptions during project construction were not analyzed for this high level regional economic impact analysis. Recreation disruptions during project construction may be analyzed for future State basin-wide feasibility studies to support regional planning activities.

16. Attachment 8H – Regional Economic Analysis for the State Systemwide Investment Approach, Section 5.0, page 5-1, second sentence of first paragraph

This section describes other potential regional economic effects of the SSIA that were not quantified in Section 4. For the 2012 CVFPP, available information did not support detailed analyses for these effects. These analyses may be completed for future State basin-wide feasibility studies. These effects include:

17. Attachment 8H – Regional Economic Analysis for the State Systemwide Investment Approach, Section 6.0, page 6-1

U.S. Army Corps of Engineers (USACE). ~~1983. Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies. U.S. Water Resources Council. U.S. Government Printing Office, Alexandria, Virginia. March 10.~~

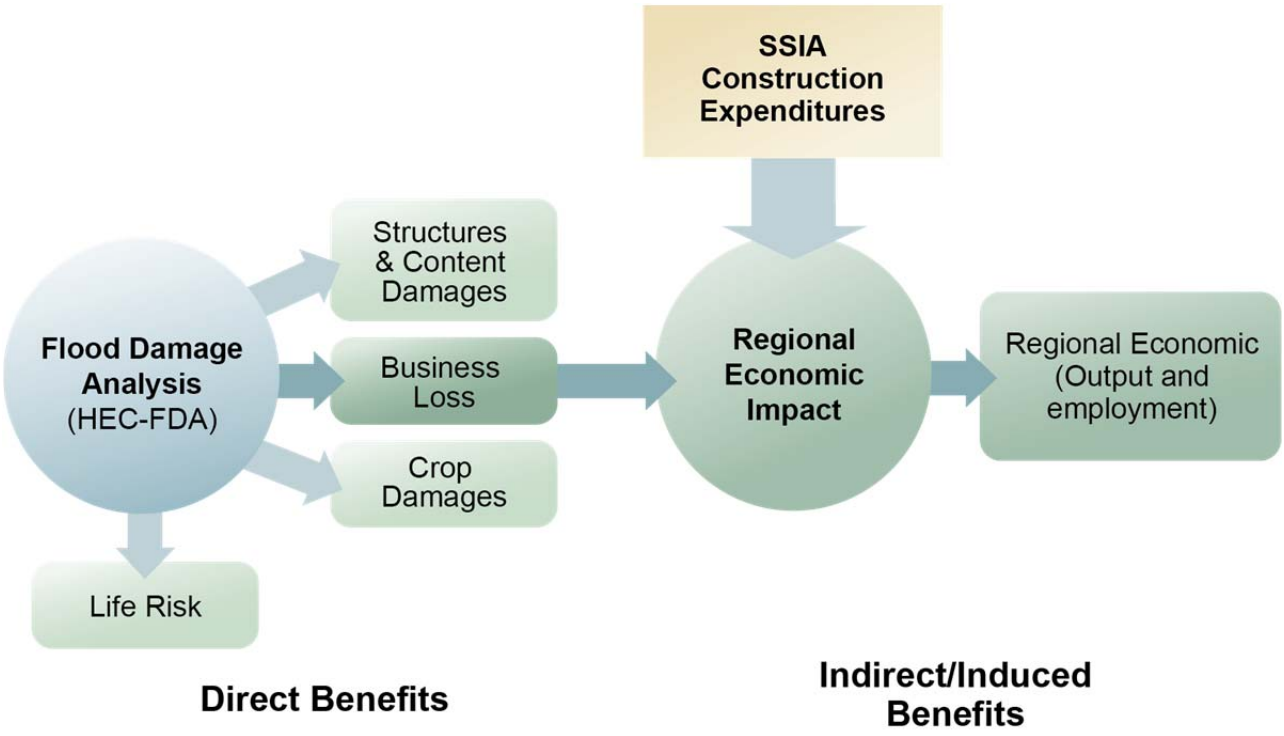
~~———.~~2000. Planning Guidance Notebook. Washington D.C., April 22. Available at: <http://140.194.76.129/publications/eng-regs/er1105-2-100/toc.htm>

———. 2011. Regional Economic Development Procedures Handbook. Institute of Water Resources, Alexandria, Virginia. May 2011.

U.S. Water Resources Council. 1983. Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies. U.S. Water Resources Council. U.S. Government Printing Office, Alexandria, Virginia. March 10.

18. Attachment 8I – Framework for Benefit Assessment, Figure 3-1, page 3-4

Replace Figure 3-1 with the CVFPP Figure 3-8 as follows:



Key:
HEC-FDA = U.S. Army Corps of Engineers Hydrologic Engineer Center Flood Damage Analysis
SSIA = State Systemwide Investment Approach

Figure 3-1. CVFPP Economic Assessment Approach

19. Attachment 8I – Framework for Benefit Assessment, Section 4.3, pages 4-6 and 4-7

Table 4-3 displays the direct, indirect, and induced employment and economic output effects resulting from the following factors:

- Construction expenditures related to the implementation of the SSIA over a 20 year period
- Avoided annual flood-related business losses (direct business losses are also included in the EAD estimates)

~~However, s~~Secondary economic effects of the above factors were ~~not~~ only estimated for the ~~other approaches~~ SSIA. The methods and data used to estimate regional economic effects related to the factors listed above, and other potential regional economic effects not quantified are described in Attachment 8H: Regional Economic Analysis for the State Systemwide Investment Approach.

20. Attachment 8J – Cost Estimates, Section 2.1, page 2-1, third line of second bullet

… The SPFC provides flood protection to nearly 1 million …

21. Attachment 8J – Cost Estimates, Section 2.2, page 2-3, Table 2-1 title and heading row

Table 2-1. Summary of Cost Estimate Ranges for Preliminary Approaches Considered and Preferred State Systemwide Investment Approach

Flood Management Element	Preliminary Approaches Considered			State Systemwide Investment Approach ($ million)
	Achieve SPFC Design Flow Capacity ($ million)	Protect High Risk Communities ($ million)	Enhance Flood System Capacity ($ million)	

22. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 1.0, page 1-2, second sentence of Section 4 bullet

The flood management elements represent different types of ~~are organized into groups based on their primary~~ improvements made to the flood protection system (systemwide, urban, rural-agricultural).

23. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 2.2.2, page 2-3, first sentence of fourth paragraph

… for each of the flood management ~~component~~components based on …

24. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 3.1, page 3-2, first paragraph

… management elements and are ~~component~~components of the …

25. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 3.1, page 3-6, Table 3-4

Revise the third row as follows:

All Weather Roads on Levee Crowns	YES (1)	NO	YES (1)	YES

Add note as follows:

Note:
(1) Costs for All Weather Roads on Levee Crowns are included in two preliminary approaches under Non-Urban Levee Improvements to Achieve SPFC Design Capacity (Table 3-3).

26. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 3.2, page 3-7, second sentence of first paragraph

… the flood management ~~component~~components included in each approach.

27. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 3.2, page 3-7, fourth sentence of first paragraph

Additional information on ~~included~~ improvement costs to each of the nine regions is provided…

28. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 3.2, page 3-7, title of Table 3-5

Table 3-5. Cost Summary for ~~Four~~ Three CVFPP Preliminary Approaches and State Systemwide Investment Approach ($millions, 2011 dollars)

29. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 3.2.1, page 3-9, Table 3-6

Add notes to the bottom of the table as follows:

Notes:
The Achieve SPFC Design Flow Capacity Approach is one of three preliminary approaches initially considered for the CVFPP. Additional detail for specific components is provided in Tables 6-1 through 6-4.

30. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 3.2.2, page 3-10, Rural Agricultural Improvements paragraph

Only the small community improvements component~~components are~~ is included in...

31. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 3.2.2, page 3-12, Table 3-7

Add notes to the bottom of the table as follows:

Notes:
The Protect High-Risk Communities Approach is one of three preliminary approaches initially considered for the CVFPP. Additional detail for specific components is provided in Tables 6-5 through 6-8.

32. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 3.2.3, page 3-13, second sentence of first paragraph

… combines ~~component~~components of the above two approaches…

33. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 3.2.3, page 3-13, second sentence of third paragraph

Most of the system improvements ~~component~~components are needed …

34. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 3.2.3, page 3-14, last sentence of second paragraph

This ~~component~~component is not included …

35. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 3.2.3, page 3-15, Table 3-8

Add notes to the bottom of the table as follows:

Notes:
The Enhance Flood System Capacity Approach is one of three preliminary approaches initially considered for the CVFPP. Additional detail for specific components is provided in Tables 6-9 through 6-12.

36. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 3.2.4, page 3-16, second sentence of third paragraph

Most of the system improvements ~~component~~components are needed…

37. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 3.2.4, page 3-17, first sentence of first paragraph

…when combined with some of the floodplain management ~~component~~components …

38. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 3.2.4, page 3-17, third paragraph

Residual risk management is a significant part of the SSIA, by providing cost-effective alternative (through floodplain management component~~components~~) to provide protection (reduced risk) in rural floodplains through the enhanced flood emergency response and floodplain management ~~component~~components (which is more comprehensive than in the other approaches). The floodplain management component~~components~~ provides a mechanism…

39. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 3.2.4, pages 3-18 and 3-19, Figures 3-1 and 3-2

Replace Figures 3-1 and 3-2 with the following:

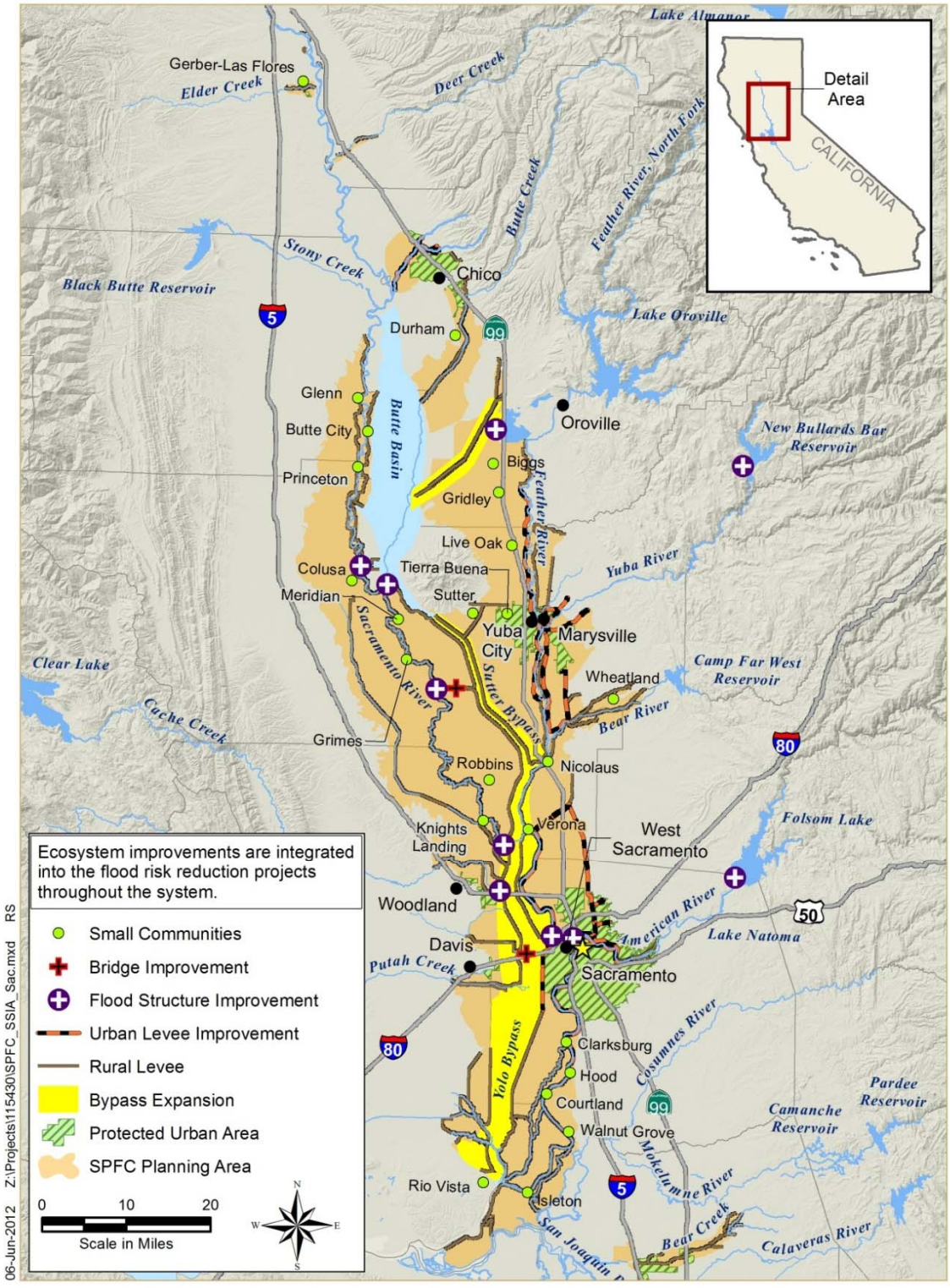


Figure 3-1. ~~**Location of Major System Improvements in the Sacramento River Basin**~~ **State Systemwide Investment Approach – Sacramento River Basin Major Capital Improvements Under Consideration**

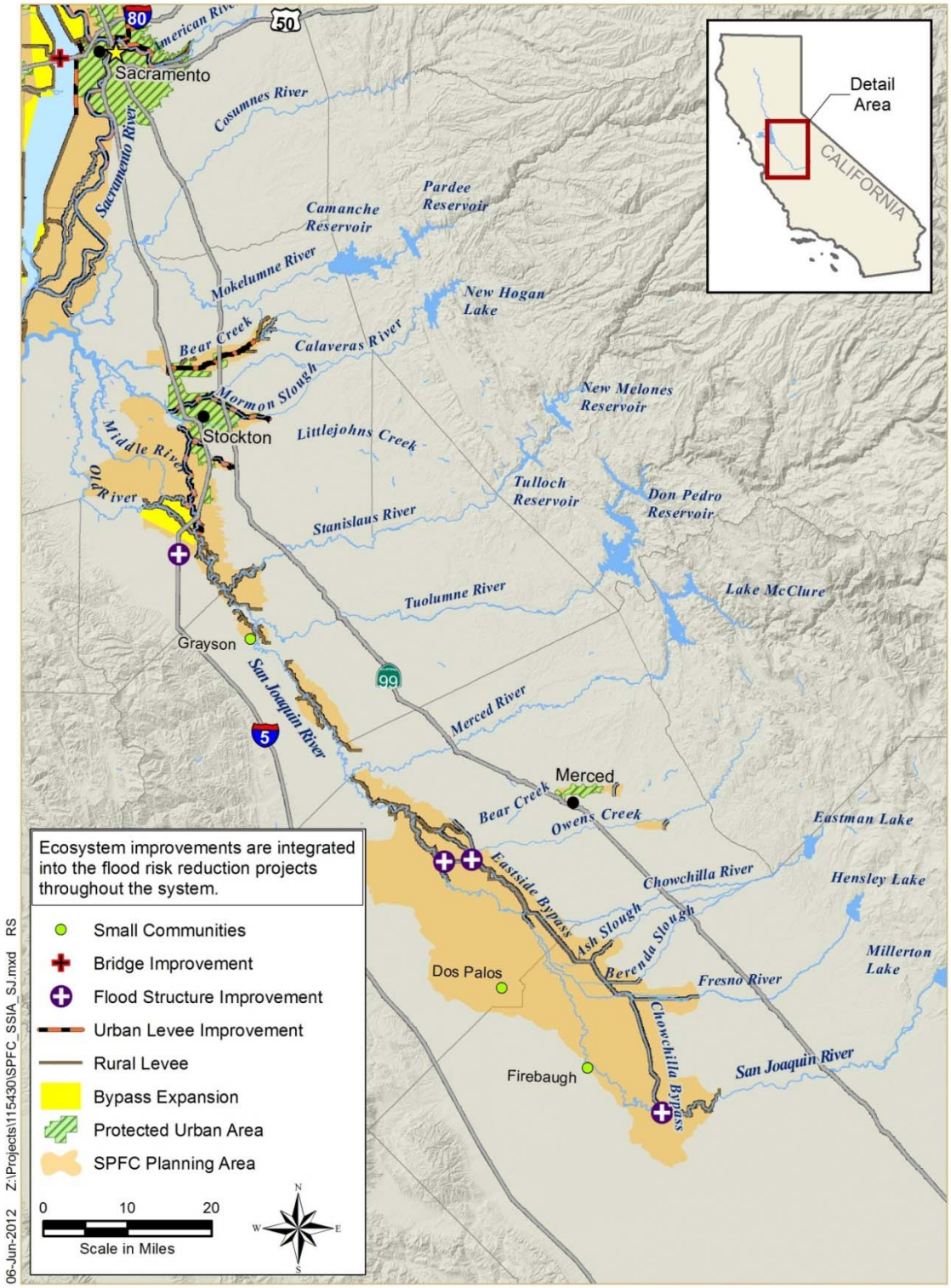


Figure 3-2. ~~Location of Major System Improvements in the San Joaquin River Basin~~ **State Systemwide Investment Approach – San Joaquin River Basin Major Capital Improvements Under Consideration**

40. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 3.2.4, page 3-20, Table 3-9

Add notes to the bottom of the table as follows:

Notes:
The State Systemwide Investment Approach is the State's preferred approach for the CVFPP.
Additional detail for specific components is provided in Tables 6-13 through 6-16.

41. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.1, page 4-1, first sentence of second paragraph

This flood management element includes purchasing land and easements for the bypasses and levees, and making environmental improvements to the lands included in the expanded bypasses.

42. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.1, page 4-2, bulleted list, bullets 4 through 9

- Levee improvements for new and expanded bypasses
  - New levee construction
  - Improving existing levees
- Flood system structures
- ~~Major flood system structures~~
- Fish passage structures

43. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.1.1, page 4-3, first paragraph

… Table 4-2. Land acquisition costs are based on a market value analysis to determine an aggregate value for each region. Region-specific costs vary by land use type (example unit costs are provided in Attachment 8J, Appendices B and C), structure relocations, and other factors. ~~and include costs of structure relocations. Additional information on development of land acquisition acreage and cost are included in Attachment 8J, Appendices B through E.~~

44. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.1.1, page 4-3, Table 4-2

Add notes to the bottom of the table as follows:

Notes:
Land acquisition costs include purchase of land (fee title), which varies by region.
Costs for land acquisition are included in one preliminary approach considered (Enhance Flood System Capacity) and are also included in the State Systemwide Investment Approach.

45. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.1.2, page 4-4, Table 4-3

Add notes to the bottom of the table as follows:

Notes:
Agricultural conservation easements would preserve agricultural land uses. These differ from easements (Section 4.1.9) because there is no provision for storage of flood flows within an agricultural conservation easement.
The cost for an agricultural easement is assumed to be 35 percent of the cost of acquiring the land (see Table 4-2).
Costs for agricultural conservation easements are included in one preliminary approach considered (Enhance Flood System Capacity) and are also included in the State Systemwide Investment Approach.

46. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.1.3, page 4-5, Table 4-4

Add notes to the bottom of the table as follows:

Notes:
It is assumed that 25 percent of lands acquired (see Table 4-1) would be developed for environmental conservation and 75 percent leased back to farmers for environmentally friendly agricultural practices such as planting of corn, rice, and other grains, except for the Sutter Bypass Expansion, where environmental conservation is designated for 50 percent of lands acquired.
Environmental conservation cost includes development of or improvement to habitat, and is estimated at $35,000 to $45,000 per acre.
Costs for environmental conservation are included in one preliminary approach considered (Enhance Flood System Capacity) and are also included in the State Systemwide Investment Approach.

47. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.1.4, page 4-6, Table 4-5

Add notes to the bottom of the table as follows:

Notes:
Unit costs of $22 million to $26 million are based on recent levee projects in the Central Valley.
Costs for new levees for bypass extension are included in one preliminary approach considered (Enhance Flood System Capacity) and are also included in the State Systemwide Investment Approach.

48. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.1.4, page 4-7, Table 4-6

Add a note to the bottom of the table as follows:

Note:
Costs for levee repairs for bypass extension are included in one preliminary approach considered (Enhance Flood System Capacity) and are also included in the State Systemwide Investment Approach.

49. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.1.5, page 4-7, fourth sentence of last paragraph

When no information was available for identified new facilities, the facility-specific cost estimates were used to guide cost estimates for similar structures.

50. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.1.5, page 4-8, Table 4-7

Add notes to the bottom of the table as follows:

Notes:
Where available, facility-specific cost estimates were used for the new system improvements. When no information was available for identified new facilities, the facility-specific cost estimates were used to guide cost estimates for similar structures.
Costs for flood system structures are included in one preliminary approach considered (Enhance Flood System Capacity) and are also included in the State Systemwide Investment Approach.

51. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.1.6, page 4-8, second sentence of first paragraph

Fish passage improvement opportunities primarily include ~~primarily~~ projects located within the SPFC …

52. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.1.6, page 4-9, Table 4-8

Add notes to the bottom of the table as follows:

Notes:
Project-specific designs or cost estimates were not available for the projects being considered; costs are programmatic in nature and were approximated based on similar fish passage projects elsewhere in California.
Costs for fish passage structures are included in one preliminary approach considered (Enhance Flood System Capacity) and are also included in the State Systemwide Investment Approach.

53. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.1.6, page 4-9, first bullet

- **Fish Passage Collaboration –** This component includes $25 million for collaboration activities with the U.S. Department of the Interior, Bureau of Reclamation and other agencies to advance fish passage opportunities. ~~Costs for these a~~Activities ~~are estimated at $25 million, and are~~ include~~d in the~~ risk assessment, feasibility, engineering, and permitting of the fish passage projects…

54. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.1.7, page 4-10

Add the following paragraph to the end of the section:

Costs for reservoir operations are included in all three preliminary approaches considered (Achieve SPFC Design Flow Capacity, Protect High-Risk Communities, Enhance Flood System Capacity) and are also included in the State Systemwide Investment Approach.

55. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.1.8, page 4-11, Table 4-9

Add notes to the bottom of the table as follows:

Notes:
Costs for new reservoir flood storage are programmatic in nature, and are determined as unit costs to purchase new storage and mitigate impacts in flood storage or multipurpose facilities.
Costs for new reservoir flood storage are included in one preliminary approach considered (Enhance Flood System Capacity) and are not included in the State Systemwide Investment Approach.

56. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.1.9, page 4-11, seventh sentence of first paragraph

~~Additional information about the land costs is included in Attachment 8J, Appendices B-E.~~

57. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.1.9, page 4-12, Table 4-10

Add notes to the bottom of the table as follows:

Notes:
Easements allow for temporary and periodic storage of flood flows from adjacent waterways. Specific locations have not yet been identified.
The cost for an easement is assumed to be 60 percent of the cost of acquiring the land (see Table 4-2).
Costs for easements are only included in one preliminary approach considered (Enhance Flood System Capacity) and are not included in the State Systemwide Investment Approach.

58. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.1.10, page 4-13, Table 4-11

Add notes to the bottom of the table as follows:

Notes:
System erosion and bypass sediment removal costs represent a one-time expenditure for sediment removal from bypasses and weirs to address deferred maintenance.
Costs for system erosion and bypass sediment removal are included in one preliminary approach considered (Enhance Flood System Capacity) and are also included in the State Systemwide Investment Approach.

59. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.2, page 4-13, last sentence of first paragraph

… as shown on Figures 3-1 ~~4-2~~ and 3-2 ~~4-3~~.

60. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.2, page 4-13, second paragraph

~~Three~~ Two options are considered for estimating urban improvement costs: a 200-year level of protection based on project-specific costs collected from ongoing feasibility studies or other information provided by local flood and other agencies and an alternative option of achieving the SPFC design flow capacity through levee improvements based on deficiencies identified by the

ULE program. An improvement for urban improvements to non-SPFC levee is also described below.

61. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.2.1, pages 4-14 and 4-15, Table 4-12

Revise certain table entries, first column, as follows:

- LD1-EIP-Lower Feather River Setback Levee at Star Bend ~~*~~ [1]
- Marysville Ring Levee Reconstruction [2]
- TRLIA – EIP – Feather River Levee Improvement Project [3]
- TRLIA – EIP – Upper Yuba River Levee Improvement Project ~~*~~ [1,3]
- RD 2103 EIP - Bear River North Levee Rehabilitation ~~*~~ [1]
- WSAFCA-~~EIP-CO West Sacramento~~ West Sacramento Levee Improvement Program [4]
- West Sacramento Project G~~G~~RR

Add notes to the bottom of the table as follows:

Projects would provide a 200-year level of protection for urban areas.
Folsom Dam Raise is an authorized project to provide flood protection for the City of Sacramento.
Costs were collected from ongoing feasibility studies or other information provided by local flood and other agencies.
Costs for the urban flood protection projects in this table are included in two preliminary approaches considered (Protect High-Risk Communities, Enhance Flood System Capacity) and are also included in the State Systemwide Investment Approach.
[1] ~~*~~ Construction of flood improvement project is completed. Not cost range is identified and contingencies for risk assessment, feasibility, and permitting are not applied.
[2] After additional analysis and input from David Lamon (City of Marysville) provided on the public draft CVFPP (December 30, 2011), the current implementation cost is estimated to be $70 to $92.5 million.
[3] Based on input from Larry Dacus (MBK Engineers) provided on the public draft CVFPP (December 30, 2011), two additional TRLIA projects should be considered to be part of this component. These are the TRLIA Proposition 13 RD 784 Levee System Improvements (Feather River, cost $61 to $105 million) and the TRLIA Goldfields High Ground Evaluation (Yuba River, cost $10 to $50 million). Although these projects are not explicitly named in the table, the costs to include them are encompassed within the range of total costs of this component ($4,277 to $5,097 million).
[4] After additional analysis and public comment from Derek Larsen (MBK Engineers) on the public draft CVFPP (December 30, 2011), the current cost of implementing the WSAFCA program recommendations is expected to be $440 to $526 million. Ongoing studies may further refine these costs. This information was not available at the time this table was prepared, but the higher cost of this program are encompassed within the range of total costs of this component ($4,277 to $5,097 million).

62. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.2.2, page 4-16, last sentence of last paragraph

~~The costs used in Table 4-13 are estimates from the ULE Program (Attachment 8J, Appendix B) and were used as the low end of the costs estimate.~~ Costs from the ULE Program (Attachment 8J, Appendix B) were used as a guide to develop a suitable cost range for each project. These ranges are shown in Table 4-13.

Option 2 costs are used in the Achieve SPFC Design Capacity Approach.

63. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.2.2, page 4-17, Table 4-13

Add notes to the bottom of the table as follows:

Notes:
Levee repair projects would restore the SPFC design capacity but may not necessarily provide a 200-year level of protection.
Project costs were developed as part of the Urban Levee Evaluation Program.
Costs for SPFC urban levee improvements from the Urban Levee Evaluation Program are included in one preliminary approach considered (Achieve SPFC Design Flow Capacity) and are not included in the State Systemwide Investment Approach.

64. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.2.3, page 4-17, section title

4.2.3 ~~Option 3:~~ Non-SPFC Urban Levee Improvements

65. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.2.3, page 4-18, first sentence of second paragraph

~~Option 3~~ The costs for improving non-SPFC urban levees are used in the …

66. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.2.3, page 4-18, Table 4-14

Add notes to the bottom of the table as follows:

Notes:
Projects include repairs to levees that are not part of the SPFC. Although the condition of these levees is not currently known, it was assumed that some repair would be needed at a unit cost of $6 to $8 million per levee mile. This unit cost is lower than SPFC levee repair costs because these levees are generally on smaller tributary streams and as a result are smaller than other levees, and certain improvement projects have already been completed.
Costs for non-SPFC urban levee improvements are included in all three preliminary approaches considered (Achieve SPFC Design Flow Capacity, Protect High-Risk Communities, Enhance Flood System Capacity) and are also included in the State Systemwide Investment Approach.

67. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.3.1, page 4-19, Table 4-15

Revise the fourth row as follows:

3 - Feather River	Verona, Biggs, Gridley, Live Oak, Sutter, Tierra Buena, Wheatland, Nicolaus

68. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.3.1, page 4-20, top of page

Add the following paragraph above the existing paragraph of text:

Small community improvements would provide a 100-year level of protection for small communities within the SPFC that are not protected by other systemwide and/or urban improvements. When the cost of protection exceeds $100,000 per house, non-structural measures would be taken (see Residual Risk Management). The total population in protected small communities is estimated at 47,000 people, and would require about 120 miles of new or improved levees. All levee improvements to protect small communities for this approach are included in this cost element, although some of the small communities may receive protection from other urban improvements. The assumed construction costs include a combination of levee improvements and construction of new levees for each individual community.

69. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.3.1, page 4-20, Table 4-16

Add notes to the bottom of the table as follows:

Small community improvements would provide a 100-year level of protection for small communities within the SPFC that are not protected by other systemwide and/or urban improvements.
Attachment 8J, Appendix D, provides additional detail for small community cost estimates.
Costs for small community improvements are included in two preliminary approaches considered (Protect High-Risk Communities, Enhance Flood System Capacity) and are also included in the State Systemwide Investment Approach.

70. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.3.2, page 4-21, Option 1: Site Specific Rural-Agricultural Improvements, first sentence

~~The alternative r~~Rural-agricultural improvements ~~include improvements~~ have been identified from recent levee inspections …

71. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.3.2, page 4-22, Table 4-17

Revise title as follows:

Table 4-17. Non-Urban Levee Erosion Repair Needs and Cost Estimate per Region

Add notes to the bottom of the table as follows:

Notes:
Repair needs were identified in 2011 levee inspections.
Costs for site-specific non-urban levee improvements are not included in any of the preliminary approaches but are included in the State Systemwide Investment Approach.

72. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.3.2, page 4-22, Table 4-18

Revise title as follows:

Table 4-18. Site-Specific Non-Urban Levee Improvements

Add notes to the bottom of the table as follows:

Notes:
Repair needs include freeboard improvements identified in the NULE program (see Attachment 8J, Appendix C).
Costs for site-specific non-urban levee improvements are not included in any of the preliminary approaches but are included in the State Systemwide Investment Approach.

73. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.3.2, page 4-23, last sentence of first paragraph

Add text and insert a paragraph break so the last sentence begins a new paragraph as follows:

The costs of the nonurban levee repairs are summarized by region in Table 4-19. The NULE Program costs include a 30% contingency for miscellaneous repairs, including remediating utility and canal hazards and reconstructing paved roads on levees. Therefore, approaches that include this component are assumed to also include all-weather roads on levee crowns (a component under the residual risk management element). The detailed cost tables in Section 6 do not include separate costs for all-weather roads because those costs are included in this component.

These estimates include repairs to SPFC project levees only…

74. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.3.2, page 4-24, Table 4-19

Add notes to the bottom of the table as follows:

Notes:
Costs are identified in Attachment 8J, Appendix C, and address SPFC project levee deficiencies such as under-seepage, through-seepage, stability, erosion, and freeboard. NULE Program costs also include levee crown road all weather resurfacings for all rural levees.
Costs for the NULE Program are included in two preliminary approaches considered (Achieve SPFC Design Flow Capacity, Enhance Flood System Capacity) and are not included in the State Systemwide Investment Approach.

75. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.3.3, page 4-25, Table 4-20

Revise the third row as follows:

MSAC_01	Mid-Sacramento	$200 to ~~$300~~290

Revise the last row as follows:

Total	**$3,250 to $~~4,530~~ 4,520**

Add notes to the bottom of the table as follows:

Notes:
Setback levees would add lands to the floodways by widening portions of the Sacramento and San Joaquin rivers.
Costs include purchase of land, removal of existing levees, and construction of new levees. Attachment 8J, Appendix E, provides additional detail for setback levee cost estimates.
Costs for setback levees are included in only one preliminary approach considered (Enhance Flood System Capacity) and are not included in the State Systemwide Investment Approach.

76. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.4.1, page 4-25, third sentence of last paragraph

This component supports additional planning and response efforts in preparation of flood events beyond ~~the~~ current level~~s of each of these components~~, and …

77. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.4.1, page 4-26, All-Weather Roads on Levee Crowns, second sentence of first paragraph

This component includes approximately 1,200 miles of SPFC~~) of~~ rural-agricultural levees.

78. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.4.1, page 4-26, All-weather Roads on Levee Crowns, second paragraph

The Achieve SPFC Design Flow Capacity Approach and the Enhanced Flood System Capacity include the a~~A~~ll-weather roads as part of the NULE levee improvements (a component under the Rural-Agricultural Improvement Element), and the costs are included in that component. The Protect High Risk Communities does not include this improvement. The State Systemwide Investment Approach includes this improvement as ~~part of~~ its own component under the Residual Risk Management Element because NULE improvements are not part of that approach.

79. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.4.1, page 4-26, Additional Flood Information Collection and Sharing, first paragraph

This component includes the additional (beyond current levels of implementation) identification and notification of the flood hazards to residents, broadcasting real-time flood information to rural-agricultural areas, mapping evacuation routes and providing them to the public, and increasing the number of flood monitoring stations in rural areas. The cost varies for different CVFPP approaches for this component because the implementation assumptions are different. For planning purposes, the cost is estimated to be a one-time expenditure of $30 million per region for the Protect High Risk Communities Approach. This cost is high because this approach focuses on the flood systems protecting urban areas and small communities, and leaves more than a thousand miles of rural-agricultural levees unimproved, requiring a more robust notification system. The cost per region is $8 million per region for the Achieve SPFC Design Flow Capacity and Enhance Flood System Capacity approaches because these approaches include improvements to the entire levee system, requiring less residual risk investment. The cost per region is $15 million for the State Systemwide Investment Approach because the extent of rural-agricultural improvements is between the other approaches. The level of effort is estimated from the DWR Hydrology and Flood Operations Office. ~~The implementation of this component varies among the approaches based on the level of rural-agricultural levee improvements in the given approach.~~

80. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.4.1, page 4-27, first sentence of second paragraph

The Delta North Region costs include $~~85~~80 million for a one-time purchase…

81. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.4.1, page 4-28, Table 4-21

Add notes to the bottom of the table as follows:

Notes:
Costs are estimated as a one-time expenditure of $500,000 to $600,000 per Levee Flood Protection Zone.
The Delta North region includes an additional $80 million for a one-time purchase of Delta flood-fight materials and $5 million for increased Delta communications.
Costs for local flood emergency planning are included in all three preliminary approaches considered (Achieve SPFC Design Flow Capacity, Protect High-Risk Communities, Enhance Flood System Capacity) and are also included in the State Systemwide Investment Approach.

82. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.4.2, page 4-28, first sentence of first paragraph of section

This component provides for future O&M of the flood protection system ~~in response to the continuous~~ with regular activities to keep the SPFC facilities in good working order.

83. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.4.2, page 4-29, first paragraph

This component includes one-time costs for inspecting the flood system after any major flood event to identify new threats to the flood system, and repair them before they become major repair projects. For planning purposes, the level of effort was estimated for the State Systemwide Investment Approach at approximately $10 million per year over 25 years for a total cost of $231 to $300 million. The costs are distributed across the regions proportionally to the number of rural levee miles. The implementation of this component is expected to vary on a year-to-year basis. Additionally, this level of effort was scaled up or down for each approach, based on the magnitude of rural levee repairs planned to be completed for each of the three approaches. Approaches with larger rural levee improvements (Achieve SPFC Design Flow Capacity and Enhance Flood System Capacity approaches) would have a lesser need compared to approaches with no or little rural levee improvements (Protect High Risk Communities Approach). The more significant

84. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.4.2, page 4-29, Table 4-22

Add notes to the bottom of the table as follows:

Notes:
Costs are estimated as $10 million per year for the State Systemwide Investment Approach, lower for approaches with larger rural levee improvements, and higher for the approach with fewer rural levee improvements. Costs are distributed across regions proportionally based on number of rural levee miles.
Costs for identification and repair of erosion are included in all three preliminary approaches considered (Achieve SPFC Design Flow Capacity, Protect High-Risk Communities, and Enhance Flood System Capacity approaches) and are also included in the State Systemwide Investment Approach.

85. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.4.2, page 4-30, second sentence of first paragraph

For planning purposes, the cost for this component is estimated to total $4 to $5 million per year for 25 years (total of $100 to $125 million).

86. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.4.2, page 4-30, second paragraph

This component includes the Sacramento River Bank Protection Program and the Channel and Levee Management Program. The State would assume responsibilities for O&M of the bypasses as well as the water side of the project levees in Sacramento River System.

87. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.4.2, page 4-30, Table 4-23

Add notes to the bottom of the table as follows:

Notes:
Costs are estimated to total $4 to $5 million per year for 25 years (total of $100 to $125 million).
Costs for Sacramento Channel and Levee Management, and Bank Protection Implementation are included in all three preliminary approaches considered (Achieve SPFC Design Flow Capacity, Protect High-Risk Communities, Enhance Flood System Capacity) and are also included in the State Systemwide Investment Approach. Distribution of the cost between the various regions is preliminary and is subject to refinement.

88. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.4.3, page 4-31, last sentence of last paragraph

The number of houses that may participate in this program was estimated based on the distribution of houses in the rural areas. ~~as listed in~~ Table 4-24 lists the estimated costs per region. This component is only included in the State Systemwide Investment Approach.

89. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.4.3, page 4-32, Table 4-24

Add notes to the bottom of the table as follows:

Notes:
Includes removing or raising structures within floodplains in rural areas.
Budget costs were based on 3,000 homes, distributed throughout the regions, at $75,000 to $100,000 per home.
Costs for raising and waterproofing structures and building berms are not included in any of the preliminary approach considered, but are included in the State Systemwide Investment Approach.

90. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.4.3, page 4-32, last sentence of last paragraph

The number ~~distribution~~ of houses that may participate in this program was estimated based on the distribution of houses in the rural areas. ~~as listed in~~ Table 4-24 lists the estimated costs per region. This component is only included in the State Systemwide Investment Approach.

91. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.4.3, page 4-33, Table 4-25

Add notes to the bottom of the table as follows:

Notes:
Budget costs were based on 3,000 homes, distributed throughout the regions, at up to $100,000 per home.
Costs for purchasing and relocating homes in floodplains are not included in any of the preliminary approach considered, but are included in the State Systemwide Investment Approach.

92. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, Section 4.4.3, page 4-33, last sentence of last paragraph

This component will be applied the same in each approach, except for the Enhance Flood System Capacity Approach. The costs for Enhance Flood System Capacity Approach are half of the other approaches because this approach includes improvement to the entire non-urban SPFC levees as well as system element improvements, thereby reducing the need for residual risk management.

93. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, pages 6-3 through 6-32

Add odd page headers as follows:

6.0 Detailed Cost Tables

Add even page headers as follows:

**Attachment 8J: Cost Estimates –
Appendix A. CVFPP Cost Estimate Methodology**

94. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, page 6-4, Table 6-1

Table 6-1 "System Improvement Costs for the Achieve SPFC Design Flow Capacity Approach" is replaced by the revised version as follows:

REGION	Land Acquisition[1]		Agricultural Conservation Easement[2]		Ecosystem Restoration and Enhancement[3]		LEVEES				Flood System and Fish Passage Structures[6]	Reservoir Operations		Easements[9]	System Erosion and Bypass Sediment Removal Project[10]	Estimated Total Cost	Risk Assessment, Feasibility, Engineering, and Permitting (25%)	Range of Estimated Total Cost over Program Duration
							New Levee Construction[4]		Improve Existing Levees[5]			Forecast-Coordinated Operations / Forecast-Based Operations[7]	New Reservoir Storage[8]					
	Acreage	Cost	Acreage	Cost	Acreage	Cost	Length	Cost	Length	Cost	Cost	Cost	Cost	Cost	Cost			
	(acres)	Low High	Low High	Low High	(acres)	Low High	(miles)	Low High	(miles)	Low High	Low High	Low High	Low High	Low High	Low High	Low High	Low High	Low High
1 Upper Sacramento Region	0	$0 to $0	0 to 0	$0 to $0	0	$0 to $0	0.0	$0 to $0	0.0	$0 to $0	$0 to $0	$9 to $12	$0 to $0	$0 to $0	$0.0 to $0.0	**$9 to $12**	**$3 to $3**	**$12 to $15**
2 Mid-Sacramento Region	0	$0 to $0	0 to 0	$0 to $0	0	$0 to $0	0.0	$0 to $0	0.0	$0 to $0	$0 to $0	$0 to $0	$0 to $0	$0 to $0	$0.0 to $0.0	**$0 to $0**	**$0 to $0**	**$0 to $0**
3 Feather River Region	0	$0 to $0	0 to 0	$0 to $0	0	$0 to $0	0.0	$0 to $0	0.0	$0 to $0	$0 to $0	$9 to $12	$0 to $0	$0 to $0	$0.0 to $0.0	**$9 to $12**	**$3 to $3**	**$12 to $15**
4 Lower Sacramento Region	0	$0 to $0	0 to 0	$0 to $0	0	$0 to $0	0.0	$0 to $0	0.0	$0 to $0	$0 to $0	$5 to $6	$0 to $0	$0 to $0	$0.0 to $0.0	**$5 to $6**	**$2 to $2**	**$7 to $8**
5 Delta North Region	0	$0 to $0	0 to 0	$0 to $0	0	$0 to $0	0.0	$0 to $0	0.0	$0 to $0	$0 to $0	$9 to $12	$0 to $0	$0 to $0	$0.0 to $0.0	**$9 to $12**	**$3 to $3**	**$12 to $15**
6 Delta South Region	0	$0 to $0	0 to 0	$0 to $0	0	$0 to $0	0.0	$0 to $0	0.0	$0 to $0	$0 to $0	$0 to $0	$0 to $0	$0 to $0	$0.0 to $0.0	**$0 to $0**	**$0 to $0**	**$0 to $0**
7 Lower San Joaquin Region	0	$0 to $0	0 to 0	$0 to $0	0	$0 to $0	0.0	$0 to $0	0.0	$0 to $0	$0 to $0	$5 to $6	$0 to $0	$0 to $0	$0.0 to $0.0	**$5 to $6**	**$2 to $2**	**$7 to $8**
8 Mid-San Joaquin Region	0	$0 to $0	0 to 0	$0 to $0	0	$0 to $0	0.0	$0 to $0	0.0	$0 to $0	$0 to $0	$9 to $12	$0 to $0	$0 to $0	$0.0 to $0.0	**$9 to $12**	**$3 to $3**	**$12 to $15**
9 Upper San Joaquin Region	0	$0 to $0	0 to 0	$0 to $0	0	$0 to $0	0.0	$0 to $0	0.0	$0 to $0	$0 to $0	$23 to $30	$0 to $0	$0 to $0	$0.0 to $0.0	**$23 to $30**	**$6 to $8**	**$29 to $38**
Total	0	$0 to $0	0 to 0	$0 to $0	0	$0 to $0	0.0	$0 to $0	0.0	$0 to $0	$0 to $0	$69 to $90	$0 to $0	$0 to $0	$0 to $0	**$69 to $90**	**$18 to $23**	**$91 to $114**

Notes:

4 All cost estimates are based on 2011 costs rounded to nearest $million.

The Achieve SPFC Design Flow Capacity Approach is one of three preliminary approaches initially considered for the CVFPP.

System Improvement Assumptions:

1 Land Acquisition: Not included in this approach

2 Agricultural Conservation Easement: Not included in this approach

3 Ecosystem Restoration and Enhancement: Not included in this approach

4 New Levee Design and Construction: Not included in this approach

5 Improve Existing Levees: Not included in this approach

6 Flood System and Fish Passage Structures: Not included in this approach

7 F-CO/F-BO: Includes up to 15 F-CO/F-BO in the Sacramento Basin (up to seven reservoirs) and the San Joaquin Basin (up to eight reservoirs), with $4.5 to $6.0 million per reservoir

8 New Reservoirs: Not included in this approach

9 Easements: Not included in this approach

10 System Erosion and Bypass Sediment Removal Project: Not included in this approach

95. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, page 6-5, Table 6-2

Table 6-2 "Urban Improvement Costs for the Achieve SPFC Design Flow Capacity Approach" is replaced by the revised version as follows:

Urban Levee Improvements (ULE) – Design Capacity Improvements for SPFC and Non-SPFC Levees~~12~~									
REGION	**Estimated Project Cost[11]**			**Risk Assessment, Feasibility, Engineering, and Permitting ~~(25%)~~~~13~~12**			**Range of Estimated Total Cost over Program Duration**		
	Low		**High**	**Low**		**High**	**Low**		**High**
1 Upper Sacramento Region	$0.0	to	$0.0	$0.0	to	$0.0	$0.0	to	$0.0
2 Mid-Sacramento Region	$0.0	to	$0.0	$0.0	to	$0.0	$0.0	to	$0.0
3 Feather River Region	$997.0	to	$1,246.0	$199.0	to	$249.0	$1,196.0	to	$1,495.0
4 Lower Sacramento Region	$1,274.0	to	$1,593.0	$255.0	to	$319.0	$1,529.0	to	$1,912.0
5 Delta North Region	$240.0	to	$300.0	$48.0	to	$60.0	$288.0	to	$360.0
6 Delta South Region	$120.0	to	$150.0	$24.0	to	$30.0	$144.0	to	$180.0
7 Lower San Joaquin Region	$198.0	to	$247.0	$40.0	to	$49.0	$238.0	to	$296.0
8 Mid-San Joaquin Region	$360.0	to	$450.0	$72.0	to	$90.0	$432.0	to	$540.0
9 Upper San Joaquin Region	$0.0	to	$0.0	$0.0	to	$0.0	$0.0	to	$0.0
Urban Levee Improvements (ULE) Subtotal	**$3,189.0**	**to**	**$3,986.0**	**$638.0**	**to**	**$797.0**	**$3,827.0**	**to**	**$4,783.0**
Urban Improvements Total	**$3,189.0**	**to**	**$3,986.0**	**$638.0**	**to**	**$797.0**	**$3,827.0**	**to**	**$4,783.0**

~~Assumptions:~~

Note~~s~~:

All cost estimates are based on 2011 costs rounded to nearest $million.

The Achieve SPFC Design Flow Capacity Approach is one of three preliminary approaches initially considered for the CVFPP.

