

1 Appendix 6B, Section A

2 Surface Water Temperature Modeling

3 This appendix provides information about the methods and assumptions used for
4 the Coordinated Long-Term Operation of the Central Valley Project (CVP) and
5 State Water Project (SWP) Environmental Impact Statement (EIS) analysis on
6 surface water temperature. The appendix also provides temperature model results
7 and interpretation methods used for the impacts analysis and descriptions.
8 Additional information pertaining to the development of the analytical tools,
9 incorporating climate change, and the use of input data from other models, is also
10 provided. This appendix is organized into three sections that are briefly described
11 below:

- 12 • Appendix 6B, Section A: Surface Water Temperature Modeling Methodology,
13 Simulations, and Assumptions
 - 14 – The water quality impacts analysis uses the HEC-5Q and Reclamation
15 Monthly Temperature models to assess and quantify effects of the
16 alternatives on the environment. This section provides information about
17 the overall analytical framework linkages with other models.
 - 18 – This section provides a brief description of the assumptions for the surface
19 water temperature model simulations of the No Action Alternative,
20 Second Basis of Comparison, and other alternatives.
- 21 • Appendix 6B, Section B: Surface Water Temperature Modeling Results
 - 22 – This section provides model outputs and a description of the model
23 simulation output formats used in the analysis and interpretation of
24 modeling results for the alternatives impacts assessment.
- 25 • Appendix 6B, Section C: HEC-5Q Model Update for Surface Water
26 Temperature Modeling
 - 27 – This section provides a detailed description of the compilation and updates
28 of the HEC-5Q models performed during development of the EIS for the
29 Trinity-Sacramento, American, and Stanislaus Rivers.

30 6B.A.1 Surface Water Temperature Modeling 31 Methodology

32 This section summarizes the surface water temperature modeling methodology
33 used for the No Action Alternative, Second Basis of Comparison, and other
34 alternatives. It describes how temperature modeling fits into the overall analytical
35 framework and contains descriptions of the key analytical and numerical tools and
36 approaches used in the quantitative evaluation of the alternatives.

37 In the evaluation of the No Action Alternative, Second Basis of Comparison, and
38 other alternatives, climate change assumptions at the Year 2030 are used to

1 develop modified climate input files for the temperature models. The modeling
2 assumptions are provided in Section 6B.A.2.

3 **6B.A.1.1 Overview of the Modeling Approach**

4 To support the water quality and aquatic resources impact analyses of the
5 alternatives, modeling of surface water temperature in the Central Valley is
6 necessary to evaluate changes to conditions affecting surface water temperatures
7 in rivers that are affected by SWP and CVP operations. Two different surface
8 water temperature modeling tools were used for the analysis. The HEC-5Q model
9 simulated daily temperatures for the Trinity River (downstream of Lewiston
10 Dam), Sacramento River (from Keswick Dam to the Feather River confluence),
11 American River (from Nimbus Dam to Sacramento River confluence), and
12 Stanislaus River (from New Melones Dam to the confluence with San Joaquin
13 River). The Reclamation Temperature Model was used for simulating monthly
14 temperatures for the Feather and Lower Sacramento (from the Feather River
15 confluence to Freeport) rivers. Both models used CalSim II outputs as stream
16 flow and reservoir storage inputs. The results from these models are used to
17 inform the understanding of effects on the surface water temperature of each
18 individual alternative considered in the EIS.

19 **6B.A.1.1.1 HEC-5Q**

20 Over the past 15 years, various temperature models were developed to simulate
21 temperature conditions on the rivers affected by CVP and SWP operations
22 (Sacramento River Water Quality Model [SRWQM], San Joaquin River HEC-5Q
23 model) (Reclamation 2008). Recently, these models were compiled and updated
24 into a single modeling package hereafter referred to as the HEC-5Q model.
25 Further updates were performed under the EIS modeling that included improved
26 meteorological data and subsequent validation of the Sacramento and American
27 River models, implementation of the Folsom Temperature Control Devices and
28 low-level outlet, implementation of the Trinity River auxiliary outlet, improved
29 temperature targeting for the Shasta and Folsom Dams, as well as improved
30 documentation and streamlining of the models as well as improved integration
31 with the CalSim II model.

32 Section 6B.C.4 of this appendix is consistent with the technical memorandum
33 submitted to Reclamation that documented changes in the HEC-5Q compilation
34 and updates for the temperature models.

35 The HEC-5Q model contains three separate models that simulate reservoir and
36 river temperatures:

- 37 • The Trinity River from Trinity Dam to below Lewiston Dam and the
38 Sacramento River from Shasta Dam to the Feather River confluence.
39 Reservoir temperatures are simulated for Trinity Lake, Lewiston Reservoir,
40 Shasta Lake, Keswick Reservoir, and Black Butte Reservoir (see
41 Figure 6B.A.1 for a schematic of the Trinity-Sacramento River HEC-5Q
42 model).

- 1 • The American River from Folsom Dam to the confluence with the Sacramento
2 River. Reservoir temperatures were simulated for Folsom Lake and Lake
3 Natoma (see Figure 6B.A.2 for a schematic of the American River HEC-5Q
4 model).
- 5 • The Stanislaus River from upstream of New Melones Reservoir to the
6 confluence with the San Joaquin River and the lower San Joaquin River from
7 the Stanislaus River confluence to below Vernalis. Reservoir temperatures
8 were simulated for New Melones Reservoir (see Figure 6B.A.3 for a
9 schematic of the Stanislaus River HEC-5Q model).

10 The HEC-5Q model was developed using integrated HEC-5 and HEC-5Q models.
11 The HEC-5 component of the model simulates daily reservoir and river flow
12 operations from monthly CalSim II data that are disaggregated to daily data. The
13 HEC-5Q component simulates mean daily reservoir and river temperatures based
14 on the daily flow inputs and meteorological parameters specified on a 6-hour time
15 step.

16 **6B.A.1.1.2 Reclamation Temperature Model**

17 The Reclamation Temperature Model includes reservoir and stream temperature
18 models that simulate monthly reservoir and stream temperatures used for
19 evaluating the effects of CVP and SWP project operations on mean monthly water
20 temperatures in the basin (Reclamation 2008). The model simulates temperatures
21 in seven major reservoirs (Trinity Lake, Whiskeytown Reservoir, Shasta Lake,
22 Oroville Reservoir, Folsom Lake, New Melones Reservoir, and Tulloch
23 Reservoir), four downstream regulating reservoirs (Lewiston, Keswick, and
24 Goodwin reservoirs; Lake Natoma), and five main river systems (Trinity,
25 Sacramento, Feather, American, and Stanislaus rivers). The river component of
26 the Reclamation Temperature Model calculates temperature changes in the
27 regulating reservoirs, below the main reservoirs. With regulating reservoir release
28 temperature as the initial river temperature, the river model computes
29 temperatures at several locations along the rivers. The calculation points for river
30 temperatures generally coincide with tributary inflow locations. The model is
31 one-dimensional in the longitudinal direction and assumes fully mixed river cross
32 sections. The effect of tributary inflow on river temperature is computed by mass
33 balance calculation. The river temperature calculations are based on regulating
34 reservoir release temperatures, river flows, and climatic data.

35 For the EIS, the Reclamation Temperature Model was used for the Feather River
36 and lower Sacramento River from the Feather River confluence to Freeport.
37 Sacramento, Trinity, American, and Stanislaus rivers temperature effects were
38 analyzed using the daily HEC-5Q models described in the previous section.

39 For more information on the Reclamation Temperature Model, see Appendix H of
40 the Reclamation's 2008 Operation Criteria and Plan (OCAP) Biological
41 Assessment (BA) (Reclamation 2008).

1 **6B.A.2 Surface Water Temperature Modeling**
2 **Simulations and Assumptions**

3 This section describes the assumptions for the HEC-5Q and Reclamation
4 Temperature Model monthly temperature simulations of the No Action
5 Alternative, Second Basis of Comparison, and Alternatives 1 through 5.

6 The following model simulations were performed as the basis of evaluating the
7 impacts of Alternatives 1 through 5 as compared to the No Action Alternative,
8 and the No Action Alternative and Alternatives 1 through 5 as compared to the
9 Second Basis of Comparison:

- 10 • No Action Alternative
- 11 • Second Basis of Comparison
- 12 • Alternative 1 – for simulation purposes, considered the same as Second Basis
13 of Comparison
- 14 • Alternative 2 – for simulation purposes, considered the same as No Action
15 Alternative
- 16 • Alternative 3
- 17 • Alternative 4 – for simulation purposes, considered the same as Second Basis
18 of Comparison.
- 19 • Alternative 5

20 Assumptions for each of these alternatives were developed with the surface water
21 modeling tools and are described in Appendix 5A, Section B.

22 Alternative 1 modeling assumptions are the same as the Second Basis of
23 Comparison and Alternative 2 modeling assumptions are the same as the No
24 Action Alternative; therefore, the assumptions for those alternatives are not
25 discussed separately in this document.

26 The general modeling assumptions described below pertain to the model runs for
27 the No Action Alternative, Second Basis of Comparison, and Alternatives 1
28 through 5.

29 **6B.A.2.1 Input Storage and Streamflow**

30 **6B.A.2.1.1 HEC-5Q**

31 Monthly flows simulated by the CalSim II model for an 82-year period (water
32 years 1922 through 2003) are used as input to HEC-5Q. Temporal downscaling is
33 performed¹ on the CalSim II monthly average tributary flows to convert them to

¹ A constant daily flow that is equivalent to monthly average flow simulated in CalSim II is assumed throughout the month for each month of the 82-year CalSim II simulation period. An exception to this is the inflow timeseries to Trinity, Shasta, and New Melones reservoirs, where monthly average inflows are downscaled to a daily timestep by fitting to a cubic-spline. This allows simulation of a daily varying inflow into the reservoirs with a smooth transition between the individual months, while assuming the same monthly volume of inflow consistent with CalSim II.

- 1 daily average flows for HEC-5Q input using a pre-processing tool (see
- 2 Tables 6B.A.1 to 6B.A.3 for a list of all of the CalSim II inputs).

3 **Table 6B.A.1 CalSim II Input Mapping with Trinity-Sacramento River HEC-5Q Model**

HEC-5Q Control Point Number	HEC-5Q Control Point Name	Input Types	CalSim II Node
340	Trinity Reservoir	Storage Inflow Outflow Evaporation	S1 I1 C1+F1 E1
330	Lewiston Reservoir	Inflow Diversion	I100 D100
240	Whiskeytown Reservoir	Storage Inflow Outflow Evaporation	S3 I3 C3+F3 E3
220	Shasta Reservoir	Storage Inflow Outflow Evaporation	S4 I4 C4+F4 E4
200	Keswick Reservoir	Evaporation	E5
180	Sacramento River below Clear Creek Confluence	Diversion	C5-C104
178	Sacramento River below Cow Creek Confluence	Inflow	C10801
176	Sacramento River below Cottonwood Creek Confluence	Inflow	C10802
172	Sacramento River below Battle Creek Confluence	Inflow	C10803
170	Sacramento River at Bend Bridge	Inflow Diversion	I109+R109 D109
160	Sacramento River above Red Bluff Diversion Dam	Inflow Diversion	C11001+I112 D112
150	Sacramento River below Woodson Bridge	Inflow Diversion	C11305+C11301+R113+R114A+R114B+R114C D113A+D113B
140	Sacramento River at GCID	Diversion	D114
1136	Black Butte Reservoir	Storage Inflow Outflow Diversion	S42 I42+C41 C42+F42 E42+D42

Appendix 6B.A: Surface Water Temperature Modeling

HEC-5Q Control Point Number	HEC-5Q Control Point Name	Input Types	CalSim II Node
1134	Stony Creek Diversions	Diversion	C42-C142A
1132	Stony Creek Confluence	Inflow	C11501
132	Sacramento River at Ord Ferry	Diversion	D117
130	Sacramento River at Butte City	Inflow Diversion	I118 I118+C115-C118-D117
128	Sacramento River above Moulton Weir	Inflow Diversion	I123+c17603 C118+I123+C17603-C124
126	Sacramento River at Moulton Weir	Diversion	D124
120	Sacramento River at Colusa Weir	Diversion	D125
116	Sacramento River at Tisdale Weir	Diversion	D126
114	Sacramento River above Knights Landing	Diversion	C126-C129
112	Sacramento River at Knights Landing	Diversion	C129-C134
365	Butte Creek BP3	Diversion	C136B-R137-R135A-R135B-C217A

1 **Table 6B.A.2 CalSim II Input Mapping with American River HEC-5Q Model**

HEC-5Q Control Point Number	HEC-5Q Control Point Name	Input Types	CalSim II Node
590	Folsom Reservoir	Storage Inflow Outflow Diversion	S8 C300+I8 C8+F8 E8+D8
580	Natoma Reservoir	Storage Diversion	S9 D9+E9-I9
572	American River above City of Sacramento Diversion	Diversion	GS66-I302
570	American River at City of Sacramento Diversion	Diversion	D302

1 **Table 6B.A.3 CalSim II Input Mapping with Stanislaus River HEC-5Q Model**

HEC-5Q Control Point Number	HEC-5Q Control Point Name	Input Types	CalSim II Node
240	New Melones Reservoir	Storage Inflow Outflow Evaporation	S10 I10 C10+F10 E10
220	Tulloch Reservoir	Storage Inflow Diversion	S76 I76 E76
200	Goodwin Reservoir	Inflow Diversion	I520 C76-C520
160	Stanislaus River at Knights Ferry	Diversion	C520-C528
150	Stanislaus River at Orange Blossom Bridge	Diversion	C520-C528
140	Stanislaus River at Oakdale Highway 120 Bridge	Diversion	C520-C528
130	Stanislaus River at Riverbank Bridge	Diversion	C520-C528
120	Stanislaus River at McHenry Bridge	Diversion	C520-C528
110	Stanislaus River at Ripon Gage	Diversion	C520-C528
400	San Joaquin River above Stanislaus River Confluence Dummy Reservoir	Diversion	C620+C545+C528-C644
98	San Joaquin River at Vernalis	Diversion	C620+C545+C528-C644

2 **6B.A.2.1.2 Reclamation Temperature Model**

3 Monthly flows that were simulated by the CalSim II model for an 81-year period
 4 (January 1922 to December 2002) are used as input to the model. Because of the
 5 CalSim II model’s complex structure, where applicable, flow arcs were combined
 6 at the appropriate temperature nodes to ensure compatibility with the Reclamation
 7 Temperature Model.

8 **6B.A.2.2 Climate Change Assumptions**

9 When simulating alternatives with climate change, some of the inputs to the
 10 temperature models must be modified. This section presents the assumptions and
 11 approaches used for modifying meteorological and inflow temperatures in the

1 temperature models. For the alternative simulations, climate assumptions were
2 established around Year 2030. Therefore, to be consistent with the other water
3 supply and economics models, the climate input data for HEC-5Q and
4 Reclamation Temperature Model were modified to represent approximate
5 conditions at Year 2030.

6 **6B.A.2.2.1 HEC-5Q**

7 HEC-5Q requires meteorological inputs specified in the form of equilibrium
8 temperatures, exchange rates, shortwave radiation and wind speed. The exchange
9 rates and equilibrium temperatures are computed from hourly observed data at the
10 Gerber gauging station. Considering the uncertainties associated with climate
11 change impacts, it was assumed that the equilibrium temperature inputs derived
12 from observed data would be modified by the change in daily average air
13 temperature projected under the climate change scenarios.

14 The inflow temperatures in HEC-5Q are specified as seasonal curve fit values
15 with diurnal variations superimposed as a function of heat exchange parameters.
16 The seasonal temperature values are derived based on the observed flows and
17 temperatures for each inflow. HEC-5Q superimposes diurnal variations on the
18 seasonal values specified using the heat exchange parameter inputs. The diurnal
19 variations are superimposed by adjusting the equilibrium temperature to reflect
20 the inflow location environment and scaling it based on the heat exchange rate
21 scaling factor and the weighting factor for emphasis on the seasonal values
22 specified. In this fashion, any climate change effects accounted for in the
23 equilibrium temperature are translated to the changes in inflow temperatures in
24 the HEC-5Q. Therefore, for the climate change scenarios, only the equilibrium
25 temperatures were adjusted for the projected change in temperature, and these
26 influence the inflow temperatures; however, independent inflow temperature
27 inputs were not changed.

28 **6B.A.2.2.2 Reclamation Temperature Model**

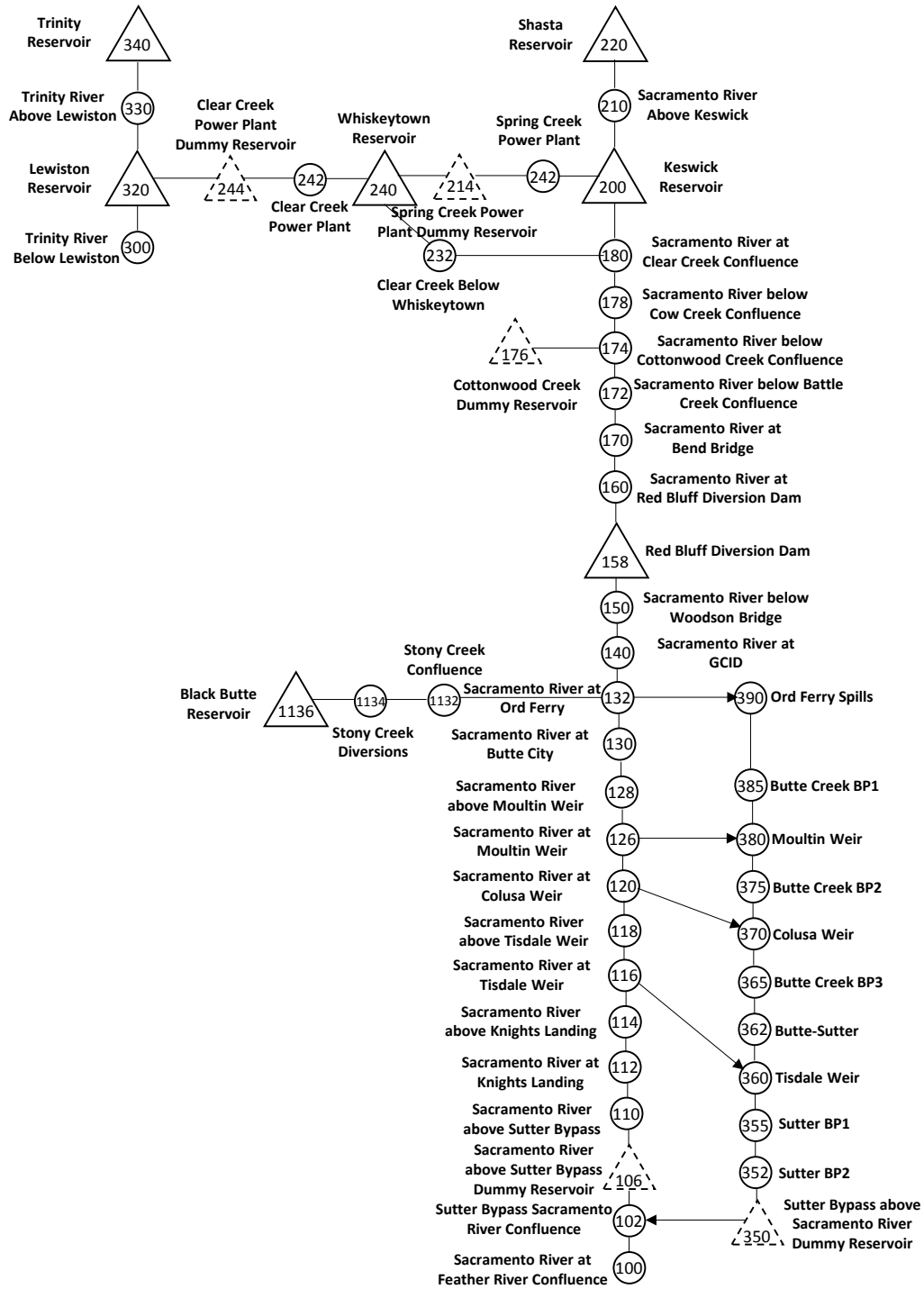
29 The Reclamation Temperature Model requires mean monthly meteorological
30 inputs of air and equilibrium temperature and heat exchange rates. The heat
31 exchange rates and equilibrium temperatures are computed from the mean
32 monthly air temperature data and long-term estimates of solar radiation, relative
33 humidity, wind speed, cloud cover, solar reflectivity, and river shading.
34 Considering the uncertainties associated with climate change impacts, it was
35 assumed that the equilibrium temperature and heat exchange rate inputs would be
36 modified by the change in mean monthly air temperature in the climate change
37 scenarios.

38 Reservoir inflow temperatures were derived from the available record of observed
39 data and averaged by month. The mean monthly inflow temperatures are then
40 repeated for each study year. For alternatives modeled with climate change, the
41 inflow temperatures were modified based on the projected long-term average
42 change in mean annual air temperature for each month.

1 **6B.A.3 Reference**

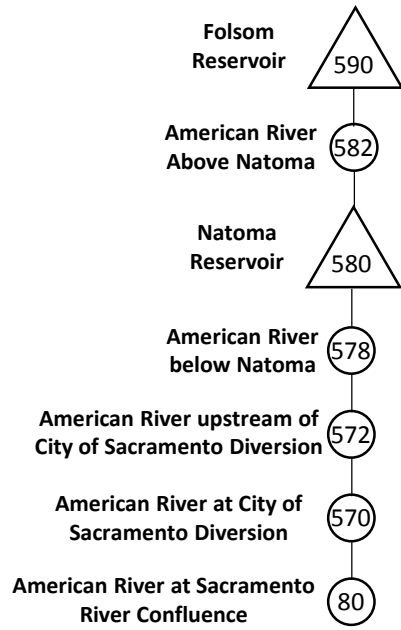
- 2 Reclamation (Bureau of Reclamation). 2008. *2008 Central Valley Project and*
3 *State Water Project Operations Criteria and Plan Biological Assessment,*
4 *Appendix H Reclamation Temperature Model and SRWQM Temperature*
5 *Model.*

Appendix 6B.A: Surface Water Temperature Modeling



1

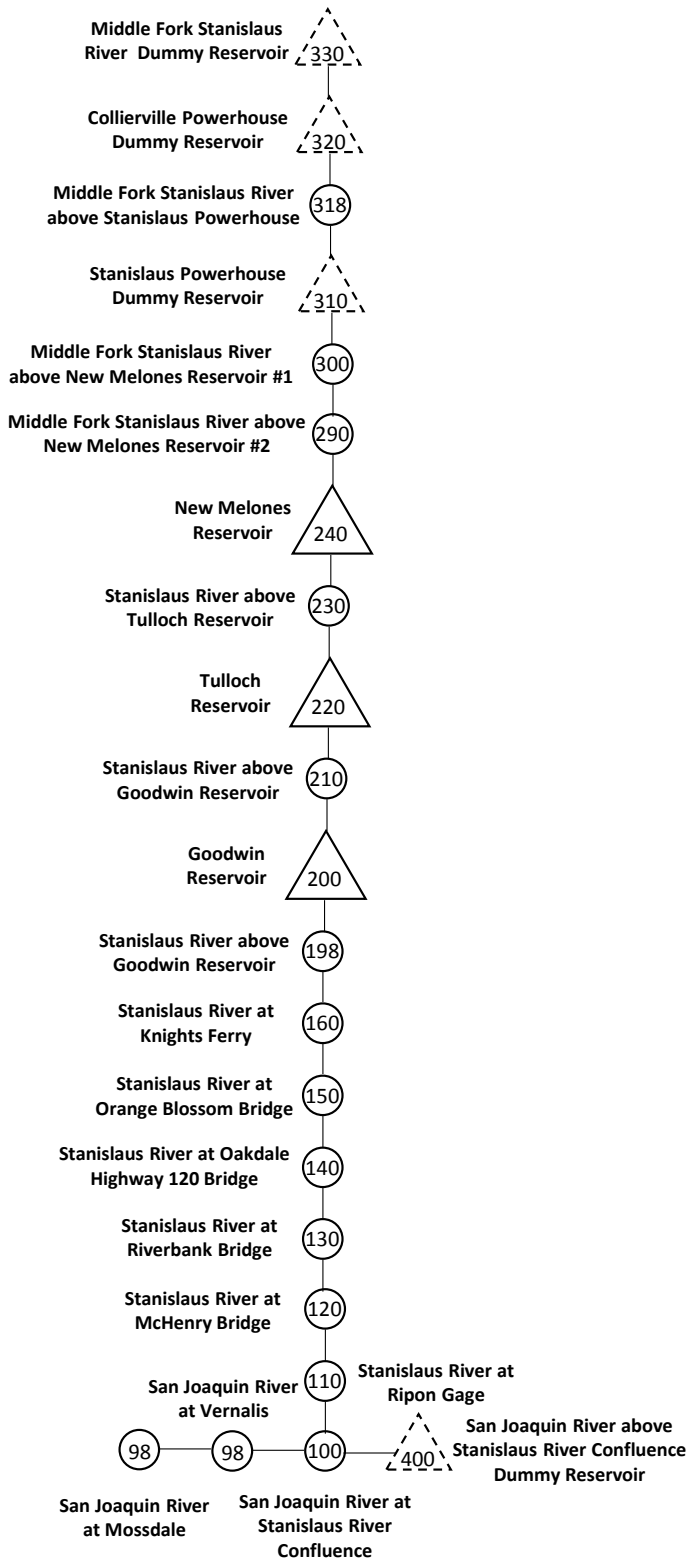
2 **Figure 6B.A.1 Schematic of Trinity-Sacramento River HEC-5Q Model**



1

2 **Figure 6B.A.2 Schematic of American River HEC-5Q Model**

Appendix 6B.A: Surface Water Temperature Modeling



1

2 **Figure 6B.A.3 Schematic of Stanislaus River HEC-5Q Model**

1 **Appendix 6B, Section B**

2 **Surface Water Temperature Modeling**
 3 **Results**

4 This appendix provides information about the methods and assumptions used for
 5 the Coordinated Long-Term Operation of the Central Valley Project (CVP) and
 6 State Water Project (SWP) Environmental Impact Statement (EIS) analysis on
 7 surface water temperature. The appendix is organized into three sections that are
 8 briefly described below:

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 23 Temperature Modeling
- 24 – This section provides a detailed description of the compilation and updates
 25 of the HEC-5Q models performed during development of the EIS for the
 26 Trinity-Sacramento, American, and Stanislaus Rivers.

27 **6B.B.1 Introduction**

28 This section provides surface water temperature model (HEC-5Q and
 29 Reclamation Temperature Model) simulation results for alternatives evaluated for
 30 the EIS. The sections provided for each parameter include figures and tables in
 31 various formats to provide the reader with tools for multiple ways of analysis.

32 The different types of presentations are explained as follows:

- 33 • **Probability of Exceedance Plots:** Probability of exceedance plots provide the
 34 frequency of occurrence of values of a parameter that exceed a reference
 35 value. For this appendix, the calculation of exceedance probability is done by
 36 ranking the data. For example, for Shasta storage end-of-September
 37 exceedance plot, Shasta storage values at the end of September for each

1 simulated year are sorted in ascending order. The smallest value would have a
2 probability of exceedance of 100 percent since all other values would be
3 greater than that value; and the largest value would have a probability of
4 exceedance of 0 percent. All of the values are plotted with probability of
5 exceedance on the x-axis and the value of the parameter on the y-axis.
6 Following the same example, if for one scenario, Shasta Lake end-of-
7 September storage of 2,000 thousand acre-feet (TAF) corresponds to
8 80 percent probability, it implies that Shasta end-of-September storage is
9 higher than 2,000 TAF in 80 percent of the years under the simulated
10 conditions.

11 • **Long-Term Average Summary and Year-Type-Based Statistics Summary**
12 **Tables:** These tables provide parameter values for each 10 o increment of
13 exceedance probability (rows) for each month (columns) as well as long-term
14 and year-type averages (using the Sacramento Valley 40-30-30 Index
15 developed by the State Water Resources Control Board for projected climate
16 at Year 2030) for each month. For a few parameters, such as Delta outflow,
17 annual total or average values are added to the tables (for volume and rates,
18 respectively).

19 All plots and tables are prepared to accommodate following comparisons:

- 20 • No Action Alternative (with climate change and sea-level rise at Year 2030)
21 compared to the Second Basis of Comparison (with climate change and
22 sea-level rise at Year 2030)
- 23 • Alternatives (with climate change and sea-level rise at Year 2030) compared
24 to the No Action Alternative
- 25 • Alternatives (with climate change and sea-level rise at Year 2030) compared
26 to the Second Basis of Comparison

27 **6B.B.1.1 Appropriate Use of Model Results**

28 The physical models developed and applied in the EIS analysis are generalized
29 and simplified representations of a complex water resources system. A brief
30 description of the appropriate use of the model results to compare two scenarios
31 or to compare against threshold values or standards is presented below.

32 **6B.B.1.1.1 Absolute vs. Relative Use of the Model Results**

33 The models are not predictive models (in how they are applied in this project),
34 and therefore the results cannot be considered as absolute with and within a
35 quantifiable confidence interval. The model results are only useful in a
36 comparative analysis and can only serve as an indicator of condition (e.g.,
37 compliance with a standard) and of trend (e.g., generalized impacts).

38 **6B.B.1.2 Appropriate Reporting Time-Step**

39 Due to the assumptions involved in the input data sets and model logic, care must
40 be taken to select the most appropriate time-step for the reporting of model
41 results. Sub-monthly (e.g., weekly or daily) reporting of model results is

1 inappropriate for all models and the results should be presented on a monthly
2 basis.

3 **6B.B.1.3 Statistical Comparisons Are Preferred**

4 Absolute differences computed at a point in time between model results from an
5 alternative and a baseline to evaluate impacts is an inappropriate use of model
6 results (e.g., computing differences between the results from a baseline and an
7 alternative for a particular day or month and year within the period of record of
8 simulation). Likewise computing absolute differences between an alternative
9 (or a baseline) and a specific threshold value or standard is an inappropriate use of
10 model results. Statistics computed based on the absolute differences at a point in
11 time (e.g., average of monthly differences) are an inappropriate use of model
12 results. By computing the absolute differences in this way, disregards the changes
13 in antecedent conditions between individual scenarios and distorts the evaluation
14 of impacts of a specific action.

15 Reporting seasonal patterns from long-term averages and water year-type
16 averages is appropriate. Statistics computed based on long-term and water
17 year-type averages are an appropriate use of model results. Computing
18 differences between long-term or water year type averages of model results from
19 two scenarios are appropriate. Care should be taken to use the appropriate water
20 year type for presenting water year-type average statistics of model results
21 (e.g., D1641 Sacramento River 40-30-30 index or San Joaquin River 60-20-20
22 index based on climate modifications). For this study, water year-types are based
23 on the projected climate and hydrology at Year 2030.

24 The most appropriate presentation of monthly and annual model results is in the
25 form of probability distributions and comparisons of probability distributions
26 (e.g., cumulative probabilities). If necessary, comparisons of model results
27 against threshold or standard values should be limited to comparisons based on
28 cumulative probability distributions.

29 **6B.B.2 Results**

30 The results are presented in the following figures.

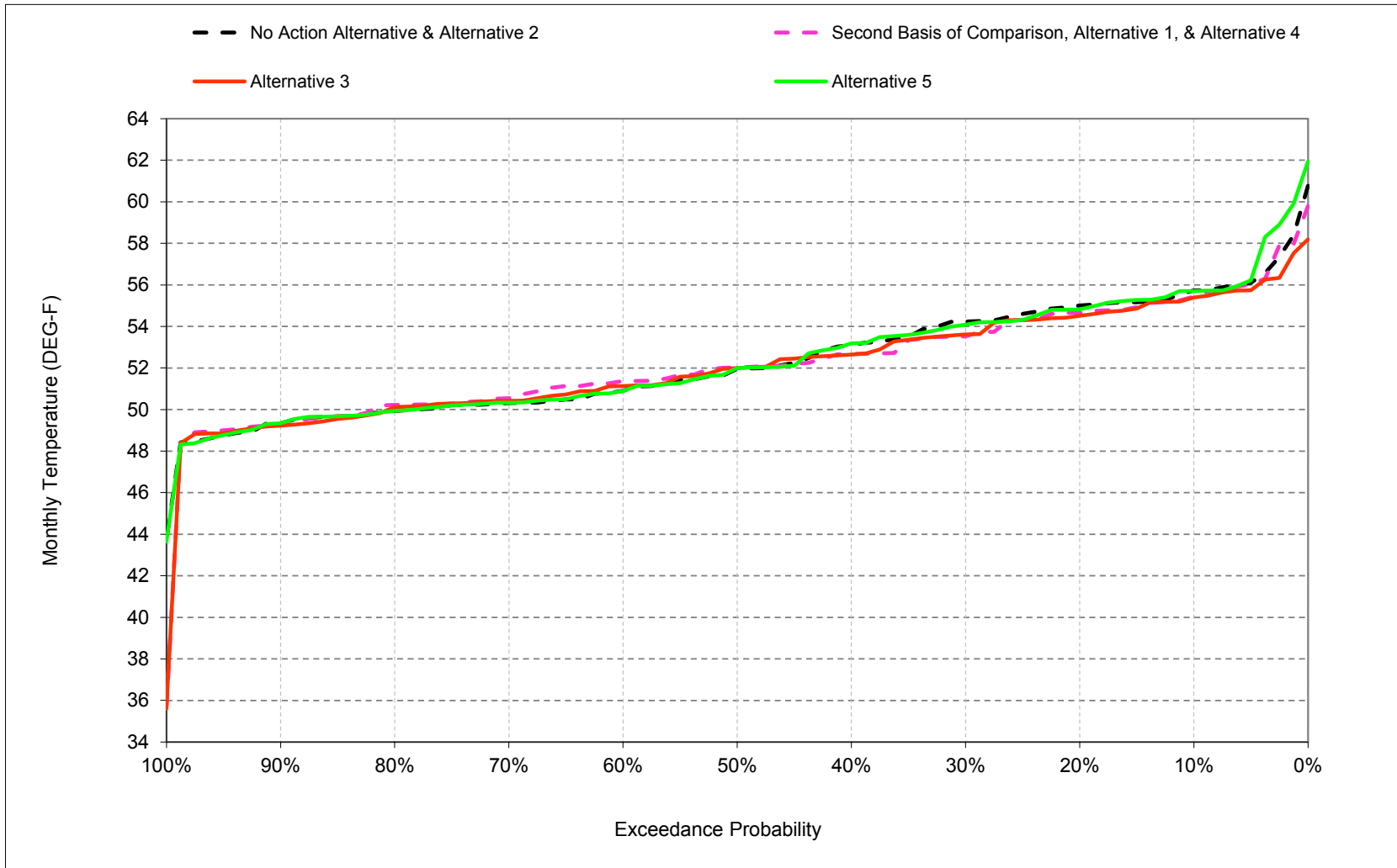
- 31 • B.1. Trinity River below Lewiston Temperature
- 32 • B.2. Clear Creek below Whiskeytown Temperature
- 33 • B.3. Clear Creek at Igo Temperature
- 34 • B.4. Clear Creek at Mouth Temperature
- 35 • B.5. Sacramento River below Keswick Temperature
- 36 • B.6. Sacramento River at Balls Ferry Temperature
- 37 • B.7. Sacramento River at Jellys Ferry Temperature
- 38 • B.8. Sacramento River at Bend Bridge Temperature
- 39 • B.9. Sacramento River at Red Bluff Temperature
- 40 • B.10. Sacramento River at Hamilton City Temperature
- 41 • B.11. Sacramento River at Knights Landing Temperature

Appendix 6B.B: Surface Water Temperature Modeling Results

- 1 • B.12. American River below Nimbus Temperature
- 2 • B.13. American River at Watt Avenue Temperature
- 3 • B.14. American River at Mouth Temperature
- 4 • B.15. Stanislaus River below New Melones Temperature
- 5 • B.16. Stanislaus River below Tulloch Temperature
- 6 • B.17. Stanislaus River below Goodwin Temperature
- 7 • B.18. Stanislaus River at Orange Blossom Bridge Temperature
- 8 • B.19. Stanislaus River at Mouth Temperature
- 9 • B.20. Feather River Low Flow Channel
- 10 • B.21. Feather River at Robinson Riffle
- 11 • B.22. Feather River at Gridley Bridge
- 12 • B.23. Feather River at Mouth

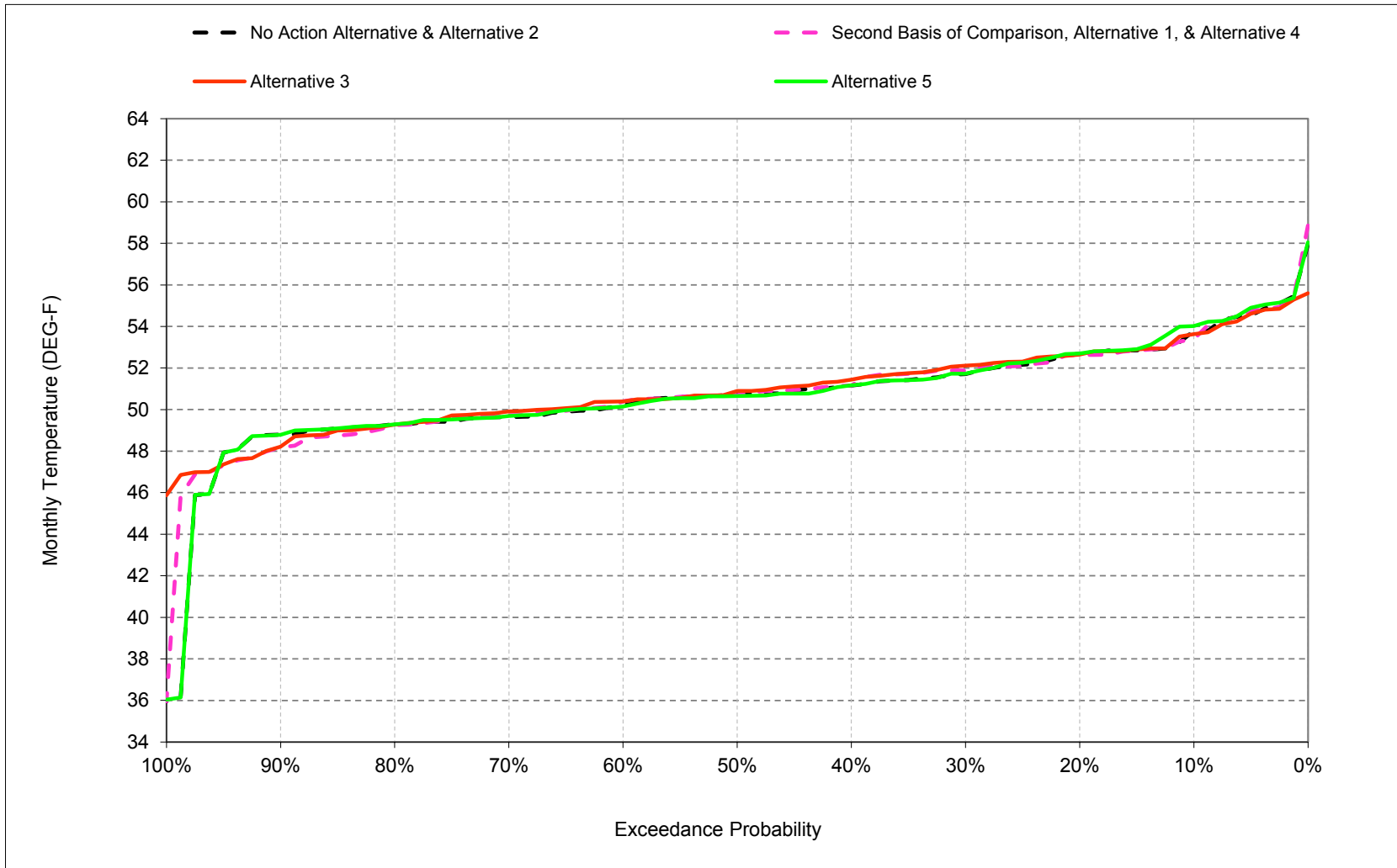
B.1. Trinity River below Lewiston Temperature

Figure B-1-1. Trinity River below Lewiston Dam, October



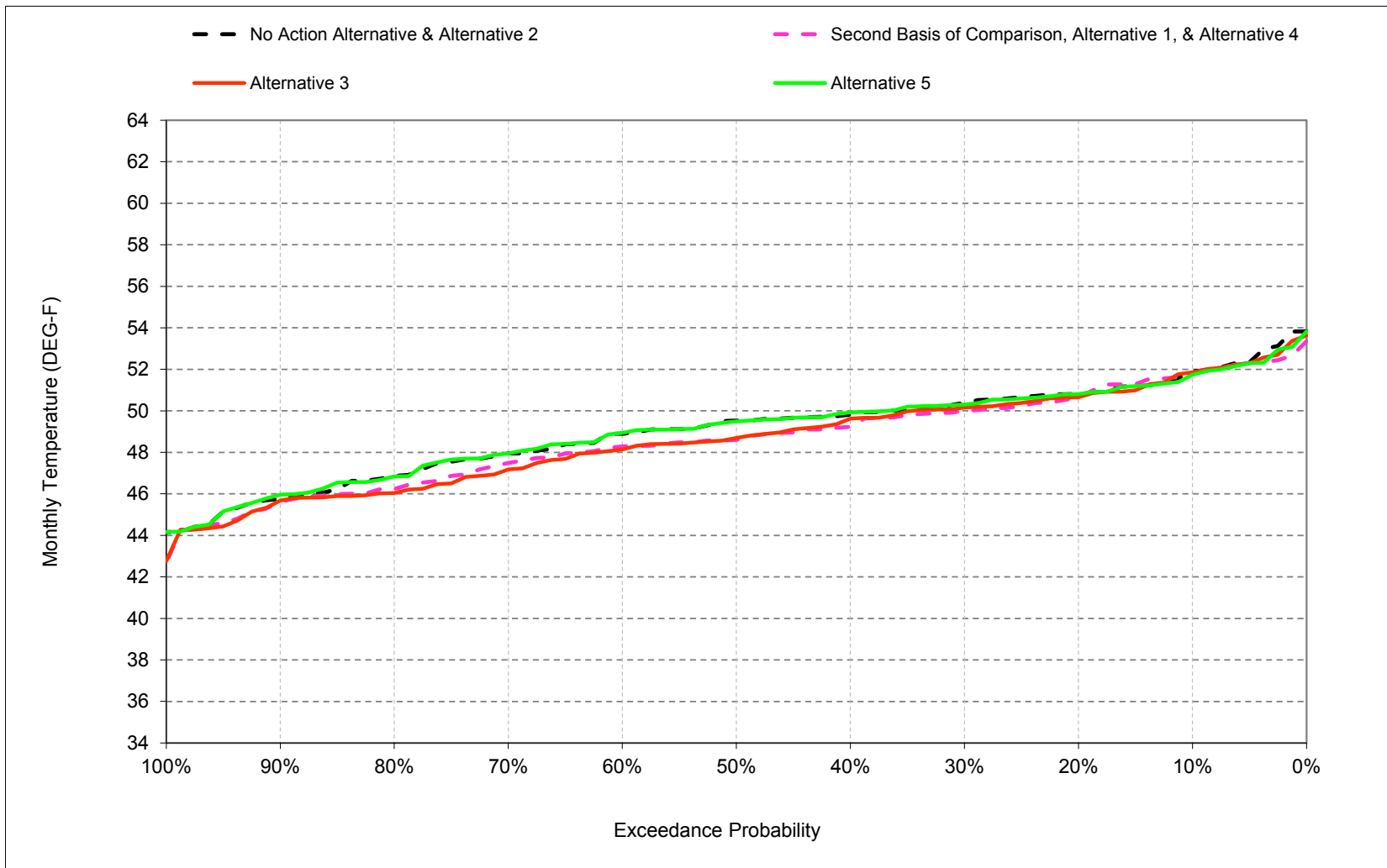
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-1-2. Trinity River below Lewiston Dam, November



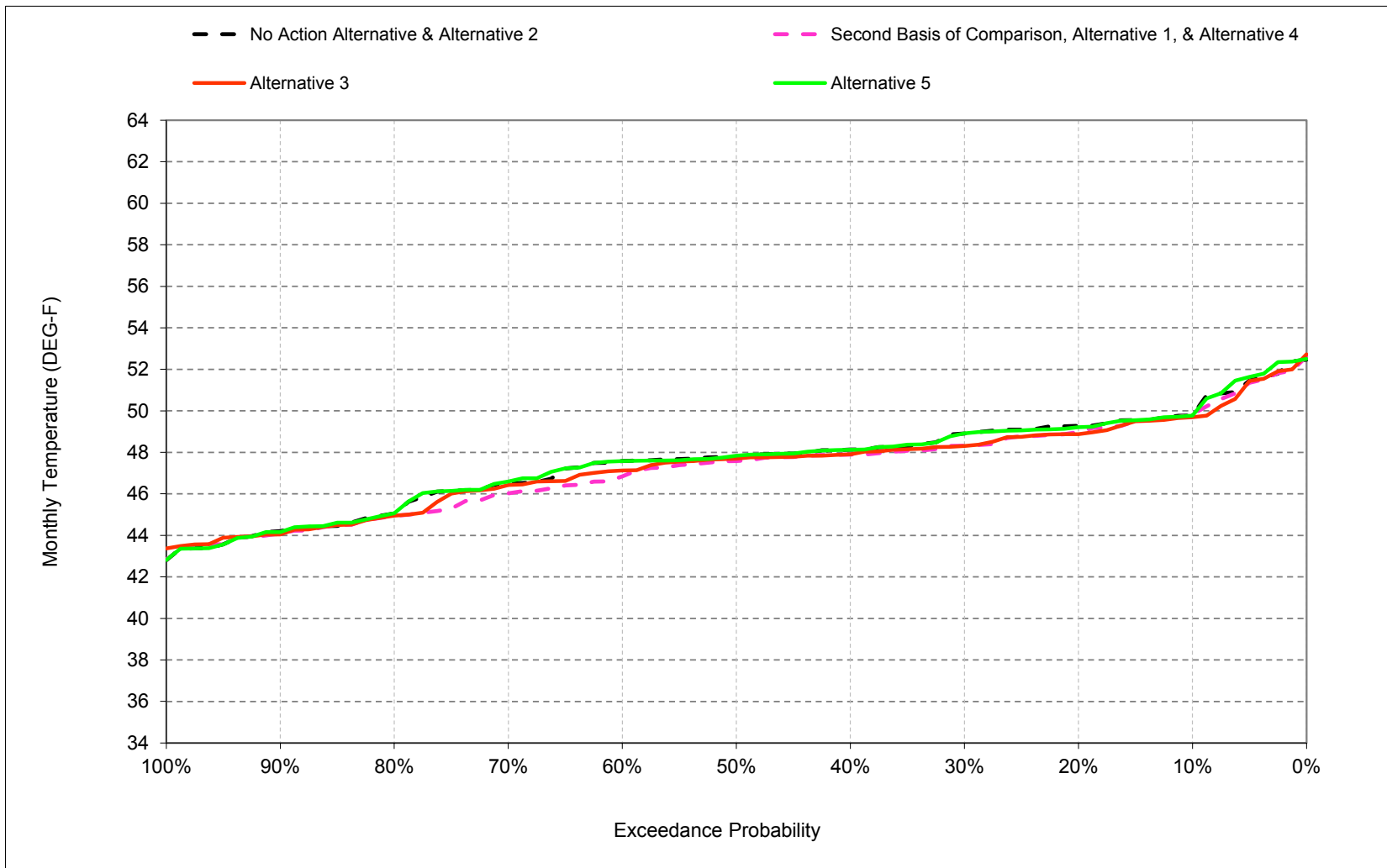
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-1-3. Trinity River below Lewiston Dam, December



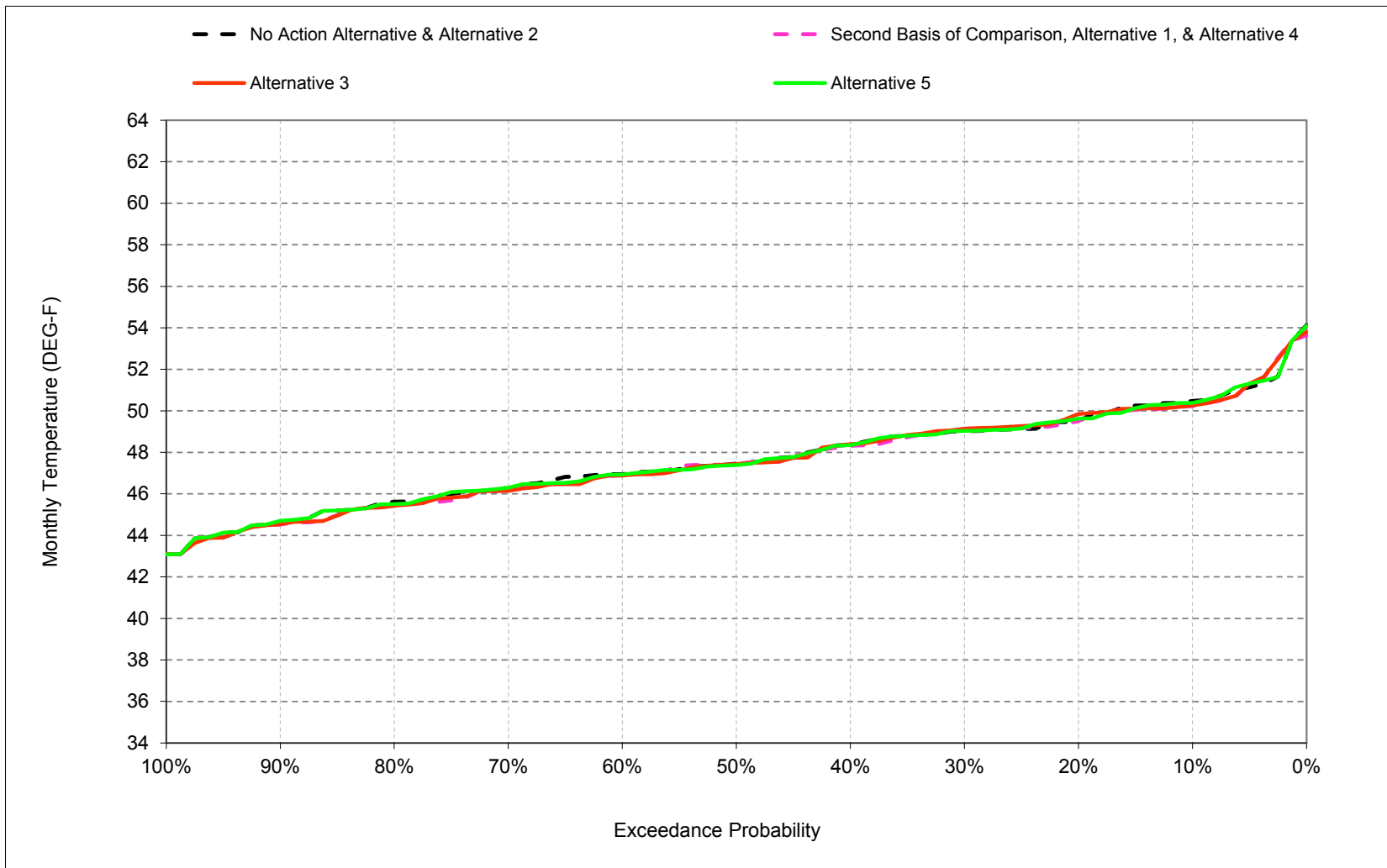
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-1-4. Trinity River below Lewiston Dam, January



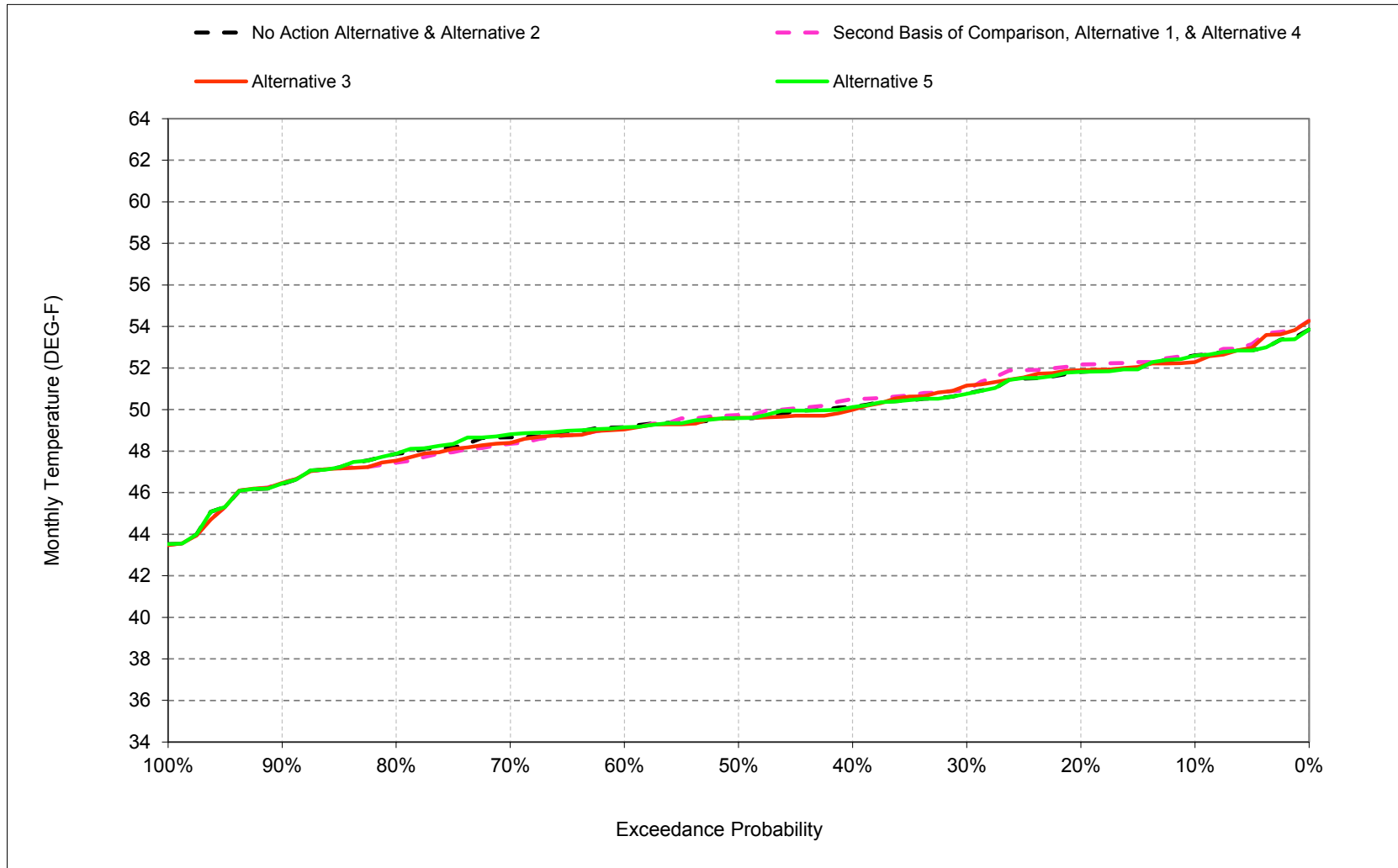
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-1-5. Trinity River below Lewiston Dam, February



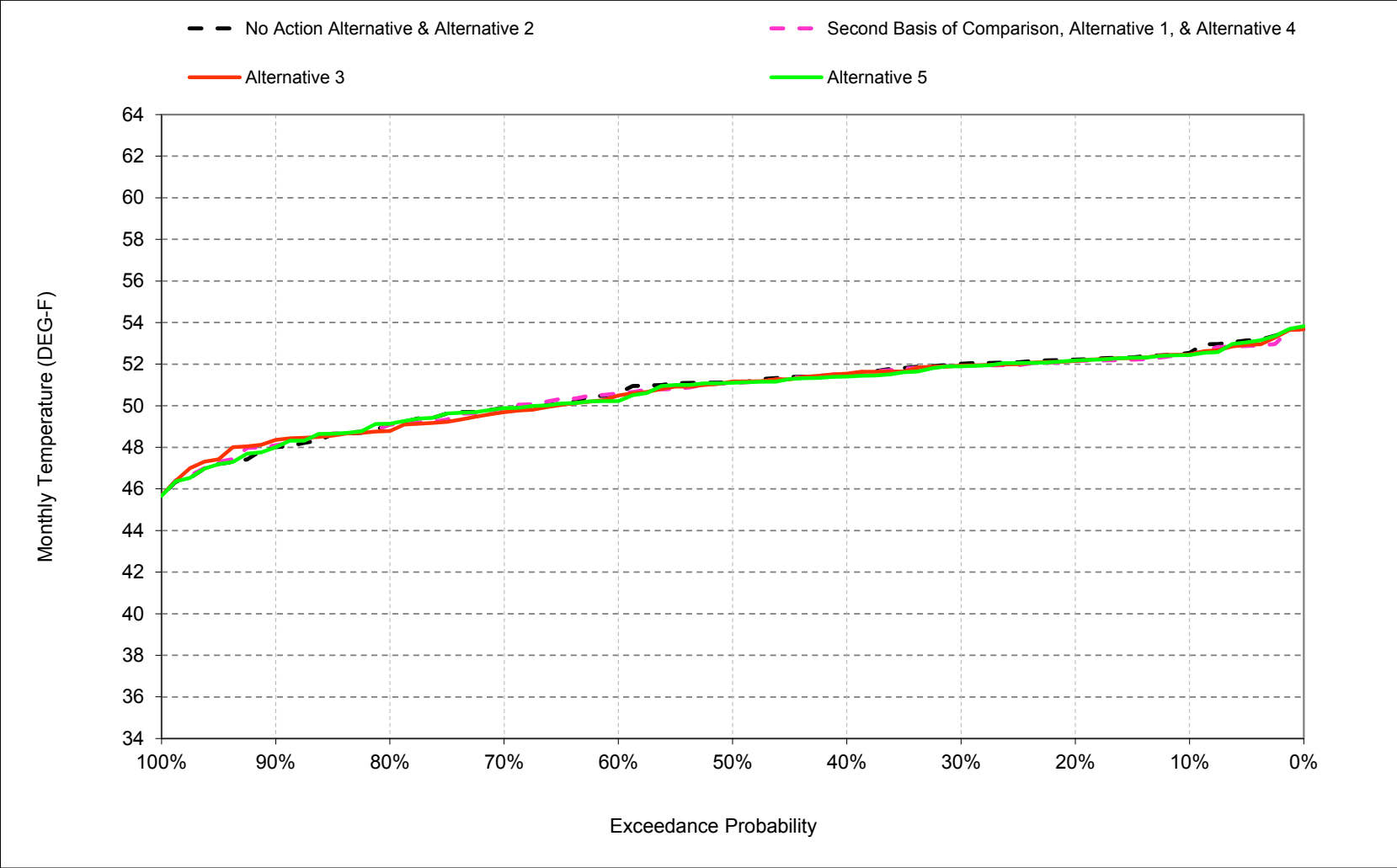
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-1-6. Trinity River below Lewiston Dam, March



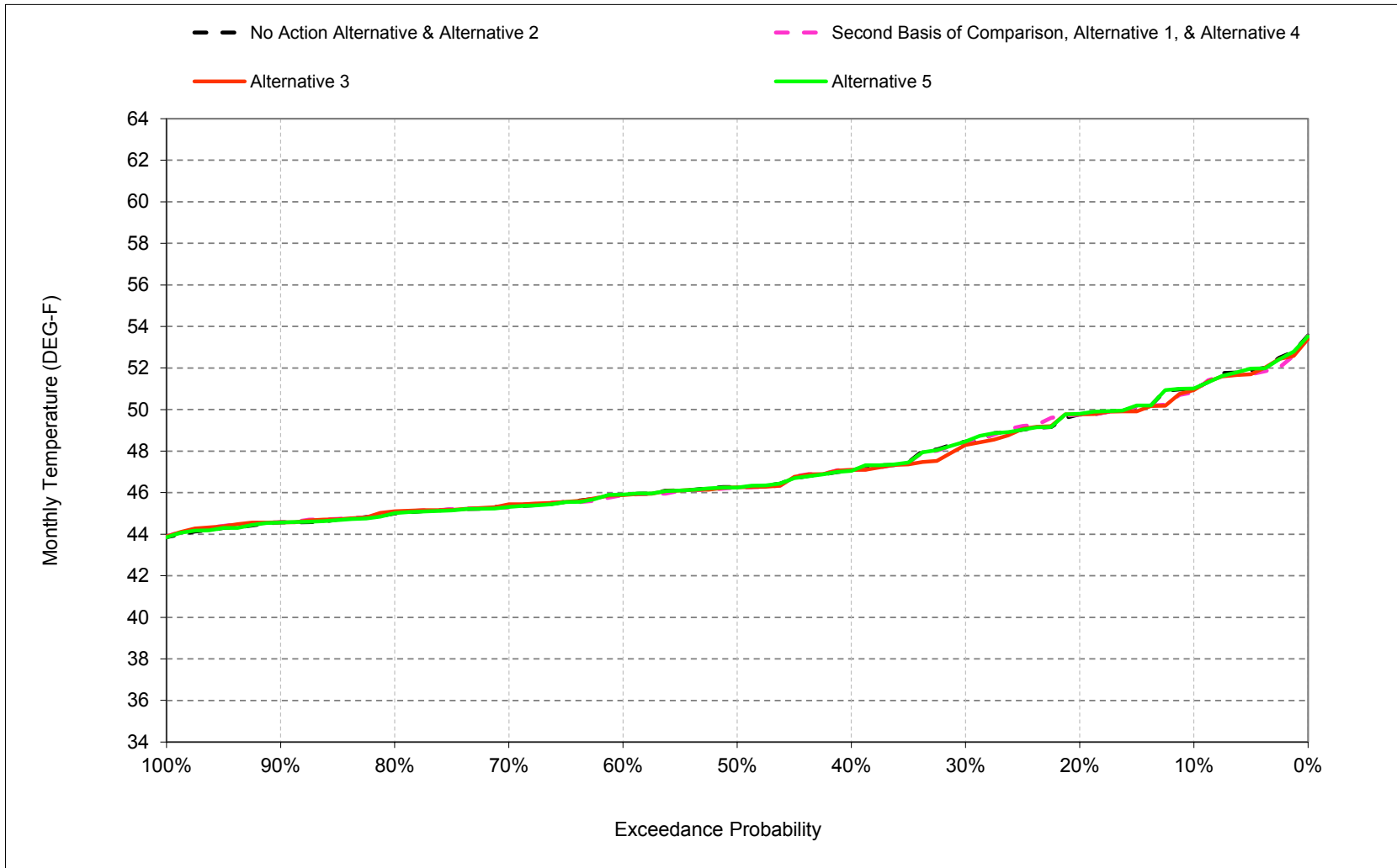
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-1-7. Trinity River below Lewiston Dam, April



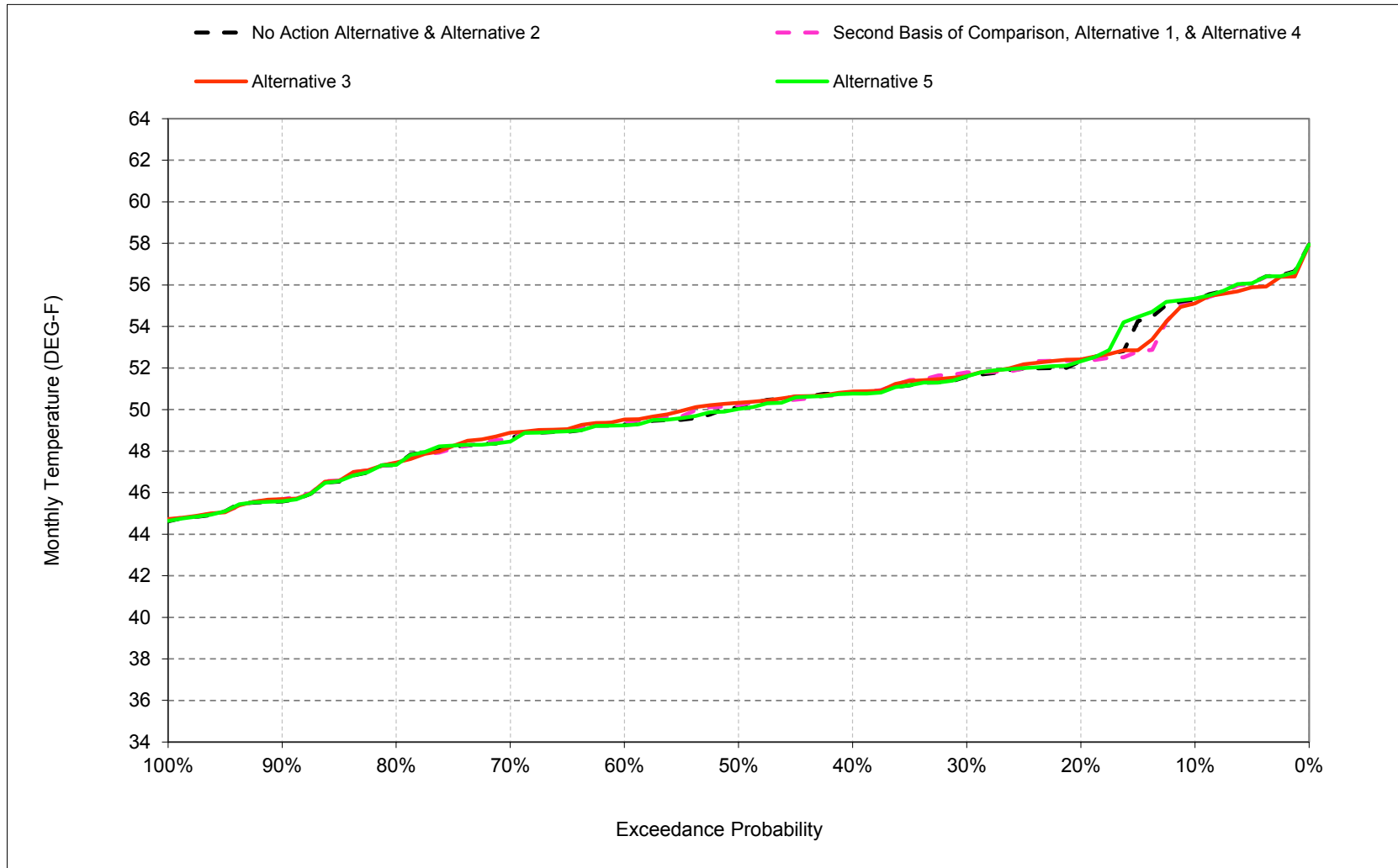
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-1-8. Trinity River below Lewiston Dam, May



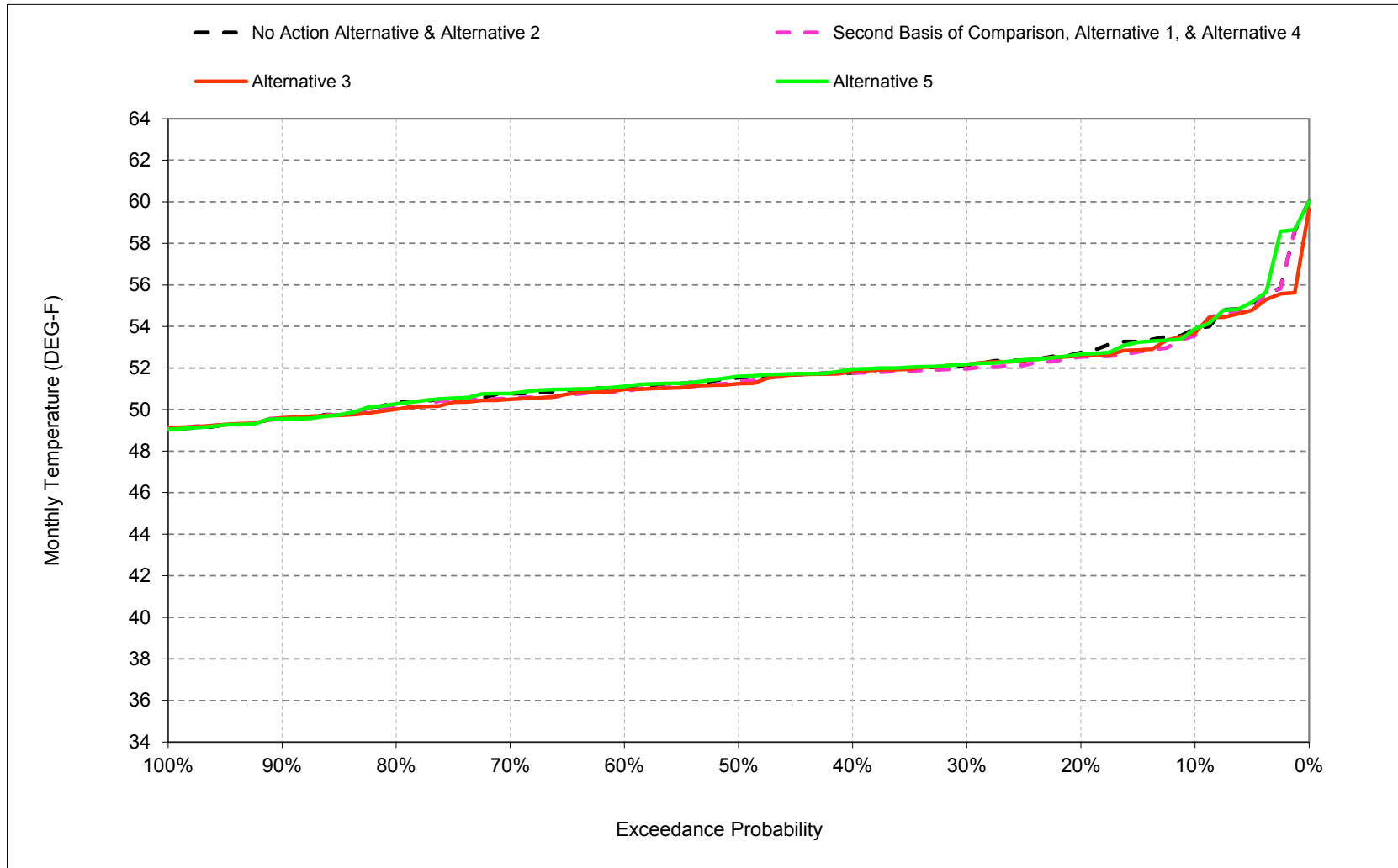
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-1-9. Trinity River below Lewiston Dam, June



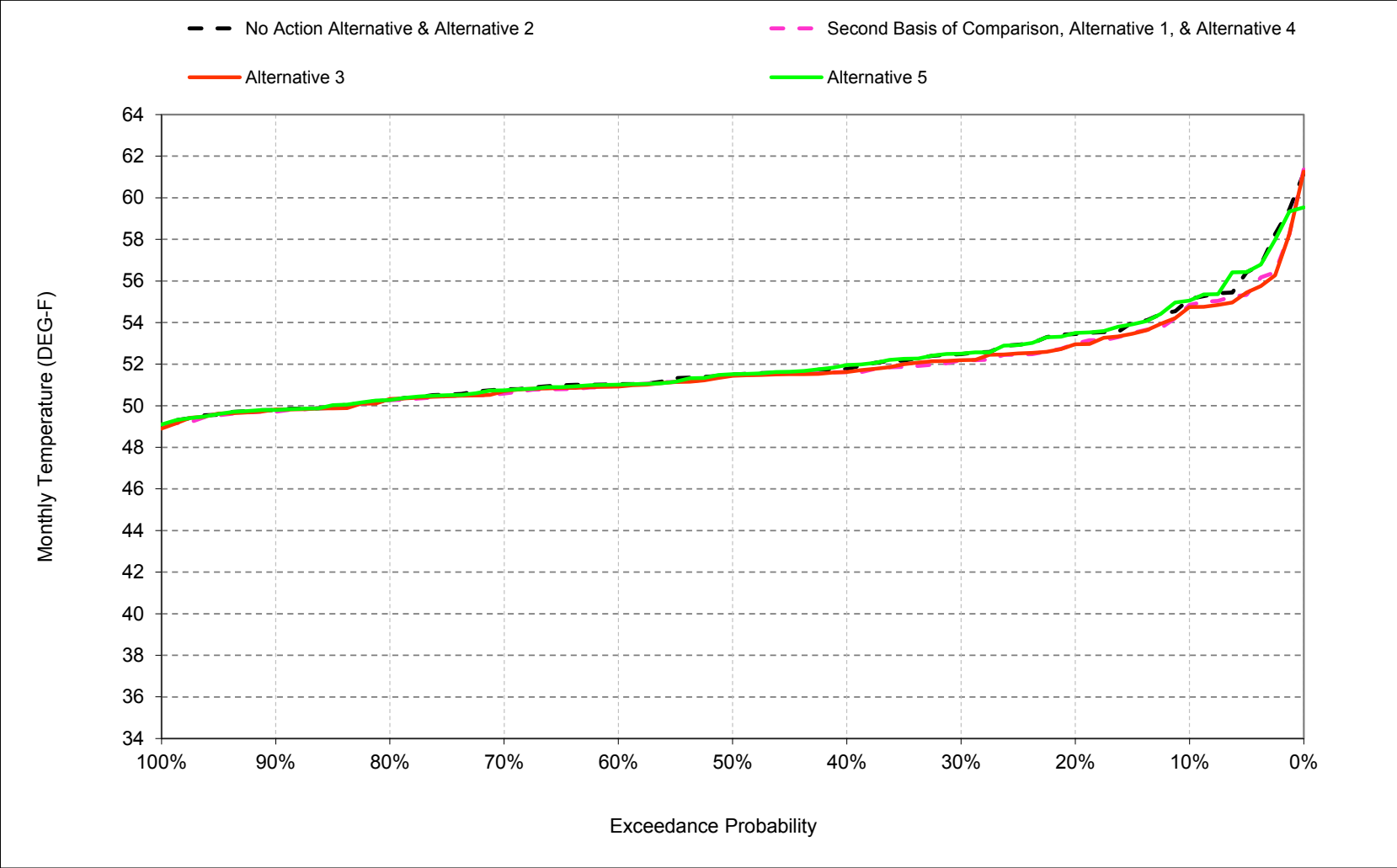
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-1-10. Trinity River below Lewiston Dam, July



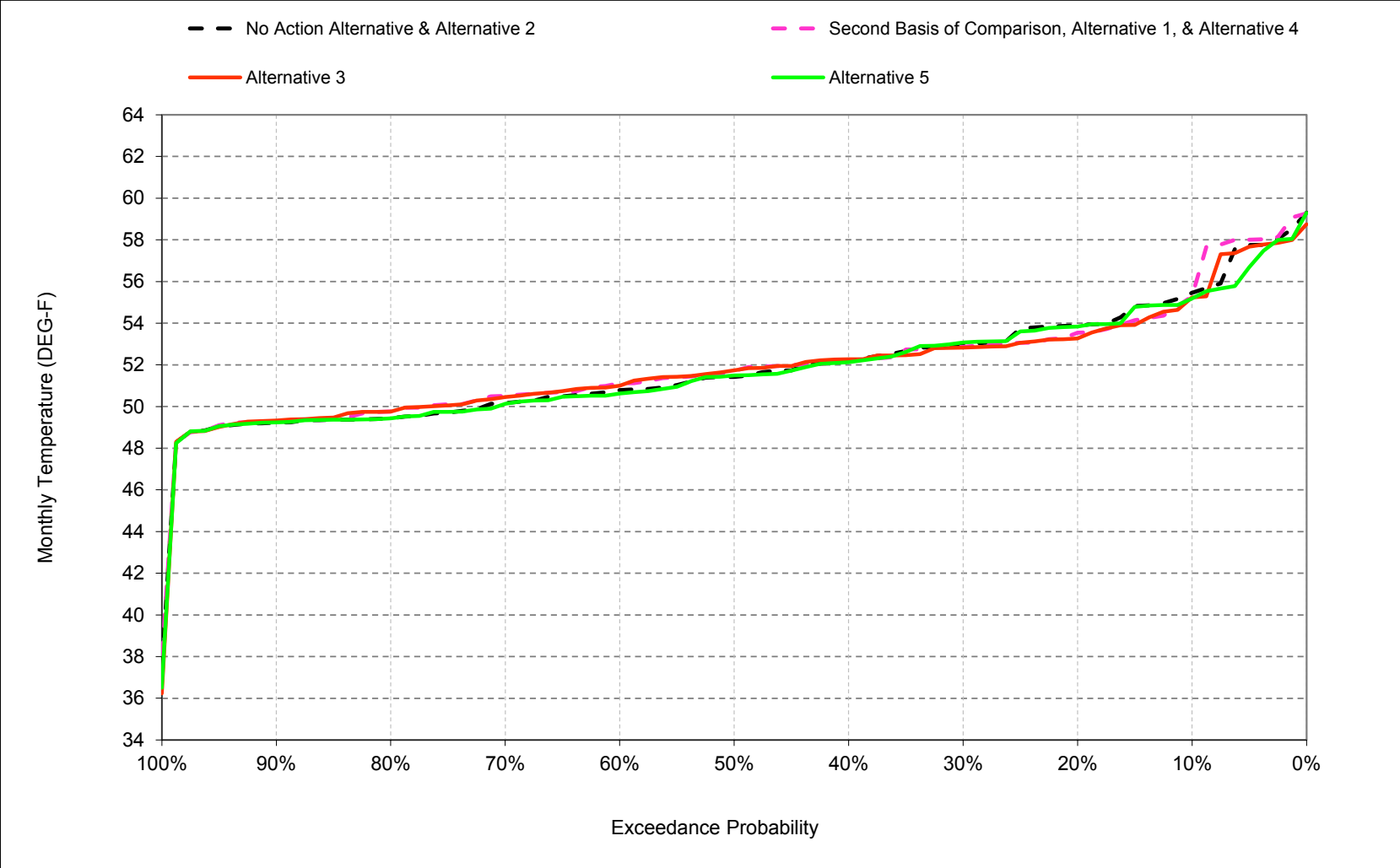
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-1-11. Trinity River below Lewiston Dam, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-1-12. Trinity River below Lewiston Dam, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-1-1. Trinity River below Lewiston Dam, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	56	54	52	50	50	53	53	51	55	54	55	55
20%	55	53	51	49	49	52	52	50	52	53	53	54
30%	54	52	50	49	49	51	52	48	52	52	52	53
40%	53	51	50	48	48	50	51	47	51	52	52	52
50%	52	51	50	48	47	50	51	46	50	52	51	51
60%	51	50	49	48	47	49	51	46	49	51	51	51
70%	50	50	48	46	46	49	50	45	48	51	51	50
80%	50	49	47	45	46	48	49	45	47	50	50	49
90%	49	49	46	44	45	46	48	45	46	50	50	49
Long Term												
Full Simulation Period ^b	52	51	49	47	48	49	51	47	50	52	52	52
Water Year Types ^c												
Wet (32%)	49	48	46	46	46	48	49	46	48	51	51	50
Above Normal (16%)	53	51	49	47	46	49	50	45	48	51	50	50
Below Normal (13%)	51	51	50	48	48	50	52	47	50	51	52	53
Dry (24%)	52	51	50	48	49	51	52	48	52	52	53	53
Critical (15%)	55	50	51	49	49	51	52	50	55	55	56	55

Alternative 1												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	55	53	52	50	50	53	52	51	55	54	55	55
20%	55	53	51	49	49	52	52	50	52	53	53	53
30%	54	52	50	48	49	51	52	48	52	52	52	53
40%	53	51	49	48	48	50	52	47	51	52	52	52
50%	52	51	49	48	47	50	51	46	50	51	51	52
60%	51	50	48	47	47	49	51	46	49	51	51	51
70%	51	50	47	46	46	48	50	45	49	51	51	50
80%	50	49	46	45	45	47	49	45	47	50	50	50
90%	49	48	46	44	44	46	48	45	46	50	50	49
Long Term												
Full Simulation Period ^b	52	51	49	47	48	50	51	47	50	52	52	52
Water Year Types ^c												
Wet (32%)	49	48	45	46	46	48	49	46	48	51	51	51
Above Normal (16%)	53	51	48	46	47	49	50	45	48	50	50	50
Below Normal (13%)	52	50	48	48	47	50	51	47	50	51	52	52
Dry (24%)	52	51	50	48	49	51	52	48	52	52	52	53
Critical (15%)	55	52	51	49	50	52	52	50	55	55	55	55

Alternative 1 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	-0.3	-0.4	-0.1	0.1	-0.2	0.0	-0.1	-0.2	-0.1	-0.3	-0.3	-0.2
0.2	-0.3	-0.1	-0.2	-0.3	0.0	0.4	-0.1	0.0	0.1	-0.2	-0.5	-0.4
0.3	-0.7	0.2	-0.4	-0.6	0.1	0.2	-0.1	0.0	0.2	-0.2	-0.3	0.0
0.4	-0.4	0.0	-0.6	-0.2	-0.1	0.3	0.0	0.1	0.0	0.0	-0.2	0.0
0.5	0.1	-0.1	-0.9	-0.2	0.0	0.1	-0.1	0.0	0.1	-0.2	0.0	0.2
0.6	0.5	0.2	-0.6	-0.8	-0.1	-0.1	0.0	-0.1	0.1	-0.2	-0.1	0.3
0.7	0.2	0.1	-0.5	-0.5	0.0	-0.4	0.0	0.0	0.1	-0.2	-0.2	0.3
0.8	0.3	0.0	-0.6	-0.1	-0.2	-0.4	0.0	0.1	0.0	-0.1	-0.1	0.3
0.9	0.0	-0.6	-0.1	-0.1	0.0	0.0	0.1	0.0	0.1	0.0	-0.1	0.0
Long Term												
Full Simulation Period ^b	-0.1	0.1	-0.4	-0.3	-0.1	0.1	0.0	0.0	0.0	-0.1	-0.2	0.1
Water Year Types ^c												
Wet (32%)	-0.1	-0.1	-0.4	-0.2	-0.2	-0.1	0.1	0.0	0.0	-0.1	-0.1	0.6
Above Normal (16%)	-0.2	-0.7	-0.6	-0.9	0.1	0.0	0.1	0.1	0.1	-0.2	-0.3	-0.3
Below Normal (13%)	0.3	-0.8	-1.5	-0.5	-0.4	0.1	-0.5	0.1	0.1	-0.3	-0.2	-0.4
Dry (24%)	-0.4	0.0	-0.1	-0.1	-0.1	0.3	-0.1	0.0	0.1	-0.1	-0.1	-0.2
Critical (15%)	-0.2	2.4	0.2	0.0	0.3	0.1	0.0	-0.2	-0.4	-0.2	-0.7	0.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-1-2. Trinity River below Lewiston Dam, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
10%	56	54	52	50	50	53	53	51	55	54	55	55
20%	55	53	51	49	49	52	52	50	52	53	53	54
30%	54	52	50	49	49	51	52	48	52	52	52	53
40%	53	51	50	48	48	50	51	47	51	52	52	52
50%	52	51	50	48	47	50	51	46	50	52	51	51
60%	51	50	49	48	47	49	51	46	49	51	51	51
70%	50	50	48	46	46	49	50	45	48	51	51	50
80%	50	49	47	45	46	48	49	45	47	50	50	49
90%	49	49	46	44	45	46	48	45	46	50	50	49
Long Term												
Full Simulation Period ^b	52	51	49	47	48	49	51	47	50	52	52	52
Water Year Types^c												
Wet (32%)	49	48	46	46	46	48	49	46	48	51	51	50
Above Normal (16%)	53	51	49	47	46	49	50	45	48	51	50	50
Below Normal (13%)	51	51	50	48	48	50	52	47	50	51	52	53
Dry (24%)	52	51	50	48	49	51	52	48	52	52	53	53
Critical (15%)	55	50	51	49	49	51	52	50	55	55	56	55

Alternative 3												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
10%	55	54	52	50	50	52	52	51	55	54	55	55
20%	55	53	51	49	50	52	52	50	52	53	53	53
30%	54	52	50	48	49	51	52	48	52	52	52	53
40%	53	51	50	48	48	50	52	47	51	52	52	52
50%	52	51	49	48	47	50	51	46	50	51	51	52
60%	51	50	48	47	47	49	50	46	49	51	51	51
70%	50	50	47	46	46	48	50	45	49	50	51	50
80%	50	49	46	45	45	47	49	45	47	50	50	50
90%	49	48	46	44	44	46	48	45	46	50	50	49
Long Term												
Full Simulation Period ^b	52	51	49	47	48	49	51	47	50	52	52	52
Water Year Types^c												
Wet (32%)	49	48	45	46	46	48	49	46	48	51	51	51
Above Normal (16%)	53	51	48	46	46	49	50	45	48	50	50	50
Below Normal (13%)	51	50	48	48	47	50	51	47	50	51	52	52
Dry (24%)	52	51	49	48	49	51	52	48	52	52	52	53
Critical (15%)	55	53	51	49	50	52	52	50	55	54	55	54

Alternative 3 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
0.1	-0.3	-0.2	-0.1	-0.1	-0.2	-0.3	-0.1	-0.1	-0.2	-0.2	-0.4	-0.3
0.2	-0.5	0.0	-0.2	-0.4	0.3	0.1	-0.1	0.0	0.1	-0.1	-0.5	-0.6
0.3	-0.6	0.4	-0.2	-0.6	0.1	0.4	-0.1	-0.2	0.1	0.0	-0.3	-0.1
0.4	-0.5	0.3	-0.2	-0.2	0.0	-0.2	0.0	0.1	0.1	0.0	-0.2	0.1
0.5	0.0	0.1	-0.8	-0.1	0.0	0.0	0.0	0.0	0.2	-0.3	-0.1	0.3
0.6	0.2	0.2	-0.8	-0.4	-0.1	-0.1	-0.2	0.0	0.2	-0.1	-0.1	0.2
0.7	0.1	0.3	-0.8	-0.2	0.0	-0.3	-0.2	0.0	0.3	-0.3	-0.2	0.2
0.8	0.2	0.0	-0.8	-0.1	-0.2	-0.3	-0.1	0.1	0.0	-0.3	-0.1	0.3
0.9	-0.1	-0.6	-0.1	-0.1	0.0	0.0	0.3	0.0	0.1	0.0	-0.1	0.1
Long Term												
Full Simulation Period ^b	-0.2	0.3	-0.4	-0.2	-0.1	0.0	0.0	0.0	0.0	-0.2	-0.2	0.0
Water Year Types^c												
Wet (32%)	-0.1	-0.1	-0.4	-0.1	-0.2	-0.1	0.2	0.0	0.0	0.0	-0.1	0.6
Above Normal (16%)	0.0	-0.4	-0.6	-0.7	0.0	-0.1	0.0	0.1	0.3	-0.2	-0.1	-0.2
Below Normal (13%)	0.1	-0.7	-1.5	-0.6	-0.5	0.1	-0.6	0.1	0.1	0.0	-0.2	-0.5
Dry (24%)	-0.4	0.0	-0.3	0.0	-0.1	0.0	-0.1	-0.1	0.2	-0.2	-0.2	-0.2
Critical (15%)	-0.8	3.3	0.3	0.3	0.6	0.0	0.0	-0.2	-0.4	-0.5	-0.8	-0.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-1-3. Trinity River below Lewiston Dam, Monthly Temperature

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
10%	56	54	52	50	50	53	53	51	55	54	55	55
20%	55	53	51	49	49	52	52	50	52	53	53	54
30%	54	52	50	49	49	51	52	48	52	52	52	53
40%	53	51	50	48	48	50	51	47	51	52	52	52
50%	52	51	50	48	47	50	51	46	50	52	51	51
60%	51	50	49	48	47	49	51	46	49	51	51	51
70%	50	50	48	46	46	49	50	45	48	51	51	50
80%	50	49	47	45	46	48	49	45	47	50	50	49
90%	49	49	46	44	45	46	48	45	46	50	50	49
Long Term												
Full Simulation Period ^b	52	51	49	47	48	49	51	47	50	52	52	52
Water Year Types^c												
Wet (32%)	49	48	46	46	46	48	49	46	48	51	51	50
Above Normal (16%)	53	51	49	47	46	49	50	45	48	51	50	50
Below Normal (13%)	51	51	50	48	48	50	52	47	50	51	52	53
Dry (24%)	52	51	50	48	49	51	52	48	52	52	53	53
Critical (15%)	55	50	51	49	49	51	52	50	55	55	56	55

Alternative 5

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
10%	56	54	52	50	50	53	52	51	55	54	55	55
20%	55	53	51	49	50	52	52	50	52	53	53	54
30%	54	52	50	49	49	51	52	48	52	52	52	53
40%	53	51	50	48	48	50	51	47	51	52	52	52
50%	52	51	49	48	47	50	51	46	50	52	51	51
60%	51	50	49	48	47	49	50	46	49	51	51	51
70%	50	50	48	47	46	49	50	45	48	51	51	50
80%	50	49	47	45	46	48	49	45	47	50	50	49
90%	49	49	46	44	45	46	48	45	46	50	50	49
Long Term												
Full Simulation Period ^b	52	51	49	48	48	50	51	47	50	52	52	52
Water Year Types^c												
Wet (32%)	49	48	46	46	46	48	49	46	48	51	51	50
Above Normal (16%)	53	51	49	47	46	49	50	45	48	51	50	50
Below Normal (13%)	51	51	50	48	48	50	51	47	50	51	52	52
Dry (24%)	52	51	50	48	49	51	52	48	52	52	53	53
Critical (15%)	56	50	51	49	49	51	52	50	56	55	56	54

Alternative 5 minus No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
0.1	0.0	0.2	-0.2	0.0	-0.1	0.0	-0.1	0.0	0.1	0.0	0.0	-0.3
0.2	-0.2	0.0	0.0	-0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.3	-0.1	0.0	-0.1	0.0	0.0	0.0	-0.1	0.0	0.0	0.1	0.0	0.1
0.4	0.1	0.0	0.1	0.0	0.0	0.0	-0.1	0.0	0.0	0.1	0.1	-0.1
0.5	0.0	-0.1	0.0	0.0	-0.1	0.0	0.0	0.0	-0.1	0.0	0.0	0.0
0.6	0.0	-0.1	0.0	0.0	0.0	0.0	-0.3	0.0	0.0	0.0	0.0	-0.2
0.7	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
0.8	0.0	0.0	0.0	0.0	-0.1	0.0	0.2	0.0	0.0	0.0	0.0	0.0
0.9	0.0	0.0	0.2	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0
Long Term												
Full Simulation Period ^b	0.1	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	-0.1
Water Year Types^c												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	-0.1	0.0	0.0
Above Normal (16%)	0.4	0.1	-0.2	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0
Below Normal (13%)	0.0	0.0	0.0	0.0	-0.1	0.0	-0.5	0.1	0.0	0.0	0.0	-0.2
Dry (24%)	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0
Critical (15%)	0.3	0.3	-0.1	0.1	0.0	0.0	-0.1	0.0	0.2	0.4	-0.1	-0.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-1-4. Trinity River below Lewiston Dam, Monthly Temperature

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Second Basis of Comparison												
Probability of Exceedance^a												
10%	55	53	52	50	50	53	52	51	55	54	55	55
20%	55	53	51	49	49	52	52	50	52	53	53	53
30%	54	52	50	48	49	51	52	48	52	52	52	53
40%	53	51	49	48	48	50	52	47	51	52	52	52
50%	52	51	49	48	47	50	51	46	50	51	51	52
60%	51	50	48	47	47	49	51	46	49	51	51	51
70%	51	50	47	46	46	48	50	45	49	51	51	50
80%	50	49	46	45	45	47	49	45	47	50	50	50
90%	49	48	46	44	44	46	48	45	46	50	50	49
Long Term												
Full Simulation Period ^b	52	51	49	47	48	50	51	47	50	52	52	52
Water Year Types^c												
Wet (32%)	49	48	45	46	46	48	49	46	48	51	51	51
Above Normal (16%)	53	51	48	46	47	49	50	45	48	50	50	50
Below Normal (13%)	52	50	48	48	47	50	51	47	50	51	52	52
Dry (24%)	52	51	50	48	49	51	52	48	52	52	52	53
Critical (15%)	55	52	51	49	50	52	52	50	55	55	55	55

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
No Action Alternative												
Probability of Exceedance^a												
10%	56	54	52	50	50	53	53	51	55	54	55	55
20%	55	53	51	49	49	52	52	50	52	53	53	54
30%	54	52	50	49	49	51	52	48	52	52	52	53
40%	53	51	50	48	48	50	51	47	51	52	52	52
50%	52	51	50	48	47	50	51	46	50	52	51	51
60%	51	50	49	48	47	49	51	46	49	51	51	51
70%	50	50	48	46	46	49	50	45	48	51	51	50
80%	50	49	47	45	46	48	49	45	47	50	50	49
90%	49	49	46	44	45	46	48	45	46	50	50	49
Long Term												
Full Simulation Period ^b	52	51	49	47	48	49	51	47	50	52	52	52
Water Year Types^c												
Wet (32%)	49	48	46	46	46	48	49	46	48	51	51	50
Above Normal (16%)	53	51	49	47	46	49	50	45	48	51	50	50
Below Normal (13%)	51	51	50	48	48	50	52	47	50	51	52	53
Dry (24%)	52	51	50	48	49	51	52	48	52	52	53	53
Critical (15%)	55	50	51	49	49	51	52	50	55	55	56	55

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
No Action Alternative minus Second Basis of Comparison												
Probability of Exceedance^a												
0.1	0.3	0.4	0.1	-0.1	0.2	0.0	0.1	0.2	0.1	0.3	0.3	0.2
0.2	0.3	0.1	0.2	0.3	0.0	-0.4	0.1	0.0	-0.1	0.2	0.5	0.4
0.3	0.7	-0.2	0.4	0.6	-0.1	-0.2	0.1	0.0	-0.2	0.2	0.3	0.0
0.4	0.4	0.0	0.6	0.2	0.1	-0.3	0.0	-0.1	0.0	0.0	0.2	0.0
0.5	-0.1	0.1	0.9	0.2	0.0	-0.1	0.1	0.0	-0.1	0.2	0.0	-0.2
0.6	-0.5	-0.2	0.6	0.8	0.1	0.1	0.0	0.1	-0.1	0.2	0.1	-0.3
0.7	-0.2	-0.1	0.5	0.5	0.0	0.4	0.0	0.0	-0.1	0.2	0.2	-0.3
0.8	-0.3	0.0	0.6	0.1	0.2	0.4	0.0	-0.1	0.0	0.1	0.1	-0.3
0.9	0.0	0.6	0.1	0.1	0.0	0.0	-0.1	0.0	-0.1	0.0	0.1	0.0
Long Term												
Full Simulation Period ^b	0.1	-0.1	0.4	0.3	0.1	-0.1	0.0	0.0	0.0	0.1	0.2	-0.1
Water Year Types^c												
Wet (32%)	0.1	0.1	0.4	0.2	0.2	0.1	-0.1	0.0	0.0	0.1	0.1	-0.6
Above Normal (16%)	0.2	0.7	0.6	0.9	-0.1	0.0	-0.1	-0.1	-0.1	0.2	0.3	0.3
Below Normal (13%)	-0.3	0.8	1.5	0.5	0.4	-0.1	0.5	-0.1	-0.1	0.3	0.2	0.4
Dry (24%)	0.4	0.0	0.1	0.1	0.1	-0.3	0.1	0.0	-0.1	0.1	0.1	0.2
Critical (15%)	0.2	-2.4	-0.2	0.0	-0.3	-0.1	0.0	0.2	0.4	0.2	0.7	-0.3

^a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

^b Based on the 82-year simulation period.

^c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-1-5. Trinity River below Lewiston Dam, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
10%	55	53	52	50	50	53	52	51	55	54	55	55
20%	55	53	51	49	49	52	52	50	52	53	53	53
30%	54	52	50	48	49	51	52	48	52	52	52	53
40%	53	51	49	48	48	50	52	47	51	52	52	52
50%	52	51	49	48	47	50	51	46	50	51	51	52
60%	51	50	48	47	47	49	51	46	49	51	51	51
70%	51	50	47	46	46	48	50	45	49	51	51	50
80%	50	49	46	45	45	47	49	45	47	50	50	50
90%	49	48	46	44	44	46	48	45	46	50	50	49
Long Term												
Full Simulation Period ^b	52	51	49	47	48	50	51	47	50	52	52	52
Water Year Types^c												
Wet (32%)	49	48	45	46	46	48	49	46	48	51	51	51
Above Normal (16%)	53	51	48	46	47	49	50	45	48	50	50	50
Below Normal (13%)	52	50	48	48	47	50	51	47	50	51	52	52
Dry (24%)	52	51	50	48	49	51	52	48	52	52	52	53
Critical (15%)	55	52	51	49	50	52	52	50	55	55	55	55

Alternative 3

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
10%	55	54	52	50	50	52	52	51	55	54	55	55
20%	55	53	51	49	50	52	52	50	52	53	53	53
30%	54	52	50	48	49	51	52	48	52	52	52	53
40%	53	51	50	48	48	50	52	47	51	52	52	52
50%	52	51	49	48	47	50	51	46	50	51	51	52
60%	51	50	48	47	47	49	50	46	49	51	51	51
70%	50	50	47	46	46	48	50	45	49	50	51	50
80%	50	49	46	45	45	47	49	45	47	50	50	50
90%	49	48	46	44	44	46	48	45	46	50	50	49
Long Term												
Full Simulation Period ^b	52	51	49	47	48	49	51	47	50	52	52	52
Water Year Types^c												
Wet (32%)	49	48	45	46	46	48	49	46	48	51	51	51
Above Normal (16%)	53	51	48	46	46	49	50	45	48	50	50	50
Below Normal (13%)	51	50	48	48	47	50	51	47	50	51	52	52
Dry (24%)	52	51	49	48	49	51	52	48	52	52	52	53
Critical (15%)	55	53	51	49	50	52	52	50	55	54	55	54

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
0.1	0.0	0.2	0.1	-0.1	0.0	-0.3	0.0	0.1	0.0	0.1	-0.1	-0.1
0.2	-0.1	0.0	0.0	-0.1	0.3	-0.3	0.0	0.0	0.1	0.1	0.0	-0.2
0.3	0.1	0.2	0.2	0.0	0.0	0.2	0.0	-0.2	-0.2	0.2	0.0	0.0
0.4	0.0	0.3	0.4	0.0	0.1	-0.5	0.0	0.0	0.1	0.0	0.0	0.1
0.5	0.0	0.2	0.1	0.1	0.0	-0.1	0.0	0.0	0.1	-0.1	-0.1	0.0
0.6	-0.2	0.0	-0.2	0.4	0.0	-0.1	-0.2	0.1	0.1	0.1	0.0	-0.1
0.7	-0.1	0.2	-0.3	0.3	-0.1	0.1	-0.2	0.1	0.2	-0.1	0.0	-0.1
0.8	-0.1	0.0	-0.2	0.0	0.0	0.1	-0.1	0.0	0.0	-0.1	0.0	0.0
0.9	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1
Long Term												
Full Simulation Period ^b	-0.1	0.2	0.0	0.1	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	-0.1
Water Year Types^c												
Wet (32%)	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Above Normal (16%)	0.2	0.3	0.1	0.2	-0.1	-0.2	-0.1	0.0	0.2	-0.1	0.1	0.0
Below Normal (13%)	-0.2	0.1	0.0	-0.2	0.0	0.0	-0.2	0.0	0.0	0.3	0.0	-0.1
Dry (24%)	-0.1	0.0	-0.1	0.1	0.0	-0.3	0.0	-0.1	0.1	0.0	0.0	0.0
Critical (15%)	-0.6	0.8	0.1	0.3	0.3	-0.1	0.0	0.0	-0.1	-0.4	-0.1	-0.6

^a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

^b Based on the 82-year simulation period.