Assumptions:

11 ~~Estimated Project Costs:~~

~~12~~ ~~Levee Improvements to for~~ Urban - Design Capacity Improvements:

SPFC Levee Improvements based on ULE Cost Estimates for individual urban areas identified on Table ~~A8~~ 4-13. Would restore SPFC design capacity but may not necessarily provide 200-year level of protection.

Non-SPFC Urban Levee ~~Improvements~~Improvement costs estimated at $6 to $8 million per mile for approximately 120 miles of Non-SPFC Urban Levees because no levee evaluation data ~~is~~ are available at this time. These improvement ~~area~~ costs are less than other improvement cost estimates because these levees are generally on smaller tributary streams and as a result are smaller than other levees, and certain improvements projects have already been completed.

~~13~~12 Risk Assessment, Feasibility, Engineering, and Permitting ~~(20%)~~ ~~R~~ranges by project from 0% to 20% depending on level of project development

96. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, page 6-6, Table 6-3

Table 6-3 "Rural-Agricultural Improvement Costs for the Achieve SPFC Design Flow Capacity Approach" is replaced by the revised version as follows:

REGION	Small Community Improvement[13]	Non-Urban - Design Capacity Improvements[14]	Rural Setback Levees[15]	Site-Specific Rural Agricultural Improvement[16]			Estimated Total Costs[17]		Risk Assessment, Feasibility, Engineering, and Permitting (25%)		Range of Estimated Total Cost over Program Duration	
	Levee Improvement to Provide 100-Year Protection for Small Communities			Miles of Rural Levees	Levee Improvements	Known and Identified Erosion Repairs	Low	High	Low	High	($)	
1 Upper Sacramento Region	$0.0	$408.0	$0.0	0	$0.0 to $0.0	$0.0	$408.0 to $510.0		$102.0 to $128.0		**$510.0 to $638.0**	
2 Mid-Sacramento Region	$0.0	$2,578.0	$0.0	0	$0.0 to $0.0	$0.0	$2,578.0 to $3,222.0		$645.0 to $806.0		**$3,223.0 to $4,028.0**	
3 Feather River Region	$0.0	$1,631.0	$0.0	0	$0.0 to $0.0	$0.0	$1,631.0 to $2,038.0		$408.0 to $510.0		**$2,039.0 to $2,548.0**	
4 Lower Sacramento Region	$0.0	$1,147.0	$0.0	0	$0.0 to $0.0	$0.0	$1,147.0 to $1,434.0		$287.0 to $359.0		**$1,434.0 to $1,793.0**	
5 Delta North Region	$0.0	$3,111.0	$0.0	0	$0.0 to $0.0	$0.0	$3,111.0 to $3,889.0		$778.0 to $973.0		**$3,889.0 to $4,862.0**	
6 Delta South Region	$0.0	$503.0	$0.0	0	$0.0 to $0.0	$0.0	$503.0 to $629.0		$126.0 to $158.0		**$629.0 to $787.0**	
7 Lower San Joaquin Region	$0.0	$272.0	$0.0	0	$0.0 to $0.0	$0.0	$272.0 to $340.0		$68.0 to $85.0		**$340.0 to $425.0**	
8 Mid-San Joaquin Region	$0.0	$379.0	$0.0	0	$0.0 to $0.0	$0.0	$379.0 to $473.0		$95.0 to $119.0		**$474.0 to $592.0**	
9 Upper San Joaquin Region	$0.0	$1,044.0	$0.0	0	$0.0 to $0.0	$0.0	$1,044.0 to $1,305.0		$261.0 to $327.0		**$1,305.0 to $1,632.0**	
Total	**$0.0**	**$11,073.0**	**$0.0**	**0**	**$0.0 to $0.0**	**$0.0**	**$11,073.0 to $13,840.0**		**$2,770.0 to $3,465.0**		**$13,843.0 to $17,305.0**	

Notes:

All cost estimates are based on 2011 costs rounded to nearest $million.

The Achieve SPFC Design Flow Capacity Approach is one of three preliminary approaches initially considered for the CVFPP.

Assumptions:

[13] Small Community Improvements:

Not included in this approach - Existing levees around small communities would be improved as part of the recommendations from NULE Program

[14] Non-Urban - Design Capacity Improvements:

Estimates from NULE program for improvements to non-urban project levees (see Attachment 8J, Appendix C) to address levee deficiencies such as under-seepage, through-seepage, stability, erosion, and freeboard.

The NULE improvements ~~are expected to~~ include Levee Crown Road All Weather resurfacings for all rural levees ~~(total 1200 miles) at cost of $50,000 per mile~~.

[15] Rural Setback Levees: Not included in this approach

[16] Site-Specific Rural Agricultural Improvements: Not included in this approach

[17] High estimate includes 25% increase for Non-Urban Design Capacity Improvements to account for upper cost estimate range.

97. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, page 6-7 to 6-8, Table 6-4

Table 6-4 "Residual Risk Management Costs for the Achieve SPFC Design Flow Capacity Approach" is replaced by the revised version as follows:

REGION	Enhanced Flood Emergency Response					Enhanced Operation and Maintenance					Floodplain Management					Estimated Total Costs	Risk Assessment, Feasibility, Engineering, and Permitting (25%)	Range of Estimated Total Cost over Program Duration
	Additional Flood Information Collection and Sharing[16~~18~~]	All Weather Roads on Levee Crowns[17~~19~~]	Local Flood Emergency Response Planning[18~~20~~]		Additional Forecasting and Notification[19~~21~~]	Identification and Repair of After Event Erosions[20~~22~~]		Develop and Implement Enhanced O&M Programs and Regional Organizations[21~~23~~]		Sacramento Channel and Levee Management and Bank Protection[22~~24~~]	Raising and Waterproofing Structures and Building Berms[23~~25~~]		Purchasing and Relocating Homes in Floodplains[24~~26~~]		Land Use and Floodplain Management Integration[25~~27~~]			
			Number of Levee Flood Protection Zones	Cost		Miles of Rural Levees	Cost of Repairs	Number of LFPZs	Cost of Repairs		Potential Number of Homes	Costs	Potential Number of Homes	Costs	Costs			
1 Upper Sacramento Region	$8.0	$0.0	10	$5 to $6	$0.0	71	$7 to $9	10	$4 to $6	$12 to $15	0	$0 to $0	0	$0 to $0	$7.5 to $10	**$44 to $54**	**$0 to $0**	**$44 to $54**
2 Mid-Sacramento Region	$8.0	$0.0	16	$8 to $10	$0.0	301	$29 to $38	16	$7 to $9	$18 to $23	0	$0 to $0	0	$0 to $0	$33.0 to $44	**$103 to $132**	**$0 to $0**	**$103 to $132**
3 Feather River Region	$8.0	$0.0	25	$13 to $15	$0.0	162	$16 to $21	25	$11 to $14	$ 2 7 to $36	0	$0 to $0	0	$0 to $0	$13.5 to $18	**$88 to $112**	**$0 to $0**	**$88 to $112**
4 Lower Sacramento Region	$8.0	$0.0	38	$19 to $23	$0.0	43	$5 to $6	38	$16 to $22	$41 to $54	0	$0 to $0	0	$0 to $0	$6.0 to $8	**$95 to $120**	**$0 to $0**	**$95. to $120**
5 Delta North Region*	$8.0	$0.0	19	$95 to $97	$0.0	252	$24 to $32	19	$8 to $11	$0 to $0	0	$0 to $0	0	$0 to $0	$19.5 to $26	**$155 to $174**	**$0 to $0**	**$155 to $174**
6 Delta South Region	$8.0	$0.0	17	$9 to $11	$0.0	54	$6 to $7	17	$7 to $10	$0 to $0	0	$0 to $0	0	$0 to $0	$13.5 to $18	**$44 to $54**	**$0 to $0**	**$44 to $54**
7 Lower San Joaquin Region	$8.0	$0.0	37	$19 to $23	$0.0	38	$4 to $5	37	$16 to $21	$0 to $0	0	$0 to $0	0	$0 to $0	$3 to $4	**$50 to $61**	**$0 to $0**	**$50 to $61**
8 Mid-San Joaquin Region	$8.0	$0.0	19	$10 to $12	$0.0	51	$6 to $7	19	$8 to $11	$0 to $0	0	$0 to $0	0	$0 to $0	$6 to $8	**$38 to $46**	**$0 to $0**	**$38 to $46**
9 Upper San Joaquin Region	$8.0	$0.0	40	$20 to $24	$0.0	228	$22 to $29	40	$17 to $23	$0 to $0	0	$0 to $0	0	$0 to $0	$48 to $64	**$115 to $148**	**$0 to $0**	**$115 to $148**
Total	**$72.0**	**$0.0**	**221**	**$198 to $221**	**$0.0**	**1,200**	**$119 to $150**	**221**	**$94 to $125**	**$98 to $125**	0	**$0 to $0**	0	**$0 to $0**	**$150 to $200**	**$732 to $901**	**$0 to $0**	**$732 to $901**

Notes:

All cost estimates are based on 2011 costs rounded to nearest $million.

The Achieve SPFC Design Flow Capacity Approach is one of three preliminary approaches initially considered for the CVFPP.

Residual Risk Management Assumptions:

[16~~18~~] Additional Flood Information Collection and Sharing:

Includes $8 million per region to improve:

- Identification and notification of the flood hazards to residents
- Effectively broadcasting real-time flood information to rural areas
- Map evacuation routes and provide them to public
- Additional flood monitoring stations in rural areas

All Weather Roads on Levee Crowns:

Improvements ~~expected to~~ would be made as part of ~~ULE and~~ NULE ~~levee improvements~~ Program and costs are included in the non-urban design capacity component of the rural-agricultural improvement element.

Local Flood Emergency Response Planning:

Includes a one-time expenditure of $500,000 to $600,000 per Levee Flood Protection Zone to improve:

- Assist local agencies to prepare flood emergency response plan
- Train flood patrolling and flood fight
- Conduct flood exercises with local entities
- Develop communication tool and process for flood emergency response

*Includes $80 million for purchase of Delta Flood fight materials and $5 million for increased Delta Communications

Additional Forecasting and Notification:

Not included in this approach

Forecasting and Notification will continue to operate at its current level.

Identification and Repair of After Event Erosions:

Inspect the flood system after any major flood event to identify erosion sites. Repair erosion sites in a timely manner before they are expected to become a major remaining project.

Costs are estimated to be approximately $5 million per year for 25 years and are distributed across regions proportionally based on number of rural levee miles.

Develop and Implement Enhanced O&Ms:

Includes annual expenditures of $4,000,000 to $5,000,000 per year for 25 years, regionally distributed according to the number of Local Flood Protection Zones to:

- Develop and implement an enhanced O&M program and establish regional maintenance organizations.

Sacramento Channel and Levee Management and Bank Protection:

Channel and levee management program includes system capacity evaluation and remediation and Sacramento River Bank Protection. Assumes $4 to $5 million per year over next 25 years. Distribution of the cost between the various regions is preliminary and is subject to refinement. The State will assume responsibilities for O&M of the bypasses as well as the water side of the project levees in Sacramento River System.

Raising and Waterproofing Structures and Building Berms:

Not included in this approach

Purchasing and Relocating Homes in Floodplains:

Not included in this approach because of extensive levee improvements made in ULE and NULE programs

Land Use and Floodplain Management Integration :

Land use and floodplain management integration including preparing multi-hazard plans, multi-hazard plans, floodplain management plan, local general plan updates, etc.

Costs estimated to be up to $200 million, and were regionally distributed based on the number of houses in rural areas.

98. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, page 6-9 to 6-10, Table 6-5

Table 6-5 "System Improvement Costs for the Protect High Risk Communities Approach" is replaced by the revised version as follows:

REGION	Land Acquisition[1]		Agricultural Conservation Easement[2]		Ecosystem Restoration and Enhancement[3]		LEVEES				Flood System and Fish Passage Structures[6]	Reservoir Operations		Easements[9]	System Erosion and Bypass Sediment Removal Project[10]	Estimated Total Cost	Risk Assessment, Feasibility, Engineering, and Permitting (25%)	Range of Estimated Total Cost over Program Duration
							New Levee Construction[4]		Improve Existing Levees[5]			Forecast-Coordinated Operations / Forecast-Based Operations[7]	New Reservoir Storage[8]					
	Acreage	Cost	Acreage	Cost	Acreage	Cost	Length	Cost	Length	Cost	Cost	Cost	Cost	Cost	Cost			
	(acres)	Low High	Low High	Low High	(acres)	Low High	(miles)	Low High	(miles)	Low High	Low High	Low High	Low High	Low High	Low High	Low High	Low High	Low High
1 Upper Sacramento Region	0	$0 to $0	0 to 0	$0 to $0	0	$0 to $0	0.0	$0 to $0	0.0	$0 to $0	$0 to $0	$9 to $12	$0 to $0	$0 to $0	$0 to $0	$9 to $12	$3 to $3	$12 to $15
2 Mid-Sacramento Region	0	$0 to $0	0 to 0	$0 to $0	0	$0 to $0	0.0	$0 to $0	0.0	$0 to $0	$0 to $0	$0 to $0	$0 to $0	$0 to $0	$0 to $0	$0 to $0	$0 to $0	$0 to $0
3 Feather River Region	0	$0 to $0	0 to 0	$0 to $0	0	$0 to $0	0.0	$0 to $0	0.0	$0 to $0	$0 to $0	$9 to $12	$0 to $0	$0 to $0	$0 to $0	$9 to $12	$3 to $3	$12 to $15
4 Lower Sacramento Region	0	$0 to $0	0 to 0	$0 to $0	0	$0 to $0	0.0	$0 to $0	0.0	$0 to $0	$0 to $0	$5 to $6	$0 to $0	$0 to $0	$0 to $0	$5 to $6	$2 to $2	$7 to $8
5 Delta North Region	0	$0 to $0	0 to 0	$0 to $0	0	$0 to $0	0.0	$0 to $0	0.0	$0 to $0	$0 to $0	$9 to $12	$0 to $0	$0 to $0	$0 to $0	$9 to $12	$3 to $3	$12 to $15
6 Delta South Region	0	$0 to $0	0 to 0	$0 to $0	0	$0 to $0	0.0	$0 to $0	0.0	$0 to $0	$0 to $0	$0 to $0	$0 to $0	$0 to $0	$0 to $0	$0 to $0	$0 to $0	$0 to $0
7 Lower San Joaquin Region	0	$0 to $0	0 to 0	$0 to $0	0	$0 to $0	0.0	$0 to $0	0.0	$0 to $0	$0 to $0	$5 to $6	$0 to $0	$0 to $0	$0 to $0	$5 to $6	$2 to $2	$7 to $8
8 Mid-San Joaquin Region	0	$0 to $0	0 to 0	$0 to $0	0	$0 to $0	0.0	$0 to $0	0.0	$0 to $0	$0 to $0	$9 to $12	$0 to $0	$0 to $0	$0 to $0	$9 to $12	$3 to $3	$12 to $15
9 Upper San Joaquin Region	0	$0 to $0	0 to 0	$0 to $0	0	$0 to $0	0.0	$0 to $0	0.0	$0 to $0	$0 to $0	$23 to $30	$0 to $0	$0 to $0	$0 to $0	$23 to $30	$6 to $8	$29 to $38
Total	0	$0 to $0	0 to 0	$0 to $0	0	$0 to $0	0.0	$0 to $0	0.0	$0 to $0	$0 to $0	$69 to $90	$0 to $0	$0 to $0	$0 to $0	$69 to $90	$18 to $23	$91 to $114

Notes:

All cost estimates are based on 2011 costs rounded to nearest $million.

The Protect High Risk Communities Approach is one of three preliminary approaches initially considered for the CVFPP.

System Improvement Assumptions:

1 Land Acquisition: Not included in this approach

2 Agricultural Conservation Easement: Not included in this approach

3 Ecosystem Restoration and Enhancement: Not included in this approach

4 New Levee Design and Construction: Not included in this approach

5 Improve Existing Levees: Not included in this approach

6 Flood System and Fish Passage Structures: Not included in this approach

7 F-CO / F-BO: Includes up to 15 F-CO/F-BO in the Sacramento Basin (up to seven reservoirs) and the San Joaquin Basin (up to eight reservoirs), with $4.5 to $6.0 million per reservoir.

8 New Reservoirs: Not included in this approach

9 Easements: Not included in this approach

10 System Erosion and Bypass Sediment Removal Project: Not included in this approach

99. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, page 6-11 to 6-12, Table 6-6

Table 6-6 "Urban Improvement Costs for the Protect High Risk Communities Approach" is replaced by the revised version as follows:

REGION	Estimated Project Cost[11]			Risk Assessment, Feasibility, Engineering, and Permitting ~~(20%)~~[1312]			Range of Estimated Total Cost over Program Duration		
	Low		High	Low		High	Low		High
Upper Sacramento Region	**$100.0**	**to**	**$120.0**	**$20.0**	**to**	**$24.0**	**$120.0**	**to**	**$144.0**
Chico Urban Levee Improvements	$100.0	to	$120.0	$20.0	to	$24.0	$120.0	to	$144.0
Mid-Sacramento Region	**$0.0**	**to**	**$0.0**	**$0.0**	**to**	**$0.0**	**$0.0**	**to**	**$0.0**
	$0.0	to	$0.0	$0.0	to	$0.0	$0.0	to	$0.0
Feather River Region	**$760.0**	**to**	**$891.0**	**$131.0**	**to**	**$157.0**	**$891.0**	**to**	**$1,048.0**
Sutter County Feasibility Study	$8.5	to	$10.2	$1.7	to	$2.0	$10.2	to	$12.2
Feather River West Levee SBFCA	$245.0	to	$294.0	$49.0	to	$58.8	$294.0	to	$352.8
LD1-EIP-Lower Feather River Setback Levee at Star Bend	$20.8	to	$20.8	$0.0	to	$0.0	$20.8	to	$20.8
Marysville Ring Levee Reconstruction	$161.9	to	$194.3	$32.4	to	$38.9	$194.3	to	$233.1
Yuba River Basin GRR	$15.4	to	$18.5	$3.1	to	$3.7	$18.5	to	$22.2
TRLIA-EIP Feather River Levee Improvement Project	$222.0	to	$266.4	$44.4	to	$53.3	$266.4	to	$319.7
TRLIA-EIP-Upper Yuba River Levee Improvement Project	$68.0	to	$68.0	$0.0	to	$0.0	$68.0	to	$68.0
RD 2103-EIP-Bear River North Levee Rehabilitation Project	$18.2	to	$18.2	$0.0	to	$0.0	$18.2	to	$18.2
Lower Sacramento Region	**$3,117.0**	**to**	**$3,726.0**	**$145.0**	**to**	**$173.0**	**$3,261.0**	**to**	**$3,899.0**
American River Common Features Project/GRR	$12.8	to	$15.4	$2.6	to	$3.1	$15.4	to	$18.4
American River Common Features-WRDA96/99 Projects/Remaining Sites	$282.0	to	$338.4	$0.0	to	$0.0	$282.0	to	$338.4
Folsom Dam Modifications-Joint Federal Project (Gated Auxiliary Spillway)	$800.0	to	$1,000.0	$0.0	to	$0.0	$800.0	to	$1,000.0
Folsom Dam Raise, Bridge Element Study and Implementation	$130.0	to	$140.0	$0.0	to	$0.0	$130.0	to	$140.0
Folsom Dam Raise - Reservoir Enlargement	$125.0	to	$130.0	$0.0	to	$0.0	$125.0	to	$130.0
South Sacramento County Streams	$104.0	to	$124.8	$0.0	to	$0.0	$104.0	to	$124.8
SAFCA-EIP-NCC Natomas Levee Improvement Project	$70.0	to	$84.0	$0.0	to	$0.0	$70.0	to	$84.0
SAFCA-NLIP,CO Natomas Levee Improvement Project	$310.0	to	$372.0	$0.0	to	$0.0	$310.0	to	$372.0
Natomas Basin Design and Construction (Future)	$385.0	to	$462.0	$0.0	to	$0.0	$385.0	to	$462.0
Magpie Creek Project (Future)	$9.8	to	$11.8	$2.0	to	$2.4	$11.8	to	$14.1
American River South and Sacramento River Future Improvements	$500.0	to	$600.0	$100.0	to	$120.0	$600.0	to	$720.0
Slip Repair	$53.0	to	$63.6	$10.6	to	$12.7	$63.6	to	$76.4
WSAFCA-EIP-CO West Sacramento	$105.0	to	$126.0	$21.0	to	$25.2	$126.0	to	$151.2
West Sacramento Project GGR	$10.0	to	$12.0	$2.0	to	$2.4	$12.0	to	$14.4
Woodland/ Lower Cache Creek Feasibility Study and Implementation	$190.0	to	$210.0	$0.0	to	$0.0	$190.0	to	$210.0
Davis-Willow Slough	$30.0	to	$36.0	$6.0	to	$7.2	$36.0	to	$43.2
Delta North Region	**$0.0**	**to**	**$0.0**	**$0.0**	**to**	**$0.0**	**$0.0**	**to**	**$0.0**
	$0.0	to	$0.0	$0.0	to	$0.0	$0.0	to	$0.0
Delta South Region	**$0.0**	**to**	**$0.0**	**$0.0**	**to**	**$0.0**	**$0.0**	**to**	**$0.0**
	$0.0	to	$0.0	$0.0	to	$0.0	$0.0	to	$0.0

Table 6-6. Urban Improvement Costs for the Protect High Risk Communities Approach (contd.)

REGION	Estimated Project Cost[11]			Risk Assessment, Feasibility, Engineering, and Permitting ~~(20%)~~[13]			Range of Estimated Total Cost over Program Duration		
	Low		High	Low		High	Low		High
Lower San Joaquin Region	$162.0	to	$194.0	$33.0	to	$39.0	$194.0	to	$233.0
Lower San Joaquin Feasibility Study	$15.4	to	$18.5	$3.1	to	$3.7	$18.5	to	$22.2
RD 17-EIP-100-Year Levee Seepage Area Project	$76.0	to	$91.2	$15.2	to	$18.2	$91.2	to	$109.4
Mormon Slough Bypass/ Stockton Diverter Canal	$40.0	to	$48.0	$8.0	to	$9.6	$48.0	to	$57.6
Smith Canal Closure Structure (EIP Project)	$30.0	to	$36.0	$6.0	to	$7.2	$36.0	to	$43.2
Mid- San Joaquin Region	**$0.0**	**to**	**$0.0**	**$0.0**	**to**	**$0.0**	**$0.0**	**to**	**$0.0**
	$0.0	to	$0.0	$0.0	to	$0.0	$0.0	to	$0.0
Upper San Joaquin Region	$138.0	to	$166.0	$28.0	to	$34.0	$166.0	to	$199.0
Merced County Streams Group (Bear Creek Unit)	$137.7	to	$165.2	$27.5	to	$33.0	$165.2	to	$198.3
Identified Urban Improvements Subtotal	$4,277.0	to	$5,097.0	$357.0	to	$427.0	$4,632.0	to	$5,523.0
Non-SPFC Urban Levee Improvements[12]									

REGION	Estimated Project Cost[11]			Risk Assessment, Feasibility, Engineering, and Permitting ~~(20%)~~[13]			Range of Estimated Total Cost over Program Duration		
	Low		High	Low		High	Low		High
1 Upper Sacramento Region	$0.0		$0.0	$0.0		$0.0	$0.0		$0.0
2 Mid-Sacramento Region	$0.0		$0.0	$0.0		$0.0	$0.0		$0.0
3 Feather River Region	$0.0		$0.0	$0.0		$0.0	$0.0		$0.0
4 Lower Sacramento Region	$240.0		$320.0	$48.0		$64.0	$288.0		$384.0
5 Delta North Region	$120.0		$160.0	$24.0		$32.0	$144.0		$192.0
6 Delta South Region	$0.0		$0.0	$0.0		$0.0	$0.0		$0.0
7 Lower San Joaquin Region	$360.0		$480.0	$72.0		$96.0	$432.0		$576.0
8 Mid-San Joaquin Region	$0.0		$0.0	$0.0		$0.0	$0.0		$0.0
9 Upper San Joaquin Region	$0.0		$0.0	$0.0		$0.0	$0.0		$0.0
Non-SPFC Urban Levee Improvements Subtotal	**$720.0**		**$960.0**	**$144.0**		**$192.0**	**$864.0**		**$1,152.0**
Urban Improvements Total	**$4,997.0**	**to**	**$5,817.0**	**$501.0**	**to**	**$571.0**	**$5,496.0**	**to**	**$6,675.0**

~~Assumptions:~~

Notes:

All cost estimates are based on 2011 costs rounded to nearest $million.

The Protect High Risk Communities Approach is one of three preliminary approaches initially considered for the CVFPP.

Assumptions:

11 ~~Estimated Project Costs:~~ Urban Flood Protection Projects would provide a 200-year level of protection for urban areas. Project-specific costs were collected from ongoing feasibility studies or other information provided by local flood and other agencies. ~~Costs provided by Project Management Office based on input from local agencies.~~

Folsom ~~Enlargement~~ Dam Raise is an authorized project to provide flood protection for the City of Sacramento

12 Non-SPFC Urban Levee ~~Improvements~~ Improvement costs estimated at $6 to $8 million per mile for approximately 120 miles of Non-SPFC Urban Levees because no levee evaluation data ~~is~~ are available at this time. These improvement costs are~~a~~ less than other improvement cost estimates because these levees are generally on smaller tributary streams and as a result are smaller than other levees, and certain improvements projects have already been completed.

13 Risk Assessment, Feasibility, Engineering, and Permitting ~~(20%) R~~ ranges by project from 0% to 20% depending on level of project development

100. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, pages 6-13 to 6-14, Table 6-7

Table 6-7 "Rural-Agricultural Improvement Costs for the Protect High Risk Communities Approach" is replaced by the revised version as follows:

REGION	Small Community Improvement ~~13~~14	Non-Urban - Design Capacity Improvements ~~14~~15	Rural Setback Levees ~~15~~16	Site-Specific Rural Agricultural Improvement ~~16~~17			Estimated Total Costs		Risk Assessment, Feasibility, Engineering, and Permitting (25%)		Range of Estimated Total Cost over Program Duration	
	Levee Improvement to Provide 100-Year Protection for Small Communities			Miles of Rural Levees	Levee Improvements	Known and Identified Erosion Repairs	Low	High	Low	High	($)	
1 - Upper Sacramento Region	$77.0	$0.0	$0.0	~~7~~10	$0.0 to $0.0	$0.0	$77.0 to $89.0		$19.0 to $23.0		**$93.0 to $112.0**	
2 - Mid-Sacramento Region	$190.0	$0.0	$0.0	~~30~~10	$0.0 to $0.0	$0.0	$190.0 to $228.0		$48.0 to $57.0		**$238.0 to $285.0**	
3 - Feather River Region	$319.0	$0.0	$0.0	~~16~~20	$0.0 to $0.0	$0.0	$319.0 to $383.0		$80.0 to $96.0		**$399.0 to $479.0**	
4 - Lower Sacramento Region	$0.0	$0.0	$0.0	~~4~~30	$0.0 to $0.0	$0.0	$0.0 to $0.0		$0.0 to $0.0		**$0.0 to $0.0**	
5 - Delta North Region	$293.0	$0.0	$0.0	~~25~~20	$0.0 to $0.0	$0.0	$293.0 to $352.0		$74.0 to $88.0		**$367.0 to $440.0**	
6 - Delta South Region	$0.0	$0.0	$0.0	~~5~~40	$0.0 to $0.0	$0.0	$0.0 to $0.0		$0.0 to $0.0		**$0.0 to $0.0**	
7 - Lower San Joaquin Region	$0.0	$0.0	$0.0	~~3~~80	$0.0 to $0.0	$0.0	$0.0 to $0.0		$0.0 to $0.0		**$0.0 to $0.0**	
8 - Mid - San Joaquin Region	$3.0	$0.0	$0.0	~~5~~10	$0.0 to $0.0	$0.0	$3.0 to $4.0		$1.0 to $1.0		**$4.0 to $5.0**	
9 - Upper San Joaquin Region	$121.0	$0.0	$0.0	~~22~~80	$0.0 to $0.0	$0.0	$121.0 to $146.0		$31.0 to $37.0		**$152.0 to $183.0**	
Total	**$1,003.0**	**$0.0**	**$0.0**	**~~1,200~~0**	**$0.0 to $0.0**	**$0.0**	**$1,003.0 to $1,202.0**		**$250.0 to $301.0**		**$1,253.0 to $1,504.0**	

Notes:

All cost estimates are based on 2011 costs rounded to nearest $million.

The Protect High Risk Communities Approach is one of three preliminary approaches initially considered for the CVFPP.

Assumptions:

~~13~~14 Small Community Improvements:

Attachment 8J, Appendix D, provides detailed information about small community improvements.

Provides 100-year level of protection for small communities within the SPFC that are not protected by other systemwide and/or urban improvements. Cost of implementation is less than $30,000 per person protected (about $100,000 per house).

Non-structural measures will be taken when the cost of protection exceeds $100,000 per house (see Residual Risk Management)

Total population in protected small communities is estimated at 47,000 people, and requires about 120 miles of new or improved levees. All levee improvements to protect small communities for

this approach are included in this cost element.
Assumed construction costs include a combination of levee improvements and construction of new levees for each individual community.
Small communities protected by Region are listed below:

1- Upper Sacramento: Durham, Gerber-Las Flores
2 - Mid-Sacramento: Knights Landing, Meridian, Colusa, Glenn, Grimes, Butte City, Robbins, Princeton
3- Feather River: Verona, Biggs, Wheatland, Gridley, Live Oak, Nicolaus, Sutter, Tierra Buena
4- None
5- Delta North: Rio Vista, Clarksburg, Courtland, Hood, Walnut Grove, Isleton
6- None
7- None
8 - Mid-San Joaquin: Grayson
9 - Upper San Joaquin: Firebaugh, Dos Palos, South Dos Palos

Non-Urban - Design Capacity Improvements: Not included in this approach

Rural Setback Levees: Not included in this approach

Site Specific Rural Agricultural Improvements: Not included in this approach

101. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, page 6-15 to 6-16, Table 6-8

Table 6-8 "Residual Risk Management Costs for the Protect High Risk Communities Approach" is replaced by the revised version as follows:

REGION	Enhanced Flood Emergency Response					Enhanced Operation and Maintenance					Floodplain Management					Estimated Total Costs		Risk Assessment, Feasibility, Engineering, and Permitting (25%)	Range of Estimated Total Cost over Program Duration
	Additional Flood Information Collection and Sharing[16][18]	All Weather Roads on Levee Crowns[17][19]	Local Flood Emergency Response Planning[18][20]		Additional Forecasting and Notification[19][21]	Identification and Repair of After Event Erosions[20][22]		Develop and Implement Enhanced O&M Programs and Regional Organizations[21][23]		Sacramento Channel and Levee Management and Bank Protection[22][24]	Raising and Waterproofing Structures and Building Berms[23][25]		Purchasing and Relocating Homes in Floodplains[24][26]		Land Use and Floodplain Management Integration[25][27]				
			Number of Levee Flood Protection Zones	Cost		Miles of Rural Levees	Cost of Repairs	Number of LFPZs	Cost of Repairs		Potential Number of Homes	Costs	Potential Number of Homes	Costs	Costs	Low	High	($)	($)
				Low to High			Low to High		Low to High	Low to High		Low to High		Low to High	Low to High				
1 Upper Sacramento Region	$30	$0	10	$5 to $6	$10	71	$27 to $36	10	$4 to $6	$12 to $15	0	$0 to $0	0	$0 to $0	$7 to $10	**$95 to $113**		**$0 to $0**	**$95 to $113**
2 Mid-Sacramento Region	$30	$0	16	$8 to $10	$10	301	$114 to $151	16	$7 to $9	$18 to $23	0	$0 to $0	0	$0 to $0	$33 to $44	**$220 to $277**		**$0 to $0**	**$220 to $277**
3 Feather River Region	$30	$0	25	$13 to $15	$10	162	$61 to $81	25	$11 to $14	$27 to $36	0	$0 to $0	0	$0 to $0	$13 to $18	**$165 to $204**		**$0 to $0**	**$165 to $204**
4 Lower Sacramento Region	$30	$0	38	$19 to $23	$10	43	$17 to $22	38	$16 to $22	$41 to $54	0	$0 to $0	0	$0 to $0	$6 to $8	**$139 to $169**		**$0 to $0**	**$139 to $169**
5 Delta North Region[20*]	$30	$0	19	$95 to $97	$10	252	$95 to $126	19	$8 to $11	$0 to $0	0	$0 to $0	0	$0 to $0	$20 to $26	**$258 to $300**		**$0 to $0**	**$258 to $300**
6 Delta South Region	$30	$0	17	$9 to $11	$10	54	$21 to $27	17	$7 to $10	$0 to $0	0	$0 to $0	0	$0 to $0	$14 to $18	**$91 to $106**		**$0 to $0**	**$91 to $106**
7 Lower San Joaquin Region	$30	$0	37	$19 to $23	$10	38	$15 to $19	37	$16 to $21	$0 to $0	0	$0 to $0	0	$0 to $0	$3 to $4	**$93 to $107**		**$0 to $0**	**$93 to $107**
8 Mid-San Joaquin Region	$30	$0	19	$10 to $12	$10	51	$20 to $26	19	$8 to $11	$0 to $0	0	$0 to $0	0	$0 to $0	$6 to $8	**$84 to $97**		**$0 to $0**	**$84 to $97**
9 Upper San Joaquin Region	$30	$0	40	$20 to $24	$10	228	$86 to $114	40	$17 to $23	$0 to $0	0	$0 to $0	0	$0 to $0	$48 to $64	**$211 to $265**		**$0 to $0**	**$211 to $265**
Total	**$270**	**$0**	**221**	**$198 to $221**	**$90**	**1,200**	**$456 to $600**	**221**	**$94 to $125**	**$98 to $125**	0	**$0 to $0**	0	**$0 to $0**	**$150 to $200**	**$1,356 to $1,638**		**$0 to $0**	**$1,356 to $1,638**

Notes:

All cost estimates are based on 2011 costs rounded to nearest $million.

The Protect High Risk Communities Approach is one of three preliminary approaches initially considered for the CVFPP.

Residual Risk Management Assumptions:

[16][18] Additional Flood Information Collection and Sharing:

Includes $30 million per region to improve:

Identification and notification of the flood hazards to residents

Effectively broadcasting real-time flood information to rural areas

Mapping evacuation routes and provide them to public

Additional flood monitoring stations in rural areas

All Weather Roads on Levee Crowns: ~~Purchasing and Relocating Homes in Floodplains:~~ Not included in this approach

Local Flood Emergency Response Planning:
- Includes a one-time expenditure of $500,000 to $600,000 per Levee Flood Protection Zone to improve:
  - Assist local agencies to prepare flood emergency response plan
  - Train flood patrolling and flood fight
  - Conduct flood exercises with local entities
  - Develop communication tool and process for flood emergency response
  - *Includes $80 million for purchase of Delta Flood fight materials and $5 million for increased Delta Communications

Additional Forecasting and Notification:
- Includes a one-time expenditure of $10,000,000 per Region to improve:
  - Improve timing and accuracy of flood forecasts
- Develop additional forecasting points to effectively serve rural communities
  - Develop an effective way of distribution forecasts to rural areas
  - ~~*Includes $80 million for purchase of Delta Flood fight materials and $5 million for increased Delta Communications capital investment in rural levees.~~

Identification and Repair of After Event Erosions:
- Inspect the flood system after any major flood event to identify erosion sites. Repair erosion sites in a timely manner before they are expected to become a major remain project. Costs are estimated to be approximately $20 million per year for 25 years and are distributed across regions proportionally based on number of rural levee miles.

Develop and Implement Enhanced O&Ms Programs and Regional Organizations:
- Includes annual expenditures of $4,000,000 to $5,000,000 per year for 25 years, regionally distributed according to the number of Local Flood Protection Zones to:
  - Develop and implement an enhanced O&M programs and establish regional maintenance organizations.

Sacramento Channel and Levee Management and Bank Protection :
- Channel and levee management program includes system capacity evaluation and remediations and Sacramento River Bank Protection. Assumes $4 to $5 million per year over next 25 years. Distribution of the cost between the various regions is preliminary and is subject to refinement. The State will assume responsibilities for O&M of the bypasses as well as the water side of the project levees in Sacramento River System

Raising and Waterproofing Structures and Building Berms: Not included in this approach

Purchasing and Relocating Homes in Floodplains: Not included in this approach

Land Use and Floodplain Management Integration :
- Land use and floodplain management integration including preparing multi-hazard plans, multi-hazard plans, floodplain management plan, local general plan updates, etc.
  - Costs estimated to be up to $200 million, and were regionally distributed based on the number of houses in rural areas.

102. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, page 6-17 to 6-18, Table 6-9

Table 6-9 "System Improvement Costs for the Enhance Flood System Capacity Approach" is replaced by the revised version as follows:

REGION	Land Acquisition [1]		Agricultural Conservation Easement [2]		Ecosystem Restoration and Enhancement [3]		Levees				Flood System and Fish Passage Structures [6]	Reservoir Operations		Easements [9]	System Erosion and Bypass Sediment Removal Project [10]	Estimated Total Cost	Risk Assessment, Feasibility, Engineering, and Permitting (25%)	Range of Estimated Total Cost over Program Duration
							New Levee Construction [4]		Improve Existing Levees [5]			Forecast-Coordinated Operations / Forecast-Based Operations [7]	New Reservoir Storage [8]					
	Acreage	Cost	Acreage (1,000)	Cost	Acreage	Cost	Length	Cost	Length	Cost	Cost	Cost	Cost	Cost	Cost			
	(acres)	Low High	Low High	Low High	(acres)	Low High	(miles)	Low High	(miles)	Low High	Low High	Low High	Low High	Low High	Low High	Low High	Low High	Low High
1 Upper Sacramento Region	0	$0 to $0	5 to 10	$18 to $42	0	$0 to $0	0	$0 to $0	0	$0 to $0	$60 to $90	$9 to $12	$0 to $0	$165 to $213	$0 to $0	$252 to $357	$63 to $90	$315 to $447
2 Mid-Sacramento Region	0	$0 to $0	10 to 15	$35 to $63	0	$0 to $0	0	$0 to $0	0	$0 to $0	$122 to $174	$0 to $0	$0 to $0	$275 to $355	$30 to $35	$462 to $627	$116 to $157	$578 to $784
3 Feather River Region	9000	$87 to $98	15 to 25	$79 to $150	3,300	$165 to $198	31	$671 to $793	15	$210 to $270	$135 to $190	$9 to $12	$200 to $300	$140 to $172	$0 to $0	$1,696 to $2,183	$424 to $546	$2,120 to $2,729
4 Lower Sacramento Region	18,900	$256 to $284	5 to 10	$32 to $70	4,900	$258 to $307	21	$462 to $546	2	$28 to $36	$230 to $280	$5 to $6	$0 to $0	$0 to $0	$30 to $40	$1,301 to $1,569	$326 to $393	$1,627 to $1,962
5 Delta North Region	7,900	$72 to $83	5 to 10	$21 to $49	2,000	$94 to $114	19	$407 to $481	0	$0 to $0	$0 to $0	$9 to $12	$0 to $0	$0 to $0	$0 to $0	$603 to $739	$151 to $185	$754 to $924
6 Delta South Region	1,000	$9 to $11	10 to 15	$42 to $74	300	$14 to $17	8	$165 to $195	7	$91 to $117	$20 to $25	$0 to $0	$0 to $0	$0 to $0	$0 to $0	$341 to $439	$86 to $110	$427 to $549
7 Lower San Joaquin Region	0	$0 to $0	0 to 0	$0 to $0	0	$0 to $0	0	$0 to $0	0	$0 to $0	$0 to $0	$5 to $6	$0 to $0	$0 to $0	$0 to $0	$5 to $6	$2 to $2	$7 to $8
8 Mid-San Joaquin Region	0	$0 to $0	10 to 15	$39 to $69	0	$0 to $0	0	$0 to $0	0	$0 to $0	$0 to $0	$9 to $12	$400 to $600	$174 to $222	$0 to $0	$622 to $903	$156 to $226	$778 to $1,129
9 Upper San Joaquin Region	0	$0 to $0	10 to 15	$39 to $69	0	$50 to $50	0	$0 to $0	0	$0 to $0	$71 to $88	$23 to $30	$500 to $1,500	$116 to $148	$0 to $0	$799 to $1,885	$200 to $472	$999 to $2,357
Total	36,800	$424 to $476	70 to 115	$305 to $586	10,500	$581 to $686	79	$1,705 to $2,015	24	$329 to $423	$638 to $847	$69 to $90	$1,100 to $2,400	$870 to $1,110	$60 to $75	$6,081 to $8,708	$1,521 to $2,177	$7,605 to $10,889

~~NOTE:~~ Notes:

All cost estimates are based on 2011 costs rounded to the nearest $million.

The Enhance Flood System Capacity Approach is one of three preliminary approaches initially considered for the CVFPP.

System Improvement Assumptions:

[1] Land Acquisition: includes purchase of land (fee title)

Land Purchase Cost Assumptions by Region

1	Upper Sacramento	$10,000 to $12,000/acre
2	Mid-Sacramento	$10,000 to $12,000/acre
3	Feather River	$15,000 to $17,000/acre
4	Lower Sacramento	$18,000 to $20,000/acre
5	Delta North	$12,000 to $14,000/acre
6	Delta South	$12,000 to $14,000/acre
7	Lower San Joaquin	$15,000 to $17,000/acre
8	Mid-San Joaquin	$11,000 to $13,000/acre
9	Upper San Joaquin	$11,000 to $13,000/acre

[2] Agricultural Conservation Easement: would preserve agricultural land uses with no provision for storage of flood flows within the easement

Agricultural Conservation Assumed 35% of Land Acquisition by Region

~~1 - Upper Sacramento 35%~~
~~2 - Mid-Sacramento 35%~~
~~3 - Feather River 35%~~
~~4 - Lower Sacramento 35%~~
~~5 - Delta North 35%~~
~~6 - Delta South 35%~~
~~7 - Lower San Joaquin 35%~~
~~8 - Mid - San Joaquin 35%~~
~~9 - Upper San Joaquin 35%~~

[3] Ecosystem Restoration and Enhancement:

Assumes 25% of land purchased for bypasses will be developed for conservation and other 75% will be leased back to farmers for environmentally friendly agricultural practices such as corn, rice, and other grains, except for the Sutter Bypass Expansion, where environmental conservation is designated for 50 percent of lands acquired.

Environmental conservation cost includes development of or improvement to habitat, and is estimated at $35,000 to $45,000 per acre

~~Environmental Conservation Development by Region~~
~~1 - Upper Sacramento $35,000 to $45,000/acre~~
~~2 - Mid-Sacramento $35,000 to $45,000/acre~~
~~3 - Feather River $35,000 to $45,000/acre~~
~~4 - Lower Sacramento $35,000 to $45,000/acre~~
~~5 - Delta North $35,000 to$45,000/acre~~
~~6 - Delta South $35,000 to $45,000/acre~~
~~7 - Lower San Joaquin $35,000 to $45,000/acre~~
~~8 - Mid - San Joaquin $35,000 to $45,000/acre~~
~~9 - Upper San Joaquin $35,000 to $45,000/acre~~

Also includes $50 million for Upper San Joaquin River Restoration Projects.

[4] New Levee Design and Construction:

$22 to $26 million/mile based on recent urban levee projects in the Central Valley.

[5] Improve Existing Levees:

$14 to $18 million/mile

[6] Flood System and Fish Passage Structures:

~~Not included in this approach.~~ Where available, facility-specific cost estimates were used. Otherwise, programmatic costs were approximated based on similar projects elsewhere in California

[7] F-CO / F-BO:

Includes up to 15 F-CO/F-BO in the Sacramento Basin (up to seven reservoirs) and the San Joaquin Basin (up to eight reservoirs), with $4.5 to $6 million per reservoir.

[8] New Reservoirs:

~~Not included in this approach.~~ Programmatic costs were approximated as unit costs to purchase new storage and mitigate impacts in flood storage or multipurpose facilities.