^c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-1-6. Trinity River below Lewiston Dam, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	55	53	52	50	50	53	52	51	55	54	55	55
20%	55	53	51	49	49	52	52	50	52	53	53	53
30%	54	52	50	48	49	51	52	48	52	52	52	53
40%	53	51	49	48	48	50	52	47	51	52	52	52
50%	52	51	49	48	47	50	51	46	50	51	51	52
60%	51	50	48	47	47	49	51	46	49	51	51	51
70%	51	50	47	46	46	48	50	45	49	51	51	50
80%	50	49	46	45	45	47	49	45	47	50	50	50
90%	49	48	46	44	44	46	48	45	46	50	50	49
Long Term												
Full Simulation Period ^b	52	51	49	47	48	50	51	47	50	52	52	52
Water Year Types ^c												
Wet (32%)	49	48	45	46	46	48	49	46	48	51	51	51
Above Normal (16%)	53	51	48	46	47	49	50	45	48	50	50	50
Below Normal (13%)	52	50	48	48	47	50	51	47	50	51	52	52
Dry (24%)	52	51	50	48	49	51	52	48	52	52	52	53
Critical (15%)	55	52	51	49	50	52	52	50	55	55	55	55

Alternative 5

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	56	54	52	50	50	53	52	51	55	54	55	55
20%	55	53	51	49	50	52	52	50	52	53	53	54
30%	54	52	50	49	49	51	52	48	52	52	52	53
40%	53	51	50	48	48	50	51	47	51	52	52	52
50%	52	51	49	48	47	50	51	46	50	52	51	51
60%	51	50	49	48	47	49	50	46	49	51	51	51
70%	50	50	48	47	46	49	50	45	48	51	51	50
80%	50	49	47	45	46	48	49	45	47	50	50	49
90%	49	49	46	44	45	46	48	45	46	50	50	49
Long Term												
Full Simulation Period ^b	52	51	49	48	48	50	51	47	50	52	52	52
Water Year Types ^c												
Wet (32%)	49	48	46	46	46	48	49	46	48	51	51	50
Above Normal (16%)	53	51	49	47	46	49	50	45	48	51	50	50
Below Normal (13%)	51	51	50	48	48	50	51	47	50	51	52	52
Dry (24%)	52	51	50	48	49	51	52	48	52	52	53	53
Critical (15%)	56	50	51	49	49	51	52	50	56	55	56	54

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	0.3	0.6	0.0	-0.1	0.2	0.0	0.0	0.2	0.2	0.3	0.3	-0.1
0.2	0.2	0.1	0.2	0.2	0.1	-0.3	0.0	0.0	-0.1	0.1	0.5	0.3
0.3	0.6	-0.2	0.3	0.6	-0.1	-0.2	0.0	0.0	-0.2	0.2	0.3	0.2
0.4	0.5	0.0	0.7	0.2	0.1	-0.4	-0.1	-0.1	0.0	0.1	0.3	-0.1
0.5	0.0	0.0	0.9	0.2	0.0	-0.1	0.0	0.0	-0.2	0.2	0.1	-0.2
0.6	-0.5	-0.2	0.6	0.9	0.1	0.0	-0.3	0.1	-0.2	0.2	0.1	-0.5
0.7	-0.2	0.0	0.5	0.5	0.0	0.4	0.0	0.0	-0.1	0.2	0.2	-0.3
0.8	-0.3	0.0	0.6	0.1	0.1	0.4	0.2	-0.1	0.0	0.1	0.1	-0.3
0.9	0.1	0.6	0.3	0.1	0.1	0.0	-0.2	0.0	-0.1	0.0	0.1	0.0
Long Term												
Full Simulation Period ^b	0.2	-0.1	0.4	0.3	0.1	-0.1	0.0	0.0	0.0	0.2	0.2	-0.2
Water Year Types ^c												
Wet (32%)	0.0	0.1	0.4	0.2	0.2	0.1	-0.1	0.0	0.0	0.0	0.1	-0.7
Above Normal (16%)	0.6	0.8	0.5	1.0	-0.1	-0.1	-0.1	-0.1	0.0	0.2	0.3	0.2
Below Normal (13%)	-0.3	0.8	1.5	0.5	0.3	-0.1	0.0	0.0	-0.1	0.3	0.2	0.2
Dry (24%)	0.3	0.0	0.2	0.2	0.1	-0.3	0.1	0.0	-0.2	0.2	0.1	0.2
Critical (15%)	0.5	-2.2	-0.3	0.0	-0.3	-0.1	-0.1	0.2	0.5	0.5	0.6	-0.7

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

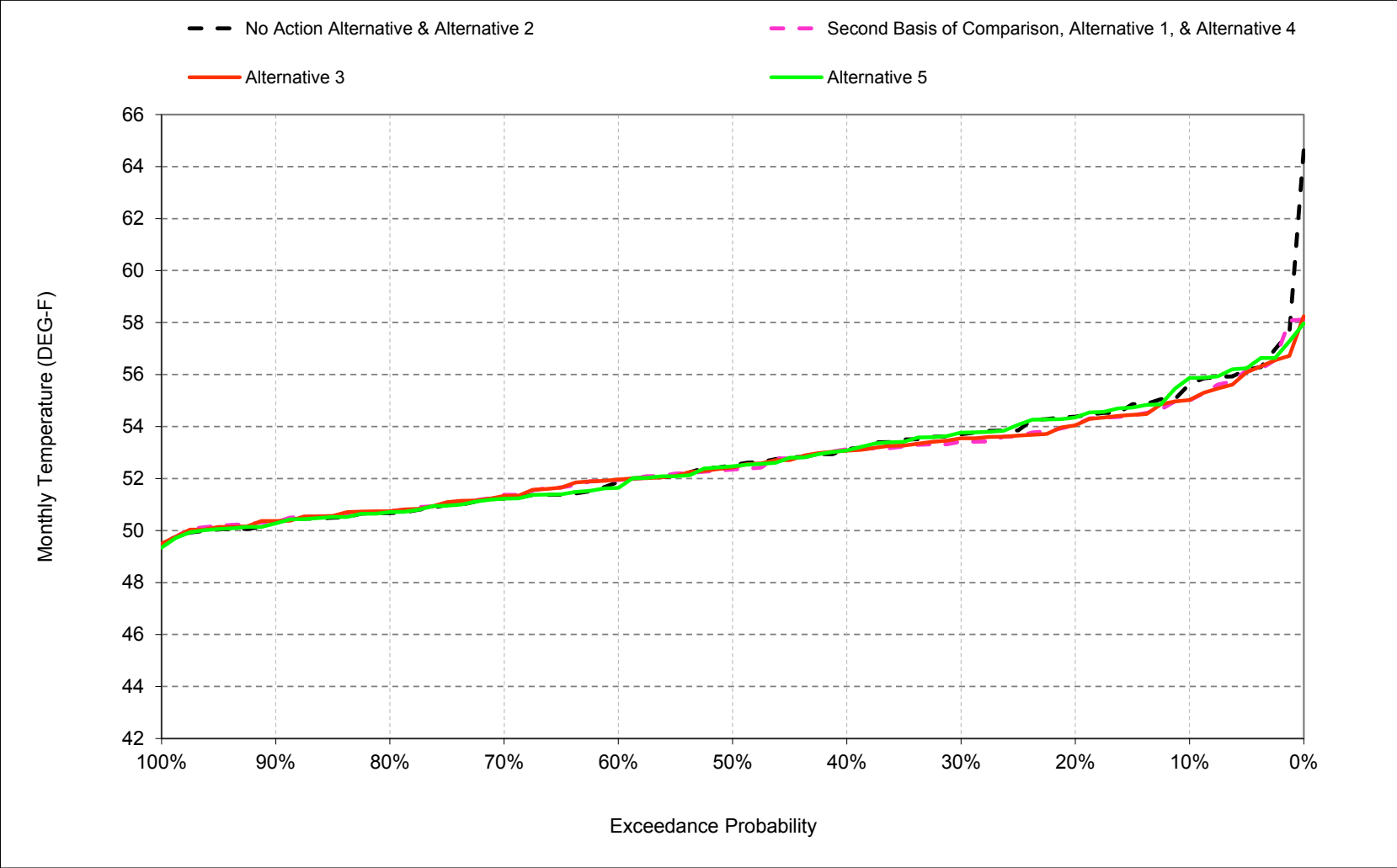
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

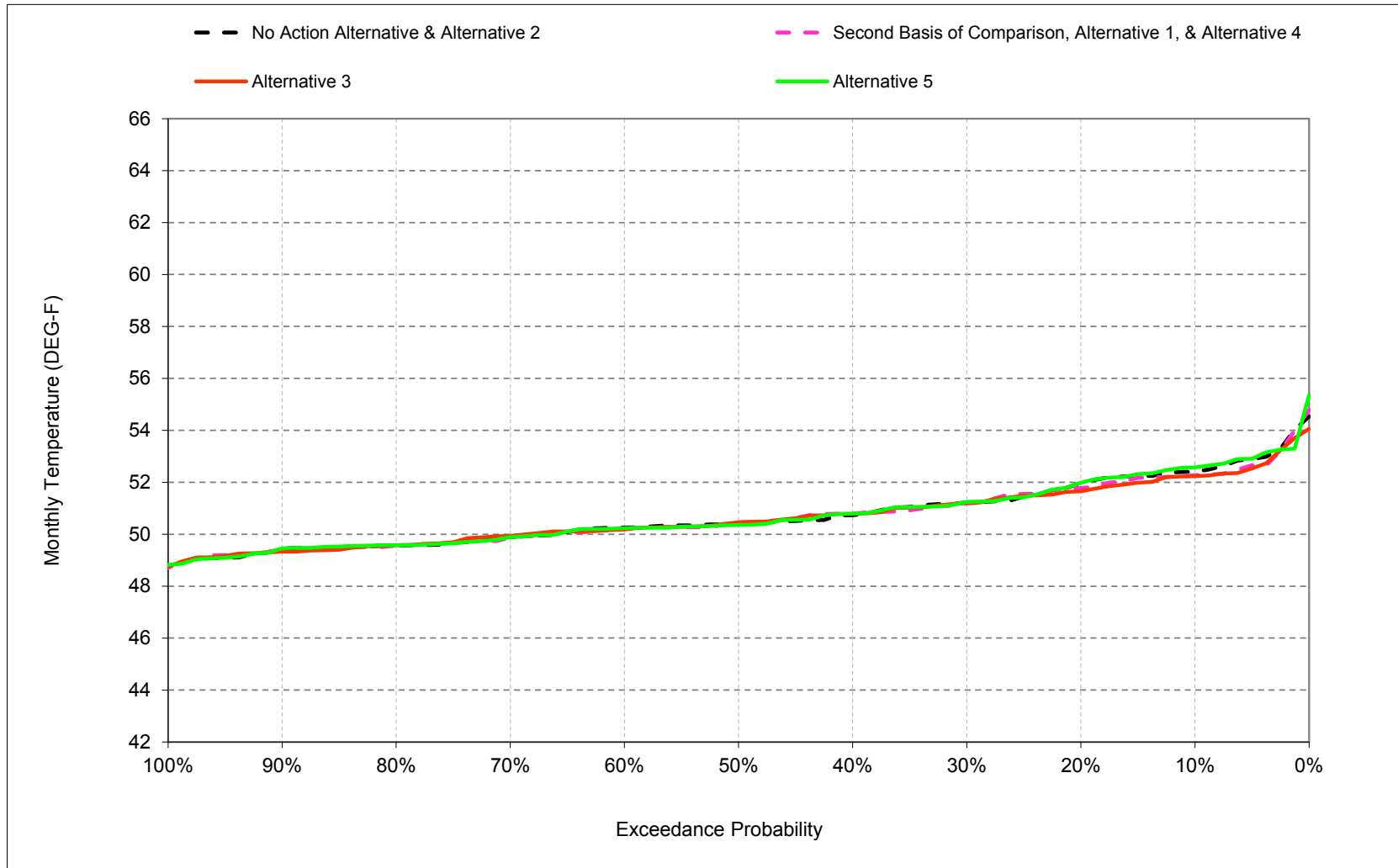
B.2. Clear Creek below Whiskeytown Temperature

Figure B-2-1. Clear Creek below Whiskeytown, October



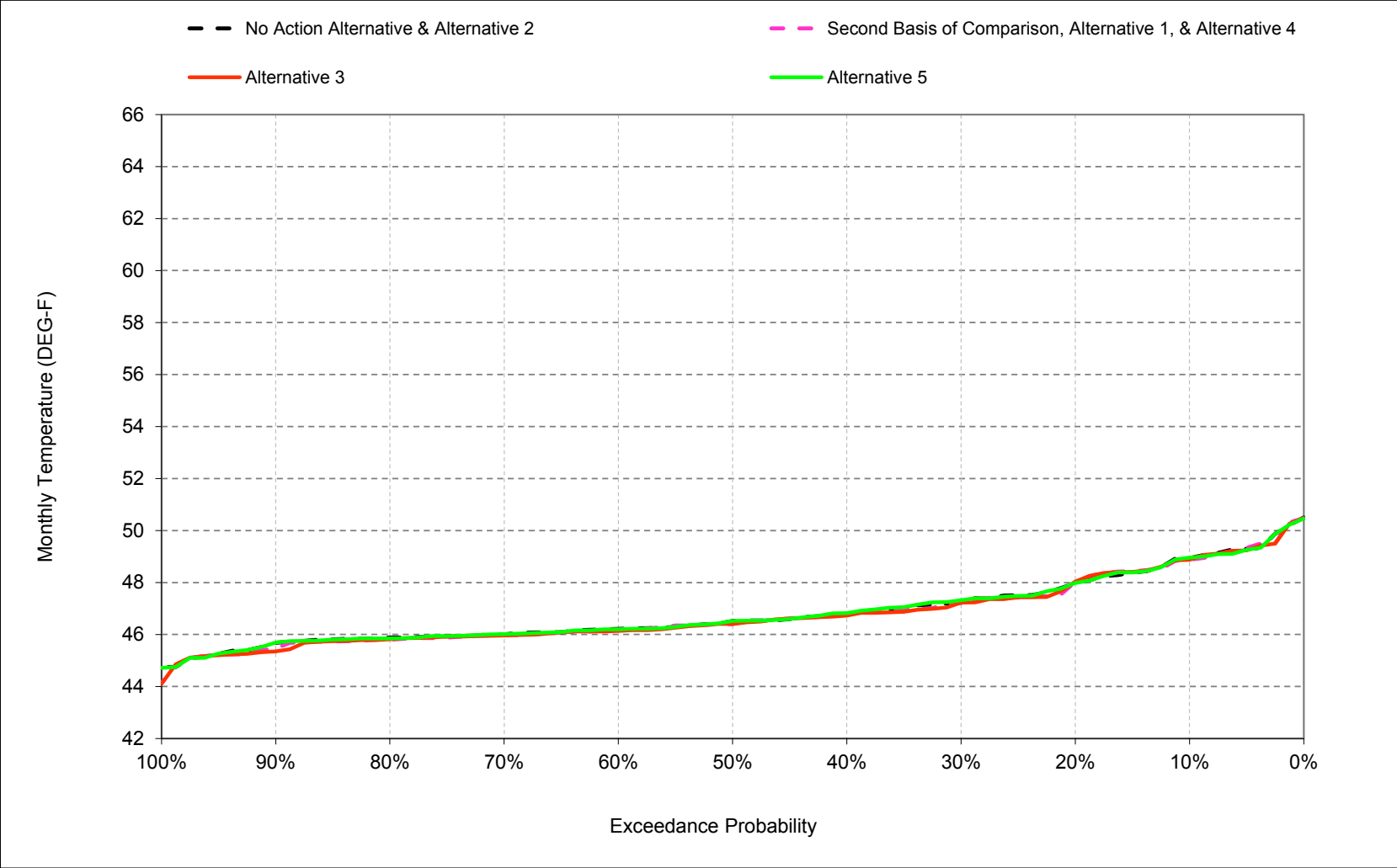
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-2-2. Clear Creek below Whiskeytown, November



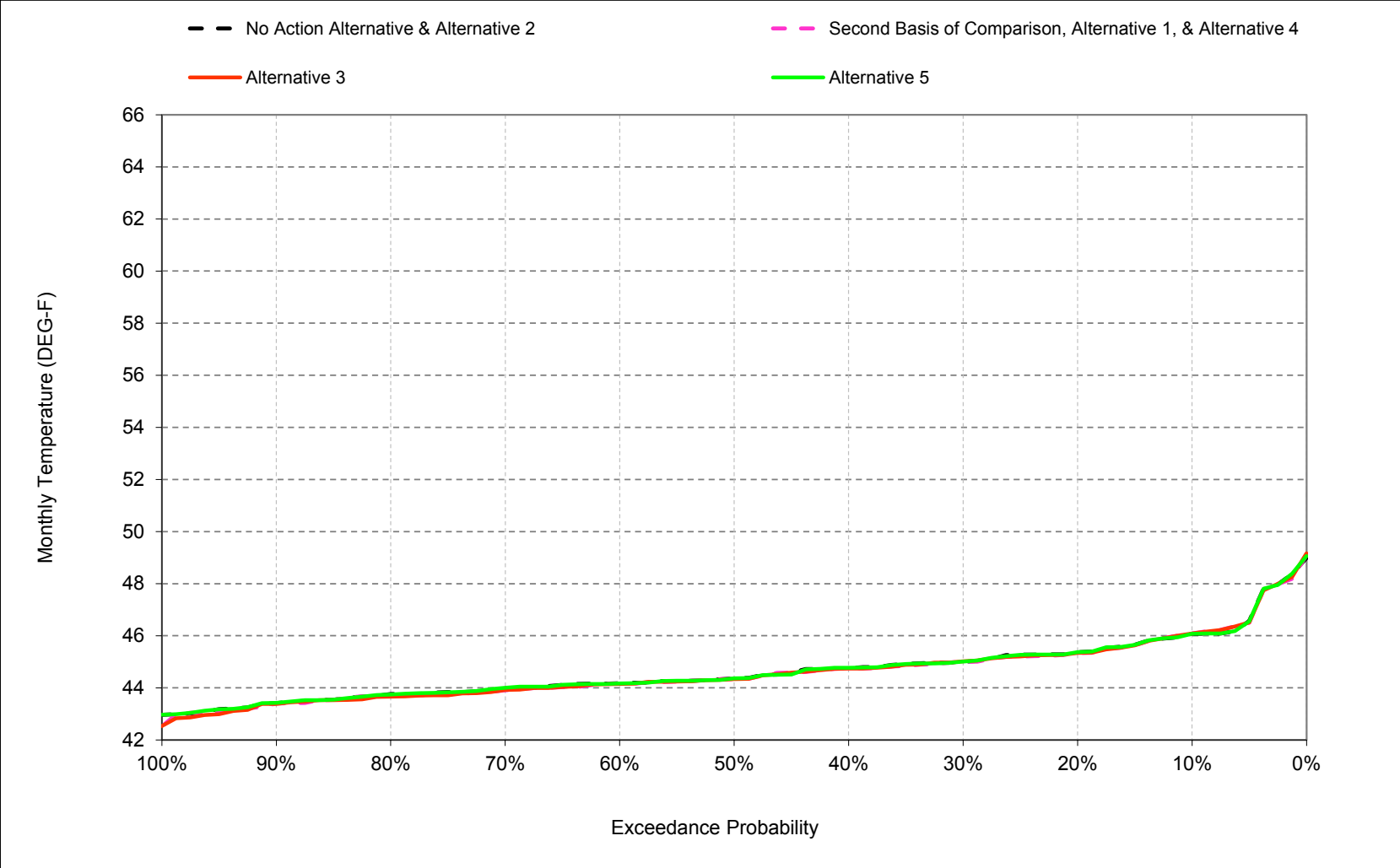
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-2-3. Clear Creek below Whiskeytown, December



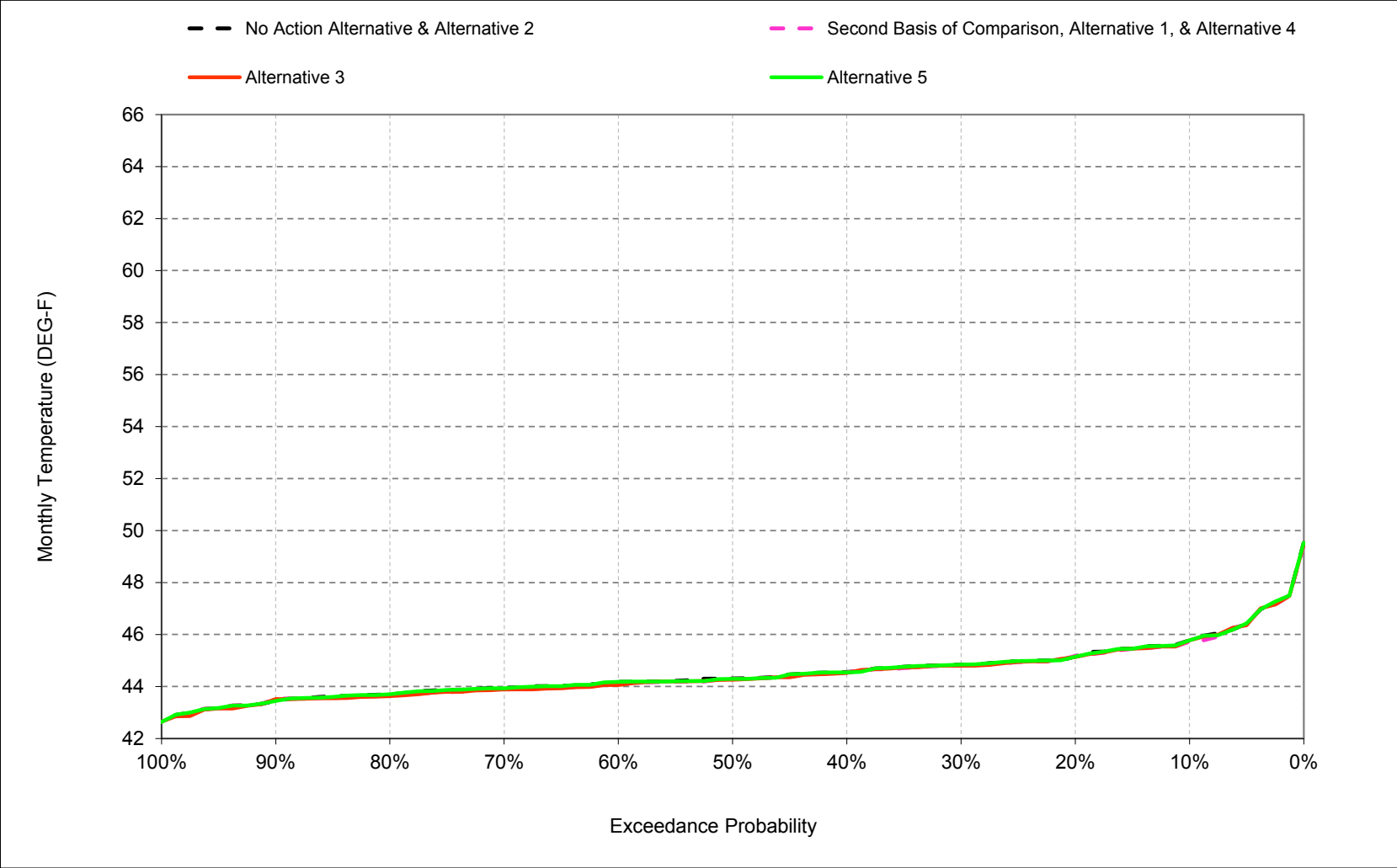
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-2-4. Clear Creek below Whiskeytown, January



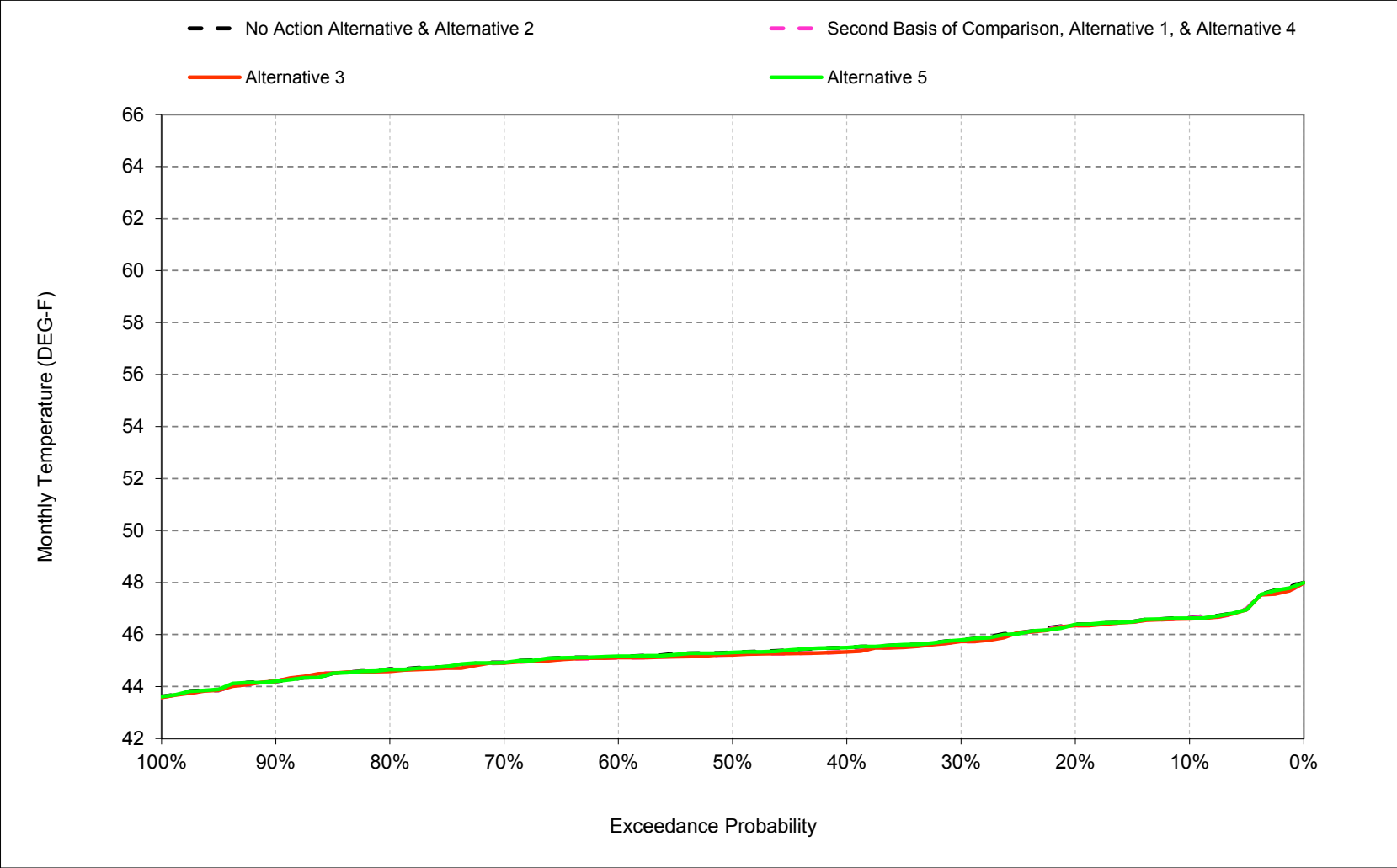
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-2-5. Clear Creek below Whiskeytown, February



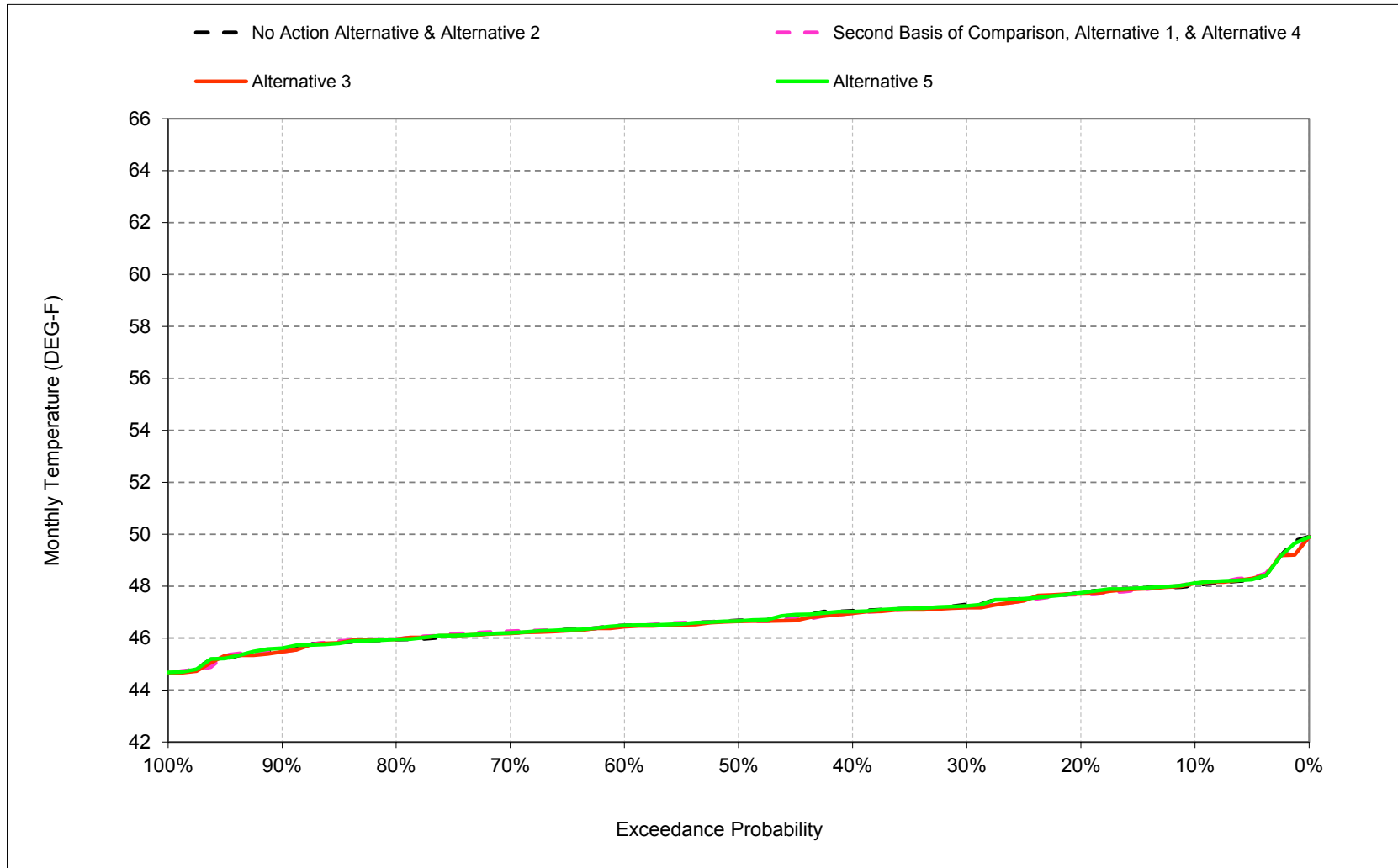
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-2-6. Clear Creek below Whiskeytown, March



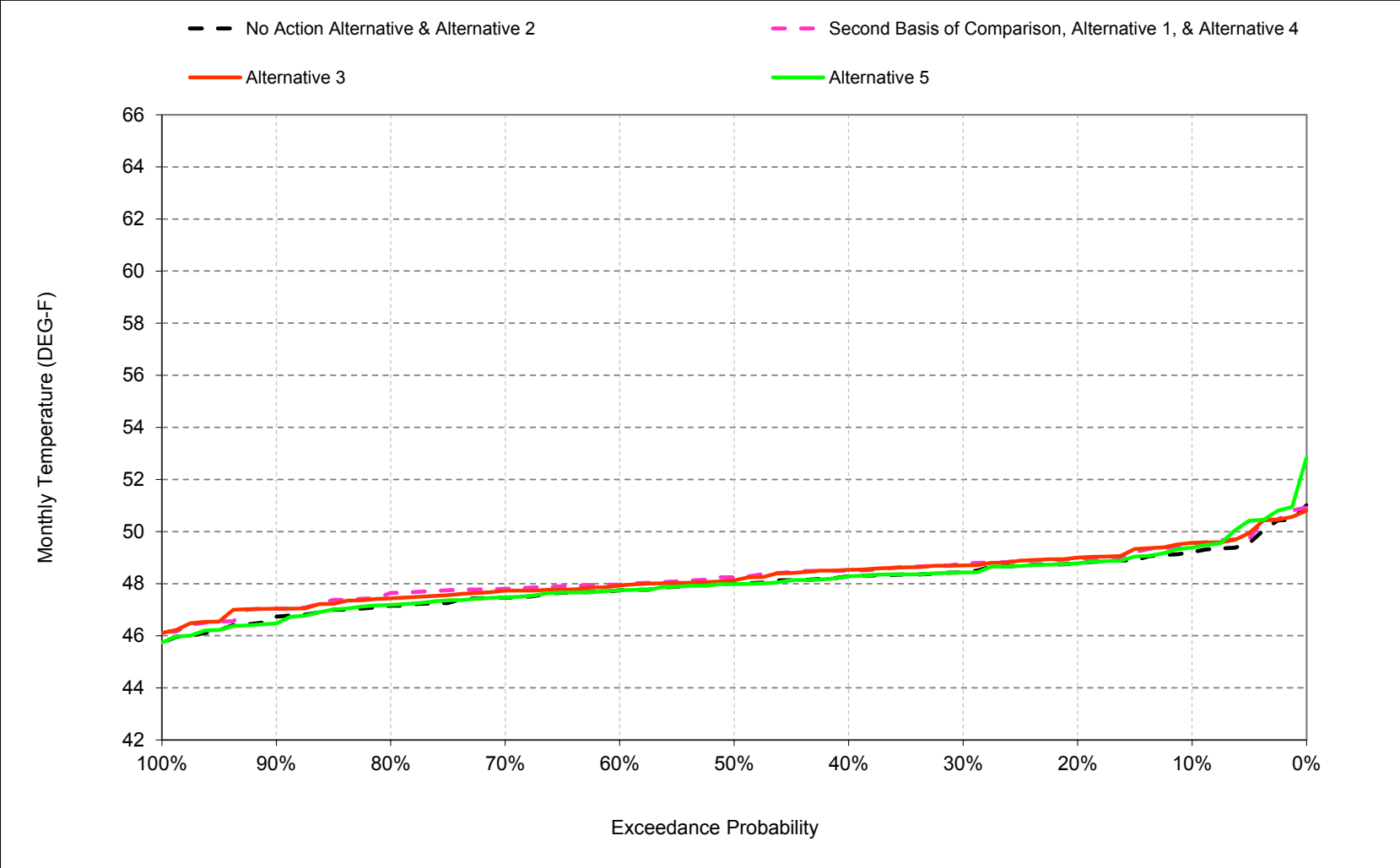
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-2-7. Clear Creek below Whiskeytown, April



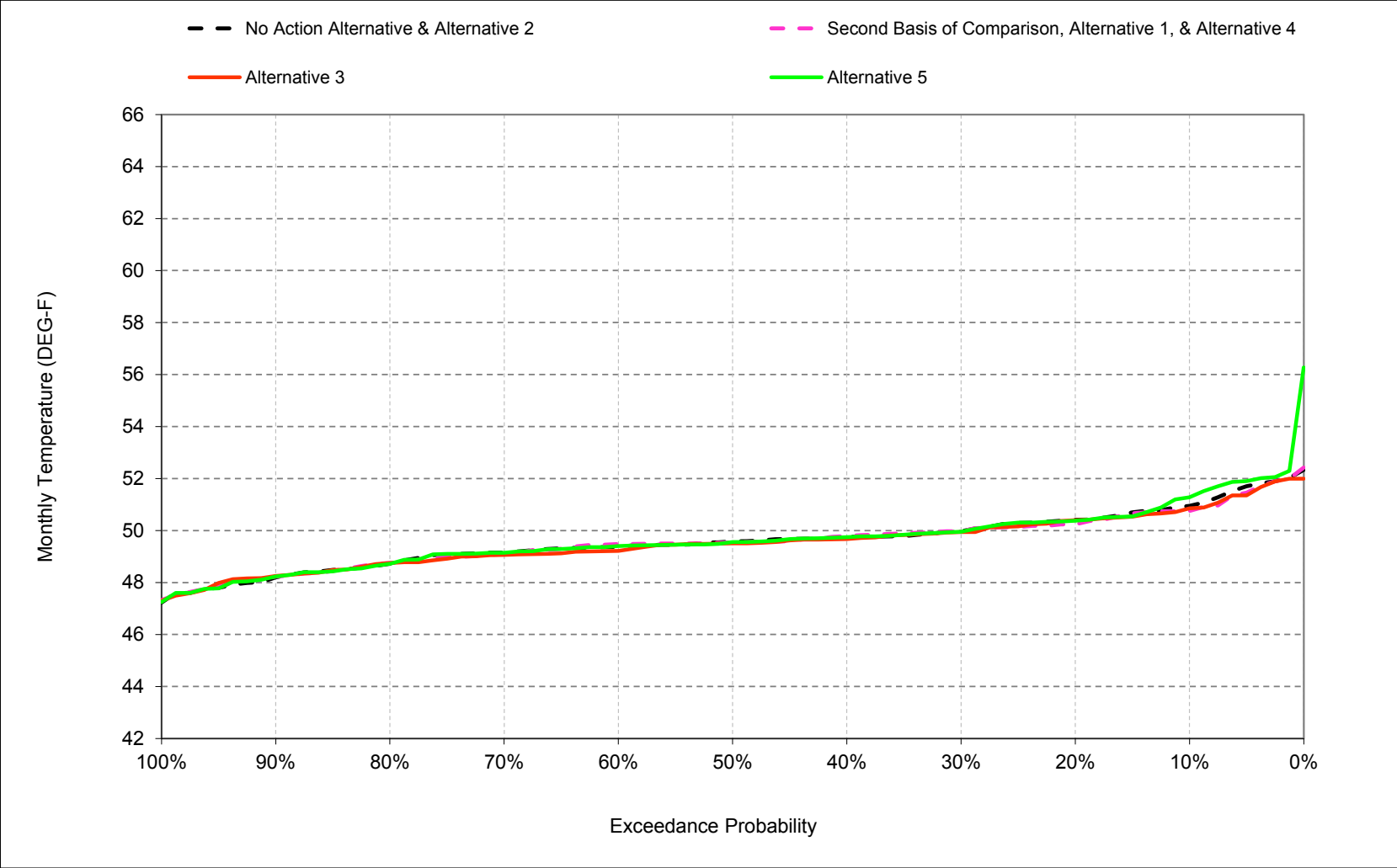
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-2-8. Clear Creek below Whiskeytown, May



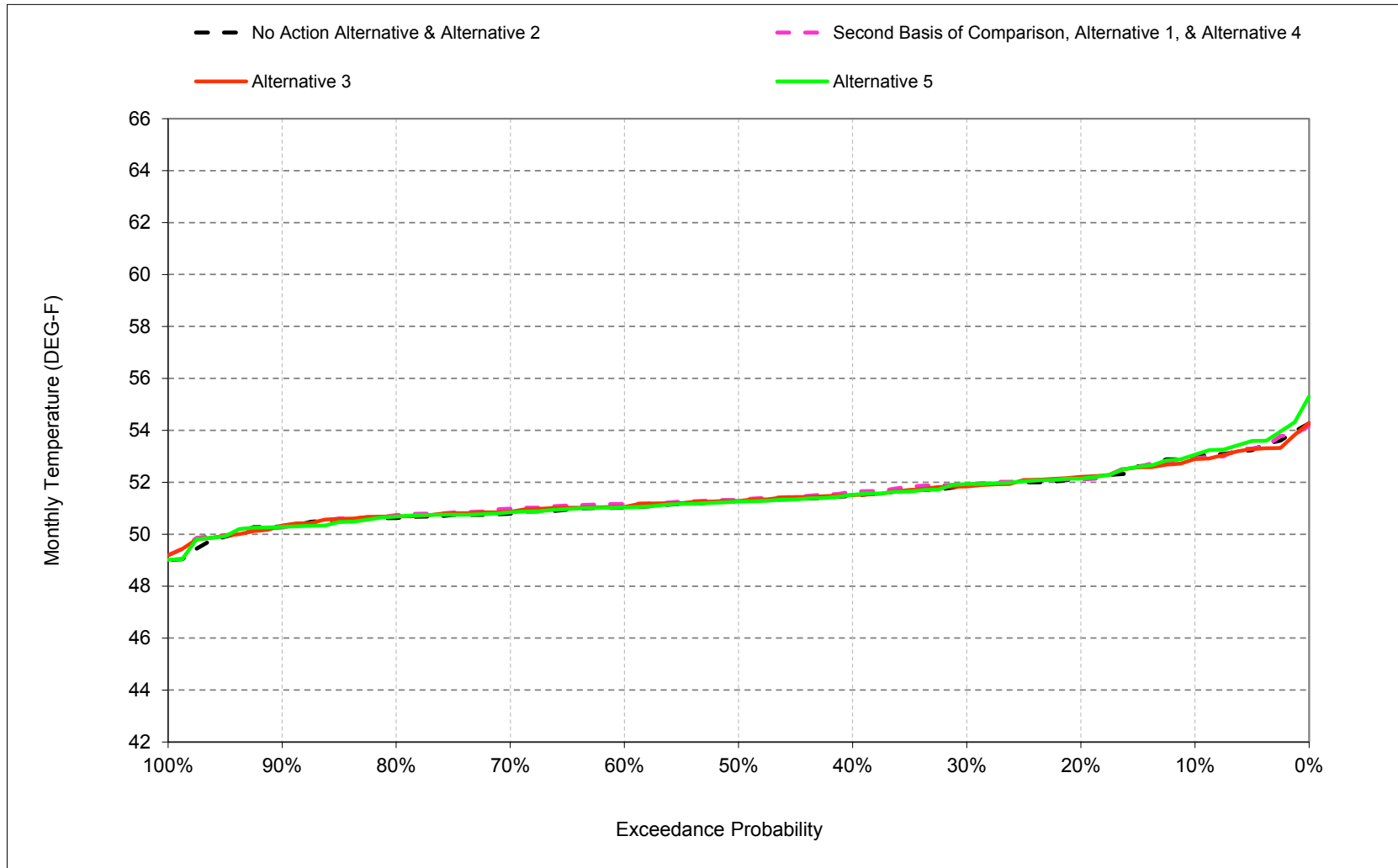
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-2-9. Clear Creek below Whiskeytown, June



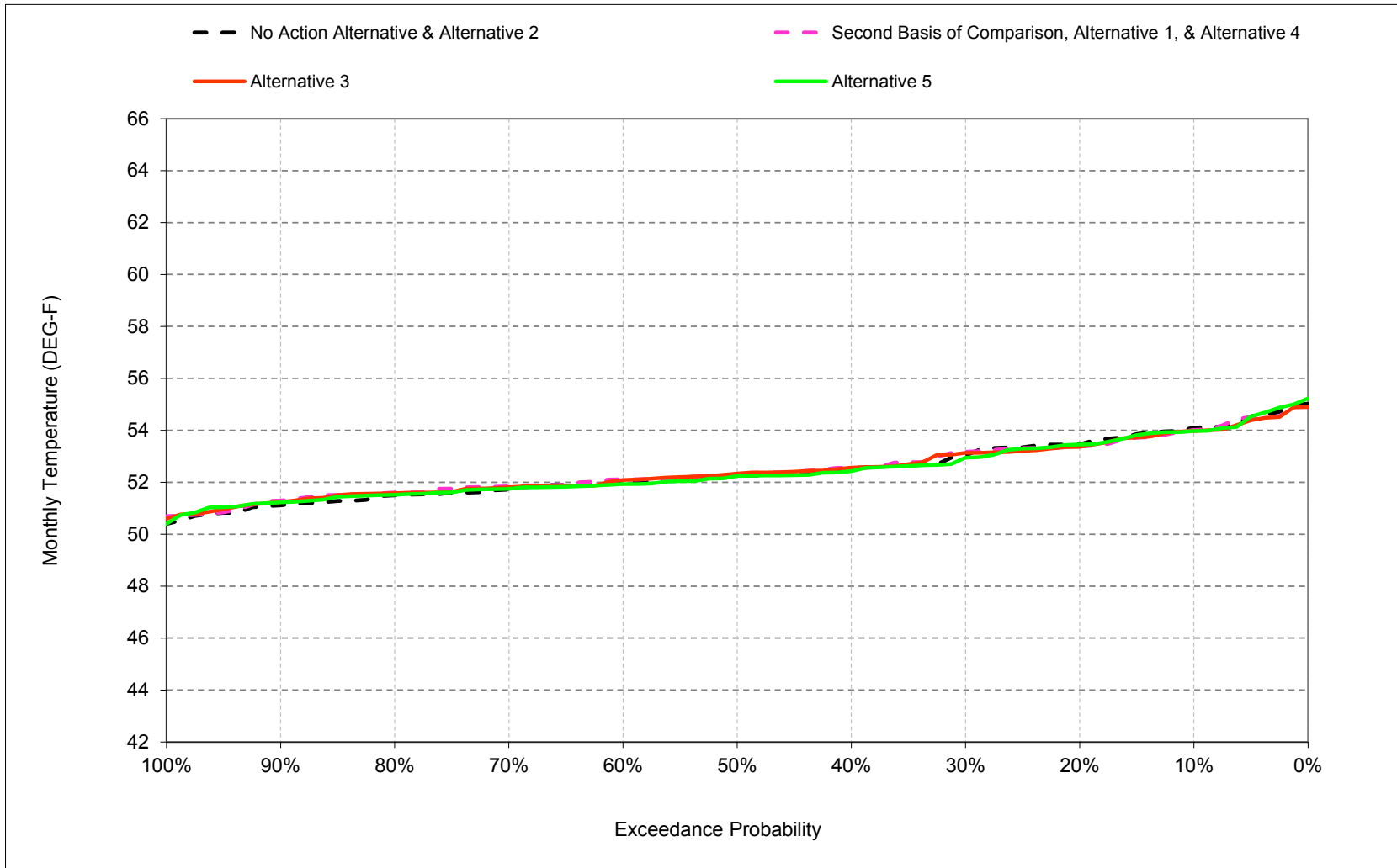
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-2-10. Clear Creek below Whiskeytown, July



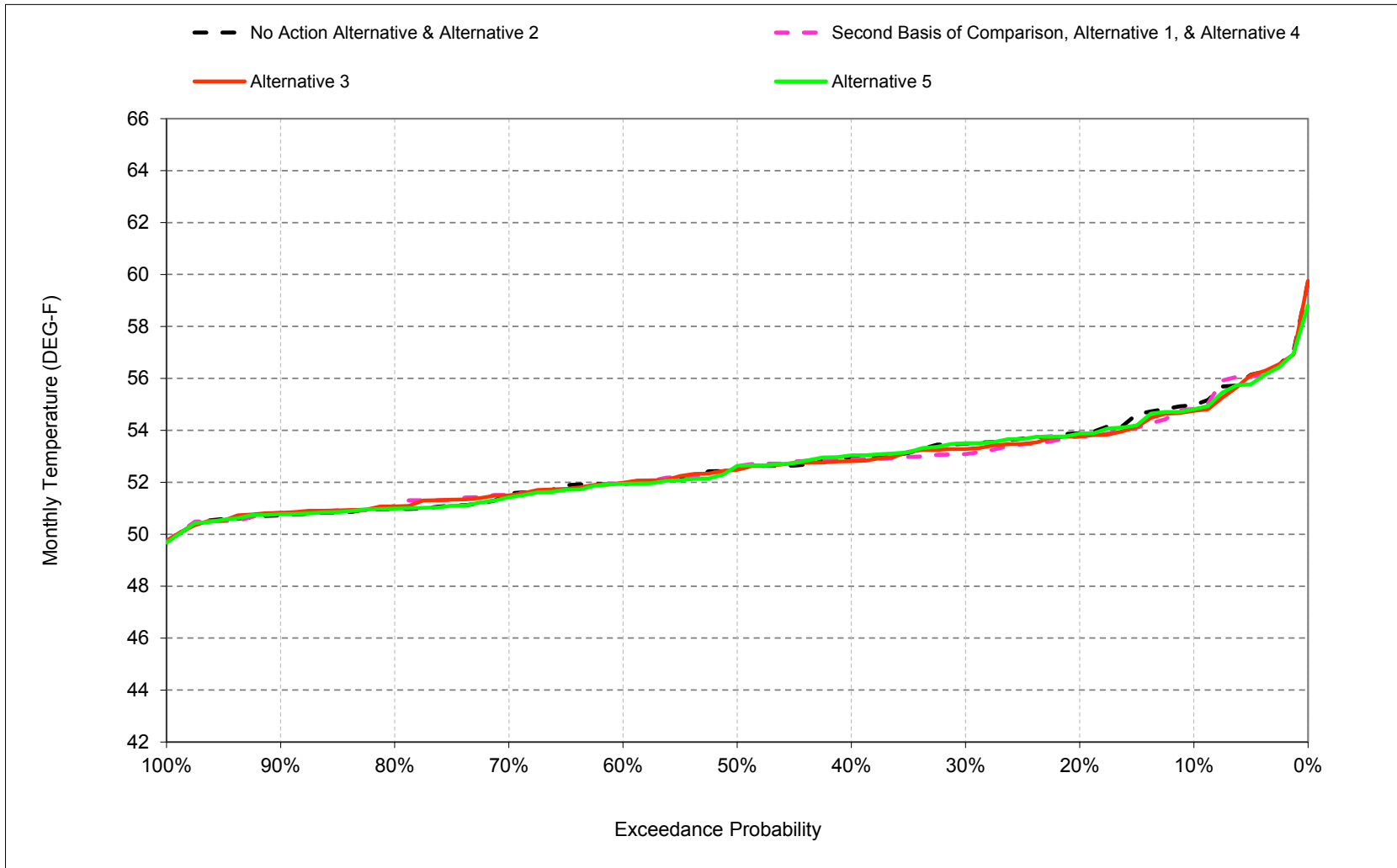
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-2-11. Clear Creek below Whiskeytown, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-2-12. Clear Creek below Whiskeytown, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-2-1. Clear Creek below Whiskeytown, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	56	52	49	46	46	47	48	49	51	53	54	55
20%	54	52	48	45	45	46	48	49	50	52	53	54
30%	54	51	47	45	45	46	47	48	50	52	53	53
40%	53	51	47	45	45	45	47	48	50	51	53	53
50%	53	50	47	44	44	45	47	48	50	51	52	52
60%	52	50	46	44	44	45	46	48	49	51	52	52
70%	51	50	46	44	44	45	46	47	49	51	52	51
80%	51	50	46	44	44	45	46	47	49	51	51	51
90%	50	49	46	43	43	44	45	47	48	50	51	51
Long Term												
Full Simulation Period ^b	53	51	47	45	45	45	47	48	50	51	52	53
Water Year Types ^c												
Wet (32%)	50	48	45	44	44	45	46	48	49	51	52	51
Above Normal (16%)	53	51	47	44	44	45	46	48	49	51	52	52
Below Normal (13%)	52	50	47	44	44	45	47	48	49	51	52	53
Dry (24%)	53	51	47	45	45	46	47	48	50	52	53	53
Critical (15%)	55	52	48	46	46	46	48	49	50	52	54	56

Alternative 1												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	55	52	49	46	46	47	48	50	51	53	54	55
20%	54	52	48	45	45	46	48	49	50	52	53	54
30%	53	51	47	45	45	46	47	49	50	52	53	53
40%	53	51	47	45	45	45	47	48	50	52	53	53
50%	52	50	46	44	44	45	47	48	50	51	52	53
60%	52	50	46	44	44	45	46	48	49	51	52	52
70%	51	50	46	44	44	45	46	48	49	51	52	52
80%	51	50	46	44	44	45	46	47	49	51	52	51
90%	50	49	45	43	43	44	45	47	48	50	51	51
Long Term												
Full Simulation Period ^b	53	51	47	45	44	45	47	48	50	51	52	53
Water Year Types ^c												
Wet (32%)	50	48	45	44	44	45	46	48	49	51	52	51
Above Normal (16%)	53	51	47	44	44	45	46	48	49	51	52	51
Below Normal (13%)	52	50	46	44	44	45	47	48	49	52	52	53
Dry (24%)	53	51	47	45	45	46	47	48	50	52	53	53
Critical (15%)	55	52	48	46	45	46	48	49	50	52	54	56

Alternative 1 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	-0.6	-0.1	-0.1	0.0	0.0	0.0	0.1	0.3	-0.2	-0.1	-0.1	-0.1
0.2	-0.3	-0.2	0.0	0.0	0.0	0.0	-0.1	0.2	-0.2	0.0	-0.1	-0.1
0.3	-0.3	0.0	0.0	0.0	0.0	-0.1	-0.1	0.3	0.0	0.0	0.1	-0.4
0.4	0.0	0.1	0.0	0.0	0.0	-0.2	-0.1	0.2	0.0	0.1	0.0	-0.1
0.5	-0.2	0.1	-0.1	0.0	0.0	-0.1	0.0	0.2	0.0	0.1	0.0	0.0
0.6	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.1	0.0
0.7	0.1	0.0	0.0	0.0	-0.1	0.0	0.1	0.3	-0.1	0.2	0.1	0.1
0.8	0.1	0.0	-0.1	0.0	0.0	0.0	0.0	0.4	0.1	0.1	0.1	0.2
0.9	0.0	-0.1	-0.2	-0.1	0.0	0.0	0.0	0.5	0.1	-0.1	0.2	0.1
Long Term												
Full Simulation Period ^b	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.1	0.1	0.0
Water Year Types ^c												
Wet (32%)	0.1	-0.1	0.0	0.0	0.0	-0.1	0.0	0.3	0.0	0.1	0.1	0.1
Above Normal (16%)	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.0	0.0	0.0	-0.1
Below Normal (13%)	-0.1	0.0	-0.2	0.0	0.0	-0.1	-0.1	0.4	0.2	0.2	0.1	0.0
Dry (24%)	-0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.2	-0.1	0.0	0.0	-0.2
Critical (15%)	-0.3	-0.1	-0.1	0.0	-0.1	-0.1	-0.1	0.1	0.0	0.1	0.1	-0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-2-2. Clear Creek below Whiskeytown, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	56	52	49	46	46	47	48	49	51	53	54	55
20%	54	52	48	45	45	46	48	49	50	52	53	54
30%	54	51	47	45	45	46	47	48	50	52	53	53
40%	53	51	47	45	45	45	47	48	50	51	53	53
50%	53	50	47	44	44	45	47	48	50	51	52	52
60%	52	50	46	44	44	45	46	48	49	51	52	52
70%	51	50	46	44	44	45	46	47	49	51	52	51
80%	51	50	46	44	44	45	46	47	49	51	51	51
90%	50	49	46	43	43	44	45	47	48	50	51	51
Long Term												
Full Simulation Period ^b	53	51	47	45	45	45	47	48	50	51	52	53
Water Year Types ^c												
Wet (32%)	50	48	45	44	44	45	46	48	49	51	52	51
Above Normal (16%)	53	51	47	44	44	45	46	48	49	51	52	52
Below Normal (13%)	52	50	47	44	44	45	47	48	49	51	52	53
Dry (24%)	53	51	47	45	45	46	47	48	50	52	53	53
Critical (15%)	55	52	48	46	46	46	48	49	50	52	54	56

Alternative 3												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	55	52	49	46	46	47	48	50	51	53	54	55
20%	54	52	48	45	45	46	48	49	50	52	53	54
30%	54	51	47	45	45	46	47	49	50	52	53	53
40%	53	51	47	45	45	45	47	49	50	51	53	53
50%	52	50	46	44	44	45	47	48	49	51	52	52
60%	52	50	46	44	44	45	46	48	49	51	52	52
70%	51	50	46	44	44	45	46	48	49	51	52	51
80%	51	50	46	44	44	45	46	47	49	51	52	51
90%	50	49	45	43	43	44	45	47	48	50	51	51
Long Term												
Full Simulation Period ^b	53	51	47	45	44	45	47	48	50	51	52	53
Water Year Types ^c												
Wet (32%)	50	48	45	44	44	45	46	48	49	51	52	51
Above Normal (16%)	53	51	47	44	44	45	46	48	49	51	52	51
Below Normal (13%)	52	50	46	44	44	45	47	48	49	52	52	53
Dry (24%)	53	51	47	45	45	46	47	48	49	52	53	53
Critical (15%)	54	52	48	46	45	46	48	49	50	52	54	56

Alternative 3 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	-0.6	-0.2	-0.1	0.0	0.0	0.0	0.1	0.4	-0.1	-0.1	-0.1	-0.2
0.2	-0.3	-0.3	0.1	0.0	0.0	0.0	0.0	0.2	0.0	0.1	-0.1	-0.1
0.3	-0.2	0.0	0.0	0.0	0.0	-0.1	-0.1	0.3	0.0	0.0	0.1	-0.2
0.4	-0.1	0.1	-0.1	0.0	0.0	-0.2	-0.1	0.3	-0.1	0.0	0.0	-0.1
0.5	-0.1	0.1	-0.1	0.0	0.0	-0.1	0.0	0.1	-0.1	0.0	0.1	0.0
0.6	0.1	-0.1	-0.1	0.0	-0.1	0.0	-0.1	0.2	-0.2	0.0	0.1	0.0
0.7	0.1	0.0	0.0	0.0	-0.1	0.0	0.0	0.2	-0.1	0.1	0.1	0.0
0.8	0.1	0.0	-0.1	-0.1	-0.1	0.0	0.0	0.3	0.1	0.1	0.1	0.1
0.9	0.0	-0.1	-0.3	0.0	0.0	0.0	-0.1	0.5	0.2	-0.1	0.1	0.1
Long Term												
Full Simulation Period ^b	-0.1	-0.1	-0.1	0.0	0.0	-0.1	0.0	0.3	-0.1	0.0	0.0	0.0
Water Year Types ^c												
Wet (32%)	0.1	-0.1	0.0	-0.1	0.0	-0.1	0.0	0.3	0.0	0.1	0.1	0.2
Above Normal (16%)	-0.1	0.0	-0.1	-0.1	0.0	0.0	0.0	0.3	-0.1	0.0	0.0	-0.1
Below Normal (13%)	0.0	0.0	-0.2	0.0	-0.1	-0.1	-0.1	0.4	0.1	0.1	0.1	-0.1
Dry (24%)	-0.4	0.0	0.0	0.0	0.0	0.0	-0.1	0.2	-0.2	-0.1	-0.1	-0.2
Critical (15%)	-0.4	-0.3	-0.2	-0.1	-0.1	-0.1	-0.1	0.0	-0.1	0.0	0.1	-0.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-2-3. Clear Creek below Whiskeytown, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	56	52	49	46	46	47	48	49	51	53	54	55
20%	54	52	48	45	45	46	48	49	50	52	53	54
30%	54	51	47	45	45	46	47	48	50	52	53	53
40%	53	51	47	45	45	45	47	48	50	51	53	53
50%	53	50	47	44	44	45	47	48	50	51	52	52
60%	52	50	46	44	44	45	46	48	49	51	52	52
70%	51	50	46	44	44	45	46	47	49	51	52	51
80%	51	50	46	44	44	45	46	47	49	51	51	51
90%	50	49	46	43	43	44	45	47	48	50	51	51
Long Term												
Full Simulation Period ^b	53	51	47	45	45	45	47	48	50	51	52	53
Water Year Types ^c												
Wet (32%)	50	48	45	44	44	45	46	48	49	51	52	51
Above Normal (16%)	53	51	47	44	44	45	46	48	49	51	52	52
Below Normal (13%)	52	50	47	44	44	45	47	48	49	51	52	53
Dry (24%)	53	51	47	45	45	46	47	48	50	52	53	53
Critical (15%)	55	52	48	46	46	46	48	49	50	52	54	56

Alternative 5												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	56	53	49	46	46	47	48	49	51	53	54	55
20%	54	52	48	45	45	46	48	49	50	52	53	54
30%	54	51	47	45	45	46	47	48	50	52	53	53
40%	53	51	47	45	45	45	47	48	50	51	52	53
50%	52	50	47	44	44	45	47	48	50	51	52	52
60%	52	50	46	44	44	45	46	48	49	51	52	52
70%	51	50	46	44	44	45	46	47	49	51	52	51
80%	51	50	46	44	44	45	46	47	49	51	52	51
90%	50	49	46	43	43	44	46	46	48	50	51	51
Long Term												
Full Simulation Period ^b	53	51	47	45	45	45	47	48	50	51	52	53
Water Year Types ^c												
Wet (32%)	50	48	45	44	44	45	46	48	49	51	52	51
Above Normal (16%)	53	51	47	44	44	45	46	48	49	51	52	51
Below Normal (13%)	52	50	47	44	44	45	47	48	49	52	52	53
Dry (24%)	53	51	47	45	45	46	47	48	50	52	53	53
Critical (15%)	55	52	48	46	46	46	48	49	51	52	53	56

Alternative 5 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.1	-0.1	-0.2
0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.3	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	0.0
0.4	-0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1
0.5	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0
0.6	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0
0.7	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
0.9	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	0.1	0.0	0.1	0.0
Long Term												
Full Simulation Period ^b	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0
Water Year Types ^c												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Above Normal (16%)	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Below Normal (13%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.1	0.1
Dry (24%)	-0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Critical (15%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.4	0.2	-0.2	-0.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-2-4. Clear Creek below Whiskeytown, Monthly Temperature

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Second Basis of Comparison												
Probability of Exceedance ^a												
10%	55	52	49	46	46	47	48	50	51	53	54	55
20%	54	52	48	45	45	46	48	49	50	52	53	54
30%	53	51	47	45	45	46	47	49	50	52	53	53
40%	53	51	47	45	45	45	47	48	50	52	53	53
50%	52	50	46	44	44	45	47	48	50	51	52	53
60%	52	50	46	44	44	45	46	48	49	51	52	52
70%	51	50	46	44	44	45	46	48	49	51	52	52
80%	51	50	46	44	44	45	46	47	49	51	52	51
90%	50	49	45	43	43	44	45	47	48	50	51	51
Long Term												
Full Simulation Period ^b	53	51	47	45	44	45	47	48	50	51	52	53
Water Year Types ^c												
Wet (32%)	50	48	45	44	44	45	46	48	49	51	52	51
Above Normal (16%)	53	51	47	44	44	45	46	48	49	51	52	51
Below Normal (13%)	52	50	46	44	44	45	47	48	49	52	52	53
Dry (24%)	53	51	47	45	45	46	47	48	50	52	53	53
Critical (15%)	55	52	48	46	45	46	48	49	50	52	54	56

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
No Action Alternative												
Probability of Exceedance ^a												
10%	56	52	49	46	46	47	48	49	51	53	54	55
20%	54	52	48	45	45	46	48	49	50	52	53	54
30%	54	51	47	45	45	46	47	48	50	52	53	53
40%	53	51	47	45	45	45	47	48	50	51	53	53
50%	53	50	47	44	44	45	47	48	50	51	52	52
60%	52	50	46	44	44	45	46	48	49	51	52	52
70%	51	50	46	44	44	45	46	47	49	51	52	51
80%	51	50	46	44	44	45	46	47	49	51	51	51
90%	50	49	46	43	43	44	45	47	48	50	51	51
Long Term												
Full Simulation Period ^b	53	51	47	45	45	45	47	48	50	51	52	53
Water Year Types ^c												
Wet (32%)	50	48	45	44	44	45	46	48	49	51	52	51
Above Normal (16%)	53	51	47	44	44	45	46	48	49	51	52	52
Below Normal (13%)	52	50	47	44	44	45	47	48	49	51	52	53
Dry (24%)	53	51	47	45	45	46	47	48	50	52	53	53
Critical (15%)	55	52	48	46	46	46	48	49	50	52	54	56

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
No Action Alternative minus Second Basis of Comparison												
Probability of Exceedance ^a												
0.1	0.6	0.1	0.1	0.0	0.0	0.0	-0.1	-0.3	0.2	0.1	0.1	0.1
0.2	0.3	0.2	0.0	0.0	0.0	0.0	0.1	-0.2	0.2	0.0	0.1	0.1
0.3	0.3	0.0	0.0	0.0	0.0	0.1	0.1	-0.3	0.0	0.0	-0.1	0.4
0.4	0.0	-0.1	0.0	0.0	0.0	0.2	0.1	-0.2	0.0	-0.1	0.0	0.1
0.5	0.2	-0.1	0.1	0.0	0.0	0.1	0.0	-0.2	0.0	-0.1	0.0	0.0
0.6	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	-0.1	-0.1	-0.1	0.0
0.7	-0.1	0.0	0.0	0.0	0.1	0.0	-0.1	-0.3	0.1	-0.2	-0.1	-0.1
0.8	-0.1	0.0	0.1	0.0	0.0	0.0	0.0	-0.4	-0.1	-0.1	-0.1	-0.2
0.9	0.0	0.1	0.2	0.1	0.0	0.0	0.0	-0.5	-0.1	0.1	-0.2	-0.1
Long Term												
Full Simulation Period ^b	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.3	0.0	-0.1	-0.1	0.0
Water Year Types ^c												
Wet (32%)	-0.1	0.1	0.0	0.0	0.0	0.1	0.0	-0.3	0.0	-0.1	-0.1	-0.1
Above Normal (16%)	0.1	0.0	0.0	0.0	0.0	0.0	-0.1	-0.4	0.0	0.0	0.0	0.1
Below Normal (13%)	0.1	0.0	0.2	0.0	0.0	0.1	0.1	-0.4	-0.2	-0.2	-0.1	0.0
Dry (24%)	0.4	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	0.1	0.0	0.0	0.2
Critical (15%)	0.3	0.1	0.1	0.0	0.1	0.1	0.1	-0.1	0.0	-0.1	-0.1	0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-2-5. Clear Creek below Whiskeytown, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	55	52	49	46	46	47	48	50	51	53	54	55
20%	54	52	48	45	45	46	48	49	50	52	53	54
30%	53	51	47	45	45	46	47	49	50	52	53	53
40%	53	51	47	45	45	45	47	48	50	52	53	53
50%	52	50	46	44	44	45	47	48	50	51	52	53
60%	52	50	46	44	44	45	46	48	49	51	52	52
70%	51	50	46	44	44	45	46	48	49	51	52	52
80%	51	50	46	44	44	45	46	47	49	51	52	51
90%	50	49	45	43	43	44	45	47	48	50	51	51
Long Term												
Full Simulation Period ^b	53	51	47	45	44	45	47	48	50	51	52	53
Water Year Types ^c												
Wet (32%)	50	48	45	44	44	45	46	48	49	51	52	51
Above Normal (16%)	53	51	47	44	44	45	46	48	49	51	52	51
Below Normal (13%)	52	50	46	44	44	45	47	48	49	52	52	53
Dry (24%)	53	51	47	45	45	46	47	48	50	52	53	53
Critical (15%)	55	52	48	46	45	46	48	49	50	52	54	56

Alternative 3

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	55	52	49	46	46	47	48	50	51	53	54	55
20%	54	52	48	45	45	46	48	49	50	52	53	54
30%	54	51	47	45	45	46	47	49	50	52	53	53
40%	53	51	47	45	45	45	47	49	50	51	53	53
50%	52	50	46	44	44	45	47	48	49	51	52	52
60%	52	50	46	44	44	45	46	48	49	51	52	52
70%	51	50	46	44	44	45	46	48	49	51	52	51
80%	51	50	46	44	44	45	46	47	49	51	52	51
90%	50	49	45	43	43	44	45	47	48	50	51	51
Long Term												
Full Simulation Period ^b	53	51	47	45	44	45	47	48	50	51	52	53
Water Year Types ^c												
Wet (32%)	50	48	45	44	44	45	46	48	49	51	52	51
Above Normal (16%)	53	51	47	44	44	45	46	48	49	51	52	51
Below Normal (13%)	52	50	46	44	44	45	47	48	49	52	52	53
Dry (24%)	53	51	47	45	45	46	47	48	49	52	53	53
Critical (15%)	54	52	48	46	45	46	48	49	50	52	54	56

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	-0.1
0.2	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.0
0.3	0.1	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	0.0	-0.1	-0.1	0.2
0.4	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	0.0	-0.1
0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	-0.1
0.6	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.3	-0.1	-0.1	0.0
0.7	0.0	0.1	0.0	0.0	0.0	0.0	-0.1	-0.1	0.0	-0.1	0.0	0.0
0.8	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	-0.1	0.0	0.0	0.0	-0.1
0.9	0.1	-0.1	-0.1	0.1	0.0	0.0	-0.1	0.0	0.0	0.0	-0.1	0.0
Long Term												
Full Simulation Period ^b	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Water Year Types ^c												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Above Normal (16%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.1
Below Normal (13%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	-0.1	0.0
Dry (24%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.1	0.0
Critical (15%)	-0.1	-0.2	-0.1	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	0.0	-0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-2-6. Clear Creek below Whiskeytown, Monthly Temperature

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Second Basis of Comparison												
Probability of Exceedance ^a												
10%	55	52	49	46	46	47	48	50	51	53	54	55
20%	54	52	48	45	45	46	48	49	50	52	53	54
30%	53	51	47	45	45	46	47	49	50	52	53	53
40%	53	51	47	45	45	45	47	48	50	52	53	53
50%	52	50	46	44	44	45	47	48	50	51	52	53
60%	52	50	46	44	44	45	46	48	49	51	52	52
70%	51	50	46	44	44	45	46	48	49	51	52	52
80%	51	50	46	44	44	45	46	47	49	51	52	51
90%	50	49	45	43	43	44	45	47	48	50	51	51
Long Term												
Full Simulation Period ^b	53	51	47	45	44	45	47	48	50	51	52	53
Water Year Types ^c												
Wet (32%)	50	48	45	44	44	45	46	48	49	51	52	51
Above Normal (16%)	53	51	47	44	44	45	46	48	49	51	52	51
Below Normal (13%)	52	50	46	44	44	45	47	48	49	52	52	53
Dry (24%)	53	51	47	45	45	46	47	48	50	52	53	53
Critical (15%)	55	52	48	46	45	46	48	49	50	52	54	56

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Alternative 5												
Probability of Exceedance ^a												
10%	56	53	49	46	46	47	48	49	51	53	54	55
20%	54	52	48	45	45	46	48	49	50	52	53	54
30%	54	51	47	45	45	46	47	48	50	52	53	53
40%	53	51	47	45	45	45	47	48	50	51	52	53
50%	52	50	47	44	44	45	47	48	50	51	52	52
60%	52	50	46	44	44	45	46	48	49	51	52	52
70%	51	50	46	44	44	45	46	47	49	51	52	51
80%	51	50	46	44	44	45	46	47	49	51	52	51
90%	50	49	46	43	43	44	46	46	48	50	51	51
Long Term												
Full Simulation Period ^b	53	51	47	45	45	45	47	48	50	51	52	53
Water Year Types ^c												
Wet (32%)	50	48	45	44	44	45	46	48	49	51	52	51
Above Normal (16%)	53	51	47	44	44	45	46	48	49	51	52	51
Below Normal (13%)	52	50	47	44	44	45	47	48	49	52	52	53
Dry (24%)	53	51	47	45	45	46	47	48	50	52	53	53
Critical (15%)	55	52	48	46	46	46	48	49	51	52	53	56

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Alternative 5 minus Second Basis of Comparison												
Probability of Exceedance ^a												
0.1	0.9	0.3	0.1	0.0	0.1	0.0	0.0	-0.2	0.5	0.1	0.0	0.0
0.2	0.3	0.2	0.0	0.0	0.0	0.0	0.1	-0.2	0.1	0.0	0.1	0.1
0.3	0.4	0.1	0.1	0.0	0.0	0.1	0.0	-0.3	0.0	0.0	-0.3	0.4
0.4	0.0	0.0	0.0	0.0	0.0	0.2	0.1	-0.2	0.0	-0.1	-0.1	0.1
0.5	0.1	-0.1	0.1	0.0	0.0	0.1	0.0	-0.3	0.0	-0.1	-0.1	-0.1
0.6	-0.3	0.0	0.0	0.0	0.1	0.0	0.0	-0.2	-0.1	-0.1	-0.2	0.0
0.7	-0.1	0.0	0.0	0.1	0.1	0.0	-0.1	-0.3	0.1	-0.2	-0.1	-0.1
0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.3	-0.1	0.0	-0.1	-0.1
0.9	0.0	0.1	0.2	0.1	0.0	0.0	0.1	-0.6	0.0	0.0	-0.1	-0.1
Long Term												
Full Simulation Period ^b	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	0.1	0.0	-0.1	0.0
Water Year Types ^c												
Wet (32%)	-0.1	0.1	0.0	0.0	0.0	0.1	0.0	-0.3	0.1	0.0	-0.1	-0.2
Above Normal (16%)	0.2	0.1	0.0	0.1	0.0	0.0	-0.1	-0.4	0.0	0.0	0.0	0.1
Below Normal (13%)	0.0	0.0	0.2	0.0	0.0	0.1	0.1	-0.2	-0.1	-0.1	0.0	0.1
Dry (24%)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	0.1	0.0	0.0	0.1
Critical (15%)	0.2	0.2	0.1	0.0	0.1	0.0	0.1	0.2	0.5	0.1	-0.3	-0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

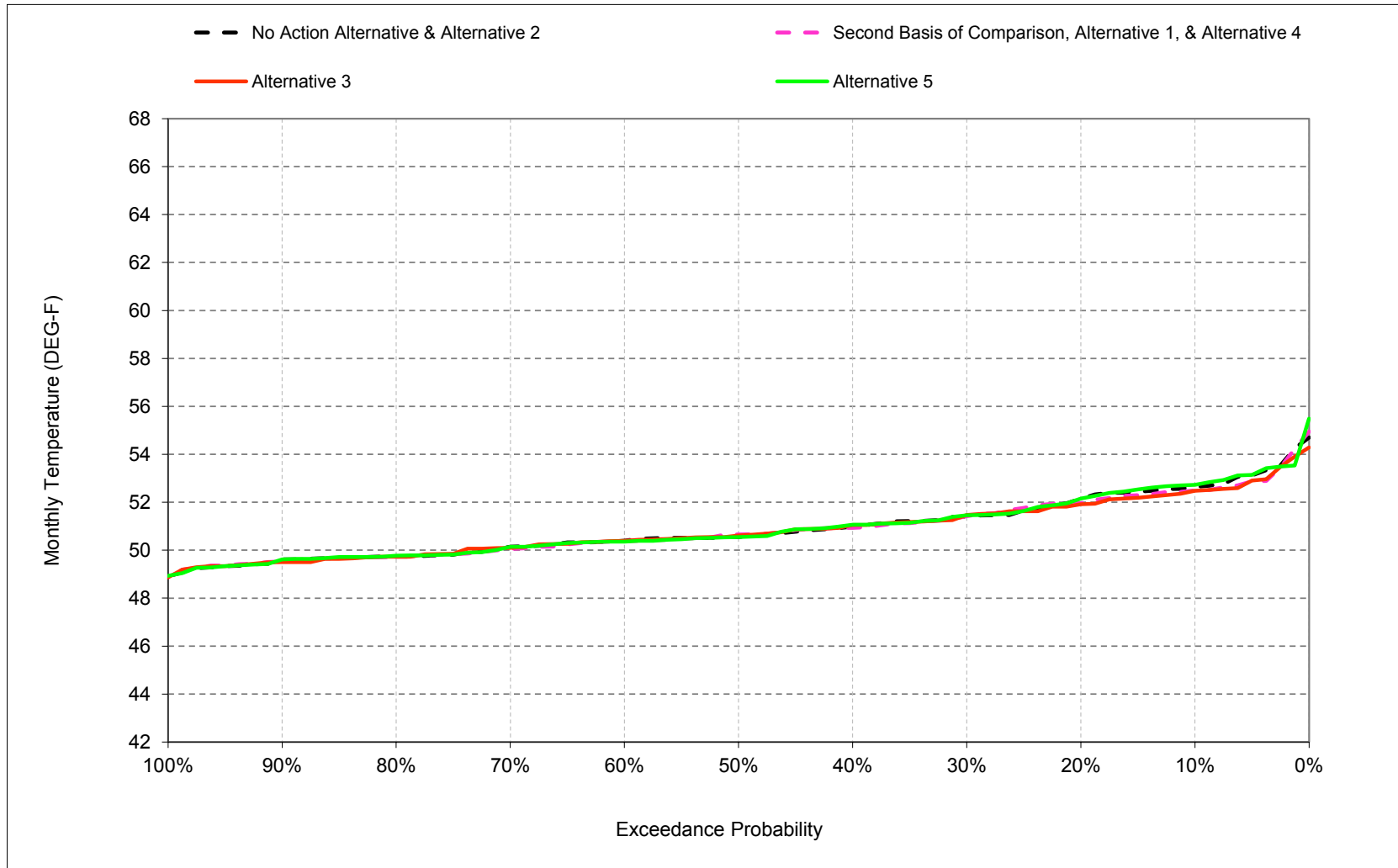
B.3. Clear Creek at Igo Temperature

Figure B-3-1. Clear Creek at Igo, October



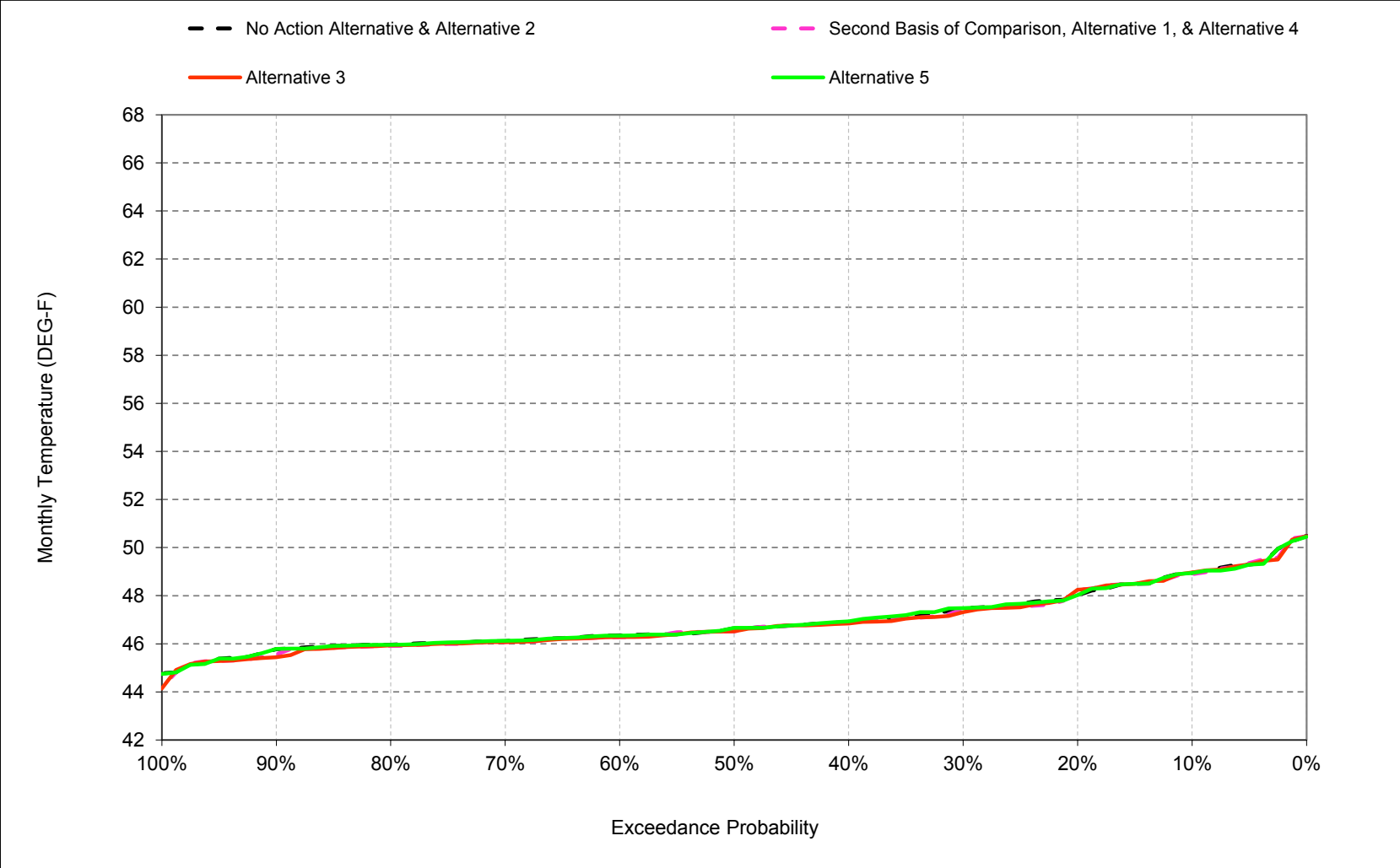
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-3-2. Clear Creek at Igo, November



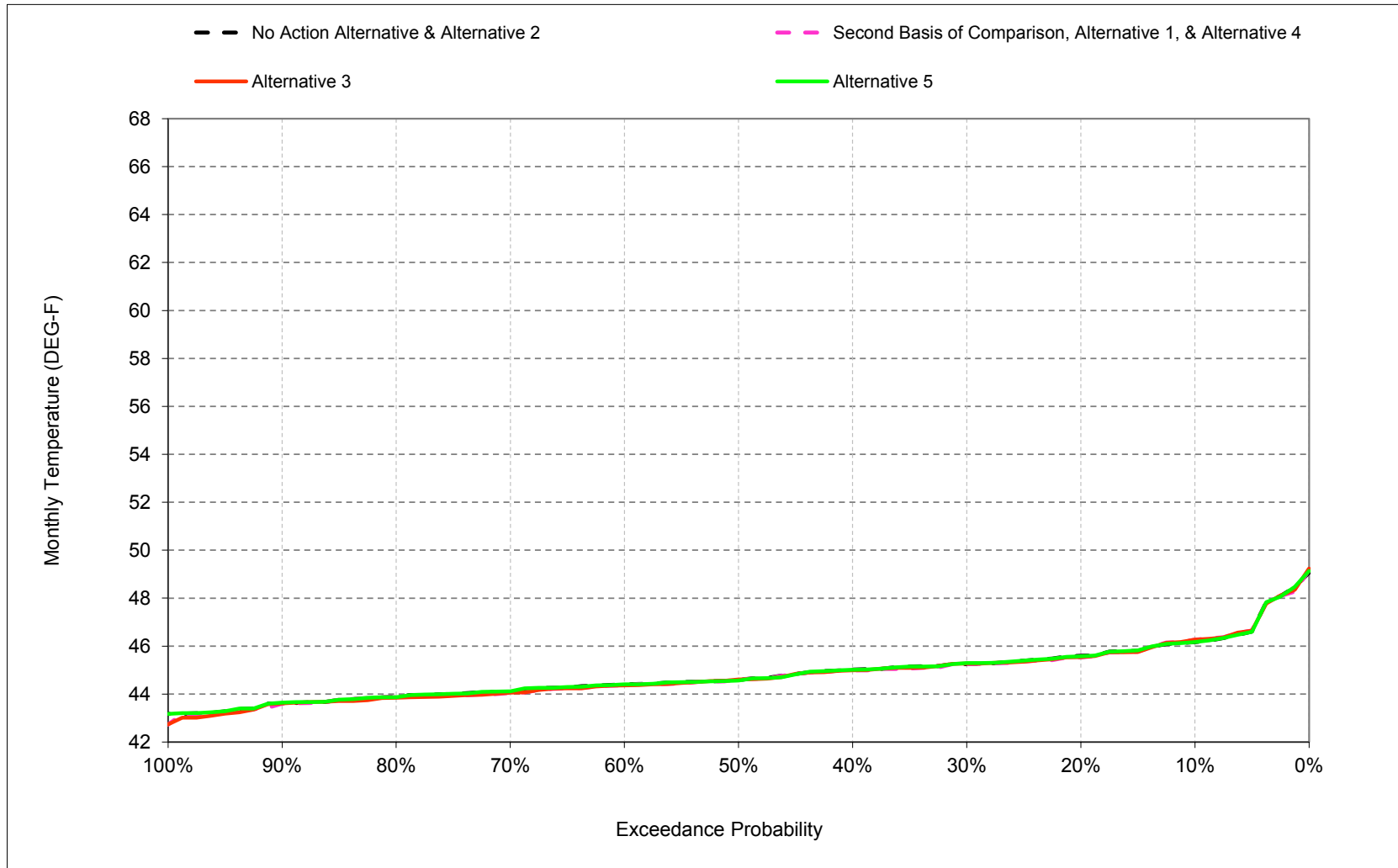
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-3-3. Clear Creek at Igo, December



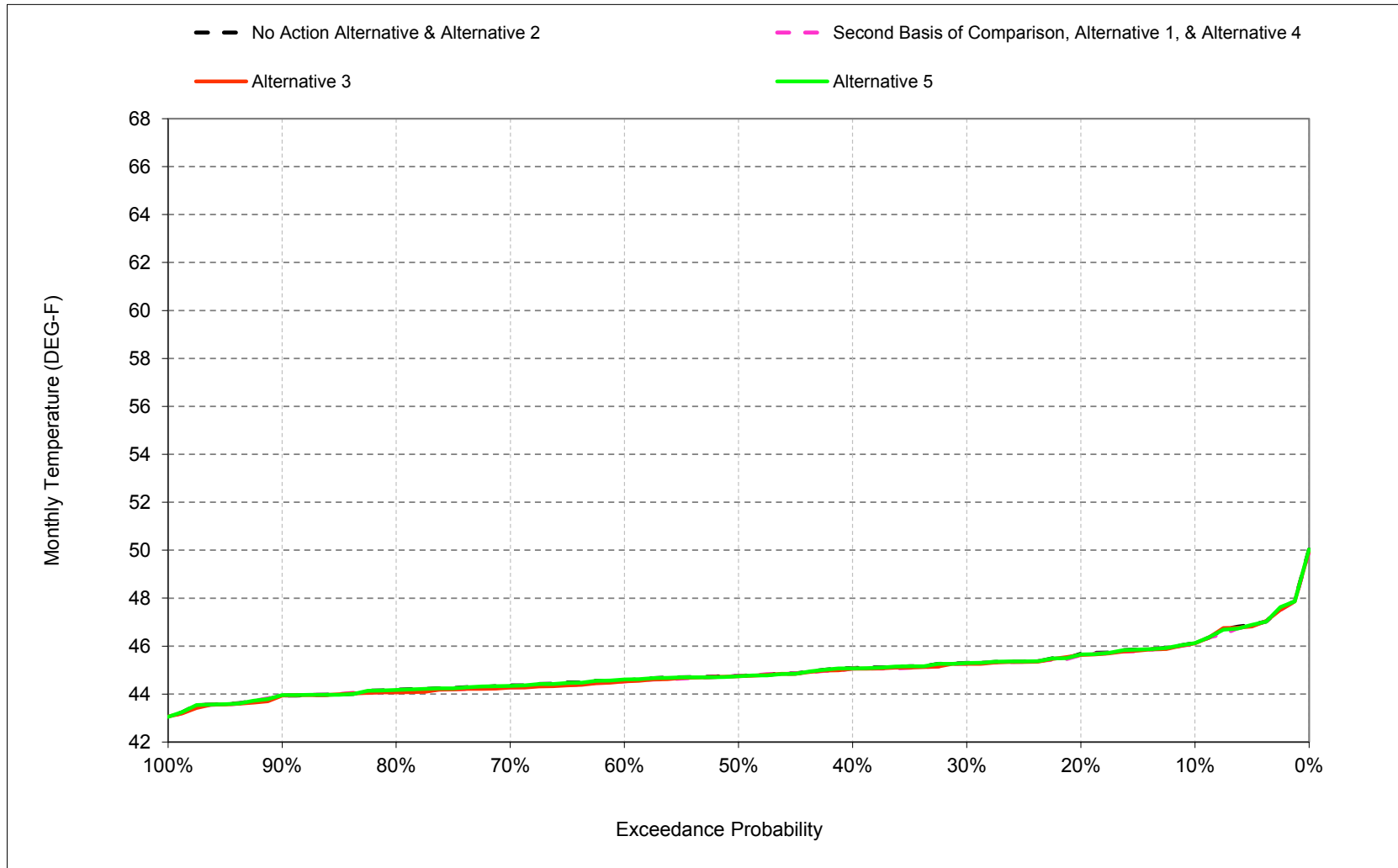
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-3-4. Clear Creek at Igo, January



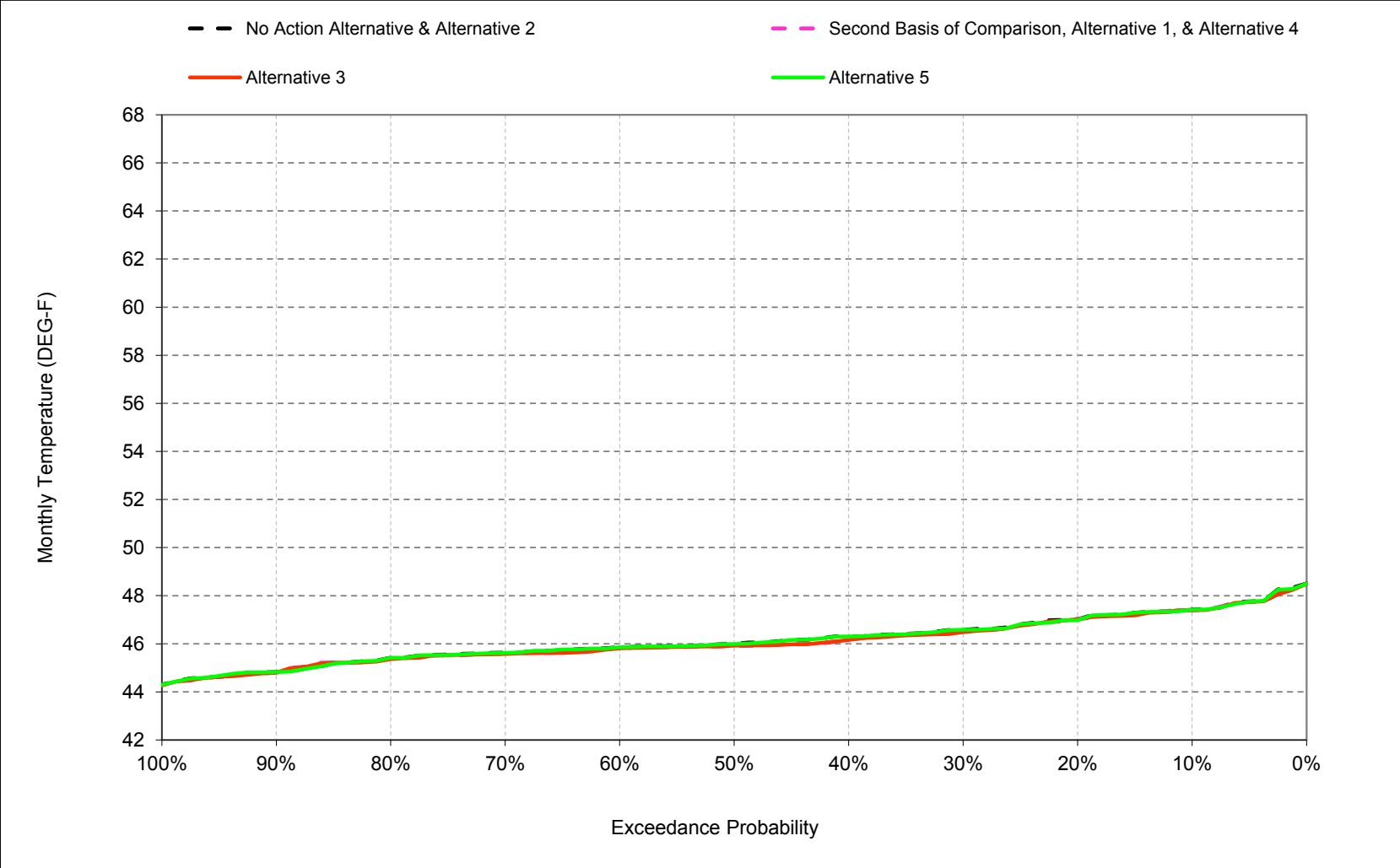
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-3-5. Clear Creek at Igo, February



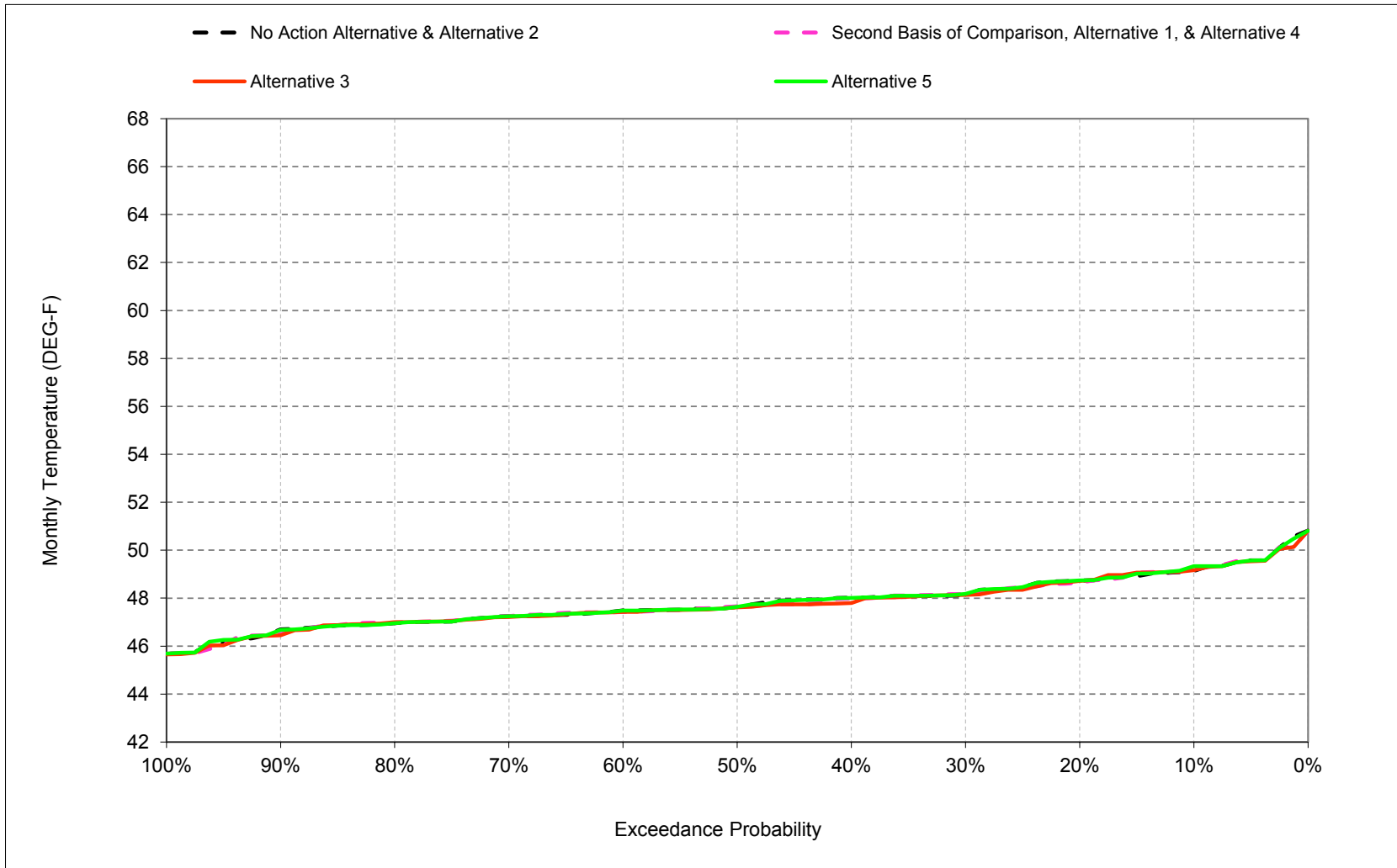
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-3-6. Clear Creek at Igo, March



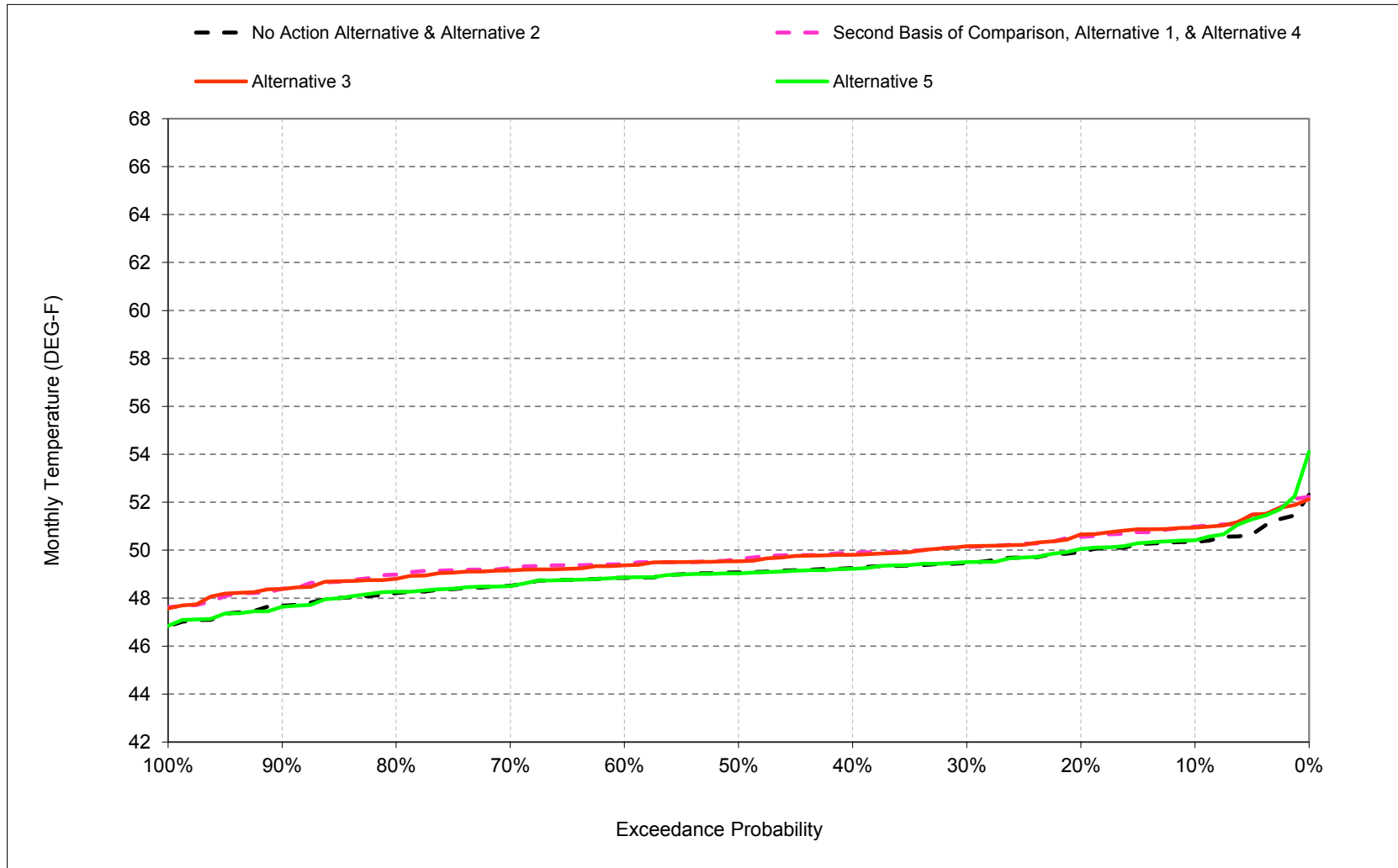
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-3-7. Clear Creek at Igo, April



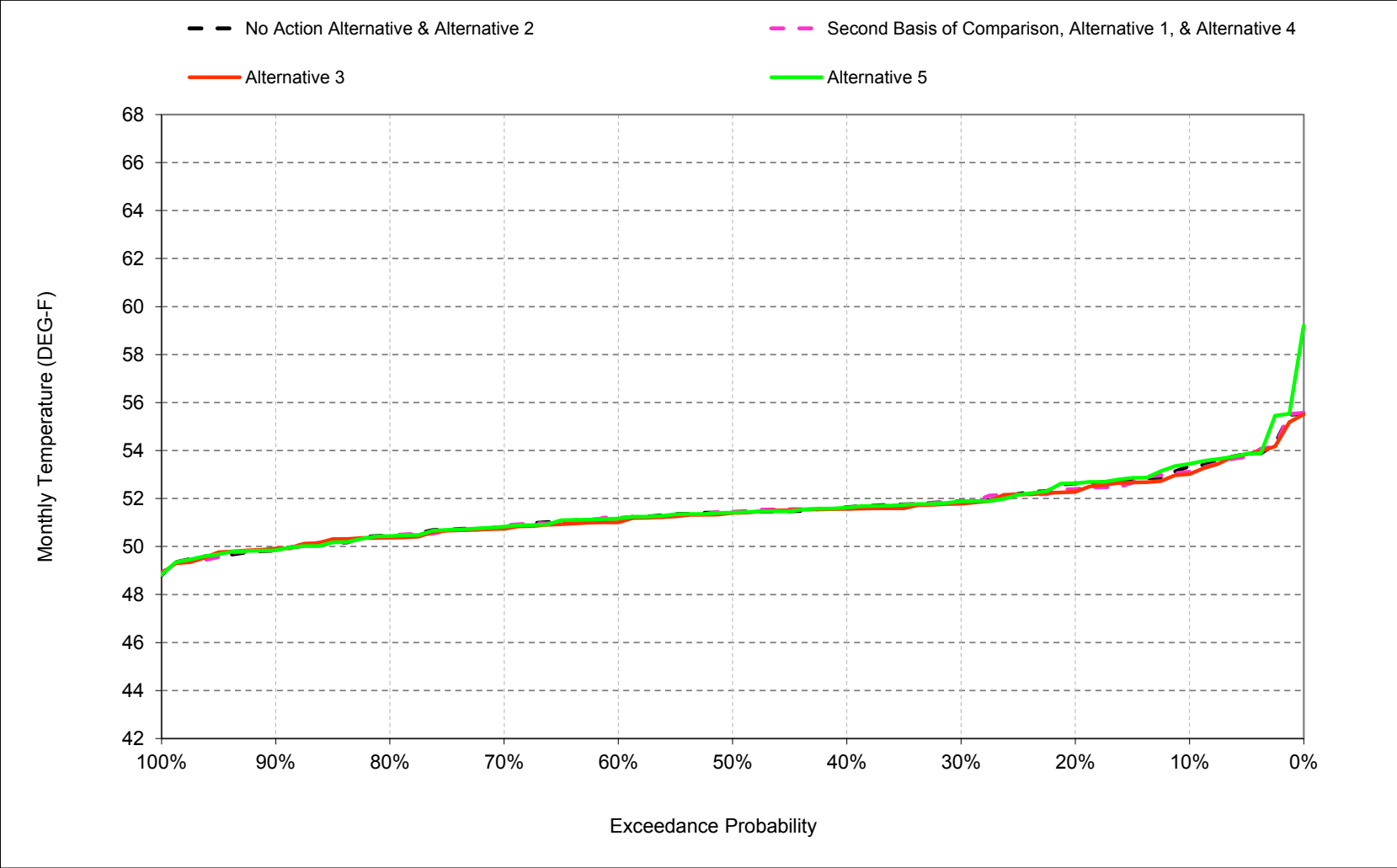
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-3-8. Clear Creek at Igo, May



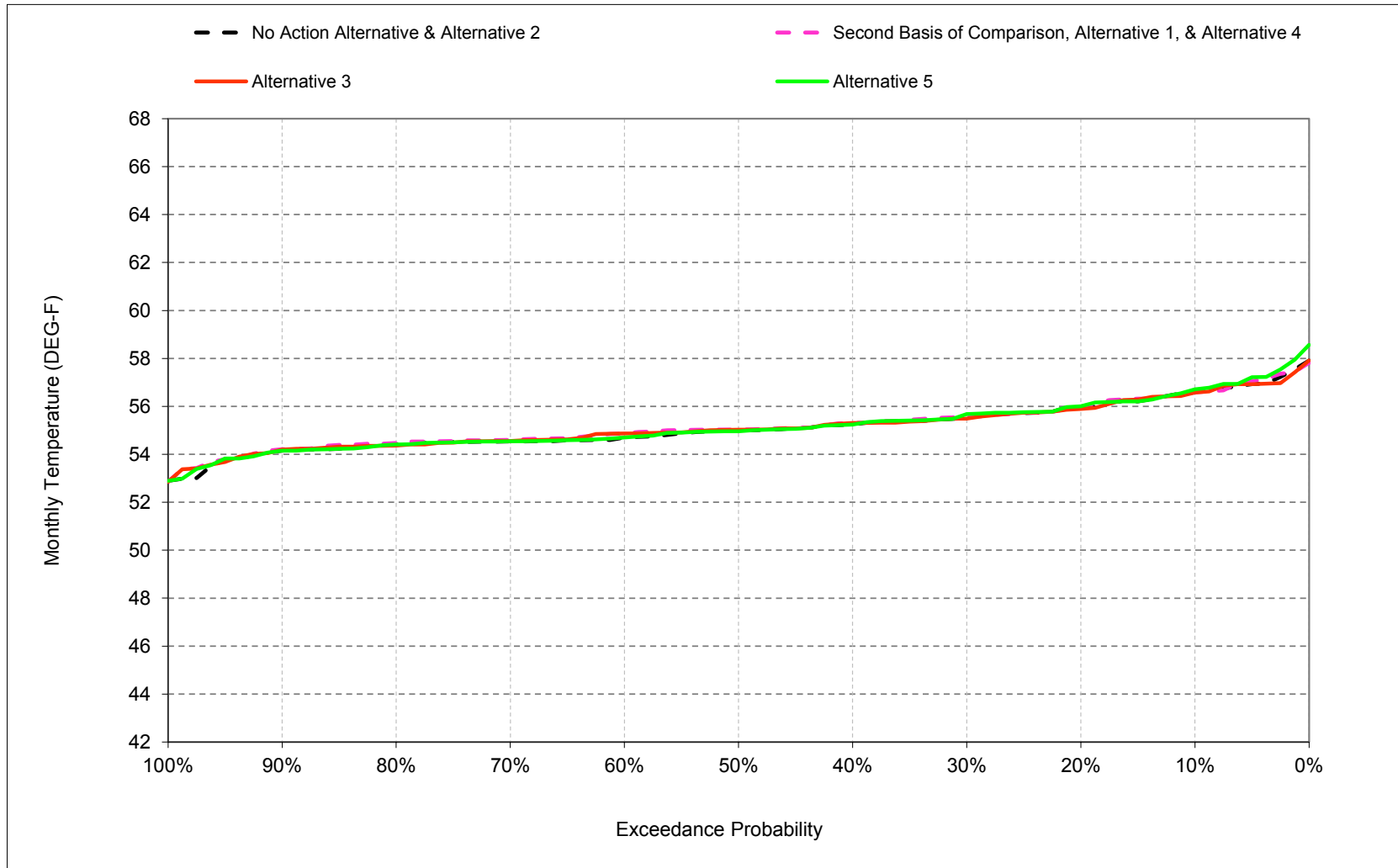
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-3-9. Clear Creek at Igo, June



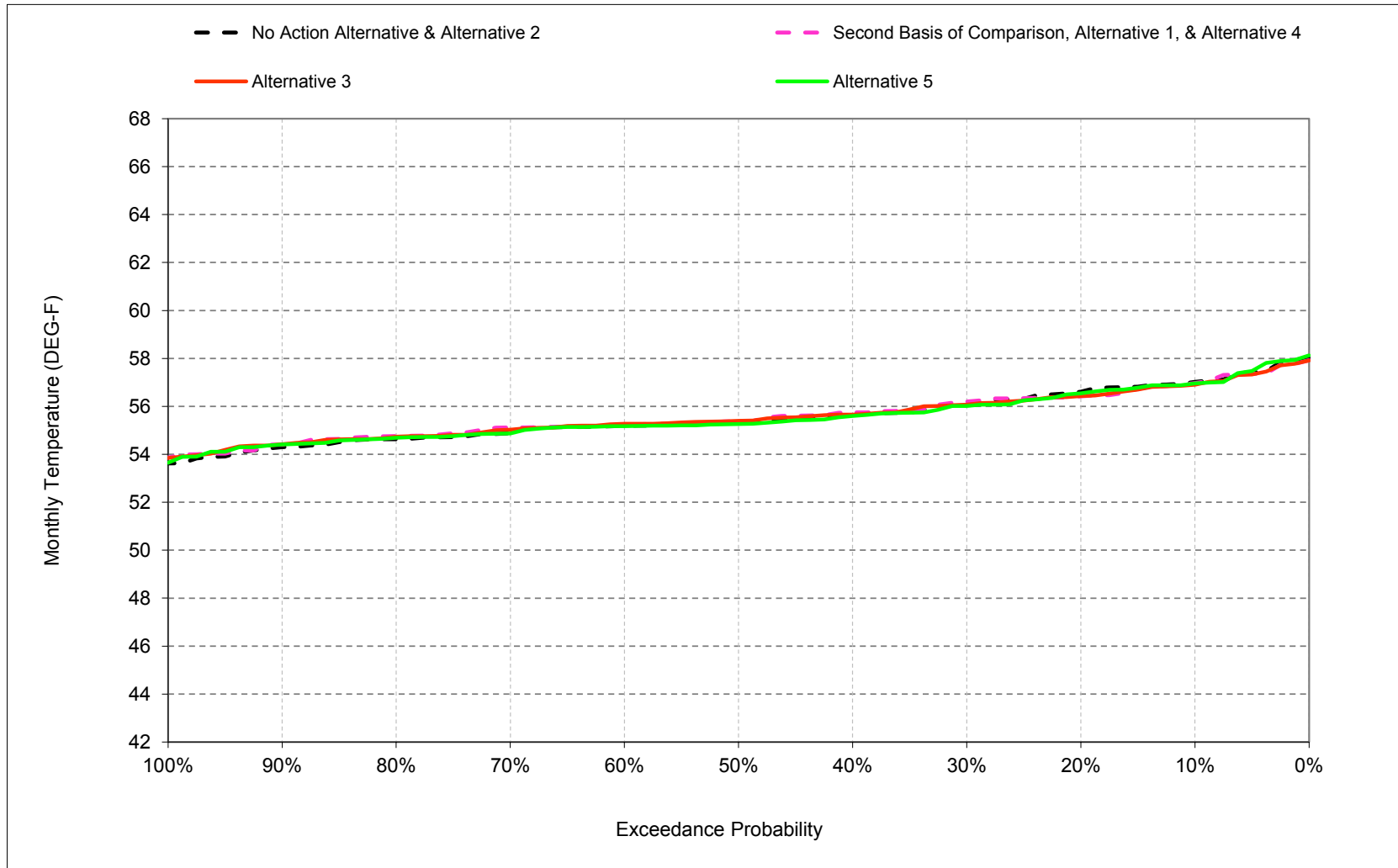
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-3-10. Clear Creek at Igo, July



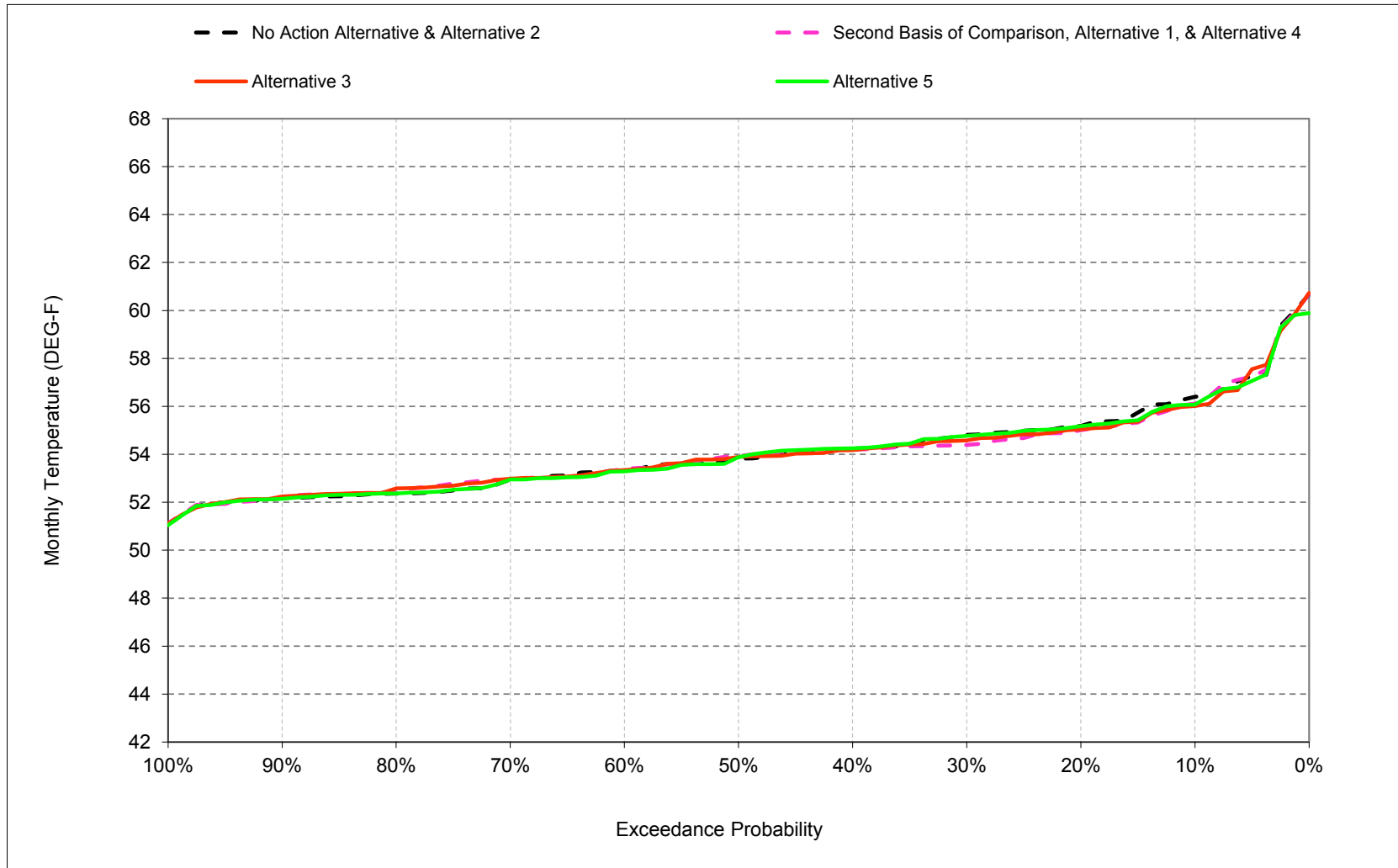
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-3-11. Clear Creek at Igo, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-3-12. Clear Creek at Igo, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-3-1. Clear Creek at Igo, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	56	53	49	46	46	47	49	50	53	57	57	56
20%	55	52	48	46	46	47	49	50	53	56	57	55
30%	54	51	47	45	45	47	48	49	52	55	56	55
40%	54	51	47	45	45	46	48	49	52	55	56	54
50%	53	51	47	45	45	46	48	49	51	55	55	54
60%	52	50	46	44	45	46	47	49	51	55	55	53
70%	52	50	46	44	44	46	47	48	51	55	55	53
80%	51	50	46	44	44	45	47	48	50	54	55	52
90%	51	50	46	44	44	45	46	48	50	54	54	52
Long Term												
Full Simulation Period ^b	53	51	47	45	45	46	48	49	51	55	56	54
Water Year Types ^c												
Wet (32%)	50	48	45	45	45	46	47	49	51	55	55	53
Above Normal (16%)	53	51	47	45	45	46	47	49	51	55	55	53
Below Normal (13%)	52	50	47	44	45	46	48	49	51	55	55	54
Dry (24%)	54	51	47	45	45	46	48	49	51	55	56	55
Critical (15%)	55	53	48	46	46	47	49	50	53	55	57	57

Alternative 1												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	56	52	49	46	46	47	49	51	53	57	57	56
20%	55	52	48	46	46	47	49	51	52	56	56	55
30%	54	51	47	45	45	47	48	50	52	56	56	54
40%	54	51	47	45	45	46	48	50	52	55	56	54
50%	53	51	47	45	45	46	48	50	51	55	55	54
60%	52	50	46	44	44	46	47	49	51	55	55	53
70%	52	50	46	44	44	46	47	49	51	55	55	53
80%	51	50	46	44	44	45	47	49	50	54	55	52
90%	51	50	46	43	44	45	46	48	50	54	54	52
Long Term												
Full Simulation Period ^b	53	51	47	45	45	46	48	50	51	55	56	54
Water Year Types ^c												
Wet (32%)	50	48	45	44	45	46	47	49	51	55	55	53
Above Normal (16%)	53	51	47	45	45	46	47	49	51	55	55	53
Below Normal (13%)	52	50	46	44	45	46	48	50	51	55	55	54
Dry (24%)	53	51	47	45	45	46	48	50	51	55	56	54
Critical (15%)	55	53	48	46	46	47	49	51	53	56	57	57

Alternative 1 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	-0.1	-0.2	-0.1	0.1	0.0	0.0	0.1	0.6	-0.2	-0.1	0.0	-0.3
0.2	-0.4	-0.2	0.2	-0.1	0.0	0.0	-0.1	0.6	-0.2	0.0	-0.2	-0.2
0.3	-0.4	0.0	0.0	0.0	0.0	-0.1	0.1	0.7	0.0	0.1	0.1	-0.4
0.4	-0.1	0.0	0.0	0.0	0.0	-0.2	0.0	0.6	0.0	0.1	0.1	0.0
0.5	-0.2	0.1	-0.1	0.0	0.0	-0.1	0.0	0.5	0.0	0.1	0.1	0.1
0.6	0.1	0.0	-0.1	0.0	-0.1	0.0	0.0	0.6	0.1	0.2	0.0	0.0
0.7	0.1	-0.1	0.0	-0.1	-0.1	0.0	0.0	0.7	0.0	0.1	0.2	0.0
0.8	0.1	0.0	0.0	0.0	-0.1	0.0	0.1	0.8	0.0	0.1	0.1	0.1
0.9	0.1	-0.1	-0.2	-0.2	0.0	0.0	0.0	0.6	0.0	0.1	0.1	0.0
Long Term												
Full Simulation Period ^b	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.1	0.1	0.0
Water Year Types ^c												
Wet (32%)	0.1	-0.1	0.0	0.0	0.0	-0.1	0.0	0.6	0.0	0.1	0.1	0.1
Above Normal (16%)	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.7	0.0	0.0	0.0	-0.1
Below Normal (13%)	-0.1	0.0	-0.2	0.0	0.0	-0.1	-0.1	0.8	0.2	0.1	0.1	0.0
Dry (24%)	-0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.6	-0.1	0.0	0.0	-0.1
Critical (15%)	-0.3	-0.1	-0.1	0.0	-0.1	0.0	-0.1	0.4	0.0	0.1	0.1	-0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-3-2. Clear Creek at Igo, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	56	53	49	46	46	47	49	50	53	57	57	56
20%	55	52	48	46	46	47	49	50	53	56	57	55
30%	54	51	47	45	45	47	48	49	52	55	56	55
40%	54	51	47	45	45	46	48	49	52	55	56	54
50%	53	51	47	45	45	46	48	49	51	55	55	54
60%	52	50	46	44	45	46	47	49	51	55	55	53
70%	52	50	46	44	44	46	47	48	51	55	55	53
80%	51	50	46	44	44	45	47	48	50	54	55	52
90%	51	50	46	44	44	45	46	48	50	54	54	52
Long Term												
Full Simulation Period ^b	53	51	47	45	45	46	48	49	51	55	56	54
Water Year Types ^c												
Wet (32%)	50	48	45	45	45	46	47	49	51	55	55	53
Above Normal (16%)	53	51	47	45	45	46	47	49	51	55	55	53
Below Normal (13%)	52	50	47	44	45	46	48	49	51	55	55	54
Dry (24%)	54	51	47	45	45	46	48	49	51	55	56	55
Critical (15%)	55	53	48	46	46	47	49	50	53	55	57	57

Alternative 3												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	56	52	49	46	46	47	49	51	53	57	57	56
20%	55	52	48	46	46	47	49	51	52	56	56	55
30%	54	51	47	45	45	46	48	50	52	55	56	55
40%	54	51	47	45	45	46	48	50	52	55	56	54
50%	53	51	47	45	45	46	48	50	51	55	55	54
60%	52	50	46	44	44	46	47	49	51	55	55	53
70%	52	50	46	44	44	46	47	49	51	55	55	53
80%	51	50	46	44	44	45	47	49	50	54	55	53
90%	51	49	45	44	44	45	46	48	50	54	54	52
Long Term												
Full Simulation Period ^b	53	51	47	45	45	46	48	50	51	55	56	54
Water Year Types ^c												
Wet (32%)	50	48	45	44	45	46	47	49	51	55	55	53
Above Normal (16%)	53	51	47	45	45	46	47	49	51	55	55	53
Below Normal (13%)	52	50	46	44	45	46	48	49	51	55	55	54
Dry (24%)	53	51	47	45	45	46	48	50	51	55	56	54
Critical (15%)	55	52	48	46	46	47	49	51	53	55	57	57

Alternative 3 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	-0.1	-0.2	0.0	0.1	0.0	0.0	0.0	0.6	-0.3	-0.1	-0.1	-0.4
0.2	-0.3	-0.2	0.2	-0.1	0.0	0.0	0.0	0.7	-0.4	-0.1	-0.2	-0.1
0.3	-0.2	0.1	-0.2	0.0	0.0	-0.1	0.0	0.7	-0.1	0.0	0.0	-0.2
0.4	-0.1	0.1	0.0	0.0	0.0	-0.2	-0.2	0.6	0.0	0.1	0.0	-0.1
0.5	-0.1	0.1	-0.1	0.0	0.0	-0.1	0.0	0.5	-0.1	0.0	0.1	0.1
0.6	0.2	0.0	-0.1	0.0	-0.1	0.0	0.0	0.5	-0.1	0.2	0.1	0.0
0.7	0.1	0.0	0.0	-0.1	-0.1	-0.1	0.0	0.7	0.0	0.0	0.2	0.0
0.8	0.1	0.0	0.0	0.0	-0.1	0.0	0.0	0.6	-0.1	0.0	0.0	0.2
0.9	0.0	-0.1	-0.3	0.0	-0.1	0.0	0.0	0.7	0.1	0.0	0.1	0.1
Long Term												
Full Simulation Period ^b	-0.2	-0.1	-0.1	0.0	0.0	-0.1	0.0	0.6	-0.1	0.0	0.0	0.0
Water Year Types ^c												
Wet (32%)	0.1	-0.1	0.0	-0.1	0.0	-0.1	0.0	0.6	0.0	0.1	0.1	0.2
Above Normal (16%)	-0.1	0.0	-0.1	-0.1	0.0	0.0	0.0	0.7	-0.1	0.0	0.0	-0.1
Below Normal (13%)	0.0	0.0	-0.2	0.0	-0.1	-0.1	-0.1	0.8	0.1	0.1	0.1	-0.1
Dry (24%)	-0.5	0.0	0.0	0.0	0.0	0.0	-0.1	0.6	-0.2	-0.1	-0.1	-0.1
Critical (15%)	-0.4	-0.3	-0.2	-0.1	-0.1	-0.1	-0.1	0.4	-0.1	0.0	0.1	-0.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-3-3. Clear Creek at Igo, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	56	53	49	46	46	47	49	50	53	57	57	56
20%	55	52	48	46	46	47	49	50	53	56	57	55
30%	54	51	47	45	45	47	48	49	52	55	56	55
40%	54	51	47	45	45	46	48	49	52	55	56	54
50%	53	51	47	45	45	46	48	49	51	55	55	54
60%	52	50	46	44	45	46	47	49	51	55	55	53
70%	52	50	46	44	44	46	47	48	51	55	55	53
80%	51	50	46	44	44	45	47	48	50	54	55	52
90%	51	50	46	44	44	45	46	48	50	54	54	52
Long Term												
Full Simulation Period ^b	53	51	47	45	45	46	48	49	51	55	56	54
Water Year Types ^c												
Wet (32%)	50	48	45	45	45	46	47	49	51	55	55	53
Above Normal (16%)	53	51	47	45	45	46	47	49	51	55	55	53
Below Normal (13%)	52	50	47	44	45	46	48	49	51	55	55	54
Dry (24%)	54	51	47	45	45	46	48	49	51	55	56	55
Critical (15%)	55	53	48	46	46	47	49	50	53	55	57	57

Alternative 5												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	56	53	49	46	46	47	49	50	53	57	57	56
20%	55	52	48	46	46	47	49	50	53	56	57	55
30%	54	51	47	45	45	47	48	49	52	56	56	55
40%	54	51	47	45	45	46	48	49	52	55	56	54
50%	53	51	47	45	45	46	48	49	51	55	55	54
60%	52	50	46	44	45	46	47	49	51	55	55	53
70%	52	50	46	44	44	46	47	48	51	55	55	53
80%	51	50	46	44	44	45	47	48	50	54	55	52
90%	51	50	46	44	44	45	46	47	50	54	54	52
Long Term												
Full Simulation Period ^b	53	51	47	45	45	46	48	49	52	55	56	54
Water Year Types ^c												
Wet (32%)	50	48	45	45	45	46	47	49	51	55	55	53
Above Normal (16%)	54	51	47	45	45	46	47	49	51	55	55	53
Below Normal (13%)	52	50	47	44	45	46	48	49	51	55	55	54
Dry (24%)	54	51	47	45	45	46	48	49	51	55	56	55
Critical (15%)	55	53	48	46	46	47	49	50	54	56	56	57

Alternative 5 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.1	-0.1	-0.3
0.2	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	-0.1	0.0
0.3	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
0.4	-0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0
0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0
0.6	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
0.9	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	0.0	0.0	0.1	0.0
Long Term												
Full Simulation Period ^b	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0
Water Year Types ^c												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Above Normal (16%)	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Below Normal (13%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.1	0.1
Dry (24%)	-0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Critical (15%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.4	0.2	-0.2	-0.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-3-4. Clear Creek at Igo, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	56	52	49	46	46	47	49	51	53	57	57	56
20%	55	52	48	46	46	47	49	51	52	56	56	55
30%	54	51	47	45	45	47	48	50	52	56	56	54
40%	54	51	47	45	45	46	48	50	52	55	56	54
50%	53	51	47	45	45	46	48	50	51	55	55	54
60%	52	50	46	44	44	46	47	49	51	55	55	53
70%	52	50	46	44	44	46	47	49	51	55	55	53
80%	51	50	46	44	44	45	47	49	50	54	55	52
90%	51	50	46	43	44	45	46	48	50	54	54	52
Long Term												
Full Simulation Period ^b	53	51	47	45	45	46	48	50	51	55	56	54
Water Year Types ^c												
Wet (32%)	50	48	45	44	45	46	47	49	51	55	55	53
Above Normal (16%)	53	51	47	45	45	46	47	49	51	55	55	53
Below Normal (13%)	52	50	46	44	45	46	48	50	51	55	55	54
Dry (24%)	53	51	47	45	45	46	48	50	51	55	56	54
Critical (15%)	55	53	48	46	46	47	49	51	53	56	57	57

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	56	53	49	46	46	47	49	50	53	57	57	56
20%	55	52	48	46	46	47	49	50	53	56	57	55
30%	54	51	47	45	45	47	48	49	52	55	56	55
40%	54	51	47	45	45	46	48	49	52	55	56	54
50%	53	51	47	45	45	46	48	49	51	55	55	54
60%	52	50	46	44	45	46	47	49	51	55	55	53
70%	52	50	46	44	44	46	47	48	51	55	55	53
80%	51	50	46	44	44	45	47	48	50	54	55	52
90%	51	50	46	44	44	45	46	48	50	54	54	52
Long Term												
Full Simulation Period ^b	53	51	47	45	45	46	48	49	51	55	56	54
Water Year Types ^c												
Wet (32%)	50	48	45	45	45	46	47	49	51	55	55	53
Above Normal (16%)	53	51	47	45	45	46	47	49	51	55	55	53
Below Normal (13%)	52	50	47	44	45	46	48	49	51	55	55	54
Dry (24%)	54	51	47	45	45	46	48	49	51	55	56	55
Critical (15%)	55	53	48	46	46	47	49	50	53	55	57	57

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	0.1	0.2	0.1	-0.1	0.0	0.0	-0.1	-0.6	0.2	0.1	0.0	0.3
0.2	0.4	0.2	-0.2	0.1	0.0	0.0	0.1	-0.6	0.2	0.0	0.2	0.2
0.3	0.4	0.0	0.0	0.0	0.0	0.1	-0.1	-0.7	0.0	-0.1	-0.1	0.4
0.4	0.1	0.0	0.0	0.0	0.0	0.2	0.0	-0.6	0.0	-0.1	-0.1	0.0
0.5	0.2	-0.1	0.1	0.0	0.0	0.1	0.0	-0.5	0.0	-0.1	-0.1	-0.1
0.6	-0.1	0.0	0.1	0.0	0.1	0.0	0.0	-0.6	-0.1	-0.2	0.0	0.0
0.7	-0.1	0.1	0.0	0.1	0.1	0.0	0.0	-0.7	0.0	-0.1	-0.2	0.0
0.8	-0.1	0.0	0.0	0.0	0.1	0.0	-0.1	-0.8	0.0	-0.1	-0.1	-0.1
0.9	-0.1	0.1	0.2	0.2	0.0	0.0	0.0	-0.6	0.0	-0.1	-0.1	0.0
Long Term												
Full Simulation Period ^b	0.2	0.0	0.0	0.0	0.0	0.0	0.0	-0.6	0.0	-0.1	-0.1	0.0
Water Year Types ^c												
Wet (32%)	-0.1	0.1	0.0	0.0	0.0	0.1	0.0	-0.6	0.0	-0.1	-0.1	-0.1
Above Normal (16%)	0.1	0.0	0.0	0.0	0.0	0.0	-0.1	-0.7	0.0	0.0	0.0	0.1
Below Normal (13%)	0.1	0.0	0.2	0.0	0.0	0.1	0.1	-0.8	-0.2	-0.1	-0.1	0.0
Dry (24%)	0.5	0.0	0.0	0.0	0.0	0.0	0.0	-0.6	0.1	0.0	0.0	0.1
Critical (15%)	0.3	0.1	0.1	0.0	0.1	0.0	0.1	-0.4	0.0	-0.1	-0.1	0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-3-5. Clear Creek at Igo, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	56	52	49	46	46	47	49	51	53	57	57	56
20%	55	52	48	46	46	47	49	51	52	56	56	55
30%	54	51	47	45	45	47	48	50	52	56	56	54
40%	54	51	47	45	45	46	48	50	52	55	56	54
50%	53	51	47	45	45	46	48	50	51	55	55	54
60%	52	50	46	44	44	46	47	49	51	55	55	53
70%	52	50	46	44	44	46	47	49	51	55	55	53
80%	51	50	46	44	44	45	47	49	50	54	55	52
90%	51	50	46	43	44	45	46	48	50	54	54	52
Long Term												
Full Simulation Period ^b	53	51	47	45	45	46	48	50	51	55	56	54
Water Year Types ^c												
Wet (32%)	50	48	45	44	45	46	47	49	51	55	55	53
Above Normal (16%)	53	51	47	45	45	46	47	49	51	55	55	53
Below Normal (13%)	52	50	46	44	45	46	48	50	51	55	55	54
Dry (24%)	53	51	47	45	45	46	48	50	51	55	56	54
Critical (15%)	55	53	48	46	46	47	49	51	53	56	57	57