[9] Easements:

~~Not included in this approach.~~ Easements are assumed to be 60 percent of the cost to acquire the land plus project-specific costs of additional facilities needed to move water in/out of easements. Specific locations have not yet been identified

[10] System Erosion and Bypass Sediment Removal Project:

~~Not included in this approach.~~ Represents a one-time expenditure for sediment removal from bypasses and weirs to address deferred maintenance

103. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, page 6-19 to 6-20, Table 6-10

Table 6-10 "Urban Improvement Costs for the Enhance Flood System Capacity Approach" is replaced by the revised version as follows:

REGION	Estimated Project Cost[11]			Risk Assessment, Feasibility, Engineering, and Permitting ~~(20%)~~[13]			Range of Estimated Total Cost over Program Duration		
	Low		High	Low		High	Low		High
Upper Sacramento Region	**$100**	**to**	**$120**	**$20**	**to**	**$24**	**$120**	**to**	**$144**
Chico Urban Levee Improvements	$100	to	$120	$20	to	$24	$120	to	$144
Mid-Sacramento Region	**$0**	**to**	**$0**	**$0**	**to**	**$0**	**$0**	**to**	**$0**
	$0	to	$0	$0	to	$0	$0	to	$0
Feather River Region	**$760**	**to**	**$891**	**$131**	**to**	**$157**	**$891**	**to**	**$1,048**
Sutter County Feasibility Study	$8.5	to	$10.2	$1.7	to	$2	$10.2	to	$12.2
Feather River West Levee SBFCA	$245	to	$294	$49	to	$58.8	$294	to	$352.8
LD1-EIP-Lower Feather River Setback Levee at Star Bend	$20.8	to	$20.8	$0	to	$0	$20.8	to	$20.8
Marysville Ring Levee Reconstruction	$161.9	to	$194.3	$32.4	to	$38.9	$194.3	to	$233.1
Yuba River Basin GRR	$15.4	to	$18.5	$3.1	to	$3.7	$18.5	to	$22.2
TRLIA-EIP Feather River Levee Improvement Project	$222	to	$266.4	$44.4	to	$53.3	$266.4	to	$319.7
TRLIA-EIP-Upper Yuba River Levee Improvement Project	$68	to	$68	$0	to	$0	$68	to	$68
RD 2103-EIP-Bear River North Levee Rehabilitation Project	$18.2	to	$18.2	$0	to	$0	$18.2	to	$18.2
Lower Sacramento Region	**$3,117**	**to**	**$3,726**	**$145**	**to**	**$173**	**$3,261**	**to**	**$3,899**
American River Common Features Project/GRR	$12.8	to	$15.4	$2.6	to	$3.1	$15.4	to	$18.4
American River Common Features-WRDA96/99 Projects/Remaining Sites	$282	to	$338.4	$0	to	$0	$282	to	$338.4
Folsom Dam Modifications-Joint Federal Project (Gated Auxiliary Spillway)	$800	to	$1,000	$0	to	$0	$800	to	$1,000
Folsom Dam Raise, Bridge Element Study and Implementation	$130	to	$140	$0	to	$0	$130	to	$140
Folsom Dam Raise - Reservoir Enlargement	$125	to	$130	$0	to	$0	$125	to	$130
South Sacramento County Streams	$104	to	$124.8	$0	to	$0	$104	to	$124.8
SAFCA-EIP-NCC Natomas Levee Improvement Project	$70	to	$84	$0	to	$0	$70	to	$84
SAFCA-NLIP,CO Natomas Levee Improvement Project	$310	to	$372	$0	to	$0	$310	to	$372
Natomas Basin Design and Construction (Future)	$385	to	$462	$0	to	$0	$385	to	$462
Magpie Creek Project (Future)	$9.8	to	$11.8	$2	to	$2.4	$11.8	to	$14.1
American River South and Sacramento River Future Improvements	$500	to	$600	$100	to	$120	$600	to	$720
Slip Repair	$53	to	$63.6	$10.6	to	$12.7	$63.6	to	$76.4
WSAFCA-EIP-CO West Sacramento	$105	to	$126	$21	to	$25.2	$126	to	$151.2
West Sacramento Project GGR	$10	to	$12	$2	to	$2.4	$12	to	$14.4
Woodland/ Lower Cache Creek Feasibility Study and Implementation	$190	to	$210	$0	to	$0	$190	to	$210
Davis-Willow Slough	$30	to	$36	$6	to	$7.2	$36	to	$43.2
Delta North Region	**$0**	**to**	**$0**	**$0**	**to**	**$0**	**$0**	**to**	**$0**
	$0	to	$0	$0	to	$0	$0	to	$0
Delta South Region	**$0**	**to**	**$0**	**$0**	**to**	**$0**	**$0**	**to**	**$0**
	$0	to	$0	$0	to	$0	$0	to	$0

Table 6-10. Urban Improvement Costs for the Enhance Flood System Capacity Approach (contd.)

REGION	Estimated Project Cost[11]			Risk Assessment, Feasibility, Engineering, and Permitting~~(20%)~~[13]			Range of Estimated Total Cost over Program Duration		
	Low		High	Low		High	Low		High
Lower San Joaquin Region	**$162**	**to**	**$194**	**$33**	**to**	**$39**	**$194**	**to**	**$233**
Lower San Joaquin Feasibility Study	$15.4	to	$18.5	$3.1	to	$3.7	$18.5	to	$22.2
RD 17-EIP-100-Year Levee Seepage Area Project	$76	to	$91.2	$15.2	to	$18.2	$91.2	to	$109.4
Mormon Slough Bypass/ Stockton Diverter Canal	$40	to	$48	$8	to	$9.6	$48	to	$57.6
Smith Canal Closure Structure (EIP Project)	$30	to	$36	$6	to	$7.2	$36	to	$43.2
Mid-San Joaquin Region	**$0**	**to**	**$0**	**$0**	**to**	**$0**	**$0**	**to**	**$0**
	$0	to	$0	$0	to	$0	$0	to	$0
Upper San Joaquin Region	**$138**	**to**	**$166**	**$28**	**to**	**$34**	**$166**	**to**	**$199**
Merced County Streams Group (Bear Creek Unit)	$137.7	to	$165.2	$27.5	to	$33	$165.2	to	$198.3
Identified Urban Improvements Subtotal	**$4,277**	**to**	**$5,097**	**$357**	**to**	**$427**	**$4,632**	**to**	**$5,523**

Non-SPFC Urban Levee Improvements[12]

REGION	Estimated Project Cost[11]			Risk Assessment, Feasibility, Engineering, and Permitting~~(20%)~~[13]			Range of Estimated Total Cost over Program Duration		
	Low		High	Low		High	Low		High
1 Upper Sacramento Region	$0		$0	$0		$0	$0		$0
2 Mid-Sacramento Region	$0		$0	$0		$0	$0		$0
3 Feather River Region	$0		$0	$0		$0	$0		$0
4 Lower Sacramento Region	$240		$320	$48		$64	$288		$384
5 Delta North Region	$120		$160	$24		$32	$144		$192
6 Delta South Region	$0		$0	$0		$0	$0		$0
7 Lower San Joaquin Region	$360		$480	$72		$96	$432		$576
8 Mid-San Joaquin Region	$0		$0	$0		$0	$0		$0
9 Upper San Joaquin Region	$0		$0	$0		$0	$0		$0
Non-SPFC Urban Levee Improvements Subtotal	**$720**		**$960**	**$144**		**$192**	**$864**		**$1,152**
Urban Improvements Total	**$4,997**	**to**	**$5,817**	**$501**	**to**	**$571**	**$5,496**	**to**	**$6,675**

Notes:
All cost estimates are based on 2011 costs rounded to nearest $million.
The Enhance Flood System Capacity Approach is one of three preliminary approaches initially considered for the CVFPP.
Assumptions:

[11] Estimated Project Costs:
Urban Flood Protection Projects would provide a 200-year level of protection for urban areas. Project-specific costs were collected from ongoing feasibility studies or other information provided by local flood and other agencies~~Costs provided by Project Management Office based on input from local agencies~~. Folsom ~~Enlargement~~ Dam Raise is an authorized project to provide flood protection for the City of Sacramento.

[12] Non-SPFC Urban Levee ~~Improvements~~ Improvement costs estimated at $6 to $8 million per mile for approximately 120 miles of Non-SPFC Urban Levees because no levee evaluation data ~~is~~ are available at this time. These improvement costs are~~a~~ less than other improvement cost estimates because these levees are generally on smaller tributary streams and as a result are smaller than other levees, and certain improvements projects have already been completed.

[13] Risk Assessment, Feasibility, Engineering, and Permitting ~~(20%):~~
Ranges by project from 0% to 20% depending on level of project development

104. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, page 6-21 to 6-22, Table 6-11

Table 6-11 "Rural-Agricultural Improvement Costs for the Enhance Flood System Capacity Approach" is replaced by the revised version as follows:

REGION	Small Community Improvement [13] [14]	Non-Urban - Design Capacity Improvements [14] [15]	Rural Setback Levees [15] [16]		Site-Specific Rural Agricultural Improvement [16] [17]			Estimated Total Costs [17] [18]		Risk Assessment, Feasibility, Engineering, and Permitting (25%)		Range of Estimated Total Cost over Program Duration
	Levee Improvement to Provide 100-Year Protection for Small Communities		Low	High	Miles of Rural Levees	Levee Improvements	Known and Identified Erosion Repairs	Low	High	Low	High	($)
1 Upper Sacramento Region	$0	$408	$0 to $0		~~7~~10	$0 to $0	$0	$408 to $510		$102 to $128		**$510 to $638**
2 Mid-Sacramento Region	$95	$2,577	$1,733 to $2,426		~~30~~10	$0 to $0	$0	$4,405 to $5,743		$1,102 to $1,436		**$5,508 to $7,179**
3 Feather River Region	$33	$1,630	$603 to $844		~~16~~20	$0 to $0	$0	$2,267 to $2,915		$567 to $729		**$2,834 to $3,644**
4 Lower Sacramento Region	$0	$1,147	$0 to $0		~~4~~30	$0 to $0	$0	$1,147 to $1,434		$287 to $359		**$1,434 to $1,793**
5 Delta North Region	$200	$3,111	$0 to $0		~~25~~20	$0 to $0	$0	$3,311 to $4,089		$828 to $1,023		**$4,139 to $5,112**
6 Delta South Region	$0	$503	$0 to $0		~~5~~40	$0 to $0	$0	$503 to $629		$126 to $158		**$629 to $787**
7 Lower San Joaquin Region	$0	$272	$0 to $0		~~3~~80	$0 to $0	$0	$272 to $340		$68 to $85		**$340 to $425**
8 Mid-San Joaquin Region	$2	$378	$716 to $1,002		~~5~~10	$0 to $0	$0	$1,096 to $1,477		$274 to $370		**$1,370 to $1,847**
9 Upper San Joaquin Region	$15	$1,043	$0 to $0		~~22~~80	$0 to $0	$0	$1,059 to $1,320		$265 to $330		**$1,324 to $1,650**
Total	**$345**	**$11,069**	**$3,052 to $4,272**		**~~1,200~~0**	**$0 to $0**	**$0**	**$14,469 to $18,453**		**$3,618 to $4,614**		**$18,088 to $23,075**

Notes:

All cost estimates are based on 2011 costs rounded to nearest $million.

The Enhance Flood System Capacity Approach is one of three preliminary approaches initially considered for the CVFPP.

Assumptions:

[13][14] Small Community Improvements:

Attachment 8J, Appendix D, provides detailed information about small community improvements.

Provides 100-year level of protection for small communities within the SPFC that are not protected by other systemwide and/or urban level improvements. Cost of implementation is less than $30,000 per person protected (about $100,000 per house).

Non-structural measures will be taken when the cost of protection exceeds $100,000 per house (see Residual Risk Management)

Total population in protected small communities is estimated at 47,000 people, and requires about 60 miles of new levees. The costs associated with the approximately 60 miles of levee improvements are included as part of NULE Design Capacity Improvements.
Assumed construction costs includes a combination of levee improvements and construction of new levees for each individual community.
Small communities protected by Region are listed below:

1 Upper Sacramento: Durham, Gerber-Las Flore
2 Mid-Sacramento: Knights Landing, Meridian, Colusa, Glenn, Grimes, Butte City, Robbins, Princeton
3 Feather River: Verona, Biggs, Wheatland, Gridley, Live Oak, Nicolaus, Sutter, Tierra Buena
4 None
5 Delta North: Rio Vista, Clarksburg, Courtland, Hood, Walnut Grove, Isleton
6 None
7 None
8 Mid-San Joaquin: Grayson
9 Upper San Joaquin: Firebaugh, Dos Palos, South Dos Palos

~~14~~15 Non-Urban - Design Capacity Improvements:
Estimates from NULE program for improvements to non-urban project levees ~~and related non-urban non-project levees~~ (see Attachment 8J, Appendix C) to address levee deficiencies such as under-seepage, through-seepage, stability, erosion, and freeboard.

The NULE improvements ~~are expected to~~ include Levee Crown Road All Weather resurfacings for all rural levees ~~(total 1200 miles) at cost of $50,000 per mile~~.

~~15~~16 Rural Setback Levees:
Includes updated levee setback costs for land purchase, old levee removal, fixing existing levees, and construction of new levees.
New lands introduced to the floodplain by the setback levee will be subjected to future riparian processes to provide ecosystem restoration.

~~16~~17 Site-Specific Rural Agricultural Improvements:
Not included in this approach

~~17~~18 High estimate includes 25% increase for Non-Urban Design Capacity Improvements to account for upper cost estimate range.

105. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, page 6-23 to 6-24, Table 6-12

Table 6-12 "Residual Risk Management Costs for the Enhance Flood System Capacity Approach" is replaced by the revised version as follows:

REGION	Enhanced Flood Emergency Response					Enhanced Operation and Maintenance					Floodplain Management					Estimated Total Costs	Risk Assessment, Feasibility, Engineering, and Permitting (25%)	Range of Estimated Total Cost over Program Duration
	Additional Flood Information Collection and Sharing[~~16~~ 19]	All Weather Roads on Levee Crowns[~~17~~ 20]	Local Flood Emergency Response Planning[~~18~~ 21]		Additional Forecasting and Notification[~~19~~ 22]	Identification and Repair of After Event Erosions[~~20~~ 23]		Develop and Implement Enhanced O&M Programs and Regional Organizations[~~21~~ 24]		Sacramento Channel and Levee Management and Bank Protection[~~22~~ 25]	Raising and Waterproofing Structures and Building Berms[~~23~~ 26]		Purchasing and Relocating Homes in Floodplains[~~24~~ 27]		Land Use and Floodplain Management Integration[~~25~~ 28]			
			Number of Levee Flood Protection Zones	Cost		Miles of Rural Levees	Cost of Repairs	Number of LFPZs	Cost of Repairs		Potential Number of Homes	Costs	Potential Number of Homes	Costs	Costs			
				Low High			Low High		Low High	Low High		Low High		Low High	Low High	Low High	($)	($)
1 Upper Sacramento Region	$8	$0	10	$5 to $6	$0	71	$7 to $9	10	$4 to $6	$12 to $15	0	$0 to $0	[~~150~~0]	$0 to $0	$3.8 to $5	**$40 to $49**	**$0 to $0**	**$40 to $49**
2 Mid-Sacramento Region	$8	$0	16	$8 to $10	$0	301	$29 to $38	16	$7 to $9	$49 to $65	0	$0 to $0	[~~660~~0]	$0 to $0	$16.5 to $22	**$117 to $152**	**$0 to $0**	**$117 to $152**
3 Feather River Region	$8	$0	25	$13 to $15	$0	162	$16 to $21	25	$11 to $14	$ 2 7 to $35	0	$0 to $0	[~~270~~0]	$0 to $0	$6.8 to $9	**$81 to $102**	**$0 to $0**	**$81 to $102**
4 Lower Sacramento Region	$8	$0	38	$19 to $23	$0	43	$5 to $6	38	$16 to $22	$8 to $10	0	$0 to $0	[~~120~~0]	$0 to $0	$3 to $4	**$59 to $72**	**$0 to $0**	**$59 to $72**
5 Delta North Region*	$8	$0	19	$95 to $97	$0	252	$24 to $320	19	$8 to $11	$0 to $0	0	$0 to $0	[~~390~~0]	$0 to $0	$9.8 to $13	**$145 to $161**	**$0 to $0**	**$145 to $161**
6 Delta South Region	$8	$0	17	$9 to $11	$0	54	$6 to $7	17	$7 to $10	$0 to $0	0	$0 to $0	[~~270~~0]	$0 to $0	$6.8 to $9	**$37 to $45**	**$0 to $0**	**$37 to $45**
7 Lower San Joaquin Region	$8	$0	37	$19 to $23	$0	38	$4 to $5	37	$16 to $21	$0 to $0	0	$0 to $0	[~~60~~0]	$0 to $0	$1.5 to $2	**$48 to $59**	**$0 to $0**	**$48 to $59**
8 Mid-San Joaquin Region	$8	$0	19	$10 to $12	$0	51	$6 to $7	19	$8 to $11	$0 to $0	0	$0 to $0	[~~120~~0]	$0 to $0	$3 to $4	**$35 to $42**	**$0 to $0**	**$35 to $42**
9 Upper San Joaquin Region	$8	$0	40	$20 to $24	$0	228	$22 to $29	40	$17 to $23	$0 to $0	0	$0 to $0	[~~960~~0]	$0 to $0	$24 to $32	**$91 to $116**	**$0 to $0**	**$91 to $116**
Total	**$72**	**$0**	**221**	**$198 to $221**	**$0**	**1,200**	**$119 to $150**	**221**	**$94 to $125**	**$96 to $125**	0	**$0 to $0**	[~~3,000~~0]	**$0 to $0**	**$75 to $100**	**$653 to $798**	**$0 to $0**	**$653 to $798**

Notes:

All cost estimates are based on 2011 costs rounded to the nearest $million.

The Enhance Flood System Capacity Approach is one of three preliminary approaches initially considered for the CVFPP.

Residual Risk Management Assumptions:

[~~16~~ 19] Additional Flood Information Collection and Sharing:

Includes $8 million per region to improve:

Identification and notification of the flood hazards to residents

Effectively broadcasting real-time flood information to rural areas
Mapping evacuation routes and provide them to public
Additional flood monitoring stations in rural areas

~~17~~ 20 All Weather Roads on Levee Crowns:
Improvement~~s expected to~~would be made as part of ~~ULE and~~ NULE ~~levee Improvements~~ Program and costs are included in the non-urban design capacity component of the rural-agricultural improvement element.

~~18~~ 21 Local Flood Emergency Response Planning:
Includes a one-time expenditure of $500,000 to $600,000 per Levee Flood Protection Zone to improve:
Assist local agencies to prepare flood emergency response plan
Train flood patrolling and flood fight
Conduct flood exercises with local entities
Develop communication tool and process for flood emergency response
*Includes $80 million for purchase of Delta Flood fight materials and $5 million for increased Delta Communications

~~19~~ 22 Additional Forecasting and Notification:
Forecasting and Notification will continue to operate at its current level. No enhancements are included for this approach.

~~20~~ 23 Identification and Repair of After Event Erosions:
Inspect the flood system after any major flood event to identify erosion sites. Repair erosion sites in a timely manner before they are expected to become a major remain project.
Costs are estimated to be approximately $5 million per year for 25 years and are distributed across regions proportionally based on number of rural levee miles.

~~21~~ 24 Develop and Implement Enhanced O&Ms:
Includes annual expenditures of $4,000,000 to $5,000,000 per year for 25 years, regionally distributed according to the number of Local Flood Protection Zones to:
Develop and implement an enhanced O&M program and establish regional maintenance organizations.

~~22~~ 25 Sacramento Channel and Levee Management and Bank Protection:
Channel and levee management program includes system capacity evaluation and remediation's and Sacramento River Bank Protection. Assumes $4 to $5 million per year over next 25 years.
Distribution of the cost between the various regions is preliminary and is subject to refinement ~~distributed according to the number of rural levee miles per region~~. The State will assume responsibilities for O&M of the bypasses as well as the water side of the project levees in Sacramento River System

~~23~~ 26 Raising and Waterproofing Structures and Building Berms:
Not included in this approach

~~24~~ 27 Purchasing and Relocating Homes in Floodplains:
Not included in this approach

~~25~~ 28 Land Use and Floodplain Management Integration:
Land use and floodplain management integration including preparing multi-hazard plans, multi-hazard plans, floodplain management plan, local general plan updates, etc.
Costs estimated to be up to $100 million, and were regionally distributed based on the number of houses in rural areas.

106. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, pages 6-25 to 6-26, Table 6-13

Table 6-13 "System Improvement Costs for the State Systemwide Investment Approach" is replaced by the revised version as follows:

REGION	Land Acquisition[1]		Agricultural Conservation Easement[2]		Ecosystem Restoration and Enhancement[3]		LEVEES				Flood System and Fish Passage Structures[6]	Reservoir Operations		Easements[9]	System Erosion and Bypass Sediment Removal Project[10]	Estimated Total Cost	Risk Assessment, Feasibility, Engineering, and Permitting (25%)	Range of Estimated Total Cost over Program Duration
							New Levee Construction[4]		Improve Existing Levees[5]			Forecast-Coordinated Operations / Forecast-Based Operations[7]	New Reservoir Storage[8]					
	Acreage	Cost	Acreage (1,000)	Cost	Acreage	Cost	Length	Cost	Length	Cost	Cost	Cost	Cost	Cost	Cost			
	(acres)	Low High	Low High	Low High	(acres)	Low High	(miles)	Low High	(miles)	Low High	Low High	Low High	Low High	Low High	Low High	Low High	Low High	Low High
1 Upper Sacramento Region	0	$0 to $0	5 to 10	$18 to $42	0	$0 to $0	0	$0 to $0	0	$0 to $0	$60 to $90	$9 to $12	$0 to $0	$0 to $0	$0 to $0	**$87 to $144**	**$22 to $36**	**$109 to $180**
2 Mid-Sacramento Region	0	$0 to $0	10 to 15	$35 to $63	0	$0 to $0	0	$0 to $0	0	$0 to $0	$122 to $174	$0 to $0	$0 to $0	$0 to $0	$30 to $35	**$187 to $272**	**$47 to $68**	**$234 to $340**
3 Feather River Region	9,000	$87 to $98	15 to 25	$79 to $150	3,300	$165 to $198	31	$671 to $793	15	$210 to $270	$135 to $190	$9 to $12	$0 to $0	$0 to $0	$0 to $0	**$1,356 to $1,711**	**$339 to $428**	**$1,695 to $2,139**
4 Lower Sacramento Region	18,900	$256 to $284	5 to 10	$32 to $70	4,900	$258 to $307	21	$462 to $546	2	$28 to $36	$230 to $280	$5 to $6	$0 to $0	$0 to $0	$30 to $40	**$1,301 to $1,569**	**$326 to $393**	**$1,627 to $1,962**
5 Delta North Region	7,900	$72 to $83	5 to 10	$21 to $49	2,000	$94 to $114	19	$407 to $481	0	$0 to $0	$0 to $0	$9 to $12	$0 to $0	$0 to $0	$0 to $0	**$603 to $739**	**$151 to $185**	**$754 to $924**
6 Delta South Region	1,000	$9 to $11	10 to 15	$42 to $74	300	$14 to $17	8	$165 to $195	7	$91 to $117	$20 to $25	$0 to $0	$0 to $0	$0 to $0	$0 to $0	**$341 to $439**	**$86 to $110**	**$427 to $549**
7 Lower San Joaquin Region	0	$0 to $0	0 to 0	$0 to $0	0	$0 to $0	0	$0 to $0	0	$0 to $0	$0 to $0	$5 to $6	$0 to $0	$0 to $0	$0 to $0	**$5 to $6**	**$2 to $2**	**$7 to $8**
8 Mid-San Joaquin Region	0	$0 to $0	10 to 15	$39 to $69	0	$0 to $0	0	$0 to $0	0	$0 to $0	$0 to $0	$9 to $12	$0 to $0	$0 to $0	$0 to $0	**$48 to $81**	**$12 to $21**	**$60 to $102**
9 Upper San Joaquin Region	0	$0 to $0	10 to 15	$39 to $69	0	$50 to $50	0	$0 to $0	0	$0 to $0	$71 to $88	$23 to $30	$0 to $0	$0 to $0	$0 to $0	**$183 to $237**	**$46 to $60**	**$229 to $297**
Total	36,800	$424 to $476	70 to 115	$305 to $586	10,500	$581 to $686	79	$1,705 to $2,015	24	$329 to $423	$638 to $847	$69 to $90	$0 to $0	$0 to $0	$60 to $75	**$4,111 to $5,198**	**$1,028 to $1,300**	**$5,142 to $6,501**

~~NOTE:~~ Notes:

All cost estimates are based on 2011 costs rounded to nearest $million.

The State Systemwide Investment Approach is the State's preferred approach for the CVFPP.