Alternative 3

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	56	52	49	46	46	47	49	51	53	57	57	56
20%	55	52	48	46	46	47	49	51	52	56	56	55
30%	54	51	47	45	45	46	48	50	52	55	56	55
40%	54	51	47	45	45	46	48	50	52	55	56	54
50%	53	51	47	45	45	46	48	50	51	55	55	54
60%	52	50	46	44	44	46	47	49	51	55	55	53
70%	52	50	46	44	44	46	47	49	51	55	55	53
80%	51	50	46	44	44	45	47	49	50	54	55	53
90%	51	49	45	44	44	45	46	48	50	54	54	52
Long Term												
Full Simulation Period ^b	53	51	47	45	45	46	48	50	51	55	56	54
Water Year Types ^c												
Wet (32%)	50	48	45	44	45	46	47	49	51	55	55	53
Above Normal (16%)	53	51	47	45	45	46	47	49	51	55	55	53
Below Normal (13%)	52	50	46	44	45	46	48	49	51	55	55	54
Dry (24%)	53	51	47	45	45	46	48	50	51	55	56	54
Critical (15%)	55	52	48	46	46	47	49	51	53	55	57	57

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	-0.1	-0.1
0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	-0.1	-0.1	0.0	0.0
0.3	0.2	0.0	-0.1	0.0	0.0	-0.1	0.0	0.0	-0.1	-0.1	-0.1	0.2
0.4	0.1	0.1	0.0	0.0	0.0	0.0	-0.2	-0.1	0.0	0.0	-0.1	0.0
0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	0.0	0.0	-0.1
0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.2	0.0	0.0	0.0
0.7	0.0	0.1	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	-0.1	0.0
0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	0.0	-0.1	-0.1	0.1
0.9	0.0	0.0	-0.1	0.1	-0.1	0.0	0.0	0.1	0.0	-0.1	0.0	0.0
Long Term												
Full Simulation Period ^b	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Water Year Types ^c												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Above Normal (16%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0
Below Normal (13%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0
Dry (24%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.1	0.0
Critical (15%)	-0.1	-0.2	-0.1	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	0.0	0.0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-3-6. Clear Creek at Igo, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	56	52	49	46	46	47	49	51	53	57	57	56
20%	55	52	48	46	46	47	49	51	52	56	56	55
30%	54	51	47	45	45	47	48	50	52	56	56	54
40%	54	51	47	45	45	46	48	50	52	55	56	54
50%	53	51	47	45	45	46	48	50	51	55	55	54
60%	52	50	46	44	44	46	47	49	51	55	55	53
70%	52	50	46	44	44	46	47	49	51	55	55	53
80%	51	50	46	44	44	45	47	49	50	54	55	52
90%	51	50	46	43	44	45	46	48	50	54	54	52
Long Term												
Full Simulation Period ^b	53	51	47	45	45	46	48	50	51	55	56	54
Water Year Types ^c												
Wet (32%)	50	48	45	44	45	46	47	49	51	55	55	53
Above Normal (16%)	53	51	47	45	45	46	47	49	51	55	55	53
Below Normal (13%)	52	50	46	44	45	46	48	50	51	55	55	54
Dry (24%)	53	51	47	45	45	46	48	50	51	55	56	54
Critical (15%)	55	53	48	46	46	47	49	51	53	56	57	57

Alternative 5

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	56	53	49	46	46	47	49	50	53	57	57	56
20%	55	52	48	46	46	47	49	50	53	56	57	55
30%	54	51	47	45	45	47	48	49	52	56	56	55
40%	54	51	47	45	45	46	48	49	52	55	56	54
50%	53	51	47	45	45	46	48	49	51	55	55	54
60%	52	50	46	44	45	46	47	49	51	55	55	53
70%	52	50	46	44	44	46	47	48	51	55	55	53
80%	51	50	46	44	44	45	47	48	50	54	55	52
90%	51	50	46	44	44	45	46	47	50	54	54	52
Long Term												
Full Simulation Period ^b	53	51	47	45	45	46	48	49	52	55	56	54
Water Year Types ^c												
Wet (32%)	50	48	45	45	45	46	47	49	51	55	55	53
Above Normal (16%)	54	51	47	45	45	46	47	49	51	55	55	53
Below Normal (13%)	52	50	47	44	45	46	48	49	51	55	55	54
Dry (24%)	54	51	47	45	45	46	48	49	51	55	56	55
Critical (15%)	55	53	48	46	46	47	49	50	54	56	56	57

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	0.3	0.2	0.0	-0.1	0.0	0.0	0.1	-0.6	0.3	0.1	0.0	0.0
0.2	0.3	0.2	-0.2	0.0	0.0	0.0	0.1	-0.5	0.2	0.0	0.1	0.2
0.3	0.4	0.0	0.0	0.0	0.0	0.1	0.0	-0.6	0.0	0.1	-0.2	0.4
0.4	0.0	0.1	0.0	0.0	0.0	0.2	0.0	-0.7	0.0	-0.1	-0.2	0.1
0.5	0.2	-0.1	0.1	0.0	0.0	0.1	0.0	-0.6	0.0	-0.1	-0.1	-0.2
0.6	-0.4	0.0	0.1	0.0	0.1	0.0	0.0	-0.6	0.0	-0.2	0.0	-0.1
0.7	-0.1	0.1	0.0	0.1	0.1	0.0	0.0	-0.7	0.0	-0.1	-0.2	0.0
0.8	-0.1	0.0	0.0	0.0	0.1	0.0	-0.1	-0.7	0.0	-0.1	-0.1	-0.1
0.9	-0.1	0.1	0.2	0.2	0.0	0.0	0.0	-0.8	0.0	-0.1	0.0	0.0
Long Term												
Full Simulation Period ^b	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.6	0.1	0.0	-0.1	0.0
Water Year Types ^c												
Wet (32%)	-0.1	0.1	0.0	0.0	0.0	0.1	0.0	-0.6	0.1	0.0	-0.1	-0.2
Above Normal (16%)	0.2	0.1	0.0	0.1	0.0	0.0	-0.1	-0.8	0.0	0.0	0.0	0.1
Below Normal (13%)	0.0	0.0	0.2	0.0	0.0	0.1	0.1	-0.6	-0.1	-0.1	0.0	0.1
Dry (24%)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.6	0.1	0.0	0.0	0.1
Critical (15%)	0.2	0.1	0.1	0.0	0.1	0.0	0.1	-0.1	0.4	0.1	-0.3	-0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

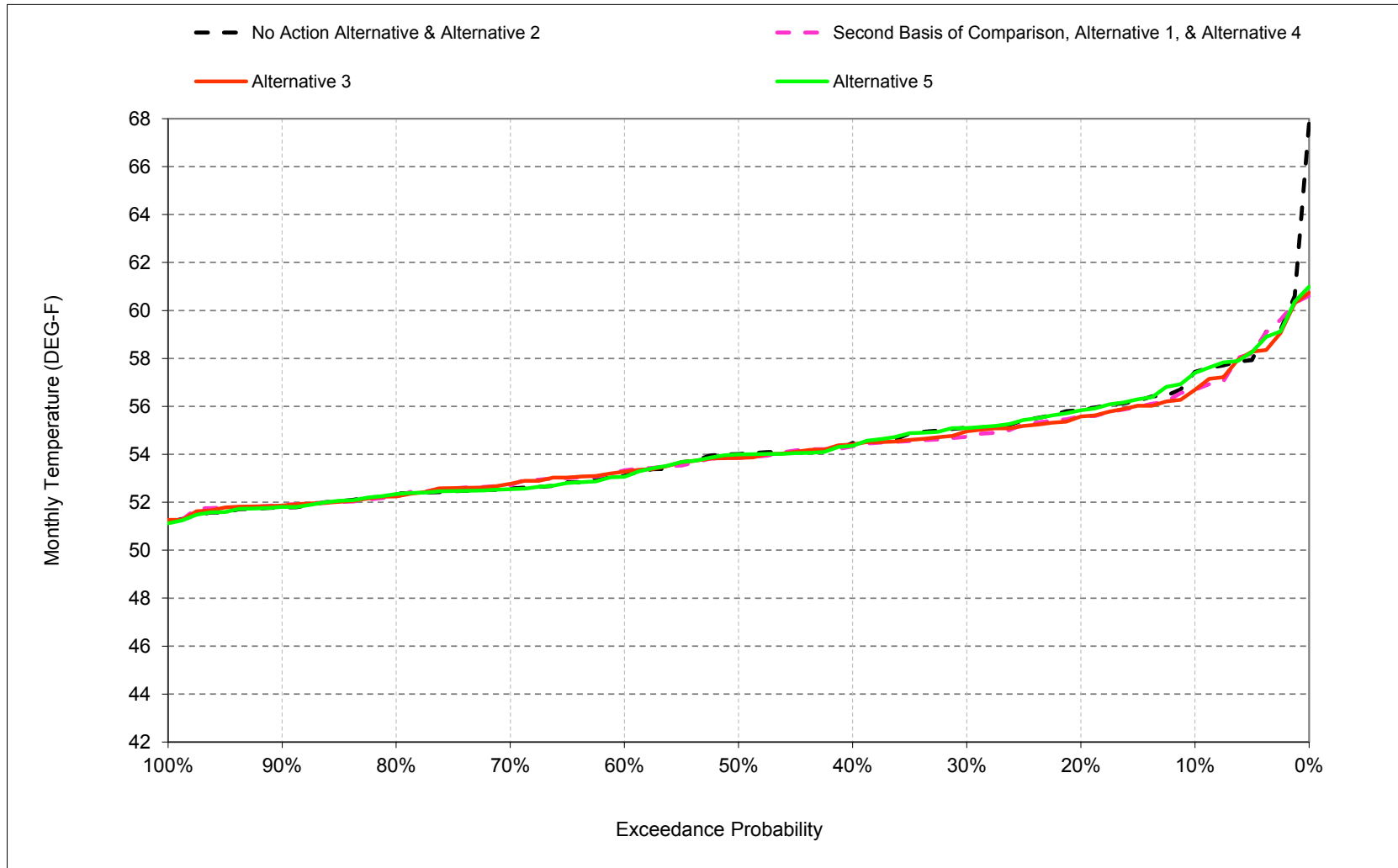
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

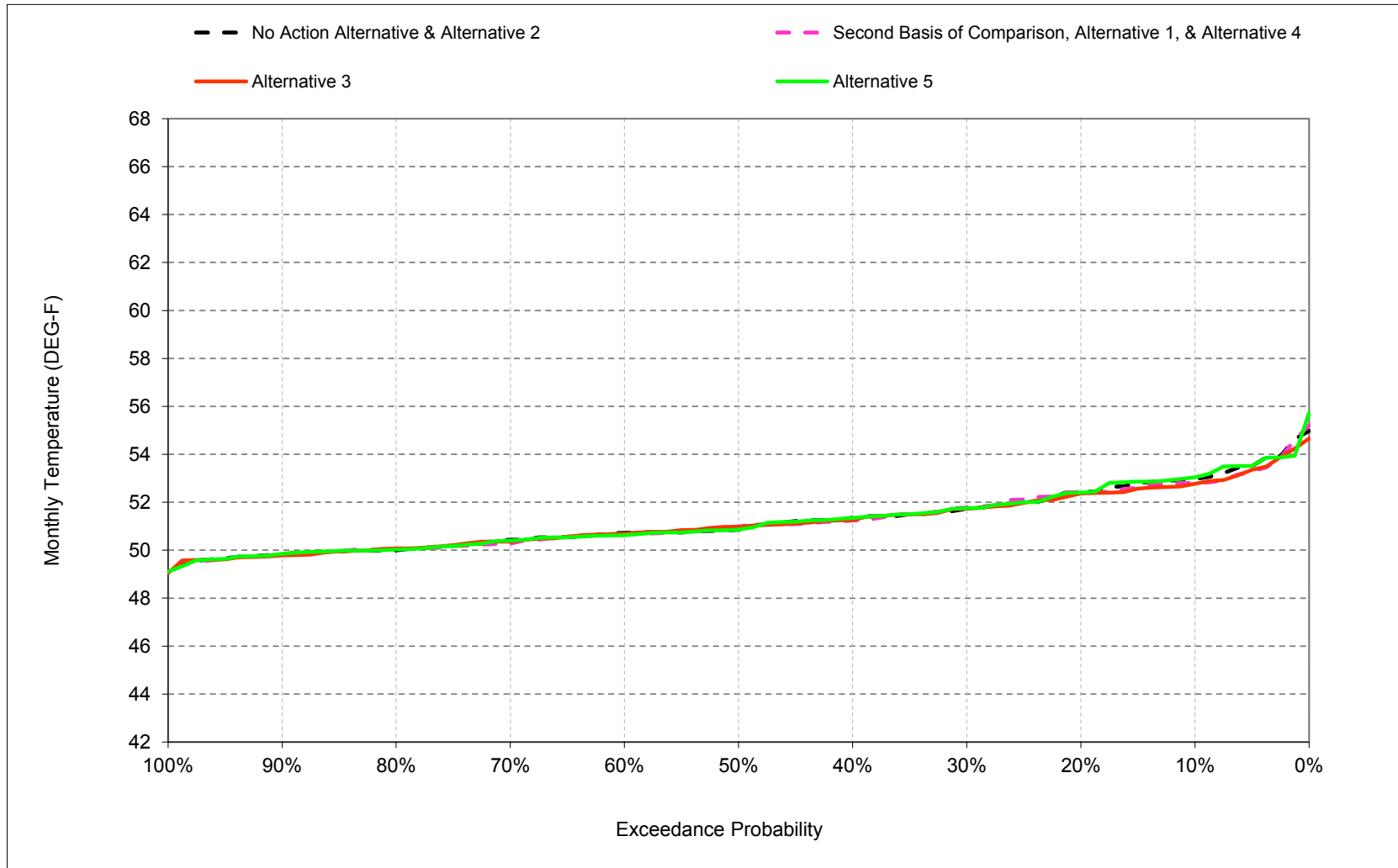
B.4. Clear Creek at Mouth Temperature

Figure B-4-1. Clear Creek at mouth, October



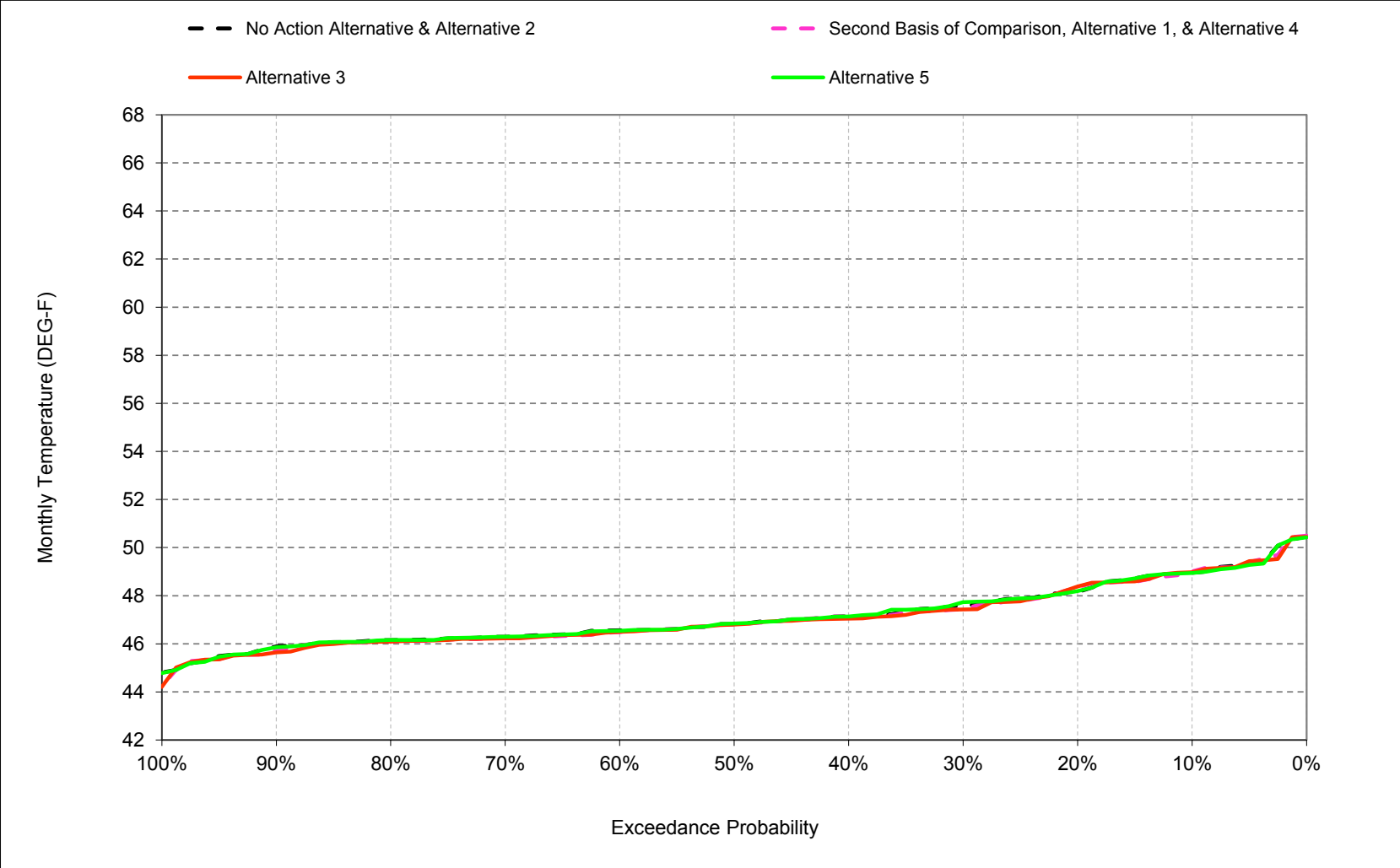
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-4-2. Clear Creek at mouth, November



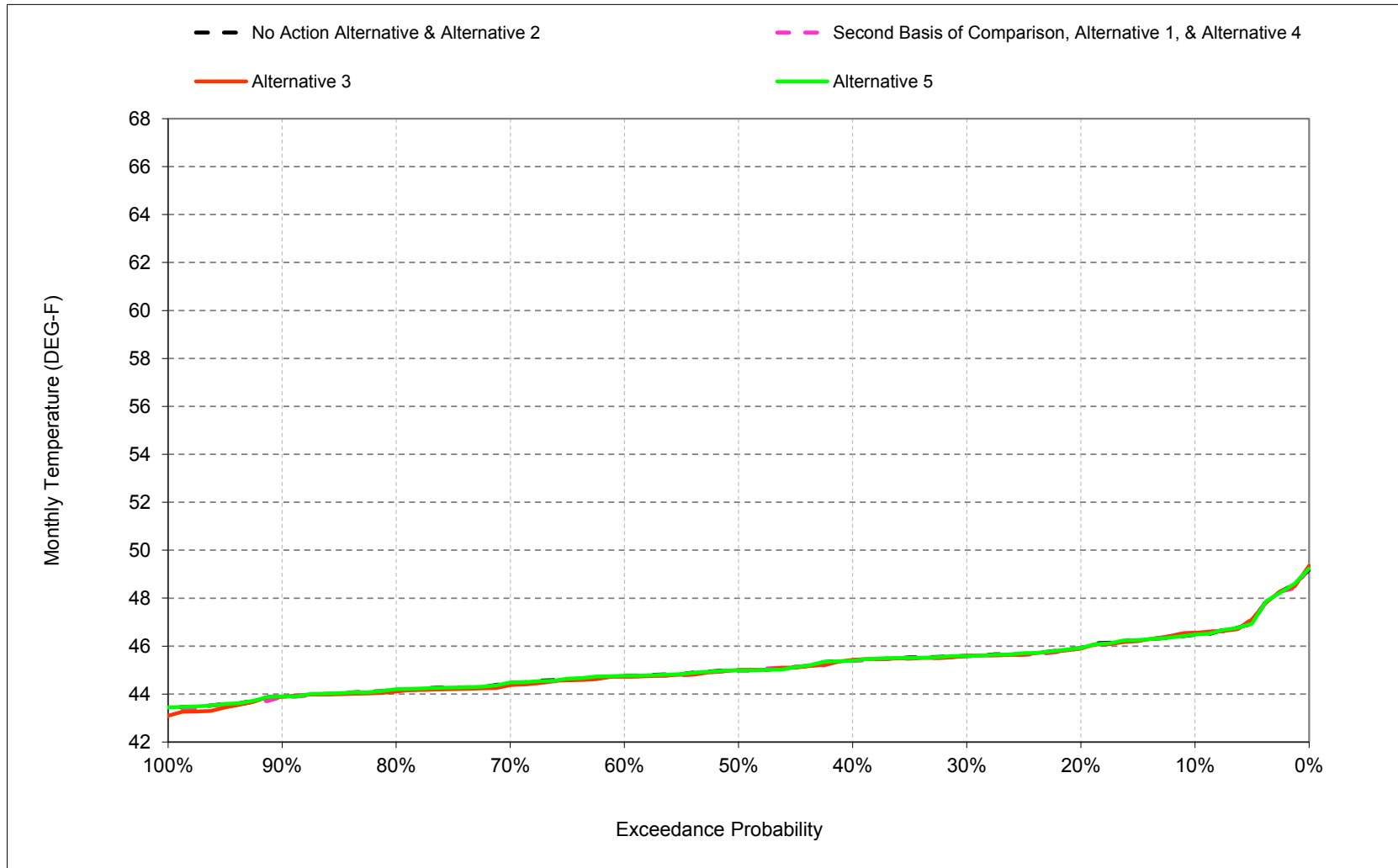
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-4-3. Clear Creek at mouth, December



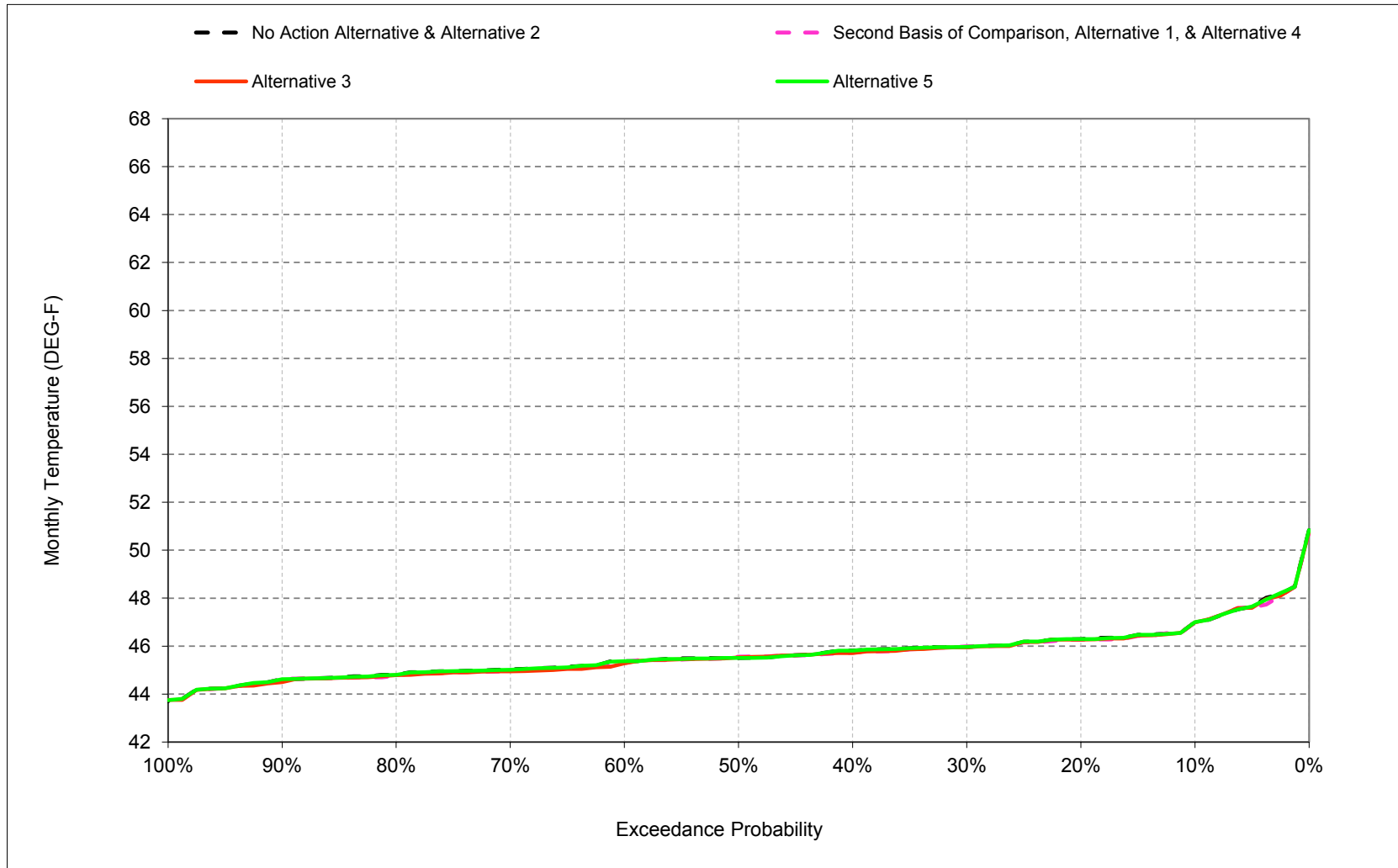
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-4-4. Clear Creek at mouth, January



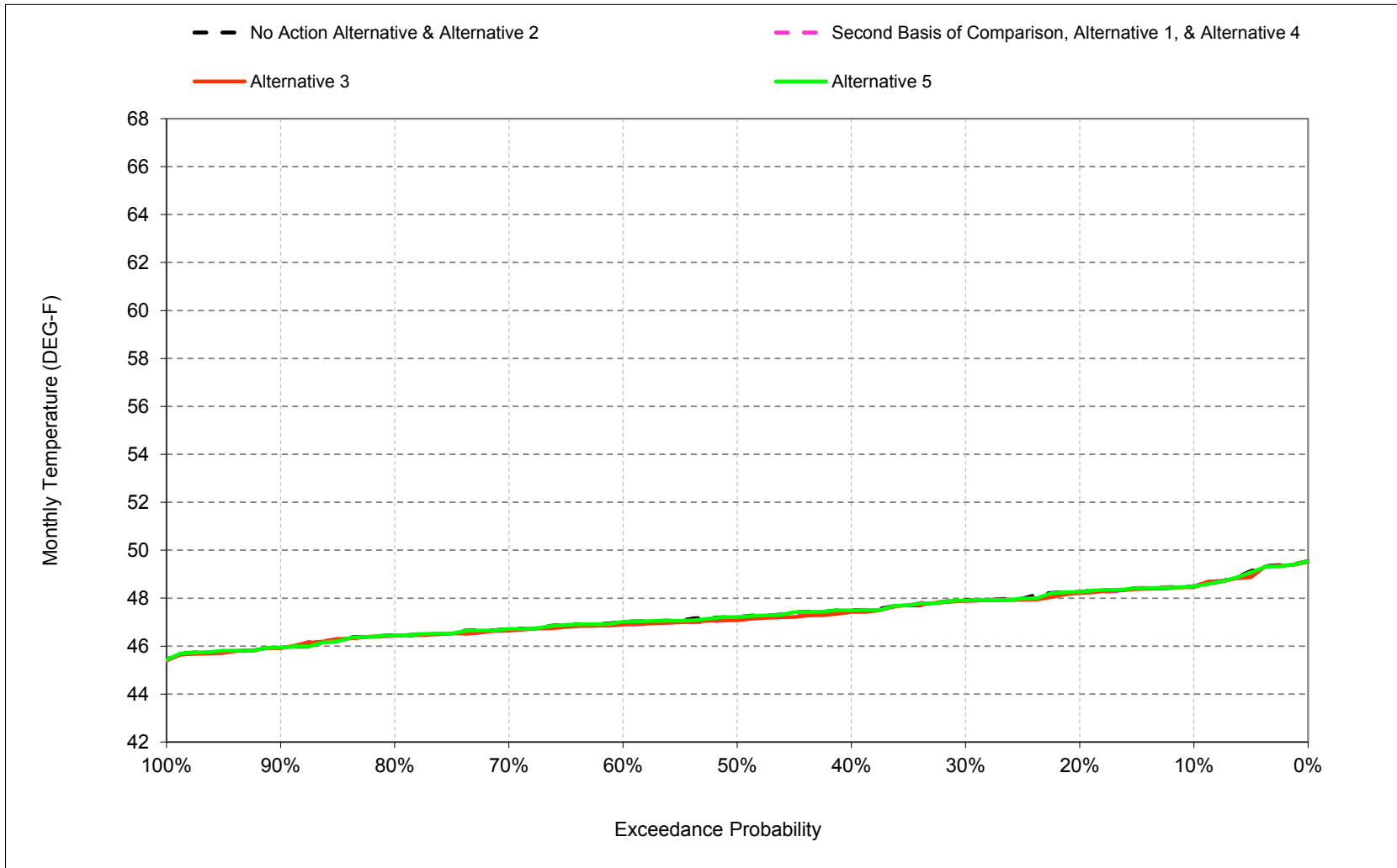
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-4-5. Clear Creek at mouth, February



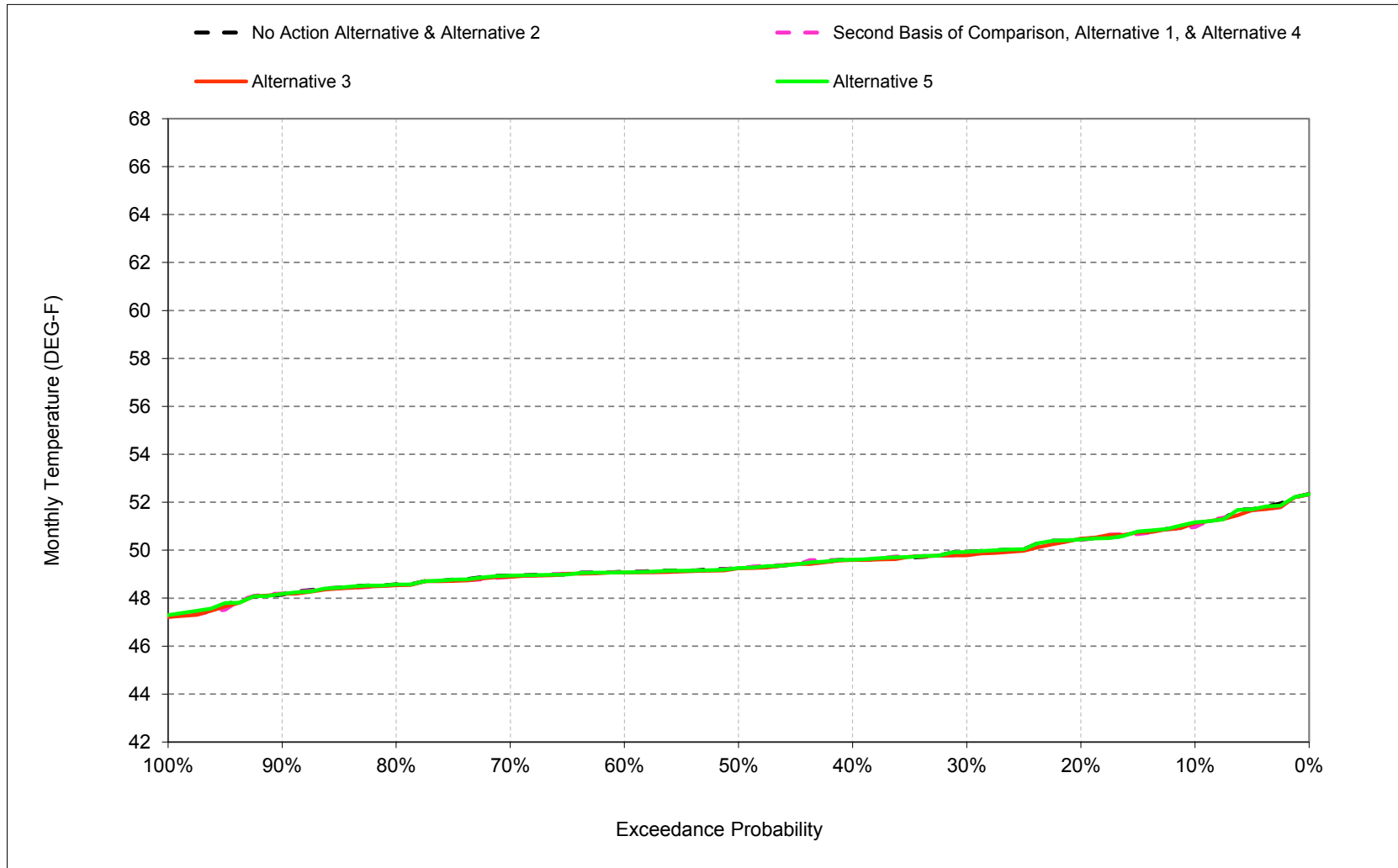
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-4-6. Clear Creek at mouth, March



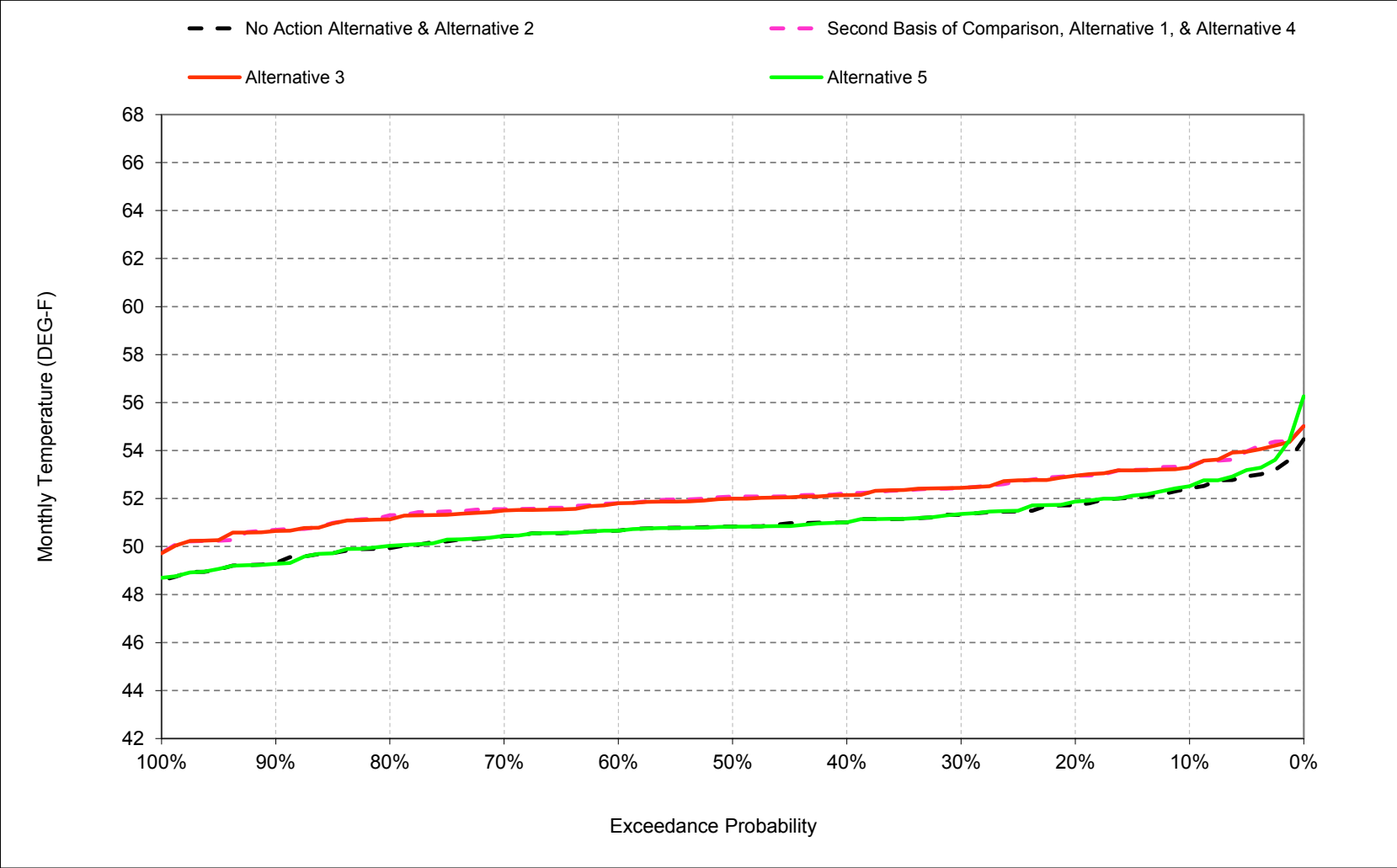
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-4-7. Clear Creek at mouth, April



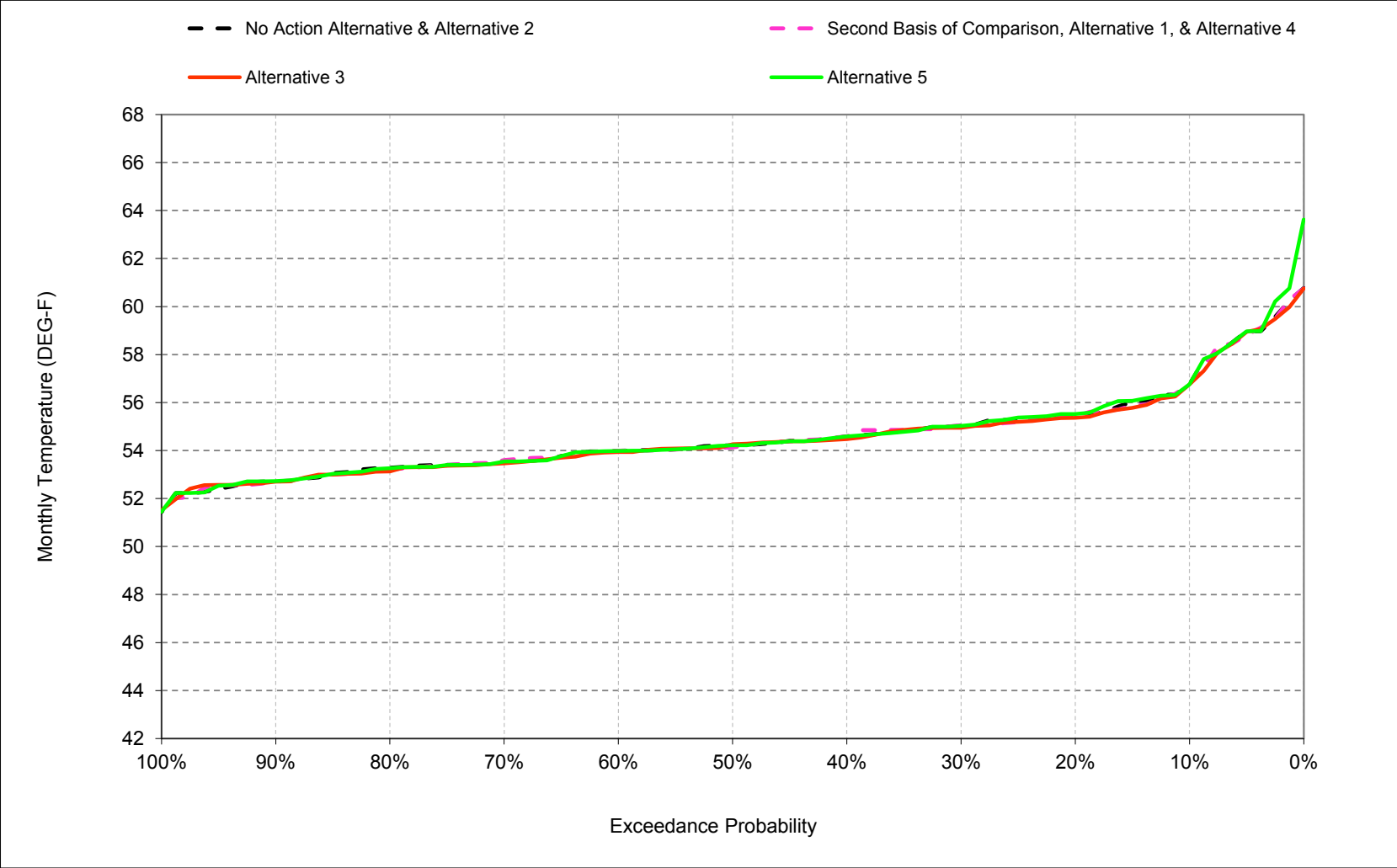
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-4-8. Clear Creek at mouth, May



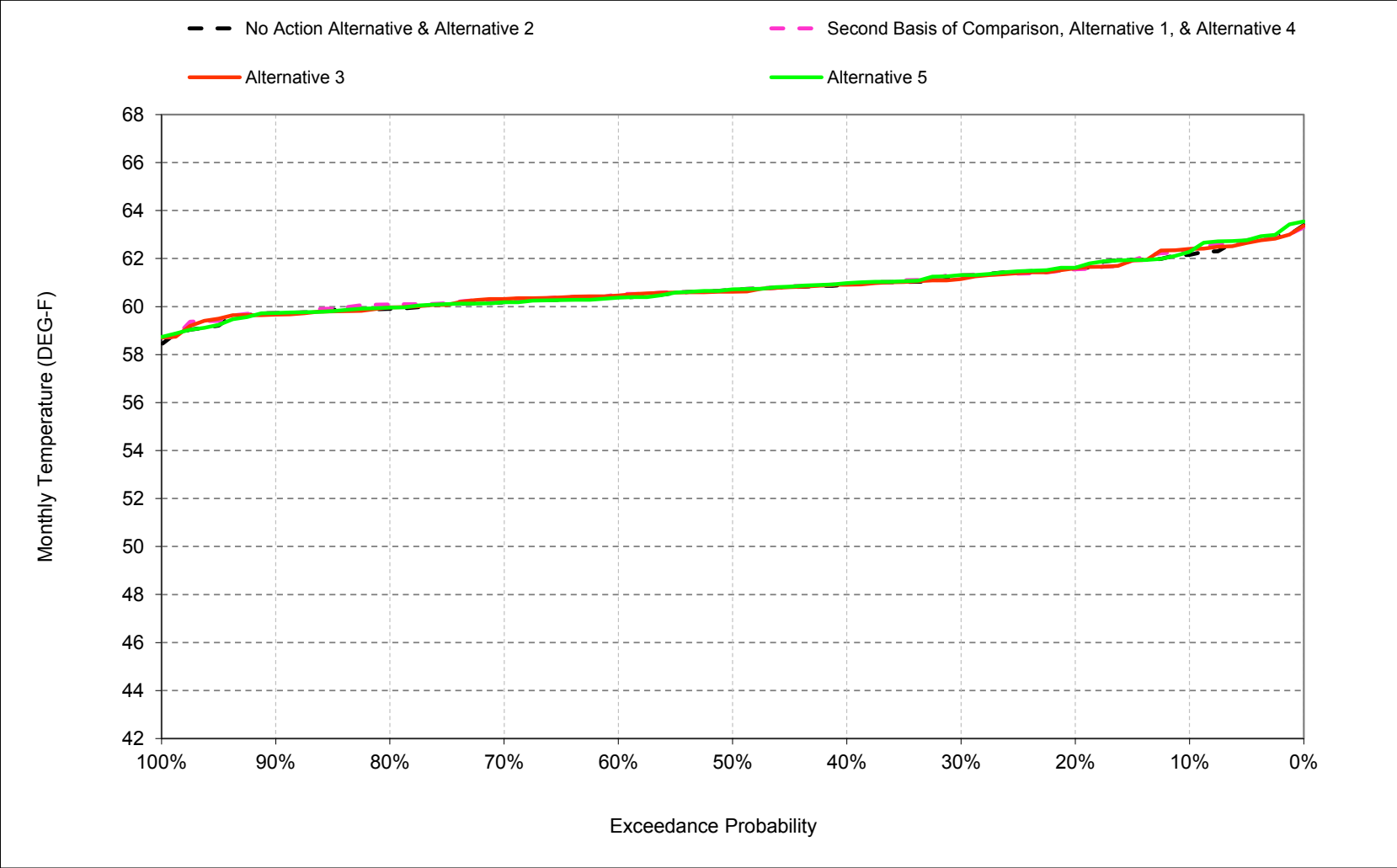
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-4-9. Clear Creek at mouth, June



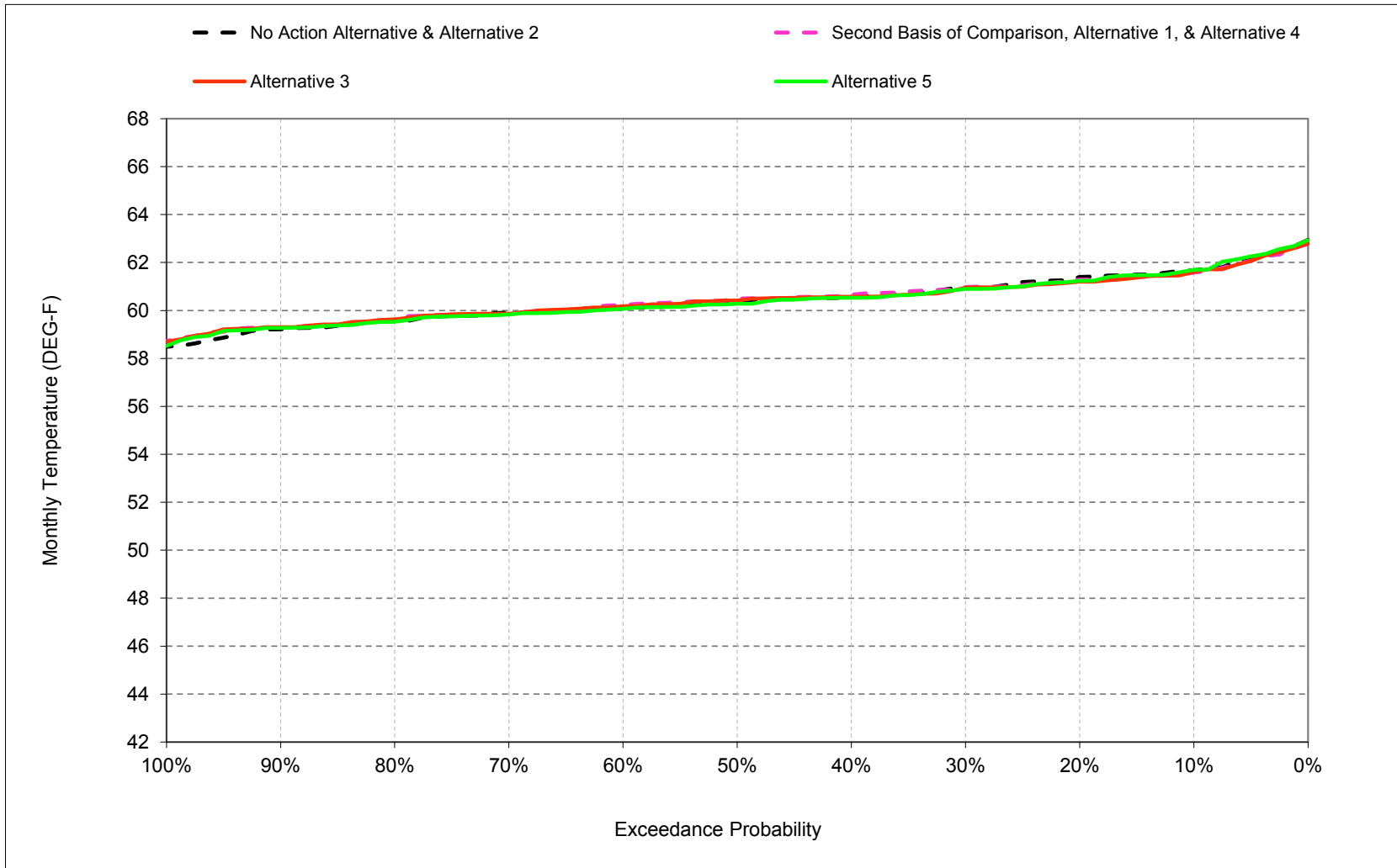
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-4-10. Clear Creek at mouth, July



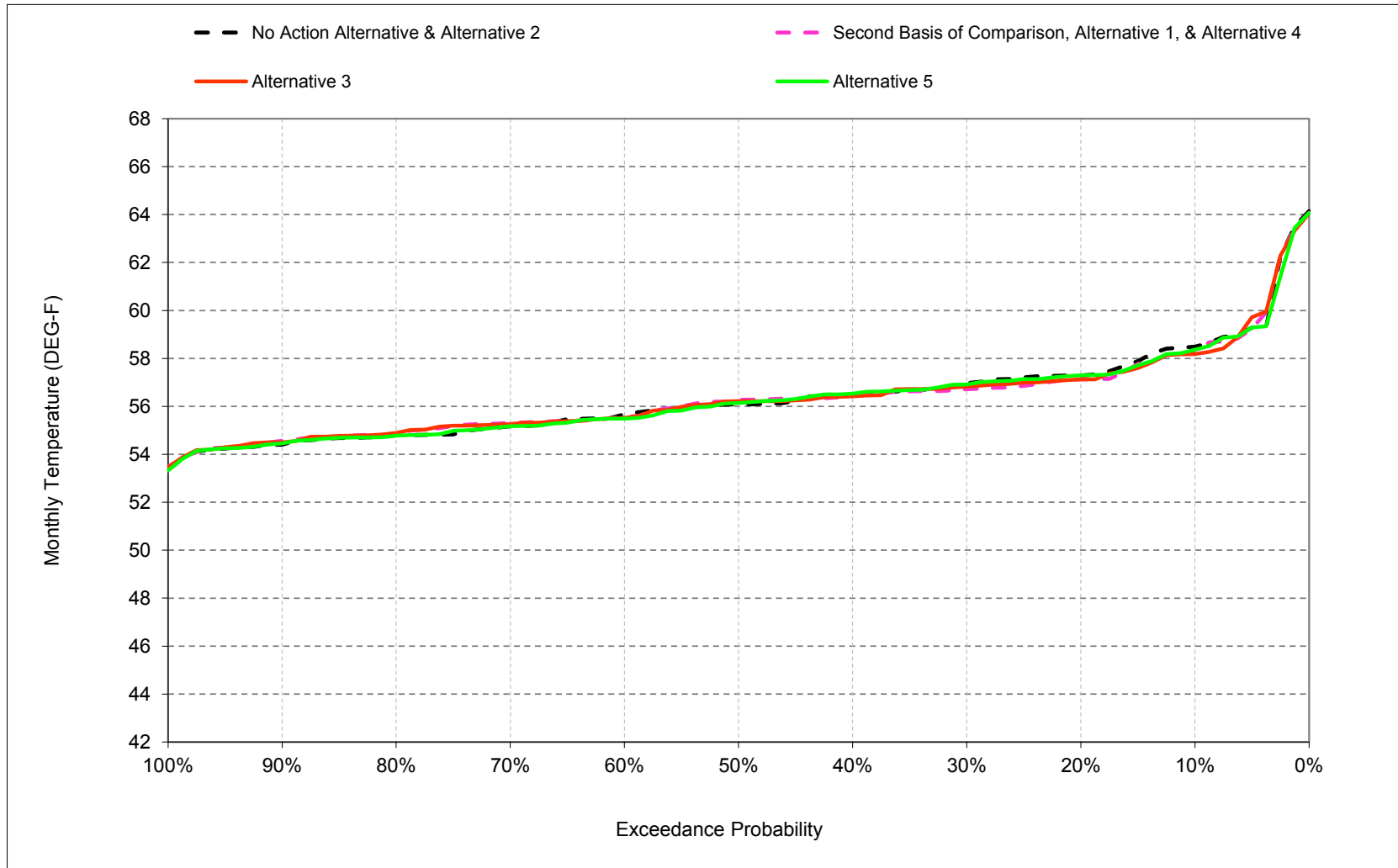
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-4-11. Clear Creek at mouth, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-4-12. Clear Creek at mouth, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-4-1. Clear Creek at mouth, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
10%	57	53	49	46	47	48	51	52	57	62	62	58
20%	56	52	48	46	46	48	50	52	55	62	61	57
30%	55	52	48	46	46	48	50	51	55	61	61	57
40%	54	51	47	45	46	47	50	51	55	61	61	56
50%	54	51	47	45	46	47	49	51	54	61	60	56
60%	53	51	47	45	45	47	49	51	54	60	60	56
70%	53	50	46	44	45	47	49	50	53	60	60	55
80%	52	50	46	44	45	46	49	50	53	60	60	55
90%	52	50	46	44	45	46	48	49	53	60	59	54
Long Term												
Full Simulation Period ^b	54	51	47	45	46	47	49	51	55	61	60	56
Water Year Types^c												
Wet (32%)	51	49	45	45	45	47	49	51	54	61	60	55
Above Normal (16%)	54	51	47	45	45	47	49	51	54	60	60	55
Below Normal (13%)	53	50	47	45	45	47	50	50	54	61	60	56
Dry (24%)	55	51	47	45	46	48	50	51	55	61	61	57
Critical (15%)	56	53	48	46	47	49	51	52	58	61	61	60

Alternative 1												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
10%	57	53	49	47	47	48	51	53	57	62	62	58
20%	56	52	48	46	46	48	50	53	55	62	61	57
30%	55	52	47	46	46	48	50	52	55	61	61	57
40%	54	51	47	45	46	47	50	52	55	61	61	56
50%	54	51	47	45	46	47	49	52	54	61	60	56
60%	53	51	46	45	45	47	49	52	54	60	60	56
70%	53	50	46	44	45	47	49	52	54	60	60	55
80%	52	50	46	44	45	46	49	51	53	60	60	55
90%	52	50	46	44	44	46	48	51	53	60	59	55
Long Term												
Full Simulation Period ^b	54	51	47	45	46	47	49	52	55	61	60	56
Water Year Types^c												
Wet (32%)	51	49	45	45	45	47	49	52	54	61	60	55
Above Normal (16%)	54	51	47	45	45	47	49	52	54	61	60	55
Below Normal (13%)	53	50	47	45	45	47	50	52	54	61	60	56
Dry (24%)	54	51	47	45	46	48	50	52	54	61	61	57
Critical (15%)	56	53	48	46	47	49	51	53	58	61	61	60

Alternative 1 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
0.1	-0.7	-0.2	0.0	0.1	0.0	0.0	-0.1	0.9	0.0	0.2	-0.1	-0.2
0.2	-0.2	0.0	0.2	0.0	0.0	0.0	0.0	1.2	-0.1	-0.1	-0.1	-0.2
0.3	-0.4	0.0	-0.2	0.0	0.0	0.0	-0.1	1.1	0.0	0.1	0.0	-0.2
0.4	-0.1	-0.1	0.0	0.0	-0.1	-0.1	0.0	1.2	0.0	0.0	0.1	0.0
0.5	-0.2	0.1	0.0	0.0	0.0	-0.1	0.0	1.2	-0.1	0.0	0.2	0.2
0.6	0.2	0.0	-0.1	0.0	-0.2	-0.1	0.0	1.1	0.0	0.1	0.1	-0.1
0.7	0.1	-0.2	0.0	-0.1	-0.1	0.0	-0.1	1.2	0.1	0.1	-0.1	0.1
0.8	-0.1	0.1	0.0	0.0	-0.1	0.0	0.0	1.3	-0.1	0.2	0.0	0.1
0.9	0.1	0.0	-0.2	-0.1	0.0	0.0	0.1	1.4	-0.1	0.0	0.1	0.1
Long Term												
Full Simulation Period ^b	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.1	0.0	0.0
Water Year Types^c												
Wet (32%)	0.1	-0.1	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.1	0.1	0.2
Above Normal (16%)	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	1.3	0.0	0.0	0.0	-0.1
Below Normal (13%)	-0.1	0.0	-0.2	0.0	0.0	-0.1	-0.1	1.3	0.2	0.1	0.1	0.0
Dry (24%)	-0.4	0.0	0.0	0.0	0.0	0.0	0.0	1.2	-0.1	0.0	0.0	-0.1
Critical (15%)	-0.2	-0.1	-0.1	0.0	-0.1	0.0	-0.1	0.9	0.0	0.1	0.1	-0.1

^a Exceedance probability is defined as the probability a given value will be exceeded in any one year.
^b Based on the 82-year simulation period.
^c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-4-2. Clear Creek at mouth, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	57	53	49	46	47	48	51	52	57	62	62	58
20%	56	52	48	46	46	48	50	52	55	62	61	57
30%	55	52	48	46	46	48	50	51	55	61	61	57
40%	54	51	47	45	46	47	50	51	55	61	61	56
50%	54	51	47	45	46	47	49	51	54	61	60	56
60%	53	51	47	45	45	47	49	51	54	60	60	56
70%	53	50	46	44	45	47	49	50	53	60	60	55
80%	52	50	46	44	45	46	49	50	53	60	60	55
90%	52	50	46	44	45	46	48	49	53	60	59	54
Long Term												
Full Simulation Period ^b	54	51	47	45	46	47	49	51	55	61	60	56
Water Year Types ^c												
Wet (32%)	51	49	45	45	45	47	49	51	54	61	60	55
Above Normal (16%)	54	51	47	45	45	47	49	51	54	60	60	55
Below Normal (13%)	53	50	47	45	45	47	50	50	54	61	60	56
Dry (24%)	55	51	47	45	46	48	50	51	55	61	61	57
Critical (15%)	56	53	48	46	47	49	51	52	58	61	61	60

Alternative 3												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	57	53	49	47	47	48	51	53	57	62	62	58
20%	56	52	48	46	46	48	50	53	55	62	61	57
30%	55	52	47	46	46	48	50	52	55	61	61	57
40%	54	51	47	45	46	47	50	52	54	61	61	56
50%	54	51	47	45	46	47	49	52	54	61	60	56
60%	53	51	46	45	45	47	49	52	54	60	60	56
70%	53	50	46	44	45	47	49	51	53	60	60	55
80%	52	50	46	44	45	46	49	51	53	60	60	55
90%	52	50	46	44	44	46	48	51	53	60	59	55
Long Term												
Full Simulation Period ^b	54	51	47	45	46	47	49	52	55	61	60	56
Water Year Types ^c												
Wet (32%)	51	49	45	45	45	47	49	52	54	61	60	55
Above Normal (16%)	54	51	47	45	45	47	49	52	54	61	60	55
Below Normal (13%)	53	51	47	45	45	47	50	52	54	61	60	56
Dry (24%)	54	51	47	45	46	48	50	52	54	61	61	57
Critical (15%)	56	53	48	46	47	49	51	53	58	61	61	60

Alternative 3 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	-0.8	-0.2	0.0	0.1	0.0	0.0	0.1	0.9	0.0	0.2	-0.1	-0.3
0.2	-0.3	-0.1	0.2	0.0	0.0	0.0	0.0	1.2	-0.1	0.0	-0.2	-0.2
0.3	-0.1	0.0	-0.2	0.0	0.0	0.0	-0.1	1.1	-0.1	-0.1	0.0	-0.1
0.4	-0.1	-0.1	-0.1	0.0	-0.1	-0.1	0.0	1.1	-0.1	0.0	0.0	-0.1
0.5	-0.2	0.1	0.0	0.0	0.0	-0.1	0.0	1.2	0.0	-0.1	0.1	0.1
0.6	0.2	0.0	-0.1	0.0	-0.2	-0.1	0.0	1.1	-0.1	0.1	0.1	-0.1
0.7	0.2	-0.1	-0.1	-0.1	-0.1	0.0	-0.1	1.1	0.0	0.2	0.0	0.1
0.8	-0.1	0.1	-0.1	-0.1	0.0	0.0	0.0	1.2	-0.1	0.0	0.1	0.1
0.9	0.1	0.0	-0.2	0.0	-0.1	0.0	0.0	1.3	-0.1	-0.1	0.1	0.1
Long Term												
Full Simulation Period ^b	-0.1	-0.1	-0.1	0.0	0.0	-0.1	0.0	1.1	0.0	0.0	0.0	0.0
Water Year Types ^c												
Wet (32%)	0.1	0.0	0.0	0.0	0.0	-0.1	0.0	1.2	0.0	0.0	0.0	0.2
Above Normal (16%)	-0.1	0.0	-0.1	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0
Below Normal (13%)	0.0	0.0	-0.2	0.0	-0.1	-0.1	-0.1	1.3	0.1	0.1	0.1	-0.1
Dry (24%)	-0.4	0.0	0.0	0.0	0.0	0.0	-0.1	1.1	-0.1	0.0	-0.1	-0.1
Critical (15%)	-0.4	-0.3	-0.2	-0.1	-0.1	-0.1	-0.1	0.8	-0.1	0.0	0.1	-0.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-4-3. Clear Creek at mouth, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	57	53	49	46	47	48	51	52	57	62	62	58
20%	56	52	48	46	46	48	50	52	55	62	61	57
30%	55	52	48	46	46	48	50	51	55	61	61	57
40%	54	51	47	45	46	47	50	51	55	61	61	56
50%	54	51	47	45	46	47	49	51	54	61	60	56
60%	53	51	47	45	45	47	49	51	54	60	60	56
70%	53	50	46	44	45	47	49	50	53	60	60	55
80%	52	50	46	44	45	46	49	50	53	60	60	55
90%	52	50	46	44	45	46	48	49	53	60	59	54
Long Term												
Full Simulation Period ^b	54	51	47	45	46	47	49	51	55	61	60	56
Water Year Types ^c												
Wet (32%)	51	49	45	45	45	47	49	51	54	61	60	55
Above Normal (16%)	54	51	47	45	45	47	49	51	54	60	60	55
Below Normal (13%)	53	50	47	45	45	47	50	50	54	61	60	56
Dry (24%)	55	51	47	45	46	48	50	51	55	61	61	57
Critical (15%)	56	53	48	46	47	49	51	52	58	61	61	60

Alternative 5												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	57	53	49	46	47	48	51	53	57	62	62	58
20%	56	52	48	46	46	48	50	52	56	62	61	57
30%	55	52	48	46	46	48	50	51	55	61	61	57
40%	54	51	47	45	46	47	50	51	55	61	61	57
50%	54	51	47	45	46	47	49	51	54	61	60	56
60%	53	51	47	45	45	47	49	51	54	60	60	56
70%	53	50	46	44	45	47	49	50	53	60	60	55
80%	52	50	46	44	45	46	49	50	53	60	60	55
90%	52	50	46	44	45	46	48	49	53	60	59	54
Long Term												
Full Simulation Period ^b	54	51	47	45	46	47	49	51	55	61	60	56
Water Year Types ^c												
Wet (32%)	51	49	45	45	45	47	49	51	54	61	60	55
Above Normal (16%)	55	51	47	45	45	47	49	50	54	60	60	55
Below Normal (13%)	53	50	47	45	45	47	50	51	54	61	60	56
Dry (24%)	55	51	47	45	46	48	50	51	54	61	61	57
Critical (15%)	56	53	48	46	47	49	51	53	58	61	61	59

Alternative 5 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.0	-0.1
0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	-0.1	0.0
0.3	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
0.4	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.6	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.2
0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1
0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Long Term												
Full Simulation Period ^b	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0
Water Year Types ^c												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Above Normal (16%)	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Below Normal (13%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.1	0.1
Dry (24%)	-0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Critical (15%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.2	-0.2	-0.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-4-4. Clear Creek at mouth, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	57	53	49	47	47	48	51	53	57	62	62	58
20%	56	52	48	46	46	48	50	53	55	62	61	57
30%	55	52	47	46	46	48	50	52	55	61	61	57
40%	54	51	47	45	46	47	50	52	55	61	61	56
50%	54	51	47	45	46	47	49	52	54	61	60	56
60%	53	51	46	45	45	47	49	52	54	60	60	56
70%	53	50	46	44	45	47	49	52	54	60	60	55
80%	52	50	46	44	45	46	49	51	53	60	60	55
90%	52	50	46	44	44	46	48	51	53	60	59	55
Long Term												
Full Simulation Period ^b	54	51	47	45	46	47	49	52	55	61	60	56
Water Year Types ^c												
Wet (32%)	51	49	45	45	45	47	49	52	54	61	60	55
Above Normal (16%)	54	51	47	45	45	47	49	52	54	61	60	55
Below Normal (13%)	53	50	47	45	45	47	50	52	54	61	60	56
Dry (24%)	54	51	47	45	46	48	50	52	54	61	61	57
Critical (15%)	56	53	48	46	47	49	51	53	58	61	61	60

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	57	53	49	46	47	48	51	52	57	62	62	58
20%	56	52	48	46	46	48	50	52	55	62	61	57
30%	55	52	48	46	46	48	50	51	55	61	61	57
40%	54	51	47	45	46	47	50	51	55	61	61	56
50%	54	51	47	45	46	47	49	51	54	61	60	56
60%	53	51	47	45	45	47	49	51	54	60	60	56
70%	53	50	46	44	45	47	49	50	53	60	60	55
80%	52	50	46	44	45	46	49	50	53	60	60	55
90%	52	50	46	44	45	46	48	49	53	60	59	54
Long Term												
Full Simulation Period ^b	54	51	47	45	46	47	49	51	55	61	60	56
Water Year Types ^c												
Wet (32%)	51	49	45	45	45	47	49	51	54	61	60	55
Above Normal (16%)	54	51	47	45	45	47	49	51	54	60	60	55
Below Normal (13%)	53	50	47	45	45	47	50	50	54	61	60	56
Dry (24%)	55	51	47	45	46	48	50	51	55	61	61	57
Critical (15%)	56	53	48	46	47	49	51	52	58	61	61	60

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	0.7	0.2	0.0	-0.1	0.0	0.0	0.1	-0.9	0.0	-0.2	0.1	0.2
0.2	0.2	0.0	-0.2	0.0	0.0	0.0	0.0	-1.2	0.1	0.1	0.1	0.2
0.3	0.4	0.0	0.2	0.0	0.0	0.0	0.1	-1.1	0.0	-0.1	0.0	0.2
0.4	0.1	0.1	0.0	0.0	0.1	0.1	0.0	-1.2	0.0	0.0	-0.1	0.0
0.5	0.2	-0.1	0.0	0.0	0.0	0.1	0.0	-1.2	0.1	0.0	-0.2	-0.2
0.6	-0.2	0.0	0.1	0.0	0.2	0.1	0.0	-1.1	0.0	-0.1	-0.1	0.1
0.7	-0.1	0.2	0.0	0.1	0.1	0.0	0.1	-1.2	-0.1	-0.1	0.1	-0.1
0.8	0.1	-0.1	0.0	0.0	0.1	0.0	0.0	-1.3	0.1	-0.2	0.0	-0.1
0.9	-0.1	0.0	0.2	0.1	0.0	0.0	-0.1	-1.4	0.1	0.0	-0.1	-0.1
Long Term												
Full Simulation Period ^b	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-1.2	0.0	-0.1	0.0	0.0
Water Year Types ^c												
Wet (32%)	-0.1	0.1	0.0	0.0	0.0	0.0	0.0	-1.2	0.0	-0.1	-0.1	-0.2
Above Normal (16%)	0.1	0.0	0.0	0.0	0.0	0.0	-0.1	-1.3	0.0	0.0	0.0	0.1
Below Normal (13%)	0.1	0.0	0.2	0.0	0.0	0.1	0.1	-1.3	-0.2	-0.1	-0.1	0.0
Dry (24%)	0.4	0.0	0.0	0.0	0.0	0.0	0.0	-1.2	0.1	0.0	0.0	0.1
Critical (15%)	0.2	0.1	0.1	0.0	0.1	0.0	0.1	-0.9	0.0	-0.1	-0.1	0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-4-5. Clear Creek at mouth, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	57	53	49	47	47	48	51	53	57	62	62	58
20%	56	52	48	46	46	48	50	53	55	62	61	57
30%	55	52	47	46	46	48	50	52	55	61	61	57
40%	54	51	47	45	46	47	50	52	55	61	61	56
50%	54	51	47	45	46	47	49	52	54	61	60	56
60%	53	51	46	45	45	47	49	52	54	60	60	56
70%	53	50	46	44	45	47	49	52	54	60	60	55
80%	52	50	46	44	45	46	49	51	53	60	60	55
90%	52	50	46	44	44	46	48	51	53	60	59	55
Long Term												
Full Simulation Period ^b	54	51	47	45	46	47	49	52	55	61	60	56
Water Year Types ^c												
Wet (32%)	51	49	45	45	45	47	49	52	54	61	60	55
Above Normal (16%)	54	51	47	45	45	47	49	52	54	61	60	55
Below Normal (13%)	53	50	47	45	45	47	50	52	54	61	60	56
Dry (24%)	54	51	47	45	46	48	50	52	54	61	61	57
Critical (15%)	56	53	48	46	47	49	51	53	58	61	61	60

Alternative 3

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	57	53	49	47	47	48	51	53	57	62	62	58
20%	56	52	48	46	46	48	50	53	55	62	61	57
30%	55	52	47	46	46	48	50	52	55	61	61	57
40%	54	51	47	45	46	47	50	52	54	61	61	56
50%	54	51	47	45	46	47	49	52	54	61	60	56
60%	53	51	46	45	45	47	49	52	54	60	60	56
70%	53	50	46	44	45	47	49	51	53	60	60	55
80%	52	50	46	44	45	46	49	51	53	60	60	55
90%	52	50	46	44	44	46	48	51	53	60	59	55
Long Term												
Full Simulation Period ^b	54	51	47	45	46	47	49	52	55	61	60	56
Water Year Types ^c												
Wet (32%)	51	49	45	45	45	47	49	52	54	61	60	55
Above Normal (16%)	54	51	47	45	45	47	49	52	54	61	60	55
Below Normal (13%)	53	51	47	45	45	47	50	52	54	61	60	56
Dry (24%)	54	51	47	45	46	48	50	52	54	61	61	57
Critical (15%)	56	53	48	46	47	49	51	53	58	61	61	60

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	-0.1	0.0	0.0	0.0	-0.1
0.2	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0
0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.2	0.0	0.1
0.4	0.1	0.0	-0.1	0.0	0.0	0.0	0.0	-0.1	-0.1	0.0	-0.1	0.0
0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.0	0.0	0.0
0.6	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	-0.1	0.0
0.7	0.1	0.1	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	0.0	0.0	0.0
0.8	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	-0.1	-0.1	-0.2	0.1	0.0
0.9	0.0	0.0	-0.1	0.2	0.0	0.0	-0.1	-0.1	0.0	-0.1	0.0	-0.1
Long Term												
Full Simulation Period ^b	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Water Year Types ^c												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Above Normal (16%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0
Below Normal (13%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0
Dry (24%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.1	0.0
Critical (15%)	-0.1	-0.2	-0.1	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	0.0	0.0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-4-6. Clear Creek at mouth, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	57	53	49	47	47	48	51	53	57	62	62	58
20%	56	52	48	46	46	48	50	53	55	62	61	57
30%	55	52	47	46	46	48	50	52	55	61	61	57
40%	54	51	47	45	46	47	50	52	55	61	61	56
50%	54	51	47	45	46	47	49	52	54	61	60	56
60%	53	51	46	45	45	47	49	52	54	60	60	56
70%	53	50	46	44	45	47	49	52	54	60	60	55
80%	52	50	46	44	45	46	49	51	53	60	60	55
90%	52	50	46	44	44	46	48	51	53	60	59	55
Long Term												
Full Simulation Period ^b	54	51	47	45	46	47	49	52	55	61	60	56
Water Year Types ^c												
Wet (32%)	51	49	45	45	45	47	49	52	54	61	60	55
Above Normal (16%)	54	51	47	45	45	47	49	52	54	61	60	55
Below Normal (13%)	53	50	47	45	45	47	50	52	54	61	60	56
Dry (24%)	54	51	47	45	46	48	50	52	54	61	61	57
Critical (15%)	56	53	48	46	47	49	51	53	58	61	61	60

Alternative 5

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	57	53	49	46	47	48	51	53	57	62	62	58
20%	56	52	48	46	46	48	50	52	56	62	61	57
30%	55	52	48	46	46	48	50	51	55	61	61	57
40%	54	51	47	45	46	47	50	51	55	61	61	57
50%	54	51	47	45	46	47	49	51	54	61	60	56
60%	53	51	47	45	45	47	49	51	54	60	60	56
70%	53	50	46	44	45	47	49	50	53	60	60	55
80%	52	50	46	44	45	46	49	50	53	60	60	55
90%	52	50	46	44	45	46	48	49	53	60	59	54
Long Term												
Full Simulation Period ^b	54	51	47	45	46	47	49	51	55	61	60	56
Water Year Types ^c												
Wet (32%)	51	49	45	45	45	47	49	51	54	61	60	55
Above Normal (16%)	55	51	47	45	45	47	49	50	54	60	60	55
Below Normal (13%)	53	50	47	45	45	47	50	51	54	61	60	56
Dry (24%)	55	51	47	45	46	48	50	51	54	61	61	57
Critical (15%)	56	53	48	46	47	49	51	53	58	61	61	59

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	0.7	0.2	-0.1	-0.1	0.0	0.0	0.2	-0.9	0.0	-0.1	0.1	0.1
0.2	0.2	0.0	-0.2	0.0	0.0	0.0	0.0	-1.1	0.1	0.1	0.0	0.2
0.3	0.4	0.0	0.3	0.0	0.0	0.0	0.1	-1.1	0.0	0.0	-0.1	0.2
0.4	0.0	0.1	0.0	0.0	0.1	0.1	0.0	-1.2	0.0	0.0	-0.1	0.1
0.5	0.1	-0.1	0.0	0.0	0.0	0.1	0.0	-1.2	0.1	0.0	-0.2	-0.1
0.6	-0.3	0.0	0.0	0.0	0.1	0.1	0.0	-1.1	0.0	-0.1	-0.2	-0.1
0.7	-0.2	0.1	0.0	0.1	0.1	0.0	0.1	-1.2	0.0	-0.1	0.0	-0.1
0.8	0.1	0.0	0.0	0.0	0.1	0.0	0.0	-1.2	0.0	-0.1	0.0	-0.1
0.9	-0.1	0.1	0.1	0.2	0.0	0.0	-0.1	-1.4	0.1	0.0	0.0	-0.1
Long Term												
Full Simulation Period ^b	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-1.1	0.1	0.0	-0.1	0.0
Water Year Types ^c												
Wet (32%)	-0.1	0.1	0.0	0.0	0.0	0.0	0.0	-1.1	0.0	0.0	0.0	-0.2
Above Normal (16%)	0.2	0.1	0.0	0.0	0.0	0.0	-0.1	-1.3	0.0	0.0	0.0	0.0
Below Normal (13%)	0.0	0.0	0.2	0.0	0.0	0.1	0.1	-1.1	-0.1	-0.1	0.0	0.1
Dry (24%)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-1.2	0.1	0.0	0.0	0.1
Critical (15%)	0.2	0.1	0.1	0.0	0.1	0.0	0.1	-0.6	0.3	0.1	-0.2	-0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

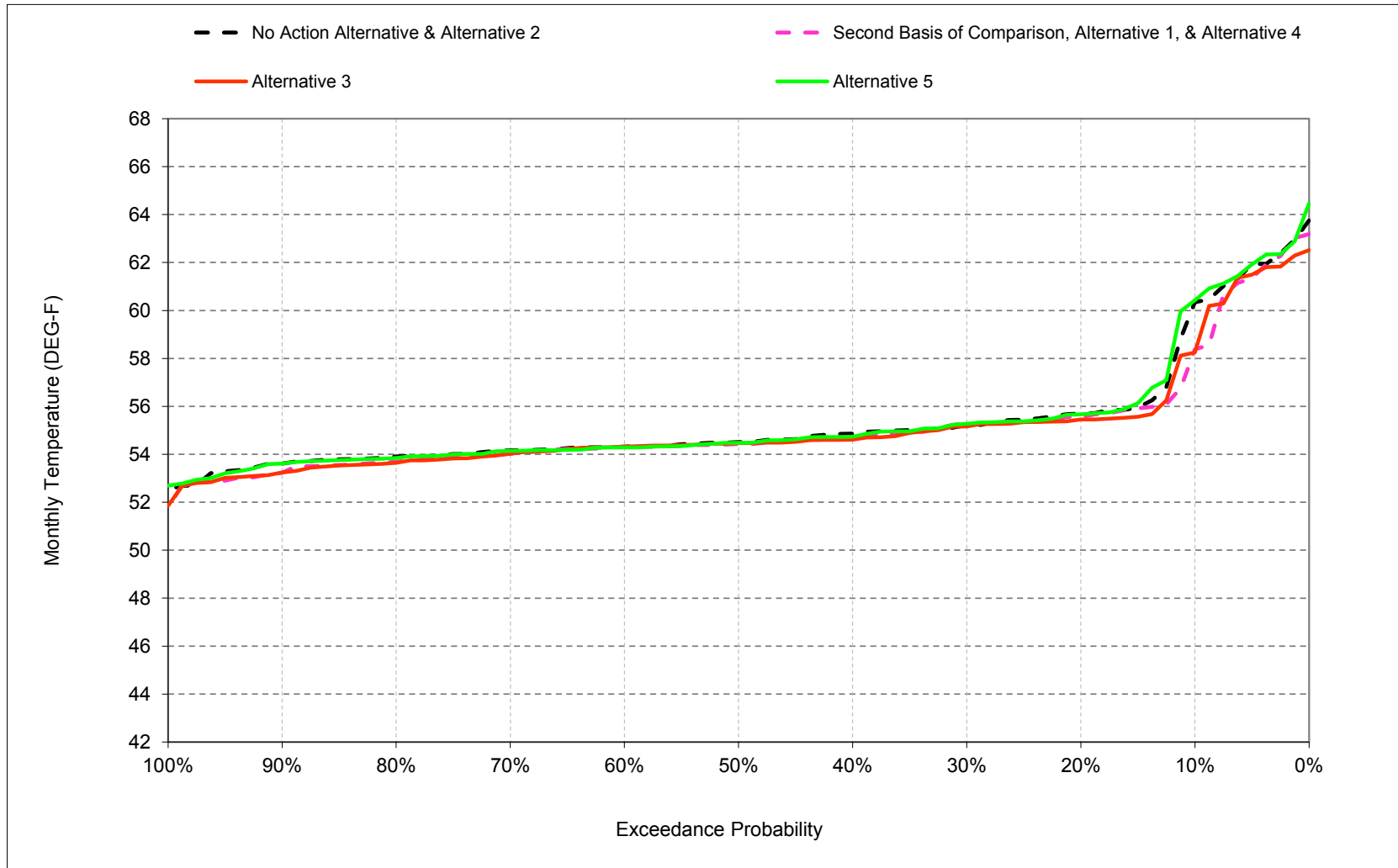
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

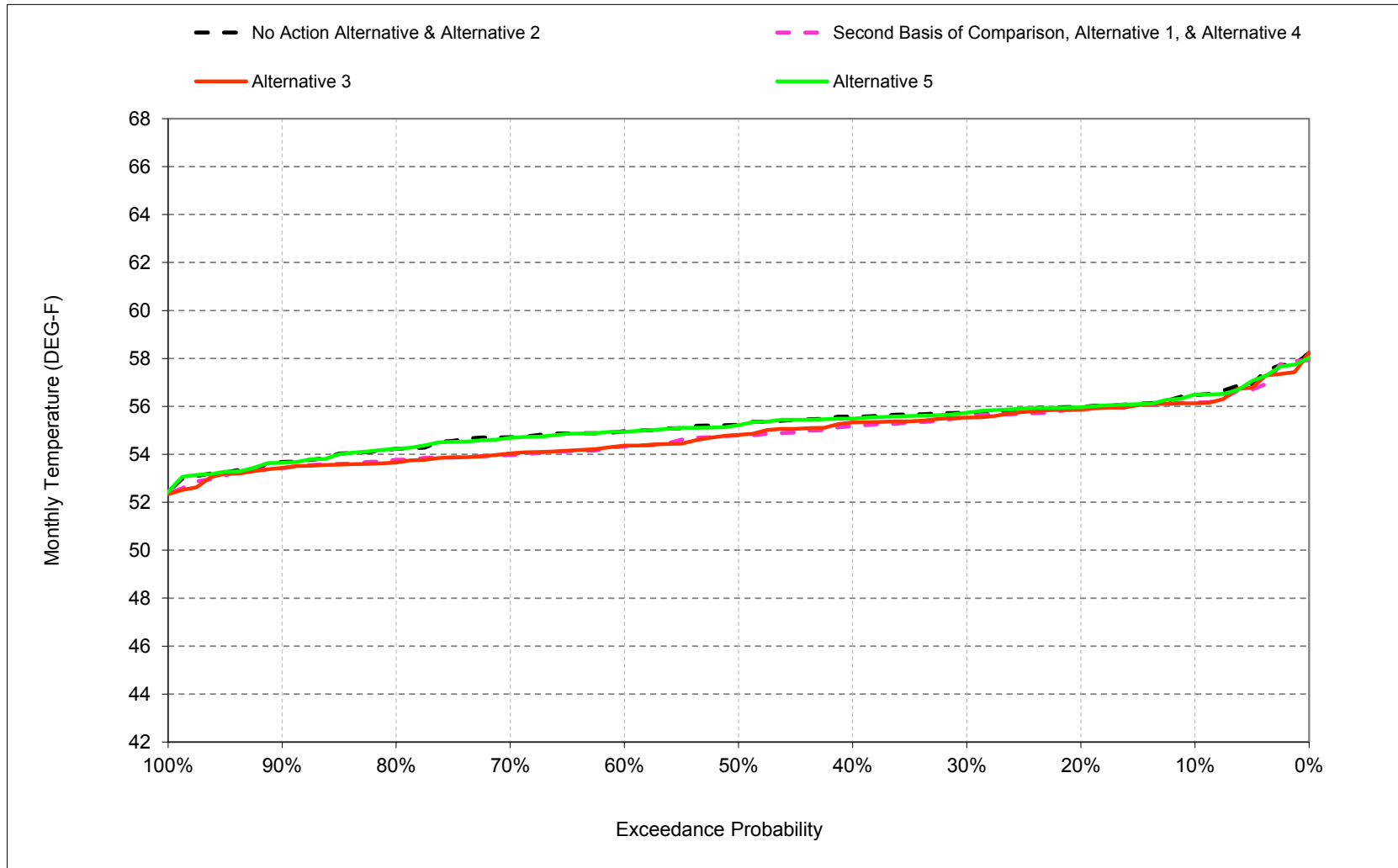
B.5. Sacramento River below Keswick Temperature

Figure B-5-1. Sacramento River below Keswick, October



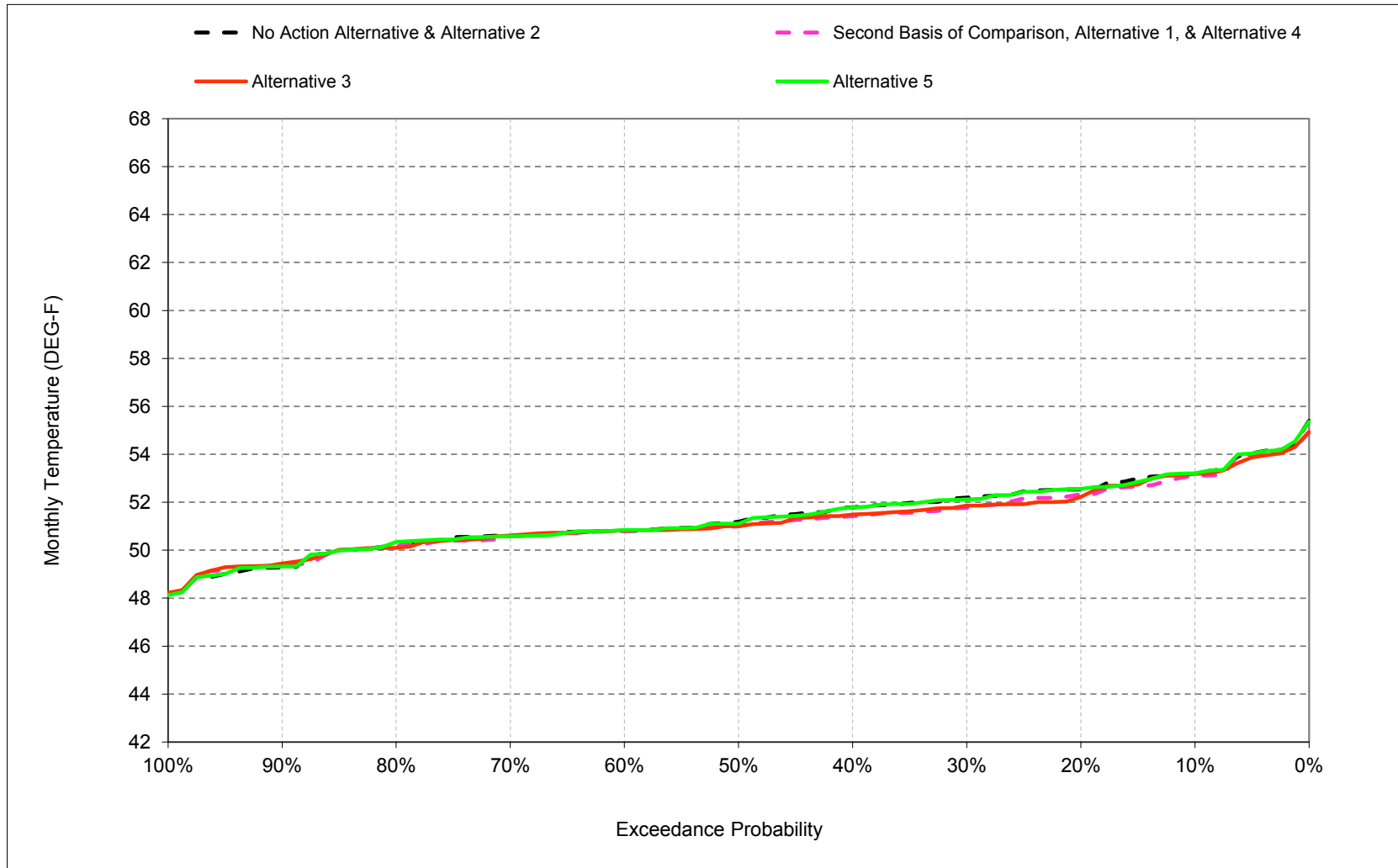
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-5-2. Sacramento River below Keswick, November



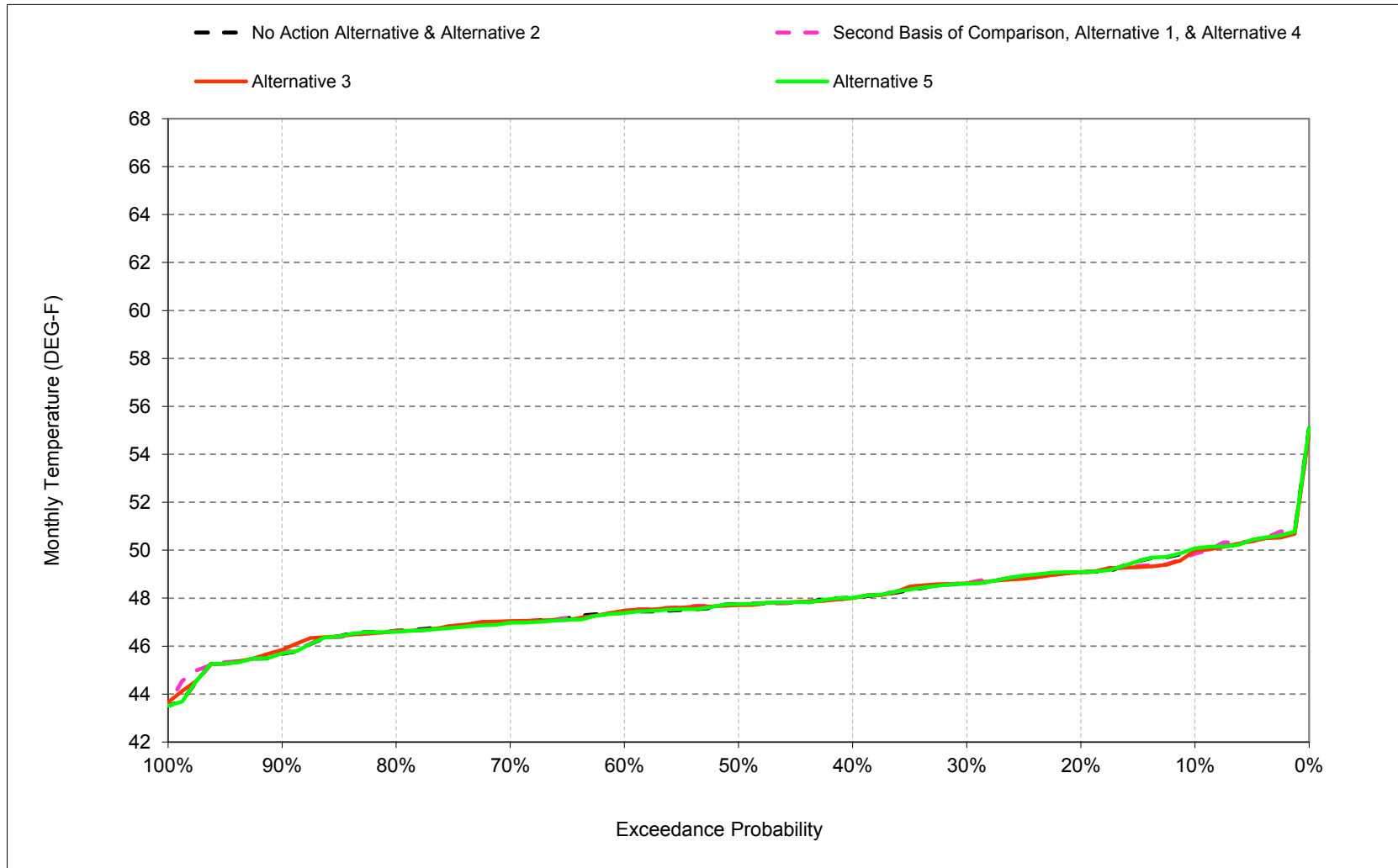
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-5-3. Sacramento River below Keswick, December



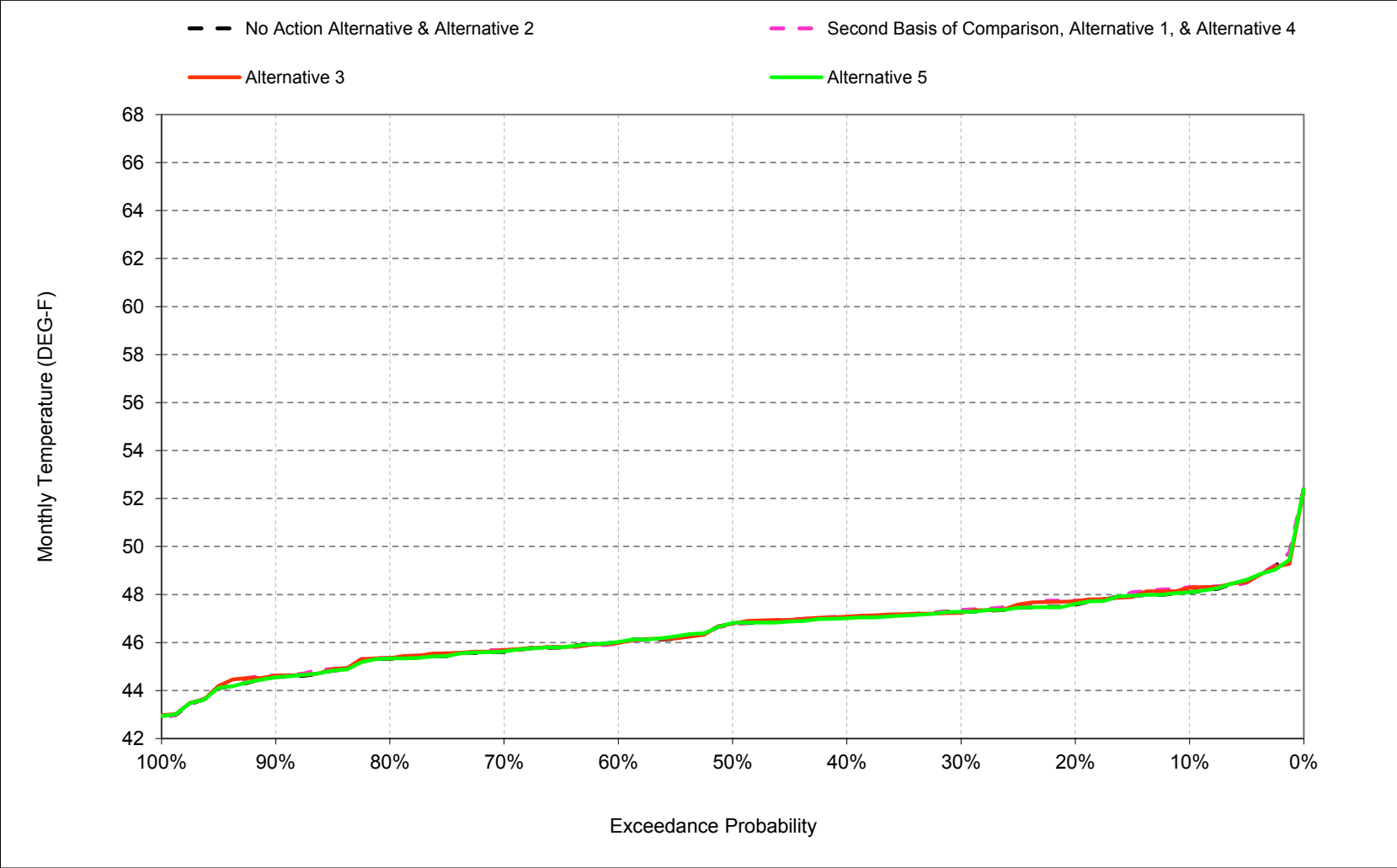
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-5-4. Sacramento River below Keswick, January



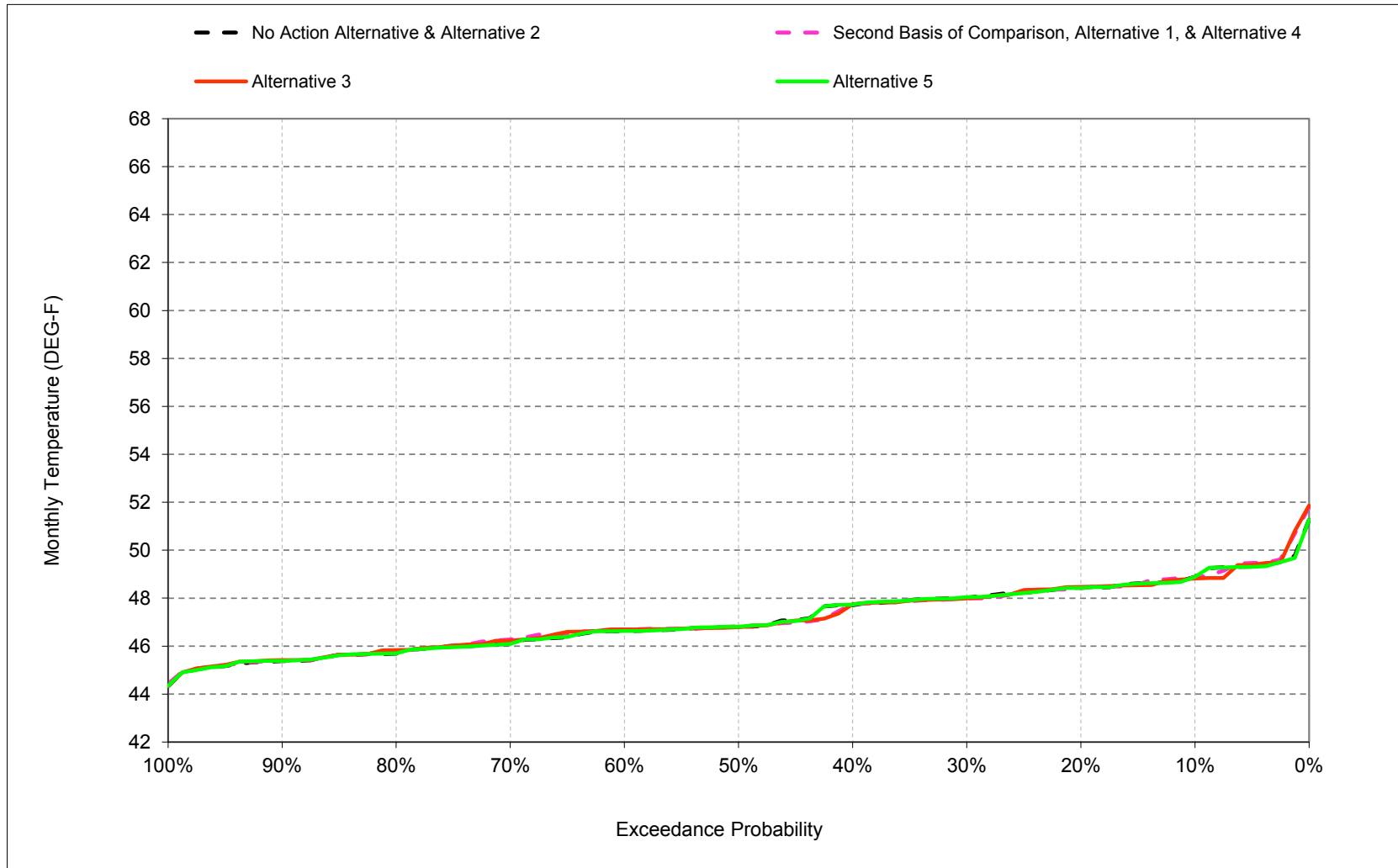
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-5-5. Sacramento River below Keswick, February



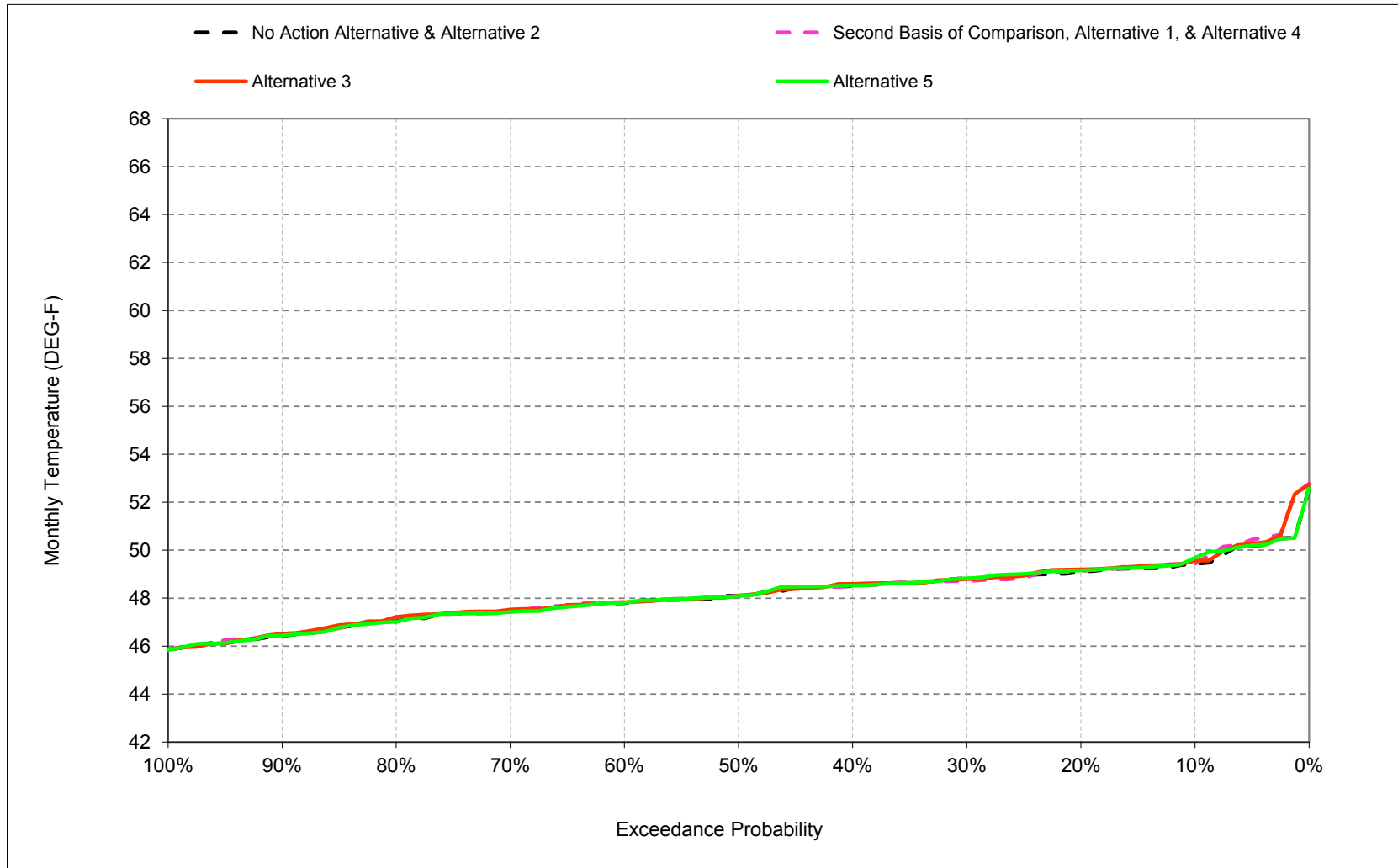
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-5-6. Sacramento River below Keswick, March



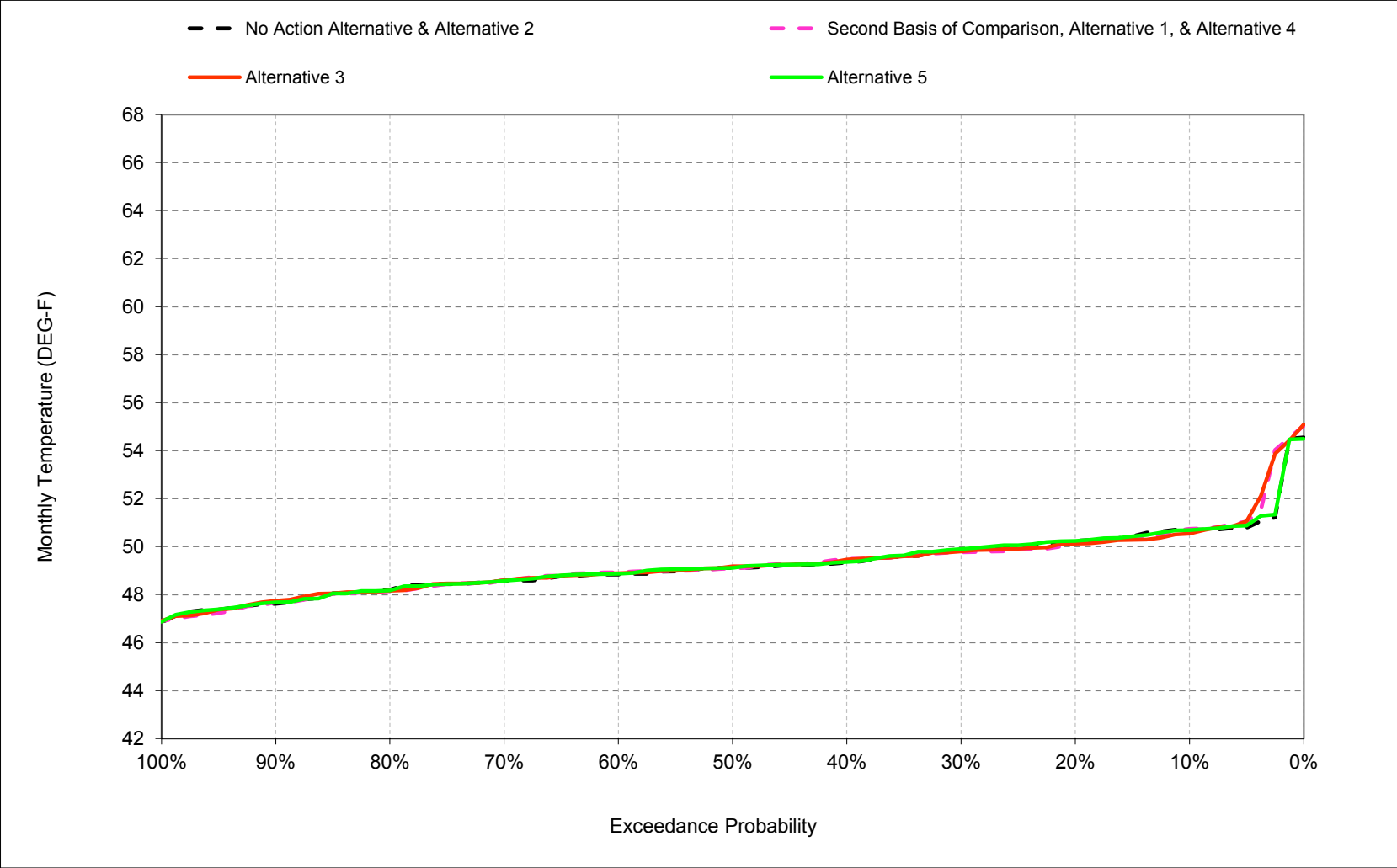
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-5-7. Sacramento River below Keswick, April



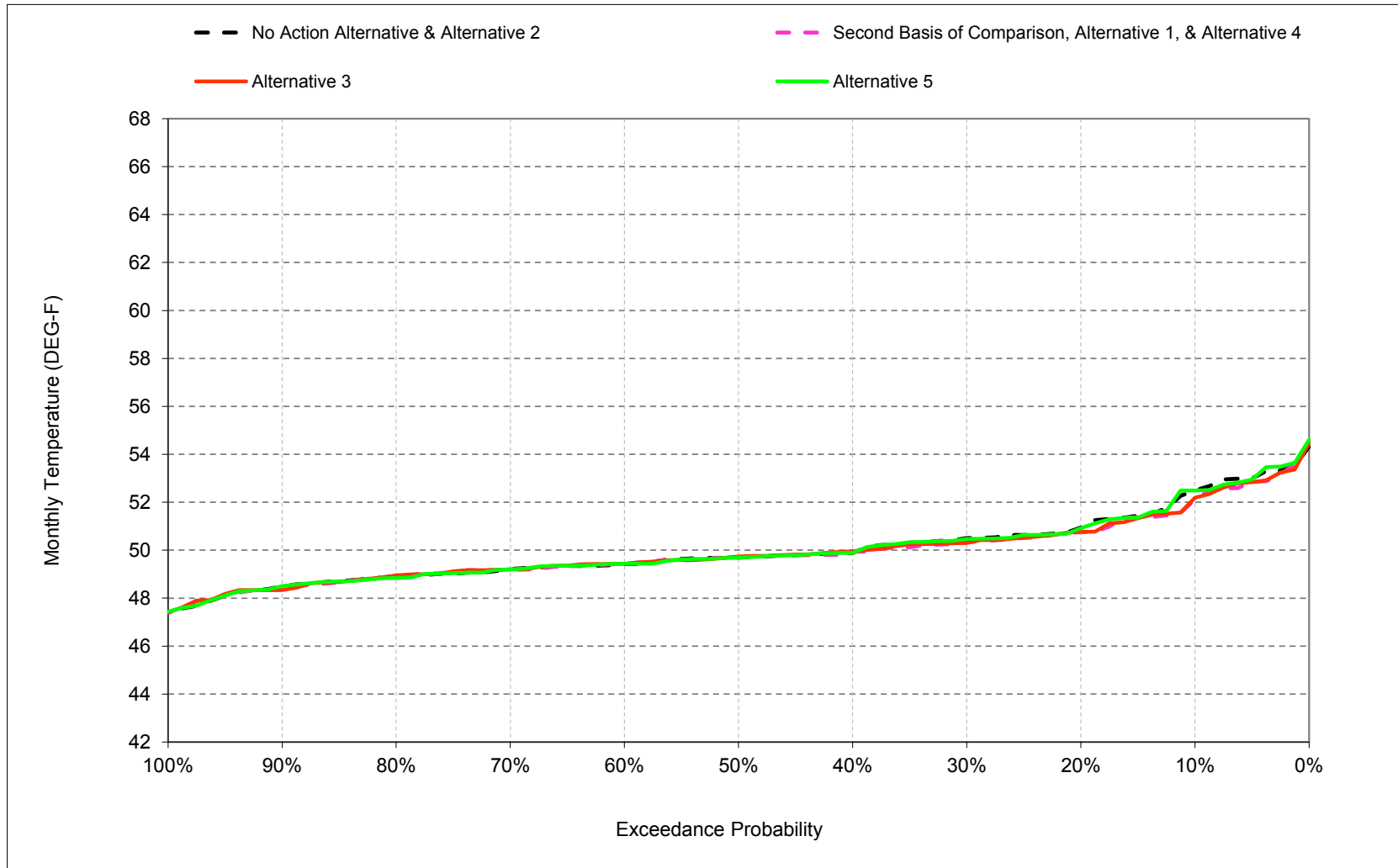
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-5-8. Sacramento River below Keswick, May



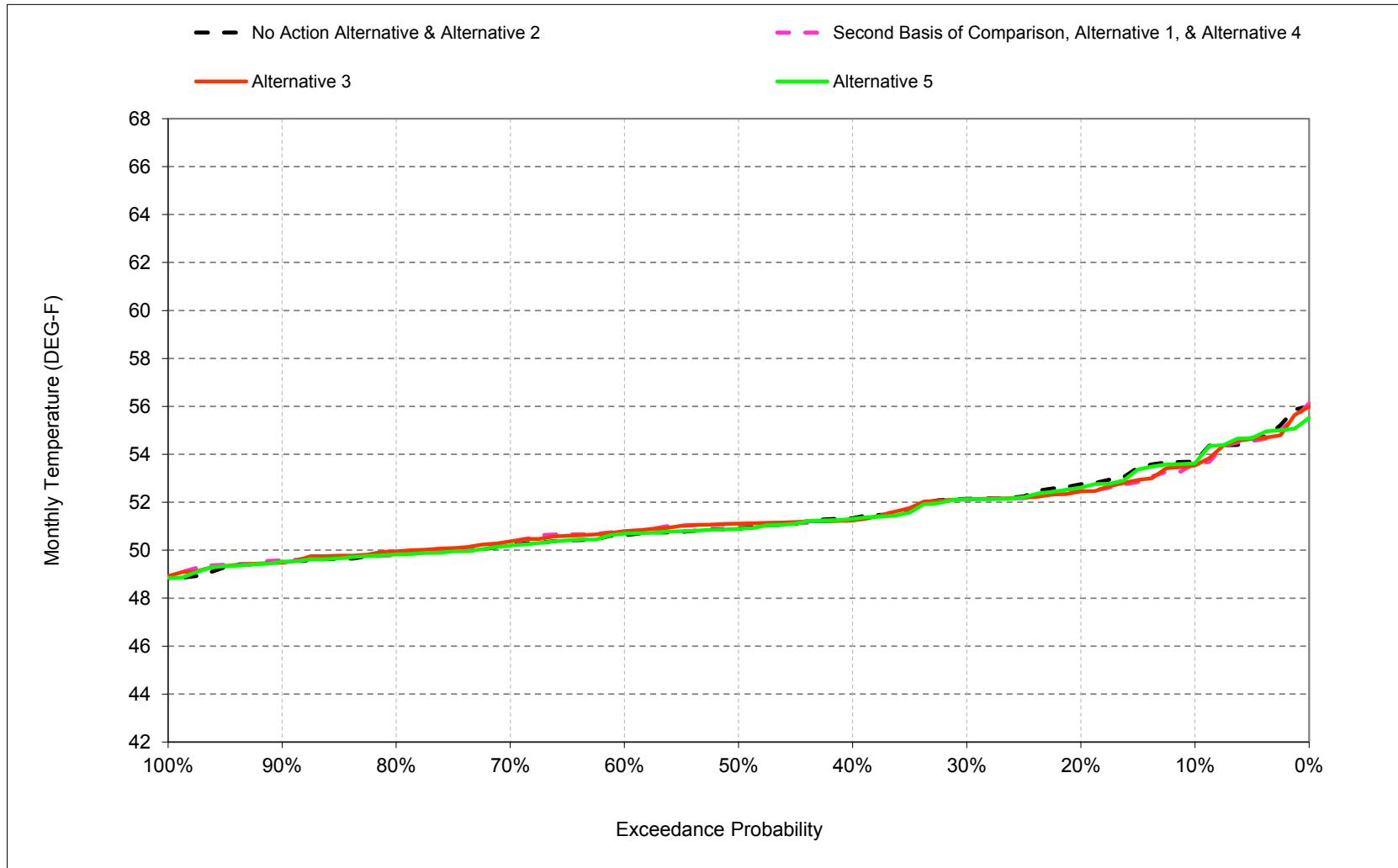
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-5-9. Sacramento River below Keswick, June



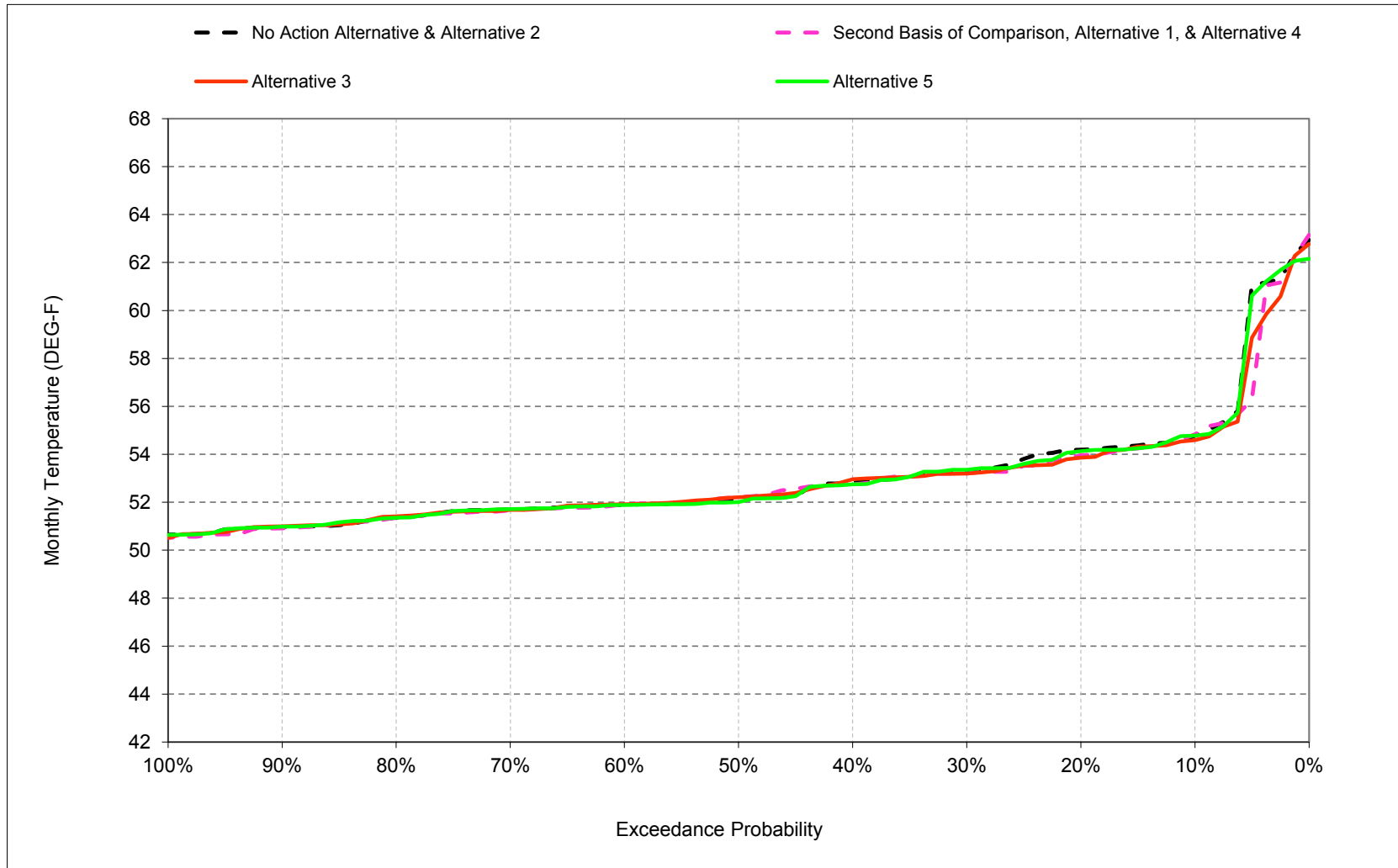
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-5-10. Sacramento River below Keswick, July