System Improvement Assumptions:

[1] Land Acquisition: includes purchase of land (fee title)

Land Purchase Cost Assumptions by Region

1 - Upper Sacramento	$10,000 to $12,000/acre
2 - Mid-Sacramento	$10,000 to $12,000/acre
3 - Feather River	$15,000 to $17,000/acre
4 - Lower Sacramento	$18,000 to $20,000/acre
5 - Delta North	$12,000 to $14,000/acre
6 - Delta South	$12,000 to $14,000/acre
7 - Lower San Joaquin	$15,000 to $17,000/acre
8 - Mid - San Joaquin	$11,000 to $13,000/acre
9 - Upper San Joaquin	$11,000 to $13,000/acre

[2] Agricultural Conservation Easement: would preserve agricultural land uses with no provision for storage of flood flows within the easement

Agricultural Conservation Assumed 35% of Land Acquisition by Region

~~1 - Upper Sacramento 35%~~
~~2 - Mid-Sacramento 35%~~
~~3 - Feather River 35%~~
~~4 - Lower Sacramento 35%~~
~~5 - Delta North 35%~~
~~6 - Delta South 35%~~
~~7 - Lower San Joaquin 35%~~
~~8 - Mid - San Joaquin 35%~~
~~9 - Upper San Joaquin 35%~~

[3] Ecosystem Restoration and Enhancement:

Assumes 25% of land purchased for bypasses will be developed for conservation and other 75% will be leased back to farmers for environmentally friendly agricultural practices such as corn, rice, and other grains, except for the Sutter Bypass Expansion, where environmental conservation is designated for 50 percent of lands acquired.

Environmental conservation cost includes development of or improvement to habitat, and is estimated at $35,000 to $45,000 per acre.

~~Environmental Conservation Development by Region~~
~~1 - Upper Sacramento $35,000 to $45,000/acre~~
~~2 - Mid-Sacramento $35,000 to $45,000/acre~~
~~3 - Feather River $35,000 to $45,000/acre~~
~~4 - Lower Sacramento $35,000 to $45,000/acre~~
~~5 - Delta North $35,000 to$45,000/acre~~
~~6 - Delta South $35,000 to $45,000/acre~~
~~7 - Lower San Joaquin $35,000 to $45,000/acre~~
~~8 - Mid - San Joaquin $35,000 to $45,000/acre~~
~~9 - Upper San Joaquin $35,000 to $45,000/acre~~

Also i~~I~~ncludes $50 million for Upper San Joaquin River Restoration Projects.

[4] New Levee Design and Construction:

$22 to $26 million/mile based on recent urban levee projects in the Central Valley.

[5] Improve Existing Levees:

$14 to $18 million/mile

[6] Flood System and Fish Passage Structures:

Not included in this approach

[7] F-CO / F-BO:

Includes up to 15 F-CO/F-BO in the Sacramento Basin (up to seven reservoirs) and the San Joaquin Basin (up to eight reservoirs), with $4.5 to $6.0 million per reservoir

[8] New Reservoirs:

Not included in this approach

[9] Easements:

Not included in this approach

[10] System Erosion and Bypass Sediment Removal Project:

~~Not included in this approach~~ Represents a one-time expenditure for sediment removal from bypasses and weirs to address deferred maintenance

107. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, page 6-27 to 6-28, Table 6-14

Table 6-14 "Urban Improvement Costs for the State Systemwide Investment Approach" is replaced by the revised version as follows:

REGION	Estimated Project Cost [11]			Risk Assessment, Feasibility, Engineering, and Permitting (20%) [13]			Range of Estimated Total Cost over Program Duration		
	Low		High	Low		High	Low		High
Upper Sacramento Region	**$100.0**	**to**	**$120.0**	**$20.0**	**to**	**$24.0**	**$120.0**	**to**	**$144.0**
Chico Urban Levee Improvements	$100.0	to	$120.0	$20.0	to	$24.0	$120.0	to	$144.0
Mid-Sacramento Region	**$0.0**	**to**	**$0.0**	**$0.0**	**to**	**$0.0**	**$0.0**	**to**	**$0.0**
	$0.0	to	$0.0	$0.0	to	$0.0	$0.0	to	$0.0
Feather River Region	**$760.0**	**to**	**$891.0**	**$131.0**	**to**	**$157.0**	**$891.0**	**to**	**$1,048.0**
Sutter County Feasibility Study	$8.5	to	$10.2	$1.7	to	$2.0	$10.2	to	$12.2
Feather River West Levee SBFCA	$245.0	to	$294.0	$49.0	to	$58.8	$294.0	to	$352.8
LD1-EIP-Lower Feather River Setback Levee at Star Bend	$20.8	to	$20.8	$0.0	to	$0.0	$20.8	to	$20.8
Marysville Ring Levee Reconstruction	$161.9	to	$194.3	$32.4	to	$38.9	$194.3	to	$233.1
Yuba River Basin GRR	$15.4	to	$18.5	$3.1	to	$3.7	$18.5	to	$22.2
TRLIA-EIP Feather River Levee Improvement Project	$222.0	to	$266.4	$44.4	to	$53.3	$266.4	to	$319.7
TRLIA-EIP-Upper Yuba River Levee Improvement Project	$68.0	to	$68.0	$0.0	to	$0.0	$68.0	to	$68.0
RD 2103-EIP-Bear River North Levee Rehabilitation Project	$18.2	to	$18.2	$0.0	to	$0.0	$18.2	to	$18.2
Lower Sacramento Region	**$3,117.0**	**to**	**$3,726.0**	**$145.0**	**to**	**$173.0**	**$3,261.0**	**to**	**$3,899.0**
American River Common Features Project/GRR	$12.8	to	$15.4	$2.6	to	$3.1	$15.4	to	$18.4
American River Common Features-WRDA96/99 Projects/Remaining Sites	$282.0	to	$338.4	$0.0	to	$0.0	$282.0	to	$338.4
Folsom Dam Modifications-Joint Federal Project (Gated Auxiliary Spillway)	$800.0	to	$1,000.0	$0.0	to	$0.0	$800.0	to	$1,000.0
Folsom Dam Raise, Bridge Element Study and Implementation	$130.0	to	$140.0	$0.0	to	$0.0	$130.0	to	$140.0
Folsom Dam Raise - Reservoir Enlargement	$125.0	to	$130.0	$0.0	to	$0.0	$125.0	to	$130.0
South Sacramento County Streams	$104.0	to	$124.8	$0.0	to	$0.0	$104.0	to	$124.8
SAFCA-EIP-NCC Natomas Levee Improvement Project	$70.0	to	$84.0	$0.0	to	$0.0	$70.0	to	$84.0
SAFCA-NLIP,CO Natomas Levee Improvement Project	$310.0	to	$372.0	$0.0	to	$0.0	$310.0	to	$372.0
Natomas Basin Design and Construction (Future)	$385.0	to	$462.0	$0.0	to	$0.0	$385.0	to	$462.0
Magpie Creek Project (Future)	$9.8	to	$11.8	$2.0	to	$2.4	$11.8	to	$14.1
American River South and Sacramento River Future Improvements	$500.0	to	$600.0	$100.0	to	$120.0	$600.0	to	$720.0
Slip Repair	$53.0	to	$63.6	$10.6	to	$12.7	$63.6	to	$76.4
WSAFCA-EIP-CO West Sacramento	$105.0	to	$126.0	$21.0	to	$25.2	$126.0	to	$151.2
West Sacramento Project GGR	$10.0	to	$12.0	$2.0	to	$2.4	$12.0	to	$14.4
Woodland/ Lower Cache Creek Feasibility Study and Implementation	$190.0	to	$210.0	$0.0	to	$0.0	$190.0	to	$210.0
Davis-Willow Slough	$30.0	to	$36.0	$6.0	to	$7.2	$36.0	to	$43.2
Delta North Region	**$0.0**	**to**	**$0.0**	**$0.0**	**to**	**$0.0**	**$0.0**	**to**	**$0.0**
	$0.0	to	$0.0	$0.0	to	$0.0	$0.0	to	$0.0
Delta South Region	**$0.0**	**to**	**$0.0**	**$0.0**	**to**	**$0.0**	**$0.0**	**to**	**$0.0**
	$0.0	to	$0.0	$0.0	to	$0.0	$0.0	to	$0.0

Table 6-14. Urban Improvement Costs for the State Systemwide Investment Approach (Continued)

REGION	Estimated Project Cost [11]				Risk Assessment, Feasibility, Engineering, and Permitting (20%) [13]				Range of Estimated Total Cost over Program Duration			
	Low		High		Low		High		Low		High	
Lower San Joaquin Region	**$162.0**	**to**	**$194.0**		**$33.0**	**to**	**$39.0**		**$194.0**	**to**	**$233.0**	
Lower San Joaquin Feasibility Study	$15.4	to	$18.5		$3.1	to	$3.7		$18.5	to	$22.2	
RD 17-EIP-100-Year Levee Seepage Area Project	$76.0	to	$91.2		$15.2	to	$18.2		$91.2	to	$109.4	
Mormon Slough Bypass/ Stockton Diverter Canal	$40.0	to	$48.0		$8.0	to	$9.6		$48.0	to	$57.6	
Smith Canal Closure Structure (EIP Project)	$30.0	to	$36.0		$6.0	to	$7.2		$36.0	to	$43.2	
Mid - San Joaquin Region	**$0.0**	**to**	**$0.0**		**$0.0**	**to**	**$0.0**		**$0.0**	**to**	**$0.0**	
	$0.0	to	$0.0		$0.0	to	$0.0		$0.0	to	$0.0	
Upper San Joaquin Region	**$138.0**	**to**	**$166.0**		**$28.0**	**to**	**$34.0**		**$166.0**	**to**	**$199.0**	
Merced County Streams Group (Bear Creek Unit)	$137.7	to	$165.2		$27.5	to	$33.0		$165.2	to	$198.3	
Identified Urban Improvements Subtotal	**$4,277.0**	**to**	**$5,097.0**		**$357.0**	**to**	**$427.0**		**$4,632.0**	**to**	**$5,523.0**	

Non-SPFC Urban Levee Improvements [12]

REGION	Estimated Project Cost [11]				Risk Assessment, Feasibility, Engineering, and Permitting (20%) [13]				Range of Estimated Total Cost over Program Duration			
	Low		High		Low		High		Low		High	
1 - Upper Sacramento Region	$0.0		$0.0		$0.0		$0.0		$0.0		$0.0	
2 - Mid-Sacramento Region	$0.0		$0.0		$0.0		$0.0		$0.0		$0.0	
3 - Feather River Region	$0.0		$0.0		$0.0		$0.0		$0.0		$0.0	
4 - Lower Sacramento Region	$240.0		$320.0		$48.0		$64.0		$288.0		$384.0	
5 - Delta North Region	$120.0		$160.0		$24.0		$32.0		$144.0		$192.0	
6 - Delta South Region	$0.0		$0.0		$0.0		$0.0		$0.0		$0.0	
7 - Lower San Joaquin Region	$360.0		$480.0		$72.0		$96.0		$432.0		$576.0	
8 - Mid - San Joaquin Region	$0.0		$0.0		$0.0		$0.0		$0.0		$0.0	
9 - Upper San Joaquin Region	$0.0		$0.0		$0.0		$0.0		$0.0		$0.0	
Non-SPFC Urban Levee Improvements Subtotal	**$720.0**		**$960.0**		**$144.0**		**$192.0**		**$864.0**		**$1,152.0**	
Urban Improvements Total	**$4,997.0**	**to**	**$5,817.0**		**$501.0**	**to**	**$571.0**		**$5,496.0**	**to**	**$6,675.0**	

~~Assumptions:~~

~~NOTE:~~ Notes: All cost estimates are based on 2011 costs rounded to nearest $million.

The State Systemwide Investment Approach is the State's preferred approach for the CVFPP.

Assumptions:

[11] Estimated Project Costs:
Urban Flood Protection Projects would provide a 200-year level of protection for urban areas. Project-specific costs were collected from ongoing feasibility studies or other information provided by local flood and other agencies ~~Costs provided by Project Management Office based on input from local agencies~~. Folsom ~~Enlargement~~ Dam Raise is an authorized project to provide flood protection for the City of Sacramento

[12] Non-SPFC Urban Levee ~~Improvements~~ Improvement costs estimated at $6 to $8 million per mile for approximately 120 miles of Non-SPFC Urban Levees because no levee evaluation data ~~is~~ are available at this time. These improvement costs are~~a~~ less than other improvement cost estimates because these levees are generally on smaller tributary streams and as a result are smaller than other levees, and certain improvements projects have already been completed.

[13] Risk Assessment, Feasibility, Engineering, and Permitting ~~(20%)~~
Ranges by project from 0% to 20% depending on level of project development

108. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, page 6-29 to 6-30, Table 6-15

Table 6-15 "Rural-Agricultural Improvement Costs for the State Systemwide Investment Approach" is replaced by the revised version as follows:

REGION	Small Community Improvement [14]	Non-Urban - Design Capacity Improvements [15]	Rural Setback Levees [16]	Site-Specific Rural Agricultural Improvement [17]			Estimated Total Costs		Risk Assessment, Feasibility, Engineering, and Permitting (25%)		Range of Estimated Total Cost over Program Duration	
	Levee Improvement to Provide 100-Year Protection for Small Communities			Miles of Rural Levees	Levee Improvements	Known and Identified Erosion Repairs						
					Low High		Low	High	Low	High	($)	
1 - Upper Sacramento Region	$74.0	$0.0	$0.0	71	$46.0 to $57.0	$3.0	$123.0	to $134.0	$31.0	to $34.0	**$154.0**	**to $168.0**
2 - Mid-Sacramento Region	$107.0	$0.0	$0.0	301	$62.0 to $77.0	$119.0	$288.0	to $303.0	$72.0	to $76.0	**$360.0**	**to $379.0**
3 - Feather River Region	$173.0	$0.0	$0.0	162	$24.0 to $30.0	$28.0	$225.0	to $231.0	$57.0	to $58.0	**$282.0**	**to $289.0**
4 - Lower Sacramento Region	$0.0	$0.0	$0.0	43	$37.0 to $46.0	$24.0	$61.0	to $70.0	$16.0	to $18.0	**$77.0**	**to $88.0**
5 - Delta North Region	$77.0	$0.0	$0.0	252	$93.0 to $117.0	$313.0	$483.0	to $507.0	$121.0	to $127.0	**$604.0**	**to $634.0**
6 - Delta South Region	$0.0	$0.0	$0.0	54	$18.0 to $22.0	$19.0	$37.0	to $41.0	$10.0	to $11.0	**$47.0**	**to $52.0**
7 - Lower San Joaquin Region	$0.0	$0.0	$0.0	38	$8.0 to $10.0	$5.0	$13.0	to $15.0	$4.0	to $4.0	**$17.0**	**to $19.0**
8 - Mid-San Joaquin Region	$3.0	$0.0	$0.0	51	$25.0 to $31.0	$10.0	$38.0	to $44.0	$10.0	to $11.0	**$48.0**	**to $55.0**
9 - Upper San Joaquin Region	$121.0	$0.0	$0.0	228	$19.0 to $24.0	$6.0	$146.0	to $151.0	$37.0	to $38.0	**$183.0**	**to $189.0**
Total	**$555.0**	**$0.0**	**$0.0**	**1,200**	**$332.0 to $414.0**	**$523.0**	**$1,410.0**	**to $1,492.0**	**$353.0**	**to $373.0**	**$1,772.0**	**to $1,873.0**

~~NOTE:~~ Notes:

All cost estimates are based on 2011 costs rounded to nearest $million.
The State Systemwide Investment Approach is the State's preferred approach for the CVFPP.
Assumptions:
[14] Small Community Improvements:
Attachment 8J, Appendix D, provides detailed information about small community improvements.
Provides 100-year level of protection for small communities within the SPFC that are not protected by other systemwide and/or urban level improvements. Cost of implementation is less than $30,000 per person protected (about $100,000 per house).
Non-structural measures will be taken when the cost of protection exceeds $100,000 per house (see Residual Risk Management)
Total population in protected small communities is estimated at 47,000 people, and requires about 60 miles of new levees. The costs associated with the approximately 60 miles

of levee improvements are included as part of NULE Design Capacity Improvements.
Assumed construction costs include a combination of levee improvements and construction of new levees for each individual community.
Small communities protected by Region are listed below:
1- Upper Sacramento: Durham, Gerber-Las Flores
2- Mid-Sacramento: Knights Landing, Meridian, Colusa, Glenn, Grimes, Butte City, Robbins, Princeton
3- Feather River: Verona, Biggs, Wheatland, Gridley, Live Oak, Nicolaus, Sutter, Tierra Buena
4- None
5- Delta North: Rio Vista, Clarksburg, Courtland, Hood, Walnut Grove, Isleton
6- None
7- None
8 - Mid-San Joaquin: Grayson
9 - Upper San Joaquin: Firebaugh, Dos Palos, South Dos Palos

[15] Non-Urban - Design Capacity Improvements:
Not included in this approach. ~~Estimates from NULE program for improvements to non-urban project levees and related non-urban non-project levees.~~
~~The NULE improvements are expected to include Levee Crown Road All Weather resurfacings for all rural levees (total 1200 miles) at cost of $50,000 per mile.~~

[16] Rural Setback Levees:
Not included in this approach. ~~Includes updated levee setback costs (9/29) for land purchase, old levee removal, fixing existing levees, and construction of new levees. New lands introduced to the floodplain by the setback levee will be subjected to future riparian processes to provide ecosystem restoration.~~

[17] Site-Specific Rural Agricultural Improvements:
~~Not included in this approach.~~ Site-specific repair needs were identified in 2011 levee inspections and include erosion repairs and freeboard improvements.

109. Attachment 8J, Appendix A – CVFPP Cost Estimates Methodology, page 6-31 to 6-32, Table 6-16

Table 6-15 "Residual Risk Management Costs for the State Systemwide Investment Approach" is replaced by the revised version as follows:

REGION	Enhanced Flood Emergency Response					Enhanced Operation and Maintenance					Floodplain Management					Estimated Total Costs		Risk Assessment, Feasibility, Engineering, and Permitting (25%)	Range of Estimated Total Cost over Program Duration
	Additional Flood Information Collection and Sharing[16 18]	All Weather Roads on Levee Crowns[17 19]	Local Flood Emergency Response Planning[18 20]		Additional Forecasting and Notification[19 21]	Identification and Repair of After Event Erosions[20 21]		Develop and Implement Enhanced O&M Programs and Regional Organizations[21–23]		Sacramento Channel and Levee Management and Bank Protection[22 24]	Raising and Waterproofing Structures and Building Berms[23 25]		Purchasing and Relocating Homes in Floodplains[24 26]		Land Use and Floodplain Management Integration[25 27]				
			Number of Levee Flood Protection Zones	Cost		Miles of Rural Levees	Cost of Repairs	Number of LFPZs	Cost of Repairs		Potential Number of Homes	Costs	Potential Number of Homes	Costs	Costs				
				Low High			Low High		Low High	Low High		Low High		Low High	Low High	Low	High	($)	($)
1 Upper Sacramento Region	$15	$4	10	$5 to $6	$10	71	$14 to $18	10	$5 to $6	$12 to $15	150	$11.3 to $15	150	$11.3 to $15	$7.5 to $10	**$95**	**$114**	**$0**	**$95** to **$114**
2 Mid-Sacramento Region	$15	$14	16	$8 to $10	$10	301	$57 to $76	16	$7 to $9	$18 to $23	660	$49.5 to $66	660	$49.5 to $66	$33 to $44	**$261**	**$333**	**$0**	**$261** to **$333**
3 Feather River Region	$15	$9	25	$13 to $15	$10	162	$31 to $41	25	$11 to $14.1	$ 2 7 to $36	270	$20.3 to $27	270	$20.3 to $27	$13.5 to $18	**$170**	**$212**	**$0**	**$170** to **$212**
4 Lower Sacramento Region	$15	$3	38	$19 to $23	$10	43	$9 to $11	38	$17 to $21.5	$41 to $54	120	$9 to $12	120	$9 to $12	$6 to $8	**$138**	**$169**	**$0**	**$138** to **$169**
5 Delta North Region*	$15	$11	19	$95 to $97	$10	252	$48 to $63	19	$9 to $10.7	$0 to $0	390	$29.3 to $39	390	$29.3 to $39	$19.5 to $26	**$266**	**$311**	**$0**	**$266** to **$311**
6 Delta South Region	$15	$3	17	$9 to $11	$10	54	$11 to $14	17	$8 to $9.6	$0 to $0	270	$20.3 to $27	270	$20.3 to $27	$13.5 to $18	**$110**	**$135**	**$0**	**$110** to **$135**
7 Lower San Joaquin Region	$15	$2	37	$19 to $23	$10	38	$8 to $10	37	$16 to $20.9	$0 to $0	60	$4.5 to $6	60	$4.5 to $6	$3 to $4	**$82**	**$97**	**$0**	**$82** to **$97**
8 Mid-San Joaquin Region	$15	$3	19	$10 to $12	$10	51	$10 to $13	19	$9 to $10.7	$0 to $0	120	$9 to $12	120	$9 to $12	$6 to $8	**$81**	**$96**	**$0**	**$81** to **$96**
9 Upper San Joaquin Region	$15	$11	40	$20 to $24	$10	228	$43 to $57	40	$17 to $22.6	$0 to $0	960	$72 to $96	960	$72 to $96	$48 to $64	**$308**	**$396**	**$0**	**$308** to **$396**
Total	**$135**	**$60**	**221**	**$198 to $221**	**$90**	**1,200**	**$231 to $300**	**221**	**$99 to $125**	**$98 to $125**	3,000	**$225 to $300**	3,000	**$225 to $300**	**$150 to $200**	**$1,511**	**to $1,863**	**$0**	**$1,511 to $1,863**

Notes:

All cost estimates are based on 2011 costs rounded to nearest $million.

The State Systemwide Investment Approach is the State's preferred approach for the CVFPP.

Residual Risk Management Assumptions:

[18] Additional Flood Information Collection and Sharing:

Includes $15 million per region to improve:
- Identification and notification of the flood hazards to residents
- Effectively broadcasting real-time flood information to rural areas
- Mapping evacuation routes and provide them to public
- Additional flood monitoring stations in rural areas

[19] All Weather Roads on Levee Crowns:
Includes Levee Crown Road All Weather resurfacings for all rural levees (total 1200 miles) at cost of $50,000 per mile

[20] Local Flood Emergency Response Planning:
Includes a one-time expenditure of $500,000 to $600,000 per Levee Flood Protection Zone to improve:
- Assist local agencies to prepare flood emergency response plan
- Train flood patrolling and flood fight
- Conduct flood exercises with local entities
- Develop communication tool and process for flood emergency response
- *Includes $80 million for purchase of Delta Flood fight materials and $5 million for increased Delta Communications

[21] Additional Forecasting and Notification:
Includes a one-time expenditure of $10,000,000 per Region to improve:
- Improve timing and accuracy of flood forecasts
- Develop additional forecasting points to effectively serve rural communities
- Develop an effective way of distribution forecasts to rural areas

[22] Identification and Repair of After Event Erosions:
Inspect the flood system after any major flood event to identify erosion sites. Repair erosion sites in a timely manner before they are expected to become a major remain project.
Costs are estimated to be approximately $10 million per year for 25 years and are distributed across regions proportionally based on number of rural levee miles.

[23] Develop and Implement Enhanced O&M Programs and Regional Organizations:
Includes annual expenditures of $4,000,000 to $5,000,000 per year for 25 years, regionally distributed according to the number of Local Flood Protection Zones to:
- Develop and implement an enhanced O&M program and establish regional maintenance organizations.