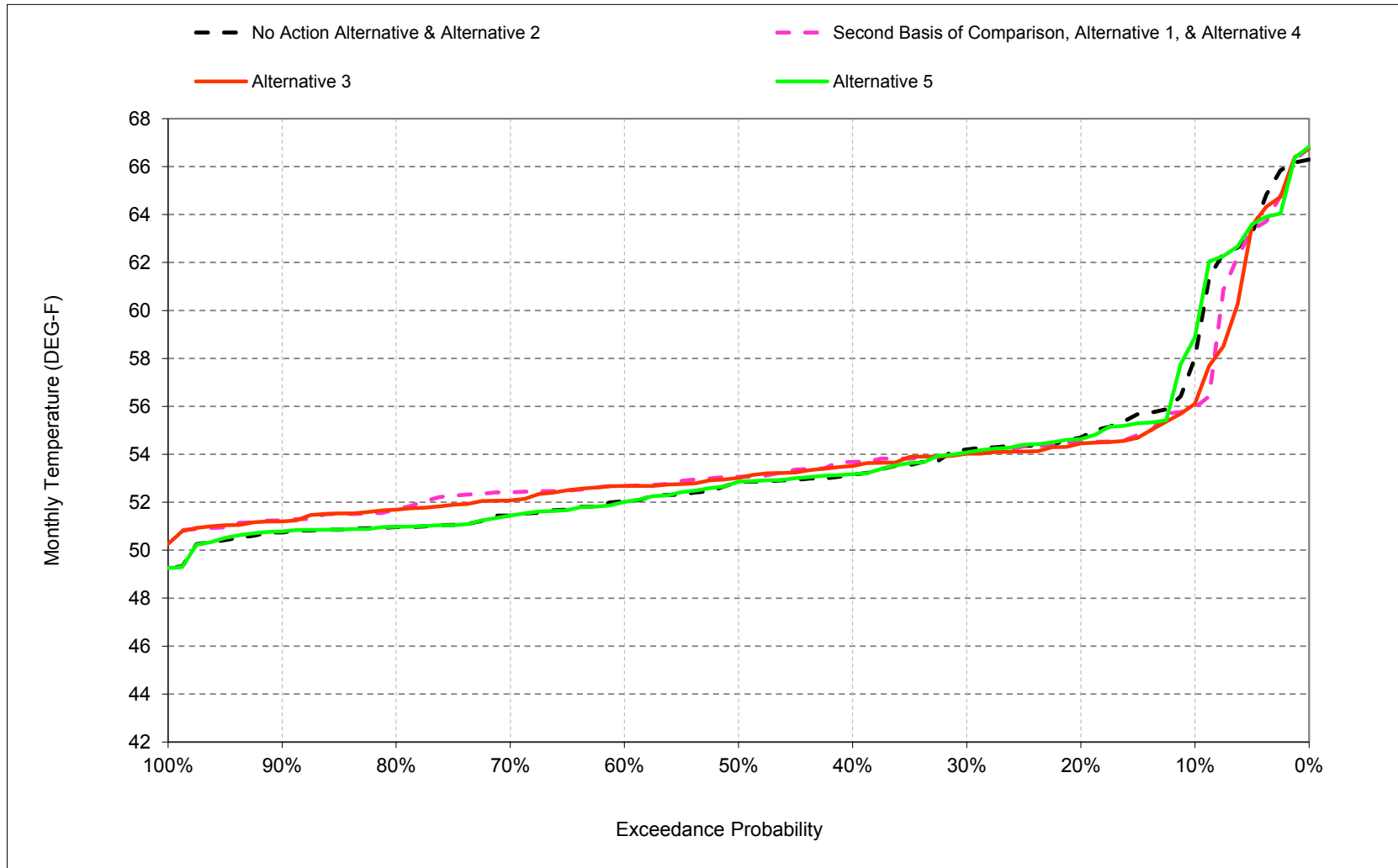
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-5-11. Sacramento River below Keswick, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-5-12. Sacramento River below Keswick, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-5-1. Sacramento River below Keswick, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	60	56	53	50	48	49	49	51	52	54	55	58
20%	56	56	53	49	48	48	49	50	51	53	54	55
30%	55	56	52	49	47	48	49	50	50	52	53	54
40%	55	56	52	48	47	48	49	49	50	51	53	53
50%	55	55	51	48	47	47	48	49	50	51	52	53
60%	54	55	51	47	46	47	48	49	49	51	52	52
70%	54	55	51	47	46	46	47	49	49	50	52	51
80%	54	54	50	47	45	46	47	48	49	50	51	51
90%	54	54	49	46	45	45	46	48	48	49	51	51
Long Term												
Full Simulation Period ^b	55	55	51	48	46	47	48	49	50	51	53	54
Water Year Types ^c												
Wet (32%)	53	53	49	47	46	46	48	49	49	51	52	51
Above Normal (16%)	55	55	51	47	46	46	48	49	49	50	51	51
Below Normal (13%)	55	55	52	48	47	48	48	49	50	51	52	53
Dry (24%)	55	55	52	48	47	48	49	49	50	52	53	54
Critical (15%)	58	56	52	48	47	48	49	51	52	54	58	61

Alternative 1												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	58	56	53	50	48	49	49	51	52	54	55	56
20%	56	56	52	49	48	48	49	50	51	52	54	55
30%	55	56	52	49	47	48	49	50	50	52	53	54
40%	55	55	51	48	47	48	49	49	50	51	53	54
50%	54	55	51	48	47	47	48	49	50	51	52	53
60%	54	54	51	47	46	47	48	49	49	51	52	53
70%	54	54	51	47	46	46	47	49	49	50	52	52
80%	54	54	50	47	45	46	47	48	49	50	51	52
90%	53	53	49	46	45	45	46	48	48	50	51	51
Long Term												
Full Simulation Period ^b	55	55	51	48	46	47	48	49	50	51	53	54
Water Year Types ^c												
Wet (32%)	52	52	49	47	46	46	48	49	49	51	52	52
Above Normal (16%)	55	54	51	47	46	46	48	49	49	50	51	52
Below Normal (13%)	54	55	51	48	47	48	49	49	50	51	52	53
Dry (24%)	55	55	51	48	47	48	49	49	50	51	53	54
Critical (15%)	57	56	52	48	47	48	49	51	52	54	57	60

Alternative 1 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	-2.0	-0.3	-0.1	0.0	0.2	0.0	0.0	0.0	-0.4	-0.1	0.1	-1.9
0.2	-0.1	-0.1	-0.2	0.0	0.2	0.0	0.0	-0.1	-0.2	-0.3	-0.3	-0.2
0.3	0.1	-0.2	-0.4	0.0	0.0	0.0	-0.1	-0.1	-0.2	0.0	-0.1	-0.1
0.4	-0.1	-0.4	-0.4	0.0	0.0	-0.1	0.0	0.1	0.0	-0.1	-0.1	0.6
0.5	-0.1	-0.4	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.3
0.6	0.0	-0.6	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.0	0.7
0.7	-0.1	-0.7	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.1	-0.1	0.9
0.8	-0.2	-0.5	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.8
0.9	-0.4	-0.3	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.5
Long Term												
Full Simulation Period ^b	-0.2	-0.4	-0.1	0.0	0.0	0.0	0.1	0.0	-0.1	0.0	-0.1	0.2
Water Year Types ^c												
Wet (32%)	-0.2	-0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	1.0
Above Normal (16%)	-0.1	-0.4	-0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.2	0.0	0.8
Below Normal (13%)	-0.3	-0.6	-0.5	-0.1	0.0	-0.1	0.2	0.3	0.0	0.0	-0.2	0.1
Dry (24%)	0.1	-0.3	-0.2	-0.1	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	-0.1
Critical (15%)	-0.8	-0.2	0.0	0.3	0.2	0.1	0.1	0.0	-0.2	-0.1	-0.5	-1.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-5-2. Sacramento River below Keswick, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
10%	60	56	53	50	48	49	49	51	52	54	55	58
20%	56	56	53	49	48	48	49	50	51	53	54	55
30%	55	56	52	49	47	48	49	50	50	52	53	54
40%	55	56	52	48	47	48	49	49	50	51	53	53
50%	55	55	51	48	47	47	48	49	50	51	52	53
60%	54	55	51	47	46	47	48	49	49	51	52	52
70%	54	55	51	47	46	46	47	49	49	50	52	51
80%	54	54	50	47	45	46	47	48	49	50	51	51
90%	54	54	49	46	45	45	46	48	48	49	51	51
Long Term												
Full Simulation Period ^b	55	55	51	48	46	47	48	49	50	51	53	54
Water Year Types^c												
Wet (32%)	53	53	49	47	46	46	48	49	49	51	52	51
Above Normal (16%)	55	55	51	47	46	46	48	49	49	50	51	51
Below Normal (13%)	55	55	52	48	47	48	48	49	50	51	52	53
Dry (24%)	55	55	52	48	47	48	49	49	50	52	53	54
Critical (15%)	58	56	52	48	47	48	49	51	52	54	58	61

Alternative 3												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
10%	58	56	53	50	48	49	50	51	52	54	55	56
20%	55	56	52	49	48	48	49	50	51	52	54	54
30%	55	56	52	49	47	48	49	50	50	52	53	54
40%	55	55	51	48	47	48	49	49	50	51	53	53
50%	54	55	51	48	47	47	48	49	50	51	52	53
60%	54	54	51	47	46	47	48	49	49	51	52	53
70%	54	54	51	47	46	46	47	49	49	50	52	52
80%	54	54	50	47	45	46	47	48	49	50	51	52
90%	53	53	49	46	45	45	46	48	48	49	51	51
Long Term												
Full Simulation Period ^b	55	55	51	48	46	47	48	49	50	51	53	54
Water Year Types^c												
Wet (32%)	52	53	49	47	46	46	48	49	49	51	52	52
Above Normal (16%)	55	54	51	47	46	46	48	49	49	50	51	52
Below Normal (13%)	54	55	52	48	47	48	49	49	50	51	52	53
Dry (24%)	55	55	51	48	47	48	49	49	50	51	53	54
Critical (15%)	57	56	52	48	47	48	49	51	52	54	57	60

Alternative 3 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
0.1	-2.1	-0.3	0.0	0.1	0.2	-0.1	0.1	-0.2	-0.3	-0.2	-0.2	-1.8
0.2	-0.2	-0.1	-0.3	0.0	0.2	0.0	0.1	-0.1	-0.1	-0.3	-0.3	-0.3
0.3	-0.1	-0.2	-0.3	0.0	-0.1	0.0	0.0	0.0	-0.2	0.0	-0.1	-0.2
0.4	-0.3	-0.2	-0.3	0.0	0.0	-0.1	0.1	0.1	0.1	-0.1	0.1	0.4
0.5	-0.1	-0.4	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.2
0.6	0.0	-0.6	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.7
0.7	-0.1	-0.7	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.1	0.0	0.6
0.8	-0.3	-0.6	-0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.7
0.9	-0.4	-0.2	0.2	0.2	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.5
Long Term												
Full Simulation Period ^b	-0.2	-0.4	-0.1	0.0	0.0	0.0	0.1	0.0	-0.1	0.0	-0.1	0.1
Water Year Types^c												
Wet (32%)	-0.2	-0.3	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.8
Above Normal (16%)	0.0	-0.4	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.8
Below Normal (13%)	-0.4	-0.6	-0.4	-0.1	0.0	-0.1	0.2	0.3	0.0	0.0	0.0	-0.3
Dry (24%)	-0.1	-0.4	-0.2	-0.1	0.0	0.0	0.0	0.0	-0.1	0.0	-0.1	-0.2
Critical (15%)	-0.6	-0.1	0.1	0.2	0.1	0.0	0.1	0.0	-0.1	-0.1	-0.6	-1.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-5-3. Sacramento River below Keswick, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	60	56	53	50	48	49	49	51	52	54	55	58
20%	56	56	53	49	48	48	49	50	51	53	54	55
30%	55	56	52	49	47	48	49	50	50	52	53	54
40%	55	56	52	48	47	48	49	49	50	51	53	53
50%	55	55	51	48	47	47	48	49	50	51	52	53
60%	54	55	51	47	46	47	48	49	49	51	52	52
70%	54	55	51	47	46	46	47	49	49	50	52	51
80%	54	54	50	47	45	46	47	48	49	50	51	51
90%	54	54	49	46	45	45	46	48	48	49	51	51
Long Term												
Full Simulation Period ^b	55	55	51	48	46	47	48	49	50	51	53	54
Water Year Types ^c												
Wet (32%)	53	53	49	47	46	46	48	49	49	51	52	51
Above Normal (16%)	55	55	51	47	46	46	48	49	49	50	51	51
Below Normal (13%)	55	55	52	48	47	48	48	49	50	51	52	53
Dry (24%)	55	55	52	48	47	48	49	49	50	52	53	54
Critical (15%)	58	56	52	48	47	48	49	51	52	54	58	61

Alternative 5												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	60	56	53	50	48	49	50	51	52	54	55	59
20%	56	56	53	49	48	48	49	50	51	53	54	55
30%	55	56	52	49	47	48	49	50	50	52	53	54
40%	55	55	52	48	47	48	49	49	50	51	53	53
50%	54	55	51	48	47	47	48	49	50	51	52	53
60%	54	55	51	47	46	47	48	49	49	51	52	52
70%	54	55	51	47	46	46	47	49	49	50	52	51
80%	54	54	50	47	45	46	47	48	49	50	51	51
90%	54	54	49	46	44	45	46	48	48	49	51	51
Long Term												
Full Simulation Period ^b	55	55	51	48	46	47	48	49	50	51	53	54
Water Year Types ^c												
Wet (32%)	53	53	49	47	46	46	48	49	49	51	52	51
Above Normal (16%)	55	55	51	47	46	46	48	49	49	50	51	51
Below Normal (13%)	54	55	52	48	47	48	48	49	50	51	52	53
Dry (24%)	55	55	52	48	47	48	49	49	50	51	53	54
Critical (15%)	58	56	52	48	47	48	49	51	53	54	58	61

Alternative 5 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	0.1	0.0	0.0	0.2	0.0	0.0	0.2	0.0	0.0	-0.1	0.0	0.9
0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	-0.1	-0.1	-0.1
0.3	0.1	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1
0.4	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0
0.5	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0
0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.7	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.8	-0.1	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Long Term												
Full Simulation Period ^b	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Water Year Types ^c												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Above Normal (16%)	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Below Normal (13%)	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1
Dry (24%)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-0.1	-0.1	-0.1
Critical (15%)	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	-0.1	-0.1	0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-5-4. Sacramento River below Keswick, Monthly Temperature

Second Basis of Comparison												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
10%	58	56	53	50	48	49	49	51	52	54	55	56
20%	56	56	52	49	48	48	49	50	51	52	54	55
30%	55	56	52	49	47	48	49	50	50	52	53	54
40%	55	55	51	48	47	48	49	49	50	51	53	54
50%	54	55	51	48	47	47	48	49	50	51	52	53
60%	54	54	51	47	46	47	48	49	49	51	52	53
70%	54	54	51	47	46	46	47	49	49	50	52	52
80%	54	54	50	47	45	46	47	48	49	50	51	52
90%	53	53	49	46	45	45	46	48	48	50	51	51
Long Term												
Full Simulation Period ^b	55	55	51	48	46	47	48	49	50	51	53	54
Water Year Types^c												
Wet (32%)	52	52	49	47	46	46	48	49	49	51	52	52
Above Normal (16%)	55	54	51	47	46	46	48	49	49	50	51	52
Below Normal (13%)	54	55	51	48	47	48	49	49	50	51	52	53
Dry (24%)	55	55	51	48	47	48	49	49	50	51	53	54
Critical (15%)	57	56	52	48	47	48	49	51	52	54	57	60

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
10%	60	56	53	50	48	49	49	51	52	54	55	58
20%	56	56	53	49	48	48	49	50	51	53	54	55
30%	55	56	52	49	47	48	49	50	50	52	53	54
40%	55	56	52	48	47	48	49	49	50	51	53	53
50%	55	55	51	48	47	47	48	49	50	51	52	53
60%	54	55	51	47	46	47	48	49	49	51	52	52
70%	54	55	51	47	46	46	47	49	49	50	52	51
80%	54	54	50	47	45	46	47	48	49	50	51	51
90%	54	54	49	46	45	45	46	48	48	49	51	51
Long Term												
Full Simulation Period ^b	55	55	51	48	46	47	48	49	50	51	53	54
Water Year Types^c												
Wet (32%)	53	53	49	47	46	46	48	49	49	51	52	51
Above Normal (16%)	55	55	51	47	46	46	48	49	49	50	51	51
Below Normal (13%)	55	55	52	48	47	48	48	49	50	51	52	53
Dry (24%)	55	55	52	48	47	48	49	49	50	52	53	54
Critical (15%)	58	56	52	48	47	48	49	51	52	54	58	61

No Action Alternative minus Second Basis of Comparison												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
0.1	2.0	0.3	0.1	0.0	-0.2	0.0	0.0	0.0	0.4	0.1	-0.1	1.9
0.2	0.1	0.1	0.2	0.0	-0.2	0.0	0.0	0.1	0.2	0.3	0.3	0.2
0.3	-0.1	0.2	0.4	0.0	0.0	0.0	0.1	0.1	0.2	0.0	0.1	0.1
0.4	0.1	0.4	0.4	0.0	0.0	0.1	0.0	-0.1	0.0	0.1	0.1	-0.6
0.5	0.1	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	-0.1	-0.3
0.6	0.0	0.6	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	-0.2	0.0	-0.7
0.7	0.1	0.7	0.0	0.0	-0.1	-0.2	0.0	0.0	0.0	-0.1	0.1	-0.9
0.8	0.2	0.5	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	-0.8
0.9	0.4	0.3	-0.1	-0.1	-0.1	0.0	0.0	0.0	0.0	-0.1	0.0	-0.5
Long Term												
Full Simulation Period ^b	0.2	0.4	0.1	0.0	0.0	0.0	-0.1	0.0	0.1	0.0	0.1	-0.2
Water Year Types^c												
Wet (32%)	0.2	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-1.0
Above Normal (16%)	0.1	0.4	0.1	0.0	-0.1	0.0	-0.1	0.0	0.0	-0.2	0.0	-0.8
Below Normal (13%)	0.3	0.6	0.5	0.1	0.0	0.1	-0.2	-0.3	0.0	0.0	0.2	-0.1
Dry (24%)	-0.1	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1
Critical (15%)	0.8	0.2	0.0	-0.3	-0.2	-0.1	-0.1	0.0	0.2	0.1	0.5	1.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-5-5. Sacramento River below Keswick, Monthly Temperature

Second Basis of Comparison												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
10%	58	56	53	50	48	49	49	51	52	54	55	56
20%	56	56	52	49	48	48	49	50	51	52	54	55
30%	55	56	52	49	47	48	49	50	50	52	53	54
40%	55	55	51	48	47	48	49	49	50	51	53	54
50%	54	55	51	48	47	47	48	49	50	51	52	53
60%	54	54	51	47	46	47	48	49	49	51	52	53
70%	54	54	51	47	46	46	47	49	49	50	52	52
80%	54	54	50	47	45	46	47	48	49	50	51	52
90%	53	53	49	46	45	45	46	48	48	50	51	51
Long Term												
Full Simulation Period ^b	55	55	51	48	46	47	48	49	50	51	53	54
Water Year Types^c												
Wet (32%)	52	52	49	47	46	46	48	49	49	51	52	52
Above Normal (16%)	55	54	51	47	46	46	48	49	49	50	51	52
Below Normal (13%)	54	55	51	48	47	48	49	49	50	51	52	53
Dry (24%)	55	55	51	48	47	48	49	49	50	51	53	54
Critical (15%)	57	56	52	48	47	48	49	51	52	54	57	60

Alternative 3												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
10%	58	56	53	50	48	49	50	51	52	54	55	56
20%	55	56	52	49	48	48	49	50	51	52	54	54
30%	55	56	52	49	47	48	49	50	50	52	53	54
40%	55	55	51	48	47	48	49	49	50	51	53	53
50%	54	55	51	48	47	47	48	49	50	51	52	53
60%	54	54	51	47	46	47	48	49	49	51	52	53
70%	54	54	51	47	46	46	47	49	49	50	52	52
80%	54	54	50	47	45	46	47	48	49	50	51	52
90%	53	53	49	46	45	45	46	48	48	49	51	51
Long Term												
Full Simulation Period ^b	55	55	51	48	46	47	48	49	50	51	53	54
Water Year Types^c												
Wet (32%)	52	53	49	47	46	46	48	49	49	51	52	52
Above Normal (16%)	55	54	51	47	46	46	48	49	49	50	51	52
Below Normal (13%)	54	55	52	48	47	48	49	49	50	51	52	53
Dry (24%)	55	55	51	48	47	48	49	49	50	51	53	54
Critical (15%)	57	56	52	48	47	48	49	51	52	54	57	60

Alternative 3 minus Second Basis of Comparison												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
0.1	-0.1	0.0	0.1	0.1	0.0	0.0	0.1	-0.2	0.1	-0.1	-0.2	0.1
0.2	-0.1	0.0	-0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0	-0.1	-0.1
0.3	-0.1	0.0	0.1	0.0	-0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0
0.4	-0.1	0.2	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.2	-0.2
0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	-0.1
0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.7	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.3
0.8	-0.1	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0
0.9	0.0	0.0	0.1	0.1	-0.1	0.0	0.0	0.1	0.0	-0.1	0.1	0.0
Long Term												
Full Simulation Period ^b	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1
Water Year Types^c												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-0.1
Above Normal (16%)	0.0	0.0	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Below Normal (13%)	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	0.2	-0.3
Dry (24%)	-0.2	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	-0.1
Critical (15%)	0.2	0.1	0.0	0.0	-0.1	-0.1	0.0	0.0	0.0	0.1	0.0	0.0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-5-6. Sacramento River below Keswick, Monthly Temperature

Second Basis of Comparison												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
10%	58	56	53	50	48	49	49	51	52	54	55	56
20%	56	56	52	49	48	48	49	50	51	52	54	55
30%	55	56	52	49	47	48	49	50	50	52	53	54
40%	55	55	51	48	47	48	49	49	50	51	53	54
50%	54	55	51	48	47	47	48	49	50	51	52	53
60%	54	54	51	47	46	47	48	49	49	51	52	53
70%	54	54	51	47	46	46	47	49	49	50	52	52
80%	54	54	50	47	45	46	47	48	49	50	51	52
90%	53	53	49	46	45	45	46	48	48	50	51	51
Long Term												
Full Simulation Period ^b	55	55	51	48	46	47	48	49	50	51	53	54
Water Year Types^c												
Wet (32%)	52	52	49	47	46	46	48	49	49	51	52	52
Above Normal (16%)	55	54	51	47	46	46	48	49	49	50	51	52
Below Normal (13%)	54	55	51	48	47	48	49	49	50	51	52	53
Dry (24%)	55	55	51	48	47	48	49	49	50	51	53	54
Critical (15%)	57	56	52	48	47	48	49	51	52	54	57	60

Alternative 5												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
10%	60	56	53	50	48	49	50	51	52	54	55	59
20%	56	56	53	49	48	48	49	50	51	53	54	55
30%	55	56	52	49	47	48	49	50	50	52	53	54
40%	55	55	52	48	47	48	49	49	50	51	53	53
50%	54	55	51	48	47	47	48	49	50	51	52	53
60%	54	55	51	47	46	47	48	49	49	51	52	52
70%	54	55	51	47	46	46	47	49	49	50	52	51
80%	54	54	50	47	45	46	47	48	49	50	51	51
90%	54	54	49	46	44	45	46	48	48	49	51	51
Long Term												
Full Simulation Period ^b	55	55	51	48	46	47	48	49	50	51	53	54
Water Year Types^c												
Wet (32%)	53	53	49	47	46	46	48	49	49	51	52	51
Above Normal (16%)	55	55	51	47	46	46	48	49	49	50	51	51
Below Normal (13%)	54	55	52	48	47	48	48	49	50	51	52	53
Dry (24%)	55	55	52	48	47	48	49	49	50	51	53	54
Critical (15%)	58	56	52	48	47	48	49	51	53	54	58	61

Alternative 5 minus Second Basis of Comparison												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
0.1	2.1	0.3	0.1	0.2	-0.2	0.0	0.2	0.0	0.4	0.0	0.0	2.8
0.2	0.1	0.1	0.2	0.0	-0.2	0.0	0.0	0.1	0.1	0.1	0.2	0.1
0.3	0.0	0.2	0.4	0.0	-0.1	0.0	0.1	0.1	0.1	0.0	0.2	0.0
0.4	0.0	0.3	0.4	0.0	-0.1	0.1	0.0	-0.1	0.0	0.0	0.0	-0.5
0.5	0.1	0.4	0.1	0.0	0.1	0.0	0.0	0.0	0.0	-0.2	-0.2	-0.3
0.6	0.0	0.6	0.0	0.0	0.1	0.0	0.0	-0.1	0.0	-0.1	0.0	-0.7
0.7	0.1	0.7	0.0	-0.1	-0.1	-0.2	0.0	0.0	0.0	-0.1	0.1	-0.9
0.8	0.1	0.5	0.2	0.0	0.0	-0.1	-0.1	0.0	0.0	0.0	0.0	-0.8
0.9	0.4	0.2	-0.1	0.0	-0.1	0.0	0.0	0.1	0.0	-0.1	0.0	-0.5
Long Term												
Full Simulation Period ^b	0.2	0.4	0.1	0.0	-0.1	0.0	0.0	0.0	0.1	0.0	0.1	-0.2
Water Year Types^c												
Wet (32%)	0.2	0.3	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.1	-0.9
Above Normal (16%)	0.1	0.3	0.1	0.0	-0.1	0.0	-0.1	0.0	0.0	-0.2	-0.1	-0.8
Below Normal (13%)	0.3	0.6	0.5	0.1	0.0	0.1	-0.1	-0.2	0.0	0.0	0.3	0.0
Dry (24%)	0.0	0.3	0.2	0.1	0.0	0.0	0.0	0.1	0.1	0.0	-0.2	0.0
Critical (15%)	0.9	0.3	0.0	-0.3	-0.2	-0.1	0.0	0.0	0.2	0.0	0.4	1.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

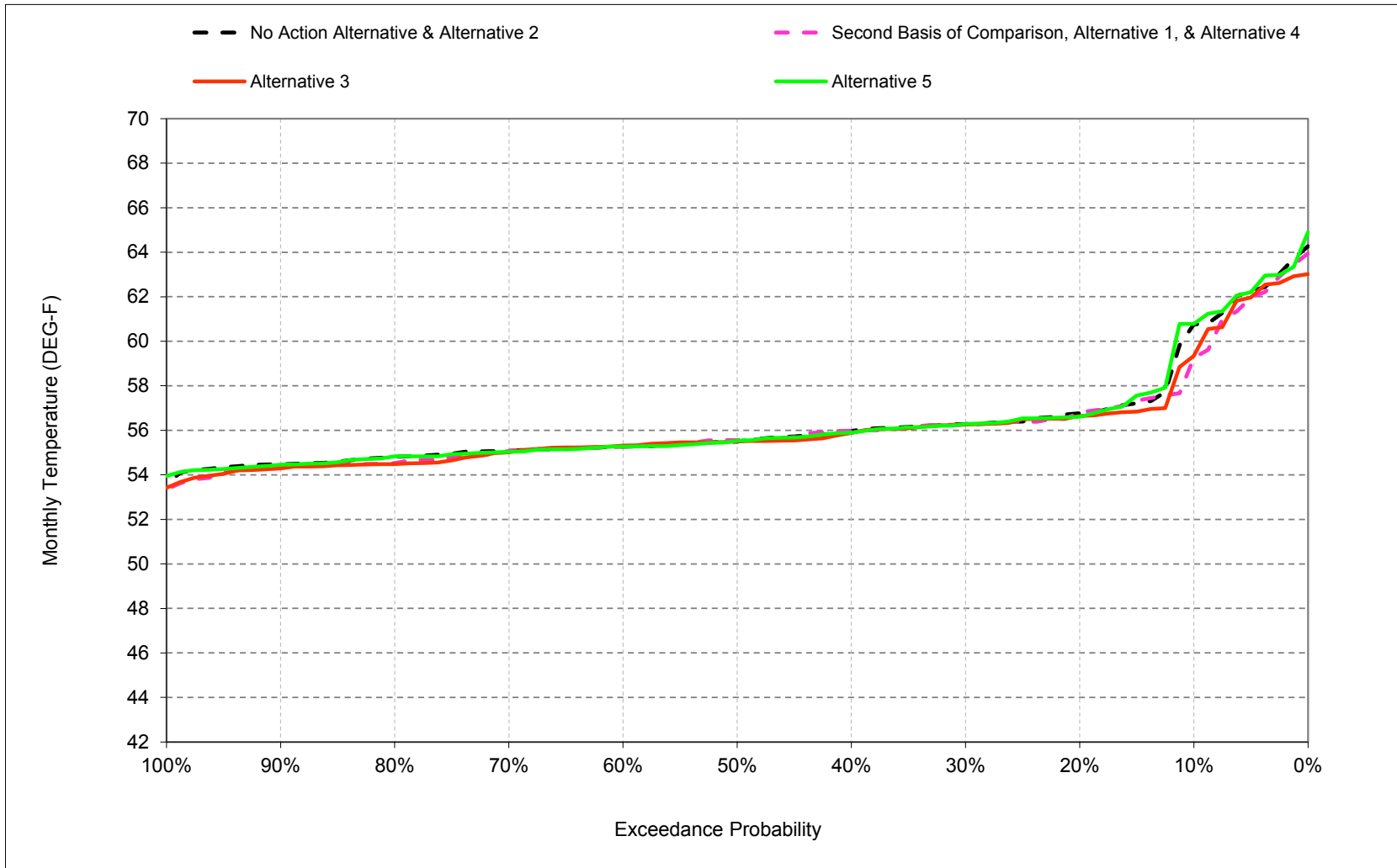
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

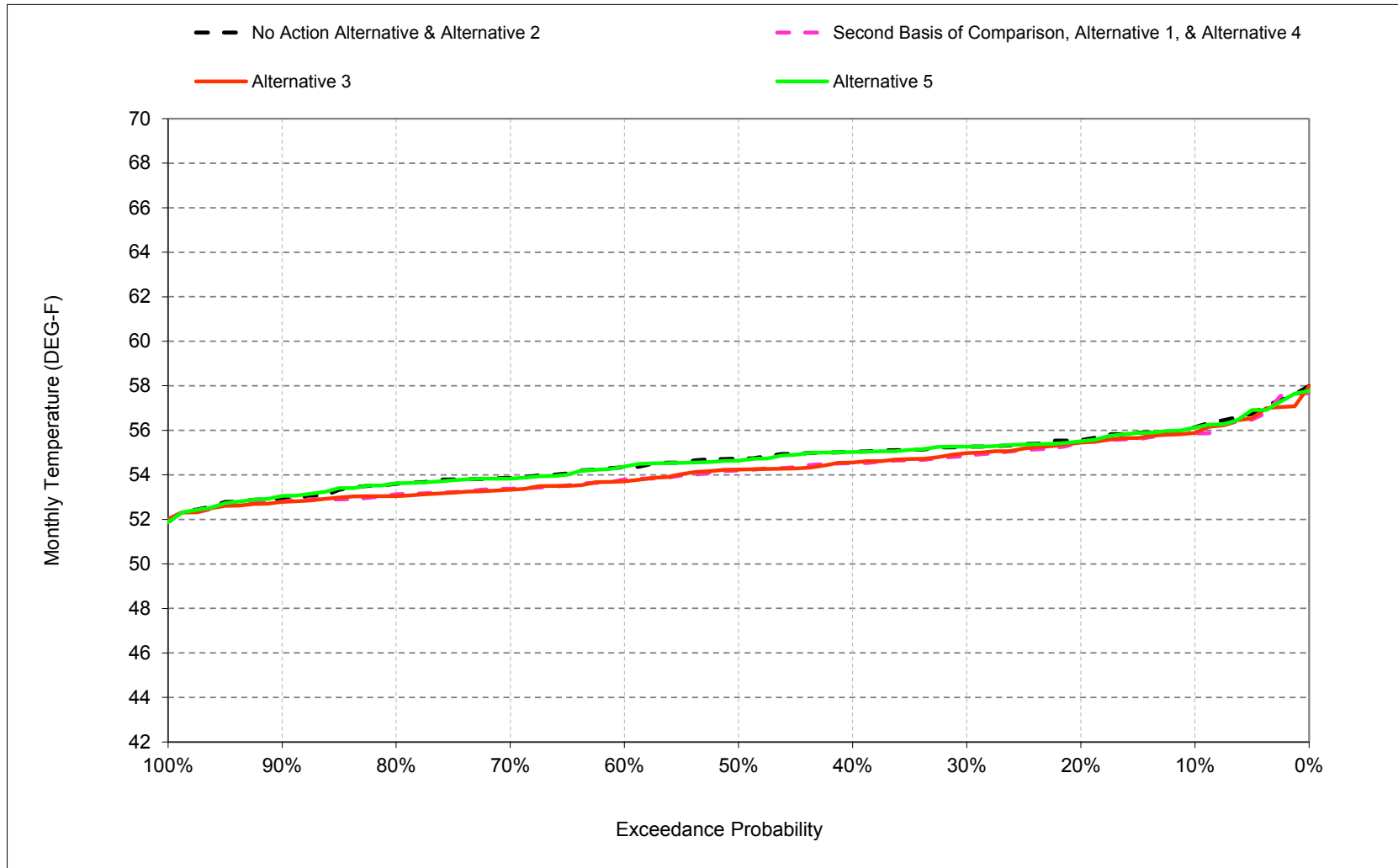
B.6. Sacramento River at Balls Ferry Temperature

Figure B-6-1. Sacramento River at Balls Ferry, October



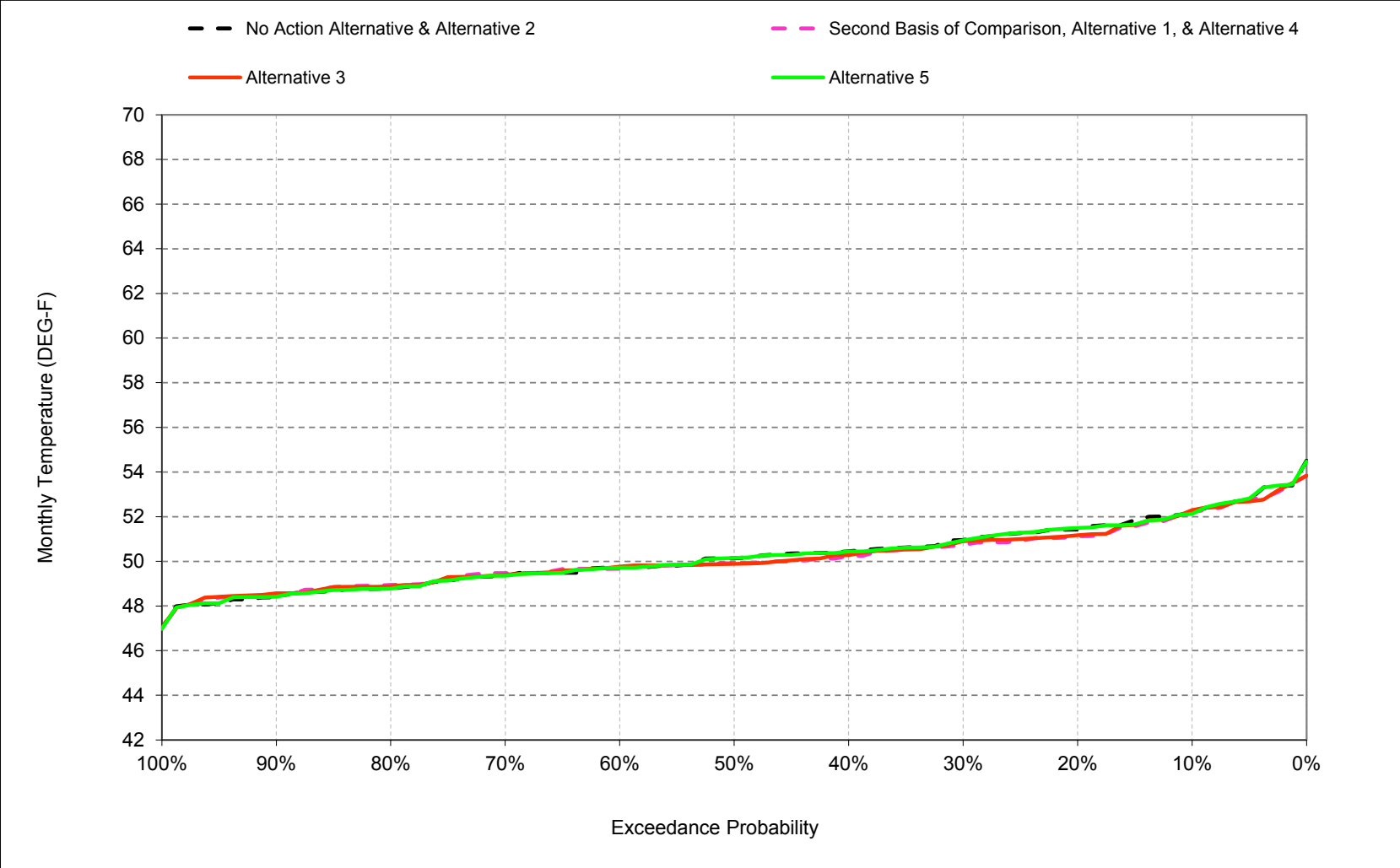
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-6-2. Sacramento River at Balls Ferry, November



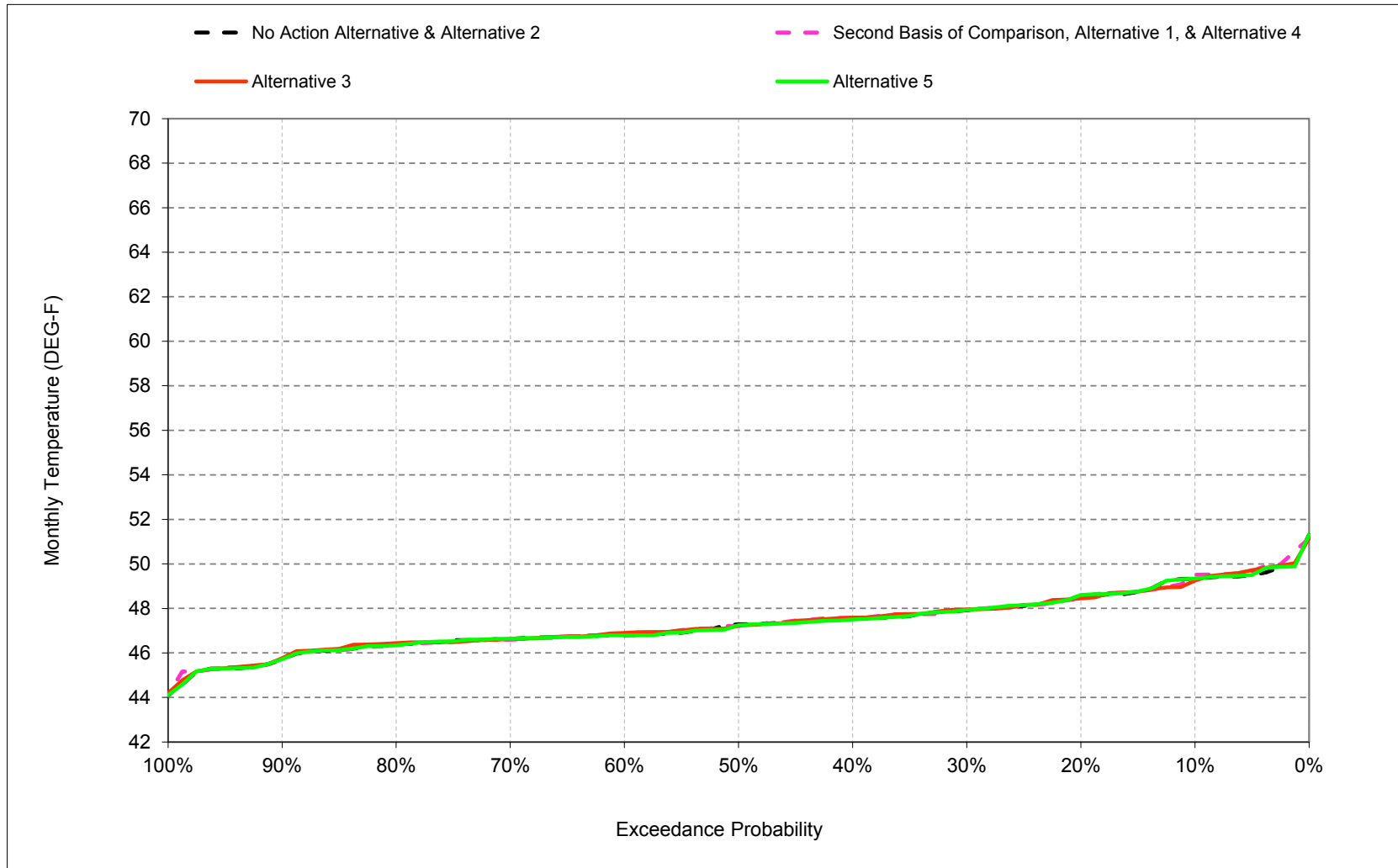
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-6-3. Sacramento River at Balls Ferry, December



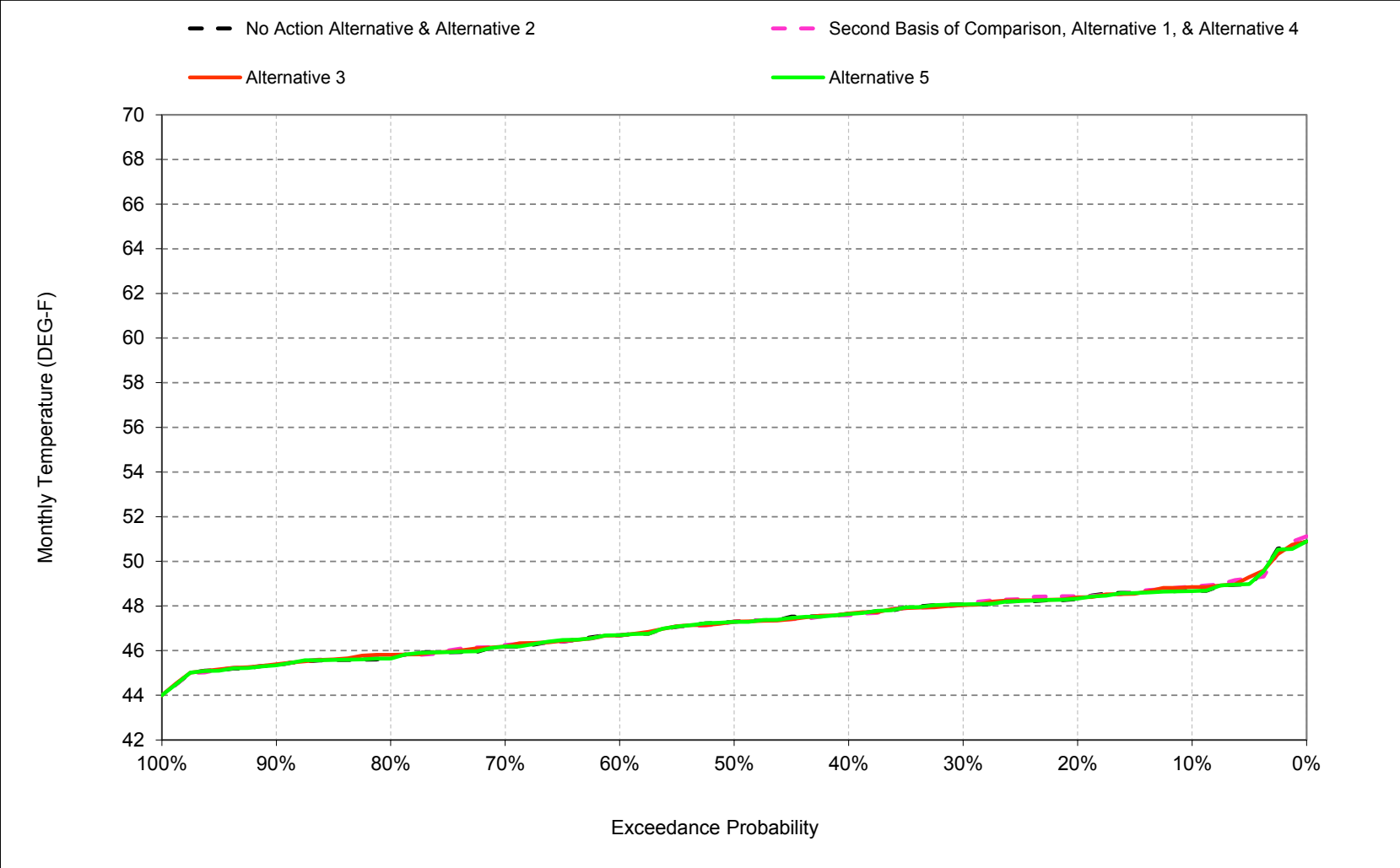
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-6-4. Sacramento River at Balls Ferry, January



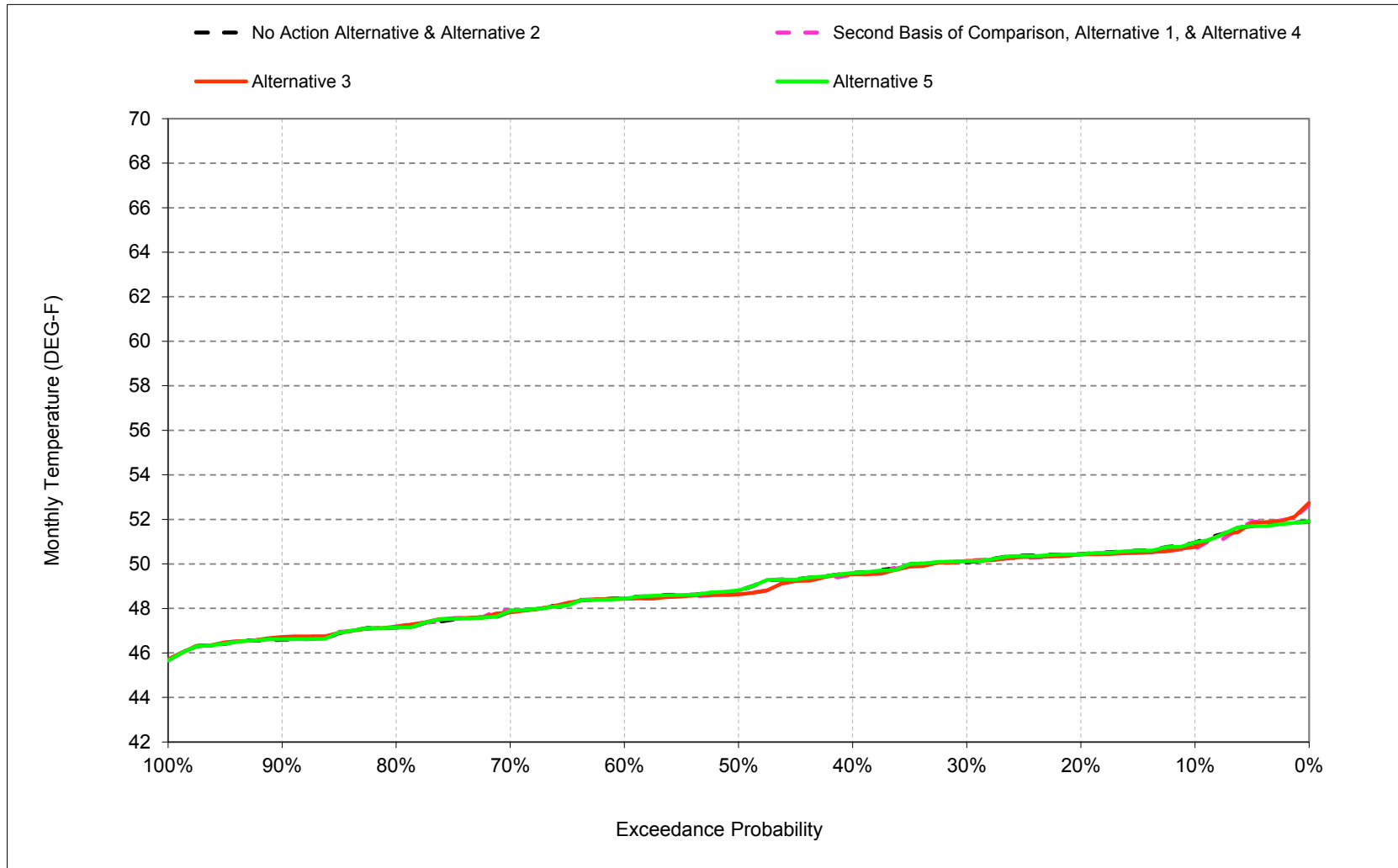
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-6-5. Sacramento River at Balls Ferry, February



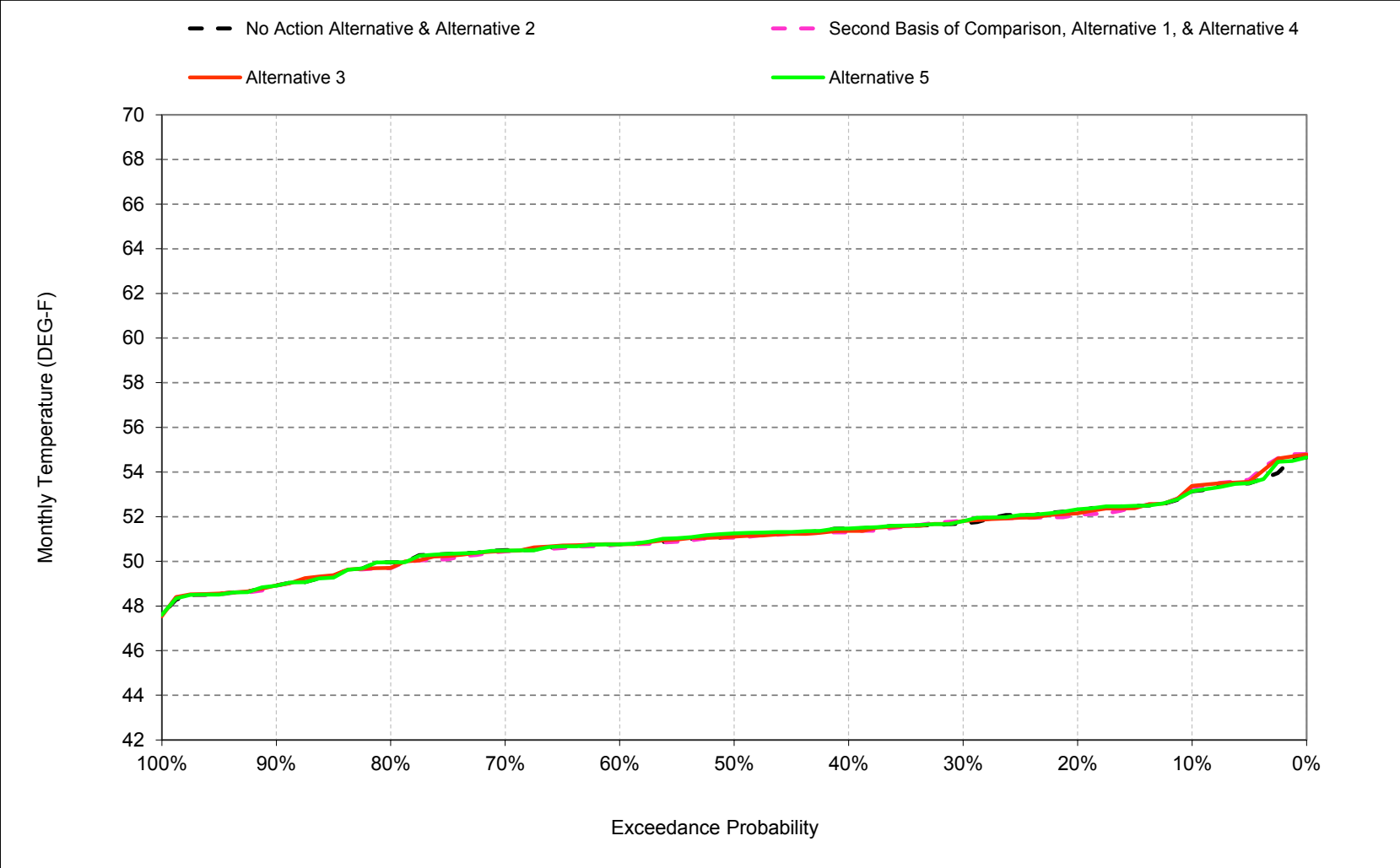
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-6-6. Sacramento River at Balls Ferry, March



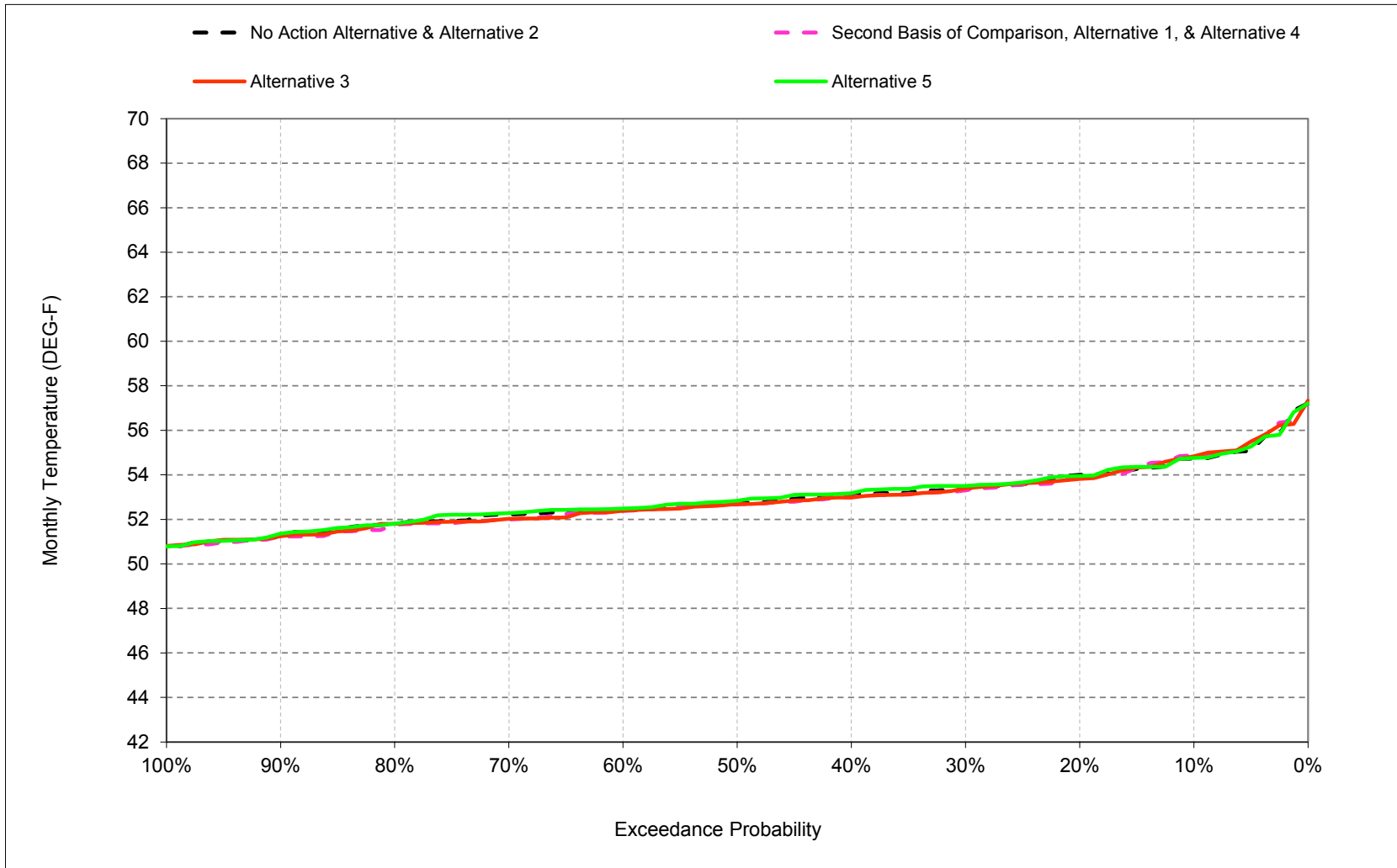
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-6-7. Sacramento River at Balls Ferry, April



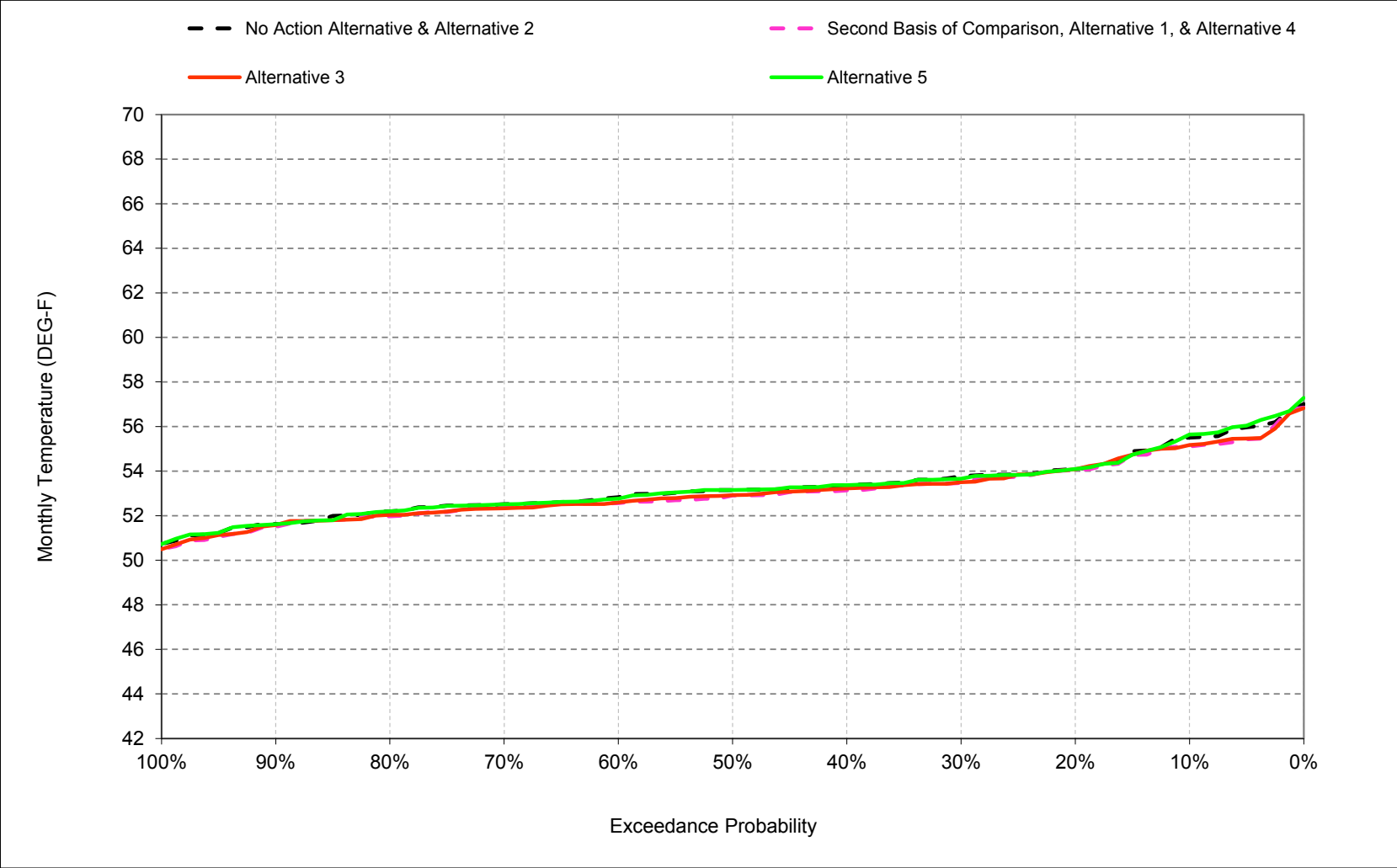
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-6-8. Sacramento River at Balls Ferry, May



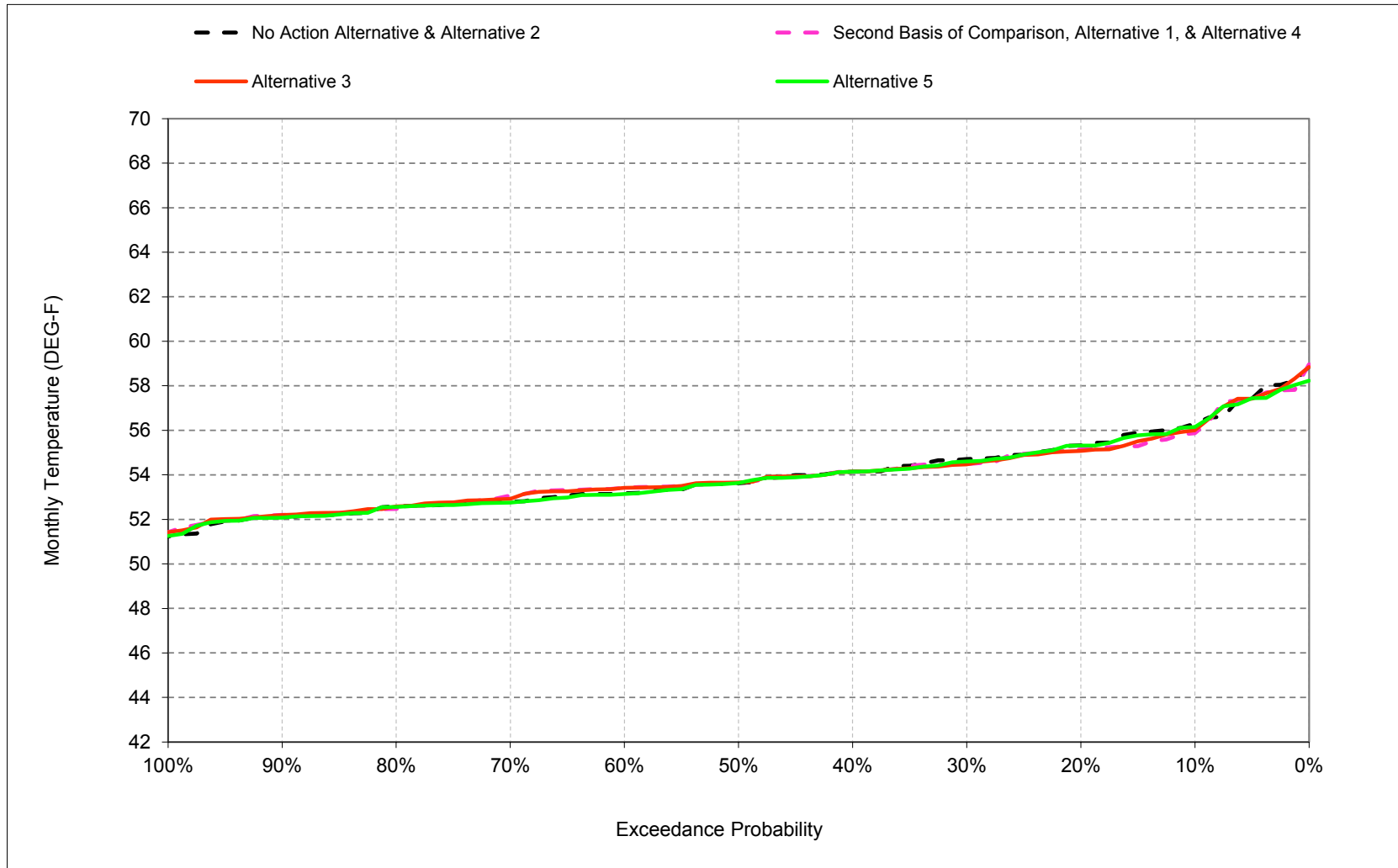
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-6-9. Sacramento River at Balls Ferry, June



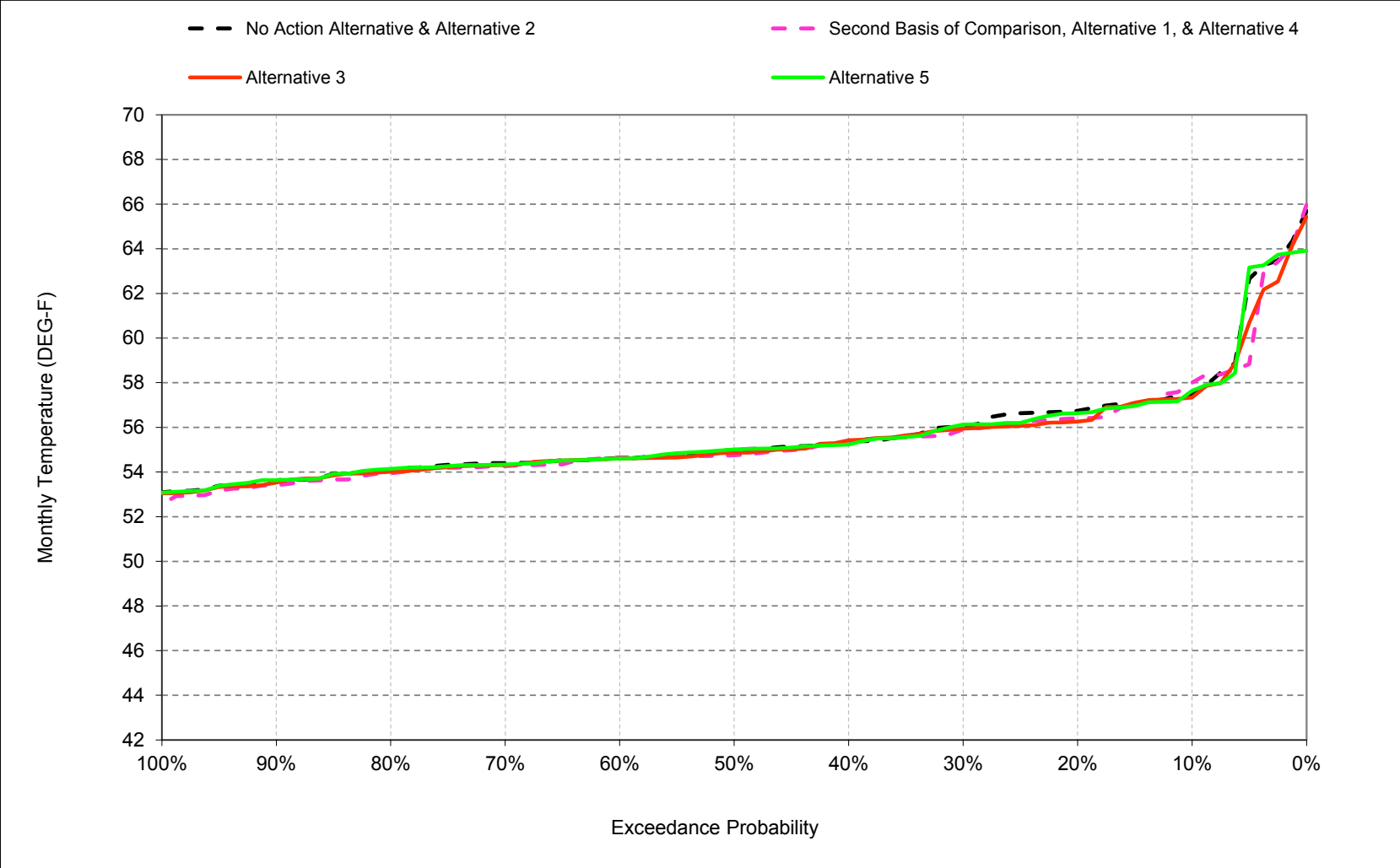
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-6-10. Sacramento River at Balls Ferry, July



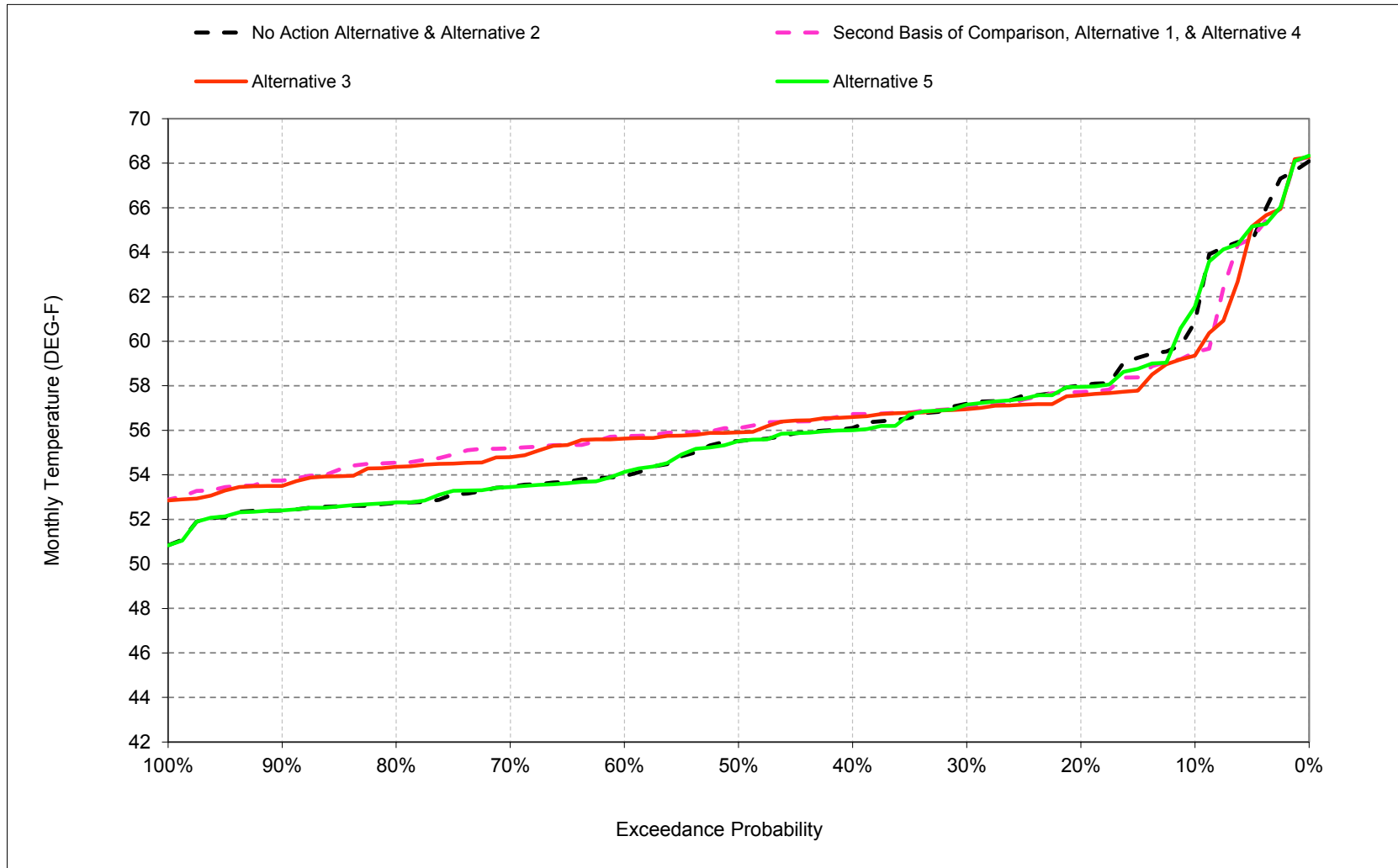
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-6-11. Sacramento River at Balls Ferry, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-6-12. Sacramento River at Balls Ferry, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-6-1. Sacramento River at Balls Ferry, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
10%	61	56	52	49	49	51	53	55	55	56	57	61
20%	57	56	51	49	48	50	52	54	54	55	57	58
30%	56	55	51	48	48	50	52	53	54	55	56	57
40%	56	55	50	48	48	50	51	53	53	54	55	56
50%	55	55	50	47	47	49	51	53	53	54	55	55
60%	55	54	50	47	47	48	51	52	53	53	55	54
70%	55	54	49	47	46	48	50	52	52	53	54	53
80%	55	54	49	46	46	47	50	52	52	53	54	53
90%	54	53	48	46	45	47	49	51	52	52	53	52
Long Term												
Full Simulation Period ^b	56	55	50	47	47	49	51	53	53	54	56	56
Water Year Types^c												
Wet (32%)	53	52	48	47	46	47	50	53	53	53	54	53
Above Normal (16%)	56	54	50	47	46	48	51	53	52	52	54	54
Below Normal (13%)	56	55	51	47	47	50	51	52	53	53	55	56
Dry (24%)	56	55	50	48	48	50	52	53	53	54	56	57
Critical (15%)	59	56	51	48	48	50	51	54	55	57	60	63
Alternative 1												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
10%	59	56	52	49	49	51	53	55	55	56	58	59
20%	57	56	51	48	48	50	52	54	54	55	56	58
30%	56	55	51	48	48	50	52	53	53	54	56	57
40%	56	55	50	48	48	49	51	53	53	54	55	57
50%	56	54	50	47	47	49	51	53	53	54	55	56
60%	55	54	50	47	47	48	51	52	53	53	55	56
70%	55	53	49	47	46	48	50	52	52	53	54	55
80%	55	53	49	46	46	47	50	52	52	52	54	55
90%	54	53	48	46	45	47	49	51	51	52	53	54
Long Term												
Full Simulation Period ^b	56	54	50	47	47	49	51	53	53	54	55	57
Water Year Types^c												
Wet (32%)	53	52	48	47	46	48	50	53	53	53	54	55
Above Normal (16%)	56	54	50	47	46	48	51	52	52	53	54	55
Below Normal (13%)	55	54	50	47	47	49	51	52	53	53	54	56
Dry (24%)	56	54	50	48	48	50	52	53	53	54	56	57
Critical (15%)	58	56	51	48	48	50	51	54	55	57	60	62
Alternative 1 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
0.1	-1.5	-0.3	0.0	0.1	0.2	-0.3	0.2	0.1	-0.4	-0.4	0.5	-1.3
0.2	0.0	-0.1	-0.3	-0.1	0.1	0.0	-0.1	-0.1	0.0	-0.2	-0.3	-0.3
0.3	0.0	-0.4	-0.2	0.0	0.0	0.1	0.1	-0.1	-0.3	-0.2	-0.2	-0.2
0.4	0.0	-0.5	-0.2	0.1	0.0	-0.1	-0.2	-0.1	-0.2	0.0	-0.1	0.6
0.5	0.1	-0.5	-0.2	-0.1	0.0	-0.1	-0.1	-0.1	-0.3	0.0	-0.2	0.6
0.6	0.0	-0.5	0.0	0.0	0.0	0.0	0.0	-0.1	-0.2	0.2	0.0	1.7
0.7	0.0	-0.5	0.1	0.0	0.0	0.2	-0.1	-0.2	-0.1	0.2	-0.1	1.7
0.8	-0.3	-0.5	0.2	0.0	0.1	0.0	-0.3	-0.2	-0.2	-0.1	-0.1	1.8
0.9	0.0	-0.1	0.1	0.0	0.0	0.1	-0.1	0.0	-0.2	0.1	-0.1	1.3
Long Term												
Full Simulation Period ^b	-0.1	-0.4	-0.1	0.0	0.0	0.0	0.0	-0.1	-0.2	0.0	-0.2	0.7
Water Year Types^c												
Wet (32%)	-0.1	-0.3	0.1	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	-0.2	2.0
Above Normal (16%)	0.0	-0.4	-0.1	0.1	0.0	-0.1	0.0	-0.2	-0.2	0.1	-0.1	1.5
Below Normal (13%)	-0.3	-0.6	-0.4	0.0	0.0	-0.2	0.0	0.0	-0.2	0.0	-0.3	0.0
Dry (24%)	0.0	-0.3	-0.2	-0.1	0.0	0.0	-0.1	-0.1	-0.3	-0.1	0.1	-0.1
Critical (15%)	-0.6	-0.3	0.0	0.2	0.2	0.0	0.0	0.0	-0.3	-0.1	-0.4	-1.0

^a Exceedance probability is defined as the probability a given value will be exceeded in any one year.
^b Based on the 82-year simulation period.
^c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-6-2. Sacramento River at Balls Ferry, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	61	56	52	49	49	51	53	55	55	56	57	61
20%	57	56	51	49	48	50	52	54	54	55	57	58
30%	56	55	51	48	48	50	52	53	54	55	56	57
40%	56	55	50	48	48	50	51	53	53	54	55	56
50%	55	55	50	47	47	49	51	53	53	54	55	55
60%	55	54	50	47	47	48	51	52	53	53	55	54
70%	55	54	49	47	46	48	50	52	52	53	54	53
80%	55	54	49	46	46	47	50	52	52	53	54	53
90%	54	53	48	46	45	47	49	51	52	52	53	52
Long Term												
Full Simulation Period ^b	56	55	50	47	47	49	51	53	53	54	56	56
Water Year Types ^c												
Wet (32%)	53	52	48	47	46	47	50	53	53	53	54	53
Above Normal (16%)	56	54	50	47	46	48	51	53	52	52	54	54
Below Normal (13%)	56	55	51	47	47	50	51	52	53	53	55	56
Dry (24%)	56	55	50	48	48	50	52	53	53	54	56	57
Critical (15%)	59	56	51	48	48	50	51	54	55	57	60	63

Alternative 3												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	59	56	52	49	49	51	53	55	55	56	57	59
20%	57	55	51	48	48	50	52	54	54	55	56	58
30%	56	55	51	48	48	50	52	53	53	54	56	57
40%	56	55	50	48	48	50	51	53	53	54	55	57
50%	56	54	50	47	47	49	51	53	53	54	55	56
60%	55	54	50	47	47	48	51	52	53	53	55	56
70%	55	53	49	47	46	48	50	52	52	53	54	55
80%	54	53	49	46	46	47	50	52	52	52	54	54
90%	54	53	49	46	45	47	49	51	52	52	53	54
Long Term												
Full Simulation Period ^b	56	54	50	47	47	49	51	53	53	54	56	57
Water Year Types ^c												
Wet (32%)	53	52	48	47	46	48	50	53	53	53	54	55
Above Normal (16%)	56	54	50	47	46	48	51	52	52	53	54	55
Below Normal (13%)	55	54	50	47	47	50	51	52	53	53	55	56
Dry (24%)	56	54	50	48	48	50	52	53	53	54	56	57
Critical (15%)	58	56	51	48	48	50	52	54	55	57	59	62

Alternative 3 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	-1.4	-0.3	0.1	-0.1	0.2	-0.2	0.2	0.1	-0.3	-0.3	-0.2	-1.4
0.2	-0.1	-0.1	-0.3	-0.1	0.1	0.0	-0.1	-0.2	0.0	-0.2	-0.5	-0.4
0.3	0.0	-0.3	-0.1	0.0	0.0	0.0	0.1	0.0	-0.3	-0.2	-0.1	-0.2
0.4	-0.1	-0.5	-0.2	0.1	0.0	0.0	-0.1	-0.1	-0.1	0.0	0.1	0.5
0.5	0.0	-0.5	-0.2	-0.1	0.0	-0.1	0.0	-0.1	-0.2	0.0	-0.1	0.4
0.6	0.1	-0.6	0.0	0.1	0.0	0.0	0.0	-0.1	-0.2	0.2	0.0	1.6
0.7	-0.1	-0.5	0.1	0.0	0.0	0.1	0.0	-0.2	-0.2	0.1	-0.1	1.3
0.8	-0.3	-0.6	0.1	0.1	0.2	0.0	-0.3	0.0	-0.2	-0.1	-0.1	1.6
0.9	-0.2	-0.2	0.2	0.0	0.0	0.1	0.0	0.0	-0.1	0.1	-0.1	1.1
Long Term												
Full Simulation Period ^b	-0.2	-0.4	-0.1	0.0	0.0	0.0	0.0	0.0	-0.2	0.0	-0.2	0.5
Water Year Types ^c												
Wet (32%)	-0.1	-0.3	0.1	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	-0.1	1.8
Above Normal (16%)	0.0	-0.4	-0.2	0.0	0.0	-0.1	0.0	-0.2	-0.1	0.2	0.1	1.5
Below Normal (13%)	-0.3	-0.6	-0.4	0.0	0.0	-0.2	0.0	0.0	-0.1	-0.1	-0.1	-0.7
Dry (24%)	-0.1	-0.4	-0.1	-0.1	0.0	0.0	-0.1	-0.1	-0.3	-0.1	-0.2	-0.2
Critical (15%)	-0.5	-0.2	0.0	0.2	0.1	0.0	0.1	0.0	-0.3	0.0	-0.5	-1.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-6-3. Sacramento River at Balls Ferry, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	61	56	52	49	49	51	53	55	55	56	57	61
20%	57	56	51	49	48	50	52	54	54	55	57	58
30%	56	55	51	48	48	50	52	53	54	55	56	57
40%	56	55	50	48	48	50	51	53	53	54	55	56
50%	55	55	50	47	47	49	51	53	53	54	55	55
60%	55	54	50	47	47	48	51	52	53	53	55	54
70%	55	54	49	47	46	48	50	52	52	53	54	53
80%	55	54	49	46	46	47	50	52	52	53	54	53
90%	54	53	48	46	45	47	49	51	52	52	53	52
Long Term												
Full Simulation Period ^b	56	55	50	47	47	49	51	53	53	54	56	56
Water Year Types ^c												
Wet (32%)	53	52	48	47	46	47	50	53	53	53	54	53
Above Normal (16%)	56	54	50	47	46	48	51	53	52	52	54	54
Below Normal (13%)	56	55	51	47	47	50	51	52	53	53	55	56
Dry (24%)	56	55	50	48	48	50	52	53	53	54	56	57
Critical (15%)	59	56	51	48	48	50	51	54	55	57	60	63

Alternative 5												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	61	56	52	49	49	51	53	55	56	56	58	61
20%	57	56	51	49	48	50	52	54	54	55	57	58
30%	56	55	51	48	48	50	52	54	54	55	56	57
40%	56	55	50	47	48	50	51	53	53	54	55	56
50%	56	55	50	47	47	49	51	53	53	54	55	55
60%	55	54	50	47	47	48	51	52	53	53	55	54
70%	55	54	49	47	46	48	50	52	52	53	54	53
80%	55	54	49	46	46	47	50	52	52	53	54	53
90%	54	53	48	46	45	47	49	51	52	52	54	52
Long Term												
Full Simulation Period ^b	56	55	50	47	47	49	51	53	53	54	56	56
Water Year Types ^c												
Wet (32%)	53	52	48	47	46	47	50	53	53	53	54	53
Above Normal (16%)	56	54	50	47	46	48	51	53	52	52	54	54
Below Normal (13%)	55	54	51	47	48	50	51	53	53	53	55	56
Dry (24%)	56	55	50	48	48	50	52	53	53	54	56	57
Critical (15%)	59	56	51	48	48	50	52	54	56	57	60	63

Alternative 5 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	0.1	0.7
0.2	-0.2	-0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	-0.1	0.0
0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	-0.1	-0.1	0.0	-0.1
0.4	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1
0.5	0.0	-0.1	0.0	-0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0	-0.1
0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.2
0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0
0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.9	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0
Long Term												
Full Simulation Period ^b	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	-0.1	0.0
Water Year Types ^c												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Above Normal (16%)	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Below Normal (13%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0
Dry (24%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	-0.1	-0.2	-0.1
Critical (15%)	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	-0.2	-0.2	0.0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-6-4. Sacramento River at Balls Ferry, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	59	56	52	49	49	51	53	55	55	56	58	59
20%	57	56	51	48	48	50	52	54	54	55	56	58
30%	56	55	51	48	48	50	52	53	53	54	56	57
40%	56	55	50	48	48	49	51	53	53	54	55	57
50%	56	54	50	47	47	49	51	53	53	54	55	56
60%	55	54	50	47	47	48	51	52	53	53	55	56
70%	55	53	49	47	46	48	50	52	52	53	54	55
80%	55	53	49	46	46	47	50	52	52	52	54	55
90%	54	53	48	46	45	47	49	51	51	52	53	54
Long Term												
Full Simulation Period ^b	56	54	50	47	47	49	51	53	53	54	55	57
Water Year Types ^c												
Wet (32%)	53	52	48	47	46	48	50	53	53	53	54	55
Above Normal (16%)	56	54	50	47	46	48	51	52	52	53	54	55
Below Normal (13%)	55	54	50	47	47	49	51	52	53	53	54	56
Dry (24%)	56	54	50	48	48	50	52	53	53	54	56	57
Critical (15%)	58	56	51	48	48	50	51	54	55	57	60	62

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	61	56	52	49	49	51	53	55	55	56	57	61
20%	57	56	51	49	48	50	52	54	54	55	57	58
30%	56	55	51	48	48	50	52	53	54	55	56	57
40%	56	55	50	48	48	50	51	53	53	54	55	56
50%	55	55	50	47	47	49	51	53	53	54	55	55
60%	55	54	50	47	47	48	51	52	53	53	55	54
70%	55	54	49	47	46	48	50	52	52	53	54	53
80%	55	54	49	46	46	47	50	52	52	53	54	53
90%	54	53	48	46	45	47	49	51	52	52	53	52
Long Term												
Full Simulation Period ^b	56	55	50	47	47	49	51	53	53	54	56	56
Water Year Types ^c												
Wet (32%)	53	52	48	47	46	47	50	53	53	53	54	53
Above Normal (16%)	56	54	50	47	46	48	51	53	52	52	54	54
Below Normal (13%)	56	55	51	47	47	50	51	52	53	53	55	56
Dry (24%)	56	55	50	48	48	50	52	53	53	54	56	57
Critical (15%)	59	56	51	48	48	50	51	54	55	57	60	63

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	1.5	0.3	0.0	-0.1	-0.2	0.3	-0.2	-0.1	0.4	0.4	-0.5	1.3
0.2	0.0	0.1	0.3	0.1	-0.1	0.0	0.1	0.1	0.0	0.2	0.3	0.3
0.3	0.0	0.4	0.2	0.0	0.0	-0.1	-0.1	0.1	0.3	0.2	0.2	0.2
0.4	0.0	0.5	0.2	-0.1	0.0	0.1	0.2	0.1	0.2	0.0	0.1	-0.6
0.5	-0.1	0.5	0.2	0.1	0.0	0.1	0.1	0.1	0.3	0.0	0.2	-0.6
0.6	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.1	0.2	-0.2	0.0	-1.7
0.7	0.0	0.5	-0.1	0.0	0.0	-0.2	0.1	0.2	0.1	-0.2	0.1	-1.7
0.8	0.3	0.5	-0.2	0.0	-0.1	0.0	0.3	0.2	0.2	0.1	0.1	-1.8
0.9	0.0	0.1	-0.1	0.0	0.0	-0.1	0.1	0.0	0.2	-0.1	0.1	-1.3
Long Term												
Full Simulation Period ^b	0.1	0.4	0.1	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.2	-0.7
Water Year Types ^c												
Wet (32%)	0.1	0.3	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	-2.0
Above Normal (16%)	0.0	0.4	0.1	-0.1	0.0	0.1	0.0	0.2	0.2	-0.1	0.1	-1.5
Below Normal (13%)	0.3	0.6	0.4	0.0	0.0	0.2	0.0	0.0	0.2	0.0	0.3	0.0
Dry (24%)	0.0	0.3	0.2	0.1	0.0	0.0	0.1	0.1	0.3	0.1	-0.1	0.1
Critical (15%)	0.6	0.3	0.0	-0.2	-0.2	0.0	0.0	0.0	0.3	0.1	0.4	1.0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-6-5. Sacramento River at Balls Ferry, Monthly Temperature

Second Basis of Comparison		Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	
Probability of Exceedance^a													
10%	59	56	52	49	49	51	53	55	55	56	58	59	
20%	57	56	51	48	48	50	52	54	54	55	56	58	
30%	56	55	51	48	48	50	52	53	53	54	56	57	
40%	56	55	50	48	48	49	51	53	53	54	55	57	
50%	56	54	50	47	47	49	51	53	53	54	55	56	
60%	55	54	50	47	47	48	51	52	53	53	55	56	
70%	55	53	49	47	46	48	50	52	52	53	54	55	
80%	55	53	49	46	46	47	50	52	52	52	54	55	
90%	54	53	48	46	45	47	49	51	51	52	53	54	
Long Term													
Full Simulation Period ^b	56	54	50	47	47	49	51	53	53	54	55	57	
Water Year Types^c													
Wet (32%)	53	52	48	47	46	48	50	53	53	53	54	55	
Above Normal (16%)	56	54	50	47	46	48	51	52	52	53	54	55	
Below Normal (13%)	55	54	50	47	47	49	51	52	53	53	54	56	
Dry (24%)	56	54	50	48	48	50	52	53	53	54	56	57	
Critical (15%)	58	56	51	48	48	50	51	54	55	57	60	62	

Alternative 3		Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	
Probability of Exceedance^a													
10%	59	56	52	49	49	51	53	55	55	56	57	59	
20%	57	55	51	48	48	50	52	54	54	55	56	58	
30%	56	55	51	48	48	50	52	53	53	54	56	57	
40%	56	55	50	48	48	50	51	53	53	54	55	57	
50%	56	54	50	47	47	49	51	53	53	54	55	56	
60%	55	54	50	47	47	48	51	52	53	53	55	56	
70%	55	53	49	47	46	48	50	52	52	53	54	55	
80%	54	53	49	46	46	47	50	52	52	52	54	54	
90%	54	53	49	46	45	47	49	51	52	52	53	54	
Long Term													
Full Simulation Period ^b	56	54	50	47	47	49	51	53	53	54	56	57	
Water Year Types^c													
Wet (32%)	53	52	48	47	46	48	50	53	53	53	54	55	
Above Normal (16%)	56	54	50	47	46	48	51	52	52	53	54	55	
Below Normal (13%)	55	54	50	47	47	50	51	52	53	53	55	56	
Dry (24%)	56	54	50	48	48	50	52	53	53	54	56	57	
Critical (15%)	58	56	51	48	48	50	52	54	55	57	59	62	

Alternative 3 minus Second Basis of Comparison		Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	
Probability of Exceedance^a													
0.1	0.1	0.0	0.1	-0.3	0.0	0.1	0.0	-0.1	0.1	0.1	-0.6	-0.1	
0.2	-0.2	-0.1	0.0	0.0	-0.1	0.0	0.1	-0.1	0.0	-0.1	-0.2	-0.1	
0.3	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	-0.1	
0.4	-0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.0	0.1	-0.1	
0.5	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	-0.2	
0.6	0.1	-0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	
0.7	-0.1	0.0	-0.1	0.0	0.0	-0.1	0.0	0.0	0.0	-0.1	0.0	-0.4	
0.8	0.0	-0.1	-0.1	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.1	-0.2	
0.9	-0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	-0.2	
Long Term													
Full Simulation Period ^b	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	
Water Year Types^c													
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-0.2	
Above Normal (16%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	
Below Normal (13%)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	-0.1	0.2	-0.6	
Dry (24%)	-0.2	-0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	-0.2	-0.1	
Critical (15%)	0.1	0.1	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.1	-0.1	-0.1	

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-6-6. Sacramento River at Balls Ferry, Monthly Temperature

Second Basis of Comparison												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	59	56	52	49	49	51	53	55	55	56	58	59
20%	57	56	51	48	48	50	52	54	54	55	56	58
30%	56	55	51	48	48	50	52	53	53	54	56	57
40%	56	55	50	48	48	49	51	53	53	54	55	57
50%	56	54	50	47	47	49	51	53	53	54	55	56
60%	55	54	50	47	47	48	51	52	53	53	55	56
70%	55	53	49	47	46	48	50	52	52	53	54	55
80%	55	53	49	46	46	47	50	52	52	52	54	55
90%	54	53	48	46	45	47	49	51	51	52	53	54
Long Term												
Full Simulation Period ^b	56	54	50	47	47	49	51	53	53	54	55	57
Water Year Types ^c												
Wet (32%)	53	52	48	47	46	48	50	53	53	53	54	55
Above Normal (16%)	56	54	50	47	46	48	51	52	52	53	54	55
Below Normal (13%)	55	54	50	47	47	49	51	52	53	53	54	56
Dry (24%)	56	54	50	48	48	50	52	53	53	54	56	57
Critical (15%)	58	56	51	48	48	50	51	54	55	57	60	62

Alternative 5

Alternative 5												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	61	56	52	49	49	51	53	55	56	56	58	61
20%	57	56	51	49	48	50	52	54	54	55	57	58
30%	56	55	51	48	48	50	52	54	54	55	56	57
40%	56	55	50	47	48	50	51	53	53	54	55	56
50%	56	55	50	47	47	49	51	53	53	54	55	55
60%	55	54	50	47	47	48	51	52	53	53	55	54
70%	55	54	49	47	46	48	50	52	52	53	54	53
80%	55	54	49	46	46	47	50	52	52	53	54	53
90%	54	53	48	46	45	47	49	51	52	52	54	52
Long Term												
Full Simulation Period ^b	56	55	50	47	47	49	51	53	53	54	56	56
Water Year Types ^c												
Wet (32%)	53	52	48	47	46	47	50	53	53	53	54	53
Above Normal (16%)	56	54	50	47	46	48	51	53	52	52	54	54
Below Normal (13%)	55	54	51	47	48	50	51	53	53	53	55	56
Dry (24%)	56	55	50	48	48	50	52	53	53	54	56	57
Critical (15%)	59	56	51	48	48	50	52	54	56	57	60	63

Alternative 5 minus Second Basis of Comparison

Alternative 5 minus Second Basis of Comparison												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	1.5	0.3	-0.1	-0.1	-0.2	0.3	-0.2	-0.1	0.5	0.3	-0.4	2.0
0.2	-0.2	0.0	0.4	0.1	-0.1	0.0	0.2	0.0	0.0	0.2	0.2	0.2
0.3	0.0	0.4	0.2	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.2	0.1
0.4	-0.1	0.5	0.2	-0.1	0.0	0.1	0.2	0.2	0.2	0.0	0.0	-0.7
0.5	0.0	0.4	0.2	-0.1	0.0	0.2	0.2	0.2	0.3	0.0	0.3	-0.7
0.6	0.0	0.6	0.0	0.0	0.0	0.0	0.1	0.1	0.2	-0.3	0.0	-1.5
0.7	0.0	0.5	-0.1	0.0	0.0	-0.2	0.1	0.3	0.1	-0.2	0.1	-1.7
0.8	0.3	0.5	-0.2	0.0	-0.1	0.0	0.3	0.2	0.2	0.1	0.2	-1.8
0.9	0.0	0.3	-0.1	0.0	0.0	0.0	0.1	0.1	0.1	-0.1	0.2	-1.3
Long Term												
Full Simulation Period ^b	0.2	0.4	0.1	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.1	-0.7
Water Year Types ^c												
Wet (32%)	0.1	0.3	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	-2.0
Above Normal (16%)	0.0	0.3	0.2	-0.1	0.0	0.1	0.0	0.2	0.2	-0.1	0.1	-1.5
Below Normal (13%)	0.2	0.5	0.4	0.0	0.0	0.2	0.1	0.1	0.2	0.0	0.5	0.0
Dry (24%)	0.0	0.3	0.2	0.1	0.0	0.0	0.1	0.3	0.3	0.0	-0.3	0.0
Critical (15%)	0.7	0.3	0.0	-0.2	-0.2	0.0	0.0	0.1	0.4	-0.1	0.2	1.0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

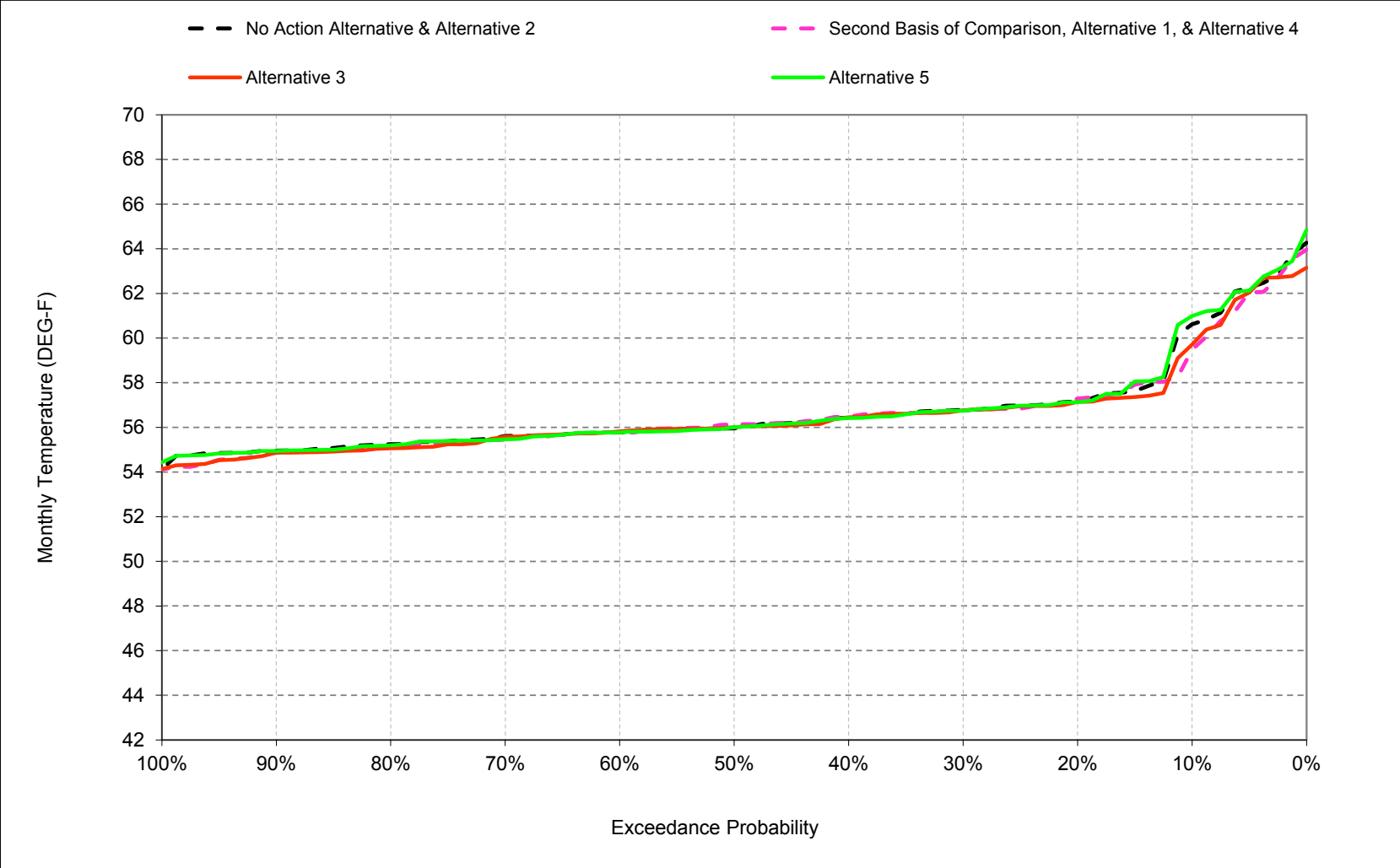
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

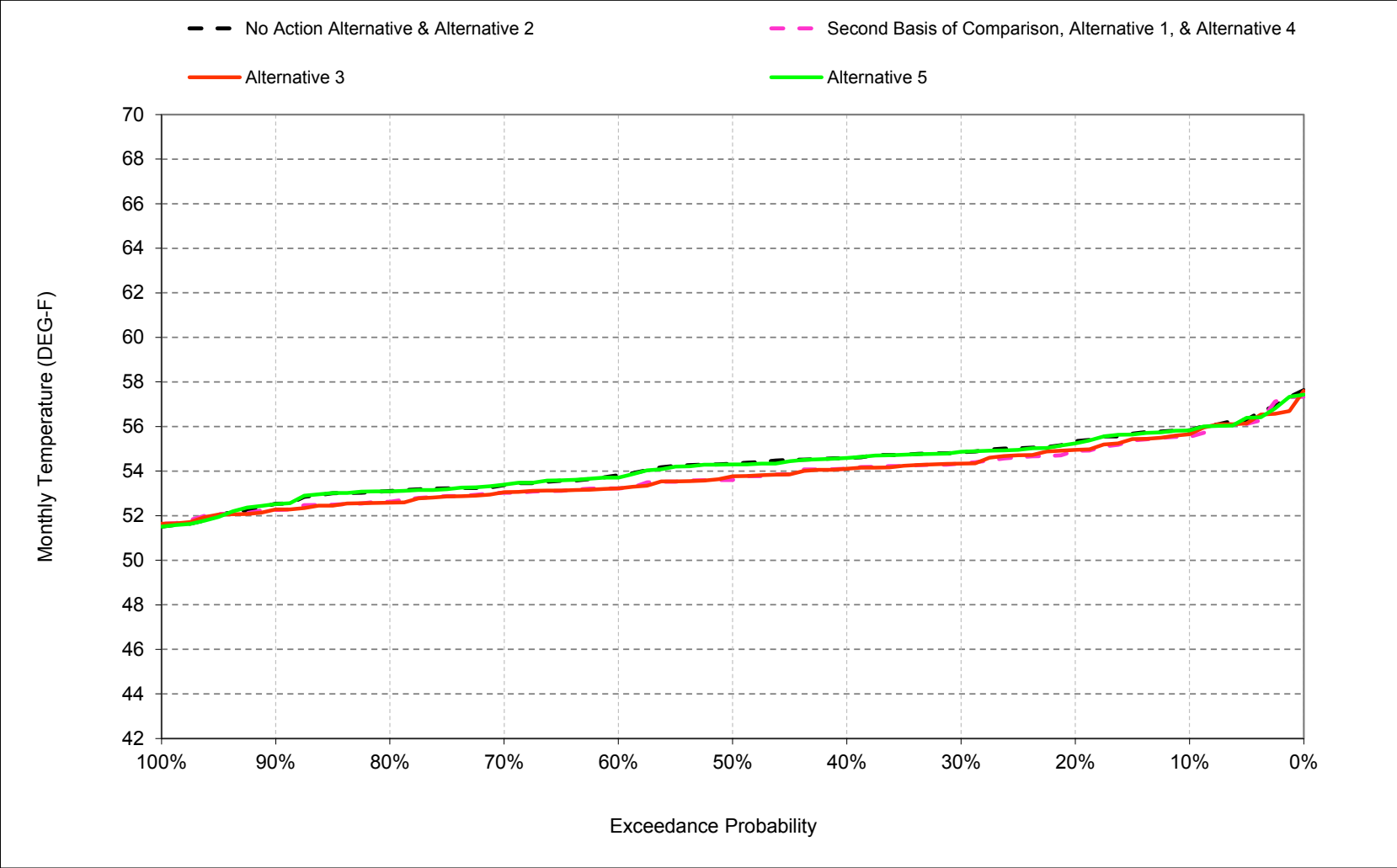
B.7. Sacramento River at Jellys Ferry Temperature

Figure B-7-1. Sacramento River at Jellys Ferry, October



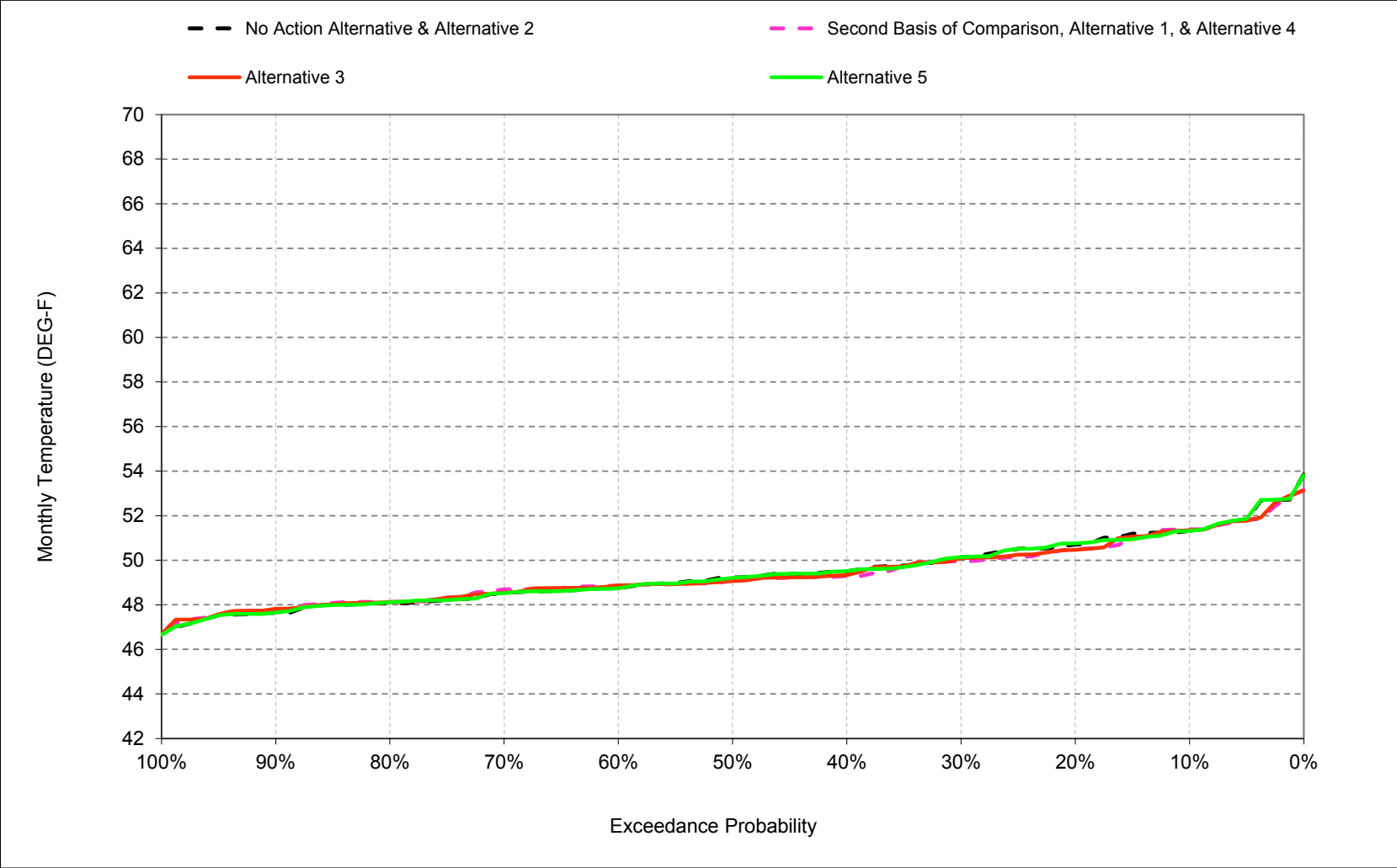
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-7-2. Sacramento River at Jellys Ferry, November



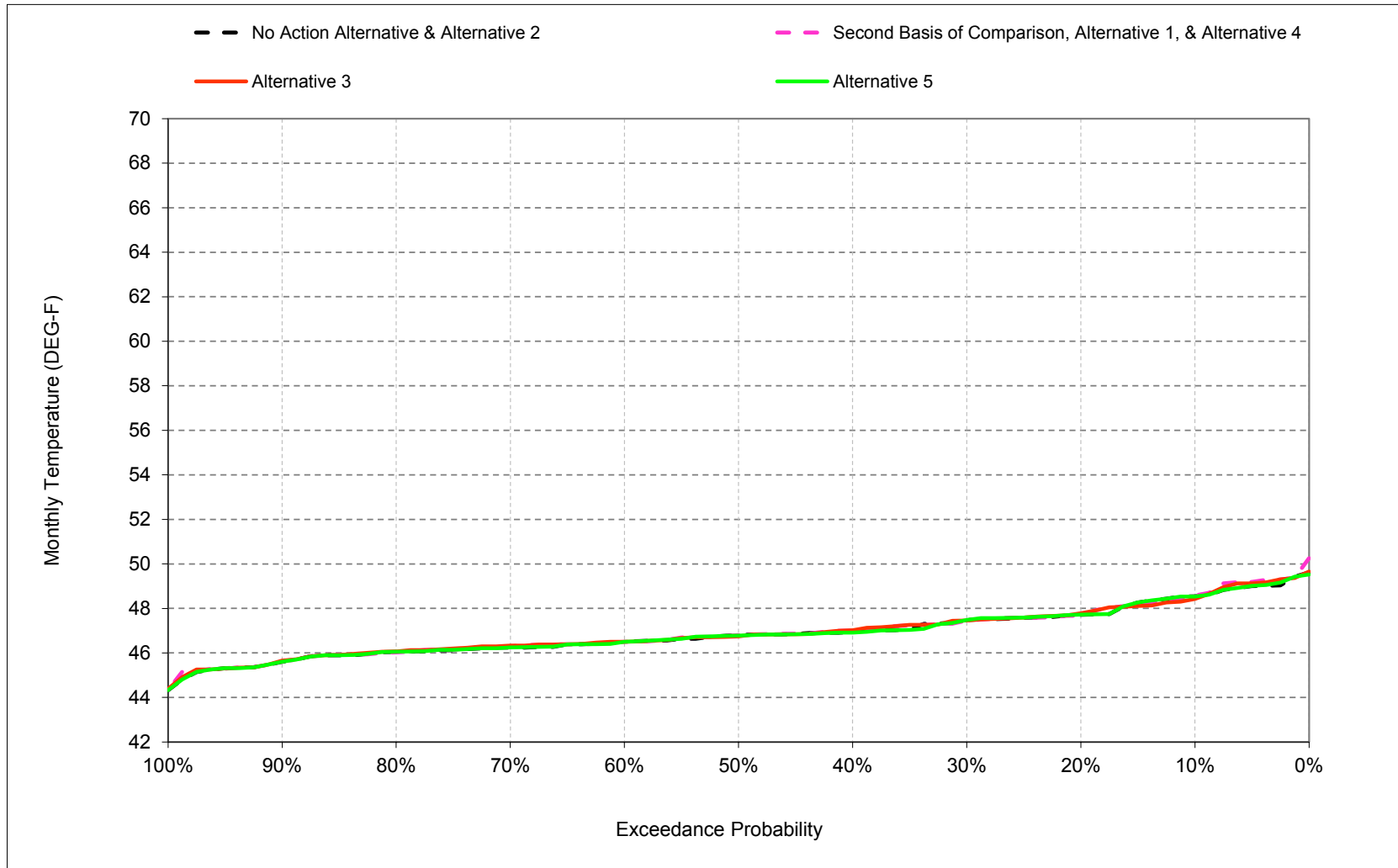
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-7-3. Sacramento River at Jellys Ferry, December



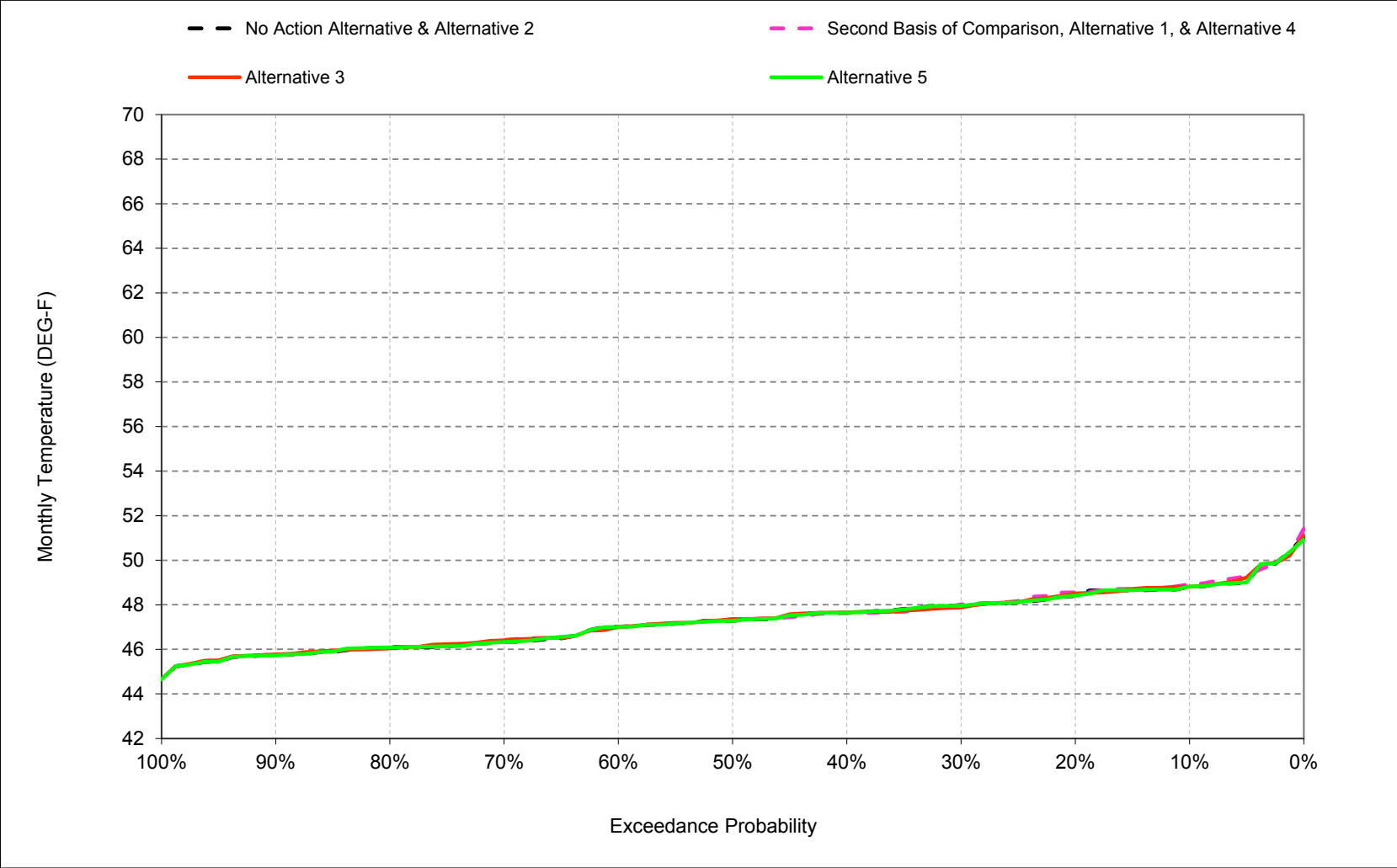
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-7-4. Sacramento River at Jellys Ferry, January



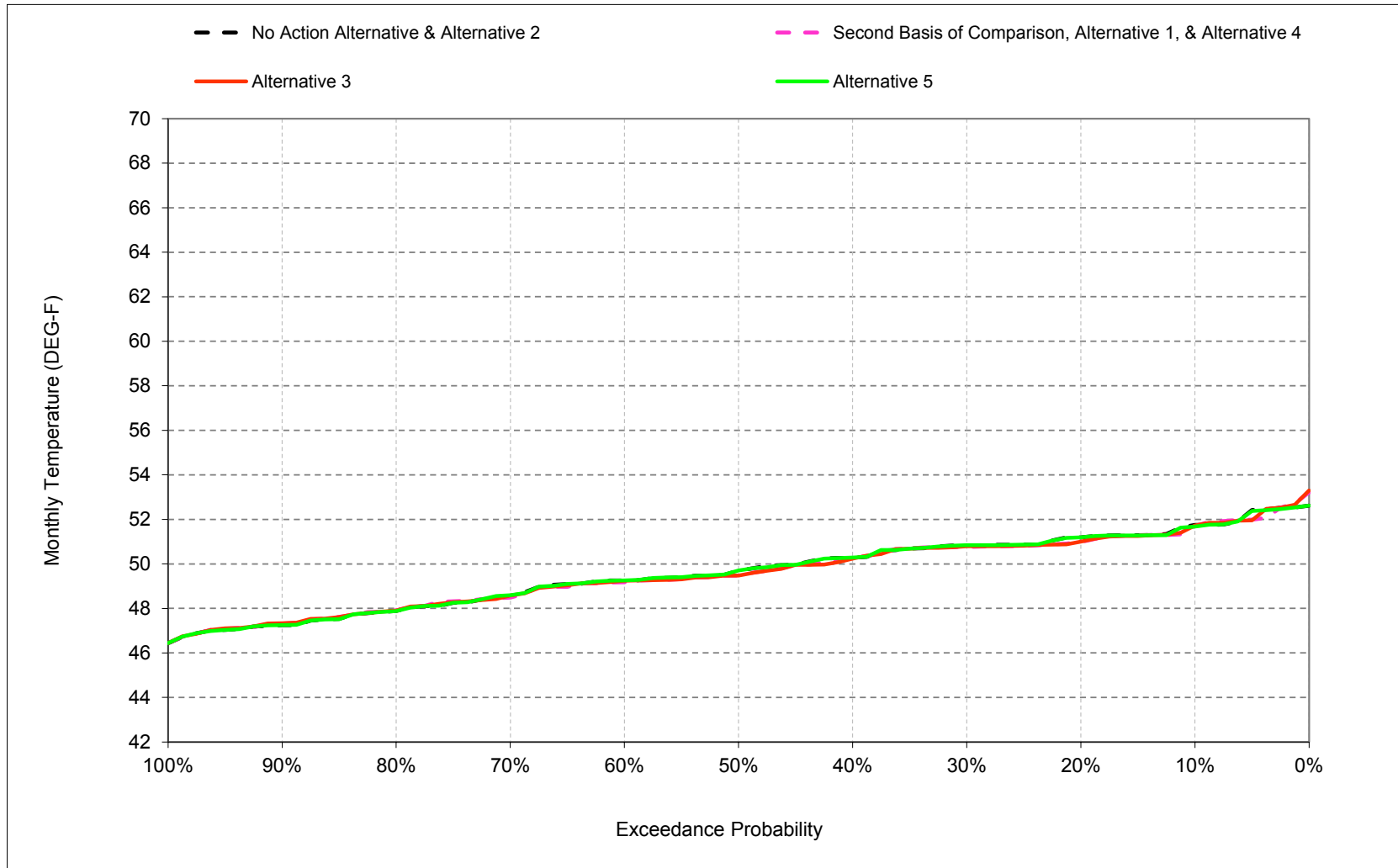
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-7-5. Sacramento River at Jellys Ferry, February



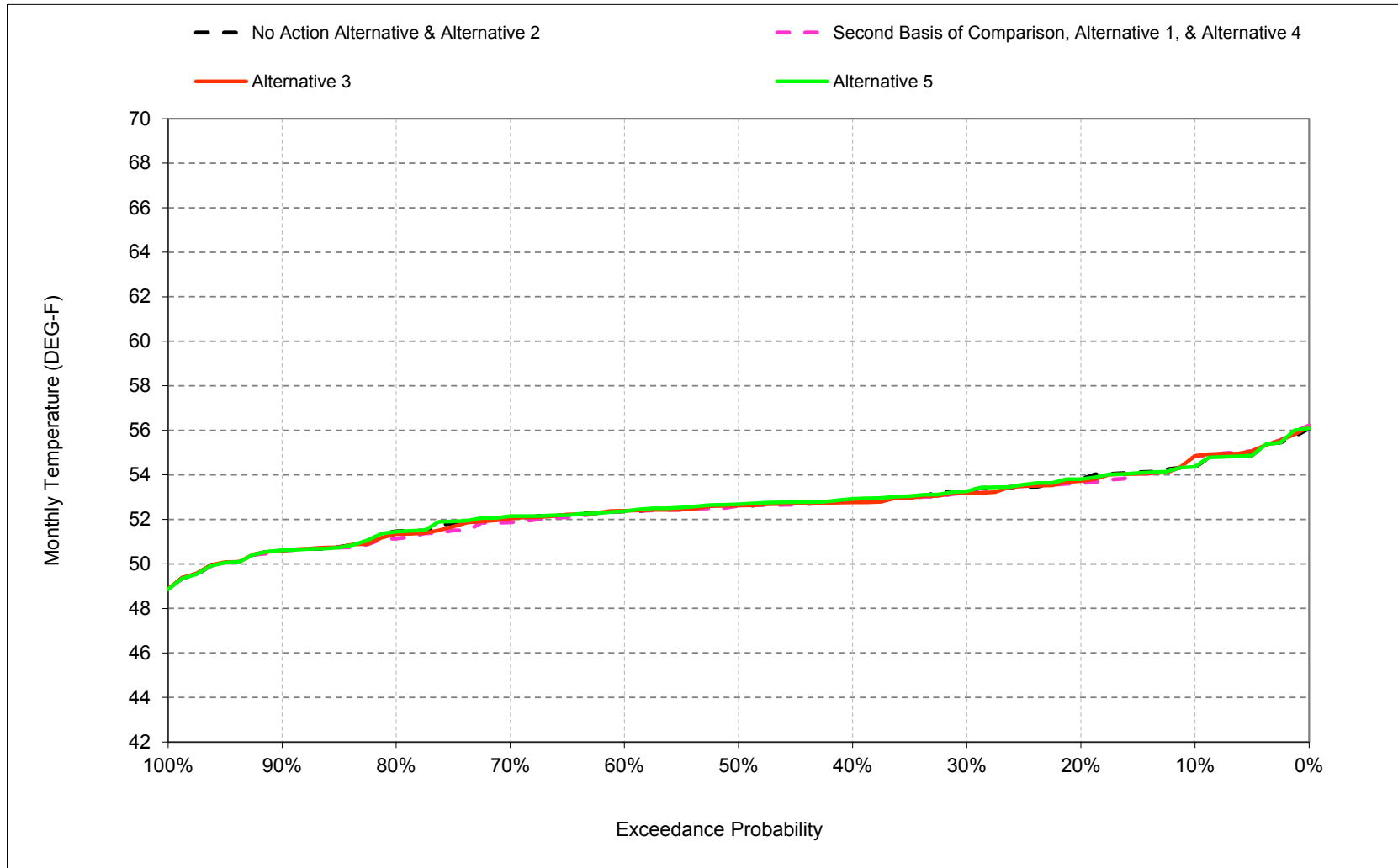
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-7-6. Sacramento River at Jellys Ferry, March



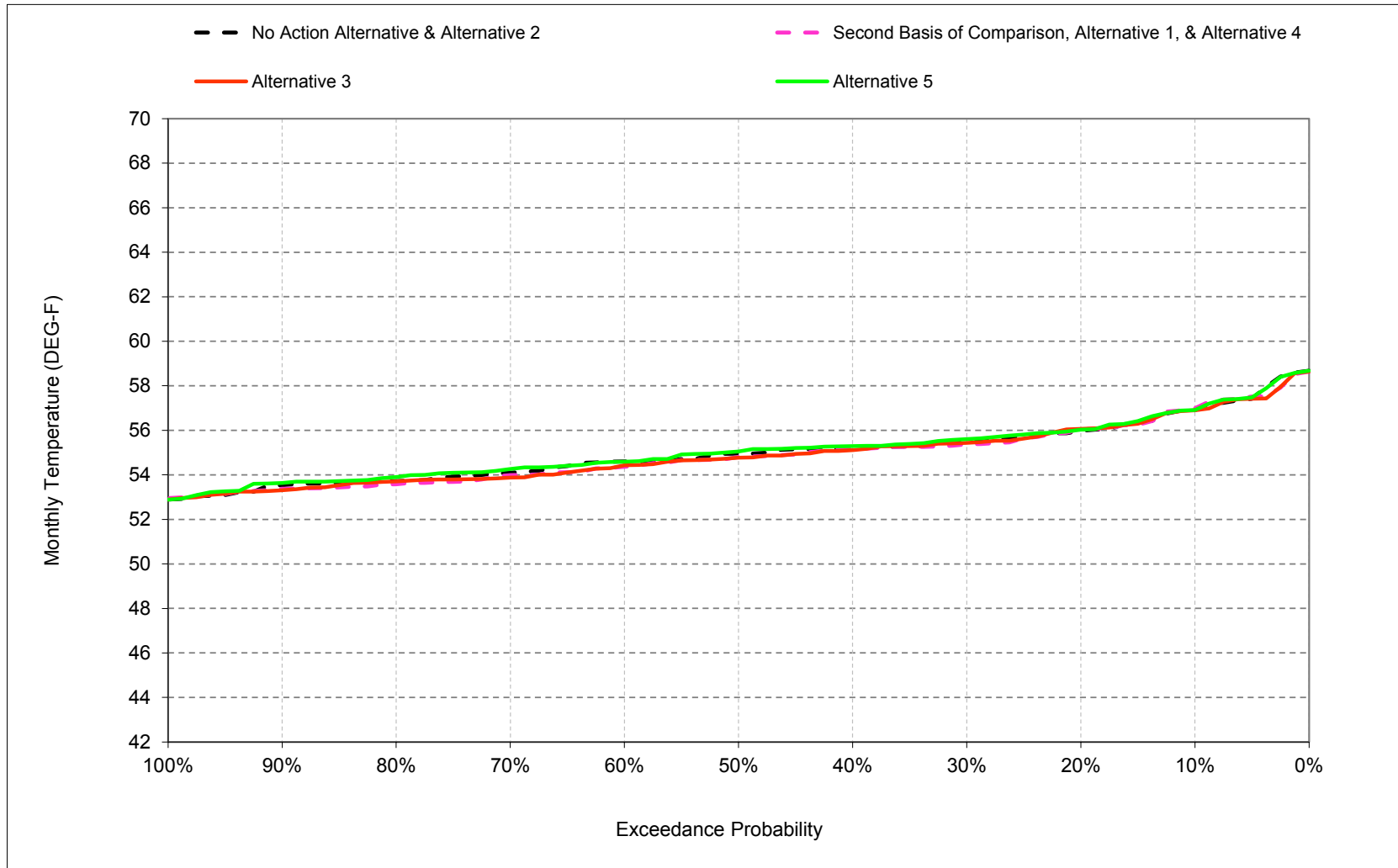
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-7-7. Sacramento River at Jellys Ferry, April



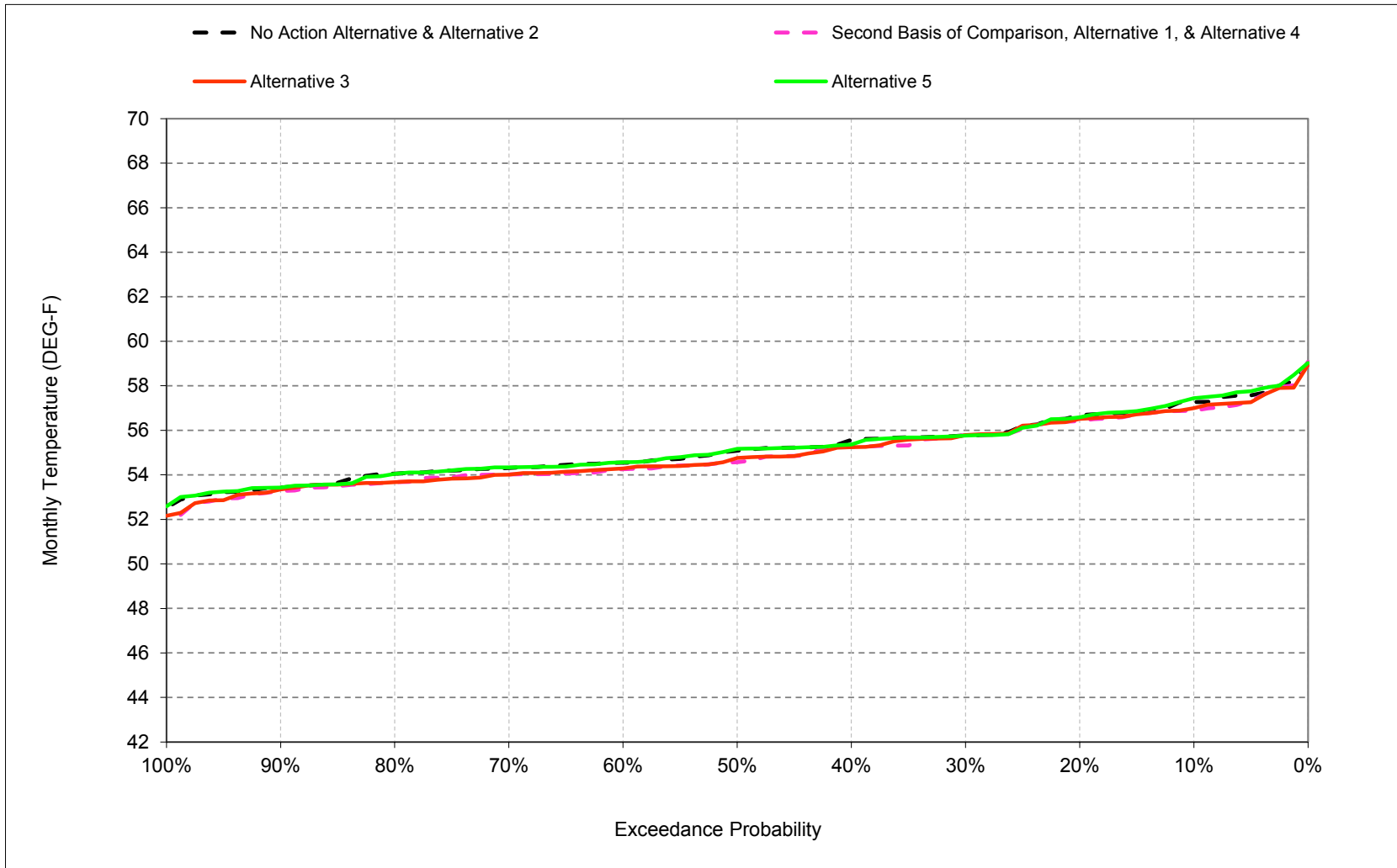
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-7-8. Sacramento River at Jellys Ferry, May



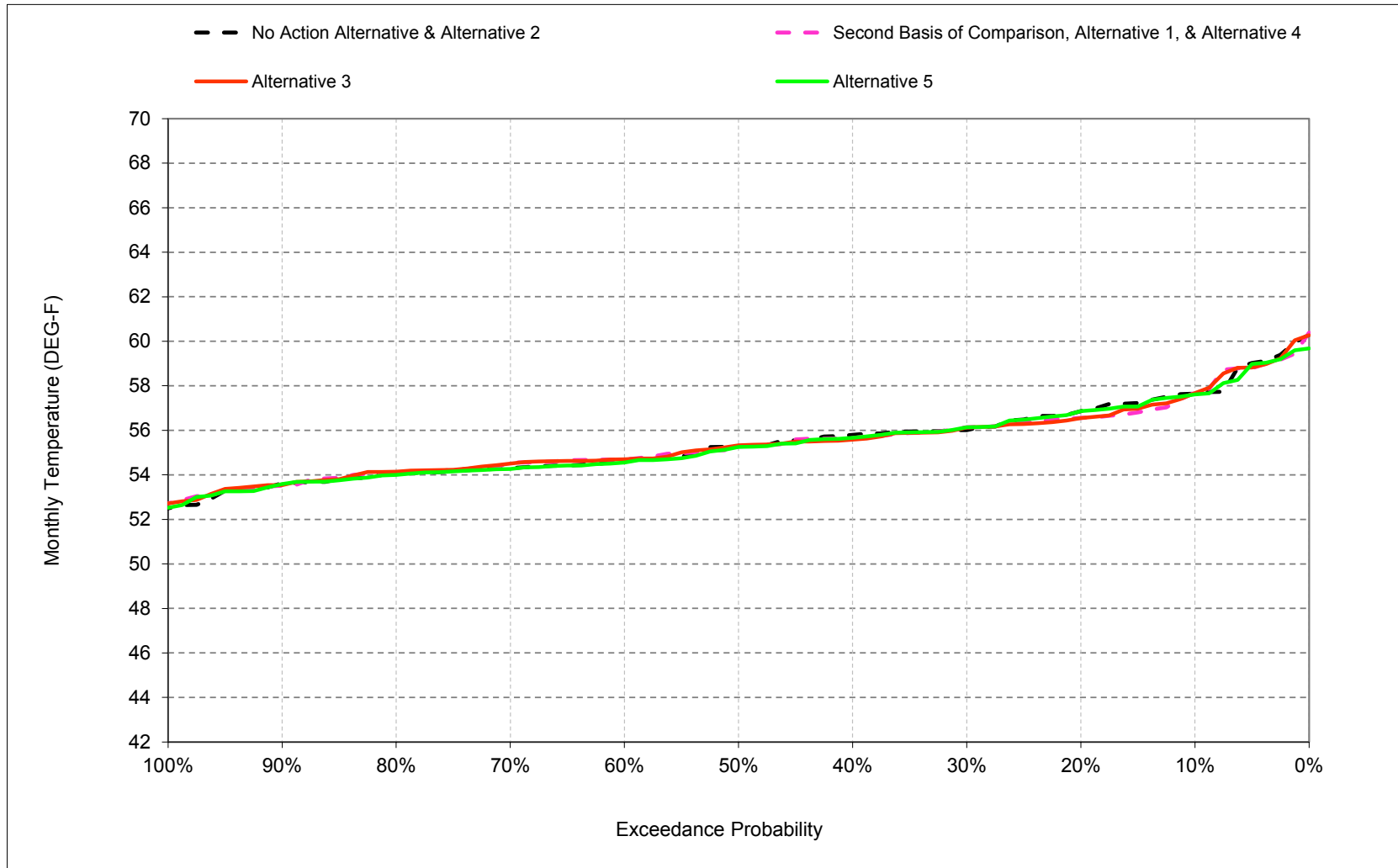
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-7-9. Sacramento River at Jellys Ferry, June



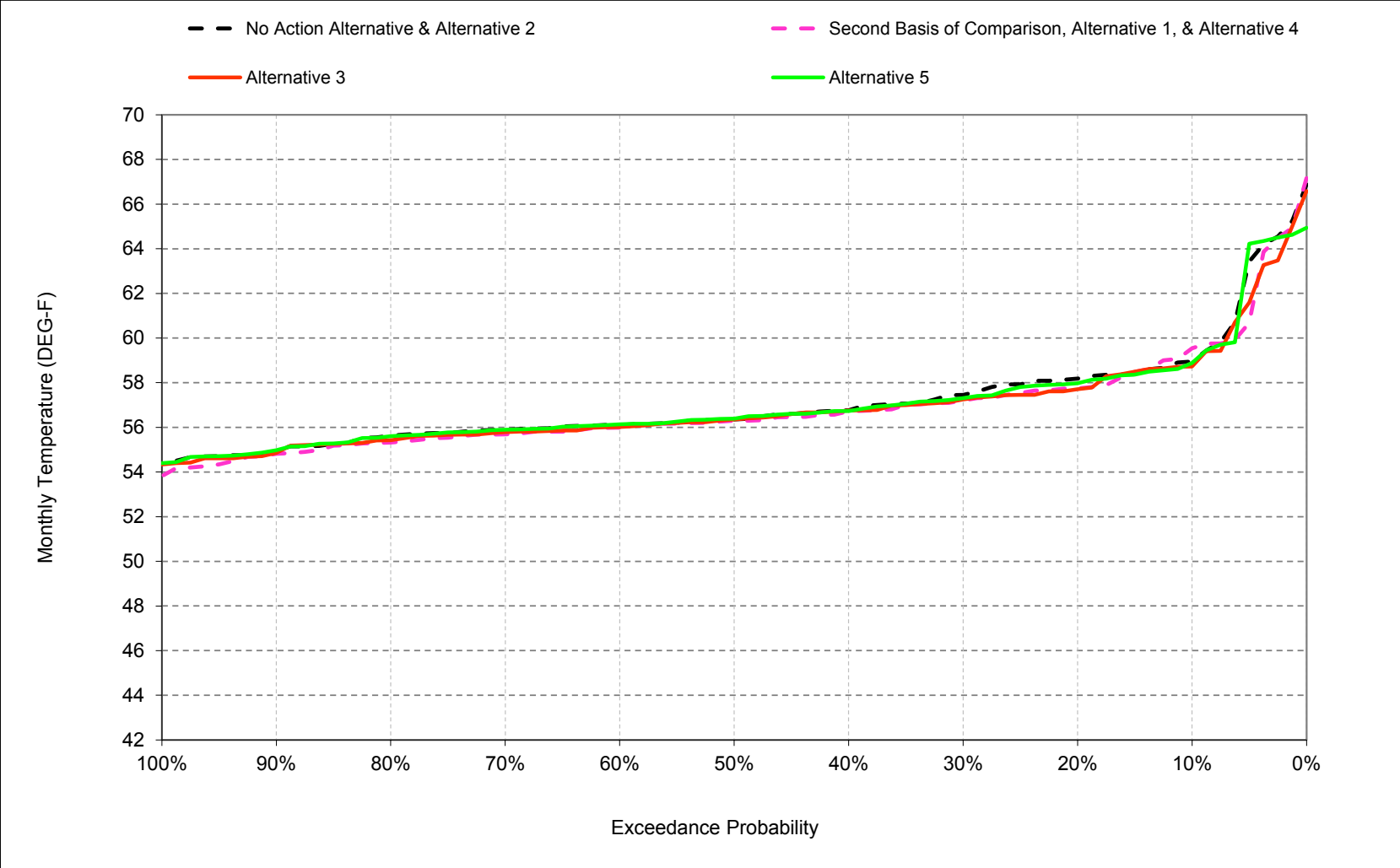
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-7-10. Sacramento River at Jellys Ferry, July



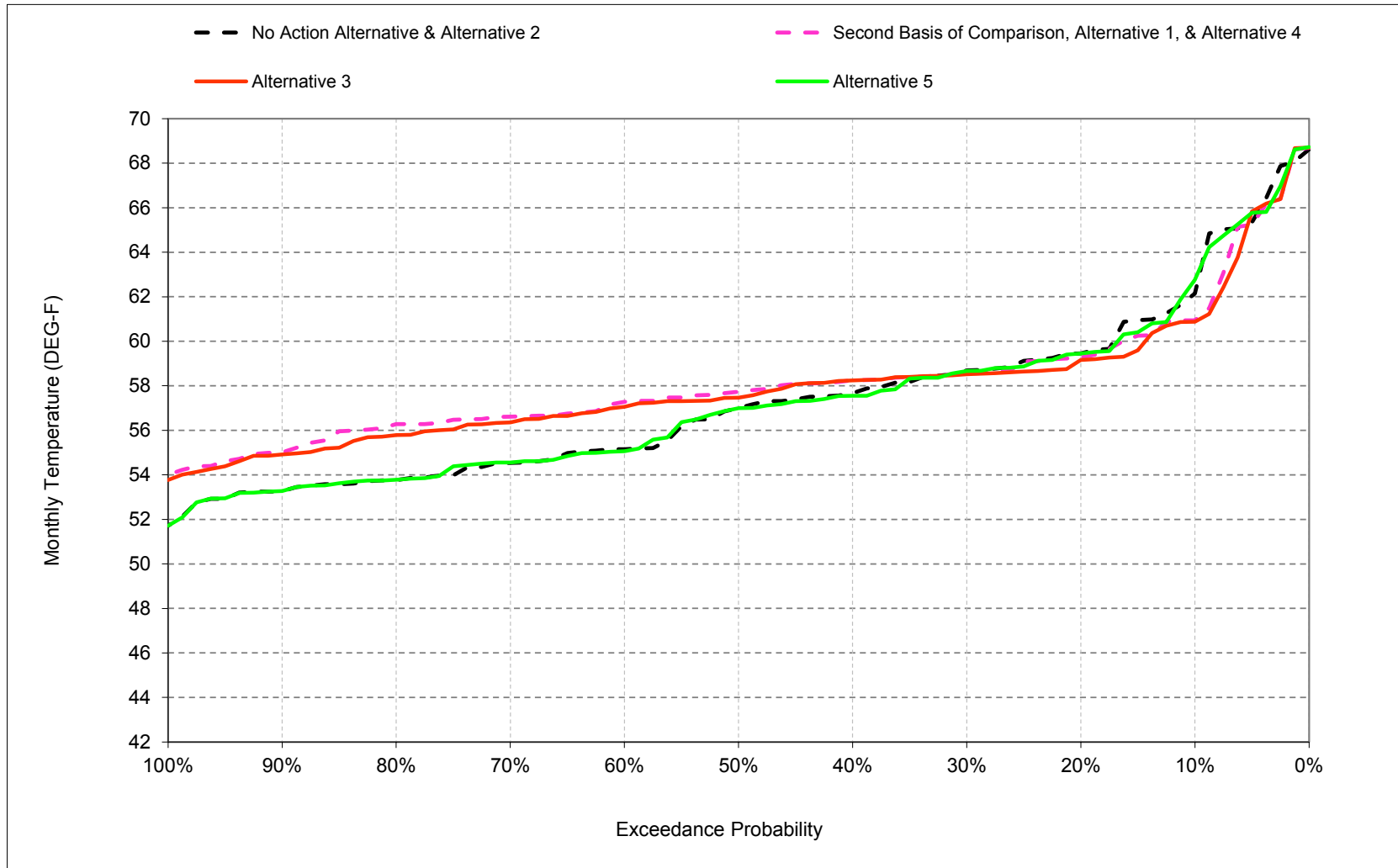
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-7-11. Sacramento River at Jellys Ferry, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-7-12. Sacramento River at Jellys Ferry, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-7-1. Sacramento River at Jellys Ferry, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	61	56	51	49	49	52	54	57	57	58	59	62
20%	57	55	51	48	48	51	54	56	57	57	58	59
30%	57	55	50	47	48	51	53	55	56	56	57	59
40%	56	55	50	47	48	50	53	55	55	56	57	58
50%	56	54	49	47	47	50	53	55	55	55	56	57
60%	56	54	49	46	47	49	52	55	55	55	56	55
70%	56	53	49	46	46	49	52	54	54	54	56	55
80%	55	53	48	46	46	48	51	54	54	54	56	54
90%	55	53	48	45	46	47	51	54	53	53	55	53
Long Term												
Full Simulation Period ^b	57	54	49	47	47	50	53	55	55	55	57	57
Water Year Types ^c												
Wet (32%)	54	52	47	46	47	48	52	55	55	55	56	54
Above Normal (16%)	57	54	49	47	47	49	52	55	54	54	55	55
Below Normal (13%)	56	54	50	47	48	50	53	54	55	55	56	58
Dry (24%)	57	54	50	47	48	50	53	55	55	55	58	59
Critical (15%)	59	55	50	47	48	51	53	56	57	58	61	64

Alternative 1												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	59	56	51	49	49	52	55	57	57	58	59	61
20%	57	55	51	48	49	51	54	56	56	57	58	59
30%	57	54	50	47	48	51	53	55	56	56	57	59
40%	56	54	49	47	48	50	53	55	55	56	57	58
50%	56	54	49	47	47	49	53	55	55	55	56	58
60%	56	53	49	46	47	49	52	54	54	55	56	57
70%	55	53	49	46	46	48	52	54	54	54	56	57
80%	55	53	48	46	46	48	51	54	54	54	55	56
90%	55	52	48	45	46	47	50	53	53	53	55	55
Long Term												
Full Simulation Period ^b	57	54	49	47	47	50	52	55	55	55	57	58
Water Year Types ^c												
Wet (32%)	54	51	47	47	47	48	52	55	55	55	56	56
Above Normal (16%)	57	54	49	47	47	49	52	55	54	54	55	57
Below Normal (13%)	56	53	49	47	48	50	53	54	54	55	56	58
Dry (24%)	57	54	49	47	48	50	53	55	54	55	58	59
Critical (15%)	59	55	50	47	48	51	53	56	57	58	61	63

Alternative 1 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	-1.1	-0.3	0.1	0.0	0.1	-0.1	0.5	0.1	-0.4	0.0	0.5	-1.2
0.2	0.1	-0.4	-0.2	0.0	0.2	-0.2	-0.1	0.1	-0.2	-0.3	-0.4	-0.2
0.3	0.0	-0.5	-0.2	0.0	0.0	-0.1	-0.1	-0.1	0.0	0.1	-0.3	-0.1
0.4	0.0	-0.5	-0.2	0.1	0.0	-0.1	0.0	0.0	-0.2	-0.1	-0.1	0.6
0.5	0.2	-0.7	-0.1	0.0	0.0	-0.1	0.0	-0.2	-0.5	-0.1	-0.1	0.8
0.6	0.0	-0.6	0.1	0.0	-0.1	-0.1	0.0	-0.3	-0.3	0.1	-0.1	2.1
0.7	-0.2	-0.3	0.2	0.0	0.0	0.0	-0.1	-0.1	-0.3	0.1	-0.2	2.1
0.8	-0.1	-0.5	0.1	0.0	0.0	0.0	-0.3	-0.1	-0.4	0.1	-0.3	2.5
0.9	-0.1	-0.3	0.1	0.0	0.0	0.1	-0.1	-0.2	-0.2	0.0	-0.1	1.7
Long Term												
Full Simulation Period ^b	-0.1	-0.4	-0.1	0.0	0.0	0.0	-0.1	-0.1	-0.3	0.0	-0.2	0.9
Water Year Types ^c												
Wet (32%)	-0.1	-0.4	0.2	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	-0.3	2.5
Above Normal (16%)	0.0	-0.4	-0.2	0.1	0.0	-0.1	0.0	-0.2	-0.3	0.1	-0.2	1.8
Below Normal (13%)	-0.2	-0.5	-0.3	0.1	0.0	-0.3	-0.1	-0.1	-0.3	0.0	-0.4	-0.1
Dry (24%)	0.0	-0.3	-0.2	-0.1	0.0	0.0	-0.1	-0.2	-0.4	-0.1	0.1	-0.1
Critical (15%)	-0.5	-0.3	0.0	0.2	0.1	0.0	0.0	0.0	-0.4	-0.1	-0.4	-0.9

^a Exceedance probability is defined as the probability a given value will be exceeded in any one year.
^b Based on the 82-year simulation period.
^c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-7-2. Sacramento River at Jellys Ferry, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	61	56	51	49	49	52	54	57	57	58	59	62
20%	57	55	51	48	48	51	54	56	57	57	58	59
30%	57	55	50	47	48	51	53	55	56	56	57	59
40%	56	55	50	47	48	50	53	55	55	56	57	58
50%	56	54	49	47	47	50	53	55	55	55	56	57
60%	56	54	49	46	47	49	52	55	55	55	56	55
70%	56	53	49	46	46	49	52	54	54	54	56	55
80%	55	53	48	46	46	48	51	54	54	54	56	54
90%	55	53	48	45	46	47	51	54	53	53	55	53
Long Term												
Full Simulation Period ^b	57	54	49	47	47	50	53	55	55	55	57	57
Water Year Types ^c												
Wet (32%)	54	52	47	46	47	48	52	55	55	55	56	54
Above Normal (16%)	57	54	49	47	47	49	52	55	54	54	55	55
Below Normal (13%)	56	54	50	47	48	50	53	54	55	55	56	58
Dry (24%)	57	54	50	47	48	50	53	55	55	55	58	59
Critical (15%)	59	55	50	47	48	51	53	56	57	58	61	64

Alternative 3												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	60	56	51	48	49	52	55	57	57	58	59	61
20%	57	55	50	48	48	51	54	56	56	57	58	59
30%	57	54	50	47	48	51	53	55	56	56	57	59
40%	56	54	49	47	48	50	53	55	55	56	57	58
50%	56	54	49	47	47	49	53	55	55	55	56	57
60%	56	53	49	47	47	49	52	54	54	55	56	57
70%	56	53	49	46	46	48	52	54	54	54	56	56
80%	55	53	48	46	46	48	51	54	54	54	55	56
90%	55	52	48	45	46	47	51	53	53	54	55	55
Long Term												
Full Simulation Period ^b	57	54	49	47	47	50	53	55	55	55	57	58
Water Year Types ^c												
Wet (32%)	54	51	47	47	47	48	52	55	55	55	56	56
Above Normal (16%)	57	54	49	47	47	49	52	55	54	54	55	57
Below Normal (13%)	56	53	49	47	48	50	53	54	54	55	56	57
Dry (24%)	56	54	50	47	48	50	53	55	54	55	57	59
Critical (15%)	59	55	50	47	48	51	53	56	57	58	61	63

Alternative 3 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	-0.9	-0.2	0.0	-0.1	0.0	-0.1	0.5	0.0	-0.3	0.0	-0.2	-1.2
0.2	0.0	-0.4	-0.2	0.1	0.1	-0.2	-0.1	0.1	-0.2	-0.3	-0.5	-0.4
0.3	0.0	-0.5	0.0	0.0	-0.1	0.0	-0.1	0.0	0.0	0.1	-0.2	-0.1
0.4	0.0	-0.5	-0.2	0.1	0.0	-0.1	-0.1	-0.1	-0.2	-0.2	0.0	0.6
0.5	0.1	-0.6	-0.2	-0.1	0.1	-0.1	0.0	-0.2	-0.4	0.0	0.0	0.5
0.6	0.0	-0.6	0.1	0.0	-0.1	0.0	0.0	-0.2	-0.3	0.1	-0.1	2.0
0.7	0.0	-0.3	0.0	0.1	0.1	0.0	0.0	-0.2	-0.3	0.2	-0.1	1.9
0.8	-0.2	-0.5	0.0	0.0	0.0	0.0	-0.2	0.0	-0.4	0.1	-0.1	2.0
0.9	-0.1	-0.2	0.2	0.0	0.0	0.1	0.0	-0.2	-0.2	0.1	-0.1	1.6
Long Term												
Full Simulation Period ^b	-0.2	-0.4	0.0	0.0	0.0	0.0	0.0	-0.1	-0.2	0.0	-0.2	0.7
Water Year Types ^c												
Wet (32%)	-0.1	-0.4	0.2	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	-0.2	2.3
Above Normal (16%)	0.0	-0.4	-0.2	0.0	0.0	-0.1	0.0	-0.2	-0.2	0.2	0.0	1.9
Below Normal (13%)	-0.2	-0.6	-0.3	0.1	0.0	-0.2	-0.1	-0.1	-0.2	-0.1	-0.1	-0.9
Dry (24%)	-0.1	-0.4	-0.1	-0.1	0.0	0.0	-0.1	-0.1	-0.4	-0.1	-0.2	-0.2
Critical (15%)	-0.4	-0.2	0.0	0.1	0.1	0.0	0.1	0.0	-0.3	0.1	-0.5	-1.0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-7-3. Sacramento River at Jellys Ferry, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	61	56	51	49	49	52	54	57	57	58	59	62
20%	57	55	51	48	48	51	54	56	57	57	58	59
30%	57	55	50	47	48	51	53	55	56	56	57	59
40%	56	55	50	47	48	50	53	55	55	56	57	58
50%	56	54	49	47	47	50	53	55	55	55	56	57
60%	56	54	49	46	47	49	52	55	55	55	56	55
70%	56	53	49	46	46	49	52	54	54	54	56	55
80%	55	53	48	46	46	48	51	54	54	54	56	54
90%	55	53	48	45	46	47	51	54	53	53	55	53
Long Term												
Full Simulation Period ^b	57	54	49	47	47	50	53	55	55	55	57	57
Water Year Types ^c												
Wet (32%)	54	52	47	46	47	48	52	55	55	55	56	54
Above Normal (16%)	57	54	49	47	47	49	52	55	54	54	55	55
Below Normal (13%)	56	54	50	47	48	50	53	54	55	55	56	58
Dry (24%)	57	54	50	47	48	50	53	55	55	55	58	59
Critical (15%)	59	55	50	47	48	51	53	56	57	58	61	64

Alternative 5												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	61	56	51	49	49	52	54	57	57	58	59	63
20%	57	55	51	48	48	51	54	56	57	57	58	59
30%	57	55	50	47	48	51	53	56	56	56	57	59
40%	56	55	50	47	48	50	53	55	55	56	57	58
50%	56	54	49	47	47	50	53	55	55	55	56	57
60%	56	54	49	46	47	49	52	55	55	55	56	55
70%	55	53	49	46	46	49	52	54	54	54	56	55
80%	55	53	48	46	46	48	51	54	54	54	56	54
90%	55	53	48	45	46	47	51	54	53	53	55	53
Long Term												
Full Simulation Period ^b	57	54	49	47	47	50	53	55	55	55	57	57
Water Year Types ^c												
Wet (32%)	54	52	47	46	47	48	52	55	55	55	56	54
Above Normal (16%)	57	54	49	47	47	49	52	55	54	54	55	55
Below Normal (13%)	56	54	50	47	48	50	53	54	55	55	56	58
Dry (24%)	57	54	50	47	48	50	53	55	55	55	57	59
Critical (15%)	59	56	50	47	48	51	53	56	57	58	61	64

Alternative 5 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	0.4	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.2	0.0	-0.1	0.6
0.2	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	0.0	-0.2	0.0
0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	-0.2	0.0
0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	-0.1	-0.1	0.0	-0.1
0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	-0.1	0.0	0.0
0.6	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	-0.1
0.7	-0.2	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0
0.8	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	-0.1	0.0	0.0	0.0
0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0
Long Term												
Full Simulation Period ^b	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-0.1	-0.1	0.0
Water Year Types ^c												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Above Normal (16%)	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
Below Normal (13%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	-0.1
Dry (24%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	-0.1	-0.2	-0.2
Critical (15%)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	-0.2	-0.2	0.0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-7-4. Sacramento River at Jellys Ferry, Monthly Temperature

Statistic		Monthly Temperature (DEG-F)											
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Second Basis of Comparison													
Probability of Exceedance ^a													
10%		59	56	51	49	49	52	55	57	57	58	59	61
20%		57	55	51	48	49	51	54	56	56	57	58	59
30%		57	54	50	47	48	51	53	55	56	56	57	59
40%		56	54	49	47	48	50	53	55	55	56	57	58
50%		56	54	49	47	47	49	53	55	55	55	56	58
60%		56	53	49	46	47	49	52	54	54	55	56	57
70%		55	53	49	46	46	48	52	54	54	54	56	57
80%		55	53	48	46	46	48	51	54	54	54	55	56
90%		55	52	48	45	46	47	50	53	53	53	55	55
Long Term													
Full Simulation Period ^b		57	54	49	47	47	50	52	55	55	55	57	58
Water Year Types ^c													
Wet (32%)		54	51	47	47	47	48	52	55	55	55	56	56
Above Normal (16%)		57	54	49	47	47	49	52	55	54	54	55	57
Below Normal (13%)		56	53	49	47	48	50	53	54	54	55	56	58
Dry (24%)		57	54	49	47	48	50	53	55	54	55	58	59
Critical (15%)		59	55	50	47	48	51	53	56	57	58	61	63

Statistic		Monthly Temperature (DEG-F)											
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
No Action Alternative													
Probability of Exceedance ^a													
10%		61	56	51	49	49	52	54	57	57	58	59	62
20%		57	55	51	48	48	51	54	56	57	57	58	59
30%		57	55	50	47	48	51	53	55	56	56	57	59
40%		56	55	50	47	48	50	53	55	55	56	57	58
50%		56	54	49	47	47	50	53	55	55	55	56	57
60%		56	54	49	46	47	49	52	55	55	55	56	55
70%		56	53	49	46	46	49	52	54	54	54	56	55
80%		55	53	48	46	46	48	51	54	54	54	56	54
90%		55	53	48	45	46	47	51	54	53	53	55	53
Long Term													
Full Simulation Period ^b		57	54	49	47	47	50	53	55	55	55	57	57
Water Year Types ^c													
Wet (32%)		54	52	47	46	47	48	52	55	55	55	56	54
Above Normal (16%)		57	54	49	47	47	49	52	55	54	54	55	55
Below Normal (13%)		56	54	50	47	48	50	53	54	55	55	56	58
Dry (24%)		57	54	50	47	48	50	53	55	55	55	58	59
Critical (15%)		59	55	50	47	48	51	53	56	57	58	61	64

Statistic		Monthly Temperature (DEG-F)											
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
No Action Alternative minus Second Basis of Comparison													
Probability of Exceedance ^a													
0.1		1.1	0.3	-0.1	0.0	-0.1	0.1	-0.5	-0.1	0.4	0.0	-0.5	1.2
0.2		-0.1	0.4	0.2	0.0	-0.2	0.2	0.1	-0.1	0.2	0.3	0.4	0.2
0.3		0.0	0.5	0.2	0.0	0.0	0.1	0.1	0.1	0.0	-0.1	0.3	0.1
0.4		0.0	0.5	0.2	-0.1	0.0	0.1	0.0	0.0	0.2	0.1	0.1	-0.6
0.5		-0.2	0.7	0.1	0.0	0.0	0.1	0.0	0.2	0.5	0.1	0.1	-0.8
0.6		0.0	0.6	-0.1	0.0	0.1	0.1	0.0	0.3	0.3	-0.1	0.1	-2.1
0.7		0.2	0.3	-0.2	0.0	0.0	0.0	0.1	0.1	0.3	-0.1	0.2	-2.1
0.8		0.1	0.5	-0.1	0.0	0.0	0.0	0.3	0.1	0.4	-0.1	0.3	-2.5
0.9		0.1	0.3	-0.1	0.0	0.0	-0.1	0.1	0.2	0.2	0.0	0.1	-1.7
Long Term													
Full Simulation Period ^b		0.1	0.4	0.1	0.0	0.0	0.0	0.1	0.1	0.3	0.0	0.2	-0.9
Water Year Types ^c													
Wet (32%)		0.1	0.4	-0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.3	-2.5
Above Normal (16%)		0.0	0.4	0.2	-0.1	0.0	0.1	0.0	0.2	0.3	-0.1	0.2	-1.8
Below Normal (13%)		0.2	0.5	0.3	-0.1	0.0	0.3	0.1	0.1	0.3	0.0	0.4	0.1
Dry (24%)		0.0	0.3	0.2	0.1	0.0	0.0	0.1	0.2	0.4	0.1	-0.1	0.1
Critical (15%)		0.5	0.3	0.0	-0.2	-0.1	0.0	0.0	0.0	0.4	0.1	0.4	0.9

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-7-5. Sacramento River at Jellys Ferry, Monthly Temperature

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Second Basis of Comparison												
Probability of Exceedance ^a												
10%	59	56	51	49	49	52	55	57	57	58	59	61
20%	57	55	51	48	49	51	54	56	56	57	58	59
30%	57	54	50	47	48	51	53	55	56	56	57	59
40%	56	54	49	47	48	50	53	55	55	56	57	58
50%	56	54	49	47	47	49	53	55	55	55	56	58
60%	56	53	49	46	47	49	52	54	54	55	56	57
70%	55	53	49	46	46	48	52	54	54	54	56	57
80%	55	53	48	46	46	48	51	54	54	54	55	56
90%	55	52	48	45	46	47	50	53	53	53	55	55
Long Term												
Full Simulation Period ^b	57	54	49	47	47	50	52	55	55	55	57	58
Water Year Types ^c												
Wet (32%)	54	51	47	47	47	48	52	55	55	55	56	56
Above Normal (16%)	57	54	49	47	47	49	52	55	54	54	55	57
Below Normal (13%)	56	53	49	47	48	50	53	54	54	55	56	58
Dry (24%)	57	54	49	47	48	50	53	55	54	55	58	59
Critical (15%)	59	55	50	47	48	51	53	56	57	58	61	63

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Alternative 3												
Probability of Exceedance ^a												
10%	60	56	51	48	49	52	55	57	57	58	59	61
20%	57	55	50	48	48	51	54	56	56	57	58	59
30%	57	54	50	47	48	51	53	55	56	56	57	59
40%	56	54	49	47	48	50	53	55	55	56	57	58
50%	56	54	49	47	47	49	53	55	55	55	56	57
60%	56	53	49	47	47	49	52	54	54	55	56	57
70%	56	53	49	46	46	48	52	54	54	54	56	56
80%	55	53	48	46	46	48	51	54	54	54	55	56
90%	55	52	48	45	46	47	51	53	53	54	55	55
Long Term												
Full Simulation Period ^b	57	54	49	47	47	50	53	55	55	55	57	58
Water Year Types ^c												
Wet (32%)	54	51	47	47	47	48	52	55	55	55	56	56
Above Normal (16%)	57	54	49	47	47	49	52	55	54	54	55	57
Below Normal (13%)	56	53	49	47	48	50	53	54	54	55	56	57
Dry (24%)	56	54	50	47	48	50	53	55	54	55	57	59
Critical (15%)	59	55	50	47	48	51	53	56	57	58	61	63

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Alternative 3 minus Second Basis of Comparison												
Probability of Exceedance ^a												
0.1	0.2	0.1	0.0	-0.1	-0.1	0.0	0.0	-0.1	0.1	0.0	-0.8	-0.1
0.2	-0.1	0.0	0.0	0.1	-0.1	0.0	0.1	0.0	0.1	0.0	0.0	-0.2
0.3	0.0	0.0	0.1	0.0	-0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0
0.4	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	0.0	-0.1	0.1	0.0
0.5	-0.1	0.2	-0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.0	-0.2
0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.2
0.7	0.1	0.0	-0.1	0.0	0.1	0.0	0.1	-0.1	0.0	0.0	0.1	-0.2
0.8	-0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.1	0.1	-0.5
0.9	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	-0.1
Long Term												
Full Simulation Period ^b	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.2
Water Year Types ^c												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	-0.2
Above Normal (16%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.0
Below Normal (13%)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.3	-0.8
Dry (24%)	-0.2	-0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	-0.2	-0.1
Critical (15%)	0.1	0.1	0.0	-0.1	-0.1	0.0	0.0	0.0	0.1	0.1	-0.1	-0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-7-6. Sacramento River at Jellys Ferry, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	59	56	51	49	49	52	55	57	57	58	59	61
20%	57	55	51	48	49	51	54	56	56	57	58	59
30%	57	54	50	47	48	51	53	55	56	56	57	59
40%	56	54	49	47	48	50	53	55	55	56	57	58
50%	56	54	49	47	47	49	53	55	55	55	56	58
60%	56	53	49	46	47	49	52	54	54	55	56	57
70%	55	53	49	46	46	48	52	54	54	54	56	57
80%	55	53	48	46	46	48	51	54	54	54	55	56
90%	55	52	48	45	46	47	50	53	53	53	55	55
Long Term												
Full Simulation Period ^b	57	54	49	47	47	50	52	55	55	55	57	58
Water Year Types ^c												
Wet (32%)	54	51	47	47	47	48	52	55	55	55	56	56
Above Normal (16%)	57	54	49	47	47	49	52	55	54	54	55	57
Below Normal (13%)	56	53	49	47	48	50	53	54	54	55	56	58
Dry (24%)	57	54	49	47	48	50	53	55	54	55	58	59
Critical (15%)	59	55	50	47	48	51	53	56	57	58	61	63

Alternative 5

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	61	56	51	49	49	52	54	57	57	58	59	63
20%	57	55	51	48	48	51	54	56	57	57	58	59
30%	57	55	50	47	48	51	53	56	56	56	57	59
40%	56	55	50	47	48	50	53	55	55	56	57	58
50%	56	54	49	47	47	50	53	55	55	55	56	57
60%	56	54	49	46	47	49	52	55	55	55	56	55
70%	55	53	49	46	46	49	52	54	54	54	56	55
80%	55	53	48	46	46	48	51	54	54	54	56	54
90%	55	53	48	45	46	47	51	54	53	53	55	53
Long Term												
Full Simulation Period ^b	57	54	49	47	47	50	53	55	55	55	57	57
Water Year Types ^c												
Wet (32%)	54	52	47	46	47	48	52	55	55	55	56	54
Above Normal (16%)	57	54	49	47	47	49	52	55	54	54	55	55
Below Normal (13%)	56	54	50	47	48	50	53	54	55	55	56	58
Dry (24%)	57	54	50	47	48	50	53	55	55	55	57	59
Critical (15%)	59	56	50	47	48	51	53	56	57	58	61	64

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	1.5	0.3	-0.1	0.0	-0.1	0.0	-0.4	-0.1	0.5	0.0	-0.6	1.7
0.2	-0.2	0.3	0.2	0.1	-0.2	0.2	0.2	0.0	0.2	0.3	0.2	0.2
0.3	0.0	0.5	0.2	0.0	0.0	0.1	0.1	0.2	0.0	0.0	0.1	0.1
0.4	0.0	0.5	0.2	-0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.1	-0.7
0.5	-0.1	0.7	0.1	0.0	-0.1	0.1	0.1	0.3	0.5	0.0	0.1	-0.8
0.6	0.0	0.5	-0.1	0.0	0.1	0.1	0.0	0.2	0.3	-0.2	0.1	-2.2
0.7	0.0	0.4	-0.2	-0.1	0.0	0.1	0.2	0.3	0.3	-0.2	0.2	-2.0
0.8	0.0	0.5	0.0	0.0	0.1	0.0	0.3	0.3	0.3	-0.1	0.2	-2.5
0.9	0.1	0.3	-0.1	0.0	0.0	-0.1	0.1	0.3	0.2	0.0	0.2	-1.7
Long Term												
Full Simulation Period ^b	0.1	0.4	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.0	0.2	-0.9
Water Year Types ^c												
Wet (32%)	0.1	0.4	-0.2	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	0.3	-2.5
Above Normal (16%)	0.0	0.3	0.2	-0.1	0.0	0.1	0.0	0.3	0.3	-0.1	0.2	-1.8
Below Normal (13%)	0.2	0.5	0.3	0.0	0.0	0.2	0.1	0.2	0.3	0.0	0.6	0.0
Dry (24%)	0.0	0.3	0.2	0.1	0.0	0.0	0.2	0.4	0.4	0.0	-0.3	0.0
Critical (15%)	0.6	0.3	0.0	-0.2	-0.2	0.0	0.1	0.2	0.5	-0.1	0.2	0.9

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

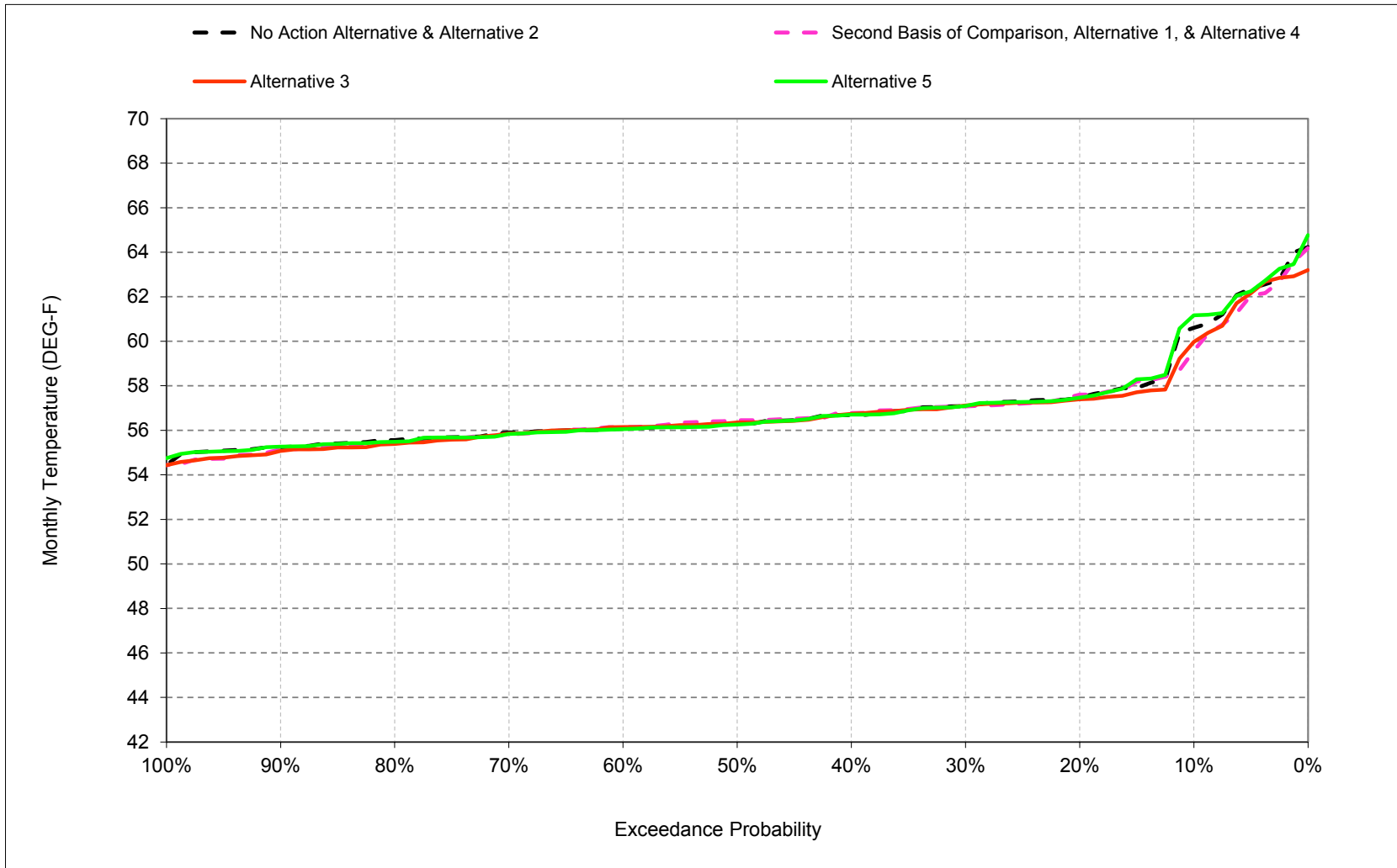
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

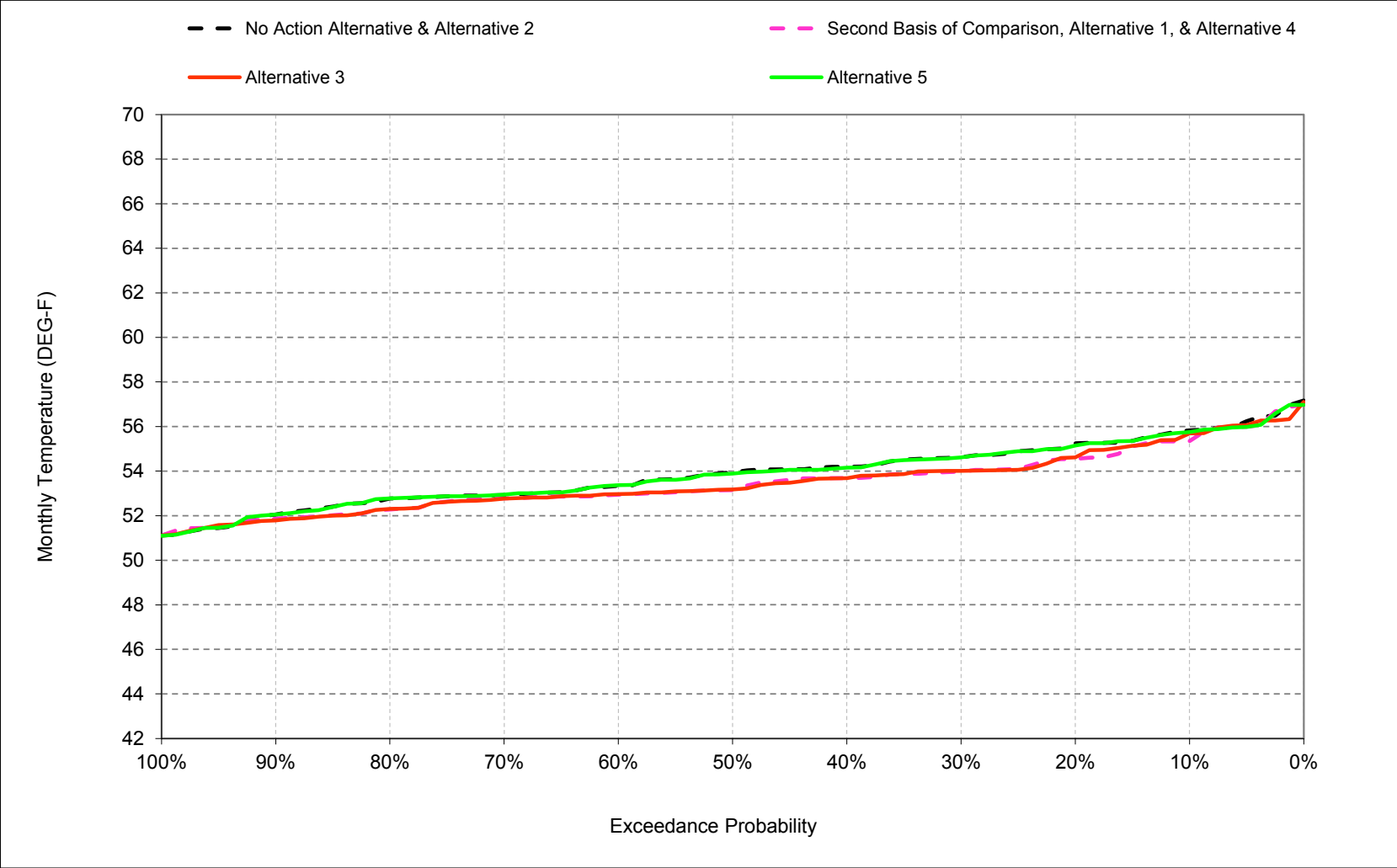
B.8. Sacramento River at Bend Bridge Temperature

Figure B-8-1. Sacramento River at Bend Bridge, October



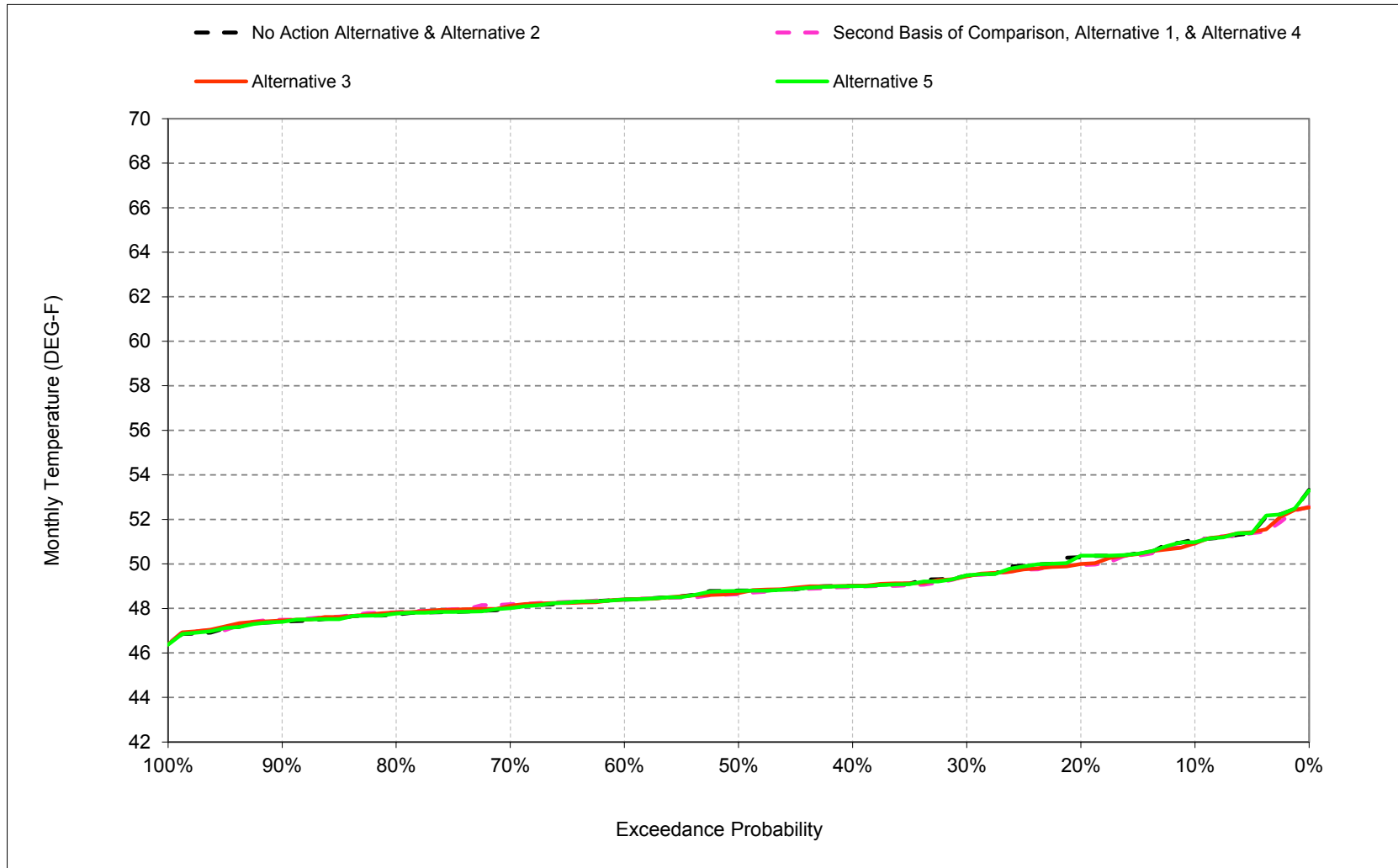
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-8-2. Sacramento River at Bend Bridge, November



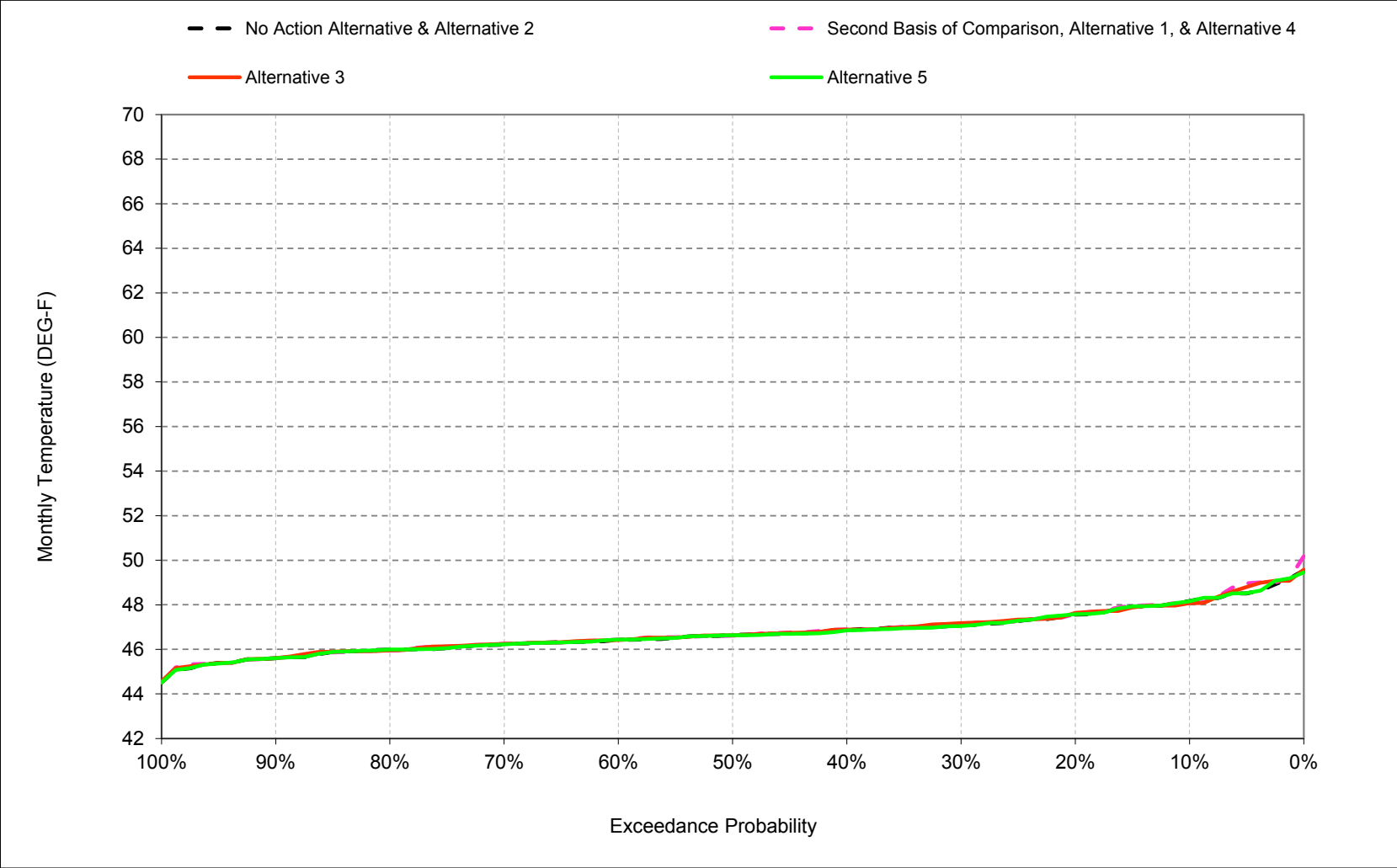
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-8-3. Sacramento River at Bend Bridge, December



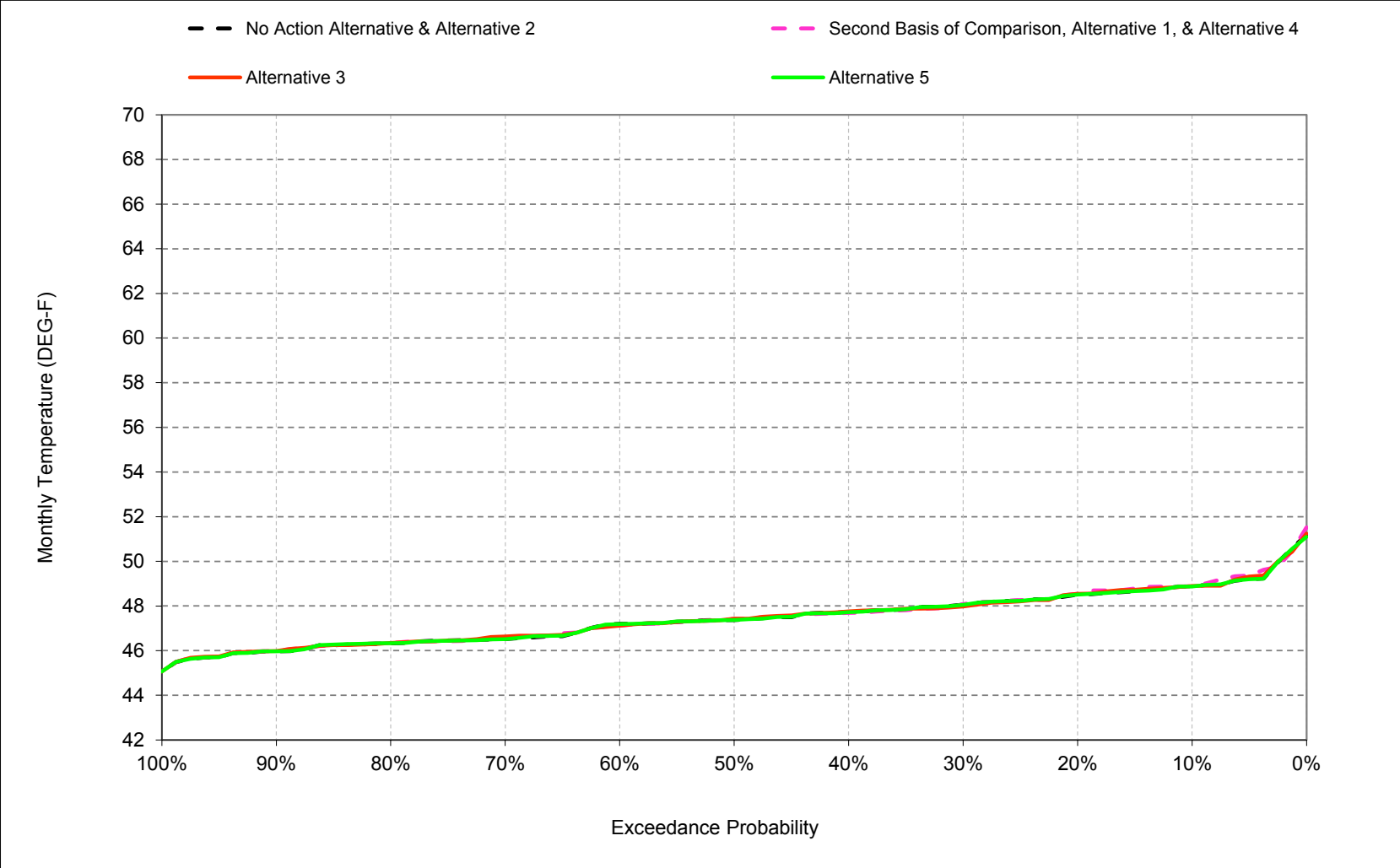
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-8-4. Sacramento River at Bend Bridge, January



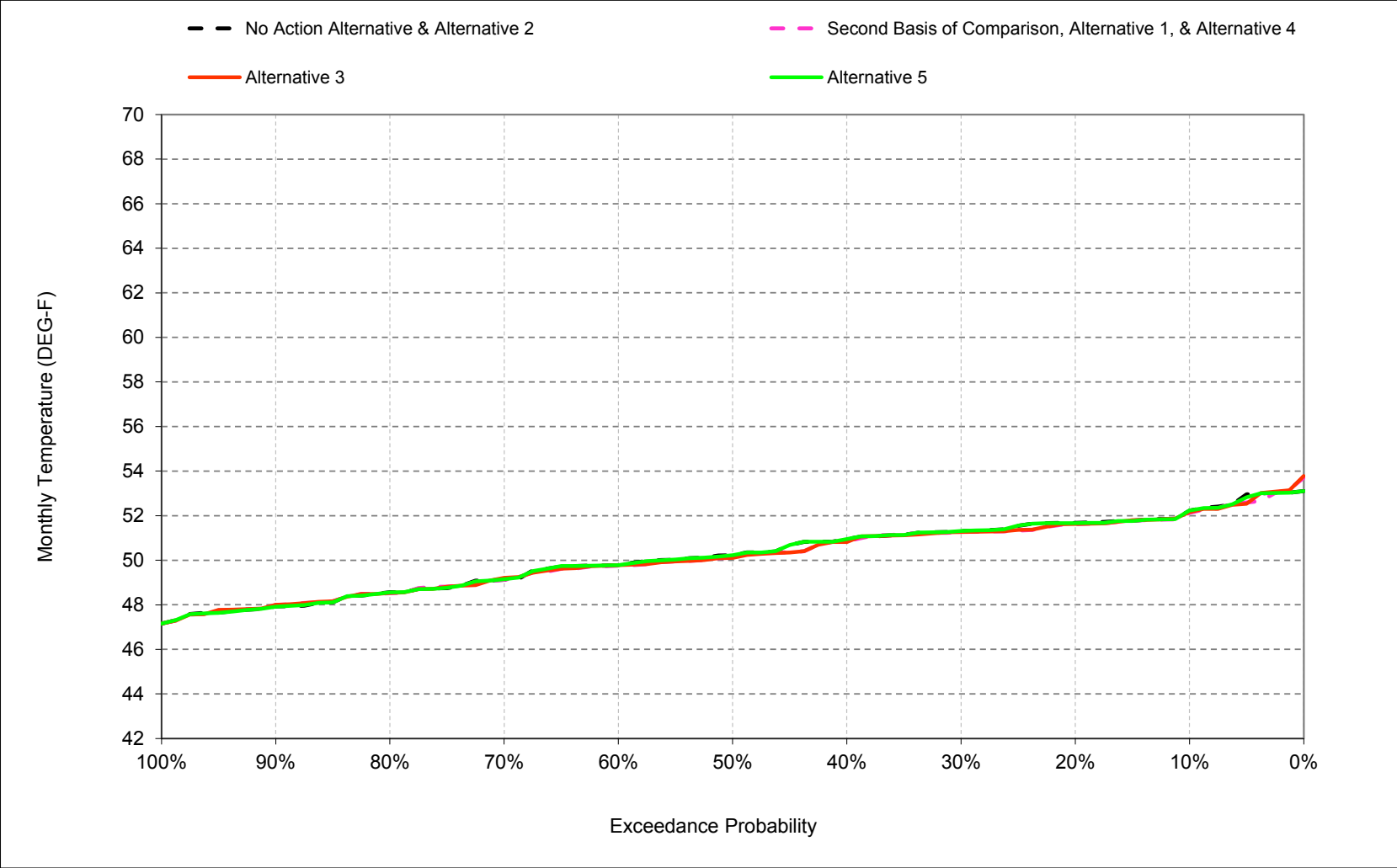
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-8-5. Sacramento River at Bend Bridge, February



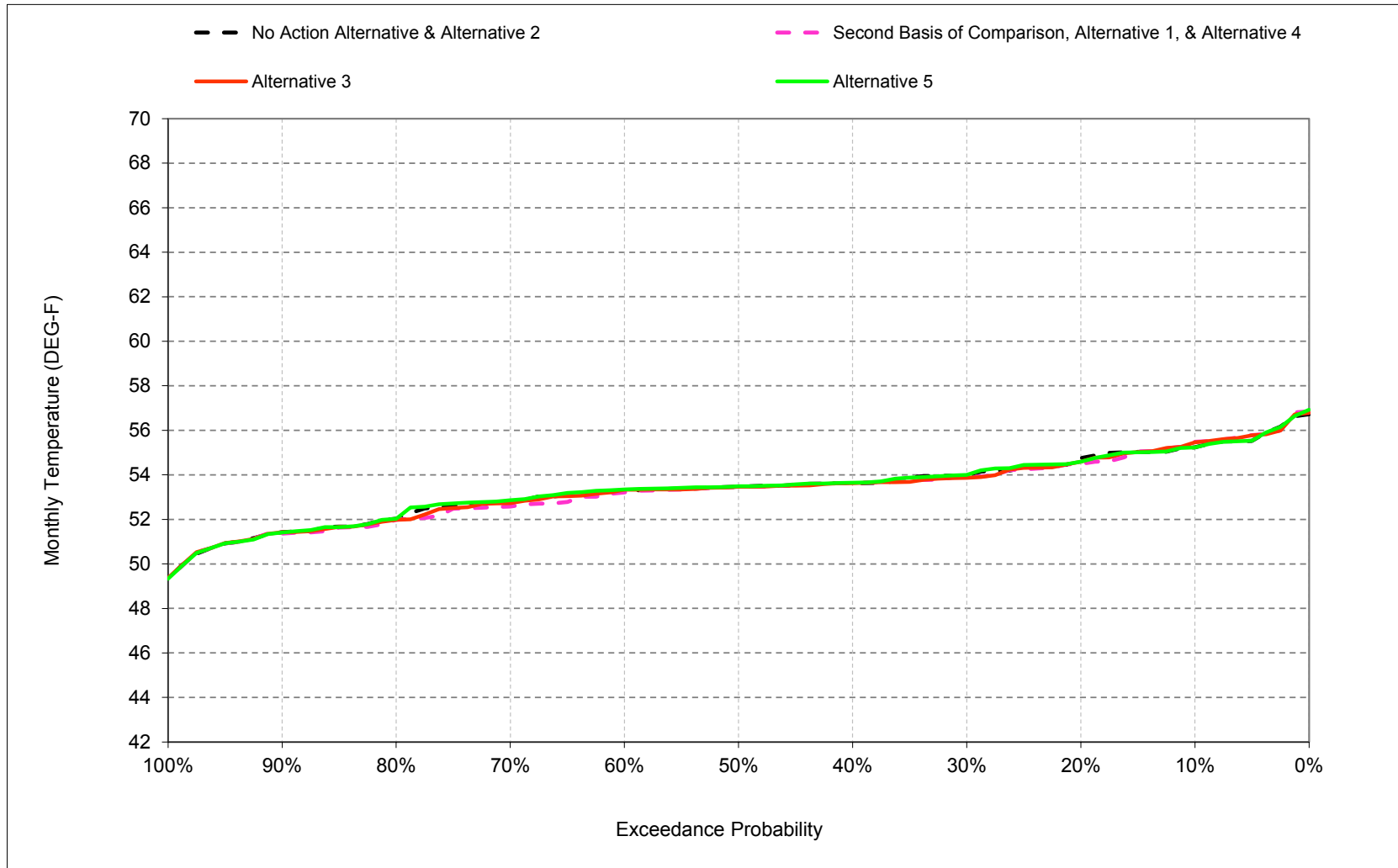
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-8-6. Sacramento River at Bend Bridge, March



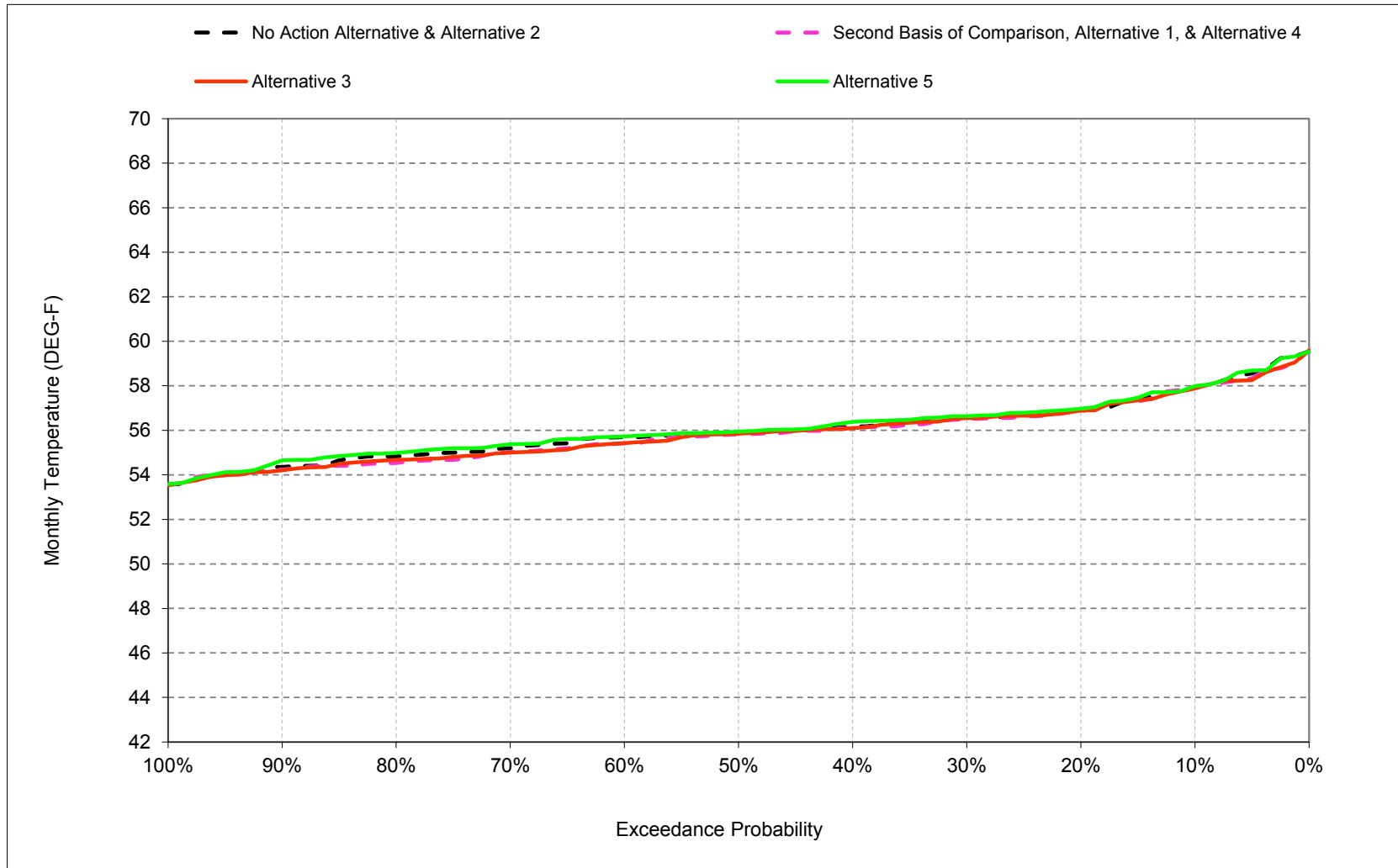
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-8-7. Sacramento River at Bend Bridge, April



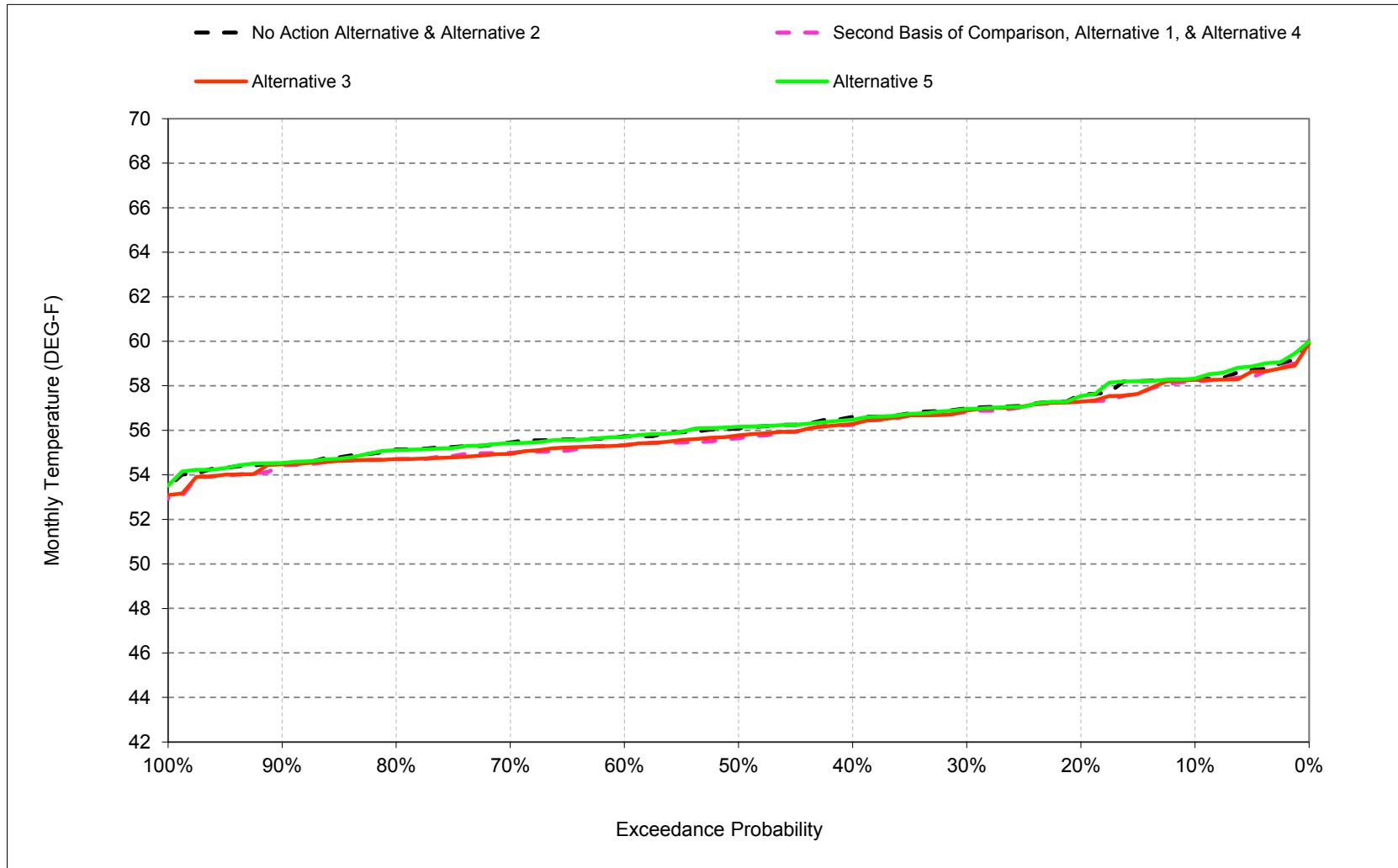
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-8-8. Sacramento River at Bend Bridge, May



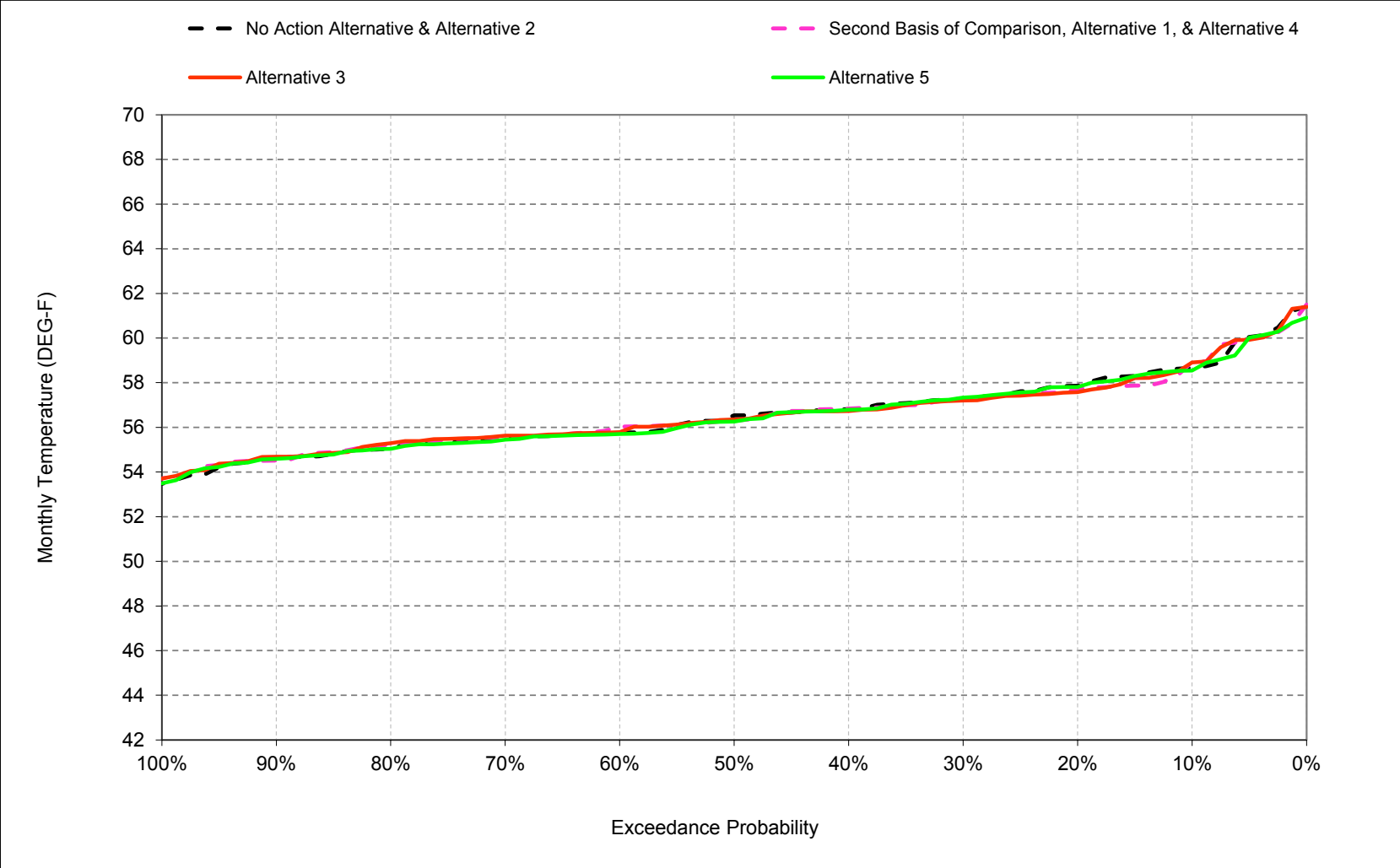
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-8-9. Sacramento River at Bend Bridge, June



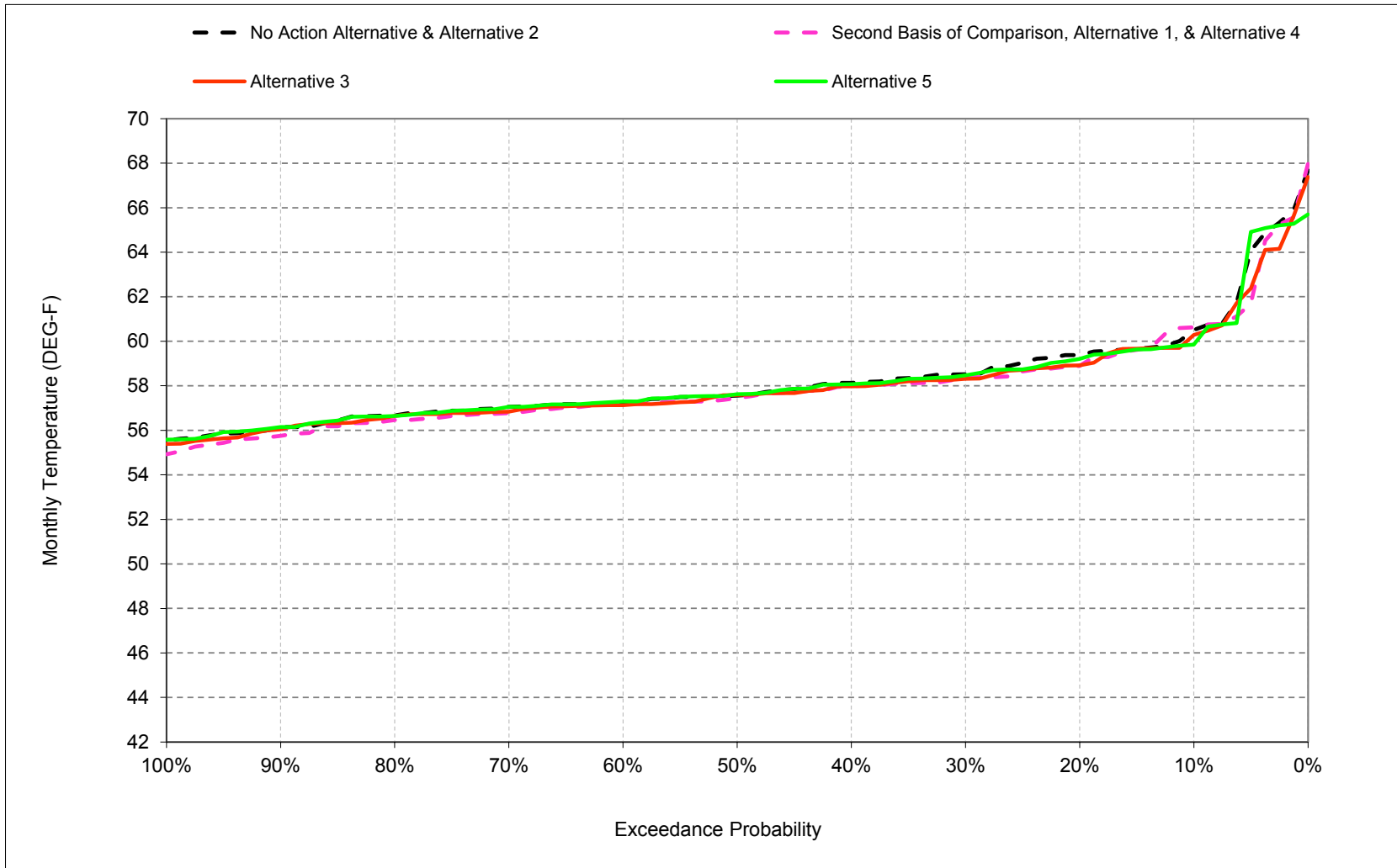
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-8-10. Sacramento River at Bend Bridge, July



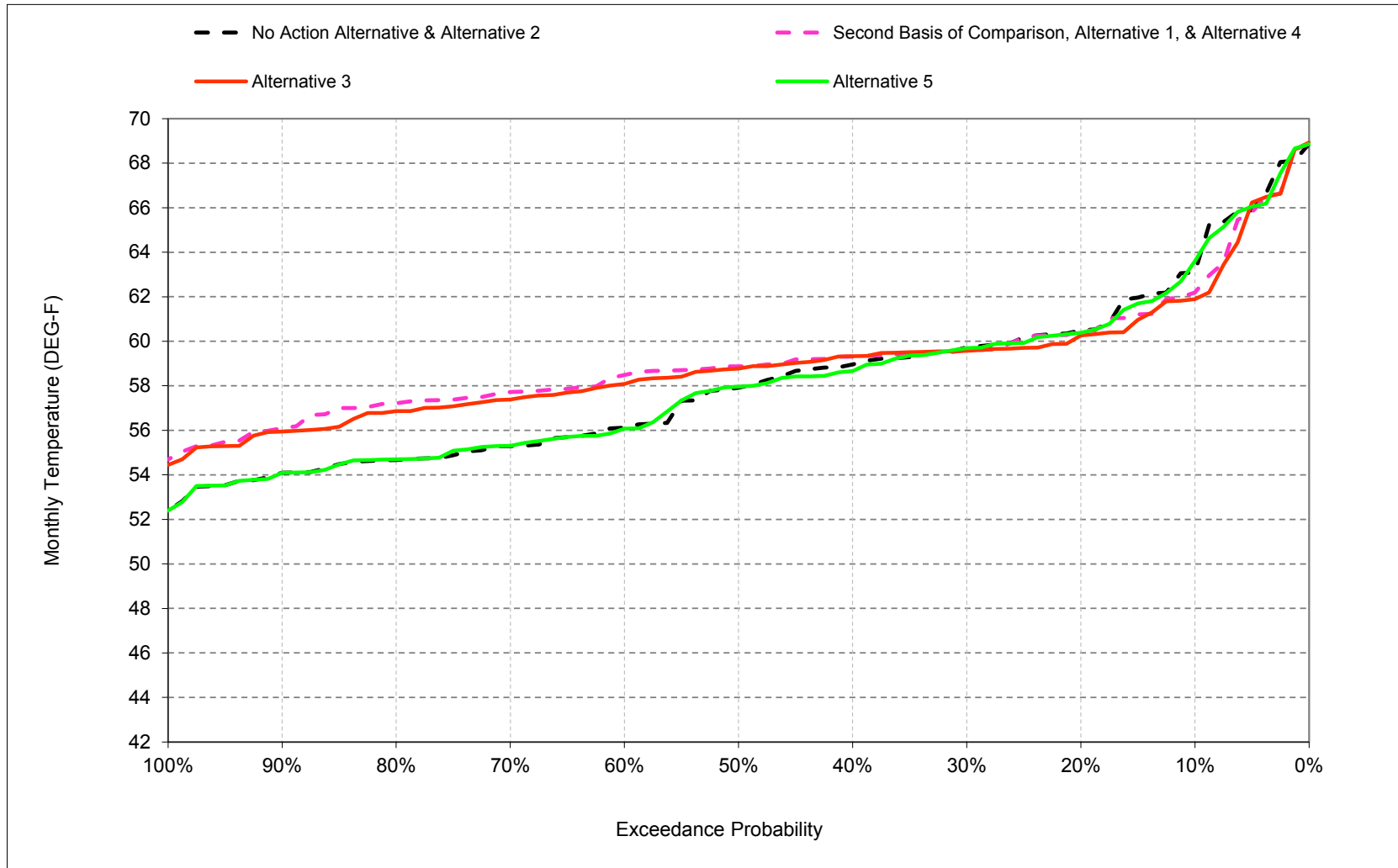
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-8-11. Sacramento River at Bend Bridge, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-8-12. Sacramento River at Bend Bridge, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-8-1. Sacramento River at Bend Bridge, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	61	56	51	48	49	52	55	58	58	59	60	63
20%	57	55	50	48	48	52	55	57	58	58	59	60
30%	57	55	49	47	48	51	54	57	57	57	59	60
40%	57	54	49	47	48	51	54	56	57	57	58	59
50%	56	54	49	47	47	50	53	56	56	56	58	58
60%	56	53	48	46	47	50	53	56	56	56	57	56
70%	56	53	48	46	47	49	53	55	55	55	57	55
80%	56	53	48	46	46	49	52	55	55	55	57	55
90%	55	52	47	46	46	48	51	54	55	55	56	54
Long Term												
Full Simulation Period ^b	57	54	49	47	47	50	53	56	56	57	58	58
Water Year Types ^c												
Wet (32%)	54	51	47	46	47	49	53	56	57	56	57	55
Above Normal (16%)	57	54	49	47	47	50	53	56	55	55	57	56
Below Normal (13%)	56	54	49	47	48	51	54	55	56	56	57	59
Dry (24%)	57	54	49	47	48	51	54	56	56	57	59	60
Critical (15%)	59	55	50	47	48	52	54	57	58	59	62	65

Alternative 1												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	60	55	51	48	49	52	55	58	58	59	61	62
20%	58	55	50	48	49	52	54	57	57	58	59	60
30%	57	54	49	47	48	51	54	56	57	57	58	60
40%	57	54	49	47	48	51	54	56	56	57	58	59
50%	56	53	49	47	47	50	53	56	56	56	57	59
60%	56	53	48	46	47	50	53	55	55	56	57	59
70%	56	53	48	46	47	49	53	55	55	56	57	58
80%	55	52	48	46	46	48	52	55	55	55	56	57
90%	55	52	47	46	46	48	51	54	54	55	56	56
Long Term												
Full Simulation Period ^b	57	53	49	47	47	50	53	56	56	57	58	59
Water Year Types ^c												
Wet (32%)	54	51	47	46	47	49	52	56	56	56	57	57
Above Normal (16%)	57	53	49	47	47	50	53	56	55	55	56	58
Below Normal (13%)	56	53	49	47	48	51	54	55	55	56	57	59
Dry (24%)	57	53	49	47	48	51	54	56	55	56	59	60
Critical (15%)	59	55	50	47	49	52	54	57	58	59	62	64

Alternative 1 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	-1.0	-0.5	-0.2	-0.1	0.0	-0.1	0.2	0.0	-0.1	0.2	0.2	-0.9
0.2	0.1	-0.7	-0.3	0.0	0.0	-0.1	-0.2	0.0	-0.3	-0.2	-0.5	0.0
0.3	0.0	-0.6	0.0	0.1	0.0	0.0	-0.1	-0.1	-0.2	0.0	-0.2	-0.1
0.4	0.1	-0.5	0.0	0.0	0.0	-0.1	0.0	-0.1	-0.3	0.0	-0.2	0.4
0.5	0.2	-0.8	-0.2	0.0	0.0	-0.1	0.0	-0.1	-0.4	-0.1	-0.1	1.0
0.6	0.0	-0.4	0.0	0.0	-0.1	0.0	-0.1	-0.3	-0.4	0.2	-0.1	2.4
0.7	-0.1	-0.1	0.2	0.0	0.0	0.0	-0.2	-0.2	-0.4	0.1	-0.2	2.4
0.8	-0.1	-0.5	0.1	0.0	0.0	0.0	-0.2	-0.3	-0.4	0.1	-0.3	2.6
0.9	-0.1	-0.2	0.1	0.0	0.0	0.0	0.0	-0.1	-0.3	-0.1	-0.3	2.0
Long Term												
Full Simulation Period ^b	-0.1	-0.4	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.3	0.0	-0.3	1.0
Water Year Types ^c												
Wet (32%)	0.0	-0.4	0.2	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	-0.4	2.8
Above Normal (16%)	0.0	-0.4	-0.2	0.1	0.0	-0.1	0.0	-0.2	-0.3	0.1	-0.2	2.0
Below Normal (13%)	-0.2	-0.5	-0.3	0.1	0.0	-0.3	-0.2	-0.2	-0.4	0.0	-0.5	-0.1
Dry (24%)	0.0	-0.3	-0.2	0.0	0.0	0.0	-0.2	-0.2	-0.4	-0.1	0.1	-0.1
Critical (15%)	-0.5	-0.3	0.0	0.2	0.1	0.0	0.0	0.0	-0.4	0.0	-0.4	-0.8

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-8-2. Sacramento River at Bend Bridge, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
10%	61	56	51	48	49	52	55	58	58	59	60	63
20%	57	55	50	48	48	52	55	57	58	58	59	60
30%	57	55	49	47	48	51	54	57	57	57	59	60
40%	57	54	49	47	48	51	54	56	57	57	58	59
50%	56	54	49	47	47	50	53	56	56	56	58	58
60%	56	53	48	46	47	50	53	56	56	56	57	56
70%	56	53	48	46	47	49	53	55	55	55	57	55
80%	56	53	48	46	46	49	52	55	55	55	57	55
90%	55	52	47	46	46	48	51	54	55	55	56	54
Long Term												
Full Simulation Period ^b	57	54	49	47	47	50	53	56	56	57	58	58
Water Year Types^c												
Wet (32%)	54	51	47	46	47	49	53	56	57	56	57	55
Above Normal (16%)	57	54	49	47	47	50	53	56	55	55	57	56
Below Normal (13%)	56	54	49	47	48	51	54	55	56	56	57	59
Dry (24%)	57	54	49	47	48	51	54	56	56	57	59	60
Critical (15%)	59	55	50	47	48	52	54	57	58	59	62	65

Alternative 3												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
10%	60	56	51	48	49	52	55	58	58	59	60	62
20%	57	55	50	48	49	52	55	57	57	58	59	60
30%	57	54	49	47	48	51	54	57	57	57	58	60
40%	57	54	49	47	48	51	54	56	56	57	58	59
50%	56	53	49	47	47	50	53	56	56	56	58	59
60%	56	53	48	46	47	50	53	55	55	56	57	58
70%	56	53	48	46	47	49	53	55	55	56	57	57
80%	55	52	48	46	46	48	52	55	55	55	57	57
90%	55	52	47	46	46	48	51	54	54	55	56	56
Long Term												
Full Simulation Period ^b	57	53	49	47	47	50	53	56	56	57	58	59
Water Year Types^c												
Wet (32%)	54	51	47	46	47	49	52	56	56	56	57	57
Above Normal (16%)	57	53	49	47	47	50	53	56	55	55	57	58
Below Normal (13%)	56	53	49	47	48	51	54	55	55	56	57	58
Dry (24%)	57	53	49	47	48	51	54	56	55	56	59	60
Critical (15%)	59	55	50	47	48	52	54	57	58	60	62	64

Alternative 3 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
0.1	-0.6	-0.1	-0.2	-0.1	0.0	0.0	0.2	-0.1	-0.1	0.2	-0.2	-1.2
0.2	-0.1	-0.6	-0.3	0.0	0.0	0.0	-0.1	0.0	-0.3	-0.3	-0.5	-0.3
0.3	0.0	-0.6	0.0	0.1	-0.1	0.0	-0.1	0.0	-0.1	-0.1	-0.2	-0.1
0.4	0.0	-0.5	0.0	0.0	0.0	-0.1	0.0	-0.1	-0.3	-0.1	-0.2	0.4
0.5	0.1	-0.8	-0.1	0.0	0.0	-0.1	0.0	0.0	-0.3	-0.1	0.0	0.9
0.6	0.1	-0.4	0.0	0.0	-0.1	0.0	0.0	-0.3	-0.4	0.0	-0.1	2.0
0.7	0.0	-0.2	0.1	0.0	0.1	0.0	0.0	-0.2	-0.5	0.1	-0.2	2.1
0.8	-0.2	-0.5	0.1	0.0	0.0	0.0	-0.1	-0.2	-0.4	0.2	-0.1	2.2
0.9	-0.2	-0.3	0.1	0.0	0.0	0.0	0.0	-0.2	-0.1	0.1	0.0	1.8
Long Term												
Full Simulation Period ^b	-0.1	-0.4	0.0	0.0	0.0	0.0	0.0	-0.1	-0.3	0.0	-0.2	0.8
Water Year Types^c												
Wet (32%)	-0.1	-0.4	0.2	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	-0.2	2.6
Above Normal (16%)	0.0	-0.4	-0.2	0.0	0.0	-0.1	0.0	-0.3	-0.2	0.1	0.0	2.0
Below Normal (13%)	-0.2	-0.5	-0.3	0.1	0.0	-0.2	-0.1	-0.2	-0.3	-0.1	-0.1	-1.0
Dry (24%)	-0.1	-0.4	-0.1	0.0	0.0	0.0	-0.1	-0.1	-0.4	-0.1	-0.2	-0.2
Critical (15%)	-0.4	-0.2	0.0	0.1	0.1	0.0	0.1	0.0	-0.3	0.1	-0.5	-0.9

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-8-3. Sacramento River at Bend Bridge, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	61	56	51	48	49	52	55	58	58	59	60	63
20%	57	55	50	48	48	52	55	57	58	58	59	60
30%	57	55	49	47	48	51	54	57	57	57	59	60
40%	57	54	49	47	48	51	54	56	57	57	58	59
50%	56	54	49	47	47	50	53	56	56	56	58	58
60%	56	53	48	46	47	50	53	56	56	56	57	56
70%	56	53	48	46	47	49	53	55	55	55	57	55
80%	56	53	48	46	46	49	52	55	55	55	57	55
90%	55	52	47	46	46	48	51	54	55	55	56	54
Long Term												
Full Simulation Period ^b	57	54	49	47	47	50	53	56	56	57	58	58
Water Year Types ^c												
Wet (32%)	54	51	47	46	47	49	53	56	57	56	57	55
Above Normal (16%)	57	54	49	47	47	50	53	56	55	55	57	56
Below Normal (13%)	56	54	49	47	48	51	54	55	56	56	57	59
Dry (24%)	57	54	49	47	48	51	54	56	56	57	59	60
Critical (15%)	59	55	50	47	48	52	54	57	58	59	62	65

Alternative 5												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	61	56	51	48	49	52	55	58	58	59	60	64
20%	57	55	50	48	48	52	55	57	57	58	59	60
30%	57	55	49	47	48	51	54	57	57	57	58	60
40%	57	54	49	47	48	51	54	56	56	57	58	59
50%	56	54	49	47	47	50	53	56	56	56	58	58
60%	56	53	48	46	47	50	53	56	56	56	57	56
70%	56	53	48	46	47	49	53	55	55	55	57	55
80%	55	53	48	46	46	49	52	55	55	55	57	55
90%	55	52	47	46	46	48	51	54	55	55	56	54
Long Term												
Full Simulation Period ^b	57	54	49	47	47	50	53	56	56	56	58	58
Water Year Types ^c												
Wet (32%)	54	51	47	46	47	49	53	56	57	56	57	55
Above Normal (16%)	57	54	49	47	47	50	53	56	55	55	57	56
Below Normal (13%)	56	54	49	47	48	51	54	55	56	56	57	59
Dry (24%)	57	54	49	47	48	51	54	56	56	57	59	60
Critical (15%)	59	55	50	47	48	52	54	57	58	59	62	65

Alternative 5 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	0.6	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.6	0.4
0.2	0.0	-0.1	0.1	0.0	0.0	0.0	-0.1	0.1	-0.1	-0.1	-0.2	-0.1
0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	-0.1	0.0
0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	-0.1	0.0	-0.1	-0.3
0.5	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-0.2	0.0	0.1
0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	-0.1	0.0	-0.1
0.7	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	-0.1	0.0	0.1
0.8	-0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0
Long Term												
Full Simulation Period ^b	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-0.1	-0.1	0.0
Water Year Types ^c												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Above Normal (16%)	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
Below Normal (13%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	-0.1
Dry (24%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	-0.1	-0.3	-0.2
Critical (15%)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	-0.2	-0.2	0.0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-8-4. Sacramento River at Bend Bridge, Monthly Temperature

Second Basis of Comparison		Monthly Temperature (DEG-F)										
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	60	55	51	48	49	52	55	58	58	59	61	62
20%	58	55	50	48	49	52	54	57	57	58	59	60
30%	57	54	49	47	48	51	54	56	57	57	58	60
40%	57	54	49	47	48	51	54	56	56	57	58	59
50%	56	53	49	47	47	50	53	56	56	56	57	59
60%	56	53	48	46	47	50	53	55	55	56	57	59
70%	56	53	48	46	47	49	53	55	55	56	57	58
80%	55	52	48	46	46	48	52	55	55	55	56	57
90%	55	52	47	46	46	48	51	54	54	55	56	56
Long Term												
Full Simulation Period ^b	57	53	49	47	47	50	53	56	56	57	58	59
Water Year Types ^c												
Wet (32%)	54	51	47	46	47	49	52	56	56	56	57	57
Above Normal (16%)	57	53	49	47	47	50	53	56	55	55	56	58
Below Normal (13%)	56	53	49	47	48	51	54	55	55	56	57	59
Dry (24%)	57	53	49	47	48	51	54	56	55	56	59	60
Critical (15%)	59	55	50	47	49	52	54	57	58	59	62	64

No Action Alternative		Monthly Temperature (DEG-F)										
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	61	56	51	48	49	52	55	58	58	59	60	63
20%	57	55	50	48	48	52	55	57	58	58	59	60
30%	57	55	49	47	48	51	54	57	57	57	59	60
40%	57	54	49	47	48	51	54	56	57	57	58	59
50%	56	54	49	47	47	50	53	56	56	56	58	58
60%	56	53	48	46	47	50	53	56	56	56	57	56
70%	56	53	48	46	47	49	53	55	55	55	57	55
80%	56	53	48	46	46	49	52	55	55	55	57	55
90%	55	52	47	46	46	48	51	54	55	55	56	54
Long Term												
Full Simulation Period ^b	57	54	49	47	47	50	53	56	56	57	58	58
Water Year Types ^c												
Wet (32%)	54	51	47	46	47	49	53	56	57	56	57	55
Above Normal (16%)	57	54	49	47	47	50	53	56	55	55	57	56
Below Normal (13%)	56	54	49	47	48	51	54	55	56	56	57	59
Dry (24%)	57	54	49	47	48	51	54	56	56	57	59	60
Critical (15%)	59	55	50	47	48	52	54	57	58	59	62	65

No Action Alternative minus Second Basis of Comparison		Monthly Temperature (DEG-F)										
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	1.0	0.5	0.2	0.1	0.0	0.1	-0.2	0.0	0.1	-0.2	-0.2	0.9
0.2	-0.1	0.7	0.3	0.0	0.0	0.1	0.2	0.0	0.3	0.2	0.5	0.0
0.3	0.0	0.6	0.0	-0.1	0.0	0.0	0.1	0.1	0.2	0.0	0.2	0.1
0.4	-0.1	0.5	0.0	0.0	0.0	0.1	0.0	0.1	0.3	0.0	0.2	-0.4
0.5	-0.2	0.8	0.2	0.0	0.0	0.1	0.0	0.1	0.4	0.1	0.1	-1.0
0.6	0.0	0.4	0.0	0.0	0.1	0.0	0.1	0.3	0.4	-0.2	0.1	-2.4
0.7	0.1	0.1	-0.2	0.0	0.0	0.0	0.2	0.2	0.4	-0.1	0.2	-2.4
0.8	0.1	0.5	-0.1	0.0	0.0	0.0	0.2	0.3	0.4	-0.1	0.3	-2.6
0.9	0.1	0.2	-0.1	0.0	0.0	0.0	0.0	0.1	0.3	0.1	0.3	-2.0
Long Term												
Full Simulation Period ^b	0.1	0.4	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.0	0.3	-1.0
Water Year Types ^c												
Wet (32%)	0.0	0.4	-0.2	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	0.4	-2.8
Above Normal (16%)	0.0	0.4	0.2	-0.1	0.0	0.1	0.0	0.2	0.3	-0.1	0.2	-2.0
Below Normal (13%)	0.2	0.5	0.3	-0.1	0.0	0.3	0.2	0.2	0.4	0.0	0.5	0.1
Dry (24%)	0.0	0.3	0.2	0.0	0.0	0.0	0.2	0.2	0.4	0.1	-0.1	0.1
Critical (15%)	0.5	0.3	0.0	-0.2	-0.1	0.0	0.0	0.0	0.4	0.0	0.4	0.8

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-8-5. Sacramento River at Bend Bridge, Monthly Temperature

Second Basis of Comparison												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	60	55	51	48	49	52	55	58	58	59	61	62
20%	58	55	50	48	49	52	54	57	57	58	59	60
30%	57	54	49	47	48	51	54	56	57	57	58	60
40%	57	54	49	47	48	51	54	56	56	57	58	59
50%	56	53	49	47	47	50	53	56	56	56	57	59
60%	56	53	48	46	47	50	53	55	55	56	57	59
70%	56	53	48	46	47	49	53	55	55	56	57	58
80%	55	52	48	46	46	48	52	55	55	55	56	57
90%	55	52	47	46	46	48	51	54	54	55	56	56
Long Term												
Full Simulation Period ^b	57	53	49	47	47	50	53	56	56	57	58	59
Water Year Types ^c												
Wet (32%)	54	51	47	46	47	49	52	56	56	56	57	57
Above Normal (16%)	57	53	49	47	47	50	53	56	55	55	56	58
Below Normal (13%)	56	53	49	47	48	51	54	55	55	56	57	59
Dry (24%)	57	53	49	47	48	51	54	56	55	56	59	60
Critical (15%)	59	55	50	47	49	52	54	57	58	59	62	64

Alternative 3												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	60	56	51	48	49	52	55	58	58	59	60	62
20%	57	55	50	48	49	52	55	57	57	58	59	60
30%	57	54	49	47	48	51	54	57	57	57	58	60
40%	57	54	49	47	48	51	54	56	56	57	58	59
50%	56	53	49	47	47	50	53	56	56	56	58	59
60%	56	53	48	46	47	50	53	55	55	56	57	58
70%	56	53	48	46	47	49	53	55	55	56	57	57
80%	55	52	48	46	46	48	52	55	55	55	57	57
90%	55	52	47	46	46	48	51	54	54	55	56	56
Long Term												
Full Simulation Period ^b	57	53	49	47	47	50	53	56	56	57	58	59
Water Year Types ^c												
Wet (32%)	54	51	47	46	47	49	52	56	56	56	57	57
Above Normal (16%)	57	53	49	47	47	50	53	56	55	55	57	58
Below Normal (13%)	56	53	49	47	48	51	54	55	55	56	57	58
Dry (24%)	57	53	49	47	48	51	54	56	55	56	59	60
Critical (15%)	59	55	50	47	48	52	54	57	58	60	62	64

Alternative 3 minus Second Basis of Comparison												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	0.4	0.4	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.0	-0.4	-0.3
0.2	-0.2	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	-0.1	0.0	-0.3
0.3	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	-0.1	0.0	0.0
0.4	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	-0.1	0.0	0.0
0.5	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	-0.1
0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	-0.1	0.0	-0.4
0.7	0.1	0.0	-0.1	0.0	0.1	0.0	0.2	0.0	0.0	0.0	0.1	-0.3
0.8	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.2	-0.4
0.9	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	-0.1	0.3	0.2	0.3	-0.2
Long Term												
Full Simulation Period ^b	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.2
Water Year Types ^c												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.2	-0.2
Above Normal (16%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.0
Below Normal (13%)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.3	-0.9
Dry (24%)	-0.2	-0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	-0.3	-0.1
Critical (15%)	0.0	0.1	0.0	-0.1	-0.1	0.0	0.0	0.0	0.1	0.1	-0.2	-0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-8-6. Sacramento River at Bend Bridge, Monthly Temperature