[24] Sacramento Channel and Levee Management and Bank Protection:
Channel and levee management program includes system capacity evaluation and remediation's and Sacramento River Bank Protection. Assumes $4,000,000 to $5,000,000 per year over next 25 years.
Distribution of the cost between the various regions is preliminary and is subject to refinement ~~.distributed according to the number of rural levee miles per region.~~ The State will assume responsibilities for O&M of the bypasses as well as the water side of the project levees in Sacramento River System

[25] Raising and Waterproofing Structures and Building Berms:
Includes removing or raising structures within floodplains within rural areas.
Estimated in include about 3,000 homes
Costs estimated at $75,000 to $100,000 per house
A grant program to flood proof structures in rural floodplains (up to $100,000 per house and up to3,000 houses: totals up to $300 million)
Regional distribution of costs is proportional to the number of houses in the rural areas.

[26] Purchasing and Relocating Homes in Floodplains:
Purchasing of houses in high risk areas of rural floodplains (up to $100,000 per house and up to 3,000 houses (totals $300 million)
Regional distribution of costs is proportional to the number of houses in the rural areas.

[27] Land Use and Floodplain Management Integration:
Land use and floodplain management integration including preparing multi-hazard plans, multi-hazard plans, floodplain management plan, local general plan updates, etc.
Costs estimated to be up to $200 million, and were regionally distributed based on the number of houses in rural areas.

110. Attachment 8J, Appendix D – Protection of Small Communities, page D-1, first paragraph

This appendix documents the conceptual design and cost estimates for providing 100-year level of flood protection for small communities within the Systemwide Planning Area through physical modifications to the flood protection system (remediation of existing levees or new levees). ~~Protection approaches 100-year level for structural remediation of existing levees or new levees. However, local drainage issues were not analyzed for 100-year protection and costs and other non-structural improvements may be required to provide 100-year level of protection. Small-community cost estimates are incorporated into the overall total costs described in Appendix A.~~ Engineering solutions adopted for each community implement physical modifications based on information from the Non-Urban Levee Evaluation Program (Attachment 8J, Appendix C) and most recent floodplain inundation modeling data available. These engineering solutions were not generated through detailed alternative analysis that considers site-specific details, and should only be considered as one potential option for community flood protection. It should also be noted that the cost estimates for providing 100-year level of protection do not consider interior drainage. It is expected that more detailed analyses for community flood protection with local guidance and input will be conducted through regional planning and project-specific feasibility studies following the 2012 CVFPP. Conceptual cost estimates for small-community protection are incorporated into the cost estimates of Protect High Risk Communities, Enhance Flood System Capacity, and the State Systemwide Investment approaches (refer to Attachment 8J, Appendix A).

111. Attachment 8J, Appendix D – Protection of Small Communities, page D-1, third paragraph

As a part of the Protect High Risk Communities Approach, small communities were identified using the following data sources:

112. Attachment 8J, Appendix D – Protection of Small Communities, page D-2, second sentence of second paragraph

Add a hyphen as follows:

The first step was to identify existing project and non-project levee sections surrounding the community identified in Geotechnical Assessment Reports (GAR) for the South and North Non-Urban Levee Evaluations (NULE) Project study areas (April 2010).

113. Attachment 8J, Appendix D – Protection of Small Communities, page D-2, fourth sentence of second paragraph

Add a hyphen as follows:

Additional non-project levees not covered in the NULE GARs were identified in existing geographic information system (GIS) mapping.

114. Attachment 8J, Appendix D – Protection of Small Communities, page D-6, first sentence of second paragraph

The DWR Urban Levee Design Criteria (ULDC)[1] ~~were~~ was used, as appropriate to levee location and function, in the conceptual design of new levees for this study.

115. Attachment 8J, Appendix D – Protection of Small Communities, page D-8, second sentence of third paragraph

The average height method considered the level of inundation from simulated FLO-2D modeling for various lengths of the proposed horizontal alignments and average~~d~~s them.

116. Attachment 8J, Appendix D – Protection of Small Communities, page D-8, last sentence of last paragraph

These line items include (as a percentage of civil construction costs) unallocated items, mobilization and demobilization, environmental mitigation (and as a percentage of total costs), escalation, contingency, engineering design, permitting and legal, engineering services during construction, and construction management.

117. Attachment 8J, Appendix D – Table D-3, pages D-10 and D-11

Table D-3 “Summary of Small Community Characteristics and Cost Estimates” is replaced by the revised version in the following page.

Table D-3. Summary of Small Community Characteristics and Cost Estimates

	Community Name	2007 Total Population	Flood Threat Level[1]	First Cost	Total Owners Cost	Total Levee Miles	Type of Levee Improvement		
							Fix Existing Levee	New Levee	Cost Curve Applied[2]
Protected by SPFC	Knights Landing	1,776	A	$30,689,566	$7,408,413	2.81		■	
	Grayson	1,172	A	$2,929,545	$792,909	0.70	■	■	
	Isleton	831	A	$45,893,744	$16,136,223	5.06		■	
	Walnut Grove	811	A	$69,176,968	$23,085,452	10.40		■	
	Meridian	756	A	$18,790,261	$6,711,266	1.85	■	■	
	Courtland	695	A	~~$70,076,277~~ $13,572,900	~~$13,696,872~~ $4,678,733	8.62	■	■	
	Robbins	367	A	$30,768,589	$12,669,419	2.25		■	
	Hood	212	A	$30,169,271	$11,427,562	1.77		■	
	Firebaugh	6,178	B	$30,918,288	$9,302,383	7.73	■	■	
	Colusa	5,574	B	$54,053,821	$12,044,135	5.25	■	■	
	Durham	5,445	B	$50,000,000	$30,355,093	13.69	■		
	Rio Vista	5,255	B	~~$42,476,797~~ $32,730,207	~~$10,157,545~~ $8,569,092	-			■
	Wheatland	2,476	B	$173,483,949	$33,658,506	15.95	■		
	Gerber-Las Flores	1,524	B	$23,420,910	$2,449,337	3.95	■		
	Glenn	1,436	B	$11,575,248	$4,766,279	1.92		■	
	Clarksburg	1,401	B	$33,583,420	$8,493,592	3.36		■	
	Tranquility	849	B	~~$42,476,797~~ $32,730,207	~~$10,157,545~~ $8,569,092	-			■
	Verona	585	B	~~$42,476,797~~ $32,730,207	~~$10,157,545~~ $8,569,092	-			■
	Grimes	516	B	$6,259,914	$1,120,875	1.38	■	■	
	Princeton	489	B	$42,476,797	$10,157,545	-			■
	Butte City	291	B	$6,217,933	$1,811,935	1.47	■	■	
	Dos Palos/ South Dos Palos	6,706	C	$89,885,219	$19,889,529	22.95	■		

Table D-3. Summary of Small Community Characteristics and Cost Estimates (contd.)

	Community Name	2007 Total Population	Flood Threat Level[1]	First Cost	Total Owners Cost	Total Levee Miles	Type of Levee Improvement		
							Fix Existing Levee	New Levee	Cost Curve Applied[2]
Protected by SPFC	Biggs	1,959	C	$90,323,215	$21,252,521	9.22	■	□	□
	Upper Lake	963	C	$75,217,182	$15,027,239	5.28	■	□	□
Not Protected by SPFC[3]	Nicolaus	211	A	$46,537,135	$14,035,214	4.29	■	■	□
	Friant	530	A	$41,373,898	$17,036,311	1.38	□	■	□
	Mendota	8,558	B	$38,382,737	$15,804,656	6.45	□	■	□
	Bethel Island	2,624	B	~~$42,476,797~~ $32,730,207	~~$10,157,545~~ $8,569,092	-	□	□	■
	Chester	2,366	B	~~$42,476,797~~ $32,730,207	~~$10,157,545~~ $8,569,092	-	□	□	■
	Los Molinos	2,068	B	~~$42,476,797~~ $32,730,207	~~$10,157,545~~ $8,569,092	-	□	□	■
	Hamilton City	1,885	B	$58,407,219	$24,050,031	3.15	□	■	□
	Thornton	1,467	B	~~$42,476,797~~ $32,730,207	~~$10,157,545~~ $8,569,092	-	□	□	■
	Tehama	443	B	$20,597,310	$3,048,821	3.86	■	□	□
	Byron	1,040	C	~~$42,476,797~~ $32,730,207	~~$10,157,545~~ $8,569,092	-	□	□	■
	Knightsen	913	C	~~$42,476,797~~ $32,730,207	~~$10,157,545~~ $8,569,092	-	□	□	■

Notes:

1 A = flood frequency > 1% per year, flooding depths > 3 feet.; B = flood frequency > 1% per year, flooding depths < 3 feet, < 2 miles from flood source; C = flood

frequency > 1% per year, flooding depths < 3 feet, > 2 miles from flood source.
2 Costs for communities lacking specific flood location and flood depth data were estimated parametrically based on communities of similar size and threat level.
3 Non-SPFC costs are not included in the SSIA of the CVFMP. Communities were assessed 100-year protection costs, but are not part of the proposed SPFC total costs.
Key:
Shading =
□ = No
■ = Yes
- =
SPFC = State Plan of Flood Control

118. Attachment 8J, Appendix D – Protection of Small Communities, page D-12, last two sentences of last paragraph

The least-cost alternative, as shown in the RACER, was used for each segment ~~giving a total capital cost of $10.1 million for Option 1. This cost does not include costs associated with raising all of Levee Segment 162~~. Refer to Table D-3 for cost estimates for this community.

119. Attachment 8J, Appendix D – Protection of Small Communities, page D-14, last sentence of first paragraph

~~The total capital cost for Option 2, not including the costs associated with raising the portion of Levee Segment 162, was estimated to be $26.4 million.~~ Refer to Table D-3 for cost estimates for this community.

120. Attachment 8J, Appendix D – Protection of Small Communities, page D-15, last sentence of first paragraph

~~The total cost for construction, including reconstruction-in-place repairs, was estimated to be $2.7 million.~~ Refer to Table D-3 for cost estimates for this community.

121. Attachment 8J, Appendix D – Protection of Small Communities, page D-17, sixth sentence of second paragraph

Segment 40 showed under-seepage issues in the area, and the length of the portion was more than the total length of repair for the cost of remediation that included under-seepage; therefore, the under-seepage cost alternative for the entire segment was used, as shown in the RACER (DWR 2011)~~, was used~~.

122. Attachment 8J, Appendix D – Protection of Small Communities, page D-17, last sentence of second paragraph

~~The total capital cost for Isleton, not including the costs associated with raising the portion of Levee Segment 378, was estimated to be $34.9 million.~~ Refer to Table D-3 for cost estimates for this community.

123. Attachment 8J, Appendix D – Protection of Small Communities, page D-19, last two sentences of second paragraph

~~The total capital cost for Walnut Grove was estimated to be $40.6 million.~~ Refer to Table D-3 for cost estimates for this community. ~~This~~These costs do~~es~~ not include costs associated with raising the portion of Levee Segment 384 or other levee raises~~, which were not assessed at this time because data from the UNET model are pending~~.

124. Attachment 8J, Appendix D – Protection of Small Communities, page D-21, last sentence of third paragraph

~~Total cost for construction, including reconstruction-in-place repairs, was estimated to be $12.4 million.~~ Refer to Table D-3 for cost estimates for this community.

125. Attachment 8J, Appendix D – Protection of Small Communities, page D-23, all paragraphs

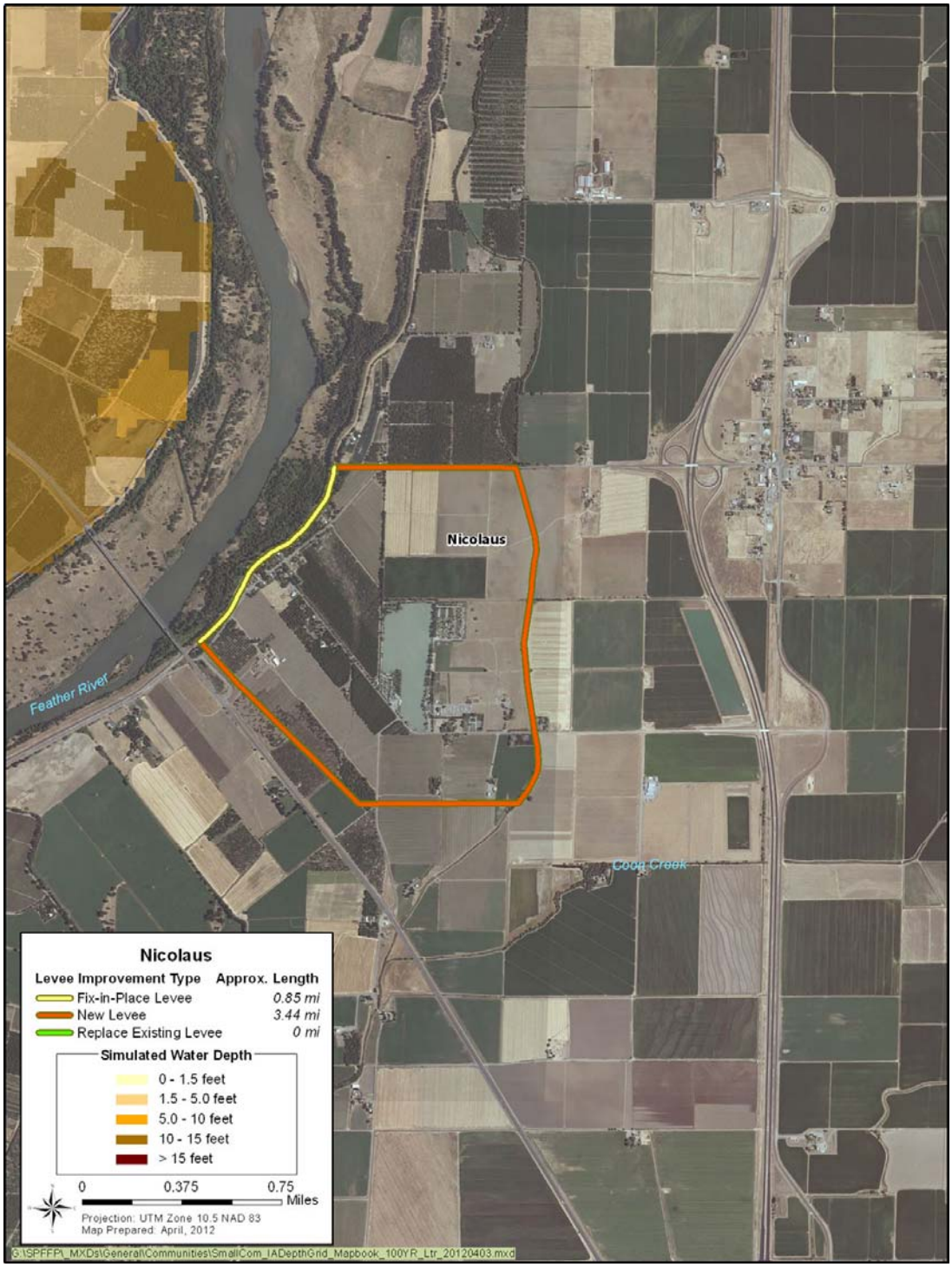
Nicolaus is an unincorporated town and area in Sutter County along California State Route 99, about 0.1 miles south of the Feather River. Floodplain inundation maps from the Comprehensive Study (USACE, 2002) did not include a 1 percent AEP flood inundation map for the areas around Nicolaus ~~FLO-2D hydraulic modeling results overlaid on an aerial photograph of Nicolaus showed no inundation during a 1 percent AEP flood in the town~~ (see Figure D-8).

~~Because no inundation was shown, constructing a new levee was not an option. Therefore, the conceptual design is a reconstruction-in-place alternative repairing all of Levee Segment 247, as described in the NULE GAR (DWR 2010). This option would provide protection to an area beyond the town (Figure D-8). The least-cost alternative, as shown in the RACER (DWR 2011), was used for Segment 247, giving a total capital cost of $1.9 million. This cost does not include expenses associated with levee raises, which were not assessed at this time because data from the UNET model are pending.~~

Estimates for potential inundation depths were developed using information from lower AEP flood events. Figure D-8 shows the adopted engineering solution for Nicolaus. The conceptual design consists of a reconstruction-in-place alternative repairing a portion of Levee Segment 247, as described in the NULE GAR (DWR 2010) with a new ring levee. Refer to Table D-3 for cost estimates for this community.

126. Attachment 8J, Appendix D – Figure D-8, page D-24

Figure D-8 "Nicolaus Levees Approach" is replaced by the revised version in the following page.



127. Attachment 8J, Appendix D – Protection of Small Communities, page D-25, all paragraphs

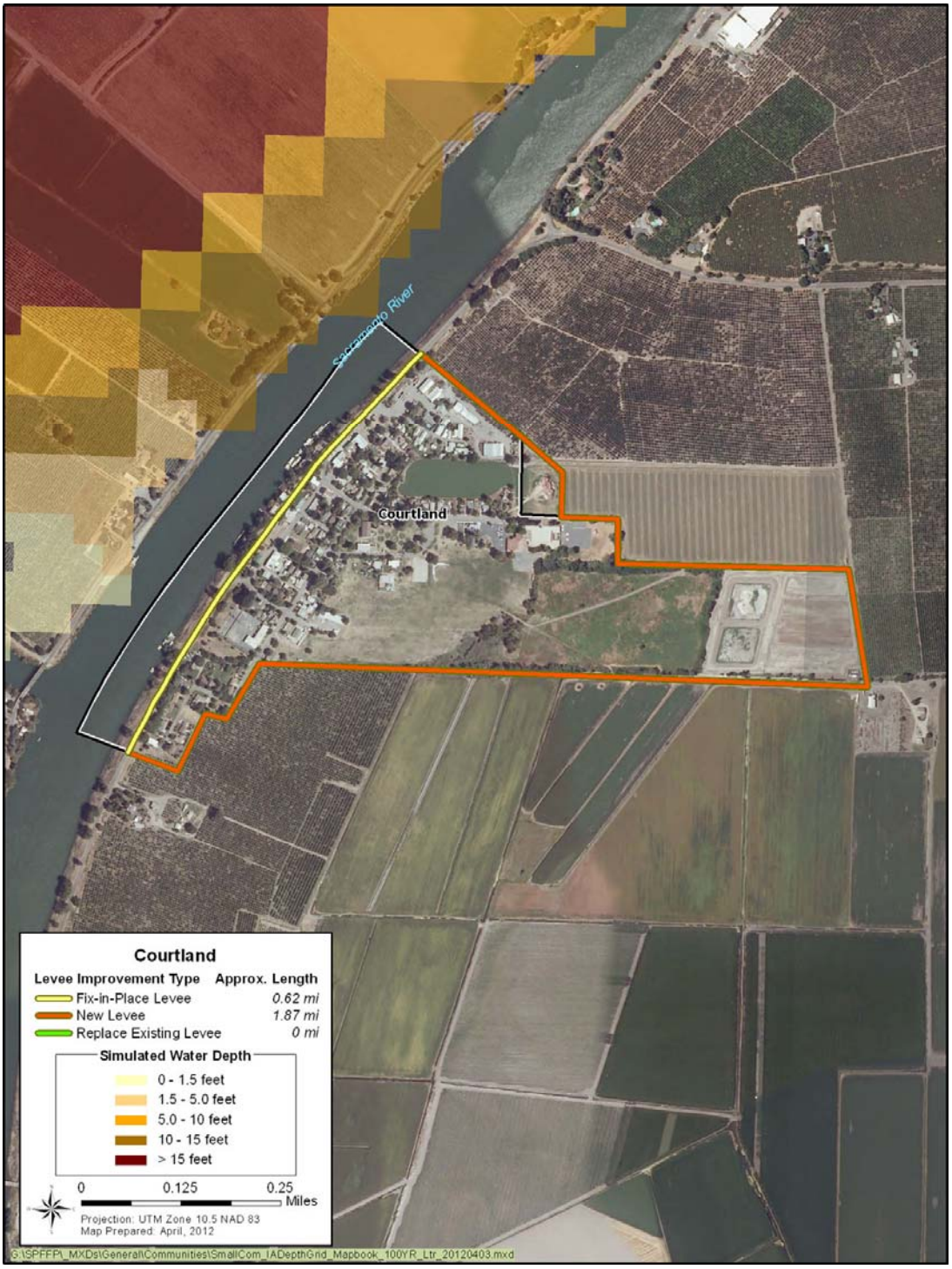
Courtland is an unincorporated community in Sacramento County located along the left bank of the Sacramento River along California State Route 160, 17 miles south-southwest of Sacramento. Floodplain inundation maps from the Comprehensive Study (USACE, 2002) did not include a 1 percent AEP flood inundation map for the areas around Courtland ~~FLO-2D hydraulic modeling results overlaid on an aerial photograph of Courtland showed no inundation during a 1 percent AEP flood in the community~~ (see Figure D-9).

~~Because no inundation was shown, constructing a new levee was not an option. Therefore, the conceptual design is a reconstruction-in-place alternative repairing all of Levee Segments 126 and 131, as described in the NULE GAR (DWR 2010). This option would provide protection to an area beyond the community (Figure D-9). The least-cost alternative, as shown in the RACER (DWR 2011), was used for each segment, giving a total capital cost of $12.6 million. This cost does not include expenses associated with levee raises, which were not assessed at this time because data from the UNET model are pending.~~

Estimates for potential inundation depths were developed using information from lower AEP flood events. Figure D-8 shows the adopted engineering solution for Cortland, which consists of fix-in-place of existing SPFC levee and new ring levee. The fix in-place component includes reconstruction in place of a portion of Levee Segment 131, as described in the NULE GAR (DWR 2010). Refer to Table D-3 for cost estimates for this community.

128. Attachment 8J, Appendix D – Figure D-9, page D-26

Figure D-9 "Courtland Levees Approach" is replaced by the revised version in the following page.



129. Attachment 8J, Appendix D – Protection of Small Communities, page D-27, last sentence of second paragraph

~~, and the total cost for construction was estimated to be $16.5 million.~~ Refer to Table D-3 for cost estimates for this community.

130. Attachment 8J, Appendix D – Protection of Small Communities, page D-29, last two sentences of second paragraph

~~The total capital cost for Hood was estimated to be $19.9 million. This cost does not include expenses associated with levee raises, which were not assessed at this time because data from the UNET model are pending.~~ Refer to Table D-3 for cost estimates for this community.

131. Attachment 8J, Appendix D – Protection of Small Communities, page D-31, last sentence of third paragraph

~~The total cost for construction, including reconstruction-in-place repairs, was estimated at $22.6 million.~~ Refer to Table D-3 for cost estimates for this community.

132. Attachment 8J, Appendix D – Protection of Small Communities, page D-35, last sentence of third paragraph

~~The total cost for construction, including reconstruction-in-place repairs, both training levees, and both ring levees, was estimated at $8.8 million.~~ Refer to Table D-3 for cost estimates for this community.

133. Attachment 8J, Appendix D – Protection of Small Communities, page D-38, last sentence of first paragraph

~~The total cost for construction, including reconstruction-in-place repairs, was estimated to be $45.3 million.~~ Refer to Table D-3 for cost estimates for this community.

134. Attachment 8J, Appendix D – Protection of Small Communities, page D-40, last two sentences of second paragraph

The least-cost alternative, as shown in the RACER (DWR 2011), was used for each segment.~~,~~ ~~giving a total capital cost of $29.2 million. This cost does not include expenses associated with levee raises, which were not assessed at this time because data from the UNET model are pending.~~ Refer to Table D-3 for cost estimates for this community.

135. Attachment 8J, Appendix D – Protection of Small Communities, page D-42, third, fourth, and fifth sentences of second paragraph

The GAR identified deficiencies in Segments 138 and 154 to repair the left bank of Dry Creek. ~~The cost to repair the left bank of Dry Creek, identified in the GAR as Segment 138, was estimated to be $0.5 million. The cost to repair the left bank of Dry Creek, identified in the GAR as Segment 154, was estimated to be $0.4 million. Therefore, the total cost to remediate the entire length of each segment was estimated to be $0.9 million~~. Refer to Table D-3 for cost estimates for this community.

136. Attachment 8J, Appendix D – Protection of Small Communities, page D-44, last sentence of second paragraph

~~The total cost estimate for Glenn is $8.6 million.~~ Refer to Table D-3 for cost estimates for this community.

137. Attachment 8J, Appendix D – Protection of Small Communities, page D-46, last two sentences of second paragraph

~~The total capital cost for Clarksburg was estimated to be $13.7 million. This cost does not include costs associated with levee raises, which were not assessed at this time because data from the UNET model are pending.~~ Refer to Table D-3 for cost estimates for this community.

138. Attachment 8J, Appendix D – Protection of Small Communities, page D-48, third sentence of second paragraph

The ~~cost to repair the~~ right bank of Elder Creek is~~,~~ identified in the GAR as Segment 59~~was estimated to be $3.8 million~~. Refer to Table D-3 for cost estimates for this community.

139. Attachment 8J, Appendix D – Protection of Small Communities, page D-50, last sentence of third paragraph

~~The total cost for construction, including reconstruction-in-place repairs, was estimated to be $7.0 million.~~ Refer to Table D-3 for cost estimates for this community.

140. Attachment 8J, Appendix D – Protection of Small Communities, page D-52, last sentence of third paragraph

~~The total cost for construction, including reconstruction-in-place repairs, was estimated to be $6.1 million.~~ Refer to Table D-3 for cost estimates for this community.

141. Attachment 8J, Appendix D – Protection of Small Communities, page D-54, last sentence of second paragraph

~~The total capital cost for Mendota was estimated to be $12.7 million.~~ Refer to Table D-3 for cost estimates for this community.

142. Attachment 8J, Appendix D – Protection of Small Communities, page D-56, third and fourth sentences of first paragraph

Because of the lack of input data, the following communities were not assessed: Palermo, Princeton, Bethel Island, Verona, Thornton, Chester, Los Molinos, Rio Vista, Tranquility, and Gerber-Las Flores. ~~The community of Palermo is a special case because it will be assessed as a part of Oroville in Group B.~~ Costs for these communities were estimated parametrically based on communities of similar sizes and flood threat level. Refer to Table D-3 for cost estimates for this community.

143. Attachment 8J, Appendix D – Protection of Small Communities, page D-58, last sentence of second paragraph

~~However, Segment 110 was categorized as low for all levee condition categories, meaning no repairs were recommended and no remediation costs were identified.~~ Cost estimates for this community is included in Table D-3.

144. Attachment 8J, Appendix D – Protection of Small Communities, page D-58, third, fourth and fifth sentences of fourth paragraph

The ~~cost to repair the~~ left bank of Middle Creek (Reaches 1 and 2)~~,~~ is identified in the GAR as Segment 81~~, was estimated to be $8.3 million~~. The ~~cost to repair the~~ left bank of Alley Creek~~,~~ is identified in the GAR as Segment 267~~, was estimated to be $2.8 million~~. ~~Therefore, the total cost to remediate the entire length of each segment was estimated to be $11.1 million.~~ Refer to Table D-3 for cost estimates for this community.

145. Attachment 8J, Appendix D – Protection of Small Communities, page D-60, last sentence

Add a sentence to the end of the paragraph as follows:

Costs for these communities were estimated parametrically based on communities of similar sizes and flood threat level. Refer to Table D-3 for cost estimates for this community.

146. Attachment 8J, Appendix D – Protection of Small Communities, page D-61

Insert additional reference:

USACE. *See* U.S. Army Corps of Engineers.

U.S. Army Corps of Engineers (USACE). 2002. Sacramento and San Joaquin River Basins Comprehensive Study. Sacramento, California.

147. Attachment 8J, Appendix E – Flood Corridor Expansion, page E-1, Flood Corridor Expansion, first paragraph

This appendix documents conceptual design and cost estimates for flood corridor expansion features, including levee setbacks. As shown in the Draft 2012 CVFPP Attachment 8J, Table 3-3, the levee setback features described in this appendix are included as part of the Enhance Flood System Capacity Approach, one of the three preliminary approaches considered. However, they are not included in the other preliminary approaches or the preferred State Systemwide Investment Approach.

148. Attachment 8J, Appendix E – Flood Corridor Expansion, page E-2, Improve Institutional Support, fourth sentence of first paragraph

Also, recent projects have been able to demonstrate additional ~~financial~~ economic benefits from new or preserved wildlife habitats created by levee setbacks.

149. Attachment 8J, Appendix E – Flood Corridor Expansion, page E-6, last paragraph

Using the Flood Inundation Potential (FIP) maps, setback levees were located to follow existing contours and avoid removing and replacing major infrastructure such as roads, canals, bridges, and residential and agricultural/industrial developments. Preliminary locations ~~estimated~~ were identified and design concepts developed for setback levees ~~setbacks~~ for the purpose of developing a cost component for the Enhance Flood System Capacity Approach, one of the three preliminary approaches considered for the CVFPP. The preliminary setback levee locations are shown in Figures E-3 and E-4.

It should be noted that rural setback levees are not included in the preferred State Systemwide Investment Approach. However, if these features are recommended for implementation in the future, setback levee locations would be subject to change based on additional information about geotechnical conditions, existing utilities, and other factors that have not yet been evaluated or considered.

150. Attachment 8J, Appendix E – Flood Corridor Expansion, page E-7, title of Figure E-3

Revise title as follows:

Preliminary Setback Levee Conceptual Projects ~~Locations~~Included In Enhance Flood System Capacity Approach, Sacramento River

151. Attachment 8J, Appendix E – Flood Corridor Expansion, page E-8, title of Figure E-4

Revise title as follows:

~~Map~~Preliminary Setback Levee Conceptual Projects ~~Locations~~Included In Enhance Flood System Capacity Approach, Sacramento River

152. Attachment 8J, Appendix E – Flood Corridor Expansion, page E-10, title of Table E-2

Revise title as follows:

Conceptual Setback Levee Projects and Quantities

153. Attachment 8J, Appendix E – Flood Corridor Expansion, page E-10, first sentence of second paragraph

Rural setback levees are not included in the State Systemwide Investment Approach. However, i~~I~~f these projects were to move forward toward implementation, they would require a feasibility-level analysis of alternatives.

154. Attachment 8J, Appendix E – Flood Corridor Expansion, page E-11, Table E-3

Revise title as follows:

Summary of Conceptual Setback Levee Costs

Add a note to the bottom of the table as follows:

The cost components in this table are included in only one CVFPP approach: the Enhance Flood System Capacity Approach, one of three preliminary approaches considered but not recommended for implementation.

155. Attachment 8J, Appendix E – Flood Corridor Expansion, page E-12, title of Figure E-5

Revise title as follows:

MSAC1 Conceptual Setback ~~Area~~Project Considered in Enhance Flood System Capacity Approach, Sacramento River

156. Attachment 8J, Appendix E – Flood Corridor Expansion, page E-13, title of Figure E-6

Revise title as follows:

MSAC2 Conceptual Setback ~~Area~~Project Considered in Enhance Flood System Capacity Approach, Sacramento River

157. Attachment 8J, Appendix E – Flood Corridor Expansion, page E-14, title of Figure E-7

Revise title as follows:

MSAC3 Conceptual Setback ~~Area~~Project Considered in Enhance Flood System Capacity Approach, Sacramento River

158. Attachment 8J, Appendix E – Flood Corridor Expansion, page E-15, title of Figure E-8

Revise title as follows:

FTR1 Conceptual Setback ~~Area~~Project Considered in Enhance Flood System Capacity Approach, Feather River

159. Attachment 8J, Appendix E – Flood Corridor Expansion, page E-16, title of Figure E-9

Revise title as follows:

LSJ1& LSJ2 Conceptual Setback ~~Area~~Project Considered in Enhance Flood System Capacity Approach, San Joaquin River

160. Attachment 8J, Appendix E – Flood Corridor Expansion, page E-17, title of Figure E-10

Revise title as follows:

MSJ1 Conceptual Setback ~~Area~~Project Considered in Enhance Flood System Capacity Approach, San Joaquin River

161. Attachment 8J, Appendix E – Flood Corridor Expansion, page E-18, title of Figure E-11

Revise title as follows:

USJ1 Conceptual Setback ~~Area~~Project Considered in Enhance Flood System Capacity Approach, San Joaquin River

162. Attachment 8J, Appendix E – Flood Corridor Expansion, page E-19, title of Figure E-12

Revise title as follows:

USJ2 Conceptual Setback ~~Area~~Project Considered in Enhance Flood System Capacity Approach, San Joaquin River

163. Attachment 8L – Groundwater Recharge Opportunities Analysis, Section 3.0, page 3-2, Figure 3-1

Source: Groundwater and Surface Water in Southern California: A Guide to Conjunctive Use (Association of Groundwater Agencies, ~~2002~~2000)

164. Attachment 8L – Groundwater Recharge Opportunities Analysis, Section 4.3, page 4-5, second bullet

Farmington Groundwater Recharge Program – One example of a project with federal partnership is the Farmington Groundwater Recharge Program that began in 2001. USACE has partnered with Stockton East Water District to store up to 35,000 acre-feet per year of flood flows in local aquifers via direct recharge methods. This recharge water is intended to help arrest the overdraft condition of the Eastern San Joaquin Groundwater Basin and increase water supply reliability to the region (http://www.farmingtonprogram.org/) (see Farmington in Figure 4-2).

CENTRAL VALLEY
FLOOD MANAGEMENT
PLANNING PROGRAM

FloodSAFE
CALIFORNIA

Errata to the Public Draft

2012 Central Valley Flood Protection Plan

Volume V – Attachment 9

June 2012

STATE OF CALIFORNIA
THE NATURAL RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

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CENTRAL VALLEY FLOOD MANAGEMENT PLANNING PROGRAM

FloodSAFE CALIFORNIA

Errata to the Public Draft
2012 Central Valley Flood Protection Plan
Volume V – Attachment 9

1. **Attachment 9A – Regional Advance Mitigation Planning, Section 2.0, page 2-9, second bullet**

   Documents are being prepared that outline the RAMP goals and ~~create~~propose a policy and financial framework for how a program could work, based on the pilot project, policy research, and other models.

2. **Attachment 9A – Regional Advance Mitigation Planning, Table 2-1, pages 2-10 and 2-11**

   Revise Table 2-1 "RAMP Timeline (Past, Present, and Future) as follows:

Errata to the Public Draft 2012 Central Valley Flood Protection Plan Volume V – Attachment 9

Table 2-1. RAMP Timeline (Past, Present, and Future)

2008	• Data gathered on DWR and Caltrans projects that potentially have impacts (demand analysis) • Pilot area identification process began and initial pilot area identified (CSV)
2009	• MOU signed between agencies (see text box on page 2-3) • Marxan analysis developed (a conservation planning tool) to find suitable mitigation sites in pilot area • "Advance mitigation" legislation developed by The Nature Conservancy
Q1 2010	• Next steps in RAMP discussed, including how to secure funding, create a governance structure, further define the "pilot area," and document RAMP as a program • Work began on a "Policy Paper" that described RAMP as a program and the obstacles to implementation
Q2 2010	• Contract signed with private consultants to develop three documents for RAMP (Statewide Framework, Regional Assessment (for the pilot area), and RAMP Manual) (DWR) • Contract signed with UC Davis for a Central Valley-wide analysis for suitable mitigation and also a wildlife corridor analysis (DWR) • Contract signed with UC Davis to include more transportation plans into "demand" analysis and perform an optimization analysis with results (Caltrans)
Q3 2010	• Efforts began to capture federal funds through SAMI (Caltrans)
Q4 2010	• Internal draft of the Statewide Framework chapters developed by core group • Outreach occurred to Strategic Growth Council and also to other infrastructure agencies
Q1 2011	• Internal draft of the Statewide Framework reviewed by geographic-specific staff of the signatory agencies to the MOU (DFG, DWR, Caltrans, etc.) - Caltrans met with MPOs and local transportation entities - DWR met with Regional Office staff and Regional Coordinators - DFG, USACE, and USFWS received feedback from Regional Office staff
Q2 2011 through Q4 2011	• Meetings began on internal draft of the CSV Regional Assessment (Pilot Project) with signatory agencies • Formal engagement occurred on internal draft of the CSV Regional Assessment with nonsignatories to the MOU (see text box on page 2-3) • Continue review of internal draft of the Statewide Framework
~~Q3 2011~~ ~~Q4 2011~~ Anticipated for 2012	• Formally engage on internal draft of the Statewide Framework with nonsignatories to MOU (see text box on page 2-3) and continue to improve the document • Begin a larger outreach effort internal and external to DWR to gather ideas on processes and methods that support or hinder development of advance mitigation and to improve upon the ideas proposed in the internal draft of the Statewide Framework • Publish internal draft of the CSV Regional Assessment to capture all ideas on the document's preferred content and proposed methodologies (e.g., various methods for estimating mitigation needs or for displaying conservation priorities on maps), but keep document as draft until more data gathering and outreach have been completed • Estimate costs for creating Action Plan(s) and related documentation • Write MOU and/or Interagency Agreements to divide planning costs among interested parties (at a minimum between DWR and Caltrans and possibly other agencies that are not on the Statewide MOU but have local infrastructure projects) • Write Action Plan(s) based on internal draft of the CSV Regional Assessment for pilot area (as needed) • Create appropriate CEQA documentation and decide on State-preferred alternative for implementation based on Action Plan(s) • Continue to identify and where possible begin work on "Actions Needed" from internal draft of the Statewide Framework (e.g., ~~make~~ propose changes to agency policy, propose new funding structures)

Table 2-1. RAMP Timeline (Past, Present, and Future) (contd.)

Anticipated for 2012 continued	• ~~DWR to submit BCP for first mitigation approach identified in Action Plan (will get $ in FY 13/14)~~ • Caltrans to work at the federal level to secure SAMI ~~or write a BCP for first mitigation approach~~ funding to support advance mitigation • DWR to review federal funding for advance mitigation with USACE • Caltrans to give financial support for a DFG position to work on SAMI and RAMP tasks • Begin any negotiations on land (DWR typically has an 18-month timeline) • Begin any negotiations with regional plan partners under Natural Community Conservation Planning efforts or Habitat Conservation Plans • Begin any negotiations with private commercial mitigation bankers • Review opportunities for creation of new regions in the State that could benefit from using RAMP's tools and templates • ~~Publish Statewide Framework, Regional Assessment, and RAMP Manual with lessons learned~~
2013	• Complete purchase of land and begin permitting work (as needed) • Data gathering on DWR and Caltrans projects that potentially have impacts (demand analysis) and new conservation planning efforts and repeat analysis done in 2011 for CSV Regional Assessment based on the most current information • Publish public versions of the Statewide Framework, CSV Regional Assessment, and RAMP Manual with lessons learned
2014	• Second Regional Assessment for new portion of the State

Key:
BCP = Budget Change Proposal
Caltrans = California Department of Transportation
CEQA = California Environmental Quality Act
CSV = Central Sacramento Valley (the pilot area's given name)
DFG = California Department of Fish and Game
DWR = California Department of Water Resources
FY = fiscal year
MOU = memorandum of understanding
MPO = Metropolitan Planning Organization, a legally defined entity that is tasked with transportation planning
Q = Quarter
RAMP = regional advance mitigation planning
SAMI = Statewide Advance Mitigation Initiative being performed by Caltrans
State = State of California
UC Davis = University of California, Davis
USACE = U.S. Army Corps of Engineers
USFWS = U.S. Fish and Wildlife Service

3. Attachment 9A – Regional Advance Mitigation Planning, Section 2.0, pages 2-11 and 2-12

The RAMP Work Group is currently developing a Statewide Framework document intended to convey to lawmakers and agency leaders the goals, benefits, and operational framework of a statewide RAMP initiative. The internal draft of the Statewide Framework ~~has been~~ could be completed as early as summer 2012, ~~and~~ but a widely circulated version will not be available until ~~fall 2012~~ at least 2013. Outreach related to this document will be directed toward agency staff as well as several outside organizations (e.g., county staff, land trust organizations, nonprofits). The Statewide Framework will have a companion document, the RAMP Manual, which will serve as a comprehensive guidance document for planning and implementing regional advance mitigation throughout California. The manual will be developed to an internal draft in ~~early~~ 2012, and a circulating draft in ~~fall 2012~~ 2013. Development of the RAMP Manual will draw from lessons learned during testing of the RAMP concept through a pilot

project. The pilot project will include preparation of the first internal draft of the Regional Assessment (planned completion in ~~spring~~ 2012), which will provide the proposed strategy for implementing advance mitigation in the pilot project region. Input on all these documents will be sought and a public version should become available in 2013.

The RAMP Work Group has selected a region in the central Sacramento Valley (along the main-stem Sacramento River from approximately the Tehama County line south to Verona and along the Feather River and its tributaries to the east) for the pilot project (Figure 2-4). Outreach to DWR's Regional Offices and Regional Coordinators is in progress. Caltrans, DFG, and USFWS will perform similar outreach with their local offices. Outreach external to DWR, Caltrans, and the RAMP Work Group will take place in ~~spring~~ 2012. If time allows, in fall 2012, an open forum will be held for nonprofits, county staff, private mitigation bankers, and other potentially affected parties to learn about RAMP, and to provide information on problems and opportunities within the region.

4. **Attachment 9C – Fish Passage Assessment, Section 9.0, page 9-1, third sentence of first paragraph**

   If all the barriers are removed and/or repaired, approximately ~~1,500~~ 4,000 miles[16] of anadromous fish habitat from the western edge of the legal Delta to the headwaters will become fully accessible for migration, spawning, and rearing; approximately 1,500 miles of this habitat are within the Systemwide Planning Area.

5. **Attachment 9F – Floodplain Restoration OpportunityAnalysis, Section 2.2.1, page 2-5, first bulleted item**

   Water-surface profiles at the time of the CVFED (Central Valley Floodplain Evaluation and Delineation) Light Detection and Ranging (LiDAR) flights in March 2008 representing a low-water baseflow condition; termed the "Baseflow" FIP (most months have greater discharges and higher water surface elevations than March 2008 (e.g., during 1945–2010, at Red Bluff, the Sacramento River had a discharge greater than March 2008 in 93 percent of months)). Areas with Baseflow FIP would provide aquatic (riverine or lacustrine) habitats if hydrologically connected to a river.

6. **Attachment 9F – Floodplain Restoration OpportunityAnalysis, Section 2.2.1, page 2-7, first paragraph**

   CalSim-derived synthetic flows were queried directly by HEC-EFM after converting the Excel-based time series flow data to USACE-HEC's Data Storage System (HEC-DSS) format. The flow values were derived from CalSim simulations to capture the flow impacts of recent regulations and projects that are not reflected in the historical record. Daily values were developed from the monthly CalSim values using a pattern matching algorithm based on historical daily flow records. For the pilot study, the flows were used as boundary conditions to an unsteady-flow HEC-RAS model developed by AECOM from the Comprehensive Study and Common Features models, and the flows and stage time series produced by unsteady HEC-RAS were queried using HEC-EFM.

7. **Attachment 9F – Floodplain Restoration OpportunityAnalysis, Section 3.0, page 3-2**

   As described in Appendix A, Section ~~2.2.9~~2.9, the process used to estimate water surface elevations resulted in elevations that varied within 1 foot of true elevations.

8. **Attachment 9F – Floodplain Restoration OpportunityAnalysis, Section 3.2.2, page 3-12, first paragraph**

   Between the Yuba and Bear rivers, most of the corridor along the Feather River has 50 percent chance FIP. More than two-thirds of these areas are disconnected from the river. Less than one percent of the corridor along this reach has 67 percent chance Sustained Spring FIP.

9. **Attachment 9F – Floodplain Restoration OpportunityAnalysis, Section 3.2.3, page 3-13, first paragraph**

   From the Bear River to the Sutter Bypass, most of the corridor along the Feather River has 50 percent chance FIP. About two-thirds of these areas are disconnected from the river. Less than one percent of the corridor along this reach has 67 percent chance Sustained Spring FIP.

10. **Attachment 9F – Floodplain Restoration OpportunityAnalysis, Section 3.6, note 1 of Tables 3-1 through 3-12, pages 3-57 through 3-68**

    [1]Data are for a corridor extending 1 mile from ~~each riverbank~~ the centerline of evaluated rivers; acreages are rounded to the nearest 100 acres and percentages are rounded to the nearest percent.

11. **Attachment 9F – Floodplain Restoration OpportunityAnalysis, Section 3.6, note 3 of Tables 3-1 through 3-12, pages 3-57 through 3-68**

    [3]Elevation below or at water surface elevation of March 2008 base flow (i.e., LiDAR FIP $\leq$ 1 foot). Elevations within 1 foot of base flow were considered to represent the water surface because estimated elevations varied within 1 foot of true elevations.

12. **Attachment 9F – Floodplain Restoration OpportunityAnalysis, Section 3.6, page 3-58, note 6 of Table 3-2**

    [6]Connected to or disconnected ~~(Discon.)~~ from river system during a 50 percent chance flow (i.e., modeled as below and connected to river channel by terrain below elevation of 50 percent chance flow ~~inundated by flood flows under existing conditions~~)

13. **Attachment 9G – Regional Permitting Options, Section 4.2.4, page 4-16, first pagraph**

The S~~s~~tate strategy to manage levee vegetation consistent with these and other ~~CVFPB~~ Board regulations is a component of the CVFPP.

14. Attachment 9G – Regional Permitting Options, Section 4.2.4, page 4-16, second pagraph

Replace the second paragraph:

The Board has all the responsibilities and authorities necessary to oversee future modifications to the SPFC. The Board has existing regulatory authority including approval or removal of encroachments within flood management projects, floodplains, floodways, and drainage areas of the Sacramento River, the San Joaquin River and their tributaries and distributaries. The Board's regulations are also preempted by obligations to the USACE pursuant to assurance agreements with the USACE, USACE Operation and Maintenance Manuals and Title 33 Code of Federal Regulations Sections 408 and 208.10.

As part of the permit application, the CVFPB requires documentation that meets the Board standards governing the design and construction of encroachments which can affect, any authorized flood control project or any adopted plan of flood control (Title 23, Section 111). The permit application and Title 23 CCR can be found on the Board's website (http://www.cvfpb.ca.gov/).

15. Attachment 9G – Regional Permitting Options, Section 7.0, page 7-1

Add the following reference:

California Code of Regulations (CCR). Title 23. Waters.