Second Basis of Comparison												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
10%	60	55	51	48	49	52	55	58	58	59	61	62
20%	58	55	50	48	49	52	54	57	57	58	59	60
30%	57	54	49	47	48	51	54	56	57	57	58	60
40%	57	54	49	47	48	51	54	56	56	57	58	59
50%	56	53	49	47	47	50	53	56	56	56	57	59
60%	56	53	48	46	47	50	53	55	55	56	57	59
70%	56	53	48	46	47	49	53	55	55	56	57	58
80%	55	52	48	46	46	48	52	55	55	55	56	57
90%	55	52	47	46	46	48	51	54	54	55	56	56
Long Term												
Full Simulation Period ^b	57	53	49	47	47	50	53	56	56	57	58	59
Water Year Types^c												
Wet (32%)	54	51	47	46	47	49	52	56	56	56	57	57
Above Normal (16%)	57	53	49	47	47	50	53	56	55	55	56	58
Below Normal (13%)	56	53	49	47	48	51	54	55	55	56	57	59
Dry (24%)	57	53	49	47	48	51	54	56	55	56	59	60
Critical (15%)	59	55	50	47	49	52	54	57	58	59	62	64

Alternative 5												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
10%	61	56	51	48	49	52	55	58	58	59	60	64
20%	57	55	50	48	48	52	55	57	57	58	59	60
30%	57	55	49	47	48	51	54	57	57	57	58	60
40%	57	54	49	47	48	51	54	56	56	57	58	59
50%	56	54	49	47	47	50	53	56	56	56	58	58
60%	56	53	48	46	47	50	53	56	56	56	57	56
70%	56	53	48	46	47	49	53	55	55	55	57	55
80%	55	53	48	46	46	49	52	55	55	55	57	55
90%	55	52	47	46	46	48	51	54	55	55	56	54
Long Term												
Full Simulation Period ^b	57	54	49	47	47	50	53	56	56	56	58	58
Water Year Types^c												
Wet (32%)	54	51	47	46	47	49	53	56	57	56	57	55
Above Normal (16%)	57	54	49	47	47	50	53	56	55	55	57	56
Below Normal (13%)	56	54	49	47	48	51	54	55	56	56	57	59
Dry (24%)	57	54	49	47	48	51	54	56	56	57	59	60
Critical (15%)	59	55	50	47	48	52	54	57	58	59	62	65

Alternative 5 minus Second Basis of Comparison												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
0.1	1.6	0.4	0.1	0.1	0.0	0.1	-0.2	0.0	0.1	-0.3	-0.8	1.3
0.2	-0.1	0.6	0.4	0.0	0.0	0.0	0.1	0.1	0.2	0.1	0.3	-0.1
0.3	0.0	0.6	0.0	-0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
0.4	-0.1	0.5	0.0	-0.1	0.0	0.1	0.0	0.2	0.2	-0.1	0.1	-0.7
0.5	-0.2	0.7	0.1	0.0	0.0	0.1	0.0	0.1	0.5	0.0	0.2	-0.9
0.6	-0.1	0.4	0.0	0.0	0.1	0.0	0.1	0.3	0.4	-0.2	0.1	-2.5
0.7	0.0	0.2	-0.2	0.0	0.0	0.0	0.3	0.3	0.4	-0.1	0.2	-2.4
0.8	0.0	0.5	0.0	0.0	0.0	0.0	0.2	0.4	0.4	-0.1	0.2	-2.5
0.9	0.1	0.2	-0.1	0.0	0.0	0.0	0.0	0.2	0.4	0.1	0.4	-2.0
Long Term												
Full Simulation Period ^b	0.1	0.4	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.0	0.2	-1.1
Water Year Types^c												
Wet (32%)	0.1	0.4	-0.2	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	0.4	-2.8
Above Normal (16%)	0.0	0.3	0.2	-0.1	0.0	0.1	0.0	0.3	0.3	-0.1	0.2	-2.0
Below Normal (13%)	0.2	0.5	0.3	-0.1	0.0	0.2	0.2	0.2	0.4	0.0	0.6	0.0
Dry (24%)	0.0	0.3	0.1	0.1	0.0	0.0	0.2	0.4	0.4	0.1	-0.3	0.0
Critical (15%)	0.5	0.3	0.0	-0.2	-0.2	0.0	0.1	0.2	0.5	-0.2	0.1	0.8

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

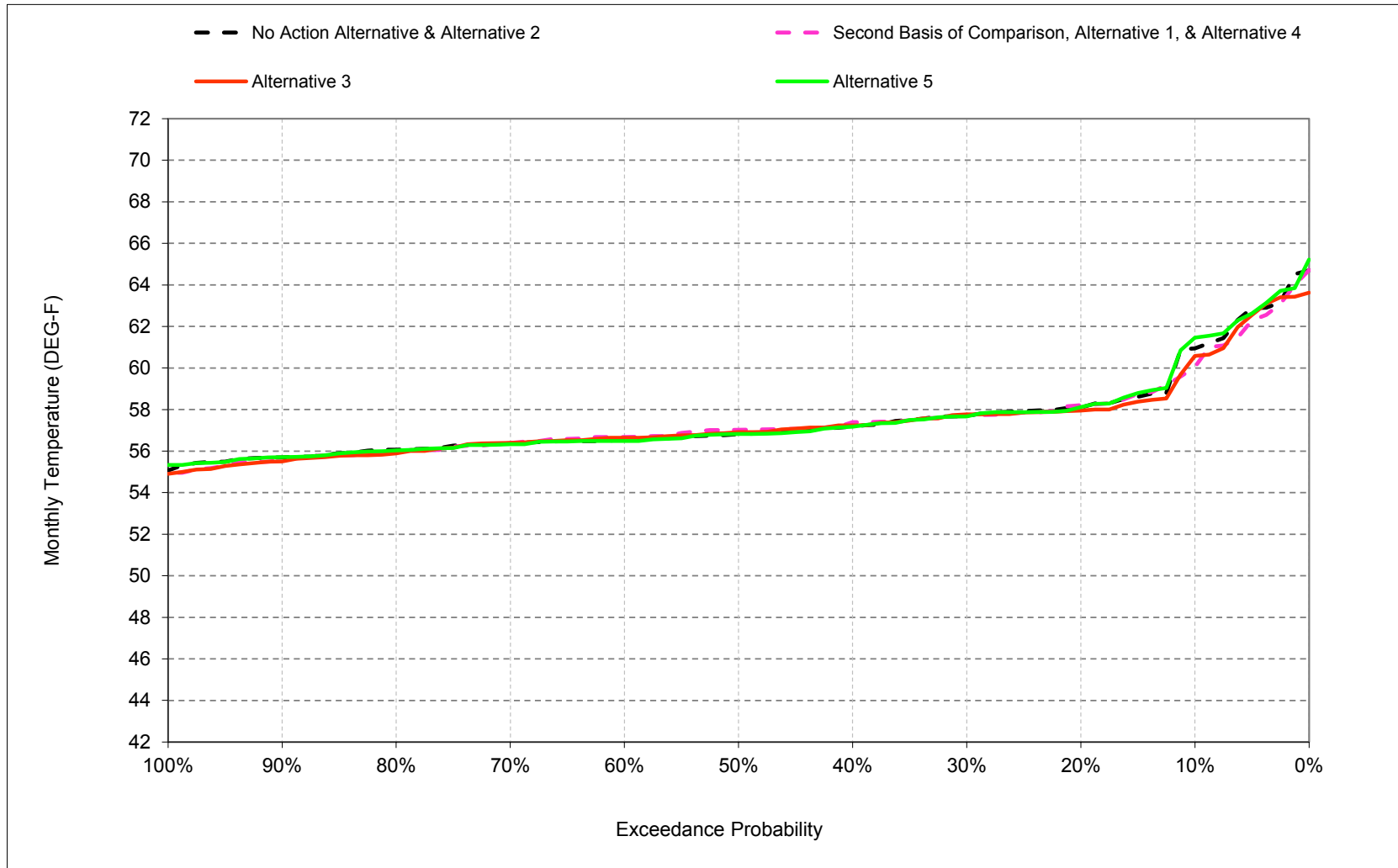
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

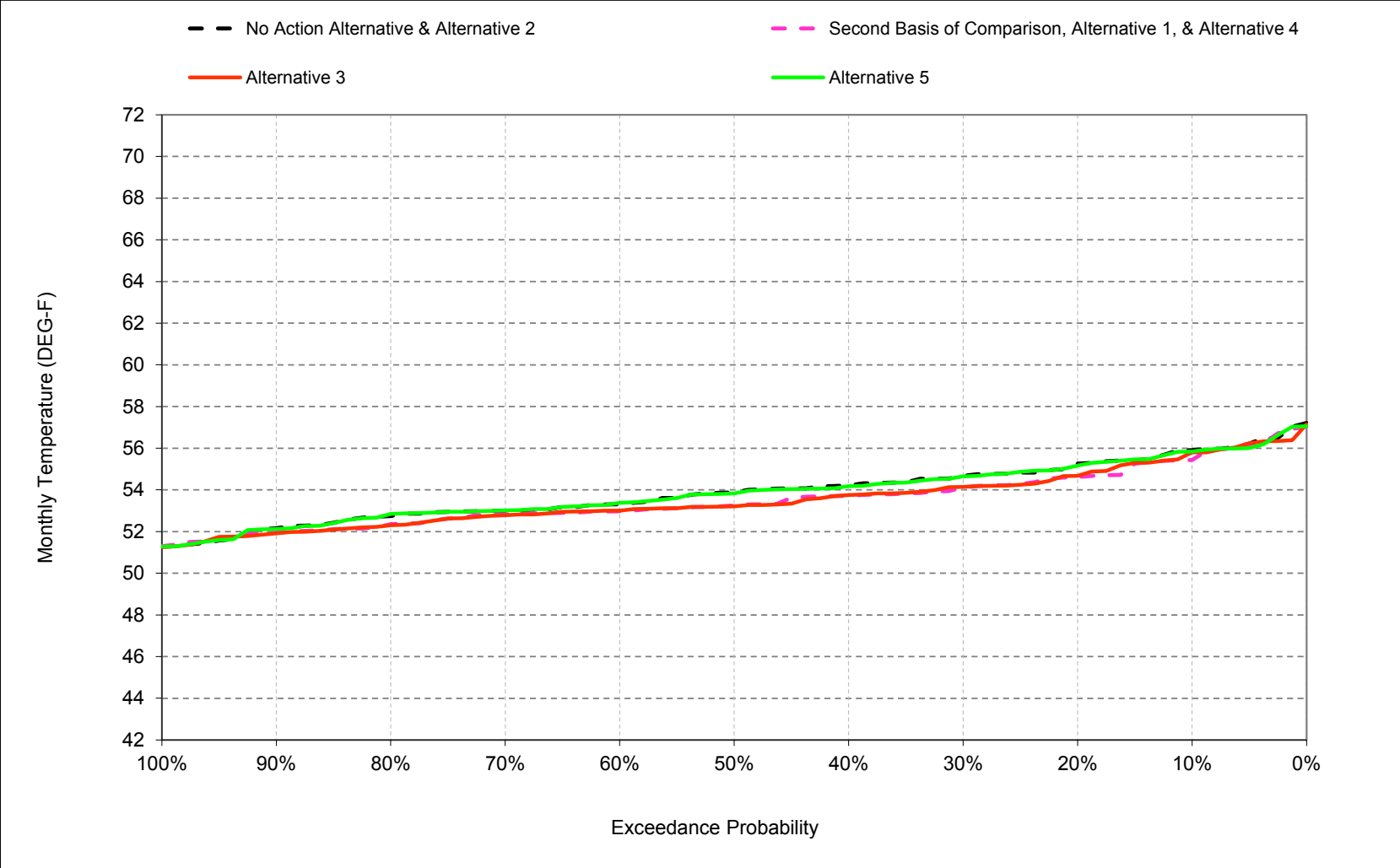
B.9. Sacramento River at Red Bluff Temperature

Figure B-9-1. Sacramento River at Red Bluff, October



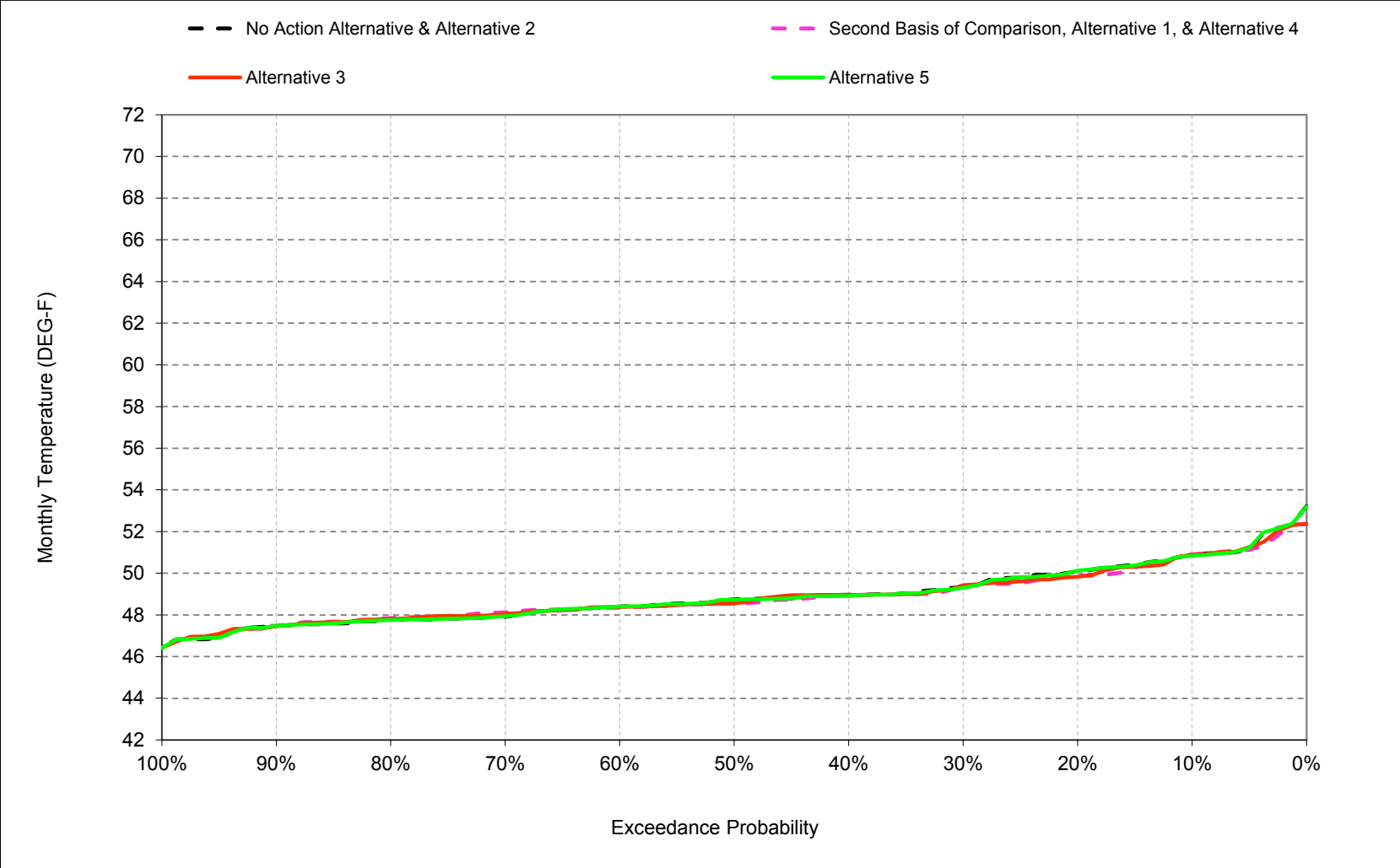
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-9-2. Sacramento River at Red Bluff, November



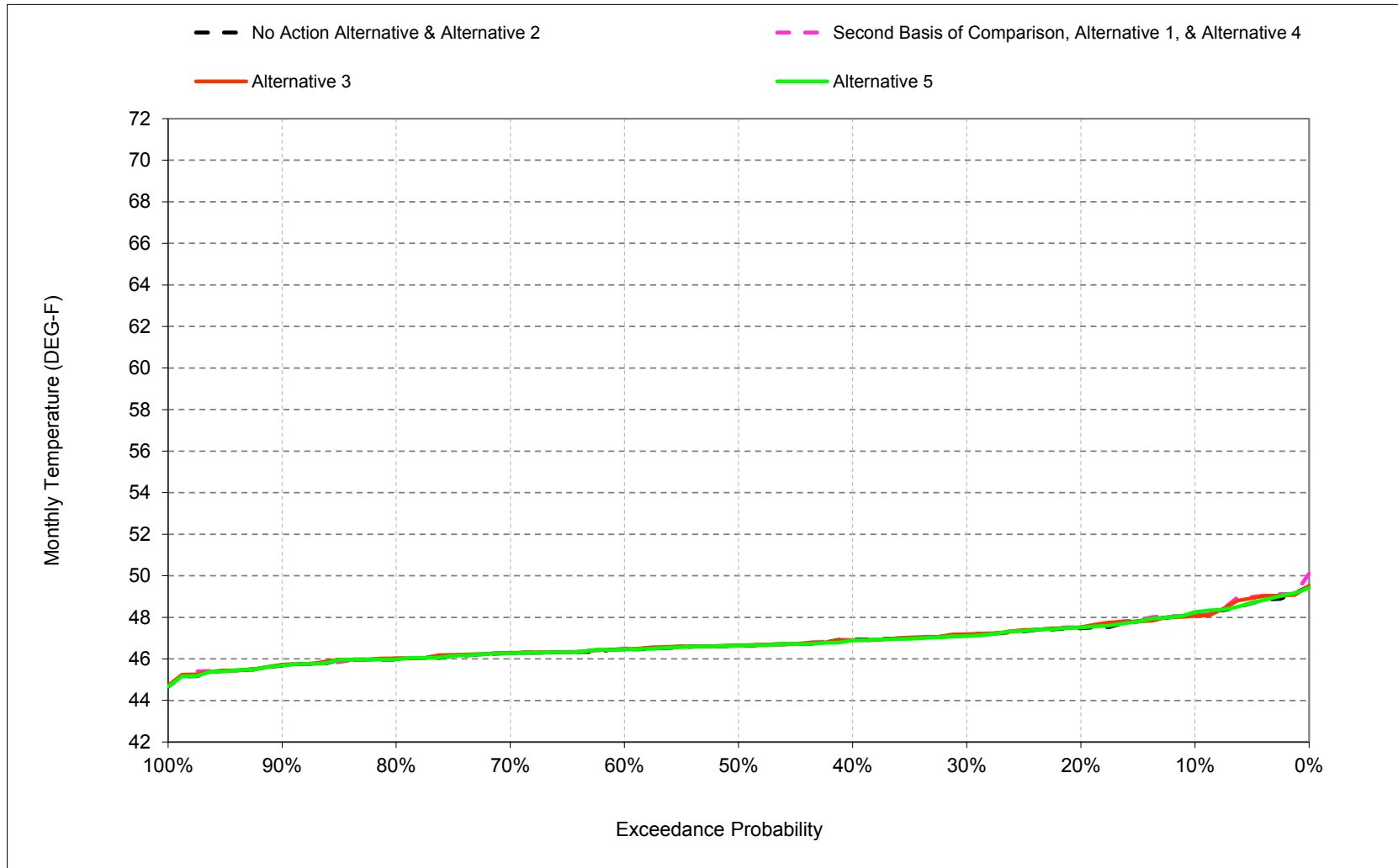
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-9-3. Sacramento River at Red Bluff, December



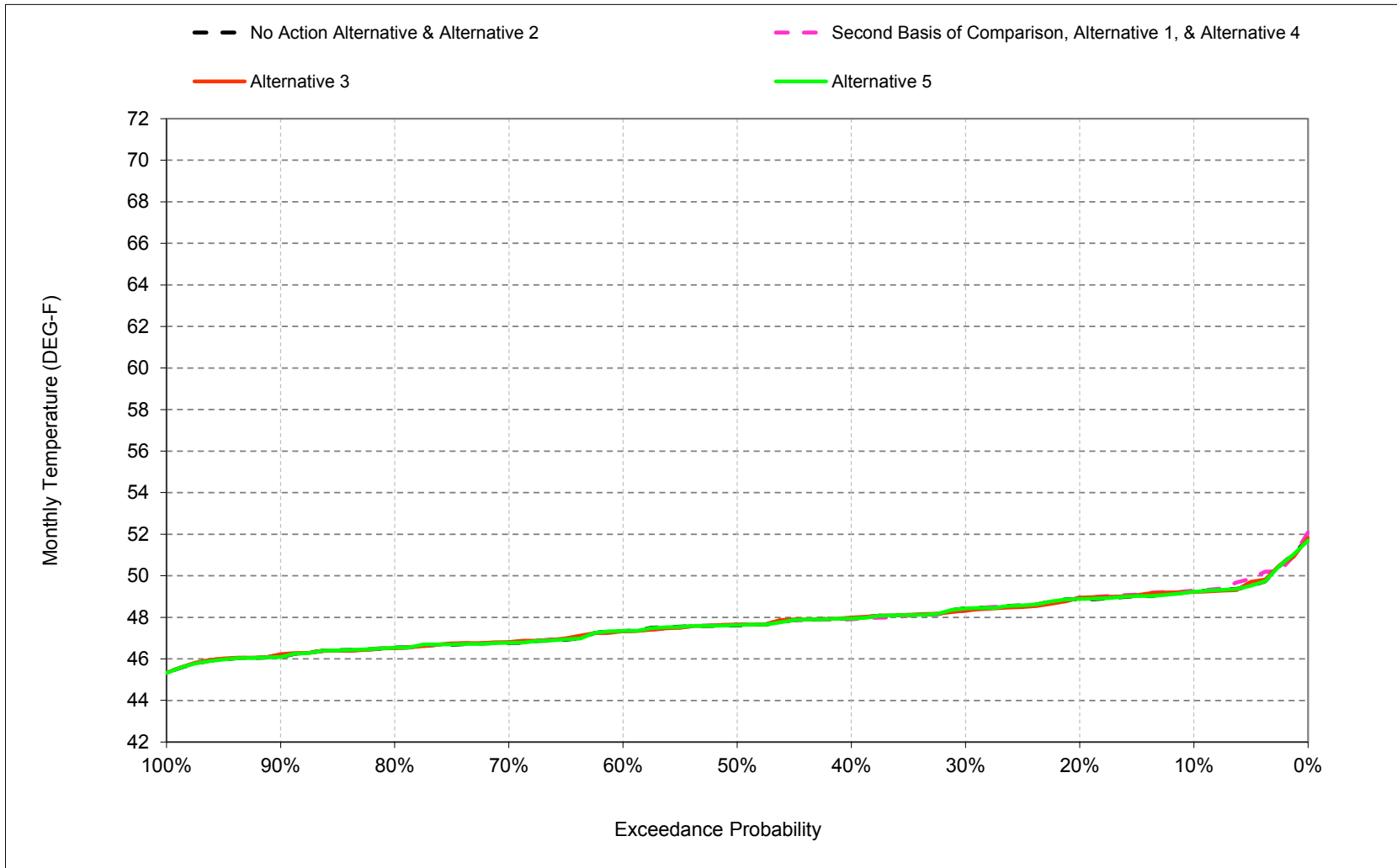
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-9-4. Sacramento River at Red Bluff, January



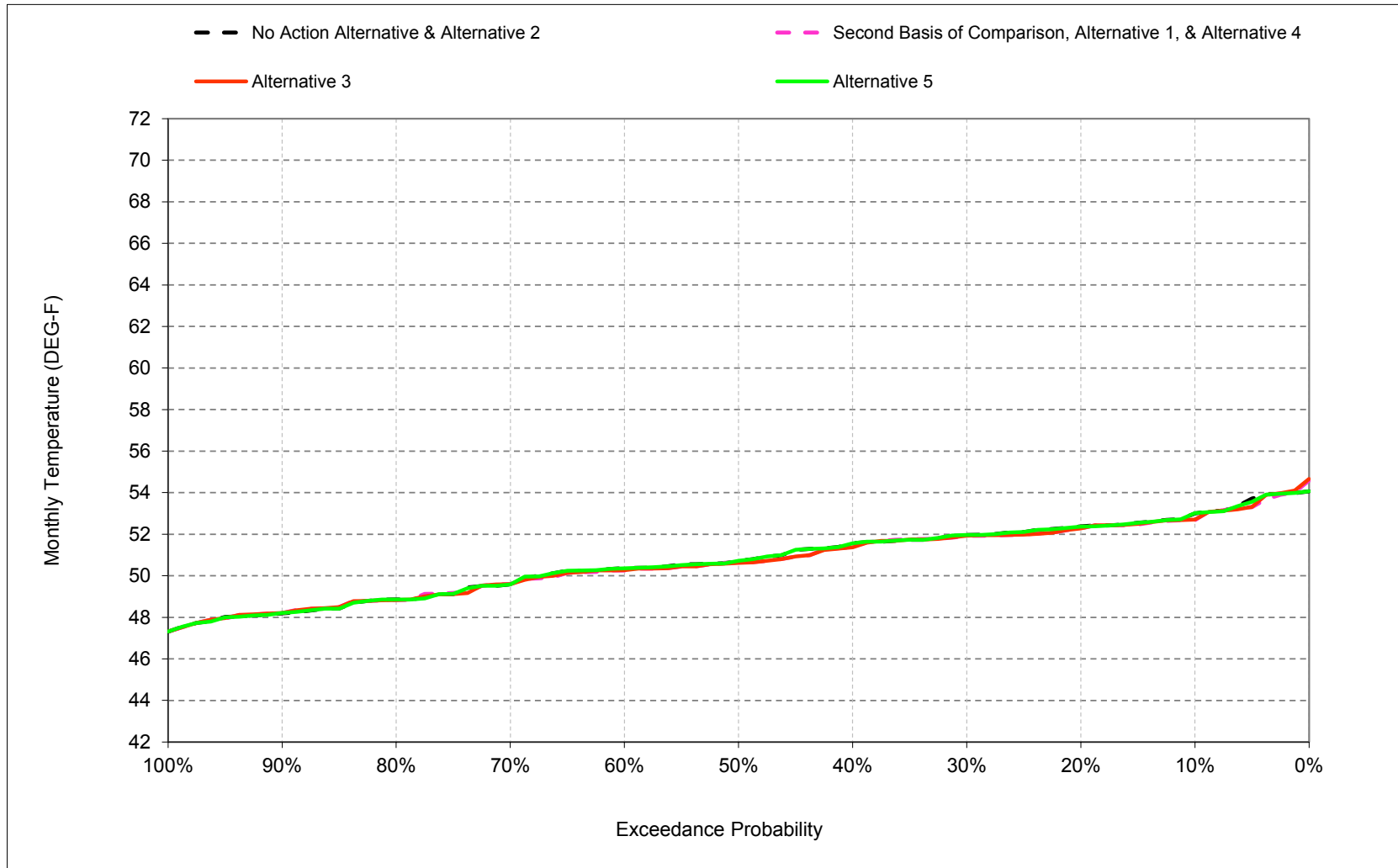
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-9-5. Sacramento River at Red Bluff, February



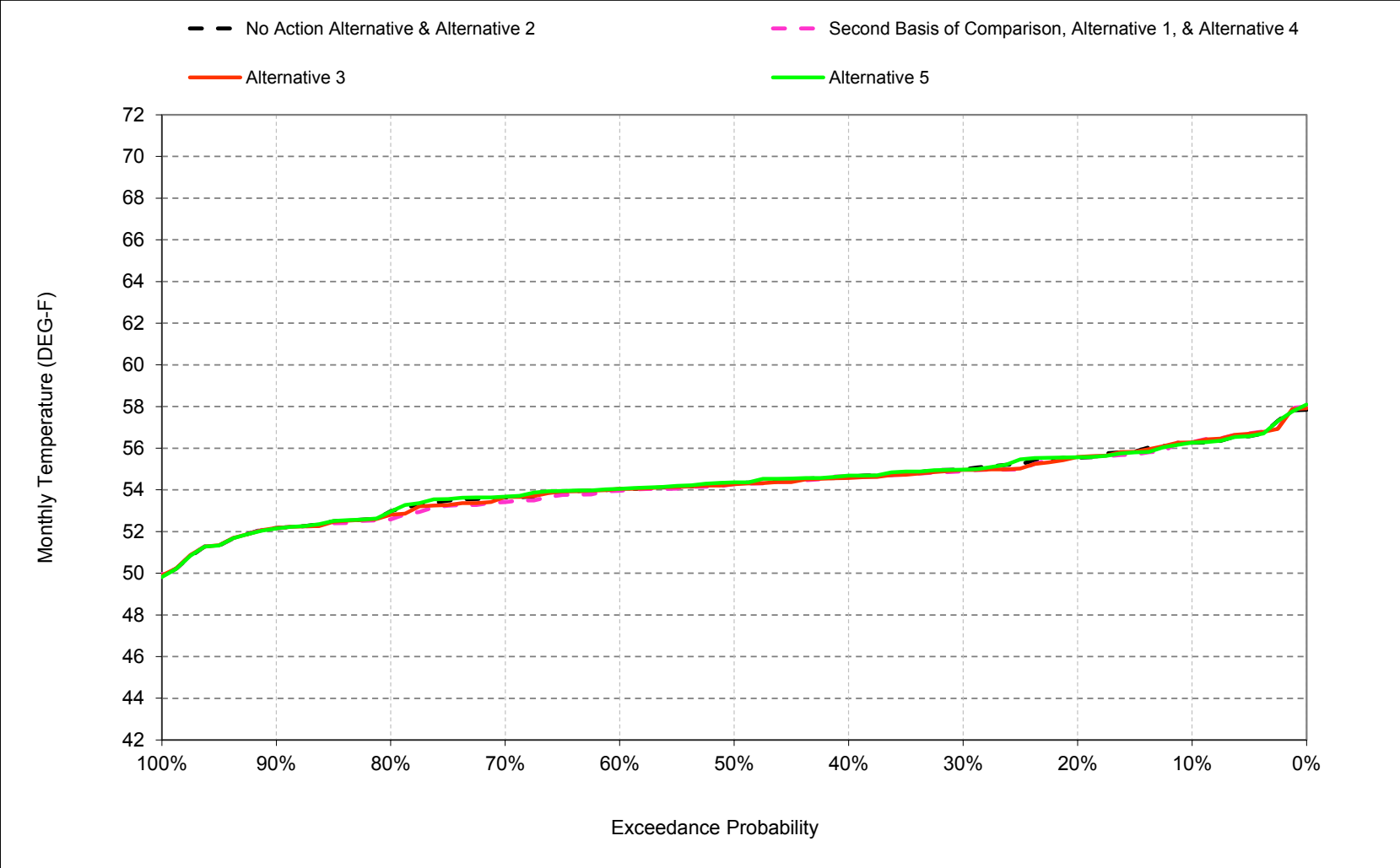
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-9-6. Sacramento River at Red Bluff, March



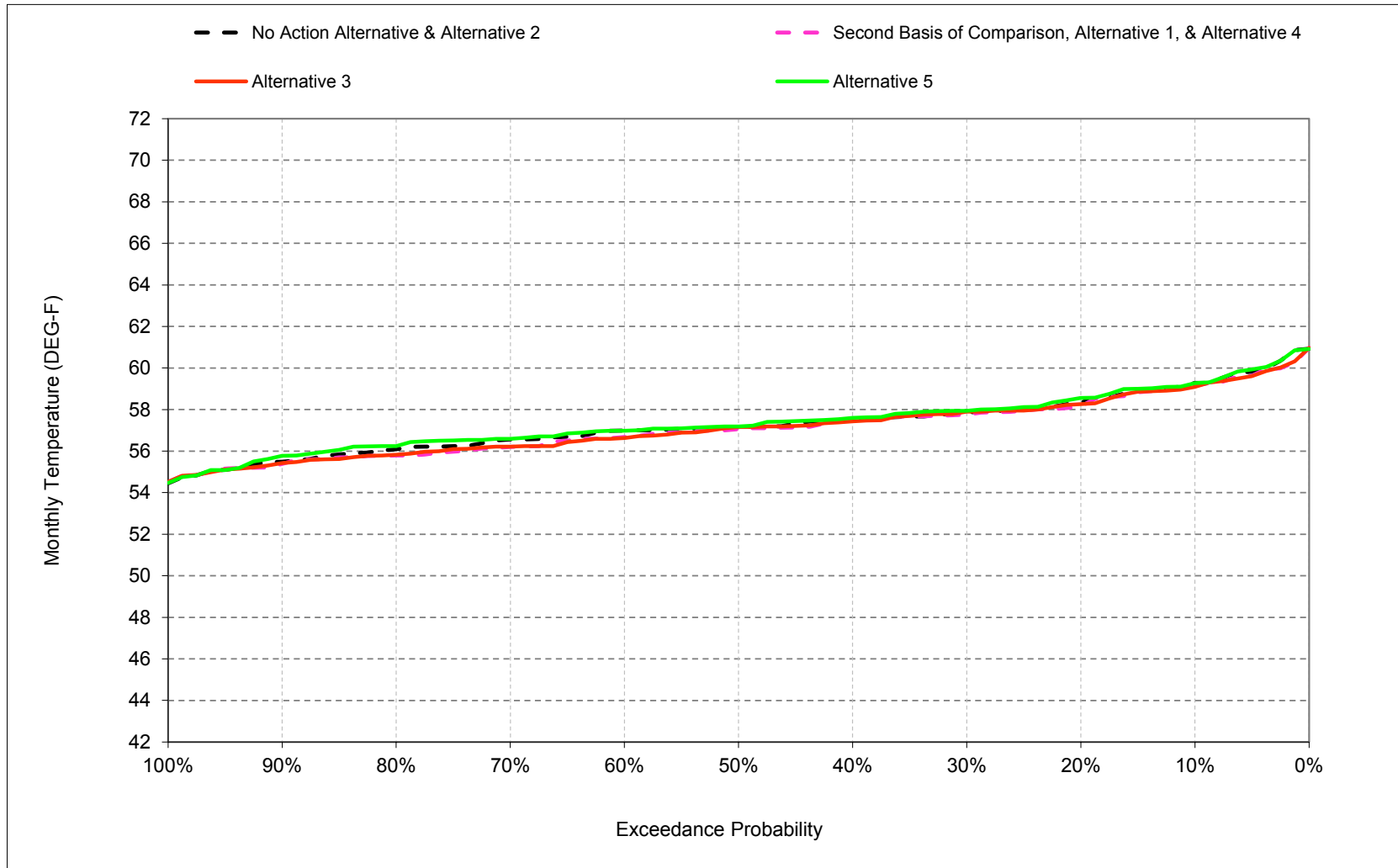
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-9-7. Sacramento River at Red Bluff, April



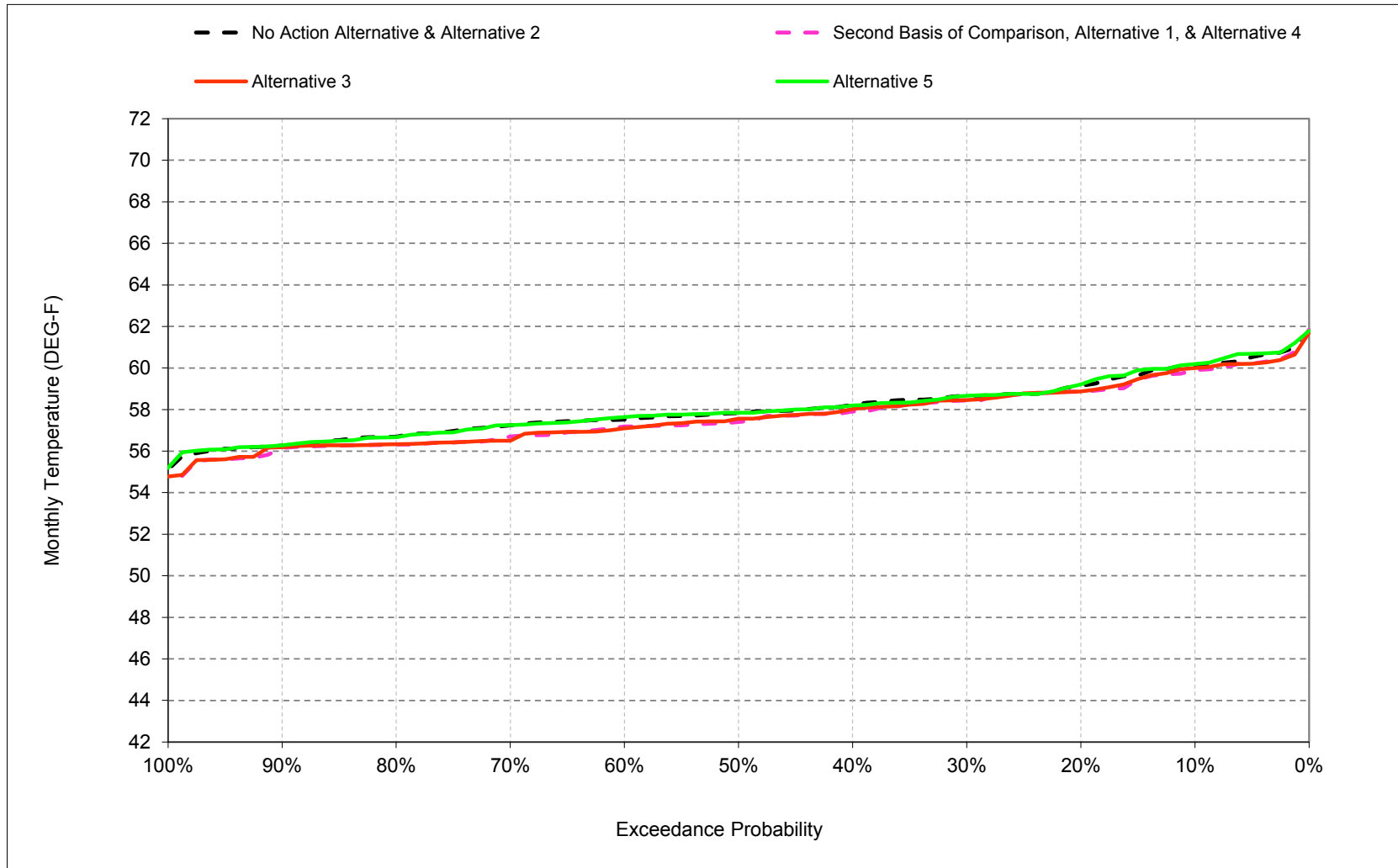
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-9-8. Sacramento River at Red Bluff, May



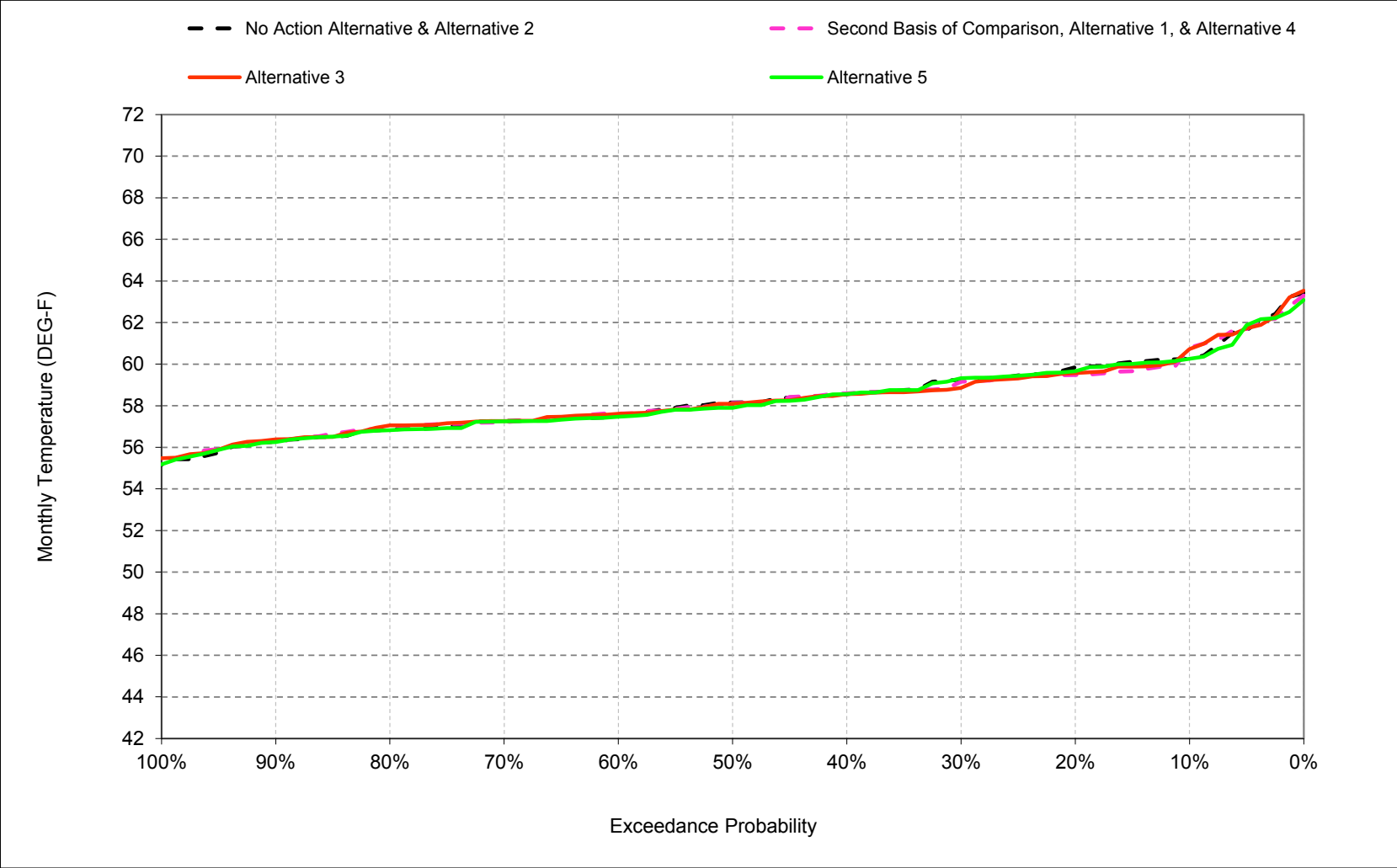
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-9-9. Sacramento River at Red Bluff, June



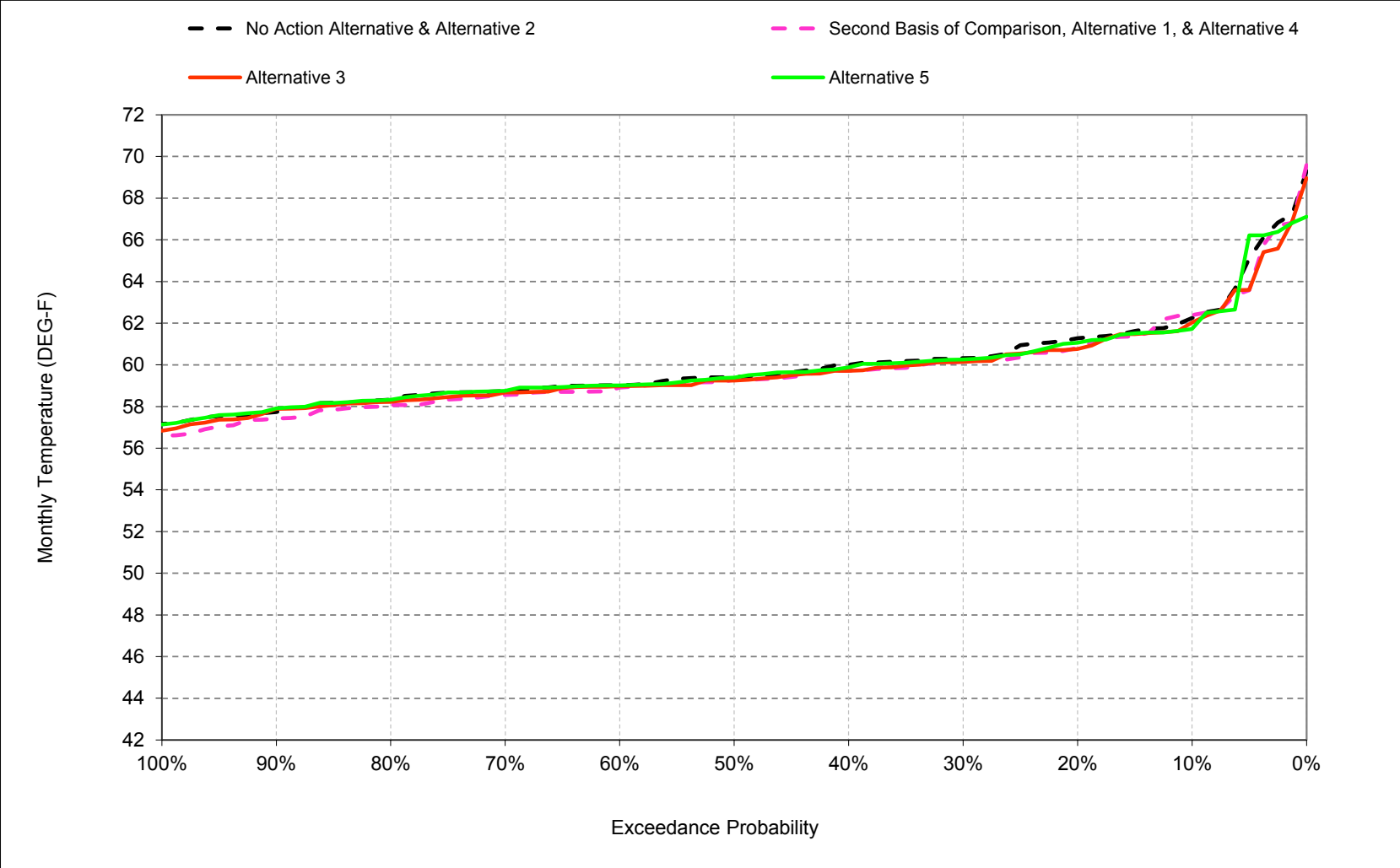
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-9-10. Sacramento River at Red Bluff, July



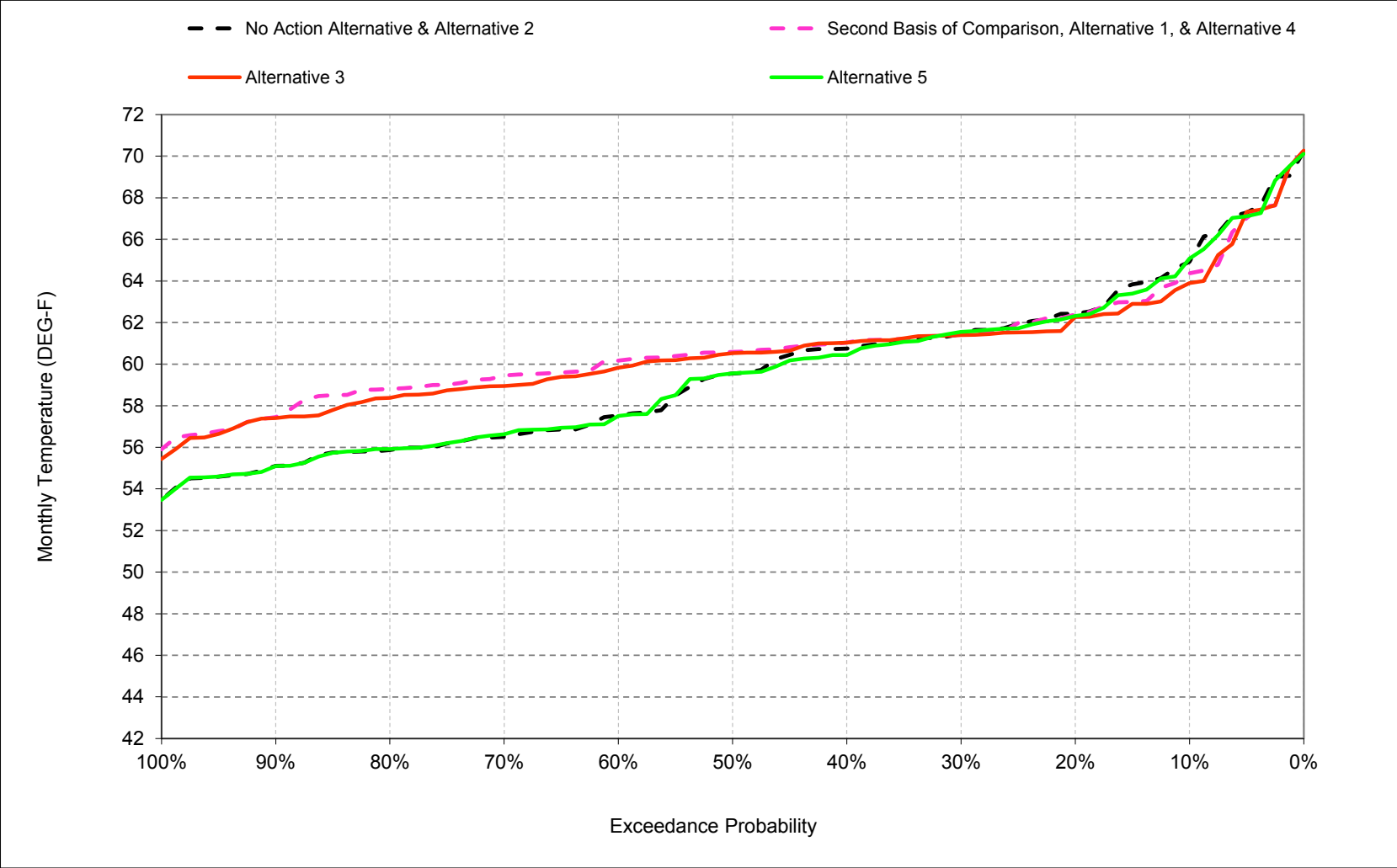
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-9-11. Sacramento River at Red Bluff, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-9-12. Sacramento River at Red Bluff, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-9-1. Sacramento River at Red Bluff, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	61	56	51	48	49	53	56	59	60	60	62	65
20%	58	55	50	47	49	52	56	58	59	60	61	62
30%	58	55	49	47	48	52	55	58	59	59	60	61
40%	57	54	49	47	48	51	55	57	58	59	60	61
50%	57	54	49	47	48	51	54	57	58	58	59	60
60%	57	53	48	46	47	50	54	57	58	57	59	58
70%	56	53	48	46	47	50	54	57	57	57	59	57
80%	56	53	48	46	46	49	53	56	57	57	58	56
90%	56	52	47	46	46	48	52	55	56	56	58	55
Long Term												
Full Simulation Period ^b	58	54	49	47	48	51	54	57	58	58	60	60
Water Year Types ^c												
Wet (32%)	55	51	47	46	47	49	53	57	58	58	59	56
Above Normal (16%)	58	54	49	47	47	50	54	57	57	57	58	57
Below Normal (13%)	57	54	49	47	48	52	55	57	57	57	59	61
Dry (24%)	57	54	49	47	48	52	55	57	58	58	61	62
Critical (15%)	60	55	50	47	49	52	55	58	60	61	64	66
Alternative 1												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	60	55	51	48	49	53	56	59	60	61	62	64
20%	58	55	50	48	49	52	56	58	59	59	61	62
30%	58	54	49	47	48	52	55	58	58	59	60	61
40%	57	54	49	47	48	51	55	57	58	59	60	61
50%	57	53	49	47	48	51	54	57	57	58	59	61
60%	57	53	48	46	47	50	54	57	57	58	59	60
70%	56	53	48	46	47	50	53	56	57	57	59	59
80%	56	52	48	46	47	49	53	56	56	57	58	59
90%	56	52	47	46	46	48	52	55	56	56	57	57
Long Term												
Full Simulation Period ^b	57	54	49	47	48	51	54	57	58	58	60	61
Water Year Types ^c												
Wet (32%)	55	51	47	46	47	49	53	57	58	58	59	59
Above Normal (16%)	58	53	49	47	47	50	54	57	57	57	58	59
Below Normal (13%)	57	53	49	47	48	51	54	56	57	57	58	60
Dry (24%)	57	54	49	47	48	52	55	57	57	58	61	62
Critical (15%)	59	55	50	47	49	52	55	58	59	61	63	65
Alternative 1 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	-0.9	-0.5	0.0	-0.1	0.1	-0.3	0.0	-0.1	-0.2	0.4	0.2	-0.6
0.2	0.1	-0.7	-0.2	0.0	0.0	-0.1	0.0	-0.2	-0.3	-0.3	-0.5	-0.1
0.3	0.0	-0.6	0.1	0.0	-0.1	0.0	-0.1	-0.2	-0.2	-0.2	-0.2	0.0
0.4	0.2	-0.5	0.0	0.0	0.0	-0.1	0.0	0.0	-0.3	0.0	-0.3	0.3
0.5	0.2	-0.6	-0.2	0.0	0.0	0.0	-0.1	-0.1	-0.4	-0.1	-0.2	1.1
0.6	0.1	-0.3	0.0	0.0	0.0	-0.1	-0.1	-0.3	-0.4	0.2	-0.2	2.6
0.7	0.0	-0.2	0.2	0.0	0.0	0.1	-0.2	-0.4	-0.6	-0.1	-0.2	2.9
0.8	-0.2	-0.4	0.1	0.0	0.0	0.0	-0.1	-0.3	-0.4	0.1	-0.3	2.9
0.9	-0.1	-0.2	0.0	0.0	0.0	0.1	0.0	-0.2	-0.4	0.0	-0.3	2.4
Long Term												
Full Simulation Period ^b	-0.1	-0.4	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.3	0.0	-0.3	1.2
Water Year Types ^c												
Wet (32%)	0.0	-0.3	0.2	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	-0.4	3.2
Above Normal (16%)	0.0	-0.4	-0.2	0.1	0.0	-0.1	0.0	-0.2	-0.4	0.1	-0.3	2.3
Below Normal (13%)	-0.1	-0.5	-0.3	0.1	0.0	-0.3	-0.2	-0.2	-0.5	0.0	-0.5	-0.2
Dry (24%)	0.1	-0.3	-0.2	0.0	0.0	0.0	-0.2	-0.2	-0.5	-0.2	0.1	-0.1
Critical (15%)	-0.4	-0.2	0.0	0.1	0.1	0.0	0.0	0.0	-0.5	0.0	-0.3	-0.8

^a Exceedance probability is defined as the probability a given value will be exceeded in any one year.
^b Based on the 82-year simulation period.
^c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-9-2. Sacramento River at Red Bluff, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	61	56	51	48	49	53	56	59	60	60	62	65
20%	58	55	50	47	49	52	56	58	59	60	61	62
30%	58	55	49	47	48	52	55	58	59	59	60	61
40%	57	54	49	47	48	51	55	57	58	59	60	61
50%	57	54	49	47	48	51	54	57	58	58	59	60
60%	57	53	48	46	47	50	54	57	58	57	59	58
70%	56	53	48	46	47	50	54	57	57	57	59	57
80%	56	53	48	46	46	49	53	56	57	57	58	56
90%	56	52	47	46	46	48	52	55	56	56	58	55
Long Term												
Full Simulation Period ^b	58	54	49	47	48	51	54	57	58	58	60	60
Water Year Types ^c												
Wet (32%)	55	51	47	46	47	49	53	57	58	58	59	56
Above Normal (16%)	58	54	49	47	47	50	54	57	57	57	58	57
Below Normal (13%)	57	54	49	47	48	52	55	57	57	57	59	61
Dry (24%)	57	54	49	47	48	52	55	57	58	58	61	62
Critical (15%)	60	55	50	47	49	52	55	58	60	61	64	66

Alternative 3												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	61	56	51	48	49	53	56	59	60	61	62	64
20%	58	55	50	48	49	52	56	58	59	60	61	62
30%	58	54	49	47	48	52	55	58	58	59	60	61
40%	57	54	49	47	48	51	55	57	58	59	60	61
50%	57	53	49	47	48	51	54	57	57	58	59	61
60%	57	53	48	46	47	50	54	57	57	58	59	60
70%	56	53	48	46	47	50	53	56	56	57	59	59
80%	56	52	48	46	47	49	53	56	56	57	58	58
90%	56	52	47	46	46	48	52	55	56	56	58	57
Long Term												
Full Simulation Period ^b	57	54	49	47	48	51	54	57	58	58	60	61
Water Year Types ^c												
Wet (32%)	55	51	47	46	47	49	53	57	58	58	59	59
Above Normal (16%)	58	53	49	47	47	50	54	57	57	57	58	59
Below Normal (13%)	57	53	49	47	48	51	55	57	57	57	59	59
Dry (24%)	57	53	49	47	48	52	55	57	57	58	60	62
Critical (15%)	59	55	50	47	49	52	55	58	59	61	63	65

Alternative 3 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	-0.4	-0.1	0.0	-0.2	0.0	-0.3	0.0	-0.2	-0.1	0.4	-0.2	-1.0
0.2	-0.1	-0.6	-0.3	0.0	0.0	-0.1	0.0	-0.1	-0.3	-0.2	-0.5	-0.3
0.3	0.1	-0.5	0.1	0.1	-0.1	0.0	0.0	0.0	-0.2	-0.4	-0.2	0.0
0.4	0.1	-0.5	0.0	0.0	0.0	-0.2	0.0	-0.1	-0.2	0.0	-0.3	0.3
0.5	0.1	-0.7	-0.2	0.0	0.0	-0.1	-0.1	0.0	-0.3	0.0	-0.2	1.0
0.6	0.1	-0.3	0.0	0.0	-0.1	-0.1	0.0	-0.4	-0.5	0.1	-0.1	2.3
0.7	0.0	-0.2	0.1	0.0	0.0	0.1	-0.1	-0.3	-0.7	0.0	-0.1	2.4
0.8	-0.2	-0.4	0.0	0.1	0.0	0.0	0.0	-0.3	-0.4	0.1	-0.1	2.5
0.9	-0.2	-0.2	0.0	0.0	0.0	0.1	0.0	-0.1	-0.1	0.1	0.0	2.3
Long Term												
Full Simulation Period ^b	-0.1	-0.4	0.0	0.0	0.0	0.0	0.0	-0.1	-0.3	0.0	-0.2	1.0
Water Year Types ^c												
Wet (32%)	0.0	-0.3	0.2	0.0	0.0	0.0	0.0	0.0	-0.2	0.0	-0.2	3.0
Above Normal (16%)	0.0	-0.4	-0.2	0.0	0.0	-0.1	0.0	-0.3	-0.3	0.1	0.0	2.3
Below Normal (13%)	-0.2	-0.5	-0.3	0.1	0.0	-0.3	-0.1	-0.2	-0.3	-0.1	-0.2	-1.1
Dry (24%)	-0.1	-0.4	-0.1	0.0	0.0	0.0	-0.1	-0.2	-0.5	-0.2	-0.2	-0.2
Critical (15%)	-0.4	-0.2	0.0	0.1	0.1	0.0	0.1	0.0	-0.4	0.2	-0.5	-0.9

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-9-3. Sacramento River at Red Bluff, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	61	56	51	48	49	53	56	59	60	60	62	65
20%	58	55	50	47	49	52	56	58	59	60	61	62
30%	58	55	49	47	48	52	55	58	59	59	60	61
40%	57	54	49	47	48	51	55	57	58	59	60	61
50%	57	54	49	47	48	51	54	57	58	58	59	60
60%	57	53	48	46	47	50	54	57	58	57	59	58
70%	56	53	48	46	47	50	54	57	57	57	59	57
80%	56	53	48	46	46	49	53	56	57	57	58	56
90%	56	52	47	46	46	48	52	55	56	56	58	55
Long Term												
Full Simulation Period ^b	58	54	49	47	48	51	54	57	58	58	60	60
Water Year Types ^c												
Wet (32%)	55	51	47	46	47	49	53	57	58	58	59	56
Above Normal (16%)	58	54	49	47	47	50	54	57	57	57	58	57
Below Normal (13%)	57	54	49	47	48	52	55	57	57	57	59	61
Dry (24%)	57	54	49	47	48	52	55	57	58	58	61	62
Critical (15%)	60	55	50	47	49	52	55	58	60	61	64	66

Alternative 5												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	61	56	51	48	49	53	56	59	60	60	62	65
20%	58	55	50	48	49	52	56	59	59	60	61	62
30%	58	55	49	47	48	52	55	58	59	59	60	62
40%	57	54	49	47	48	51	55	58	58	59	60	60
50%	57	54	49	47	48	51	54	57	58	58	59	60
60%	56	53	48	46	47	50	54	57	58	57	59	58
70%	56	53	48	46	47	50	54	57	57	57	59	57
80%	56	53	48	46	47	49	53	56	57	57	58	56
90%	56	52	47	46	46	48	52	56	56	56	58	55
Long Term												
Full Simulation Period ^b	58	54	49	47	48	51	54	57	58	58	60	60
Water Year Types ^c												
Wet (32%)	55	51	47	46	47	49	53	57	58	58	59	56
Above Normal (16%)	58	54	49	47	47	50	54	57	57	57	58	57
Below Normal (13%)	57	54	49	47	48	52	55	57	57	57	59	60
Dry (24%)	57	54	49	47	48	52	55	58	58	58	60	62
Critical (15%)	60	55	50	47	49	52	55	58	60	61	63	66

Alternative 5 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	0.5	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-0.5	0.1
0.2	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.0	-0.2	-0.2	-0.1
0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	-0.1	0.1
0.4	0.0	0.0	-0.1	-0.1	0.0	0.0	0.1	0.1	0.0	0.0	-0.2	-0.3
0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	0.0	0.0
0.6	-0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
0.7	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
0.8	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
0.9	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.2	0.0	0.0	0.1	0.0
Long Term												
Full Simulation Period ^b	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-0.1	-0.1	-0.1
Water Year Types ^c												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Above Normal (16%)	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
Below Normal (13%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	-0.1
Dry (24%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	-0.1	-0.3	-0.2
Critical (15%)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	-0.2	-0.3	-0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-9-4. Sacramento River at Red Bluff, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	60	55	51	48	49	53	56	59	60	61	62	64
20%	58	55	50	48	49	52	56	58	59	59	61	62
30%	58	54	49	47	48	52	55	58	58	59	60	61
40%	57	54	49	47	48	51	55	57	58	59	60	61
50%	57	53	49	47	48	51	54	57	57	58	59	61
60%	57	53	48	46	47	50	54	57	57	58	59	60
70%	56	53	48	46	47	50	53	56	57	57	59	59
80%	56	52	48	46	47	49	53	56	56	57	58	59
90%	56	52	47	46	46	48	52	55	56	56	57	57
Long Term												
Full Simulation Period ^b	57	54	49	47	48	51	54	57	58	58	60	61
Water Year Types ^c												
Wet (32%)	55	51	47	46	47	49	53	57	58	58	59	59
Above Normal (16%)	58	53	49	47	47	50	54	57	57	57	58	59
Below Normal (13%)	57	53	49	47	48	51	54	56	57	57	58	60
Dry (24%)	57	54	49	47	48	52	55	57	57	58	61	62
Critical (15%)	59	55	50	47	49	52	55	58	59	61	63	65

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	61	56	51	48	49	53	56	59	60	60	62	65
20%	58	55	50	47	49	52	56	58	59	60	61	62
30%	58	55	49	47	48	52	55	58	59	59	60	61
40%	57	54	49	47	48	51	55	57	58	59	60	61
50%	57	54	49	47	48	51	54	57	58	58	59	60
60%	57	53	48	46	47	50	54	57	58	57	59	58
70%	56	53	48	46	47	50	54	57	57	57	59	57
80%	56	53	48	46	46	49	53	56	57	57	58	56
90%	56	52	47	46	46	48	52	55	56	56	58	55
Long Term												
Full Simulation Period ^b	58	54	49	47	48	51	54	57	58	58	60	60
Water Year Types ^c												
Wet (32%)	55	51	47	46	47	49	53	57	58	58	59	56
Above Normal (16%)	58	54	49	47	47	50	54	57	57	57	58	57
Below Normal (13%)	57	54	49	47	48	52	55	57	57	57	59	61
Dry (24%)	57	54	49	47	48	52	55	57	58	58	61	62
Critical (15%)	60	55	50	47	49	52	55	58	60	61	64	66

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	0.9	0.5	0.0	0.1	-0.1	0.3	0.0	0.1	0.2	-0.4	-0.2	0.6
0.2	-0.1	0.7	0.2	0.0	0.0	0.1	0.0	0.2	0.3	0.3	0.5	0.1
0.3	0.0	0.6	-0.1	0.0	0.1	0.0	0.1	0.1	0.2	0.2	0.2	0.0
0.4	-0.2	0.5	0.0	0.0	0.0	0.1	0.0	0.0	0.3	0.0	0.3	-0.3
0.5	-0.2	0.6	0.2	0.0	0.0	0.0	0.1	0.1	0.4	0.1	0.2	-1.1
0.6	-0.1	0.3	0.0	0.0	0.0	0.1	0.1	0.3	0.4	-0.2	0.2	-2.6
0.7	0.0	0.2	-0.2	0.0	0.0	-0.1	0.2	0.4	0.6	0.1	0.2	-2.9
0.8	0.2	0.4	-0.1	0.0	0.0	0.0	0.1	0.3	0.4	-0.1	0.3	-2.9
0.9	0.1	0.2	0.0	0.0	0.0	-0.1	0.0	0.2	0.4	0.0	0.3	-2.4
Long Term												
Full Simulation Period ^b	0.1	0.4	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.0	0.3	-1.2
Water Year Types ^c												
Wet (32%)	0.0	0.3	-0.2	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	0.4	-3.2
Above Normal (16%)	0.0	0.4	0.2	-0.1	0.0	0.1	0.0	0.2	0.4	-0.1	0.3	-2.3
Below Normal (13%)	0.1	0.5	0.3	-0.1	0.0	0.3	0.2	0.2	0.5	0.0	0.5	0.2
Dry (24%)	-0.1	0.3	0.2	0.0	0.0	0.0	0.2	0.2	0.5	0.2	-0.1	0.1
Critical (15%)	0.4	0.2	0.0	-0.1	-0.1	0.0	0.0	0.0	0.5	0.0	0.3	0.8

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-9-5. Sacramento River at Red Bluff, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	60	55	51	48	49	53	56	59	60	61	62	64
20%	58	55	50	48	49	52	56	58	59	59	61	62
30%	58	54	49	47	48	52	55	58	58	59	60	61
40%	57	54	49	47	48	51	55	57	58	59	60	61
50%	57	53	49	47	48	51	54	57	57	58	59	61
60%	57	53	48	46	47	50	54	57	57	58	59	60
70%	56	53	48	46	47	50	53	56	57	57	59	59
80%	56	52	48	46	47	49	53	56	56	57	58	59
90%	56	52	47	46	46	48	52	55	56	56	57	57
Long Term												
Full Simulation Period ^b	57	54	49	47	48	51	54	57	58	58	60	61
Water Year Types ^c												
Wet (32%)	55	51	47	46	47	49	53	57	58	58	59	59
Above Normal (16%)	58	53	49	47	47	50	54	57	57	57	58	59
Below Normal (13%)	57	53	49	47	48	51	54	56	57	57	58	60
Dry (24%)	57	54	49	47	48	52	55	57	57	58	61	62
Critical (15%)	59	55	50	47	49	52	55	58	59	61	63	65

Alternative 3

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	61	56	51	48	49	53	56	59	60	61	62	64
20%	58	55	50	48	49	52	56	58	59	60	61	62
30%	58	54	49	47	48	52	55	58	58	59	60	61
40%	57	54	49	47	48	51	55	57	58	59	60	61
50%	57	53	49	47	48	51	54	57	57	58	59	61
60%	57	53	48	46	47	50	54	57	57	58	59	60
70%	56	53	48	46	47	50	53	56	56	57	59	59
80%	56	52	48	46	47	49	53	56	56	57	58	58
90%	56	52	47	46	46	48	52	55	56	56	58	57
Long Term												
Full Simulation Period ^b	57	54	49	47	48	51	54	57	58	58	60	61
Water Year Types ^c												
Wet (32%)	55	51	47	46	47	49	53	57	58	58	59	59
Above Normal (16%)	58	53	49	47	47	50	54	57	57	57	58	59
Below Normal (13%)	57	53	49	47	48	51	55	57	57	57	59	59
Dry (24%)	57	53	49	47	48	52	55	57	57	58	60	62
Critical (15%)	59	55	50	47	49	52	55	58	59	61	63	65

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	0.5	0.4	0.0	0.0	-0.1	0.0	0.0	-0.1	0.1	0.0	-0.4	-0.5
0.2	-0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	-0.2
0.3	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.0	-0.2	0.0
0.4	-0.2	0.0	0.0	0.0	0.1	0.0	-0.1	-0.1	0.1	-0.1	0.0	0.0
0.5	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	-0.1
0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-0.1	0.0	0.2	-0.3
0.7	0.0	0.0	-0.1	0.0	0.0	0.0	0.1	0.0	-0.1	0.1	0.1	-0.5
0.8	0.0	-0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.2	-0.4
0.9	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.1	0.3	-0.1
Long Term												
Full Simulation Period ^b	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-0.2
Water Year Types ^c												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.2	-0.2
Above Normal (16%)	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.0	0.3	0.0
Below Normal (13%)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.4	-1.0
Dry (24%)	-0.2	-0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	-0.3	-0.1
Critical (15%)	0.0	0.1	0.0	-0.1	-0.1	0.0	0.0	0.0	0.1	0.2	-0.2	-0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-9-6. Sacramento River at Red Bluff, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	60	55	51	48	49	53	56	59	60	61	62	64
20%	58	55	50	48	49	52	56	58	59	59	61	62
30%	58	54	49	47	48	52	55	58	58	59	60	61
40%	57	54	49	47	48	51	55	57	58	59	60	61
50%	57	53	49	47	48	51	54	57	57	58	59	61
60%	57	53	48	46	47	50	54	57	57	58	59	60
70%	56	53	48	46	47	50	53	56	57	57	59	59
80%	56	52	48	46	47	49	53	56	56	57	58	59
90%	56	52	47	46	46	48	52	55	56	56	57	57
Long Term												
Full Simulation Period ^b	57	54	49	47	48	51	54	57	58	58	60	61
Water Year Types ^c												
Wet (32%)	55	51	47	46	47	49	53	57	58	58	59	59
Above Normal (16%)	58	53	49	47	47	50	54	57	57	57	58	59
Below Normal (13%)	57	53	49	47	48	51	54	56	57	57	58	60
Dry (24%)	57	54	49	47	48	52	55	57	57	58	61	62
Critical (15%)	59	55	50	47	49	52	55	58	59	61	63	65

Alternative 5

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	61	56	51	48	49	53	56	59	60	60	62	65
20%	58	55	50	48	49	52	56	59	59	60	61	62
30%	58	55	49	47	48	52	55	58	59	59	60	62
40%	57	54	49	47	48	51	55	58	58	59	60	60
50%	57	54	49	47	48	51	54	57	58	58	59	60
60%	56	53	48	46	47	50	54	57	58	57	59	58
70%	56	53	48	46	47	50	54	57	57	57	59	57
80%	56	53	48	46	47	49	53	56	57	57	58	56
90%	56	52	47	46	46	48	52	56	56	56	58	55
Long Term												
Full Simulation Period ^b	58	54	49	47	48	51	54	57	58	58	60	60
Water Year Types ^c												
Wet (32%)	55	51	47	46	47	49	53	57	58	58	59	56
Above Normal (16%)	58	54	49	47	47	50	54	57	57	57	58	57
Below Normal (13%)	57	54	49	47	48	52	55	57	57	57	59	60
Dry (24%)	57	54	49	47	48	52	55	58	58	58	60	62
Critical (15%)	60	55	50	47	49	52	55	58	60	61	63	66

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	1.4	0.4	-0.1	0.1	-0.1	0.3	0.0	0.1	0.3	-0.4	-0.7	0.7
0.2	-0.1	0.6	0.3	0.0	0.0	0.1	0.0	0.4	0.3	0.2	0.3	-0.1
0.3	0.0	0.5	-0.1	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1
0.4	-0.2	0.5	0.0	-0.1	0.0	0.1	0.0	0.1	0.3	0.0	0.1	-0.6
0.5	-0.2	0.6	0.2	0.0	0.0	0.0	0.1	0.2	0.5	-0.2	0.1	-1.1
0.6	-0.2	0.4	0.1	0.0	0.1	0.1	0.1	0.3	0.5	-0.2	0.2	-2.7
0.7	-0.1	0.2	-0.2	0.0	0.0	-0.1	0.3	0.4	0.6	0.0	0.2	-2.8
0.8	0.1	0.5	-0.1	0.0	0.0	0.0	0.1	0.5	0.4	-0.1	0.3	-2.9
0.9	0.1	0.2	0.0	0.0	0.0	-0.1	0.0	0.4	0.4	0.0	0.4	-2.4
Long Term												
Full Simulation Period ^b	0.1	0.3	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.0	0.2	-1.3
Water Year Types ^c												
Wet (32%)	0.0	0.3	-0.2	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	0.4	-3.2
Above Normal (16%)	0.0	0.3	0.2	-0.1	0.0	0.1	0.0	0.3	0.4	-0.1	0.3	-2.2
Below Normal (13%)	0.1	0.4	0.3	0.0	0.0	0.3	0.2	0.3	0.5	0.0	0.7	0.0
Dry (24%)	0.0	0.3	0.1	0.0	0.0	0.0	0.2	0.5	0.5	0.1	-0.4	0.0
Critical (15%)	0.4	0.3	0.0	-0.2	-0.2	0.0	0.1	0.2	0.6	-0.2	0.0	0.7

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

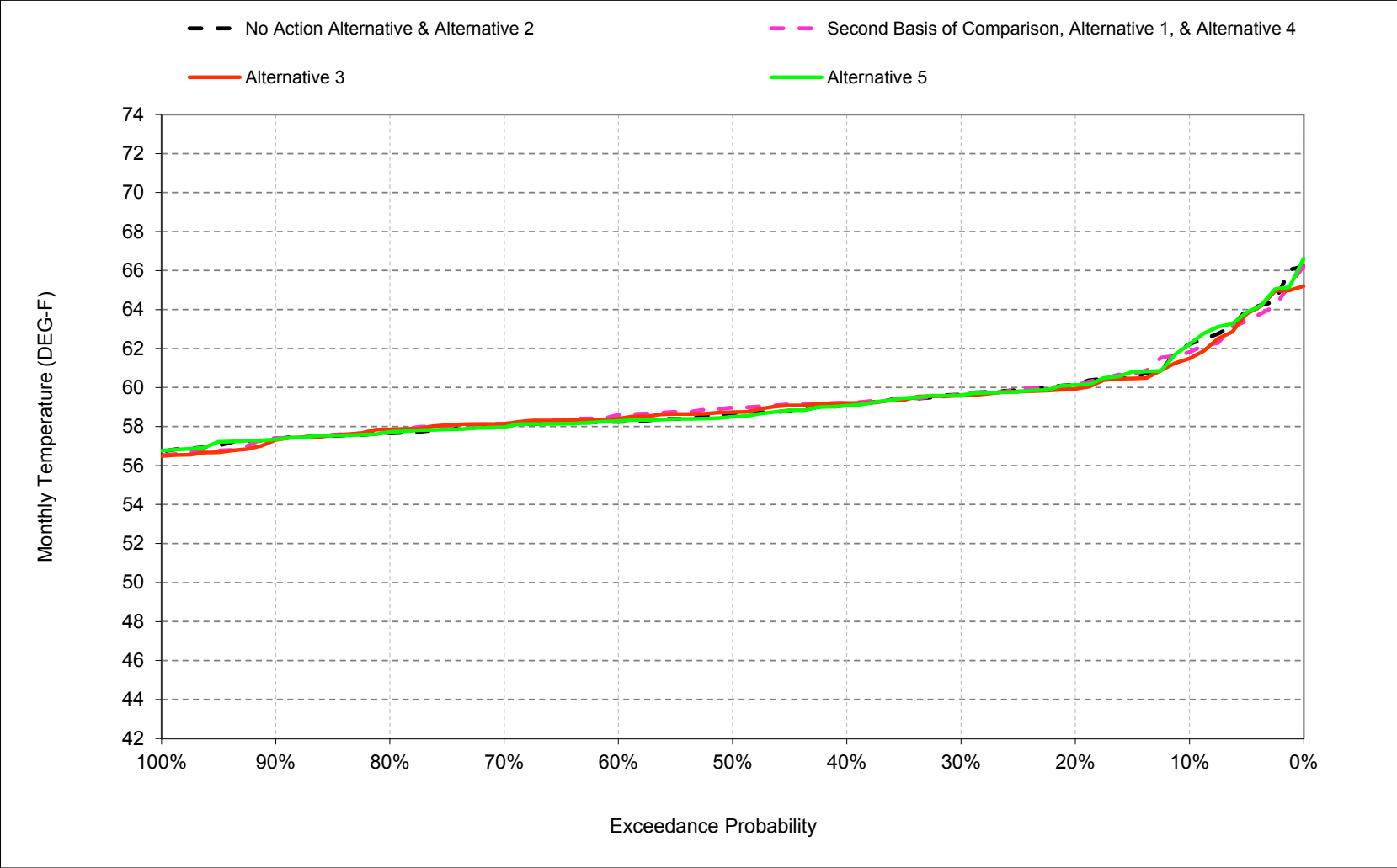
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

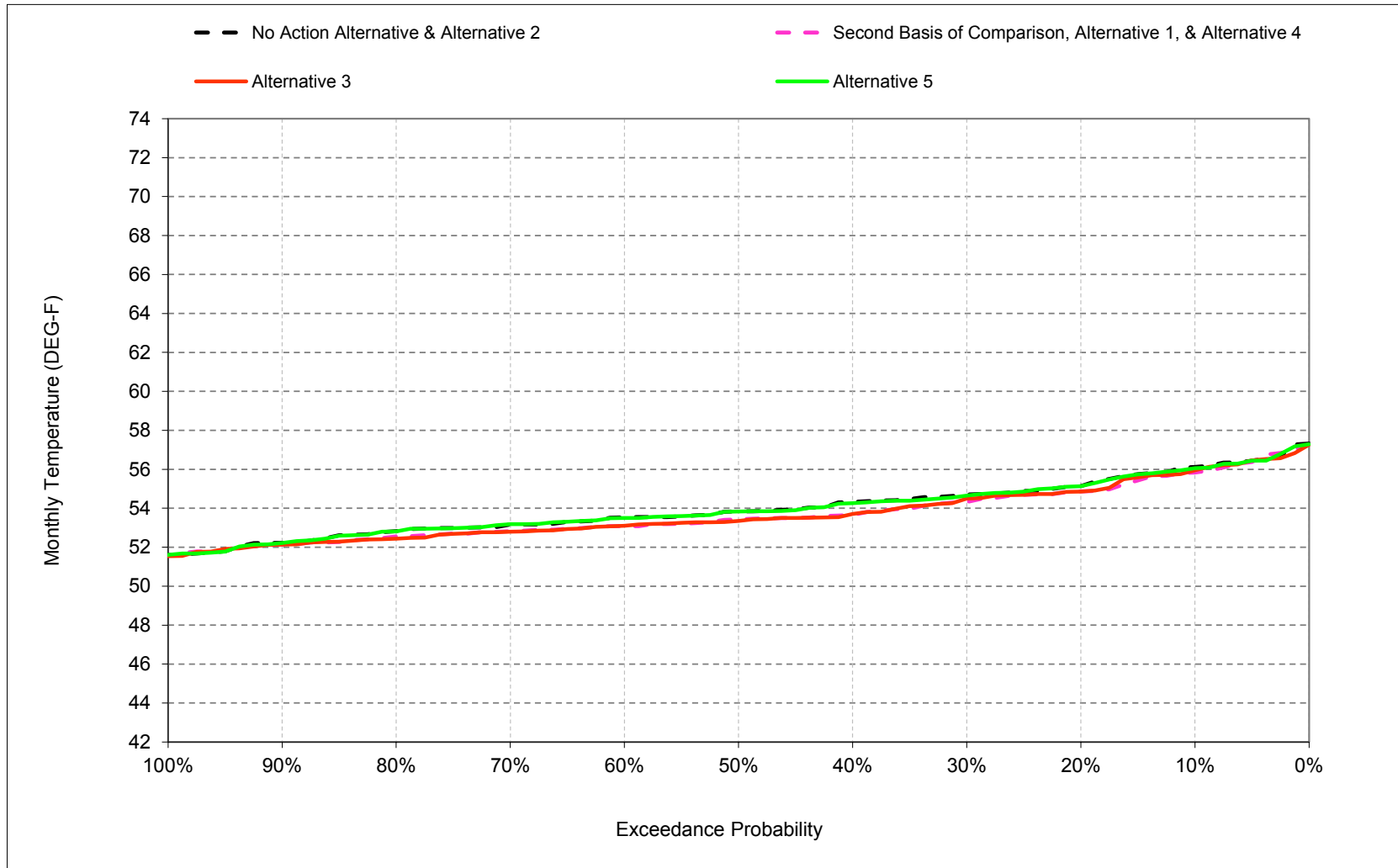
B.10. Sacramento River at Hamilton City Temperature

Figure B-10-1. Sacramento River below Hamilton City, October



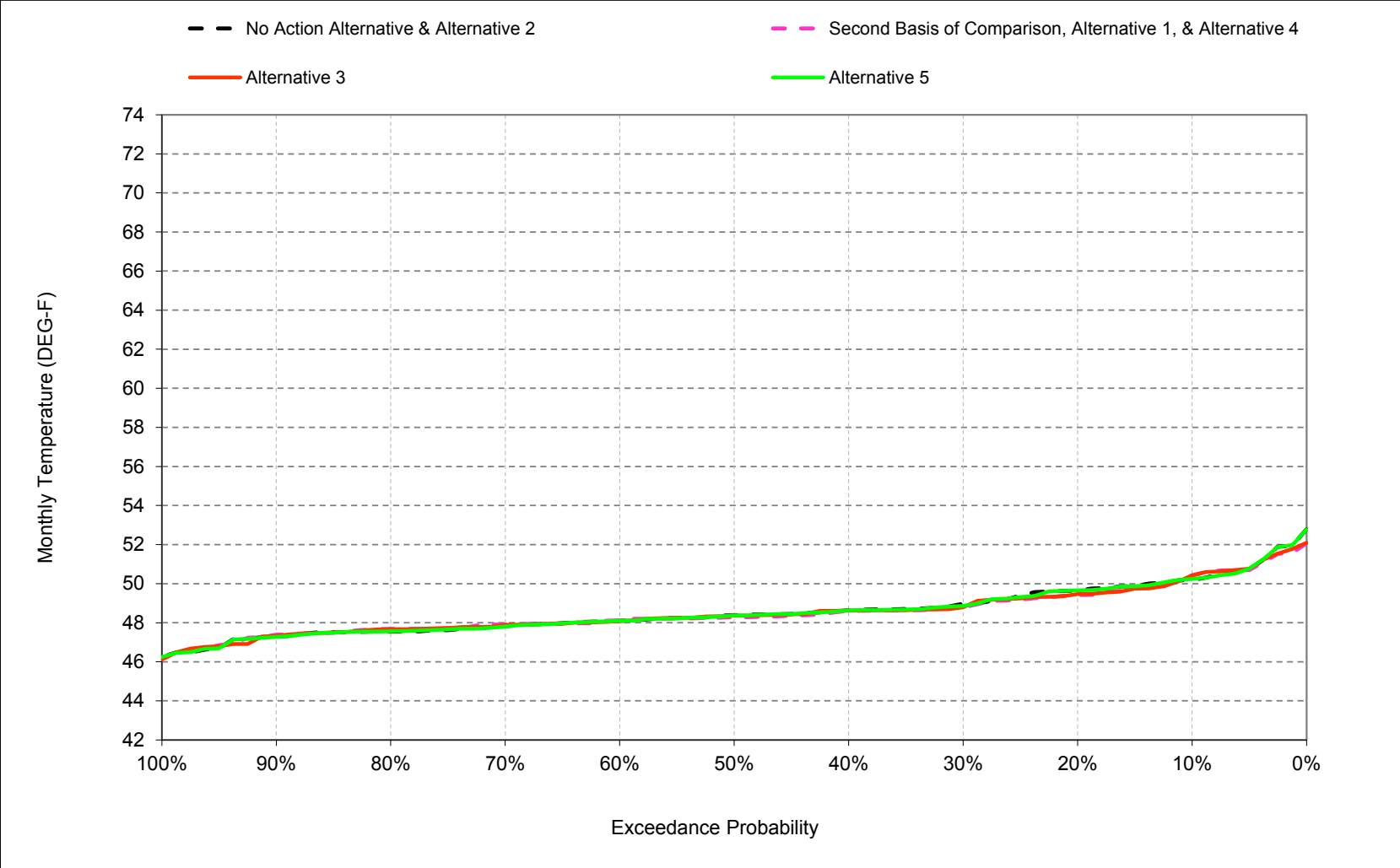
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-10-2. Sacramento River below Hamilton City, November



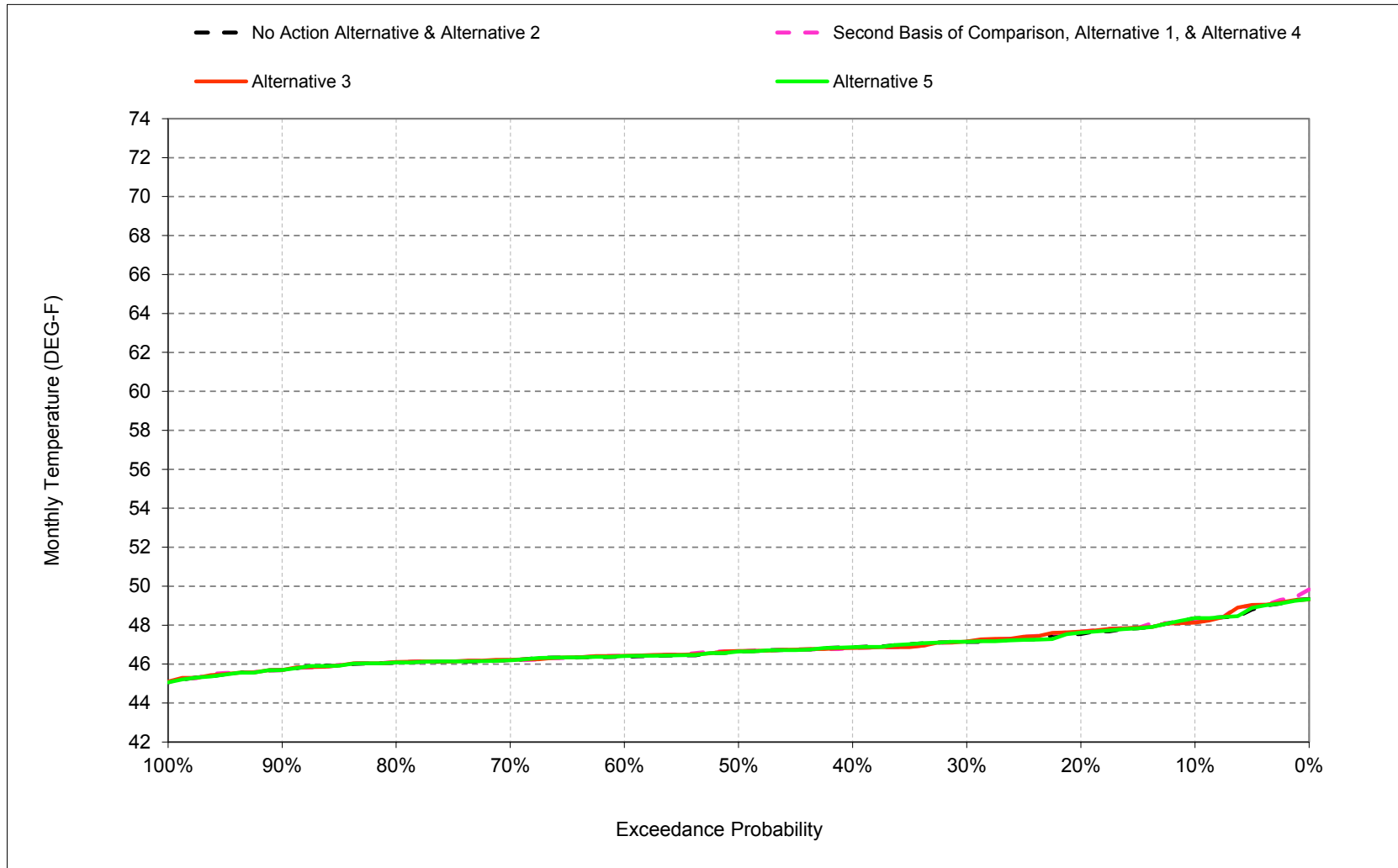
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-10-3. Sacramento River below Hamilton City, December



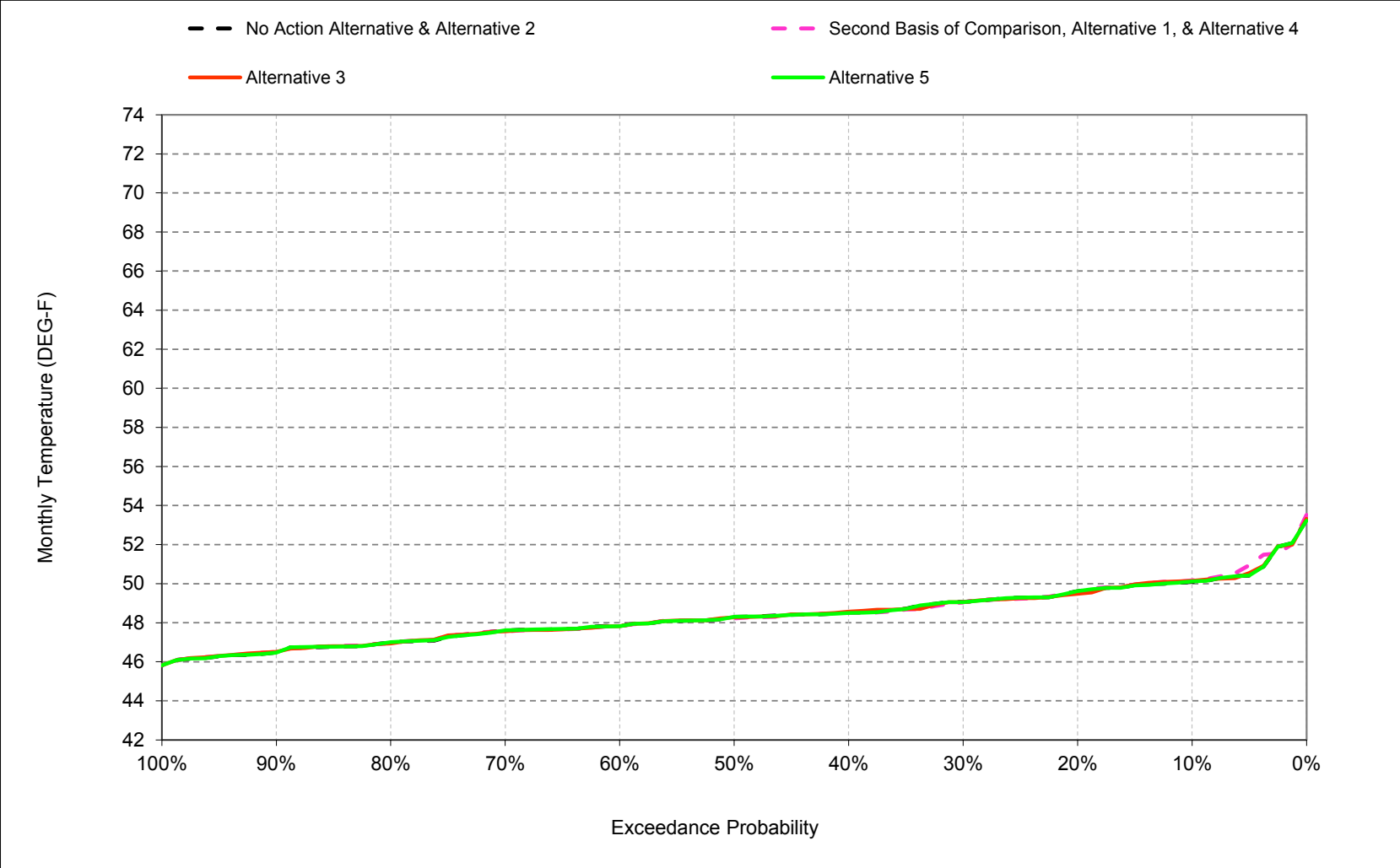
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-10-4. Sacramento River below Hamilton City, January



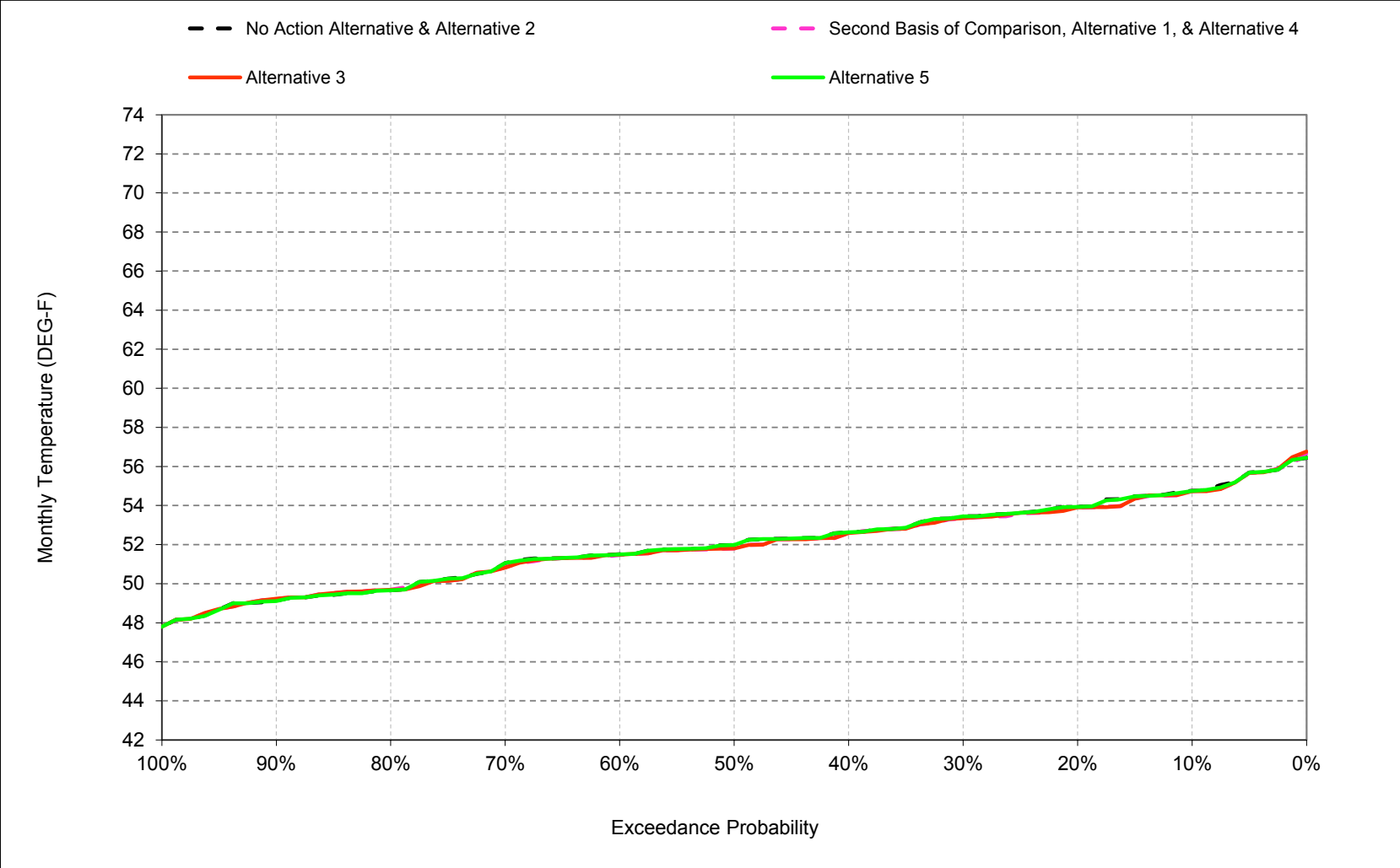
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-10-5. Sacramento River below Hamilton City, February



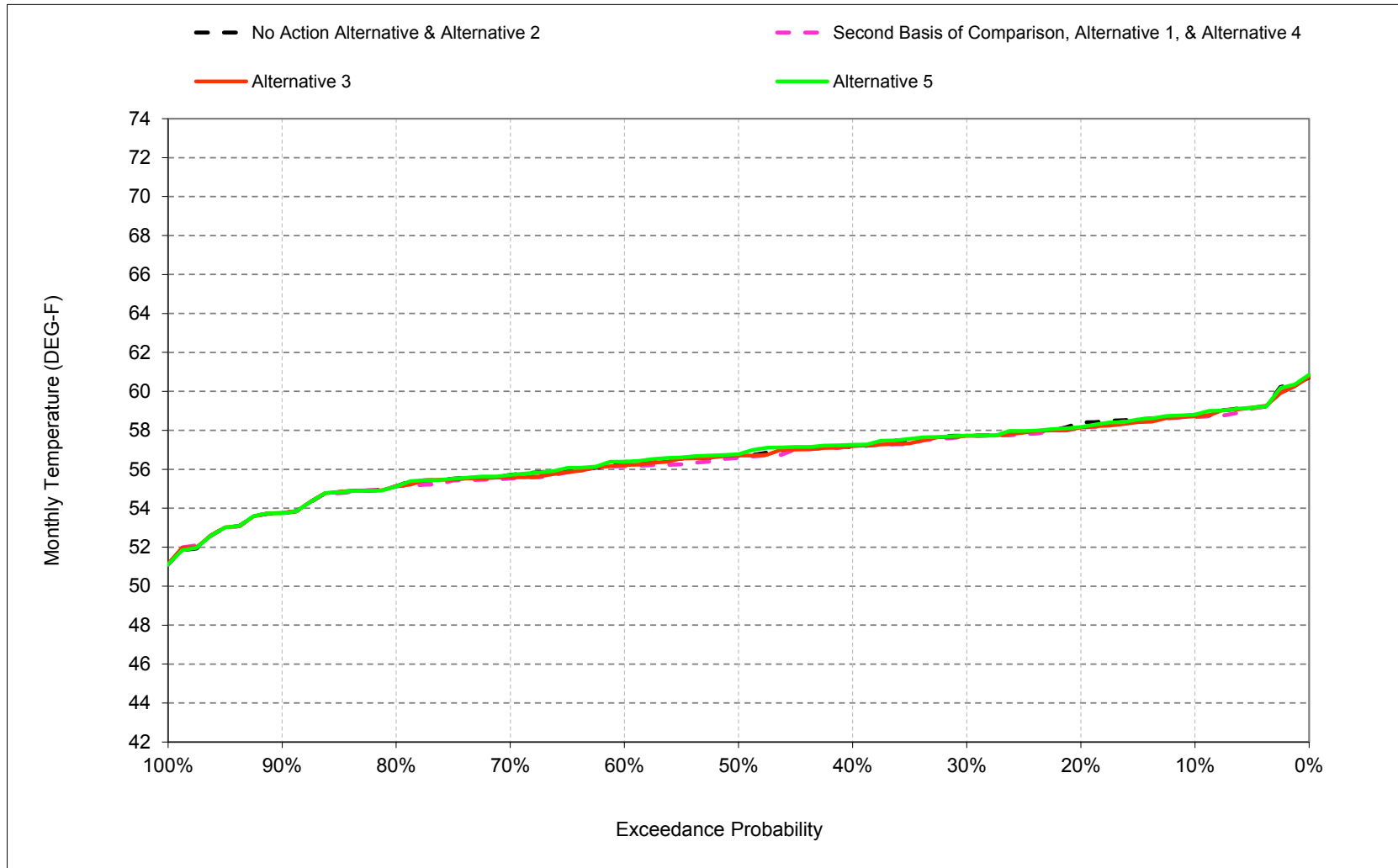
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-10-6. Sacramento River below Hamilton City, March



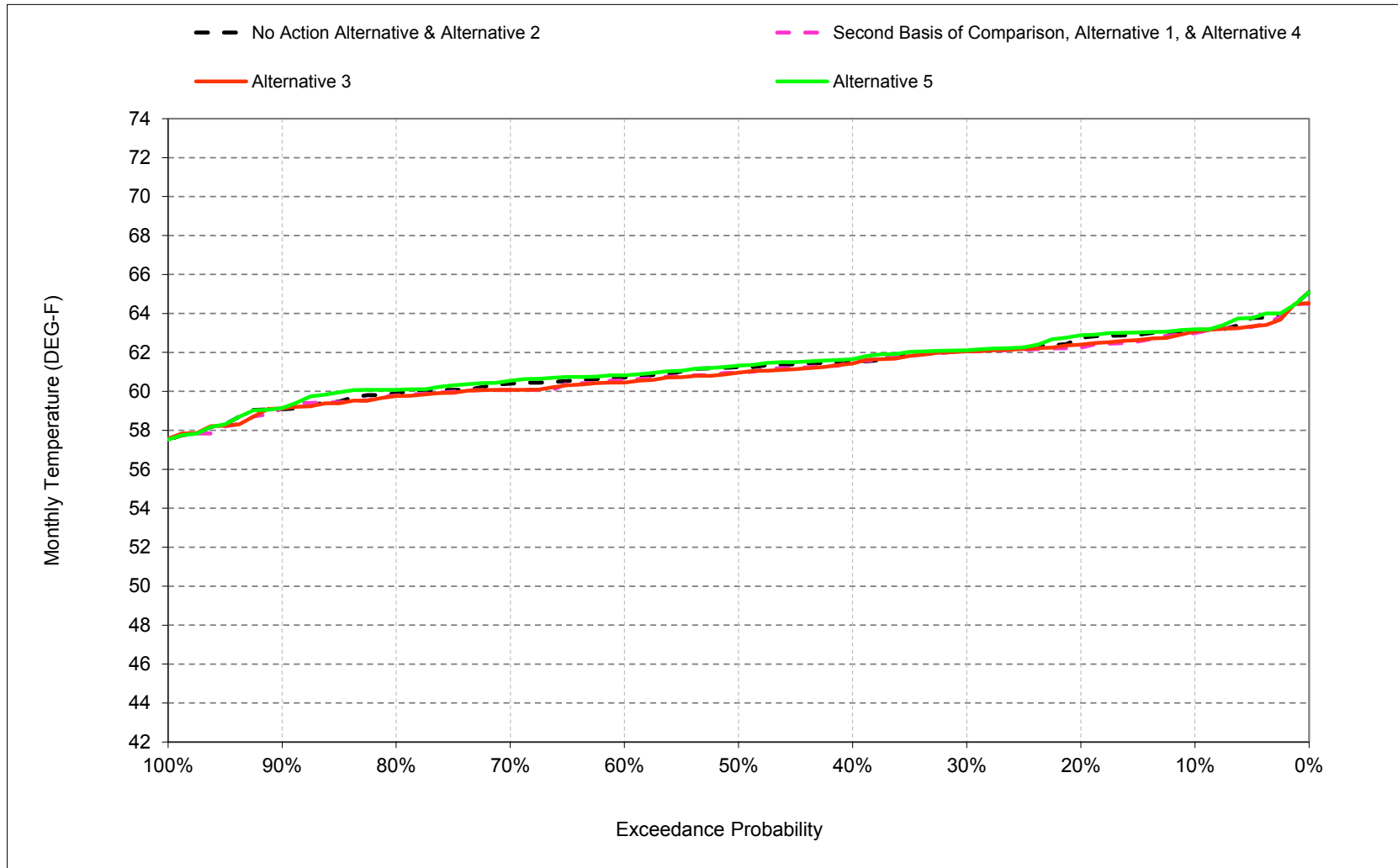
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-10-7. Sacramento River below Hamilton City, April



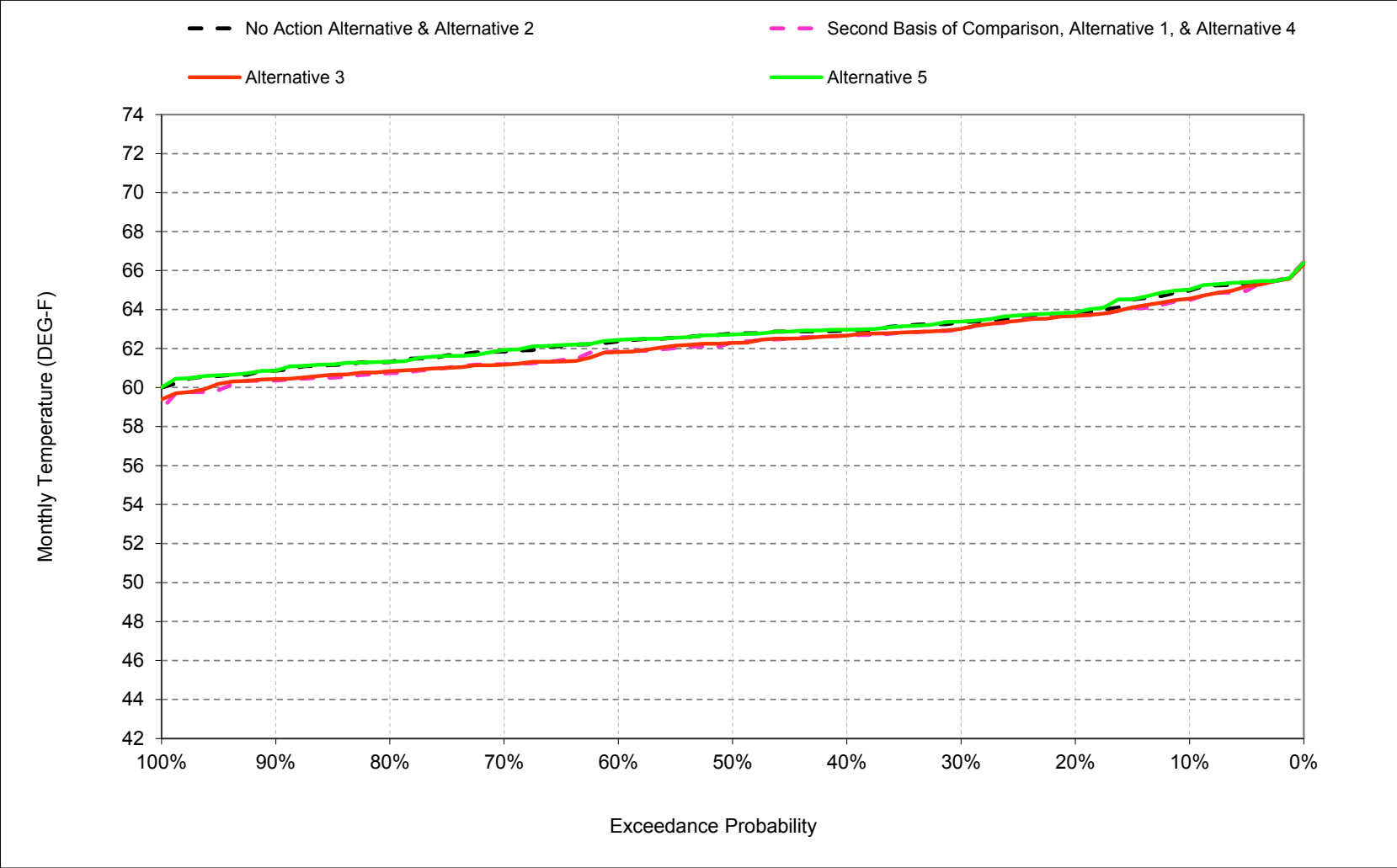
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-10-8. Sacramento River below Hamilton City, May



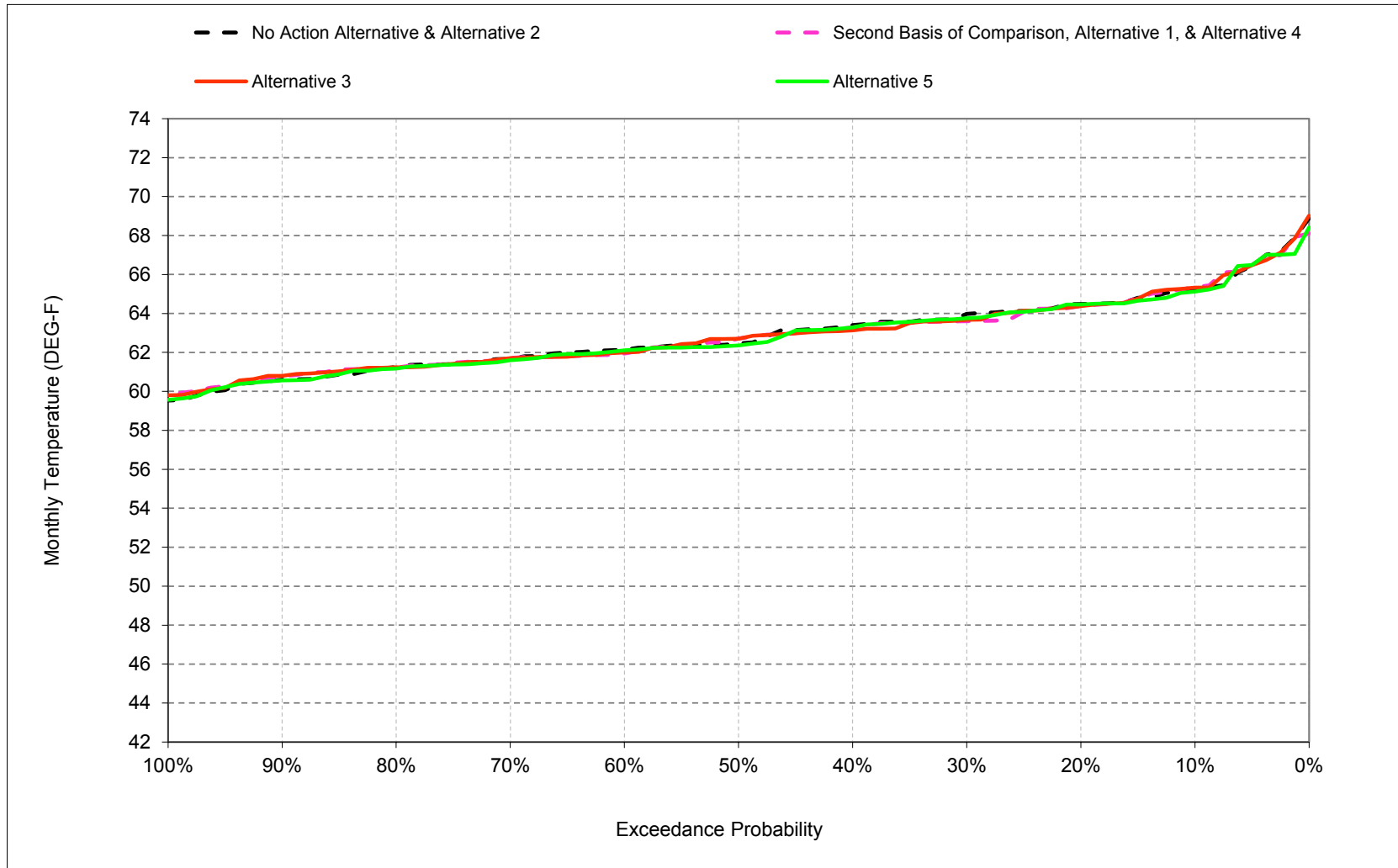
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-10-9. Sacramento River below Hamilton City, June



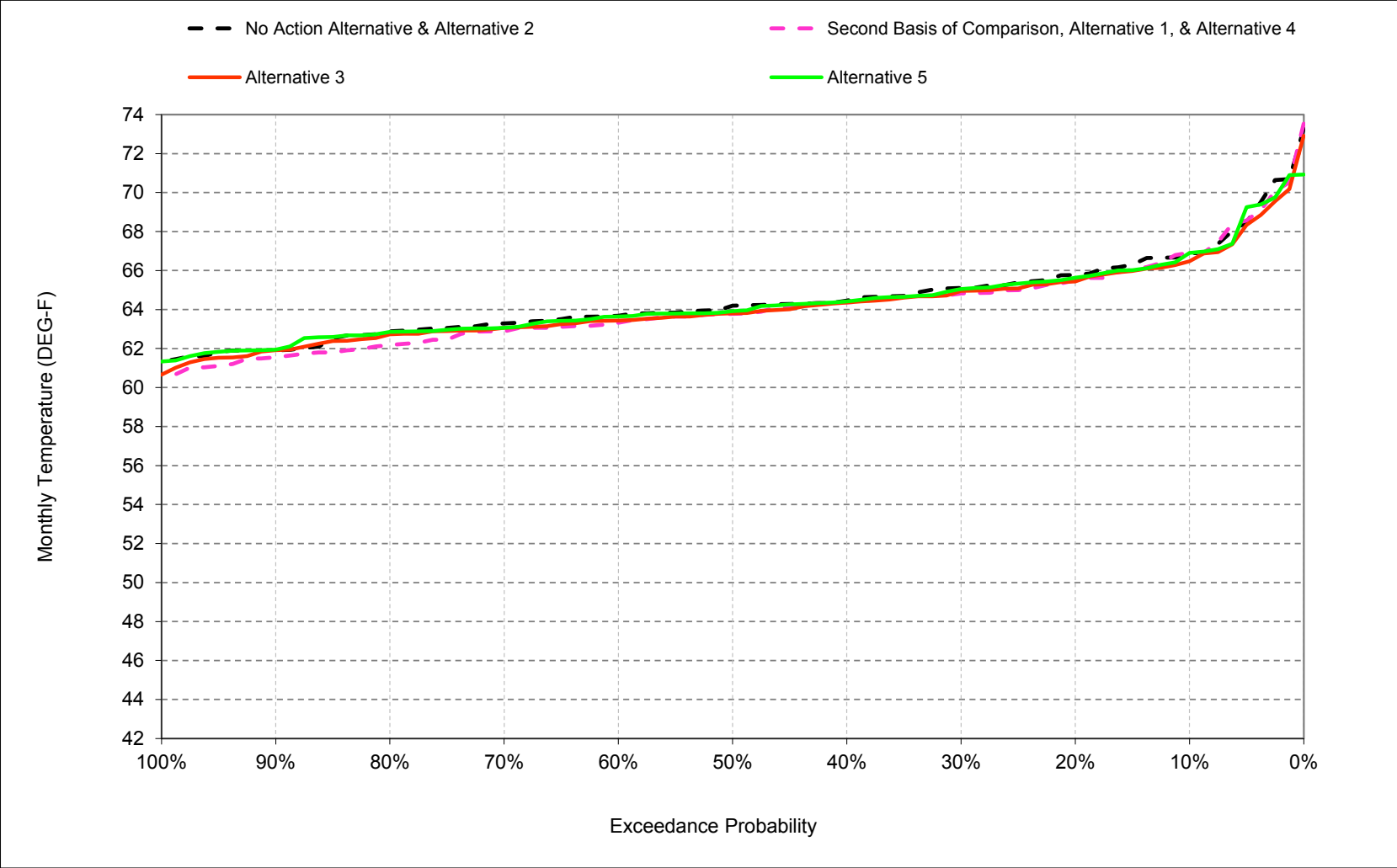
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-10-10. Sacramento River below Hamilton City, July



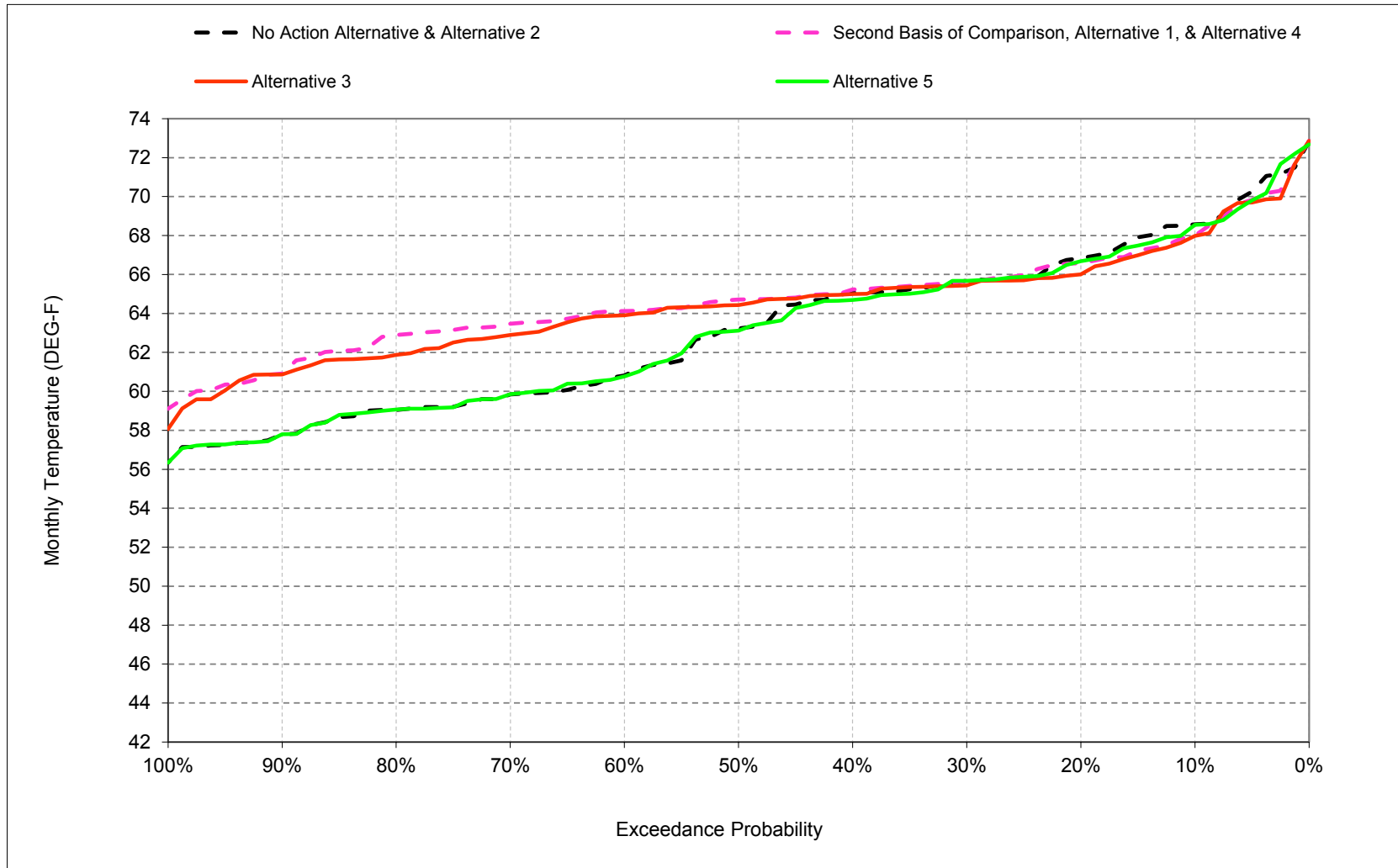
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-10-11. Sacramento River below Hamilton City, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-10-12. Sacramento River below Hamilton City, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-10-1. Sacramento River below Hamilton City, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	62	56	50	48	50	55	59	63	65	65	67	69
20%	60	55	50	48	50	54	58	63	64	64	66	67
30%	60	55	49	47	49	53	58	62	63	64	65	66
40%	59	54	49	47	48	53	57	62	63	63	64	65
50%	59	54	48	47	48	52	57	61	63	62	64	63
60%	58	54	48	46	48	51	56	61	62	62	64	61
70%	58	53	48	46	48	51	56	60	62	62	63	60
80%	58	53	48	46	47	50	55	60	61	61	63	59
90%	57	52	47	46	46	49	54	59	61	61	62	58
Long Term												
Full Simulation Period ^b	59	54	49	47	48	52	57	61	63	63	64	63
Water Year Types ^c												
Wet (32%)	56	52	46	46	47	50	55	60	63	63	64	59
Above Normal (16%)	59	54	49	47	48	51	56	61	62	61	63	61
Below Normal (13%)	58	54	49	47	49	53	57	61	62	62	63	65
Dry (24%)	59	54	49	47	49	53	58	62	62	63	65	66
Critical (15%)	61	55	49	47	50	54	58	62	64	66	68	69

Alternative 1												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	62	56	50	48	50	55	59	63	64	65	67	68
20%	60	55	49	48	50	54	58	62	64	64	65	67
30%	60	54	49	47	49	53	58	62	63	64	65	66
40%	59	54	49	47	48	52	57	61	63	63	64	65
50%	59	53	48	47	48	52	57	61	62	63	64	65
60%	59	53	48	46	48	51	56	61	62	62	63	64
70%	58	53	48	46	48	51	55	60	61	62	63	63
80%	58	53	48	46	47	50	55	60	61	61	62	63
90%	57	52	47	46	46	49	54	59	60	61	61	61
Long Term												
Full Simulation Period ^b	59	54	49	47	48	52	56	61	62	63	64	65
Water Year Types ^c												
Wet (32%)	56	51	47	46	47	50	55	60	63	63	63	63
Above Normal (16%)	59	54	48	47	48	51	56	61	62	61	62	63
Below Normal (13%)	58	53	48	47	49	53	57	60	61	62	62	64
Dry (24%)	59	54	49	47	49	53	57	61	62	63	65	66
Critical (15%)	61	55	49	47	50	54	58	62	64	66	67	69

Alternative 1 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	-0.4	-0.3	0.2	-0.2	0.1	0.0	-0.1	-0.2	-0.5	0.1	0.0	-0.6
0.2	-0.1	-0.3	-0.2	0.1	-0.1	0.0	-0.2	-0.5	-0.1	-0.1	-0.3	-0.2
0.3	0.1	-0.4	-0.2	0.0	0.0	-0.1	0.0	0.0	-0.4	-0.3	-0.3	0.0
0.4	0.1	-0.7	0.0	0.0	0.0	-0.1	0.0	0.0	-0.3	-0.1	-0.1	0.1
0.5	0.3	-0.4	-0.1	0.0	0.0	-0.2	-0.1	-0.3	-0.5	0.2	-0.3	1.5
0.6	0.4	-0.5	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.5	-0.2	-0.4	3.2
0.7	0.0	-0.3	0.1	0.0	0.0	-0.1	-0.1	-0.3	-0.6	0.0	-0.4	3.6
0.8	0.0	-0.3	0.1	0.0	0.0	0.0	0.0	-0.1	-0.6	0.0	-0.6	3.8
0.9	0.0	-0.1	0.1	0.0	0.1	0.1	0.0	-0.2	-0.5	0.1	-0.4	3.2
Long Term												
Full Simulation Period ^b	0.0	-0.3	0.0	0.0	0.0	-0.1	-0.1	-0.2	-0.4	0.0	-0.3	1.6
Water Year Types ^c												
Wet (32%)	0.1	-0.3	0.1	0.0	0.0	0.0	0.0	-0.1	-0.1	0.1	-0.6	4.2
Above Normal (16%)	0.1	-0.3	-0.2	0.0	0.0	-0.1	0.0	-0.2	-0.5	0.1	-0.4	2.9
Below Normal (13%)	0.0	-0.4	-0.2	0.0	0.0	-0.3	-0.3	-0.3	-0.6	0.0	-0.6	-0.2
Dry (24%)	0.1	-0.2	-0.1	0.0	0.0	0.0	-0.2	-0.2	-0.6	-0.2	0.2	-0.1
Critical (15%)	-0.2	-0.2	0.0	0.1	0.1	0.0	0.0	0.0	-0.6	0.1	-0.2	-0.6

^a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

^b Based on the 82-year simulation period.

^c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-10-2. Sacramento River below Hamilton City, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	62	56	50	48	50	55	59	63	65	65	67	69
20%	60	55	50	48	50	54	58	63	64	64	66	67
30%	60	55	49	47	49	53	58	62	63	64	65	66
40%	59	54	49	47	48	53	57	62	63	63	64	65
50%	59	54	48	47	48	52	57	61	63	62	64	63
60%	58	54	48	46	48	51	56	61	62	62	64	61
70%	58	53	48	46	48	51	56	60	62	62	63	60
80%	58	53	48	46	47	50	55	60	61	61	63	59
90%	57	52	47	46	46	49	54	59	61	61	62	58
Long Term												
Full Simulation Period ^b	59	54	49	47	48	52	57	61	63	63	64	63
Water Year Types ^c												
Wet (32%)	56	52	46	46	47	50	55	60	63	63	64	59
Above Normal (16%)	59	54	49	47	48	51	56	61	62	61	63	61
Below Normal (13%)	58	54	49	47	49	53	57	61	62	62	63	65
Dry (24%)	59	54	49	47	49	53	58	62	62	63	65	66
Critical (15%)	61	55	49	47	50	54	58	62	64	66	68	69

Alternative 3												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	61	56	50	48	50	55	59	63	65	65	66	68
20%	60	55	49	48	49	54	58	62	64	64	65	66
30%	60	54	49	47	49	53	58	62	63	64	65	65
40%	59	54	49	47	49	52	57	61	63	63	64	65
50%	59	53	48	47	48	52	57	61	62	63	64	64
60%	58	53	48	46	48	51	56	60	62	62	63	64
70%	58	53	48	46	48	51	56	60	61	62	63	63
80%	58	52	48	46	47	50	55	60	61	61	63	62
90%	57	52	47	46	46	49	54	59	60	61	62	61
Long Term												
Full Simulation Period ^b	59	54	49	47	48	52	56	61	62	63	64	64
Water Year Types ^c												
Wet (32%)	56	51	47	46	47	50	55	60	63	63	63	63
Above Normal (16%)	59	54	48	47	48	51	56	61	62	61	63	63
Below Normal (13%)	58	53	48	47	49	53	57	60	61	62	63	63
Dry (24%)	59	54	49	47	49	53	58	61	62	63	65	66
Critical (15%)	61	55	49	47	50	54	58	62	64	66	67	69

Alternative 3 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	-0.7	-0.2	0.2	-0.2	0.1	0.0	0.0	-0.1	-0.4	0.1	-0.4	-0.6
0.2	-0.2	-0.3	-0.2	0.1	-0.1	-0.1	-0.2	-0.3	-0.2	-0.1	-0.3	-0.8
0.3	-0.1	-0.2	-0.2	0.0	0.0	-0.1	0.0	0.0	-0.4	-0.2	-0.2	-0.2
0.4	0.1	-0.6	0.0	0.0	0.0	-0.1	0.0	-0.1	-0.3	-0.2	-0.1	0.0
0.5	0.0	-0.5	0.0	0.1	0.0	-0.2	0.0	-0.3	-0.5	0.3	-0.3	1.3
0.6	0.2	-0.4	0.0	0.0	0.0	0.0	-0.1	-0.2	-0.5	-0.1	-0.2	3.0
0.7	0.0	-0.4	0.1	0.0	0.0	-0.1	-0.1	-0.3	-0.7	0.0	-0.3	3.1
0.8	0.2	-0.4	0.1	0.0	0.0	0.0	0.0	-0.1	-0.5	0.0	-0.2	2.8
0.9	-0.1	-0.1	0.0	0.0	0.1	0.1	0.0	0.0	-0.5	0.3	0.0	3.1
Long Term												
Full Simulation Period ^b	0.0	-0.3	0.0	0.0	0.0	0.0	-0.1	-0.2	-0.4	0.0	-0.3	1.3
Water Year Types ^c												
Wet (32%)	0.1	-0.3	0.1	0.0	0.0	0.0	0.0	-0.1	-0.2	0.0	-0.4	3.9
Above Normal (16%)	0.0	-0.3	-0.2	0.0	0.0	-0.1	0.0	-0.3	-0.4	0.1	-0.1	2.9
Below Normal (13%)	0.0	-0.4	-0.2	0.0	0.0	-0.3	-0.2	-0.3	-0.5	-0.1	-0.2	-1.4
Dry (24%)	-0.1	-0.3	-0.1	0.0	0.0	0.0	-0.1	-0.2	-0.6	-0.2	-0.2	-0.2
Critical (15%)	-0.3	-0.2	0.0	0.1	0.0	0.0	0.0	0.0	-0.5	0.3	-0.4	-0.7

^a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

^b Based on the 82-year simulation period.

^c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-10-3. Sacramento River below Hamilton City, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
10%	62	56	50	48	50	55	59	63	65	65	67	69
20%	60	55	50	48	50	54	58	63	64	64	66	67
30%	60	55	49	47	49	53	58	62	63	64	65	66
40%	59	54	49	47	48	53	57	62	63	63	64	65
50%	59	54	48	47	48	52	57	61	63	62	64	63
60%	58	54	48	46	48	51	56	61	62	62	64	61
70%	58	53	48	46	48	51	56	60	62	62	63	60
80%	58	53	48	46	47	50	55	60	61	61	63	59
90%	57	52	47	46	46	49	54	59	61	61	62	58
Long Term												
Full Simulation Period ^b	59	54	49	47	48	52	57	61	63	63	64	63
Water Year Types^c												
Wet (32%)	56	52	46	46	47	50	55	60	63	63	64	59
Above Normal (16%)	59	54	49	47	48	51	56	61	62	61	63	61
Below Normal (13%)	58	54	49	47	49	53	57	61	62	62	63	65
Dry (24%)	59	54	49	47	49	53	58	62	62	63	65	66
Critical (15%)	61	55	49	47	50	54	58	62	64	66	68	69

Alternative 5												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
10%	62	56	50	48	50	55	59	63	65	65	67	68
20%	60	55	50	48	50	54	58	63	64	64	66	67
30%	60	55	49	47	49	53	58	62	63	64	65	66
40%	59	54	49	47	48	53	57	62	63	63	64	65
50%	58	54	48	47	48	52	57	61	63	62	64	63
60%	58	53	48	46	48	51	56	61	62	62	64	61
70%	58	53	48	46	48	51	56	60	62	62	63	60
80%	58	53	48	46	47	50	55	60	61	61	63	59
90%	57	52	47	46	46	49	54	59	61	61	62	58
Long Term												
Full Simulation Period ^b	59	54	49	47	48	52	57	61	63	63	64	63
Water Year Types^c												
Wet (32%)	56	52	46	46	47	50	55	60	63	63	64	59
Above Normal (16%)	59	54	49	47	48	51	56	61	62	61	63	61
Below Normal (13%)	58	54	49	47	49	53	57	61	62	62	63	64
Dry (24%)	59	54	49	47	49	53	58	62	62	63	65	66
Critical (15%)	61	55	49	47	50	54	58	63	64	65	67	69

Alternative 5 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
0.1	0.0	-0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.1	-0.1	0.0	-0.1
0.2	0.0	0.0	0.0	0.1	0.0	0.0	-0.2	0.2	0.0	0.0	-0.2	-0.2
0.3	0.0	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	0.0
0.4	0.0	-0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.0	-0.1	0.0	-0.3
0.5	-0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	-0.1	-0.2	-0.1
0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	-0.1	0.0	-0.1
0.7	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-0.1	-0.2	0.0
0.8	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Long Term												
Full Simulation Period ^b	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-0.1	-0.1	-0.1
Water Year Types^c												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Above Normal (16%)	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
Below Normal (13%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	-0.2
Dry (24%)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.0	-0.1	-0.3	-0.2
Critical (15%)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	-0.2	-0.3	-0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-10-4. Sacramento River below Hamilton City, Monthly Temperature

Second Basis of Comparison		Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	
Probability of Exceedance^a													
10%	62	56	50	48	50	55	59	63	64	65	67	68	
20%	60	55	49	48	50	54	58	62	64	64	65	67	
30%	60	54	49	47	49	53	58	62	63	64	65	66	
40%	59	54	49	47	48	52	57	61	63	63	64	65	
50%	59	53	48	47	48	52	57	61	62	63	64	65	
60%	59	53	48	46	48	51	56	61	62	62	63	64	
70%	58	53	48	46	48	51	55	60	61	62	63	63	
80%	58	53	48	46	47	50	55	60	61	61	62	63	
90%	57	52	47	46	46	49	54	59	60	61	61	61	
Long Term													
Full Simulation Period ^b	59	54	49	47	48	52	56	61	62	63	64	65	
Water Year Types^c													
Wet (32%)	56	51	47	46	47	50	55	60	63	63	63	63	
Above Normal (16%)	59	54	48	47	48	51	56	61	62	61	62	63	
Below Normal (13%)	58	53	48	47	49	53	57	60	61	62	62	64	
Dry (24%)	59	54	49	47	49	53	57	61	62	63	65	66	
Critical (15%)	61	55	49	47	50	54	58	62	64	66	67	69	

No Action Alternative		Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	
Probability of Exceedance^a													
10%	62	56	50	48	50	55	59	63	65	65	67	69	
20%	60	55	50	48	50	54	58	63	64	64	66	67	
30%	60	55	49	47	49	53	58	62	63	64	65	66	
40%	59	54	49	47	48	53	57	62	63	63	64	65	
50%	59	54	48	47	48	52	57	61	63	62	64	63	
60%	58	54	48	46	48	51	56	61	62	62	64	61	
70%	58	53	48	46	48	51	56	60	62	62	63	60	
80%	58	53	48	46	47	50	55	60	61	61	63	59	
90%	57	52	47	46	46	49	54	59	61	61	62	58	
Long Term													
Full Simulation Period ^b	59	54	49	47	48	52	57	61	63	63	64	63	
Water Year Types^c													
Wet (32%)	56	52	46	46	47	50	55	60	63	63	64	59	
Above Normal (16%)	59	54	49	47	48	51	56	61	62	61	63	61	
Below Normal (13%)	58	54	49	47	49	53	57	61	62	62	63	65	
Dry (24%)	59	54	49	47	49	53	58	62	62	63	65	66	
Critical (15%)	61	55	49	47	50	54	58	62	64	66	68	69	

No Action Alternative minus Second Basis of Comparison		Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	
Probability of Exceedance^a													
0.1	0.4	0.3	-0.2	0.2	-0.1	0.0	0.1	0.2	0.5	-0.1	0.0	0.6	
0.2	0.1	0.3	0.2	-0.1	0.1	0.0	0.2	0.5	0.1	0.1	0.3	0.2	
0.3	-0.1	0.4	0.2	0.0	0.0	0.1	0.0	0.0	0.4	0.3	0.3	0.0	
0.4	-0.1	0.7	0.0	0.0	0.0	0.1	0.0	0.0	0.3	0.1	0.1	-0.1	
0.5	-0.3	0.4	0.1	0.0	0.0	0.2	0.1	0.3	0.5	-0.2	0.3	-1.5	
0.6	-0.4	0.5	0.0	0.0	0.0	0.1	0.1	0.1	0.5	0.2	0.4	-3.2	
0.7	0.0	0.3	-0.1	0.0	0.0	0.1	0.1	0.3	0.6	0.0	0.4	-3.6	
0.8	0.0	0.3	-0.1	0.0	0.0	0.0	0.0	0.1	0.6	0.0	0.6	-3.8	
0.9	0.0	0.1	-0.1	0.0	-0.1	-0.1	0.0	0.2	0.5	-0.1	0.4	-3.2	
Long Term													
Full Simulation Period ^b	0.0	0.3	0.0	0.0	0.0	0.1	0.1	0.2	0.4	0.0	0.3	-1.6	
Water Year Types^c													
Wet (32%)	-0.1	0.3	-0.1	0.0	0.0	0.0	0.0	0.1	0.1	-0.1	0.6	-4.2	
Above Normal (16%)	-0.1	0.3	0.2	0.0	0.0	0.1	0.0	0.2	0.5	-0.1	0.4	-2.9	
Below Normal (13%)	0.0	0.4	0.2	0.0	0.0	0.3	0.3	0.3	0.6	0.0	0.6	0.2	
Dry (24%)	-0.1	0.2	0.1	0.0	0.0	0.0	0.2	0.2	0.6	0.2	-0.2	0.1	
Critical (15%)	0.2	0.2	0.0	-0.1	-0.1	0.0	0.0	0.0	0.6	-0.1	0.2	0.6	

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-10-5. Sacramento River below Hamilton City, Monthly Temperature

Second Basis of Comparison												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
10%	62	56	50	48	50	55	59	63	64	65	67	68
20%	60	55	49	48	50	54	58	62	64	64	65	67
30%	60	54	49	47	49	53	58	62	63	64	65	66
40%	59	54	49	47	48	52	57	61	63	63	64	65
50%	59	53	48	47	48	52	57	61	62	63	64	65
60%	59	53	48	46	48	51	56	61	62	62	63	64
70%	58	53	48	46	48	51	55	60	61	62	63	63
80%	58	53	48	46	47	50	55	60	61	61	62	63
90%	57	52	47	46	46	49	54	59	60	61	61	61
Long Term												
Full Simulation Period ^b	59	54	49	47	48	52	56	61	62	63	64	65
Water Year Types^c												
Wet (32%)	56	51	47	46	47	50	55	60	63	63	63	63
Above Normal (16%)	59	54	48	47	48	51	56	61	62	61	62	63
Below Normal (13%)	58	53	48	47	49	53	57	60	61	62	62	64
Dry (24%)	59	54	49	47	49	53	57	61	62	63	65	66
Critical (15%)	61	55	49	47	50	54	58	62	64	66	67	69

Alternative 3												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
10%	61	56	50	48	50	55	59	63	65	65	66	68
20%	60	55	49	48	49	54	58	62	64	64	65	66
30%	60	54	49	47	49	53	58	62	63	64	65	65
40%	59	54	49	47	49	52	57	61	63	63	64	65
50%	59	53	48	47	48	52	57	61	62	63	64	64
60%	58	53	48	46	48	51	56	60	62	62	63	64
70%	58	53	48	46	48	51	56	60	61	62	63	63
80%	58	52	48	46	47	50	55	60	61	61	63	62
90%	57	52	47	46	46	49	54	59	60	61	62	61
Long Term												
Full Simulation Period ^b	59	54	49	47	48	52	56	61	62	63	64	64
Water Year Types^c												
Wet (32%)	56	51	47	46	47	50	55	60	63	63	63	63
Above Normal (16%)	59	54	48	47	48	51	56	61	62	61	63	63
Below Normal (13%)	58	53	48	47	49	53	57	60	61	62	63	63
Dry (24%)	59	54	49	47	49	53	58	61	62	63	65	66
Critical (15%)	61	55	49	47	50	54	58	62	64	66	67	69

Alternative 3 minus Second Basis of Comparison												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
0.1	-0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	-0.5	0.0
0.2	-0.2	0.0	0.0	0.0	-0.1	0.0	0.0	0.2	0.0	0.0	0.0	-0.6
0.3	-0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	-0.2
0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	-0.1	0.0	-0.2
0.5	-0.2	-0.1	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.1	0.0	-0.2
0.6	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.1	0.2	-0.2
0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	-0.6
0.8	0.2	-0.1	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.0	0.4	-1.0
0.9	-0.1	0.0	-0.1	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.4	-0.1
Long Term												
Full Simulation Period ^b	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-0.3
Water Year Types^c												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	0.3	-0.3
Above Normal (16%)	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.0	0.3	0.0
Below Normal (13%)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.0	0.4	-1.2
Dry (24%)	-0.2	-0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	-0.4	-0.1
Critical (15%)	-0.1	0.0	0.0	0.0	-0.1	0.0	0.1	0.0	0.1	0.2	-0.2	-0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-10-6. Sacramento River below Hamilton City, Monthly Temperature

Second Basis of Comparison												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	62	56	50	48	50	55	59	63	64	65	67	68
20%	60	55	49	48	50	54	58	62	64	64	65	67
30%	60	54	49	47	49	53	58	62	63	64	65	66
40%	59	54	49	47	48	52	57	61	63	63	64	65
50%	59	53	48	47	48	52	57	61	62	63	64	65
60%	59	53	48	46	48	51	56	61	62	62	63	64
70%	58	53	48	46	48	51	55	60	61	62	63	63
80%	58	53	48	46	47	50	55	60	61	61	62	63
90%	57	52	47	46	46	49	54	59	60	61	61	61
Long Term												
Full Simulation Period ^b	59	54	49	47	48	52	56	61	62	63	64	65
Water Year Types ^c												
Wet (32%)	56	51	47	46	47	50	55	60	63	63	63	63
Above Normal (16%)	59	54	48	47	48	51	56	61	62	61	62	63
Below Normal (13%)	58	53	48	47	49	53	57	60	61	62	62	64
Dry (24%)	59	54	49	47	49	53	57	61	62	63	65	66
Critical (15%)	61	55	49	47	50	54	58	62	64	66	67	69

Alternative 5												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	62	56	50	48	50	55	59	63	65	65	67	68
20%	60	55	50	48	50	54	58	63	64	64	66	67
30%	60	55	49	47	49	53	58	62	63	64	65	66
40%	59	54	49	47	48	53	57	62	63	63	64	65
50%	58	54	48	47	48	52	57	61	63	62	64	63
60%	58	53	48	46	48	51	56	61	62	62	64	61
70%	58	53	48	46	48	51	56	60	62	62	63	60
80%	58	53	48	46	47	50	55	60	61	61	63	59
90%	57	52	47	46	46	49	54	59	61	61	62	58
Long Term												
Full Simulation Period ^b	59	54	49	47	48	52	57	61	63	63	64	63
Water Year Types ^c												
Wet (32%)	56	52	46	46	47	50	55	60	63	63	64	59
Above Normal (16%)	59	54	49	47	48	51	56	61	62	61	63	61
Below Normal (13%)	58	54	49	47	49	53	57	61	62	62	63	64
Dry (24%)	59	54	49	47	49	53	58	62	62	63	65	66
Critical (15%)	61	55	49	47	50	54	58	63	64	65	67	69

Alternative 5 minus Second Basis of Comparison												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	0.4	0.2	-0.2	0.2	0.0	0.0	0.1	0.2	0.5	-0.2	-0.1	0.5
0.2	0.0	0.3	0.2	-0.1	0.1	0.0	0.0	0.6	0.1	0.1	0.1	0.1
0.3	-0.1	0.3	0.1	0.0	0.0	0.1	0.0	0.1	0.4	0.1	0.2	0.0
0.4	-0.2	0.6	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.0	0.0	-0.5
0.5	-0.5	0.4	0.1	0.0	0.0	0.2	0.2	0.3	0.5	-0.3	0.1	-1.6
0.6	-0.3	0.4	0.0	0.0	0.0	0.1	0.2	0.3	0.6	0.2	0.4	-3.3
0.7	-0.2	0.4	-0.1	0.0	0.0	0.1	0.2	0.4	0.7	-0.1	0.2	-3.6
0.8	0.0	0.2	-0.1	0.0	0.0	0.0	0.0	0.3	0.6	0.0	0.6	-3.8
0.9	-0.1	0.1	-0.1	0.0	-0.1	-0.1	0.0	0.2	0.5	-0.1	0.4	-3.2
Long Term												
Full Simulation Period ^b	0.0	0.3	0.0	0.0	0.0	0.0	0.1	0.3	0.5	-0.1	0.2	-1.7
Water Year Types ^c												
Wet (32%)	-0.1	0.3	-0.2	0.0	0.0	0.0	0.0	0.1	0.1	-0.1	0.6	-4.1
Above Normal (16%)	-0.1	0.3	0.2	0.0	0.0	0.1	0.0	0.3	0.6	-0.1	0.5	-2.8
Below Normal (13%)	0.0	0.4	0.2	0.0	0.0	0.3	0.2	0.4	0.7	0.0	0.8	0.0
Dry (24%)	0.0	0.2	0.1	0.0	0.0	0.0	0.2	0.5	0.6	0.1	-0.5	-0.1
Critical (15%)	0.1	0.2	0.0	-0.1	-0.1	0.0	0.2	0.3	0.8	-0.3	-0.2	0.5

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

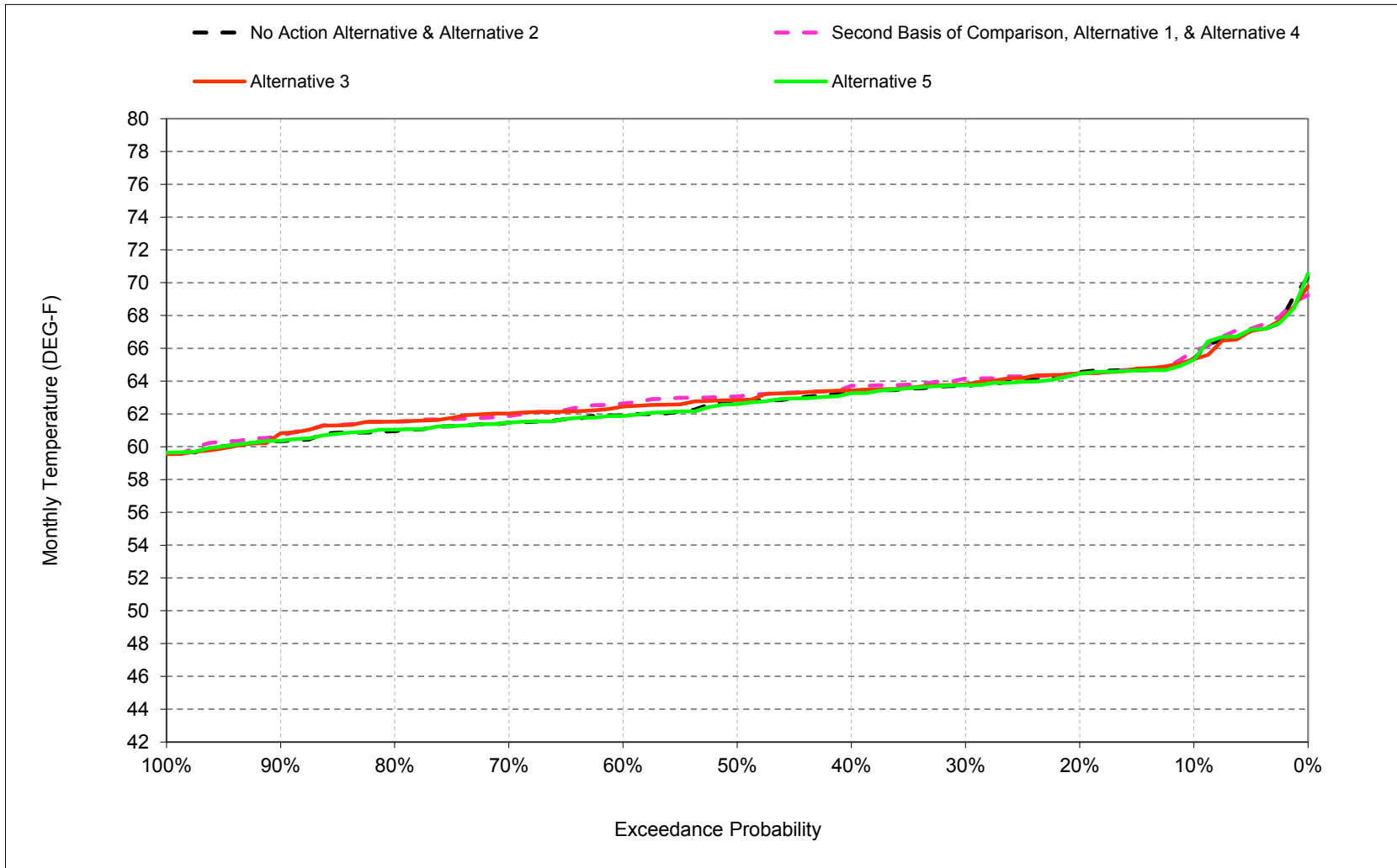
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

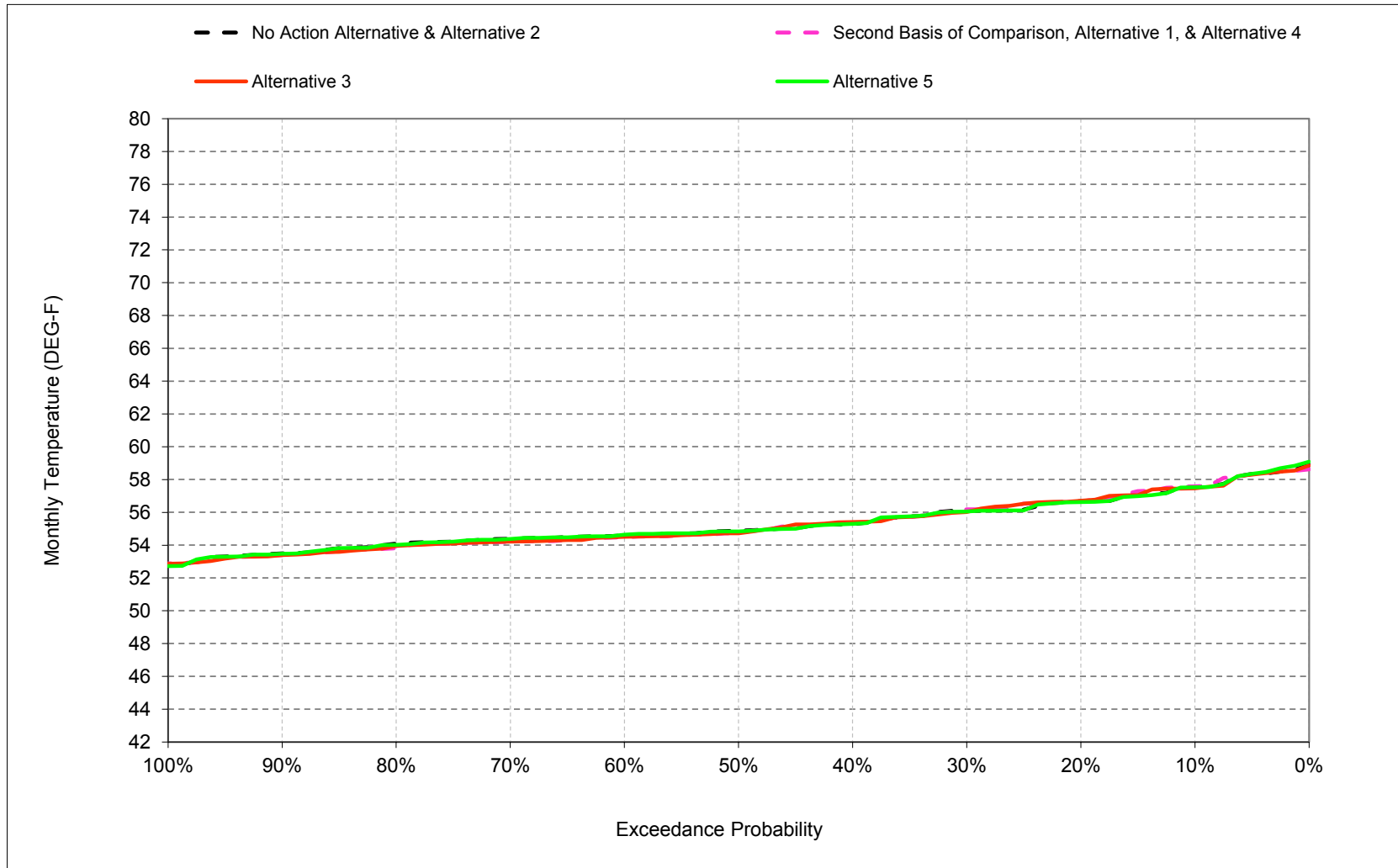
B.11. Sacramento River at Knights Landing Temperature

Figure B-11-1. Sacramento River at Knights Landing, October



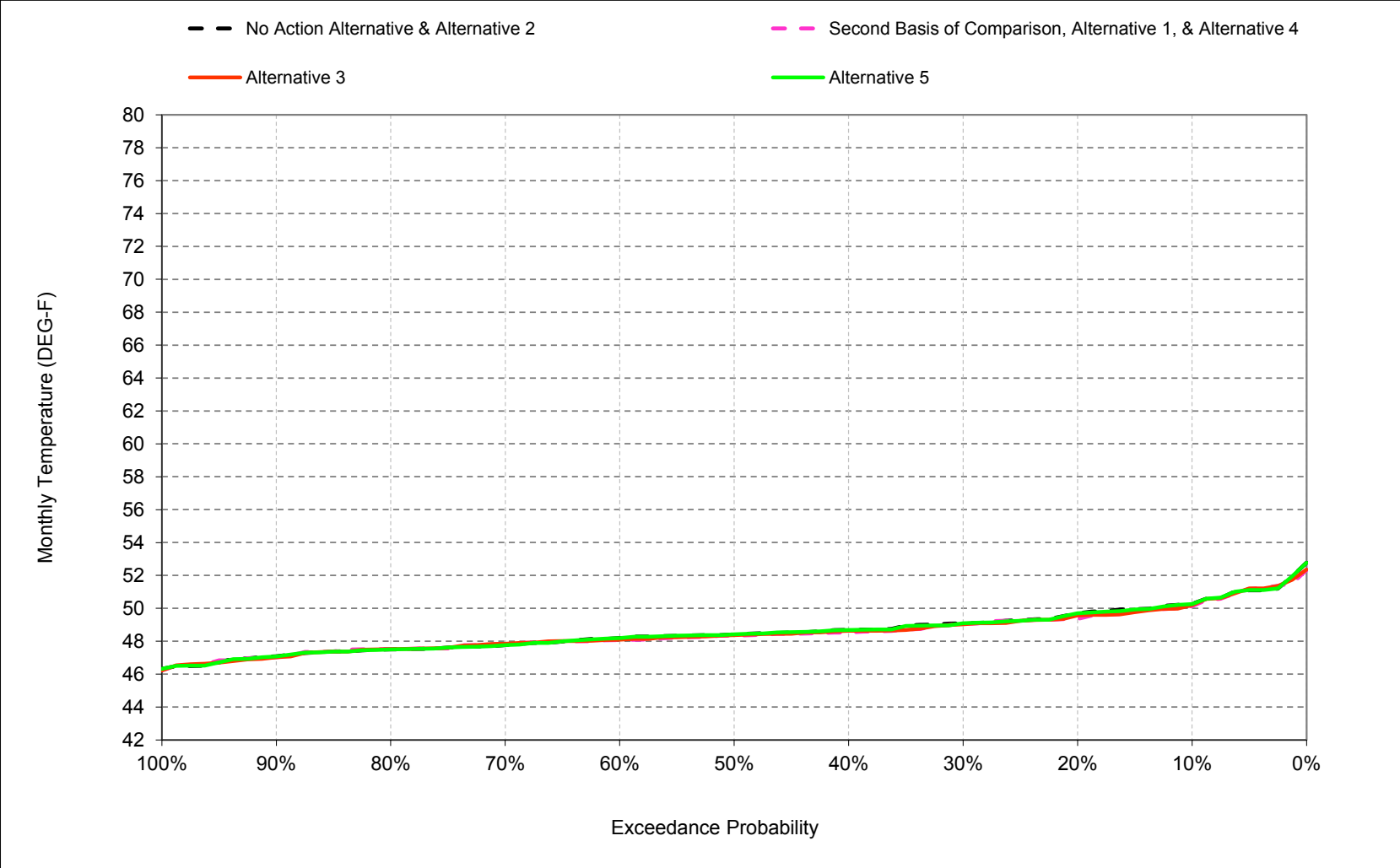
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-11-2. Sacramento River at Knights Landing, November



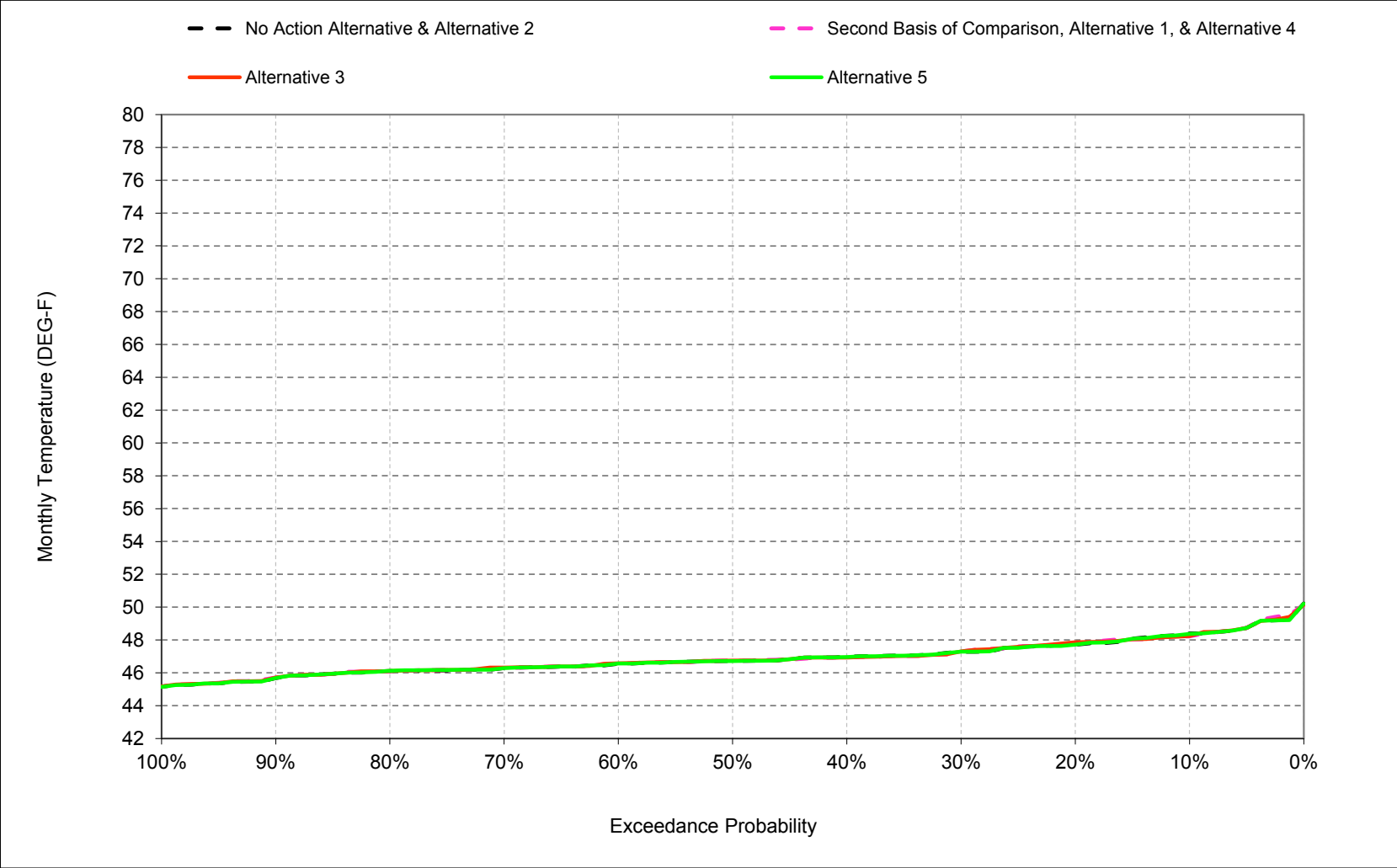
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-11-3. Sacramento River at Knights Landing, December



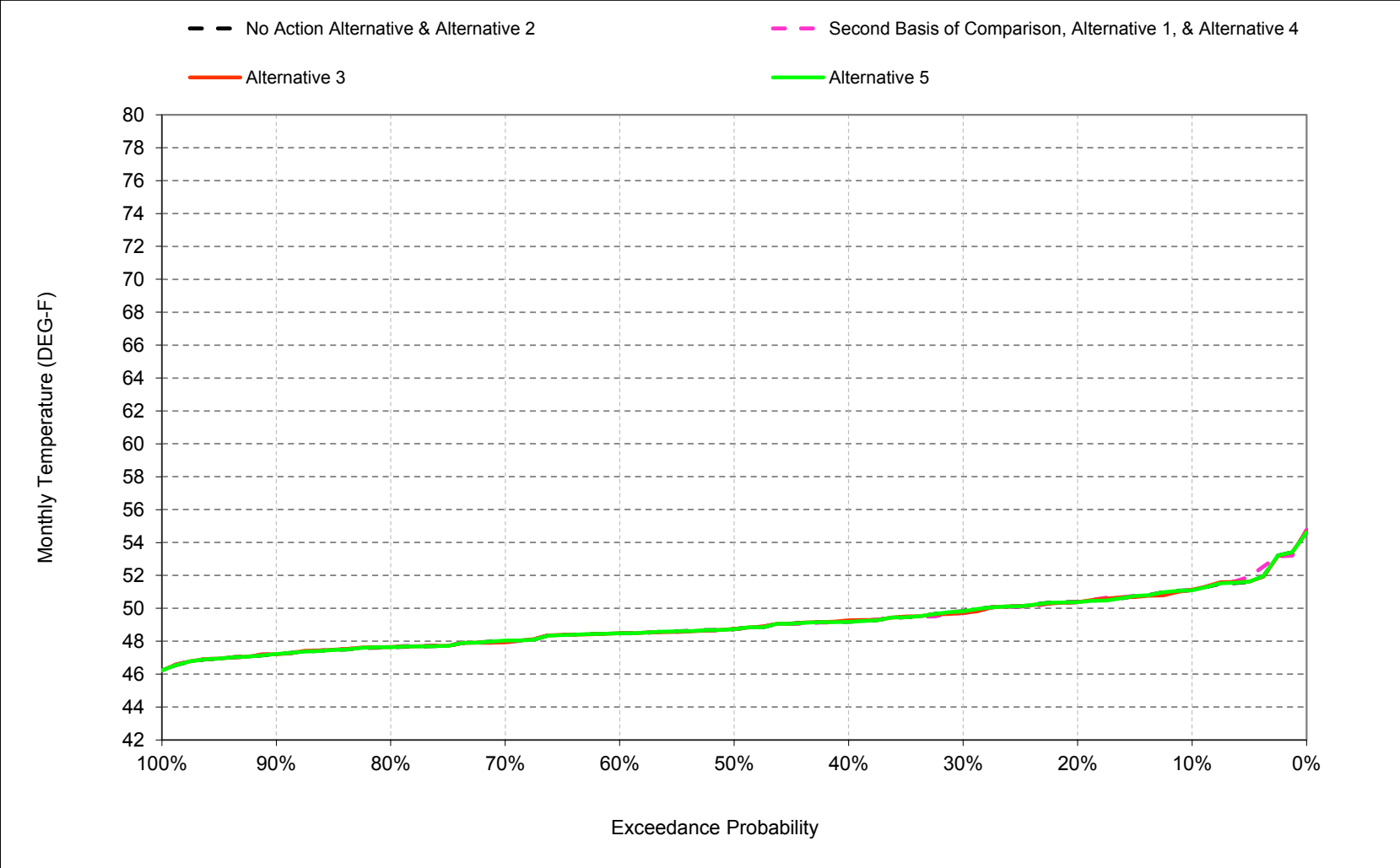
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-11-4. Sacramento River at Knights Landing, January



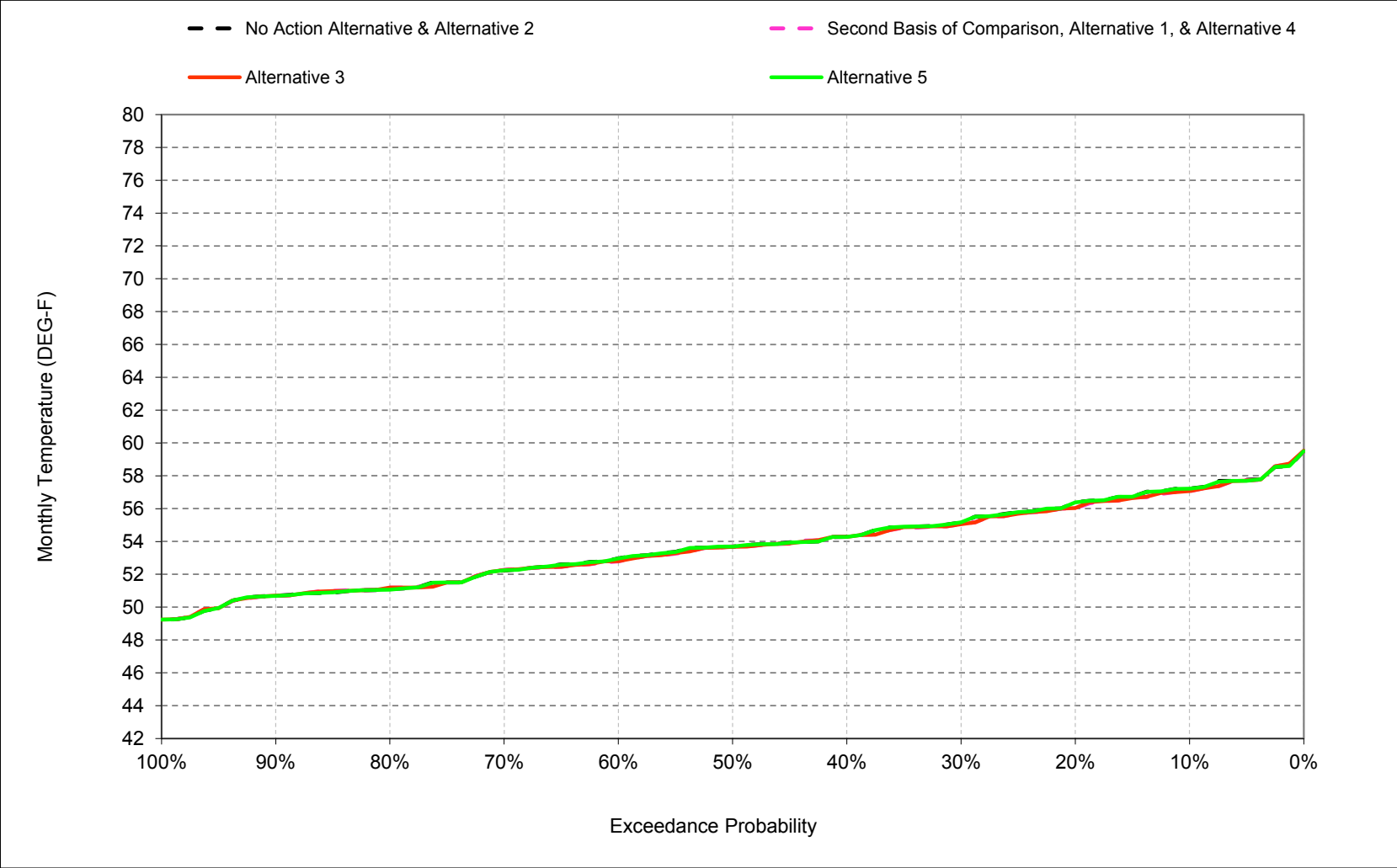
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-11-5. Sacramento River at Knights Landing, February



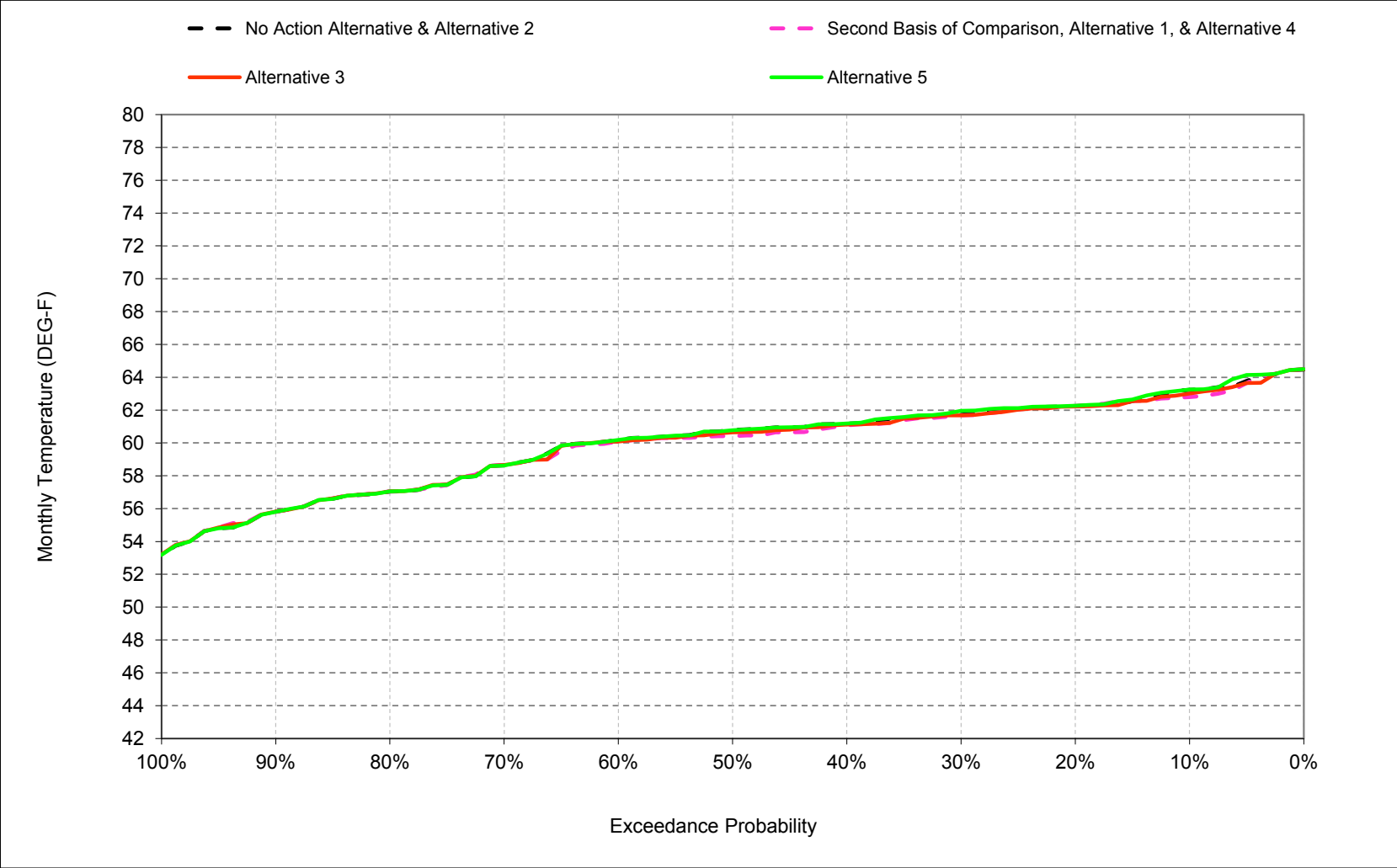
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-11-6. Sacramento River at Knights Landing, March



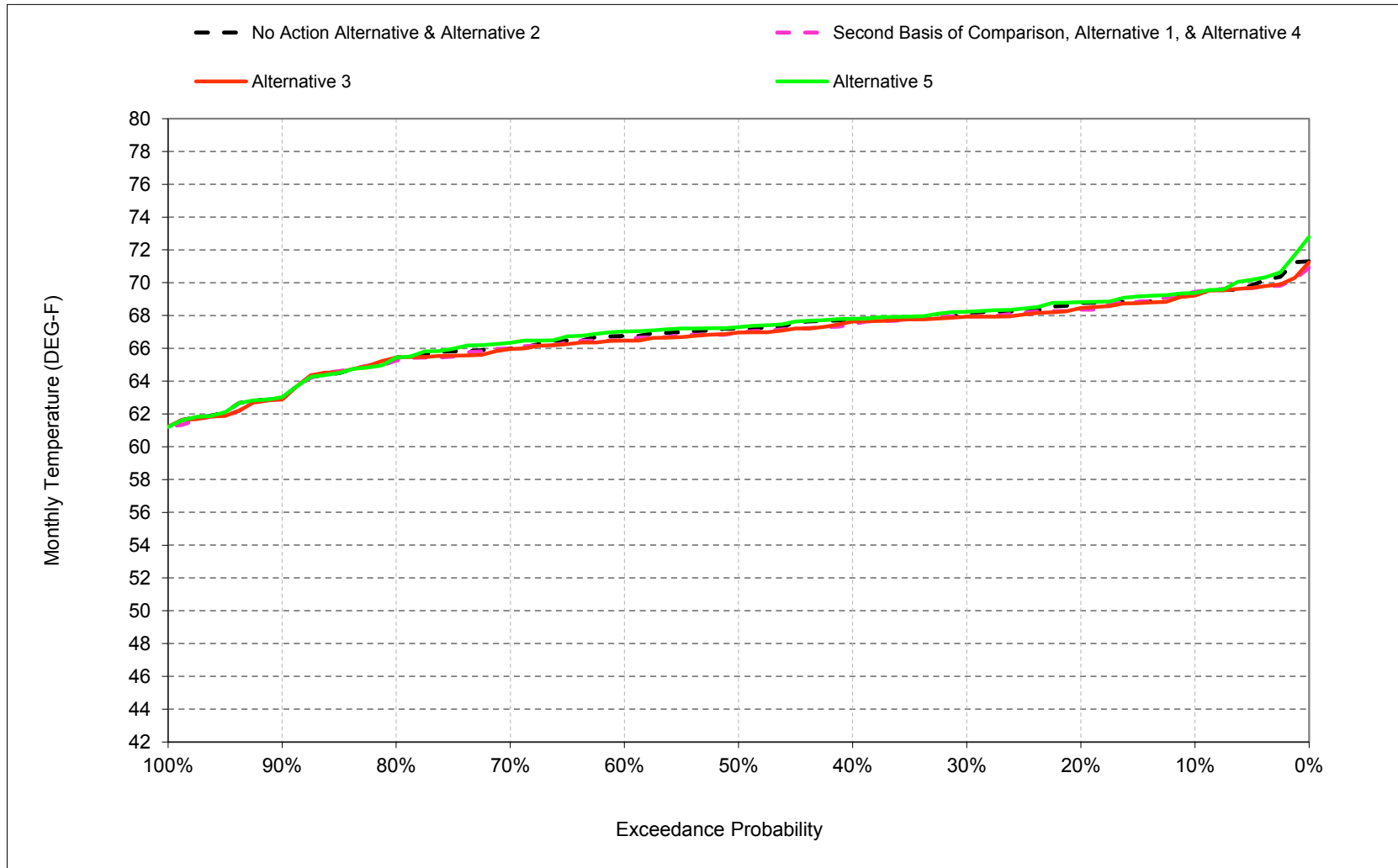
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-11-7. Sacramento River at Knights Landing, April



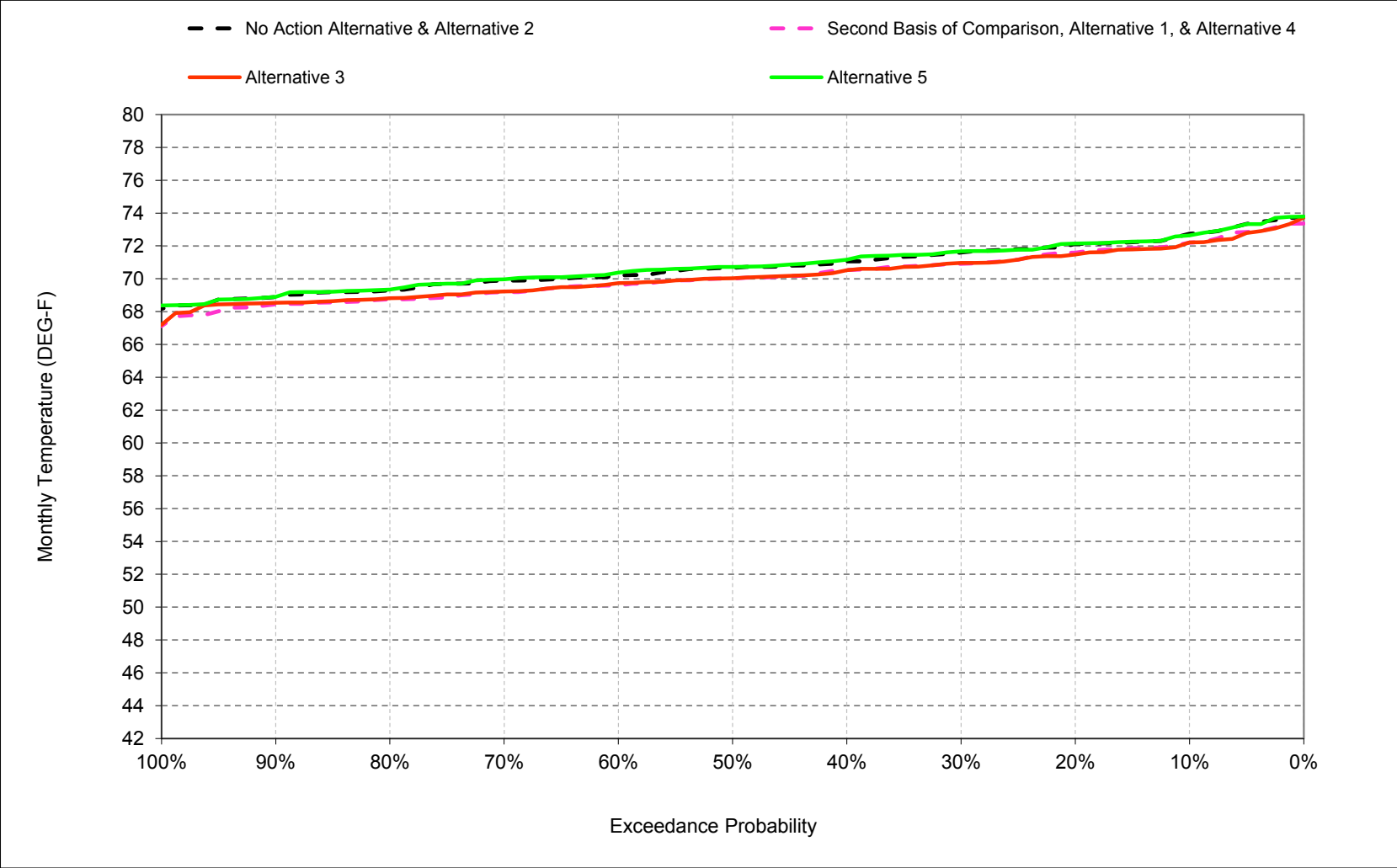
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-11-8. Sacramento River at Knights Landing, May



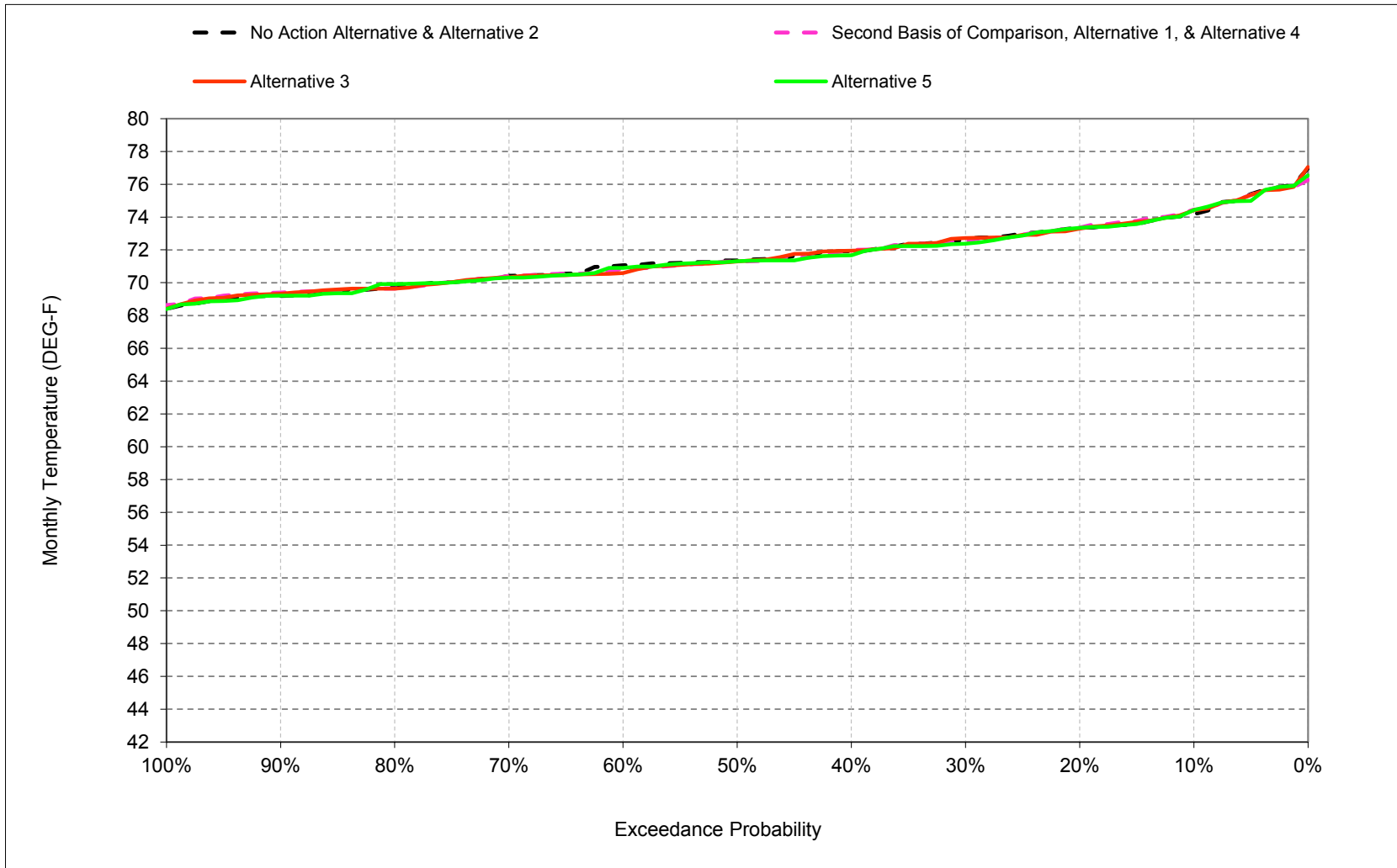
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-11-9. Sacramento River at Knights Landing, June



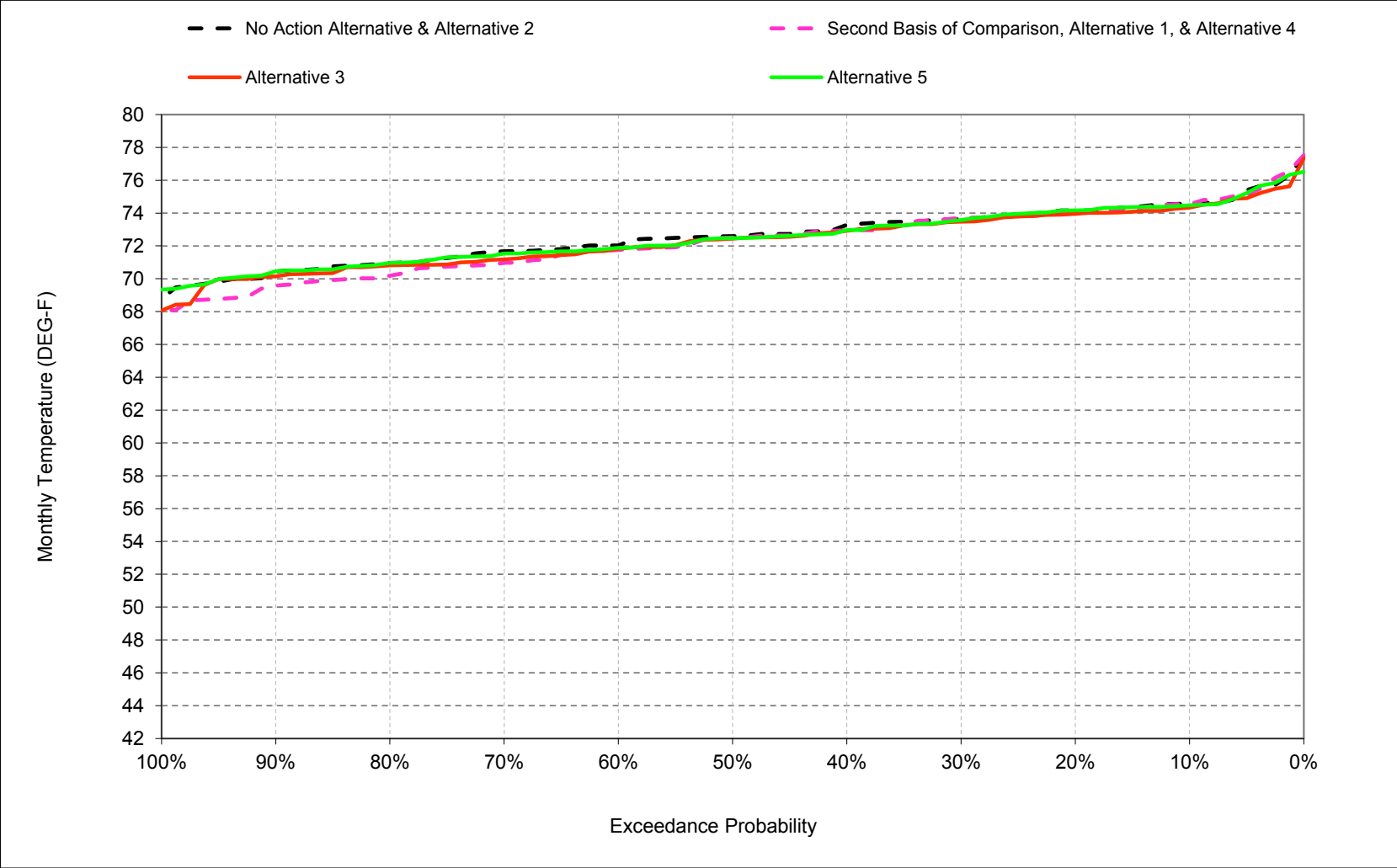
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-11-10. Sacramento River at Knights Landing, July



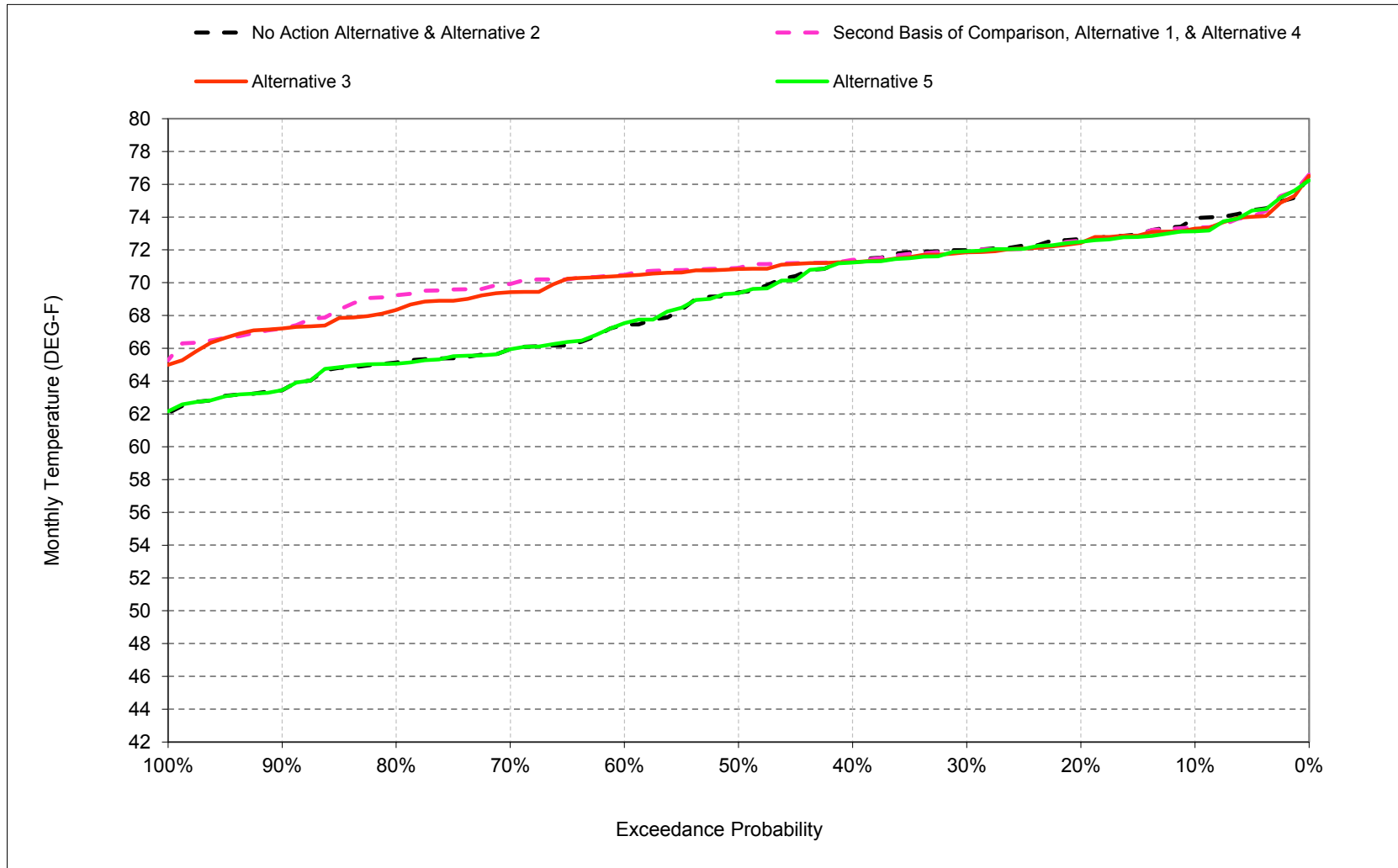
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-11-11. Sacramento River at Knights Landing, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-11-12. Sacramento River at Knights Landing, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-11-1. Sacramento River at Knights Landing, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	65	58	50	48	51	57	63	69	73	74	75	74
20%	65	57	50	48	50	56	62	69	72	73	74	73
30%	64	56	49	47	50	55	62	68	72	73	74	72
40%	63	55	49	47	49	54	61	68	71	72	73	71
50%	63	55	48	47	49	54	61	67	71	71	73	69
60%	62	55	48	47	48	53	60	67	70	71	72	67
70%	61	54	48	46	48	52	59	66	70	70	72	66
80%	61	54	48	46	48	51	57	65	69	70	71	65
90%	60	53	47	46	47	51	56	63	69	69	70	63
Long Term												
Full Simulation Period ^b	63	55	49	47	49	54	60	67	71	72	73	69
Water Year Types ^c												
Wet (32%)	60	53	46	46	48	52	57	65	70	72	72	65
Above Normal (16%)	63	55	49	47	48	53	59	67	71	70	72	67
Below Normal (13%)	62	54	48	47	49	55	62	67	70	71	71	71
Dry (24%)	63	55	49	47	50	55	61	68	71	72	73	72
Critical (15%)	65	57	49	47	51	57	63	68	72	74	74	74

Alternative 1												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	66	58	50	48	51	57	63	69	72	74	75	73
20%	64	57	49	48	50	56	62	68	72	73	74	73
30%	64	56	49	47	50	55	62	68	71	73	74	72
40%	64	55	49	47	49	54	61	67	71	72	73	71
50%	63	55	48	47	49	54	60	67	70	71	72	71
60%	63	54	48	47	48	53	60	66	70	71	72	70
70%	62	54	48	46	48	52	59	66	69	70	71	70
80%	62	54	48	46	48	51	57	65	69	70	70	69
90%	61	53	47	46	47	51	56	63	68	69	69	67
Long Term												
Full Simulation Period ^b	63	55	49	47	49	54	60	67	70	72	72	71
Water Year Types ^c												
Wet (32%)	60	53	46	46	48	52	57	65	70	72	72	69
Above Normal (16%)	63	55	49	47	48	52	59	66	70	70	71	70
Below Normal (13%)	62	54	48	47	49	55	61	67	69	70	70	70
Dry (24%)	63	55	49	47	50	55	61	68	70	71	73	72
Critical (15%)	65	57	49	47	51	57	63	68	71	74	74	73

Alternative 1 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	0.5	0.0	-0.1	-0.2	0.0	-0.2	-0.4	0.1	-0.5	0.3	0.0	-0.5
0.2	-0.1	0.0	-0.3	0.1	0.0	-0.3	0.0	-0.4	-0.5	0.0	-0.1	-0.1
0.3	0.5	0.1	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.7	-0.1	0.1	-0.1
0.4	0.4	0.1	-0.2	0.0	0.0	0.0	-0.1	-0.3	-0.5	0.0	-0.2	0.1
0.5	0.3	-0.1	-0.1	0.0	0.0	0.0	-0.3	-0.3	-0.6	-0.1	-0.1	1.6
0.6	0.7	-0.1	-0.1	0.0	0.0	-0.1	-0.1	-0.3	-0.6	-0.3	-0.3	3.2
0.7	0.4	-0.2	0.1	0.0	-0.1	0.0	0.0	0.0	-0.7	0.0	-0.8	4.1
0.8	0.6	-0.3	0.0	0.0	0.0	0.0	0.0	0.0	-0.5	0.0	-0.8	4.1
0.9	0.3	-0.1	-0.1	0.1	0.1	0.0	0.0	-0.1	-0.5	0.2	-0.7	3.7
Long Term												
Full Simulation Period ^b	0.3	0.0	-0.1	0.0	0.0	-0.1	-0.1	-0.2	-0.6	0.0	-0.4	1.8
Water Year Types ^c												
Wet (32%)	0.4	0.0	0.1	0.0	0.0	0.0	0.0	-0.1	-0.1	0.2	-0.7	4.6
Above Normal (16%)	0.3	-0.1	-0.1	0.0	0.0	-0.1	0.0	-0.2	-0.7	0.0	-0.6	2.8
Below Normal (13%)	0.4	-0.1	-0.2	0.0	0.0	-0.3	-0.3	-0.4	-0.9	-0.1	-0.7	-0.2
Dry (24%)	0.2	0.0	-0.1	0.0	0.0	0.0	-0.2	-0.2	-0.7	-0.3	0.3	-0.1
Critical (15%)	0.2	0.0	0.0	0.1	0.1	0.0	0.0	0.0	-0.7	0.1	0.0	-0.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-11-2. Sacramento River at Knights Landing, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	65	58	50	48	51	57	63	69	73	74	75	74
20%	65	57	50	48	50	56	62	69	72	73	74	73
30%	64	56	49	47	50	55	62	68	72	73	74	72
40%	63	55	49	47	49	54	61	68	71	72	73	71
50%	63	55	48	47	49	54	61	67	71	71	73	69
60%	62	55	48	47	48	53	60	67	70	71	72	67
70%	61	54	48	46	48	52	59	66	70	70	72	66
80%	61	54	48	46	48	51	57	65	69	70	71	65
90%	60	53	47	46	47	51	56	63	69	69	70	63
Long Term												
Full Simulation Period ^b	63	55	49	47	49	54	60	67	71	72	73	69
Water Year Types ^c												
Wet (32%)	60	53	46	46	48	52	57	65	70	72	72	65
Above Normal (16%)	63	55	49	47	48	53	59	67	71	70	72	67
Below Normal (13%)	62	54	48	47	49	55	62	67	70	71	71	71
Dry (24%)	63	55	49	47	50	55	61	68	71	72	73	72
Critical (15%)	65	57	49	47	51	57	63	68	72	74	74	74

Alternative 3												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	65	57	50	48	51	57	63	69	72	74	74	73
20%	64	57	50	48	50	56	62	68	71	73	74	72
30%	64	56	49	47	50	55	62	68	71	73	73	72
40%	63	55	49	47	49	54	61	68	70	72	73	71
50%	63	55	48	47	49	54	61	67	70	71	72	71
60%	62	55	48	47	48	53	60	66	70	71	72	70
70%	62	54	48	46	48	52	59	66	69	70	71	69
80%	62	54	48	46	48	51	57	65	69	70	71	68
90%	61	53	47	46	47	51	56	63	69	69	70	67
Long Term												
Full Simulation Period ^b	63	55	49	47	49	54	60	67	70	72	72	70
Water Year Types ^c												
Wet (32%)	60	53	46	46	48	52	57	65	70	72	72	69
Above Normal (16%)	63	55	49	47	48	52	59	66	70	70	71	70
Below Normal (13%)	62	54	48	47	49	55	61	67	69	70	71	69
Dry (24%)	63	55	49	47	50	55	61	68	70	71	73	72
Critical (15%)	65	57	49	47	51	57	63	68	71	74	74	73

Alternative 3 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	0.0	-0.1	-0.1	-0.1	0.0	-0.2	-0.2	-0.2	-0.5	0.2	-0.3	-0.6
0.2	-0.1	0.0	-0.1	0.1	0.0	-0.3	0.0	-0.3	-0.6	-0.1	-0.2	-0.3
0.3	0.1	-0.1	-0.1	0.0	-0.1	-0.1	0.0	-0.1	-0.6	0.1	-0.2	-0.2
0.4	0.1	0.1	-0.1	0.0	0.1	0.0	-0.1	-0.2	-0.6	0.0	-0.3	0.0
0.5	0.1	-0.2	0.0	0.0	0.0	0.0	-0.1	-0.3	-0.6	-0.1	-0.2	1.5
0.6	0.5	-0.1	-0.1	0.1	0.0	-0.1	0.0	-0.3	-0.5	-0.5	-0.3	3.1
0.7	0.6	-0.2	0.1	0.1	-0.1	0.0	0.0	-0.1	-0.7	0.0	-0.5	3.7
0.8	0.6	-0.1	0.0	0.0	0.0	0.0	0.0	0.2	-0.5	0.0	-0.1	3.1
0.9	0.5	-0.1	-0.1	0.0	0.0	0.0	0.0	-0.1	-0.3	0.1	0.0	3.8
Long Term												
Full Simulation Period ^b	0.2	0.0	-0.1	0.0	0.0	-0.1	-0.1	-0.2	-0.5	0.0	-0.3	1.6
Water Year Types ^c												
Wet (32%)	0.4	0.0	0.1	0.0	0.0	0.0	0.0	-0.1	-0.2	0.1	-0.4	4.4
Above Normal (16%)	0.1	-0.1	-0.1	0.0	0.0	-0.1	0.0	-0.3	-0.6	0.0	-0.2	2.9
Below Normal (13%)	0.4	-0.1	-0.2	0.0	0.0	-0.3	-0.2	-0.4	-0.8	-0.1	-0.2	-1.4
Dry (24%)	0.1	0.0	-0.1	0.0	0.0	0.0	-0.1	-0.2	-0.7	-0.3	-0.2	-0.1
Critical (15%)	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.6	0.4	-0.2	-0.4

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-11-3. Sacramento River at Knights Landing, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	65	58	50	48	51	57	63	69	73	74	75	74
20%	65	57	50	48	50	56	62	69	72	73	74	73
30%	64	56	49	47	50	55	62	68	72	73	74	72
40%	63	55	49	47	49	54	61	68	71	72	73	71
50%	63	55	48	47	49	54	61	67	71	71	73	69
60%	62	55	48	47	48	53	60	67	70	71	72	67
70%	61	54	48	46	48	52	59	66	70	70	72	66
80%	61	54	48	46	48	51	57	65	69	70	71	65
90%	60	53	47	46	47	51	56	63	69	69	70	63
Long Term												
Full Simulation Period ^b	63	55	49	47	49	54	60	67	71	72	73	69
Water Year Types ^c												
Wet (32%)	60	53	46	46	48	52	57	65	70	72	72	65
Above Normal (16%)	63	55	49	47	48	53	59	67	71	70	72	67
Below Normal (13%)	62	54	48	47	49	55	62	67	70	71	71	71
Dry (24%)	63	55	49	47	50	55	61	68	71	72	73	72
Critical (15%)	65	57	49	47	51	57	63	68	72	74	74	74

Alternative 5												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	65	58	50	48	51	57	63	69	73	74	74	73
20%	64	57	50	48	50	56	62	69	72	73	74	72
30%	64	56	49	47	50	55	62	68	72	72	74	72
40%	63	55	49	47	49	54	61	68	71	72	73	71
50%	63	55	48	47	49	54	61	67	71	71	72	69
60%	62	55	48	47	48	53	60	67	70	71	72	67
70%	61	54	48	46	48	52	59	66	70	70	71	66
80%	61	54	47	46	48	51	57	65	69	70	71	65
90%	60	53	47	45	47	51	56	63	69	69	70	63
Long Term												
Full Simulation Period ^b	63	55	49	47	49	54	60	67	71	72	72	69
Water Year Types ^c												
Wet (32%)	60	53	46	46	48	52	57	65	70	72	72	65
Above Normal (16%)	63	55	49	47	48	53	59	67	71	70	72	67
Below Normal (13%)	62	54	48	47	49	55	62	67	70	71	71	71
Dry (24%)	63	55	49	47	50	55	61	68	71	71	73	72
Critical (15%)	65	57	49	47	51	57	63	69	72	73	74	74

Alternative 5 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.2	-0.1	-0.8
0.2	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	-0.2
0.3	0.0	-0.1	0.0	0.0	0.0	0.0	0.2	0.2	0.1	-0.2	-0.1	-0.1
0.4	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-0.3	-0.3	-0.1
0.5	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	-0.1	-0.1	0.0
0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.2	-0.1	-0.2	0.0
0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.1	0.0	-0.2	0.0
0.8	0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0
0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	-0.1
Long Term												
Full Simulation Period ^b	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	-0.1	-0.1	-0.1
Water Year Types ^c												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Above Normal (16%)	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
Below Normal (13%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	-0.1
Dry (24%)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.0	-0.1	-0.3	-0.2
Critical (15%)	-0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3	-0.2	-0.3	-0.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-11-4. Sacramento River at Knights Landing, Monthly Temperature

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Second Basis of Comparison												
Probability of Exceedance ^a												
10%	66	58	50	48	51	57	63	69	72	74	75	73
20%	64	57	49	48	50	56	62	68	72	73	74	73
30%	64	56	49	47	50	55	62	68	71	73	74	72
40%	64	55	49	47	49	54	61	67	71	72	73	71
50%	63	55	48	47	49	54	60	67	70	71	72	71
60%	63	54	48	47	48	53	60	66	70	71	72	70
70%	62	54	48	46	48	52	59	66	69	70	71	70
80%	62	54	48	46	48	51	57	65	69	70	70	69
90%	61	53	47	46	47	51	56	63	68	69	69	67
Long Term												
Full Simulation Period ^b	63	55	49	47	49	54	60	67	70	72	72	71
Water Year Types ^c												
Wet (32%)	60	53	46	46	48	52	57	65	70	72	72	69
Above Normal (16%)	63	55	49	47	48	52	59	66	70	70	71	70
Below Normal (13%)	62	54	48	47	49	55	61	67	69	70	70	70
Dry (24%)	63	55	49	47	50	55	61	68	70	71	73	72
Critical (15%)	65	57	49	47	51	57	63	68	71	74	74	73

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
No Action Alternative												
Probability of Exceedance ^a												
10%	65	58	50	48	51	57	63	69	73	74	75	74
20%	65	57	50	48	50	56	62	69	72	73	74	73
30%	64	56	49	47	50	55	62	68	72	73	74	72
40%	63	55	49	47	49	54	61	68	71	72	73	71
50%	63	55	48	47	49	54	61	67	71	71	73	69
60%	62	55	48	47	48	53	60	67	70	71	72	67
70%	61	54	48	46	48	52	59	66	70	70	72	66
80%	61	54	48	46	48	51	57	65	69	70	71	65
90%	60	53	47	46	47	51	56	63	69	69	70	63
Long Term												
Full Simulation Period ^b	63	55	49	47	49	54	60	67	71	72	73	69
Water Year Types ^c												
Wet (32%)	60	53	46	46	48	52	57	65	70	72	72	65
Above Normal (16%)	63	55	49	47	48	53	59	67	71	70	72	67
Below Normal (13%)	62	54	48	47	49	55	62	67	70	71	71	71
Dry (24%)	63	55	49	47	50	55	61	68	71	72	73	72
Critical (15%)	65	57	49	47	51	57	63	68	72	74	74	74

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
No Action Alternative minus Second Basis of Comparison												
Probability of Exceedance ^a												
0.1	-0.5	0.0	0.1	0.2	0.0	0.2	0.4	-0.1	0.5	-0.3	0.0	0.5
0.2	0.1	0.0	0.3	-0.1	0.0	0.3	0.0	0.4	0.5	0.0	0.1	0.1
0.3	-0.5	-0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.7	0.1	-0.1	0.1
0.4	-0.4	-0.1	0.2	0.0	0.0	0.0	0.1	0.3	0.5	0.0	0.2	-0.1
0.5	-0.3	0.1	0.1	0.0	0.0	0.0	0.3	0.3	0.6	0.1	0.1	-1.6
0.6	-0.7	0.1	0.1	0.0	0.0	0.1	0.1	0.3	0.6	0.3	0.3	-3.2
0.7	-0.4	0.2	-0.1	0.0	0.1	0.0	0.0	0.0	0.7	0.0	0.8	-4.1
0.8	-0.6	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.8	-4.1
0.9	-0.3	0.1	0.1	-0.1	-0.1	0.0	0.0	0.1	0.5	-0.2	0.7	-3.7
Long Term												
Full Simulation Period ^b	-0.3	0.0	0.1	0.0	0.0	0.1	0.1	0.2	0.6	0.0	0.4	-1.8
Water Year Types ^c												
Wet (32%)	-0.4	0.0	-0.1	0.0	0.0	0.0	0.0	0.1	0.1	-0.2	0.7	-4.6
Above Normal (16%)	-0.3	0.1	0.1	0.0	0.0	0.1	0.0	0.2	0.7	0.0	0.6	-2.8
Below Normal (13%)	-0.4	0.1	0.2	0.0	0.0	0.3	0.3	0.4	0.9	0.1	0.7	0.2
Dry (24%)	-0.2	0.0	0.1	0.0	0.0	0.0	0.2	0.2	0.7	0.3	-0.3	0.1
Critical (15%)	-0.2	0.0	0.0	-0.1	-0.1	0.0	0.0	0.0	0.7	-0.1	0.0	0.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-11-5. Sacramento River at Knights Landing, Monthly Temperature

Second Basis of Comparison												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
10%	66	58	50	48	51	57	63	69	72	74	75	73
20%	64	57	49	48	50	56	62	68	72	73	74	73
30%	64	56	49	47	50	55	62	68	71	73	74	72
40%	64	55	49	47	49	54	61	67	71	72	73	71
50%	63	55	48	47	49	54	60	67	70	71	72	71
60%	63	54	48	47	48	53	60	66	70	71	72	70
70%	62	54	48	46	48	52	59	66	69	70	71	70
80%	62	54	48	46	48	51	57	65	69	70	70	69
90%	61	53	47	46	47	51	56	63	68	69	69	67
Long Term												
Full Simulation Period ^b	63	55	49	47	49	54	60	67	70	72	72	71
Water Year Types^c												
Wet (32%)	60	53	46	46	48	52	57	65	70	72	72	69
Above Normal (16%)	63	55	49	47	48	52	59	66	70	70	71	70
Below Normal (13%)	62	54	48	47	49	55	61	67	69	70	70	70
Dry (24%)	63	55	49	47	50	55	61	68	70	71	73	72
Critical (15%)	65	57	49	47	51	57	63	68	71	74	74	73

Alternative 3												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
10%	65	57	50	48	51	57	63	69	72	74	74	73
20%	64	57	50	48	50	56	62	68	71	73	74	72
30%	64	56	49	47	50	55	62	68	71	73	73	72
40%	63	55	49	47	49	54	61	68	70	72	73	71
50%	63	55	48	47	49	54	61	67	70	71	72	71
60%	62	55	48	47	48	53	60	66	70	71	72	70
70%	62	54	48	46	48	52	59	66	69	70	71	69
80%	62	54	48	46	48	51	57	65	69	70	71	68
90%	61	53	47	46	47	51	56	63	69	69	70	67
Long Term												
Full Simulation Period ^b	63	55	49	47	49	54	60	67	70	72	72	70
Water Year Types^c												
Wet (32%)	60	53	46	46	48	52	57	65	70	72	72	69
Above Normal (16%)	63	55	49	47	48	52	59	66	70	70	71	70
Below Normal (13%)	62	54	48	47	49	55	61	67	69	70	71	69
Dry (24%)	63	55	49	47	50	55	61	68	70	71	73	72
Critical (15%)	65	57	49	47	51	57	63	68	71	74	74	73

Alternative 3 minus Second Basis of Comparison												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
0.1	-0.5	-0.1	0.1	0.0	0.0	0.0	0.2	-0.2	0.0	0.0	-0.2	-0.1
0.2	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.1	-0.1	-0.1	-0.1	-0.2
0.3	-0.4	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	-0.2	-0.1
0.4	-0.3	0.0	0.1	0.0	0.1	0.0	0.1	0.2	-0.1	0.0	-0.1	-0.1
0.5	-0.2	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	-0.1	-0.1
0.6	-0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	-0.2	0.0	-0.1
0.7	0.1	0.0	0.0	0.1	0.0	0.0	0.0	-0.1	0.0	0.0	0.3	-0.5
0.8	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.7	-1.0
0.9	0.2	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.2	-0.1	0.7	0.0
Long Term												
Full Simulation Period ^b	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-0.2
Water Year Types^c												
Wet (32%)	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	0.3	-0.2
Above Normal (16%)	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.0	0.4	0.0
Below Normal (13%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.5	-1.2
Dry (24%)	-0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	-0.1	-0.5	-0.1
Critical (15%)	-0.2	0.0	0.0	0.0	-0.1	0.0	0.1	0.0	0.1	0.2	-0.2	0.0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-11-6. Sacramento River at Knights Landing, Monthly Temperature

Second Basis of Comparison												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	66	58	50	48	51	57	63	69	72	74	75	73
20%	64	57	49	48	50	56	62	68	72	73	74	73
30%	64	56	49	47	50	55	62	68	71	73	74	72
40%	64	55	49	47	49	54	61	67	71	72	73	71
50%	63	55	48	47	49	54	60	67	70	71	72	71
60%	63	54	48	47	48	53	60	66	70	71	72	70
70%	62	54	48	46	48	52	59	66	69	70	71	70
80%	62	54	48	46	48	51	57	65	69	70	70	69
90%	61	53	47	46	47	51	56	63	68	69	69	67
Long Term												
Full Simulation Period ^b	63	55	49	47	49	54	60	67	70	72	72	71
Water Year Types ^c												
Wet (32%)	60	53	46	46	48	52	57	65	70	72	72	69
Above Normal (16%)	63	55	49	47	48	52	59	66	70	70	71	70
Below Normal (13%)	62	54	48	47	49	55	61	67	69	70	70	70
Dry (24%)	63	55	49	47	50	55	61	68	70	71	73	72
Critical (15%)	65	57	49	47	51	57	63	68	71	74	74	73

Alternative 5												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	65	58	50	48	51	57	63	69	73	74	74	73
20%	64	57	50	48	50	56	62	69	72	73	74	72
30%	64	56	49	47	50	55	62	68	72	72	74	72
40%	63	55	49	47	49	54	61	68	71	72	73	71
50%	63	55	48	47	49	54	61	67	71	71	72	69
60%	62	55	48	47	48	53	60	67	70	71	72	67
70%	61	54	48	46	48	52	59	66	70	70	71	66
80%	61	54	47	46	48	51	57	65	69	70	71	65
90%	60	53	47	45	47	51	56	63	69	69	70	63
Long Term												
Full Simulation Period ^b	63	55	49	47	49	54	60	67	71	72	72	69
Water Year Types ^c												
Wet (32%)	60	53	46	46	48	52	57	65	70	72	72	65
Above Normal (16%)	63	55	49	47	48	53	59	67	71	70	72	67
Below Normal (13%)	62	54	48	47	49	55	62	67	70	71	71	71
Dry (24%)	63	55	49	47	50	55	61	68	71	71	73	72
Critical (15%)	65	57	49	47	51	57	63	69	72	73	74	74

Alternative 5 minus Second Basis of Comparison												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	-0.5	0.0	0.1	0.2	0.0	0.2	0.5	0.0	0.5	0.0	-0.1	-0.2
0.2	0.0	0.0	0.3	-0.1	0.0	0.3	0.0	0.5	0.6	0.0	0.1	-0.1
0.3	-0.4	-0.1	0.0	0.0	0.1	0.1	0.3	0.3	0.8	-0.1	-0.1	0.0
0.4	-0.4	-0.1	0.1	0.0	0.0	0.0	0.1	0.4	0.6	-0.3	-0.1	-0.1
0.5	-0.5	0.1	0.1	0.0	0.0	0.0	0.3	0.4	0.7	0.0	0.0	-1.6
0.6	-0.8	0.1	0.1	0.0	0.0	0.1	0.1	0.5	0.7	0.1	0.1	-3.1
0.7	-0.4	0.2	-0.1	0.0	0.1	0.0	0.0	0.3	0.8	0.0	0.6	-4.1
0.8	-0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.3	0.8	-4.1
0.9	-0.3	0.1	0.0	-0.1	-0.1	0.0	0.0	0.1	0.5	-0.2	0.8	-3.8
Long Term												
Full Simulation Period ^b	-0.4	0.0	0.1	0.0	0.0	0.1	0.1	0.3	0.6	-0.1	0.3	-1.9
Water Year Types ^c												
Wet (32%)	-0.4	0.0	-0.1	0.0	0.0	0.0	0.0	0.1	0.1	-0.2	0.7	-4.6
Above Normal (16%)	-0.4	0.1	0.1	0.0	0.0	0.1	0.0	0.3	0.8	0.0	0.6	-2.7
Below Normal (13%)	-0.4	0.1	0.2	0.0	0.0	0.3	0.3	0.4	1.0	0.1	1.0	0.1
Dry (24%)	-0.2	0.0	0.1	0.0	0.0	0.0	0.2	0.6	0.8	0.2	-0.6	-0.1
Critical (15%)	-0.3	0.0	0.0	-0.1	-0.1	0.0	0.2	0.3	1.0	-0.3	-0.3	0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

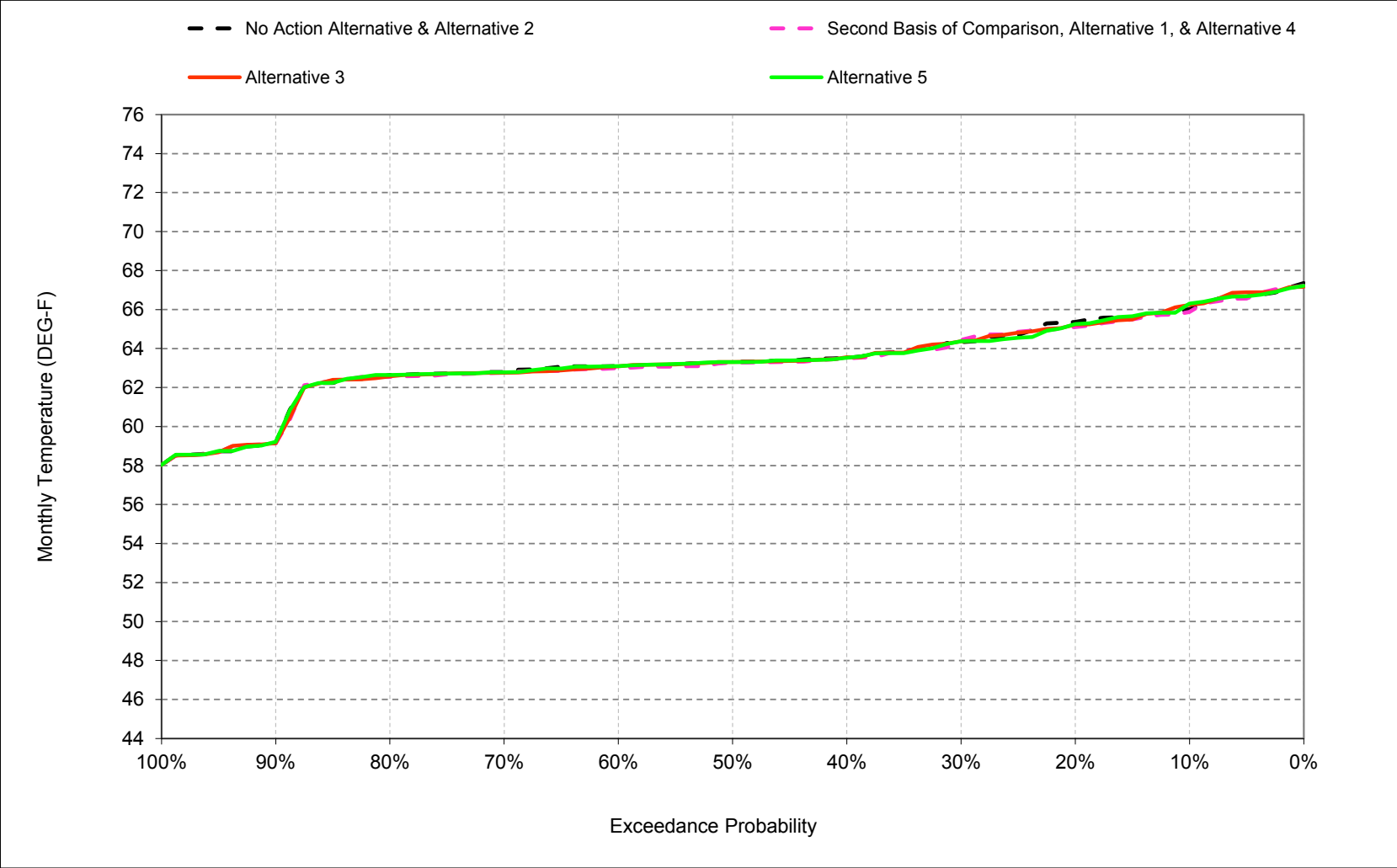
b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

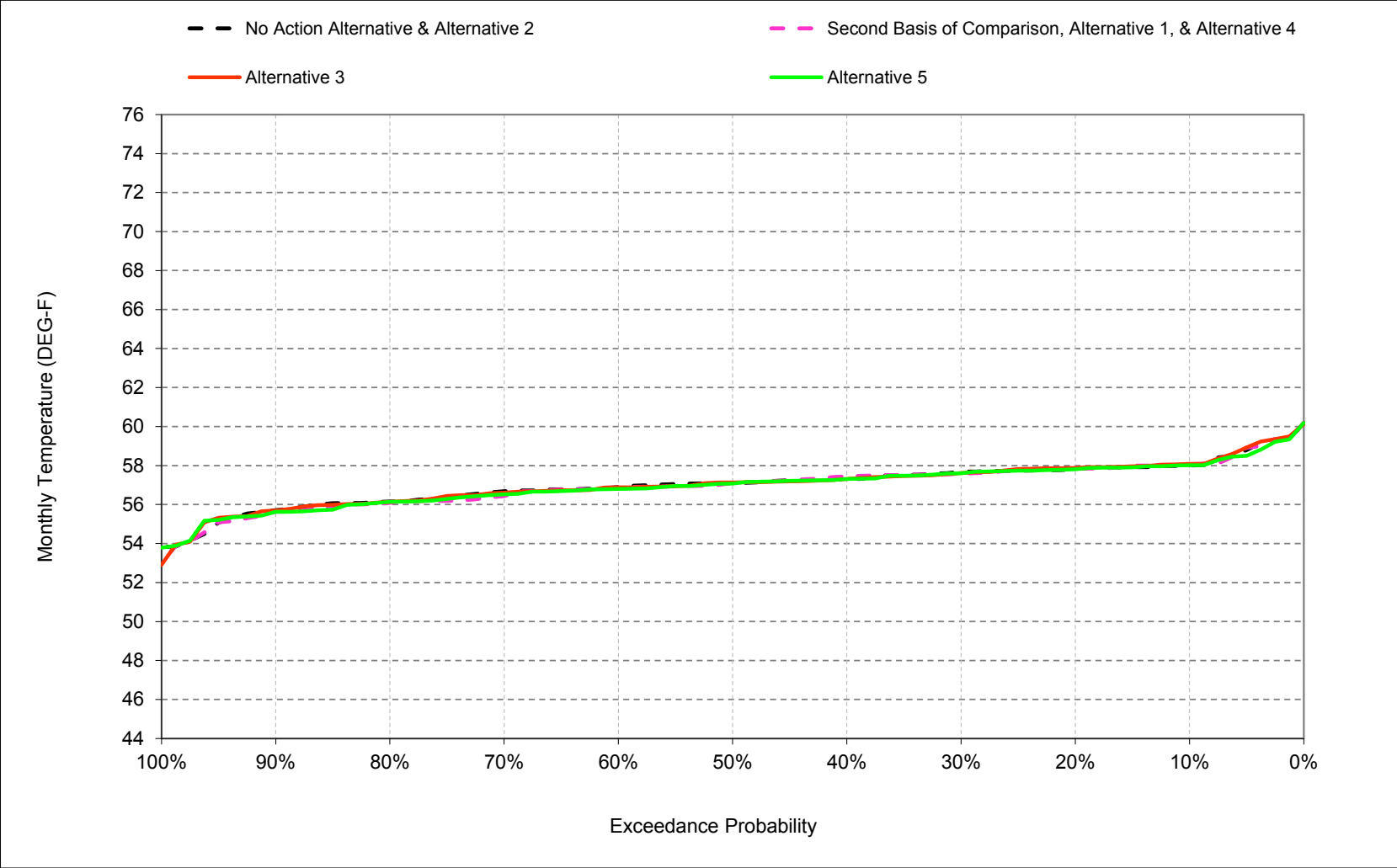
B.12. American River below Nimbus Temperature

Figure B-12-1. American River below Nimbus Dam, October



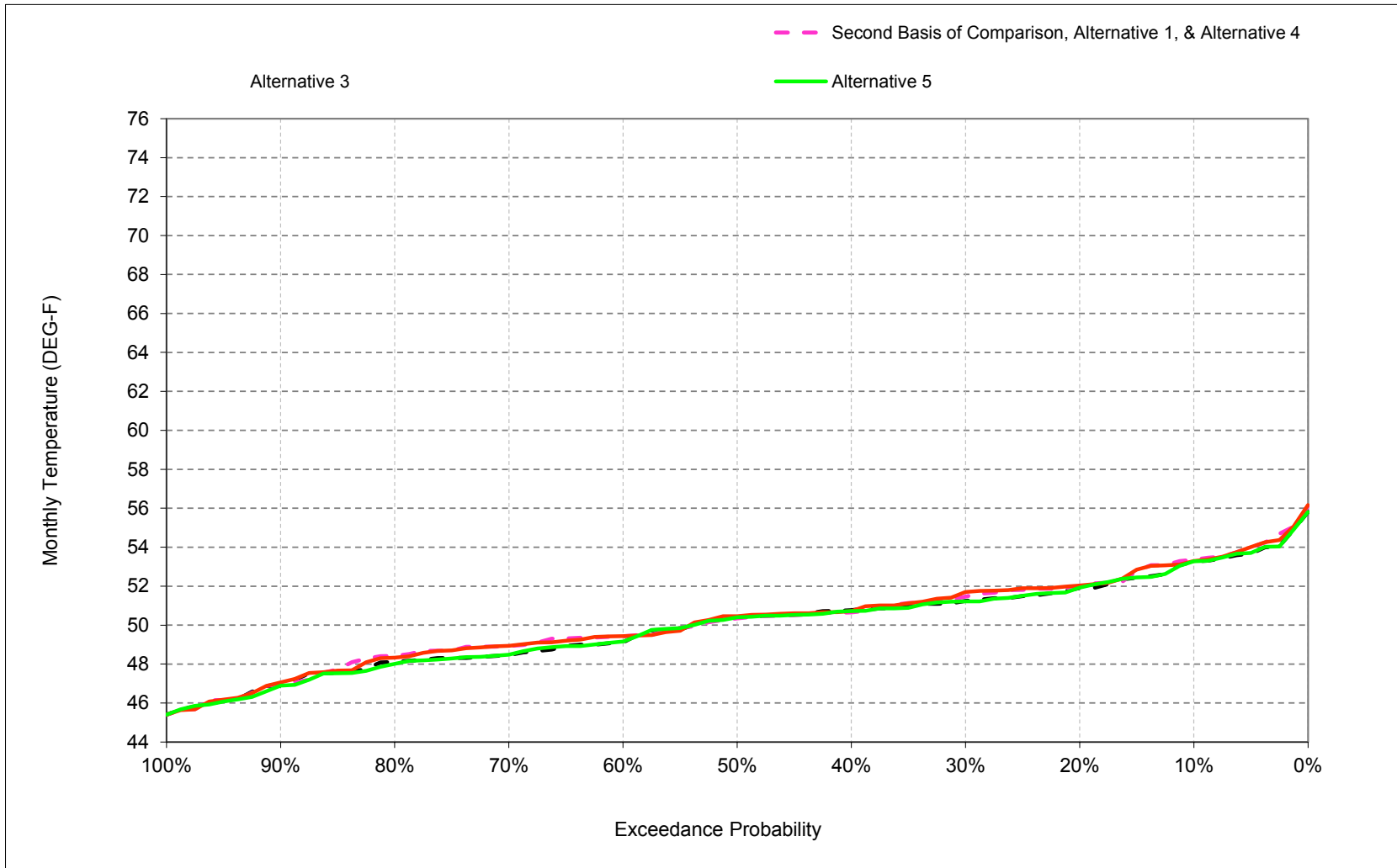
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-12-2. American River below Nimbus Dam, November



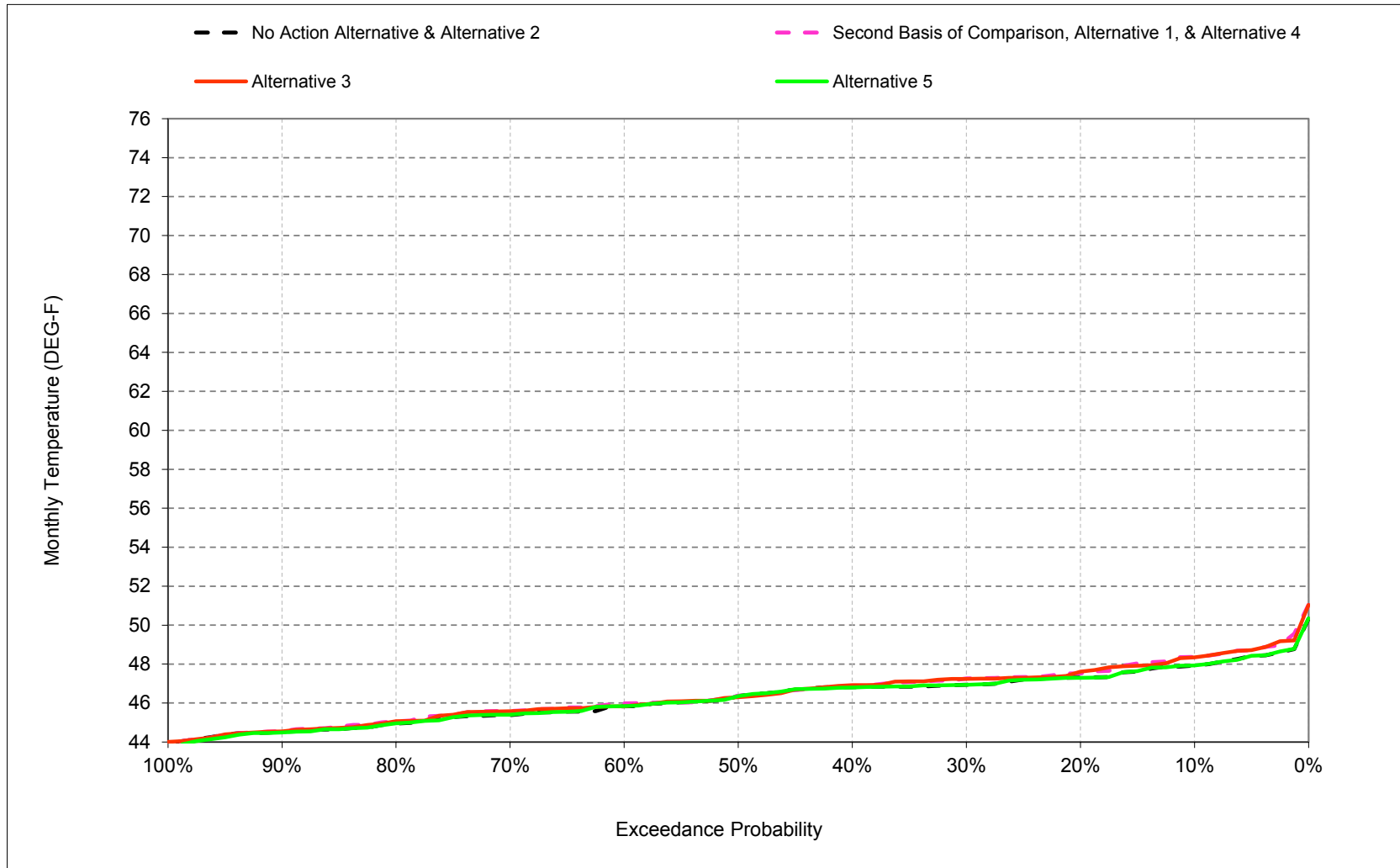
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-12-3. American River below Nimbus Dam, December



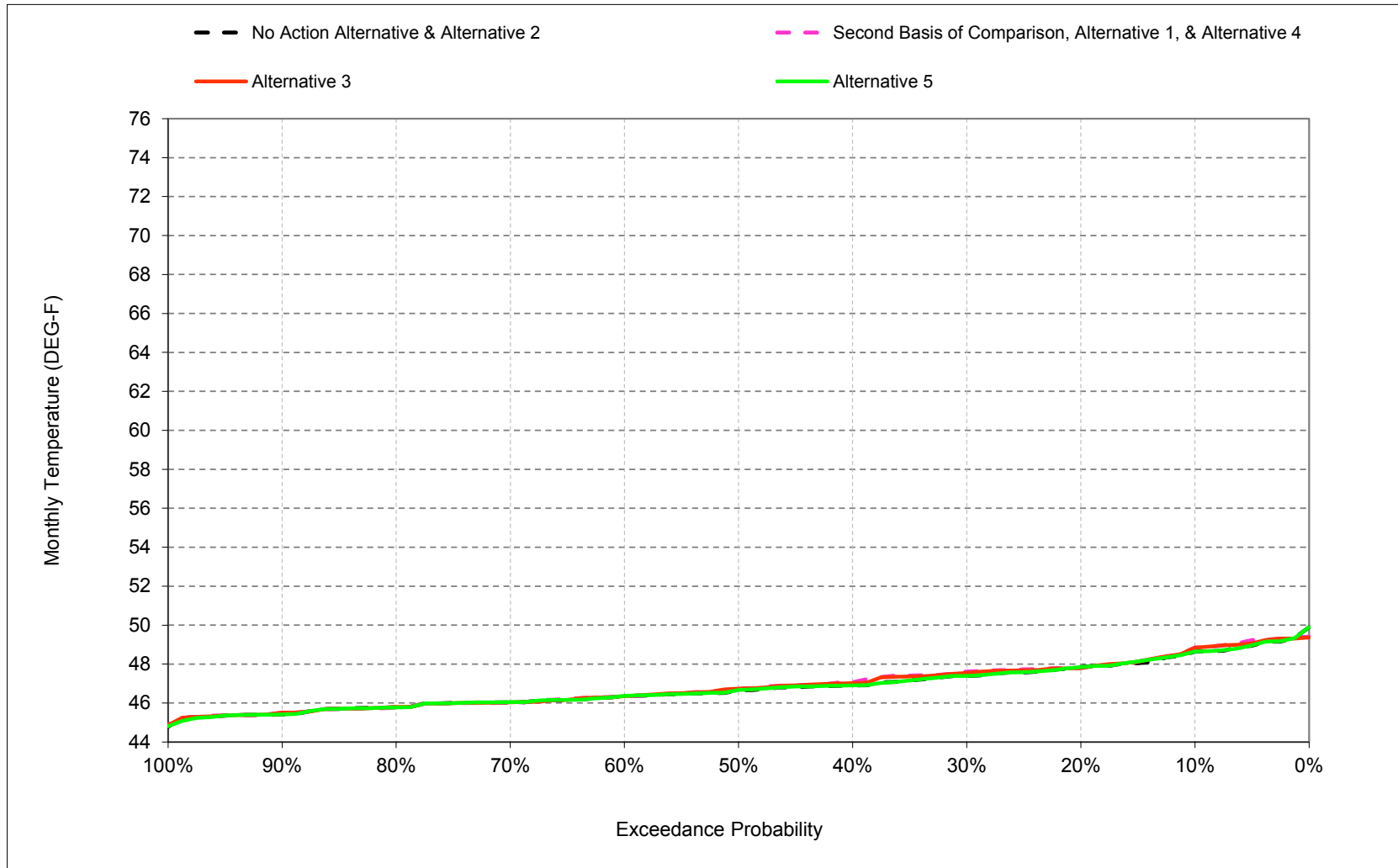
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-12-4. American River below Nimbus Dam, January



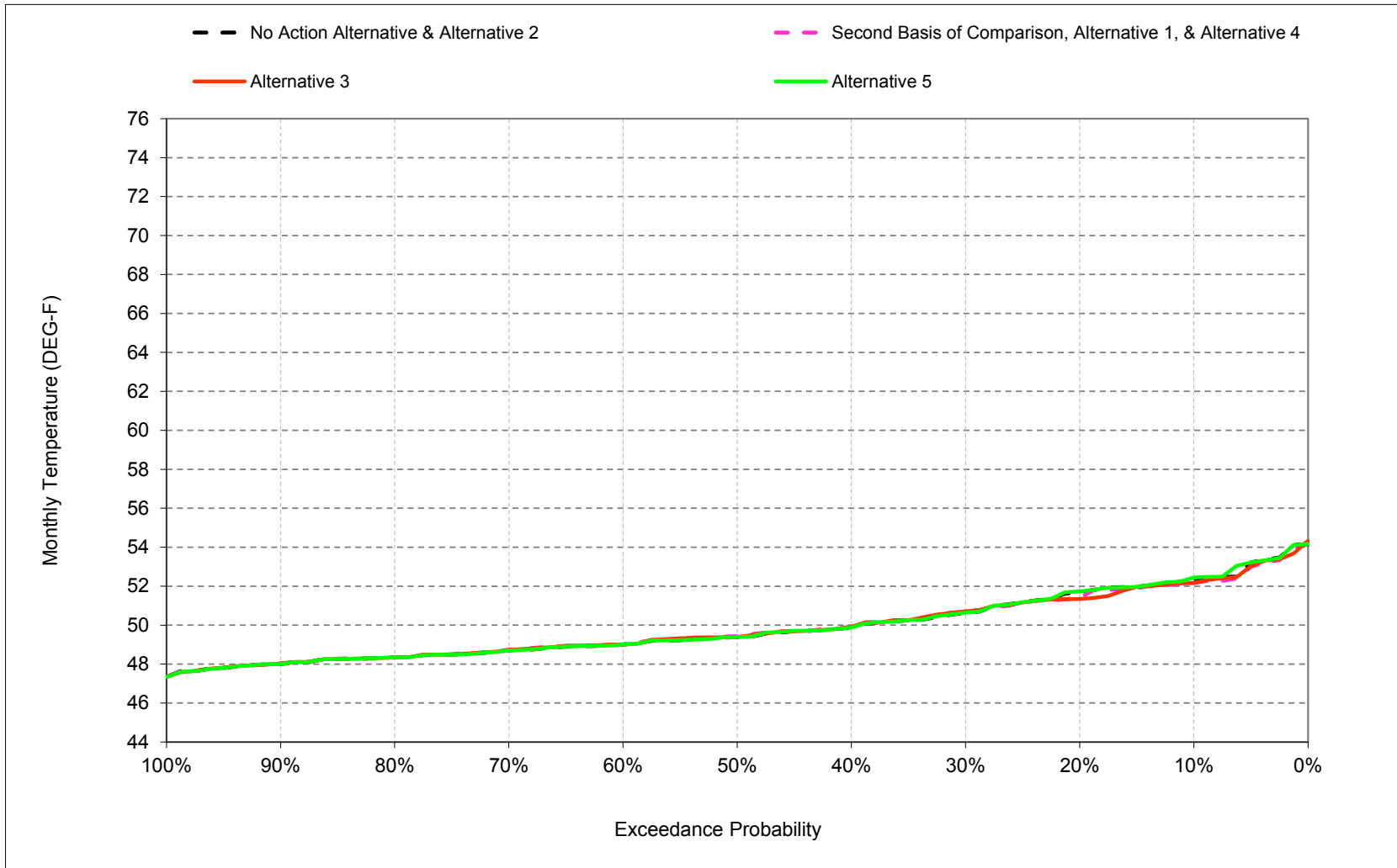
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-12-5. American River below Nimbus Dam, February



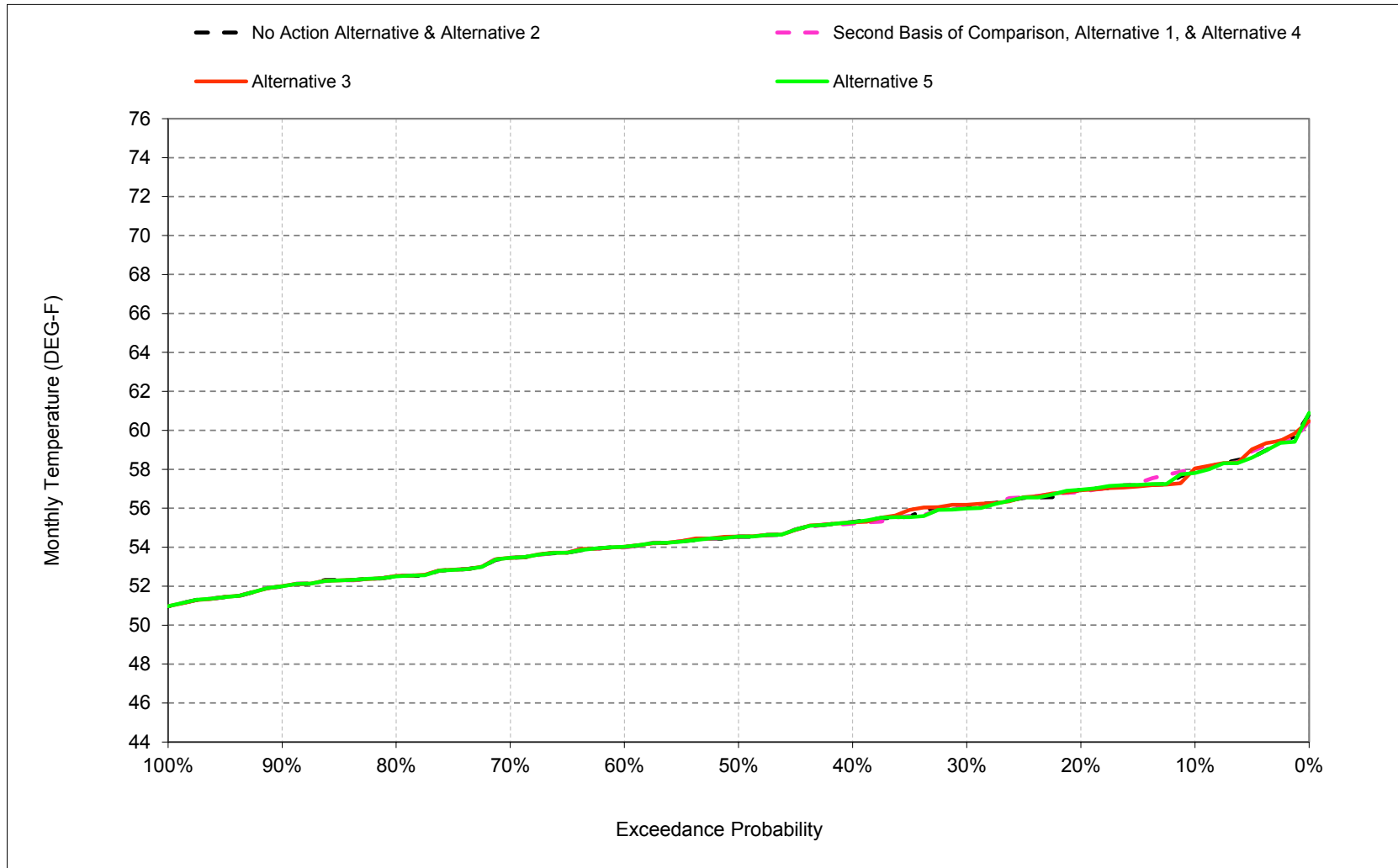
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-12-6. American River below Nimbus Dam, March



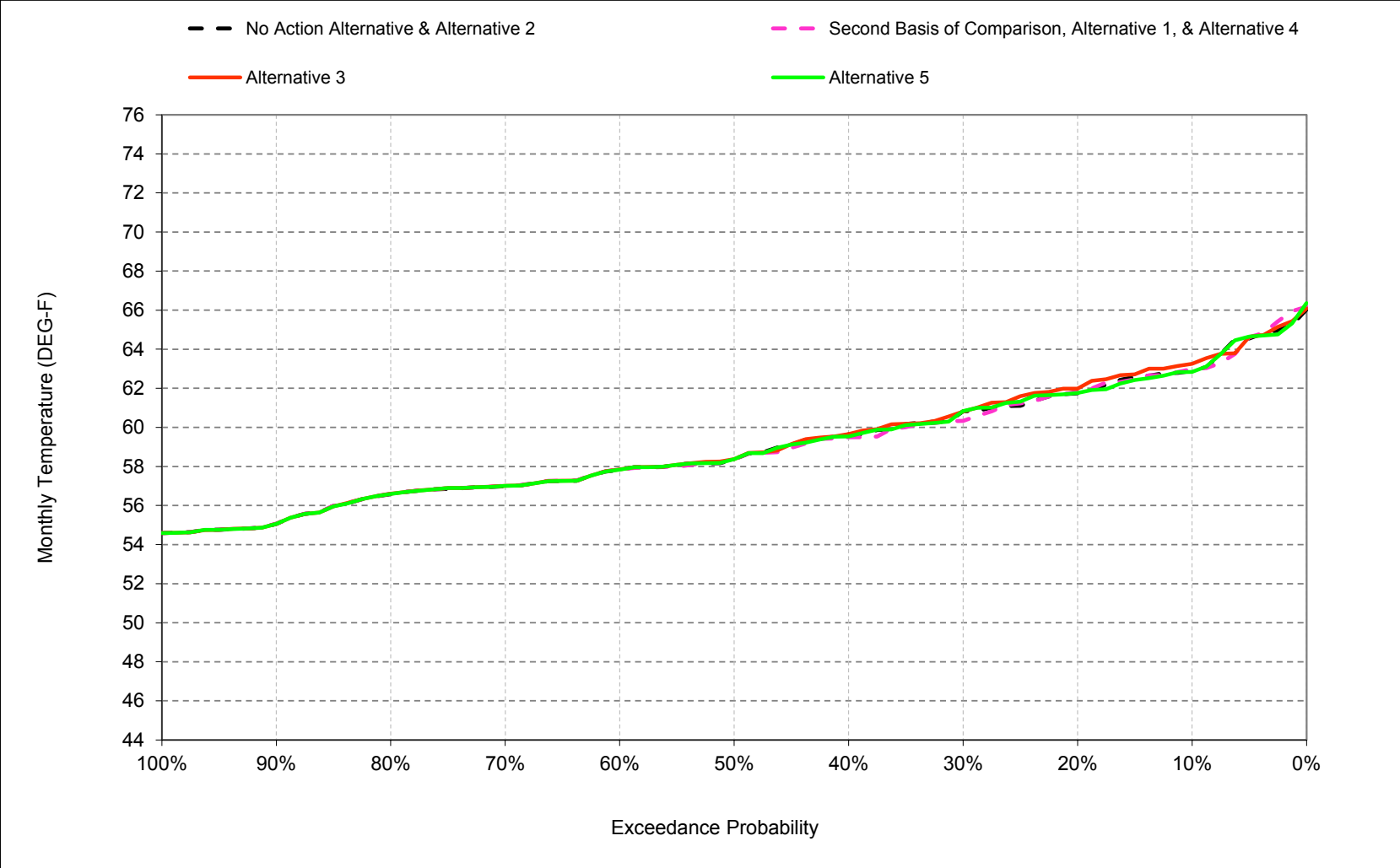
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-12-7. American River below Nimbus Dam, April



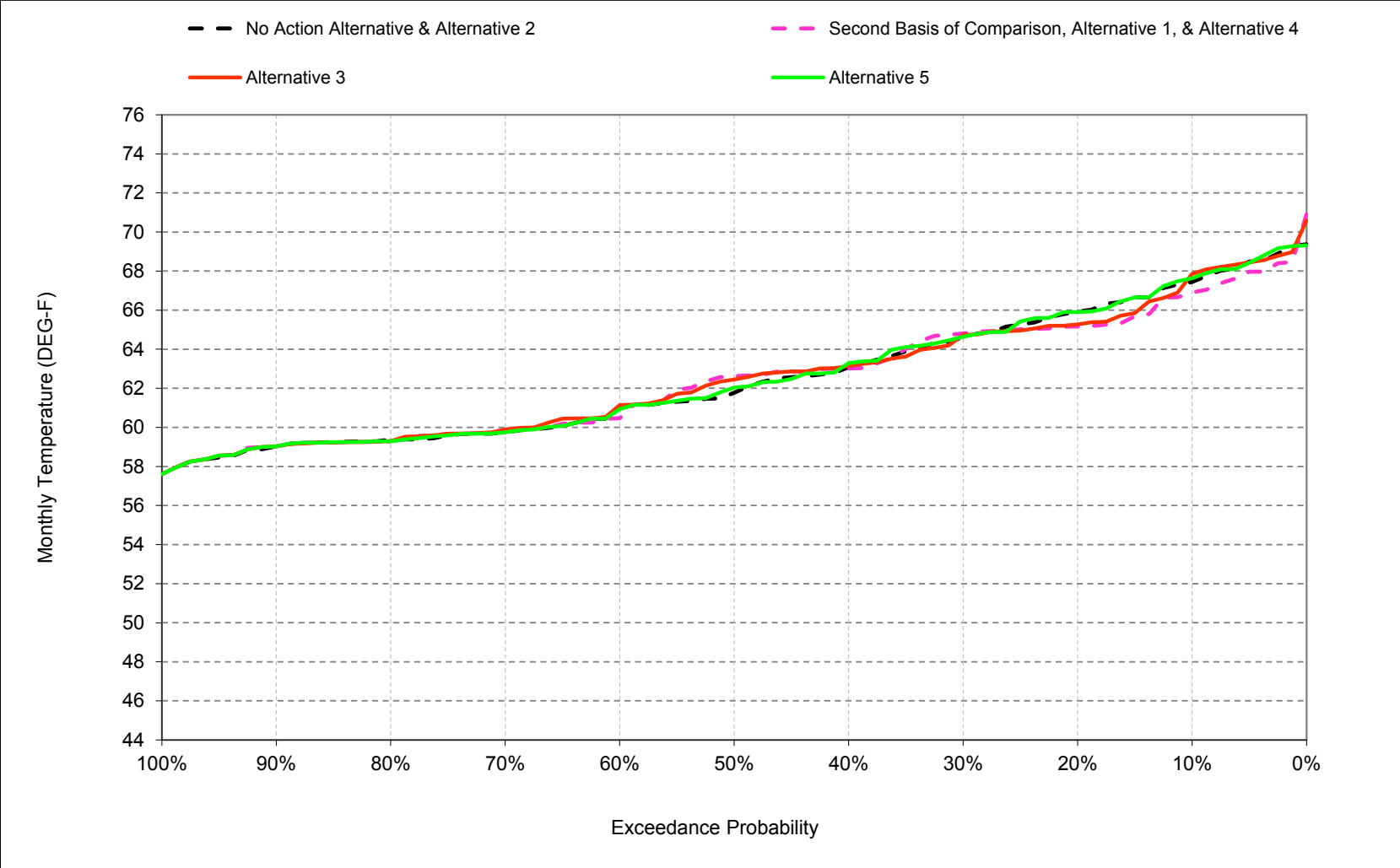
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-12-8. American River below Nimbus Dam, May



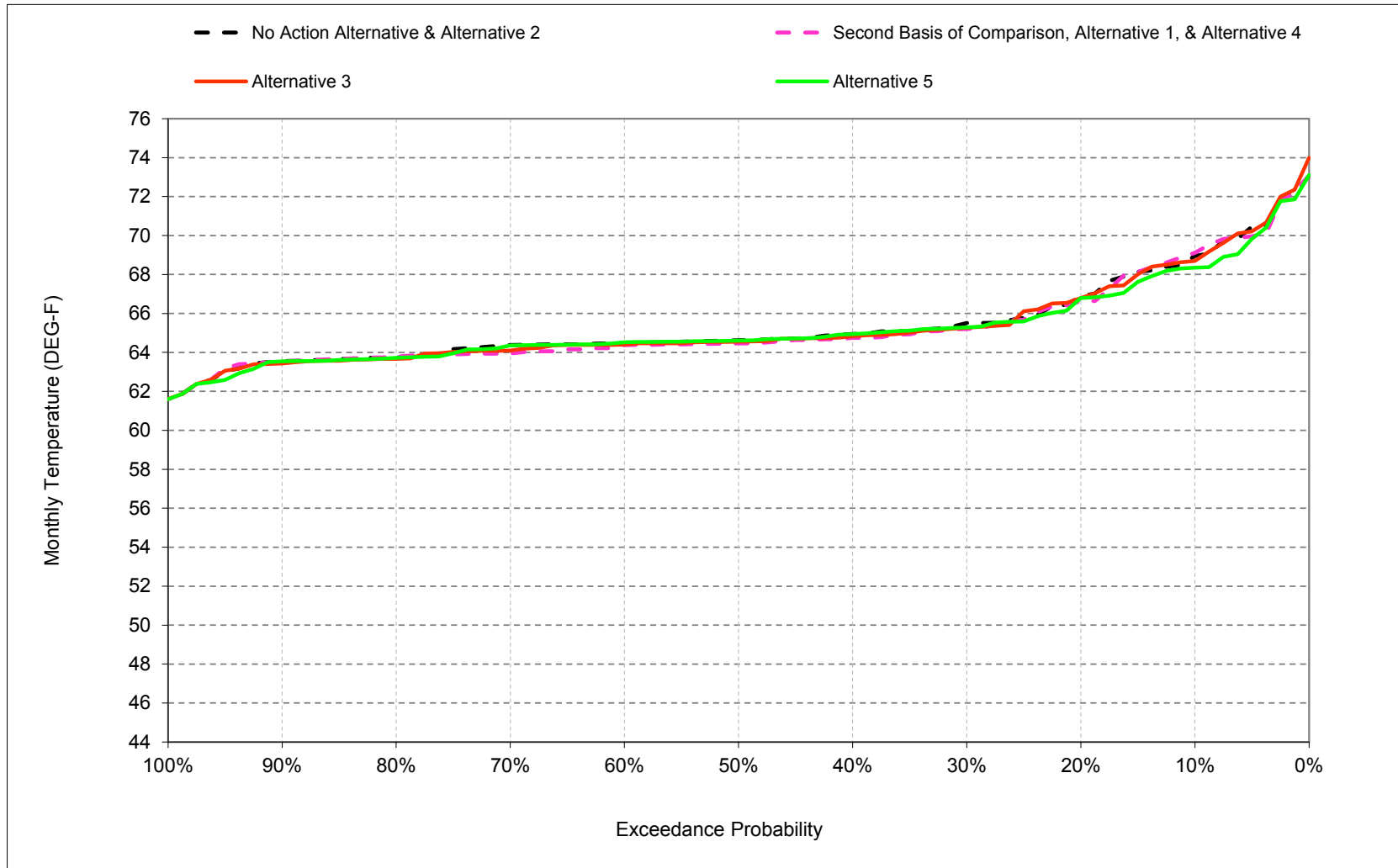
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-12-9. American River below Nimbus Dam, June



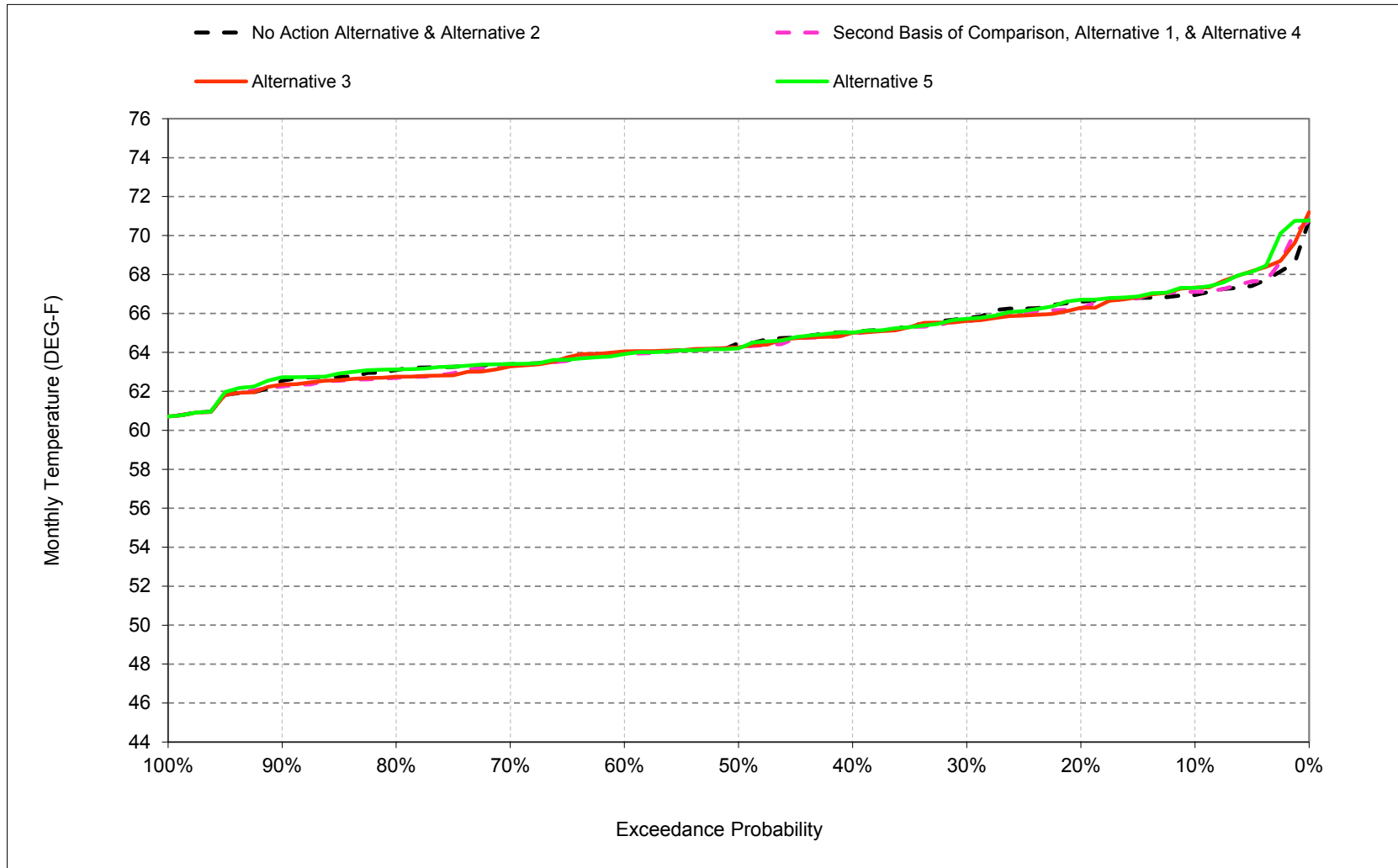
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-12-10. American River below Nimbus Dam, July



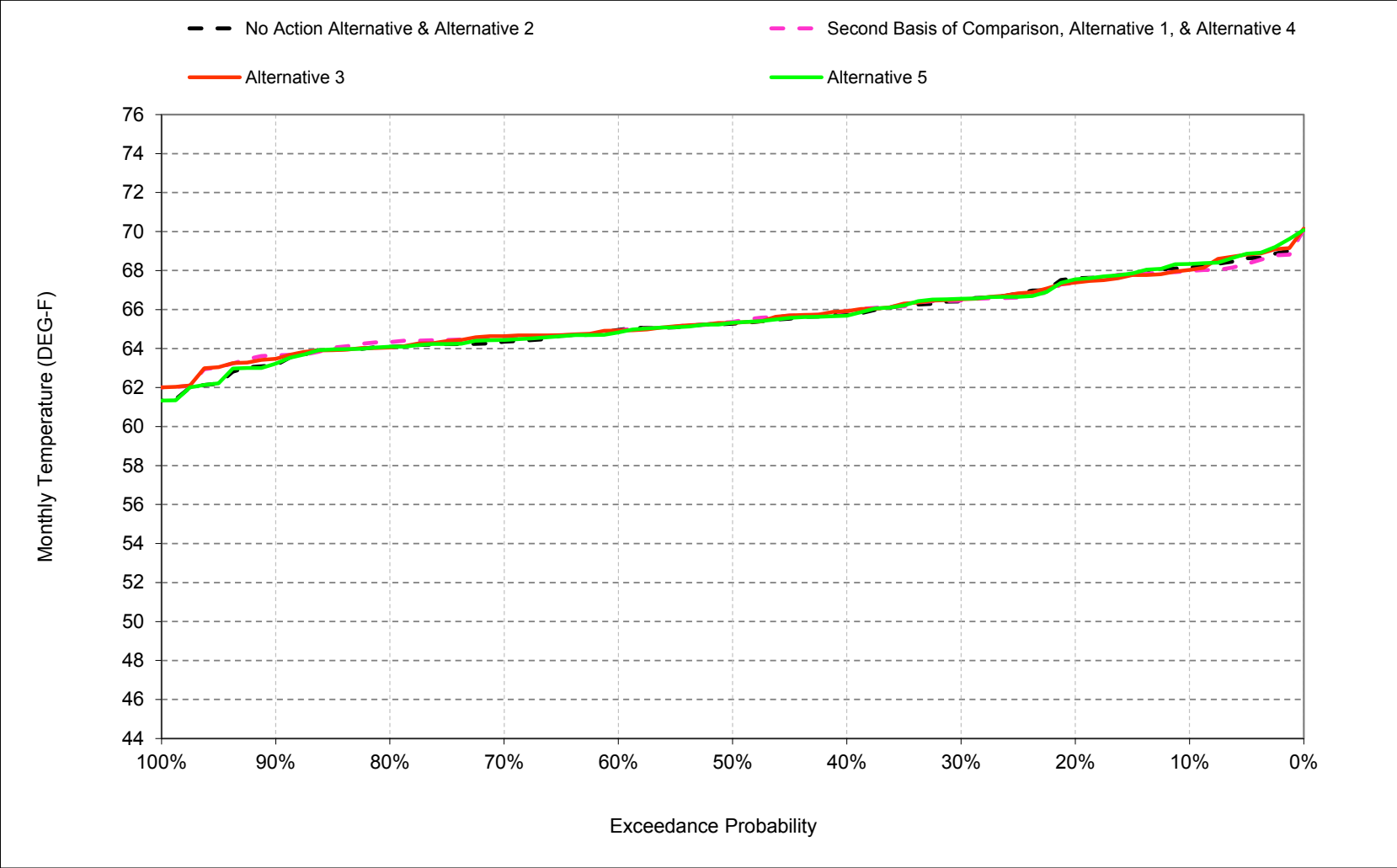
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-12-11. American River below Nimbus Dam, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-12-12. American River below Nimbus Dam, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-12-1. American River below Nimbus Dam, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
10%	66	58	53	48	49	52	58	63	67	69	67	68
20%	65	58	52	47	48	52	57	62	66	67	67	68
30%	64	58	51	47	47	51	56	61	65	65	66	66
40%	64	57	51	47	47	50	55	60	63	65	65	66
50%	63	57	50	46	47	49	54	58	62	65	64	65
60%	63	57	49	46	46	49	54	58	61	64	64	65
70%	63	57	48	45	46	49	53	57	60	64	63	64
80%	63	56	48	45	46	48	52	56	59	64	63	64
90%	59	56	47	44	45	48	52	55	59	64	62	63
Long Term												
Full Simulation Period ^b	63	57	50	46	47	50	55	59	62	65	65	65
Water Year Types^c												
Wet (32%)	60	55	47	46	46	49	53	57	60	64	63	64
Above Normal (16%)	64	57	50	46	47	49	54	58	62	64	64	65
Below Normal (13%)	62	57	51	47	47	50	56	60	64	65	65	66
Dry (24%)	64	57	51	47	47	51	55	60	64	66	66	66
Critical (15%)	65	58	51	47	48	52	57	62	66	69	67	68

Alternative 1												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
10%	66	58	53	48	49	52	58	63	67	69	67	68
20%	65	58	52	48	48	51	57	62	65	67	66	67
30%	64	58	51	47	48	51	56	60	65	65	66	66
40%	63	57	51	47	47	50	55	59	63	65	65	66
50%	63	57	50	46	47	49	54	58	63	64	64	65
60%	63	57	49	46	46	49	54	58	60	64	64	65
70%	63	56	49	46	46	49	53	57	60	64	63	65
80%	63	56	48	45	46	48	52	57	59	64	63	64
90%	59	56	47	45	45	48	52	55	59	63	62	64
Long Term												
Full Simulation Period ^b	63	57	50	46	47	50	55	59	62	65	65	66
Water Year Types^c												
Wet (32%)	60	54	48	46	46	49	53	57	60	64	63	64
Above Normal (16%)	63	57	50	47	47	49	54	58	62	64	64	65
Below Normal (13%)	62	57	51	47	47	50	56	60	63	65	65	66
Dry (24%)	64	57	51	47	47	51	56	60	64	66	66	66
Critical (15%)	65	58	51	47	48	52	57	61	66	69	67	68

Alternative 1 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
0.1	-0.1	0.0	0.1	0.4	0.2	-0.1	0.2	0.1	-0.6	0.2	0.2	-0.2
0.2	-0.3	0.0	0.0	0.2	0.0	-0.3	-0.1	0.1	-0.7	-0.2	-0.4	-0.2
0.3	0.1	-0.1	0.2	0.3	0.2	0.1	0.0	-0.3	0.2	-0.3	-0.2	0.0
0.4	0.0	0.1	-0.1	0.0	0.2	0.0	-0.1	-0.1	0.0	-0.2	-0.1	0.1
0.5	0.0	0.0	-0.1	0.0	0.1	0.0	0.0	0.0	1.0	-0.1	-0.1	0.1
0.6	-0.1	0.0	0.3	0.1	0.0	0.0	0.0	0.0	-0.2	-0.2	-0.1	-0.1
0.7	0.0	-0.2	0.5	0.2	0.0	0.0	0.0	0.0	0.1	-0.4	-0.1	0.3
0.8	-0.1	-0.1	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.3	0.2
0.9	0.0	-0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.5
Long Term												
Full Simulation Period ^b	-0.1	-0.1	0.2	0.2	0.1	0.0	0.0	0.0	0.0	-0.1	-0.1	0.1
Water Year Types^c												
Wet (32%)	-0.1	-0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.1	0.0	-0.3	0.3
Above Normal (16%)	-0.5	-0.4	0.1	0.3	0.1	0.0	0.0	0.0	0.4	-0.2	0.1	0.1
Below Normal (13%)	0.0	0.1	0.3	0.3	0.2	0.0	-0.2	-0.1	-0.9	-0.2	-0.6	0.3
Dry (24%)	0.1	0.0	0.1	0.1	0.0	0.0	0.1	0.2	-0.1	-0.2	0.1	-0.1
Critical (15%)	0.2	0.2	0.1	0.2	0.1	-0.1	0.1	-0.4	0.1	0.2	0.2	-0.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Appendix 6B: Surface Water Temperature Modeling

1/0/1900

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	66	58	53	48	49	52	58	63	67	69	67	68
20%	65	58	52	47	48	52	57	62	66	67	67	68
30%	64	58	51	47	47	51	56	61	65	65	66	66
40%	64	57	51	47	47	50	55	60	63	65	65	66
50%	63	57	50	46	47	49	54	58	62	65	64	65
60%	63	57	49	46	46	49	54	58	61	64	64	65
70%	63	57	48	45	46	49	53	57	60	64	63	64
80%	63	56	48	45	46	48	52	56	59	64	63	64
90%	59	56	47	44	45	48	52	55	59	64	62	63
Long Term												
Full Simulation Period ^b	63	57	50	46	47	50	55	59	62	65	65	65
Water Year Types ^c												
Wet (32%)	60	55	47	46	46	49	53	57	60	64	63	64
Above Normal (16%)	64	57	50	46	47	49	54	58	62	64	64	65
Below Normal (13%)	62	57	51	47	47	50	56	60	64	65	65	66
Dry (24%)	64	57	51	47	47	51	55	60	64	66	66	66
Critical (15%)	65	58	51	47	48	52	57	62	66	69	67	68

Alternative 3

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	66	58	53	48	49	52	58	63	68	69	67	68
20%	65	58	52	48	48	51	57	62	65	67	66	67
30%	64	58	52	47	48	51	56	61	65	65	66	67
40%	64	57	51	47	47	50	55	60	63	65	65	66
50%	63	57	50	46	47	49	55	58	62	65	64	65
60%	63	57	49	46	46	49	54	58	61	64	64	65
70%	63	57	49	46	46	49	53	57	60	64	63	65
80%	63	56	48	45	46	48	52	57	59	64	63	64
90%	59	56	47	45	45	48	52	55	59	63	62	63
Long Term												
Full Simulation Period ^b	63	57	50	46	47	50	55	59	63	65	65	66
Water Year Types ^c												
Wet (32%)	60	54	48	46	46	49	53	57	60	64	63	64
Above Normal (16%)	64	57	50	46	47	49	54	58	62	64	64	65
Below Normal (13%)	62	57	51	47	47	50	56	61	63	65	65	66
Dry (24%)	64	57	51	47	47	51	56	60	64	66	66	66
Critical (15%)	65	58	51	47	48	52	57	61	66	69	67	68

Alternative 3 minus No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	0.2	0.1	0.0	0.4	0.2	-0.1	0.1	0.4	0.3	-0.2	0.4	-0.1
0.2	-0.1	0.1	0.1	0.3	0.0	-0.3	0.0	0.2	-0.6	-0.1	-0.3	-0.2
0.3	0.1	-0.1	0.5	0.3	0.1	0.1	0.1	0.1	0.0	-0.2	-0.1	0.1
0.4	0.0	0.0	-0.1	0.1	0.1	0.0	0.0	0.0	0.1	-0.1	-0.1	0.2
0.5	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.8	-0.1	-0.1	0.1
0.6	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	0.0	0.0
0.7	0.0	-0.1	0.5	0.2	0.0	0.0	0.0	0.0	0.1	-0.3	-0.2	0.3
0.8	-0.1	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0	-0.1	-0.3	0.0
0.9	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	0.0	0.3
Long Term												
Full Simulation Period ^b	0.0	0.0	0.2	0.2	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.1
Water Year Types ^c												
Wet (32%)	-0.1	-0.1	0.3	0.1	0.0	0.0	0.0	0.0	0.1	0.0	-0.2	0.2
Above Normal (16%)	-0.2	-0.2	0.0	0.2	0.1	0.0	0.0	0.0	0.4	-0.2	0.2	0.1
Below Normal (13%)	0.1	0.4	0.4	0.4	0.2	0.0	-0.1	0.4	-0.3	-0.1	-0.3	0.4
Dry (24%)	0.0	0.0	0.2	0.1	0.0	0.0	0.1	0.3	-0.1	0.0	0.1	-0.2
Critical (15%)	0.1	0.1	0.1	0.1	0.0	-0.2	0.1	-0.4	-0.1	0.1	0.1	0.0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-12-3. American River below Nimbus Dam, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	66	58	53	48	49	52	58	63	67	69	67	68
20%	65	58	52	47	48	52	57	62	66	67	67	68
30%	64	58	51	47	47	51	56	61	65	65	66	66
40%	64	57	51	47	47	50	55	60	63	65	65	66
50%	63	57	50	46	47	49	54	58	62	65	64	65
60%	63	57	49	46	46	49	54	58	61	64	64	65
70%	63	57	48	45	46	49	53	57	60	64	63	64
80%	63	56	48	45	46	48	52	56	59	64	63	64
90%	59	56	47	44	45	48	52	55	59	64	62	63
Long Term												
Full Simulation Period ^b	63	57	50	46	47	50	55	59	62	65	65	65
Water Year Types ^c												
Wet (32%)	60	55	47	46	46	49	53	57	60	64	63	64
Above Normal (16%)	64	57	50	46	47	49	54	58	62	64	64	65
Below Normal (13%)	62	57	51	47	47	50	56	60	64	65	65	66
Dry (24%)	64	57	51	47	47	51	55	60	64	66	66	66
Critical (15%)	65	58	51	47	48	52	57	62	66	69	67	68

Alternative 5												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	66	58	53	48	49	52	58	63	68	68	67	68
20%	65	58	52	47	48	52	57	62	66	67	67	68
30%	64	58	51	47	47	51	56	61	65	65	66	67
40%	64	57	51	47	47	50	55	60	63	65	65	66
50%	63	57	50	46	47	49	55	58	62	65	64	65
60%	63	57	49	46	46	49	54	58	61	64	64	65
70%	63	57	48	45	46	49	53	57	60	64	63	64
80%	63	56	48	45	46	48	52	57	59	64	63	64
90%	59	56	47	44	45	48	52	55	59	64	63	63
Long Term												
Full Simulation Period ^b	63	57	50	46	47	50	55	59	63	65	65	66
Water Year Types ^c												
Wet (32%)	60	55	47	46	46	49	53	57	60	64	63	64
Above Normal (16%)	64	57	50	46	47	49	54	58	62	64	64	65
Below Normal (13%)	62	57	51	46	47	50	56	60	64	65	65	66
Dry (24%)	64	57	51	47	47	51	55	60	64	66	66	66
Critical (15%)	65	57	51	47	48	52	57	62	66	68	67	68

Alternative 5 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	0.3	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	-0.6	0.4	0.2
0.2	-0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	-0.1	0.1	-0.1
0.3	0.0	-0.1	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	-0.2	0.0	0.1
0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.0	0.0	-0.1
0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	-0.1	0.0
0.6	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1
0.7	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.1
0.8	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
0.9	0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.4	-0.1
Long Term												
Full Simulation Period ^b	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.0
Water Year Types ^c												
Wet (32%)	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Above Normal (16%)	0.0	-0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Below Normal (13%)	0.0	0.0	-0.2	-0.1	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.1
Dry (24%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	0.1	0.0
Critical (15%)	0.0	-0.1	0.0	0.0	0.0	0.1	-0.1	-0.1	0.1	-0.6	0.2	0.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-12-4. American River below Nimbus Dam, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	66	58	53	48	49	52	58	63	67	69	67	68
20%	65	58	52	48	48	51	57	62	65	67	66	67
30%	64	58	51	47	48	51	56	60	65	65	66	66
40%	63	57	51	47	47	50	55	59	63	65	65	66
50%	63	57	50	46	47	49	54	58	63	64	64	65
60%	63	57	49	46	46	49	54	58	60	64	64	65
70%	63	56	49	46	46	49	53	57	60	64	63	65
80%	63	56	48	45	46	48	52	57	59	64	63	64
90%	59	56	47	45	45	48	52	55	59	63	62	64
Long Term												
Full Simulation Period ^b	63	57	50	46	47	50	55	59	62	65	65	66
Water Year Types ^c												
Wet (32%)	60	54	48	46	46	49	53	57	60	64	63	64
Above Normal (16%)	63	57	50	47	47	49	54	58	62	64	64	65
Below Normal (13%)	62	57	51	47	47	50	56	60	63	65	65	66
Dry (24%)	64	57	51	47	47	51	56	60	64	66	66	66
Critical (15%)	65	58	51	47	48	52	57	61	66	69	67	68

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	66	58	53	48	49	52	58	63	67	69	67	68
20%	65	58	52	47	48	52	57	62	66	67	67	68
30%	64	58	51	47	47	51	56	61	65	65	66	66
40%	64	57	51	47	47	50	55	60	63	65	65	66
50%	63	57	50	46	47	49	54	58	62	65	64	65
60%	63	57	49	46	46	49	54	58	61	64	64	65
70%	63	57	48	45	46	49	53	57	60	64	63	64
80%	63	56	48	45	46	48	52	56	59	64	63	64
90%	59	56	47	44	45	48	52	55	59	64	62	63
Long Term												
Full Simulation Period ^b	63	57	50	46	47	50	55	59	62	65	65	65
Water Year Types ^c												
Wet (32%)	60	55	47	46	46	49	53	57	60	64	63	64
Above Normal (16%)	64	57	50	46	47	49	54	58	62	64	64	65
Below Normal (13%)	62	57	51	47	47	50	56	60	64	65	65	66
Dry (24%)	64	57	51	47	47	51	55	60	64	66	66	66
Critical (15%)	65	58	51	47	48	52	57	62	66	69	67	68

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	0.1	0.0	-0.1	-0.4	-0.2	0.1	-0.2	-0.1	0.6	-0.2	-0.2	0.2
0.2	0.3	0.0	0.0	-0.2	0.0	0.3	0.1	-0.1	0.7	0.2	0.4	0.2
0.3	-0.1	0.1	-0.2	-0.3	-0.2	-0.1	0.0	0.3	-0.2	0.3	0.2	0.0
0.4	0.0	-0.1	0.1	0.0	-0.2	0.0	0.1	0.1	0.0	0.2	0.1	-0.1
0.5	0.0	0.0	0.1	0.0	-0.1	0.0	0.0	0.0	-1.0	0.1	0.1	-0.1
0.6	0.1	0.0	-0.3	-0.1	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.1
0.7	0.0	0.2	-0.5	-0.2	0.0	0.0	0.0	0.0	-0.1	0.4	0.1	-0.3
0.8	0.1	0.1	-0.3	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	-0.2
0.9	0.0	0.1	-0.1	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	-0.5
Long Term												
Full Simulation Period ^b	0.1	0.1	-0.2	-0.2	-0.1	0.0	0.0	0.0	0.0	0.1	0.1	-0.1
Water Year Types ^c												
Wet (32%)	0.1	0.1	-0.2	-0.1	0.0	0.0	0.0	0.0	-0.1	0.0	0.3	-0.3
Above Normal (16%)	0.5	0.4	-0.1	-0.3	-0.1	0.0	0.0	0.0	-0.4	0.2	-0.1	-0.1
Below Normal (13%)	0.0	-0.1	-0.3	-0.3	-0.2	0.0	0.2	0.1	0.9	0.2	0.6	-0.3
Dry (24%)	-0.1	0.0	-0.1	-0.1	0.0	0.0	-0.1	-0.2	0.1	0.2	-0.1	0.1
Critical (15%)	-0.2	-0.2	-0.1	-0.2	-0.1	0.1	-0.1	0.4	-0.1	-0.2	-0.2	0.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-12-5. American River below Nimbus Dam, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	66	58	53	48	49	52	58	63	67	69	67	68
20%	65	58	52	48	48	51	57	62	65	67	66	67
30%	64	58	51	47	48	51	56	60	65	65	66	66
40%	63	57	51	47	47	50	55	59	63	65	65	66
50%	63	57	50	46	47	49	54	58	63	64	64	65
60%	63	57	49	46	46	49	54	58	60	64	64	65
70%	63	56	49	46	46	49	53	57	60	64	63	65
80%	63	56	48	45	46	48	52	57	59	64	63	64
90%	59	56	47	45	45	48	52	55	59	63	62	64
Long Term												
Full Simulation Period ^b	63	57	50	46	47	50	55	59	62	65	65	66
Water Year Types ^c												
Wet (32%)	60	54	48	46	46	49	53	57	60	64	63	64
Above Normal (16%)	63	57	50	47	47	49	54	58	62	64	64	65
Below Normal (13%)	62	57	51	47	47	50	56	60	63	65	65	66
Dry (24%)	64	57	51	47	47	51	56	60	64	66	66	66
Critical (15%)	65	58	51	47	48	52	57	61	66	69	67	68

Alternative 3

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	66	58	53	48	49	52	58	63	68	69	67	68
20%	65	58	52	48	48	51	57	62	65	67	66	67
30%	64	58	52	47	48	51	56	61	65	65	66	67
40%	64	57	51	47	47	50	55	60	63	65	65	66
50%	63	57	50	46	47	49	55	58	62	65	64	65
60%	63	57	49	46	46	49	54	58	61	64	64	65
70%	63	57	49	46	46	49	53	57	60	64	63	65
80%	63	56	48	45	46	48	52	57	59	64	63	64
90%	59	56	47	45	45	48	52	55	59	63	62	63
Long Term												
Full Simulation Period ^b	63	57	50	46	47	50	55	59	63	65	65	66
Water Year Types ^c												
Wet (32%)	60	54	48	46	46	49	53	57	60	64	63	64
Above Normal (16%)	64	57	50	46	47	49	54	58	62	64	64	65
Below Normal (13%)	62	57	51	47	47	50	56	61	63	65	65	66
Dry (24%)	64	57	51	47	47	51	56	60	64	66	66	66
Critical (15%)	65	58	51	47	48	52	57	61	66	69	67	68

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	0.4	0.0	-0.1	0.0	0.0	0.0	-0.1	0.3	0.9	-0.4	0.2	0.0
0.2	0.1	0.0	0.1	0.1	0.0	0.0	0.1	0.2	0.1	0.1	0.0	0.0
0.3	-0.1	0.0	0.2	0.0	-0.1	0.0	0.1	0.4	-0.2	0.1	0.0	0.1
0.4	0.1	-0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0
0.5	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	-0.2	0.1	0.0	0.0
0.6	0.1	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.3	0.1	0.1	0.1
0.7	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	-0.1	0.0
0.8	0.0	0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	-0.3
0.9	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	-0.2
Long Term												
Full Simulation Period ^b	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0
Water Year Types ^c												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Above Normal (16%)	0.3	0.2	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Below Normal (13%)	0.1	0.2	0.0	0.0	0.0	0.0	0.1	0.5	0.6	0.1	0.3	0.2
Dry (24%)	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.0	-0.1
Critical (15%)	-0.1	-0.1	-0.1	0.0	0.0	-0.1	0.0	0.0	-0.2	-0.1	-0.2	0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-12-6. American River below Nimbus Dam, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	66	58	53	48	49	52	58	63	67	69	67	68
20%	65	58	52	48	48	51	57	62	65	67	66	67
30%	64	58	51	47	48	51	56	60	65	65	66	66
40%	63	57	51	47	47	50	55	59	63	65	65	66
50%	63	57	50	46	47	49	54	58	63	64	64	65
60%	63	57	49	46	46	49	54	58	60	64	64	65
70%	63	56	49	46	46	49	53	57	60	64	63	65
80%	63	56	48	45	46	48	52	57	59	64	63	64
90%	59	56	47	45	45	48	52	55	59	63	62	64
Long Term												
Full Simulation Period ^b	63	57	50	46	47	50	55	59	62	65	65	66
Water Year Types ^c												
Wet (32%)	60	54	48	46	46	49	53	57	60	64	63	64
Above Normal (16%)	63	57	50	47	47	49	54	58	62	64	64	65
Below Normal (13%)	62	57	51	47	47	50	56	60	63	65	65	66
Dry (24%)	64	57	51	47	47	51	56	60	64	66	66	66
Critical (15%)	65	58	51	47	48	52	57	61	66	69	67	68

Alternative 5

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	66	58	53	48	49	52	58	63	68	68	67	68
20%	65	58	52	47	48	52	57	62	66	67	67	68
30%	64	58	51	47	47	51	56	61	65	65	66	67
40%	64	57	51	47	47	50	55	60	63	65	65	66
50%	63	57	50	46	47	49	55	58	62	65	64	65
60%	63	57	49	46	46	49	54	58	61	64	64	65
70%	63	57	48	45	46	49	53	57	60	64	63	64
80%	63	56	48	45	46	48	52	57	59	64	63	64
90%	59	56	47	44	45	48	52	55	59	64	63	63
Long Term												
Full Simulation Period ^b	63	57	50	46	47	50	55	59	63	65	65	66
Water Year Types ^c												
Wet (32%)	60	55	47	46	46	49	53	57	60	64	63	64
Above Normal (16%)	64	57	50	46	47	49	54	58	62	64	64	65
Below Normal (13%)	62	57	51	46	47	50	56	60	64	65	65	66
Dry (24%)	64	57	51	47	47	51	55	60	64	66	66	66
Critical (15%)	65	57	51	47	48	52	57	62	66	68	67	68

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	0.4	0.0	-0.1	-0.4	-0.2	0.3	-0.2	-0.1	0.7	-0.7	0.2	0.4
0.2	0.2	0.0	0.0	-0.2	0.0	0.3	0.1	-0.1	0.7	0.1	0.5	0.2
0.3	-0.1	0.0	-0.3	-0.3	-0.2	-0.1	-0.1	0.3	-0.2	0.1	0.1	0.1
0.4	0.0	-0.1	0.1	0.0	-0.2	0.0	0.1	0.1	0.1	0.2	0.1	-0.2
0.5	0.0	0.0	0.1	0.0	-0.1	0.0	0.0	0.0	-0.7	0.1	-0.1	-0.1
0.6	0.1	-0.1	-0.3	-0.1	0.0	0.0	0.0	0.0	0.2	0.2	-0.1	-0.1
0.7	0.0	0.1	-0.4	-0.2	0.0	0.0	0.0	0.0	-0.1	0.3	0.1	-0.2
0.8	0.1	0.0	-0.4	-0.1	0.0	0.0	0.0	0.0	0.0	-0.1	0.4	-0.3
0.9	0.1	0.0	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.4	-0.6
Long Term												
Full Simulation Period ^b	0.0	0.0	-0.2	-0.2	-0.1	0.0	0.0	0.0	0.1	0.0	0.2	-0.1
Water Year Types ^c												
Wet (32%)	0.1	0.1	-0.2	-0.1	0.0	0.0	0.0	0.0	-0.1	0.0	0.3	-0.3
Above Normal (16%)	0.5	0.2	-0.1	-0.3	-0.1	0.0	0.0	0.0	-0.4	0.2	-0.1	-0.1
Below Normal (13%)	0.0	-0.1	-0.5	-0.5	-0.2	0.0	0.2	0.1	0.9	0.1	0.7	-0.2
Dry (24%)	-0.1	0.0	0.0	-0.1	0.0	0.0	-0.1	-0.1	0.2	0.1	0.0	0.1
Critical (15%)	-0.2	-0.3	-0.2	-0.2	-0.1	0.2	-0.2	0.3	0.0	-0.8	0.0	0.4

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

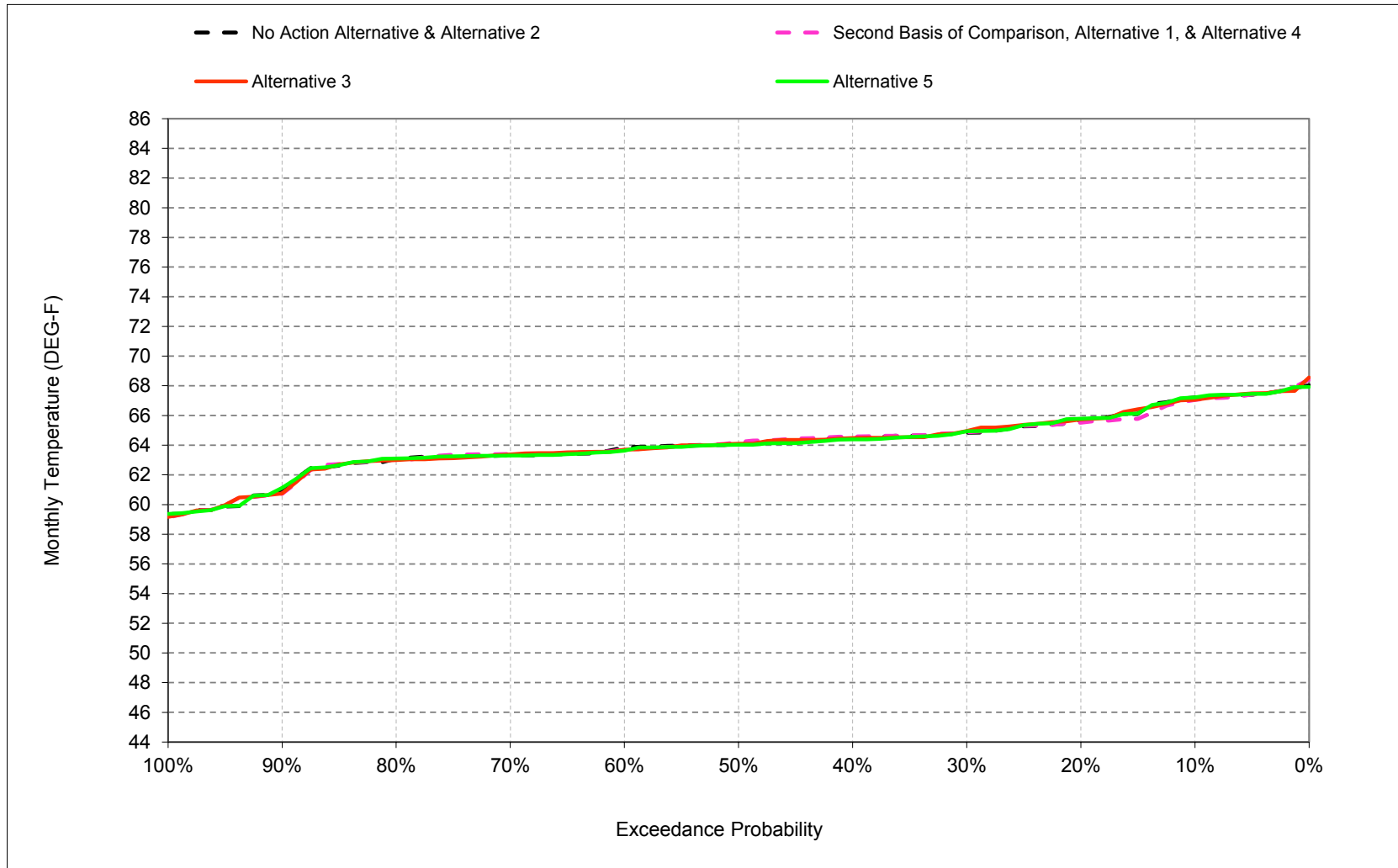
b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

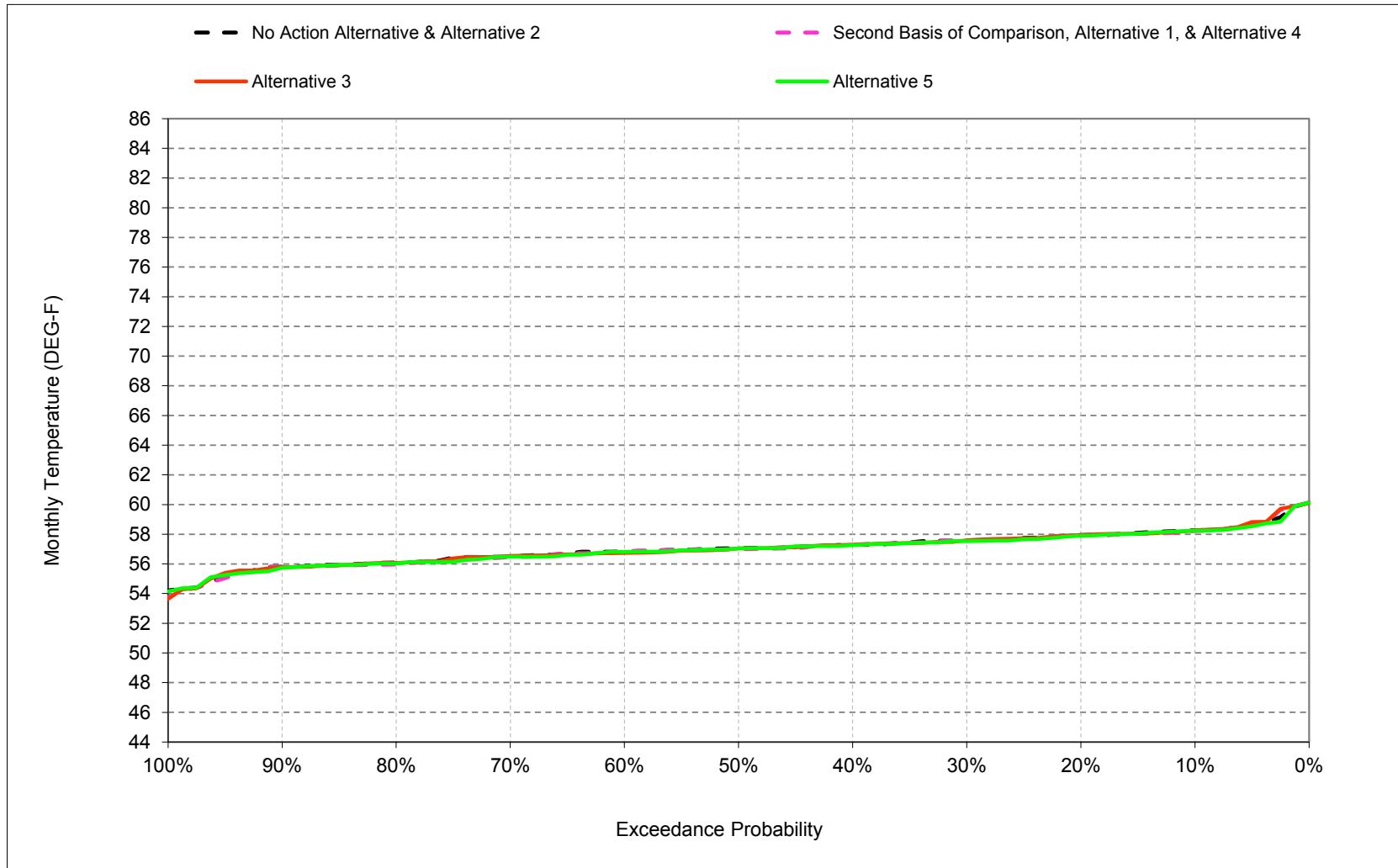
B.13. American River at Watt Avenue Temperature

Figure B-13-1. American River at Watt Avenue, October



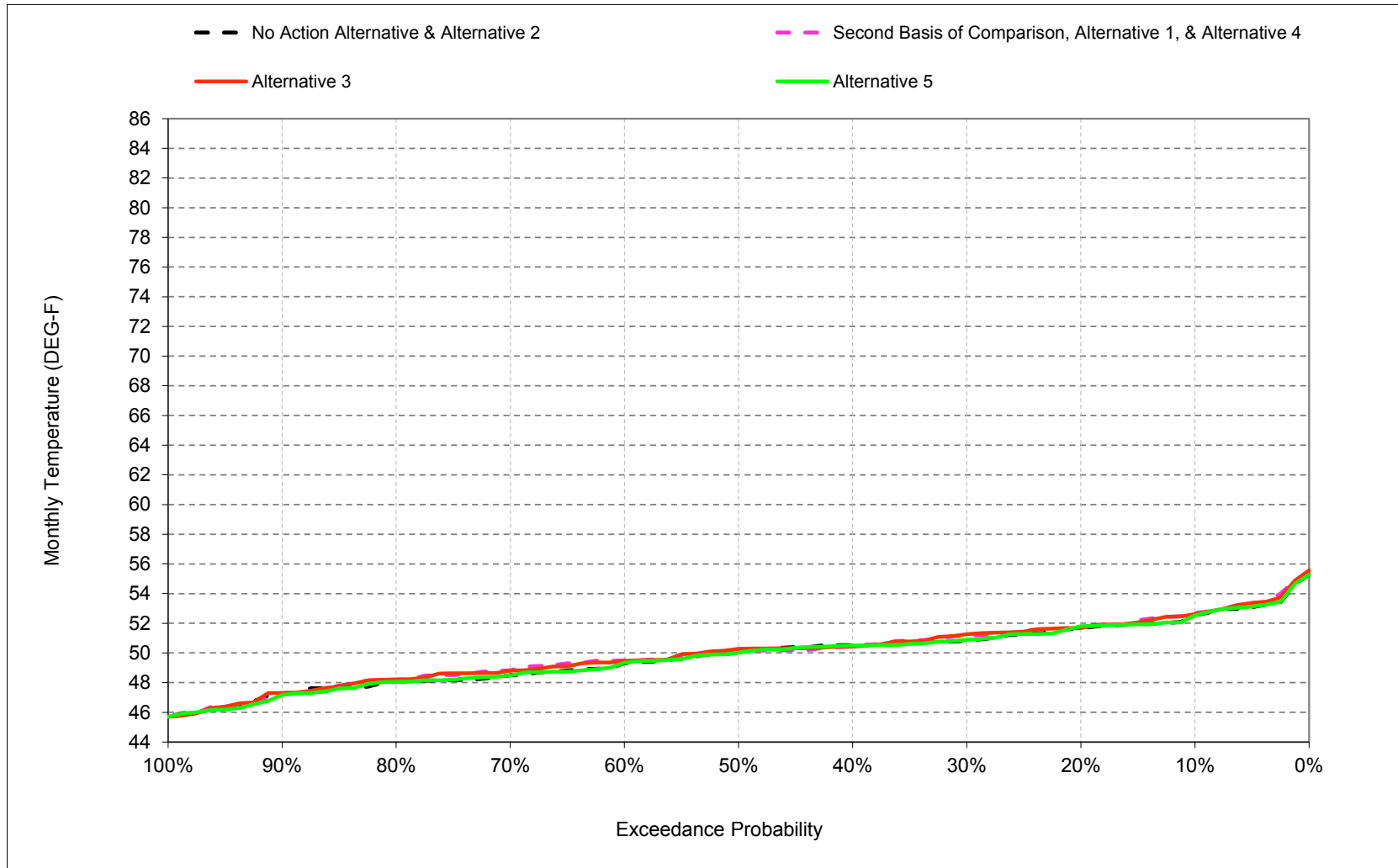
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-13-2. American River at Watt Avenue, November



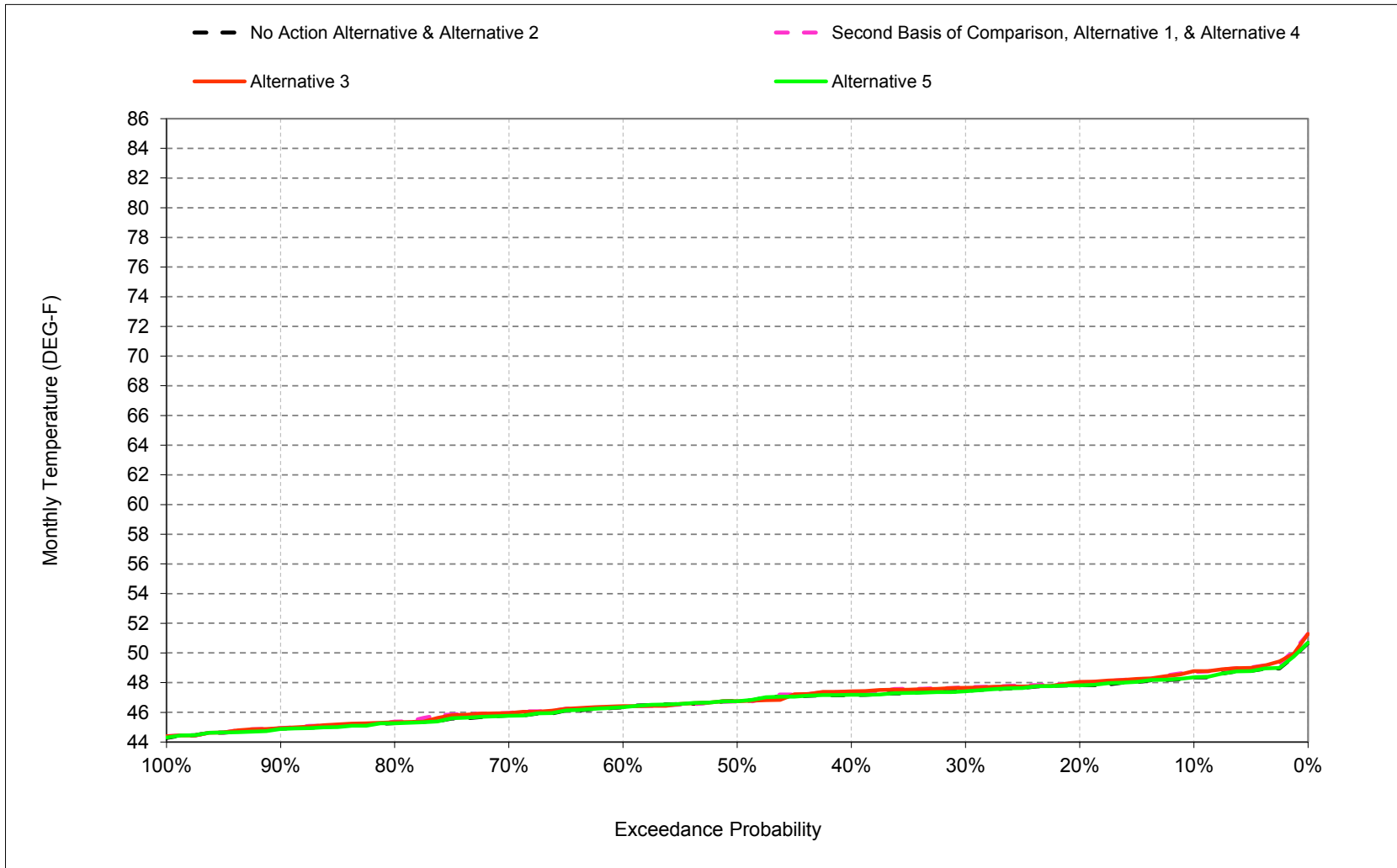
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-13-3. American River at Watt Avenue, December



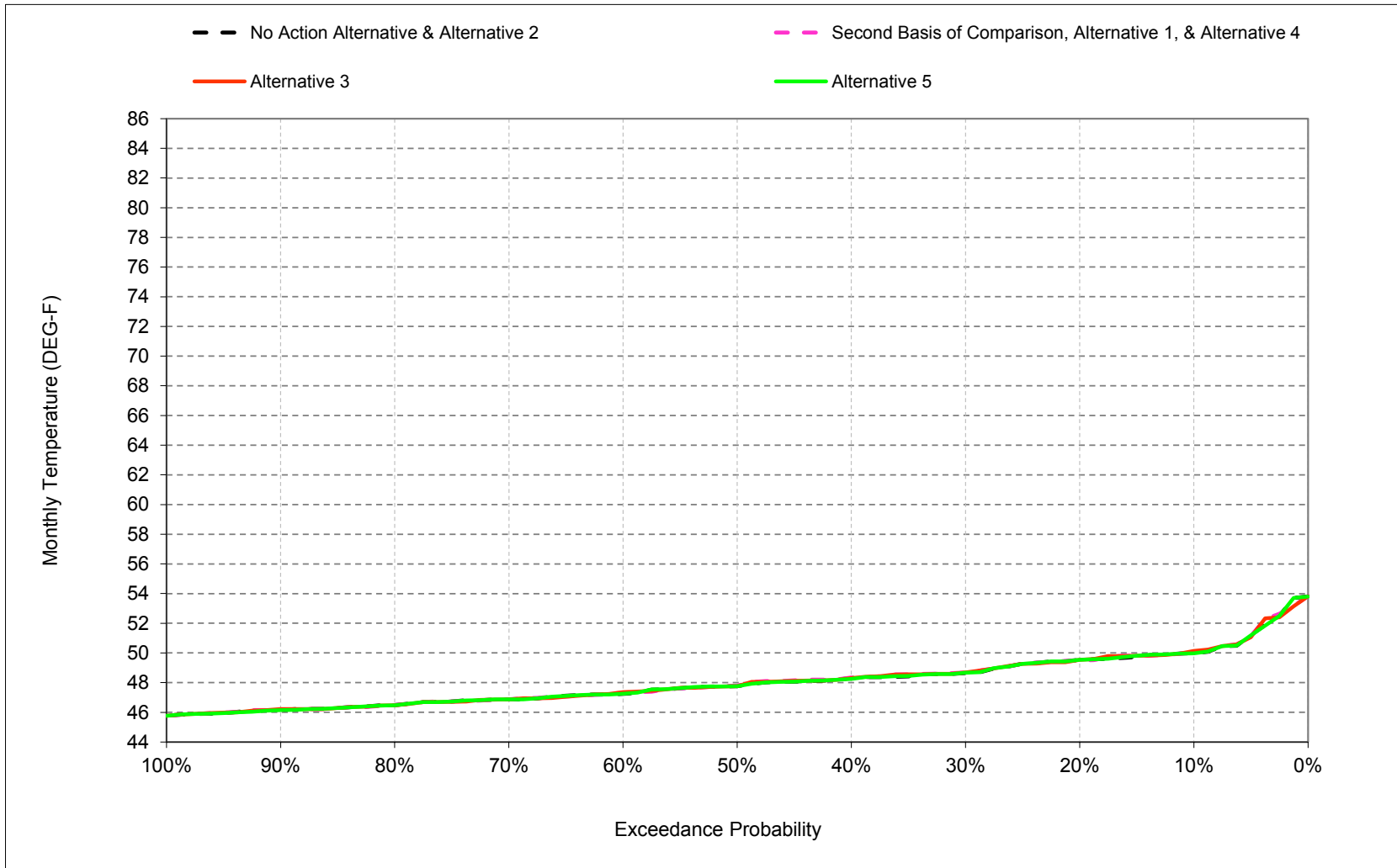
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-13-4. American River at Watt Avenue, January



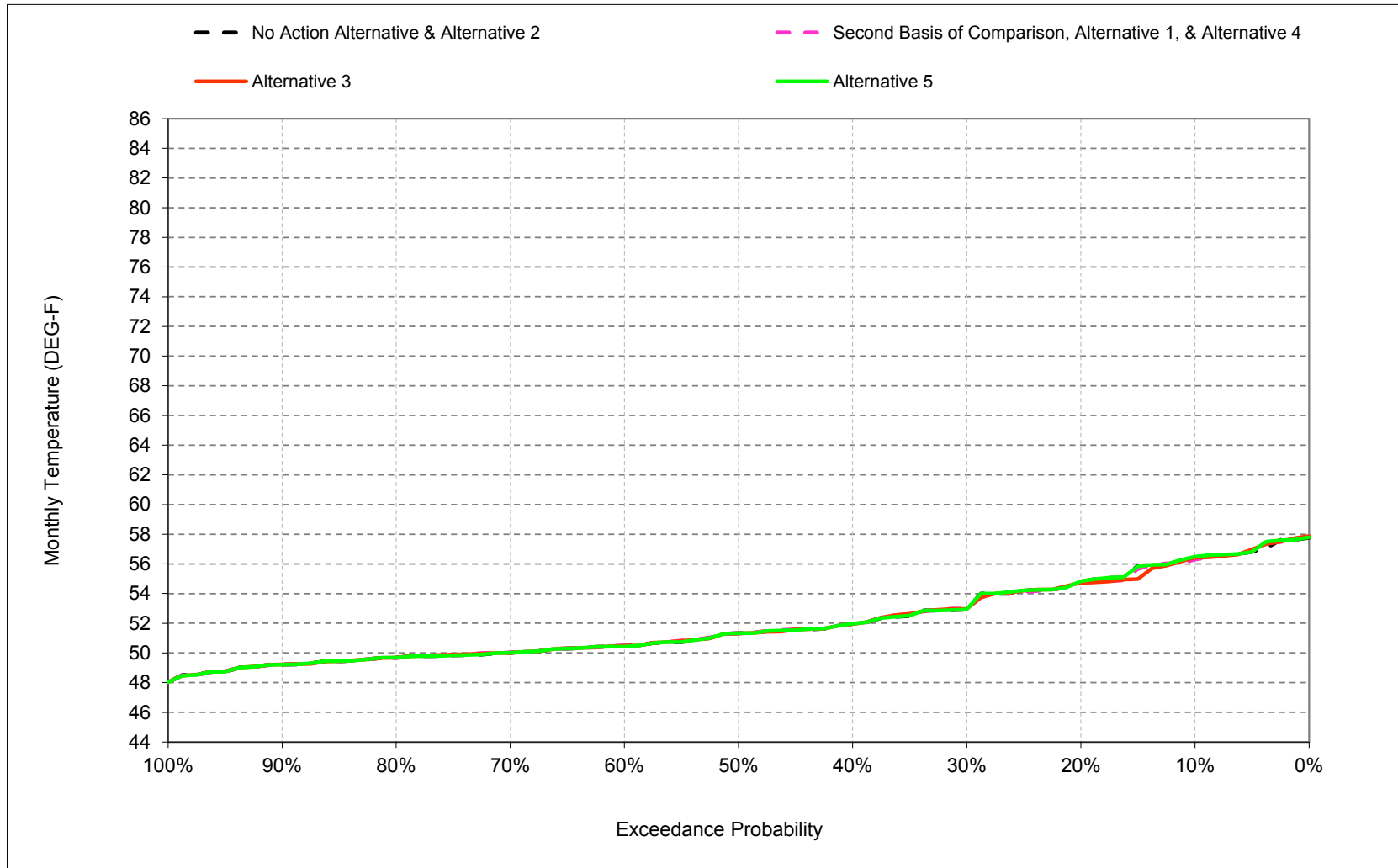
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-13-5. American River at Watt Avenue, February



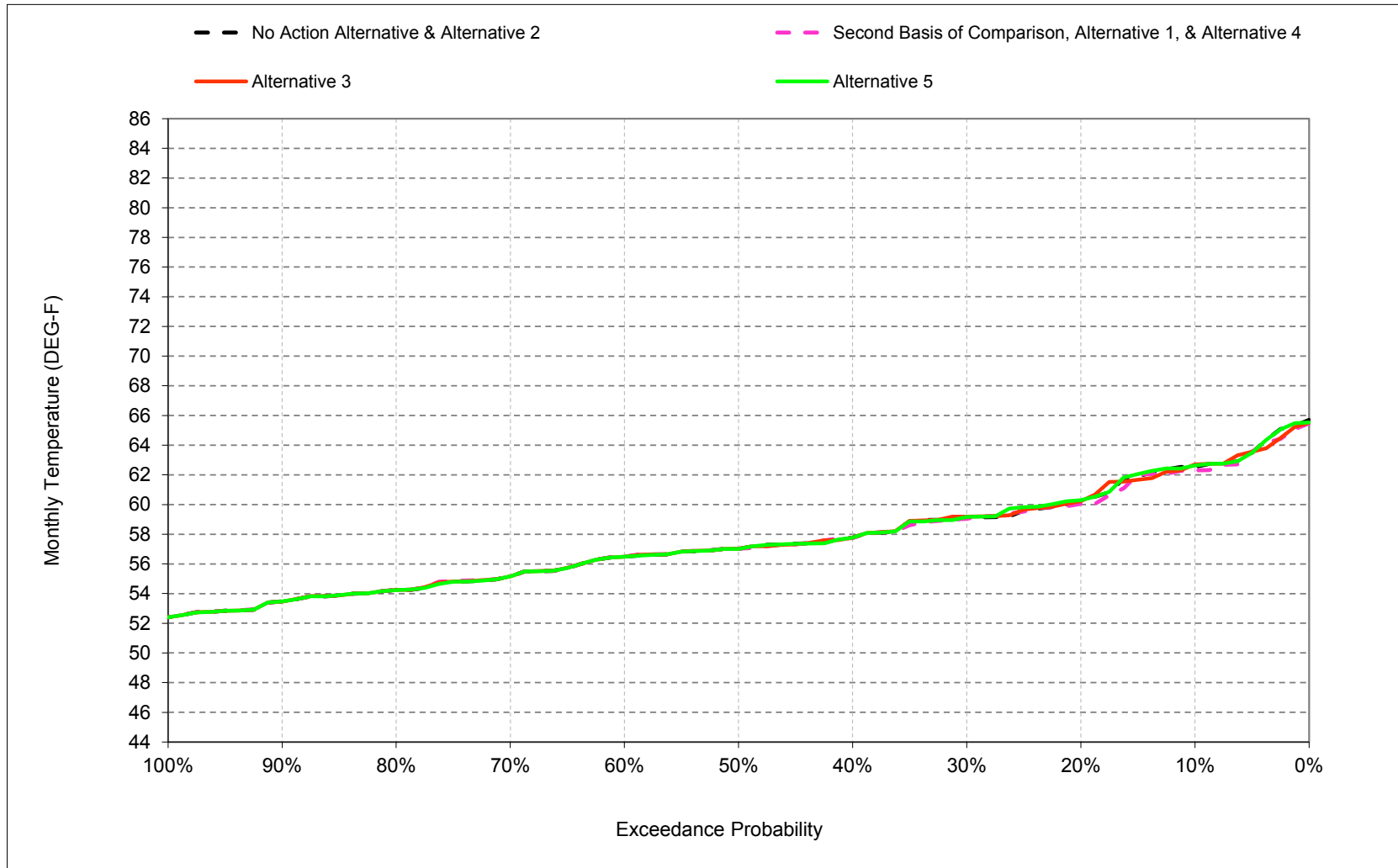
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-13-6. American River at Watt Avenue, March



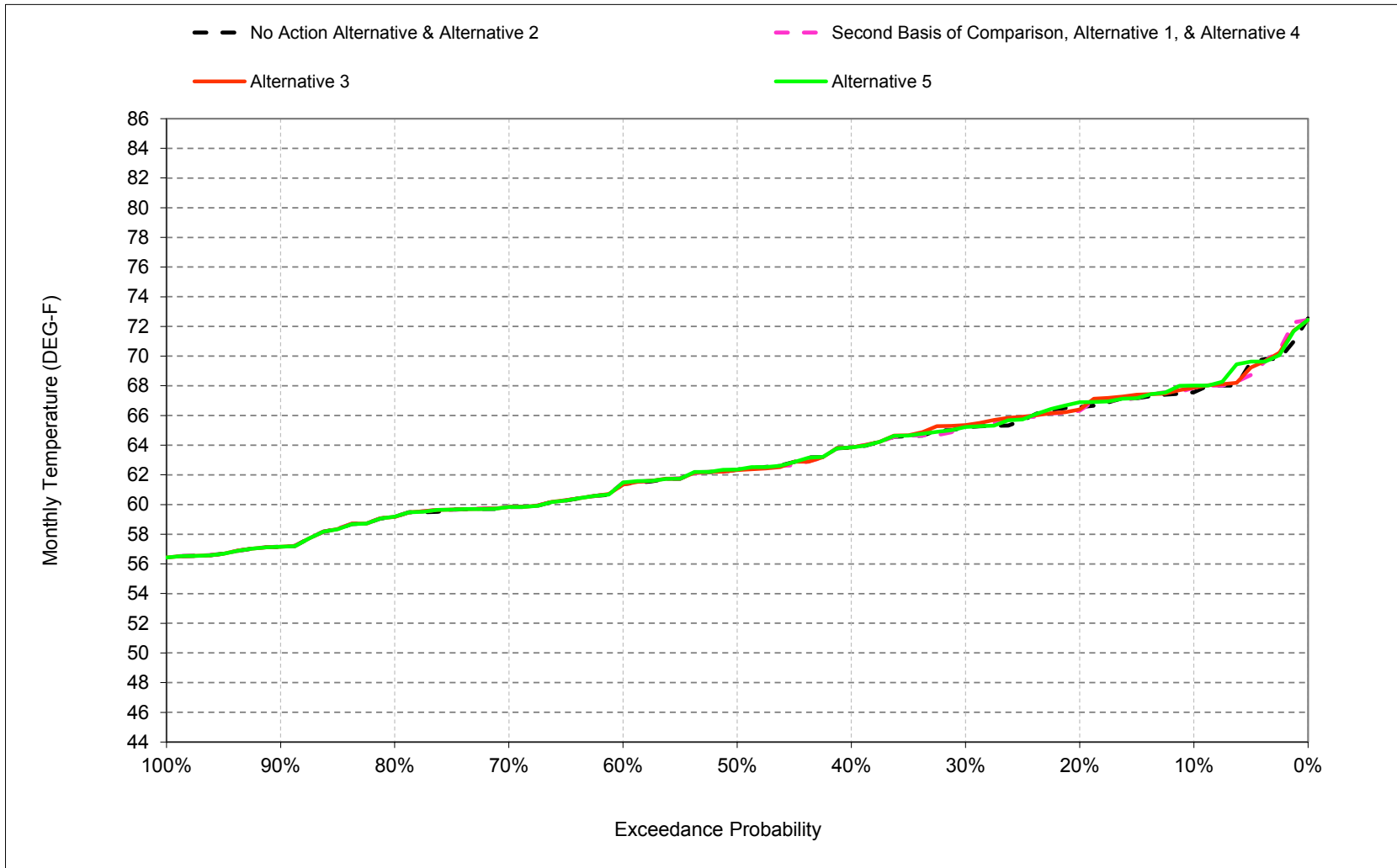
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-13-7. American River at Watt Avenue, April



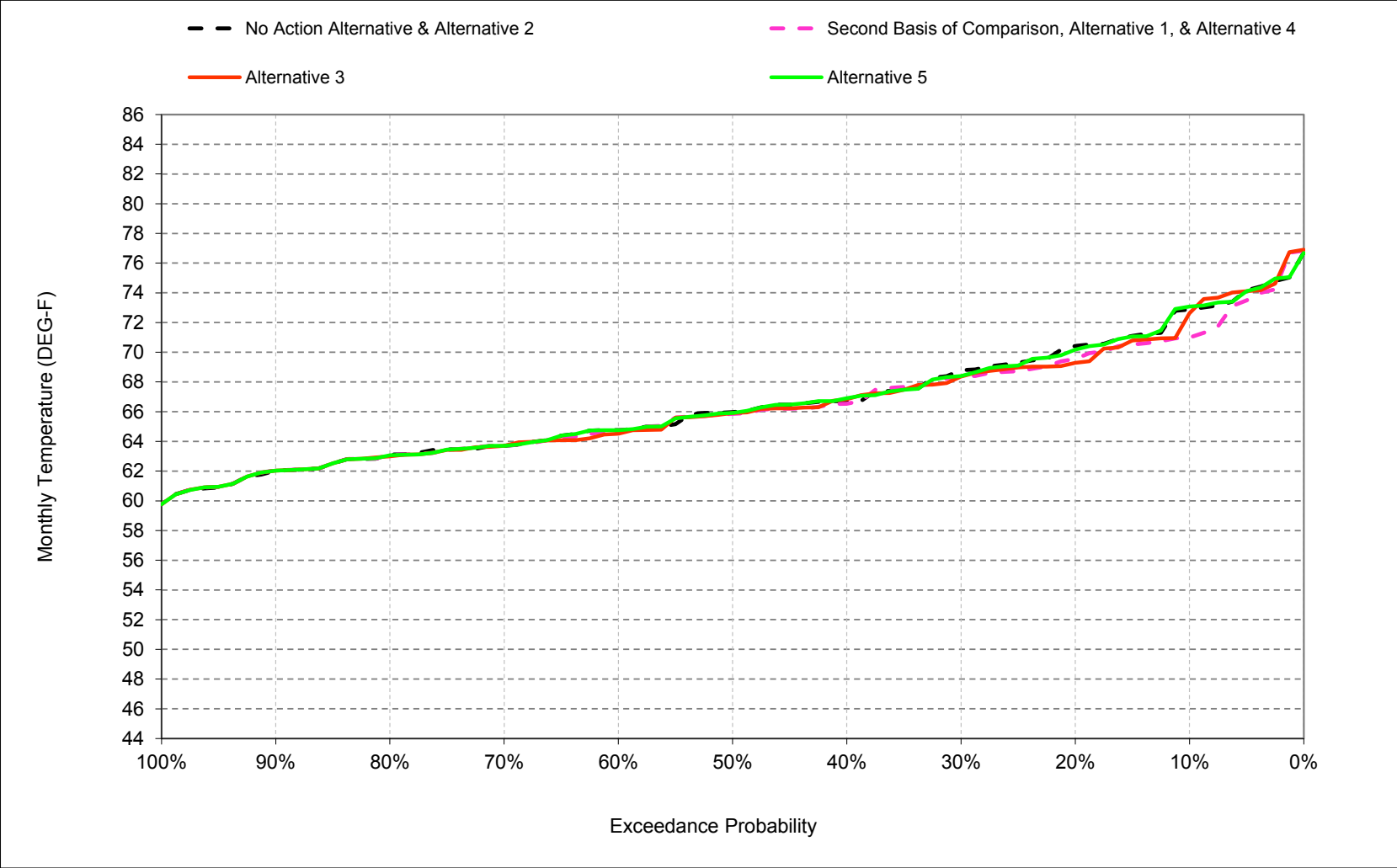
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-13-8. American River at Watt Avenue, May



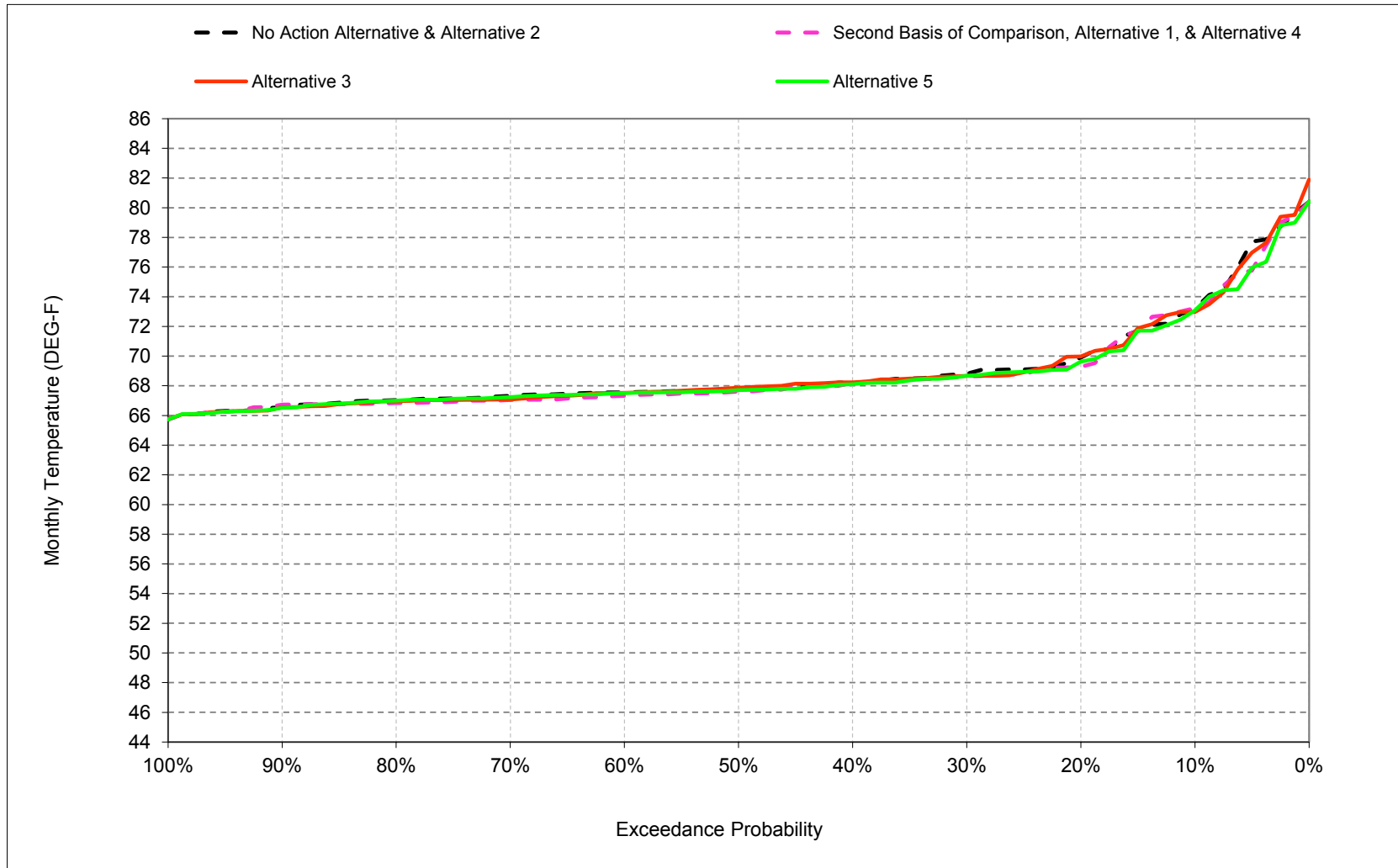
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-13-9. American River at Watt Avenue, June



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-13-10. American River at Watt Avenue, July



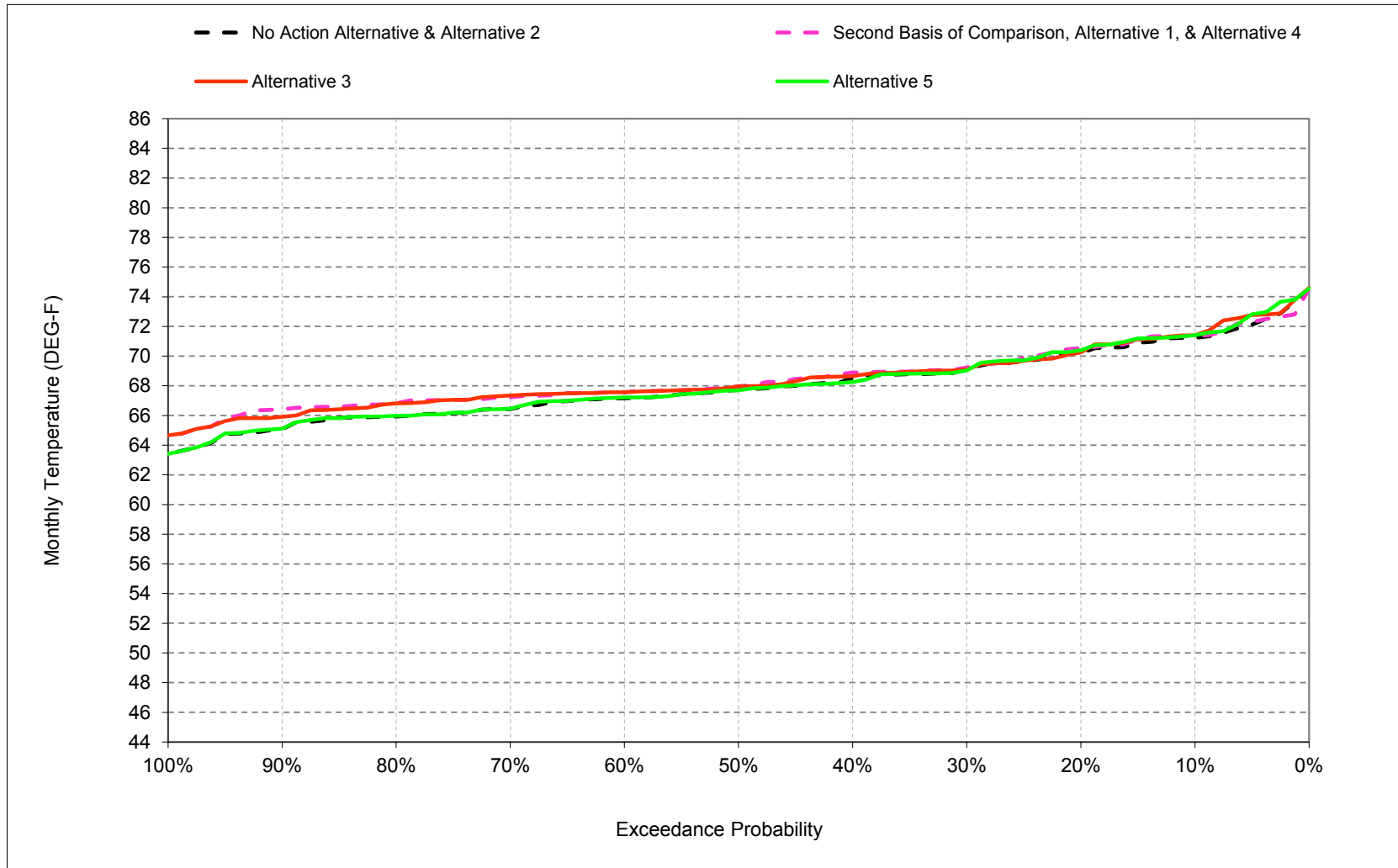
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-13-11. American River at Watt Avenue, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-13-12. American River at Watt Avenue, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-13-1. American River at Watt Avenue, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	67	58	53	48	50	56	63	68	73	73	73	71
20%	66	58	52	48	50	55	60	67	70	70	72	70
30%	65	58	51	47	49	53	59	65	69	69	70	69
40%	64	57	51	47	48	52	58	64	67	68	69	68
50%	64	57	50	47	48	51	57	62	66	68	69	68
60%	64	57	49	46	47	50	56	61	65	68	68	67
70%	63	56	49	46	47	50	55	60	64	67	68	66
80%	63	56	48	45	46	50	54	59	63	67	67	66
90%	61	56	47	45	46	49	53	57	62	67	66	65
Long Term												
Full Simulation Period ^b	64	57	50	47	48	52	57	63	66	69	69	68
Water Year Types ^c												
Wet (32%)	61	55	47	46	47	50	55	59	63	67	67	66
Above Normal (16%)	65	57	50	47	47	50	56	62	66	67	68	67
Below Normal (13%)	63	56	50	47	48	52	59	64	68	68	70	69
Dry (24%)	64	57	50	47	49	53	58	64	68	69	70	69
Critical (15%)	66	58	50	47	51	56	61	67	70	74	72	71

Alternative 1												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	67	58	53	49	50	56	62	68	71	73	73	71
20%	66	58	52	48	49	55	60	66	70	69	72	71
30%	65	58	51	48	49	53	59	65	68	69	70	69
40%	65	57	50	47	48	52	58	64	67	68	69	69
50%	64	57	50	47	48	51	57	62	66	68	69	68
60%	64	57	49	46	47	50	56	61	65	67	68	68
70%	63	56	49	46	47	50	55	60	64	67	67	67
80%	63	56	48	45	46	50	54	59	63	67	66	67
90%	61	56	47	45	46	49	53	57	62	67	65	66
Long Term												
Full Simulation Period ^b	64	57	50	47	48	52	57	63	66	69	69	68
Water Year Types ^c												
Wet (32%)	61	55	47	46	47	50	55	59	63	67	66	67
Above Normal (16%)	64	57	50	47	47	50	56	62	66	67	68	68
Below Normal (13%)	63	56	51	47	48	52	59	64	68	68	69	69
Dry (24%)	65	57	50	47	49	53	59	64	68	69	70	69
Critical (15%)	66	58	50	47	51	56	61	66	71	74	72	71

Alternative 1 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	-0.2	0.0	0.2	0.4	0.1	-0.1	-0.2	0.3	-1.9	0.1	-0.4	0.1
0.2	-0.2	-0.1	0.0	0.1	0.0	-0.1	-0.2	-0.3	-0.9	-0.6	-0.2	0.3
0.3	0.0	0.0	0.3	0.3	0.0	0.1	-0.1	0.0	-0.3	-0.2	-0.2	0.1
0.4	0.1	0.0	-0.1	0.2	0.0	0.0	0.0	0.0	-0.2	-0.1	-0.2	0.4
0.5	0.1	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	-0.1	-0.2	-0.1	0.2
0.6	-0.1	0.0	0.2	0.0	0.1	0.0	0.0	0.1	-0.1	-0.2	-0.3	0.4
0.7	0.1	0.0	0.3	0.2	0.0	0.0	0.0	0.0	0.0	-0.3	-0.3	0.8
0.8	-0.1	-0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	-0.4	0.8
0.9	-0.2	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	-0.2	1.4
Long Term												
Full Simulation Period ^b	0.0	0.0	0.2	0.1	0.0	0.0	-0.1	0.0	-0.2	-0.2	-0.2	0.5
Water Year Types ^c												
Wet (32%)	-0.1	-0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	-0.1	-0.5	1.1
Above Normal (16%)	-0.2	-0.3	0.1	0.2	0.0	0.0	0.0	0.0	-0.1	-0.2	0.1	0.5
Below Normal (13%)	0.1	0.1	0.3	0.3	0.0	0.0	-0.3	0.1	-1.6	-0.3	-0.6	0.2
Dry (24%)	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.1	-0.2	-0.3	0.1	0.0
Critical (15%)	0.1	0.2	0.1	0.1	0.0	0.0	-0.2	-0.2	0.5	0.1	-0.1	0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-13-2. American River at Watt Avenue, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	67	58	53	48	50	56	63	68	73	73	73	71
20%	66	58	52	48	50	55	60	67	70	70	72	70
30%	65	58	51	47	49	53	59	65	69	69	70	69
40%	64	57	51	47	48	52	58	64	67	68	69	68
50%	64	57	50	47	48	51	57	62	66	68	69	68
60%	64	57	49	46	47	50	56	61	65	68	68	67
70%	63	56	49	46	47	50	55	60	64	67	68	66
80%	63	56	48	45	46	50	54	59	63	67	67	66
90%	61	56	47	45	46	49	53	57	62	67	66	65
Long Term												
Full Simulation Period ^b	64	57	50	47	48	52	57	63	66	69	69	68
Water Year Types ^c												
Wet (32%)	61	55	47	46	47	50	55	59	63	67	67	66
Above Normal (16%)	65	57	50	47	47	50	56	62	66	67	68	67
Below Normal (13%)	63	56	50	47	48	52	59	64	68	68	70	69
Dry (24%)	64	57	50	47	49	53	58	64	68	69	70	69
Critical (15%)	66	58	50	47	51	56	61	67	70	74	72	71

Alternative 3												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	67	58	53	49	50	56	63	68	72	73	73	71
20%	66	58	52	48	50	55	60	66	69	70	72	70
30%	65	58	51	48	49	53	59	65	68	69	70	69
40%	64	57	50	47	48	52	58	64	67	68	69	69
50%	64	57	50	47	48	51	57	62	66	68	68	68
60%	64	57	49	46	47	50	56	61	64	68	68	68
70%	63	57	49	46	47	50	55	60	64	67	67	67
80%	63	56	48	45	46	50	54	59	63	67	66	67
90%	61	56	47	45	46	49	53	57	62	66	66	66
Long Term												
Full Simulation Period ^b	64	57	50	47	48	52	57	63	66	69	69	68
Water Year Types ^c												
Wet (32%)	61	54	48	46	47	50	55	59	63	67	66	67
Above Normal (16%)	65	57	50	47	47	50	56	62	66	67	68	68
Below Normal (13%)	63	57	51	47	48	52	59	64	67	68	69	69
Dry (24%)	65	57	50	47	49	53	59	64	68	69	70	69
Critical (15%)	66	58	50	47	51	55	61	66	71	74	73	71

Alternative 3 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	-0.2	0.0	0.1	0.4	0.1	0.0	0.1	0.3	-0.4	-0.2	0.2	0.2
0.2	0.0	0.0	0.0	0.2	0.0	0.0	0.0	-0.2	-1.1	0.1	-0.3	0.0
0.3	0.1	0.0	0.4	0.2	0.0	0.0	0.1	0.2	-0.4	-0.1	0.1	0.0
0.4	0.0	0.0	-0.1	0.3	0.0	0.0	0.0	0.0	0.1	0.0	-0.2	0.2
0.5	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	-0.1	0.2
0.6	-0.2	-0.1	0.2	0.1	0.1	0.0	0.0	0.0	-0.3	0.0	-0.1	0.4
0.7	0.1	0.1	0.3	0.2	0.0	0.0	0.0	0.0	-0.1	-0.2	-0.2	0.9
0.8	-0.1	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0	-0.1	-0.6	0.8
0.9	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-0.2	-0.1	0.8
Long Term												
Full Simulation Period ^b	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.1	-0.1	0.0	-0.2	0.4
Water Year Types ^c												
Wet (32%)	0.0	-0.1	0.2	0.1	0.0	0.0	0.0	0.0	-0.1	0.1	-0.4	1.0
Above Normal (16%)	-0.1	-0.2	0.0	0.1	0.0	0.0	0.0	0.0	-0.2	-0.2	0.3	0.6
Below Normal (13%)	0.1	0.3	0.4	0.3	0.1	0.0	-0.1	0.1	-0.5	-0.1	-0.6	0.1
Dry (24%)	0.1	0.0	0.1	0.1	0.0	0.0	0.1	0.2	-0.1	0.0	-0.1	-0.1
Critical (15%)	0.0	0.1	0.1	0.1	0.0	-0.1	0.0	-0.2	0.3	0.0	0.1	0.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-13-3. American River at Watt Avenue, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	67	58	53	48	50	56	63	68	73	73	73	71
20%	66	58	52	48	50	55	60	67	70	70	72	70
30%	65	58	51	47	49	53	59	65	69	69	70	69
40%	64	57	51	47	48	52	58	64	67	68	69	68
50%	64	57	50	47	48	51	57	62	66	68	69	68
60%	64	57	49	46	47	50	56	61	65	68	68	67
70%	63	56	49	46	47	50	55	60	64	67	68	66
80%	63	56	48	45	46	50	54	59	63	67	67	66
90%	61	56	47	45	46	49	53	57	62	67	66	65
Long Term												
Full Simulation Period ^b	64	57	50	47	48	52	57	63	66	69	69	68
Water Year Types ^c												
Wet (32%)	61	55	47	46	47	50	55	59	63	67	67	66
Above Normal (16%)	65	57	50	47	47	50	56	62	66	67	68	67
Below Normal (13%)	63	56	50	47	48	52	59	64	68	68	70	69
Dry (24%)	64	57	50	47	49	53	58	64	68	69	70	69
Critical (15%)	66	58	50	47	51	56	61	67	70	74	72	71

Alternative 5												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	67	58	53	48	50	56	63	68	73	73	73	71
20%	66	58	52	48	50	55	60	67	70	70	72	70
30%	65	58	51	47	49	53	59	65	68	69	70	69
40%	64	57	51	47	48	52	58	64	67	68	69	68
50%	64	57	50	47	48	51	57	62	66	68	69	68
60%	64	57	49	46	47	50	56	61	65	67	68	67
70%	63	56	48	46	47	50	55	60	64	67	68	66
80%	63	56	48	45	46	50	54	59	63	67	67	66
90%	61	56	47	45	46	49	53	57	62	66	66	65
Long Term												
Full Simulation Period ^b	64	57	50	47	48	52	57	63	66	69	69	68
Water Year Types ^c												
Wet (32%)	61	55	47	46	47	50	55	59	63	67	67	66
Above Normal (16%)	65	57	50	47	47	50	56	62	66	67	68	67
Below Normal (13%)	63	56	50	47	48	52	59	64	68	68	70	69
Dry (24%)	64	57	50	47	49	53	58	64	68	69	70	69
Critical (15%)	66	58	50	47	51	56	61	67	70	74	72	72

Alternative 5 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.5	0.2	-0.1	0.1	0.2
0.2	0.0	-0.1	0.1	0.0	0.0	0.0	0.0	0.3	-0.3	-0.3	-0.2	0.2
0.3	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	-0.3	-0.1	-0.1	-0.1
0.4	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	-0.1	-0.2
0.5	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-0.1	0.0	0.0
0.6	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	0.0
0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	0.0
0.8	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0
0.9	0.1	-0.1	-0.1	-0.1	0.0	0.0	0.0	0.0	0.1	-0.1	0.2	0.1
Long Term												
Full Simulation Period ^b	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-0.2	0.0	0.1
Water Year Types ^c												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.0
Above Normal (16%)	0.0	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Below Normal (13%)	0.0	0.0	-0.1	-0.1	0.0	0.0	0.0	0.1	0.1	-0.1	0.1	0.1
Dry (24%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	-0.2	0.0	0.0
Critical (15%)	0.0	-0.1	0.0	0.0	0.0	0.1	0.1	0.0	-0.3	-0.5	-0.1	0.5

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-13-4. American River at Watt Avenue, Monthly Temperature

Second Basis of Comparison		Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	
Probability of Exceedance^a													
10%	67	58	53	49	50	56	62	68	71	73	73	71	
20%	66	58	52	48	49	55	60	66	70	69	72	71	
30%	65	58	51	48	49	53	59	65	68	69	70	69	
40%	65	57	50	47	48	52	58	64	67	68	69	69	
50%	64	57	50	47	48	51	57	62	66	68	69	68	
60%	64	57	49	46	47	50	56	61	65	67	68	68	
70%	63	56	49	46	47	50	55	60	64	67	67	67	
80%	63	56	48	45	46	50	54	59	63	67	66	67	
90%	61	56	47	45	46	49	53	57	62	67	65	66	
Long Term													
Full Simulation Period ^b	64	57	50	47	48	52	57	63	66	69	69	68	
Water Year Types^c													
Wet (32%)	61	55	47	46	47	50	55	59	63	67	66	67	
Above Normal (16%)	64	57	50	47	47	50	56	62	66	67	68	68	
Below Normal (13%)	63	56	51	47	48	52	59	64	66	68	69	69	
Dry (24%)	65	57	50	47	49	53	59	64	68	69	70	69	
Critical (15%)	66	58	50	47	51	56	61	66	71	74	72	71	

No Action Alternative		Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	
Probability of Exceedance^a													
10%	67	58	53	48	50	56	63	68	73	73	73	71	
20%	66	58	52	48	50	55	60	67	70	70	72	70	
30%	65	58	51	47	49	53	59	65	69	69	70	69	
40%	64	57	51	47	48	52	58	64	67	68	69	68	
50%	64	57	50	47	48	51	57	62	66	68	69	68	
60%	64	57	49	46	47	50	56	61	65	68	68	67	
70%	63	56	49	46	47	50	55	60	64	67	68	66	
80%	63	56	48	45	46	50	54	59	63	67	67	66	
90%	61	56	47	45	46	49	53	57	62	67	66	65	
Long Term													
Full Simulation Period ^b	64	57	50	47	48	52	57	63	66	69	69	68	
Water Year Types^c													
Wet (32%)	61	55	47	46	47	50	55	59	63	67	67	66	
Above Normal (16%)	65	57	50	47	47	50	56	62	66	67	68	67	
Below Normal (13%)	63	56	50	47	48	52	59	64	68	68	70	69	
Dry (24%)	64	57	50	47	49	53	58	64	68	69	70	69	
Critical (15%)	66	58	50	47	51	56	61	67	70	74	72	71	

No Action Alternative minus Second Basis of Comparison		Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	
Probability of Exceedance^a													
0.1	0.2	0.0	-0.2	-0.4	-0.1	0.1	0.2	-0.3	1.9	-0.1	0.4	-0.1	
0.2	0.2	0.1	0.0	-0.1	0.0	0.1	0.2	0.3	0.9	0.6	0.2	-0.3	
0.3	0.0	0.0	-0.3	-0.3	0.0	-0.1	0.1	0.0	0.3	0.2	0.2	-0.1	
0.4	-0.1	0.0	0.1	-0.2	0.0	0.0	0.0	0.0	0.2	0.1	0.2	-0.4	
0.5	-0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	-0.2	
0.6	0.1	0.0	-0.2	0.0	-0.1	0.0	0.0	-0.1	0.1	0.2	0.3	-0.4	
0.7	-0.1	0.0	-0.3	-0.2	0.0	0.0	0.0	0.0	0.0	0.3	0.3	-0.8	
0.8	0.1	0.1	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	-0.8	
0.9	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	0.2	-1.4	
Long Term													
Full Simulation Period ^b	0.0	0.0	-0.2	-0.1	0.0	0.0	0.1	0.0	0.2	0.2	0.2	-0.5	
Water Year Types^c													
Wet (32%)	0.1	0.1	-0.2	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.5	-1.1	
Above Normal (16%)	0.2	0.3	-0.1	-0.2	0.0	0.0	0.0	0.0	0.1	0.2	-0.1	-0.5	
Below Normal (13%)	-0.1	-0.1	-0.3	-0.3	0.0	0.0	0.3	-0.1	1.6	0.3	0.6	-0.2	
Dry (24%)	-0.1	0.0	-0.1	-0.1	0.0	0.0	0.0	-0.1	0.2	0.3	-0.1	0.0	
Critical (15%)	-0.1	-0.2	-0.1	-0.1	0.0	0.0	0.2	0.2	-0.5	-0.1	0.1	-0.1	

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-13-5. American River at Watt Avenue, Monthly Temperature

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Second Basis of Comparison												
Probability of Exceedance ^a												
10%	67	58	53	49	50	56	62	68	71	73	73	71
20%	66	58	52	48	49	55	60	66	70	69	72	71
30%	65	58	51	48	49	53	59	65	68	69	70	69
40%	65	57	50	47	48	52	58	64	67	68	69	69
50%	64	57	50	47	48	51	57	62	66	68	69	68
60%	64	57	49	46	47	50	56	61	65	67	68	68
70%	63	56	49	46	47	50	55	60	64	67	67	67
80%	63	56	48	45	46	50	54	59	63	67	66	67
90%	61	56	47	45	46	49	53	57	62	67	65	66
Long Term												
Full Simulation Period ^b	64	57	50	47	48	52	57	63	66	69	69	68
Water Year Types ^c												
Wet (32%)	61	55	47	46	47	50	55	59	63	67	66	67
Above Normal (16%)	64	57	50	47	47	50	56	62	66	67	68	68
Below Normal (13%)	63	56	51	47	48	52	59	64	66	68	69	69
Dry (24%)	65	57	50	47	49	53	59	64	68	69	70	69
Critical (15%)	66	58	50	47	51	56	61	66	71	74	72	71

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Alternative 3												
Probability of Exceedance ^a												
10%	67	58	53	49	50	56	63	68	72	73	73	71
20%	66	58	52	48	50	55	60	66	69	70	72	70
30%	65	58	51	48	49	53	59	65	68	69	70	69
40%	64	57	50	47	48	52	58	64	67	68	69	69
50%	64	57	50	47	48	51	57	62	66	68	68	68
60%	64	57	49	46	47	50	56	61	64	68	68	68
70%	63	57	49	46	47	50	55	60	64	67	67	67
80%	63	56	48	45	46	50	54	59	63	67	66	67
90%	61	56	47	45	46	49	53	57	62	66	66	66
Long Term												
Full Simulation Period ^b	64	57	50	47	48	52	57	63	66	69	69	68
Water Year Types ^c												
Wet (32%)	61	54	48	46	47	50	55	59	63	67	66	67
Above Normal (16%)	65	57	50	47	47	50	56	62	66	67	68	68
Below Normal (13%)	63	57	51	47	48	52	59	64	67	68	69	69
Dry (24%)	65	57	50	47	49	53	59	64	68	69	70	69
Critical (15%)	66	58	50	47	51	55	61	66	71	74	73	71

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Alternative 3 minus Second Basis of Comparison												
Probability of Exceedance ^a												
0.1	0.0	0.0	-0.1	0.0	0.0	0.1	0.4	0.0	1.5	-0.2	0.6	0.0
0.2	0.2	0.0	0.0	0.1	0.0	0.0	0.2	0.1	-0.3	0.7	-0.1	-0.3
0.3	0.1	0.0	0.1	0.0	0.0	0.0	0.2	0.2	-0.1	0.0	0.3	-0.1
0.4	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1	0.0	-0.2
0.5	-0.1	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0
0.6	0.0	-0.1	0.0	0.1	0.0	0.0	0.0	0.0	-0.2	0.2	0.2	0.0
0.7	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.1	0.1
0.8	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-0.2	0.0
0.9	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	-0.2	0.1	-0.5	
Long Term												
Full Simulation Period ^b	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0
Water Year Types ^c												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.1	-0.1
Above Normal (16%)	0.2	0.2	-0.1	-0.1	0.0	0.0	0.0	0.0	-0.1	0.0	0.2	0.1
Below Normal (13%)	0.0	0.2	0.0	0.0	0.0	0.0	0.2	0.1	1.0	0.1	0.0	-0.1
Dry (24%)	-0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.3	-0.2	-0.1
Critical (15%)	-0.1	-0.1	-0.1	0.0	0.0	-0.1	0.1	0.0	-0.2	-0.1	0.2	0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-13-6. American River at Watt Avenue, Monthly Temperature

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Second Basis of Comparison												
Probability of Exceedance ^a												
10%	67	58	53	49	50	56	62	68	71	73	73	71
20%	66	58	52	48	49	55	60	66	70	69	72	71
30%	65	58	51	48	49	53	59	65	68	69	70	69
40%	65	57	50	47	48	52	58	64	67	68	69	69
50%	64	57	50	47	48	51	57	62	66	68	69	68
60%	64	57	49	46	47	50	56	61	65	67	68	68
70%	63	56	49	46	47	50	55	60	64	67	67	67
80%	63	56	48	45	46	50	54	59	63	67	66	67
90%	61	56	47	45	46	49	53	57	62	67	65	66
Long Term												
Full Simulation Period ^b	64	57	50	47	48	52	57	63	66	69	69	68
Water Year Types ^c												
Wet (32%)	61	55	47	46	47	50	55	59	63	67	66	67
Above Normal (16%)	64	57	50	47	47	50	56	62	66	67	68	68
Below Normal (13%)	63	56	51	47	48	52	59	64	66	68	69	69
Dry (24%)	65	57	50	47	49	53	59	64	68	69	70	69
Critical (15%)	66	58	50	47	51	56	61	66	71	74	72	71

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Alternative 5												
Probability of Exceedance ^a												
10%	67	58	53	48	50	56	63	68	73	73	73	71
20%	66	58	52	48	50	55	60	67	70	70	72	70
30%	65	58	51	47	49	53	59	65	68	69	70	69
40%	64	57	51	47	48	52	58	64	67	68	69	68
50%	64	57	50	47	48	51	57	62	66	68	69	68
60%	64	57	49	46	47	50	56	61	65	67	68	67
70%	63	56	48	46	47	50	55	60	64	67	68	66
80%	63	56	48	45	46	50	54	59	63	67	67	66
90%	61	56	47	45	46	49	53	57	62	66	66	65
Long Term												
Full Simulation Period ^b	64	57	50	47	48	52	57	63	66	69	69	68
Water Year Types ^c												
Wet (32%)	61	55	47	46	47	50	55	59	63	67	67	66
Above Normal (16%)	65	57	50	47	47	50	56	62	66	67	68	67
Below Normal (13%)	63	56	50	47	48	52	59	64	68	68	70	69
Dry (24%)	64	57	50	47	49	53	58	64	68	69	70	69
Critical (15%)	66	58	50	47	51	56	61	67	70	74	72	72

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Alternative 5 minus Second Basis of Comparison												
Probability of Exceedance ^a												
0.1	0.2	0.0	-0.2	-0.4	-0.1	0.2	0.3	0.2	2.1	-0.2	0.5	0.0
0.2	0.3	0.0	0.1	-0.1	0.0	0.1	0.3	0.6	0.6	0.3	0.0	-0.1
0.3	0.1	-0.1	-0.3	-0.3	0.0	-0.1	0.1	0.0	0.0	0.0	0.1	-0.2
0.4	-0.2	0.0	0.1	-0.2	-0.1	0.0	0.0	0.0	0.3	0.0	0.2	-0.6
0.5	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	-0.2
0.6	-0.1	0.0	-0.1	0.0	-0.1	-0.1	0.0	0.0	0.1	0.2	0.1	-0.4
0.7	-0.1	0.0	-0.3	-0.2	0.0	0.0	0.0	0.0	0.0	0.2	0.2	-0.8
0.8	0.1	0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.8	-0.8
0.9	0.4	-0.1	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	-0.2	0.4	-1.3
Long Term												
Full Simulation Period ^b	0.0	0.0	-0.2	-0.1	0.0	0.0	0.1	0.0	0.2	0.0	0.3	-0.4
Water Year Types ^c												
Wet (32%)	0.0	0.0	-0.2	-0.1	0.0	0.0	0.0	0.0	0.0	-0.1	0.6	-1.1
Above Normal (16%)	0.2	0.1	-0.1	-0.2	0.0	0.0	0.0	0.0	0.2	0.2	-0.1	-0.5
Below Normal (13%)	-0.1	-0.1	-0.4	-0.3	-0.1	0.0	0.3	0.0	1.6	0.2	0.7	-0.1
Dry (24%)	-0.1	0.0	0.0	-0.1	0.0	0.0	0.0	0.1	0.3	0.1	-0.1	0.0
Critical (15%)	-0.1	-0.2	-0.2	-0.1	0.0	0.1	0.3	0.2	-0.7	-0.6	0.1	0.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

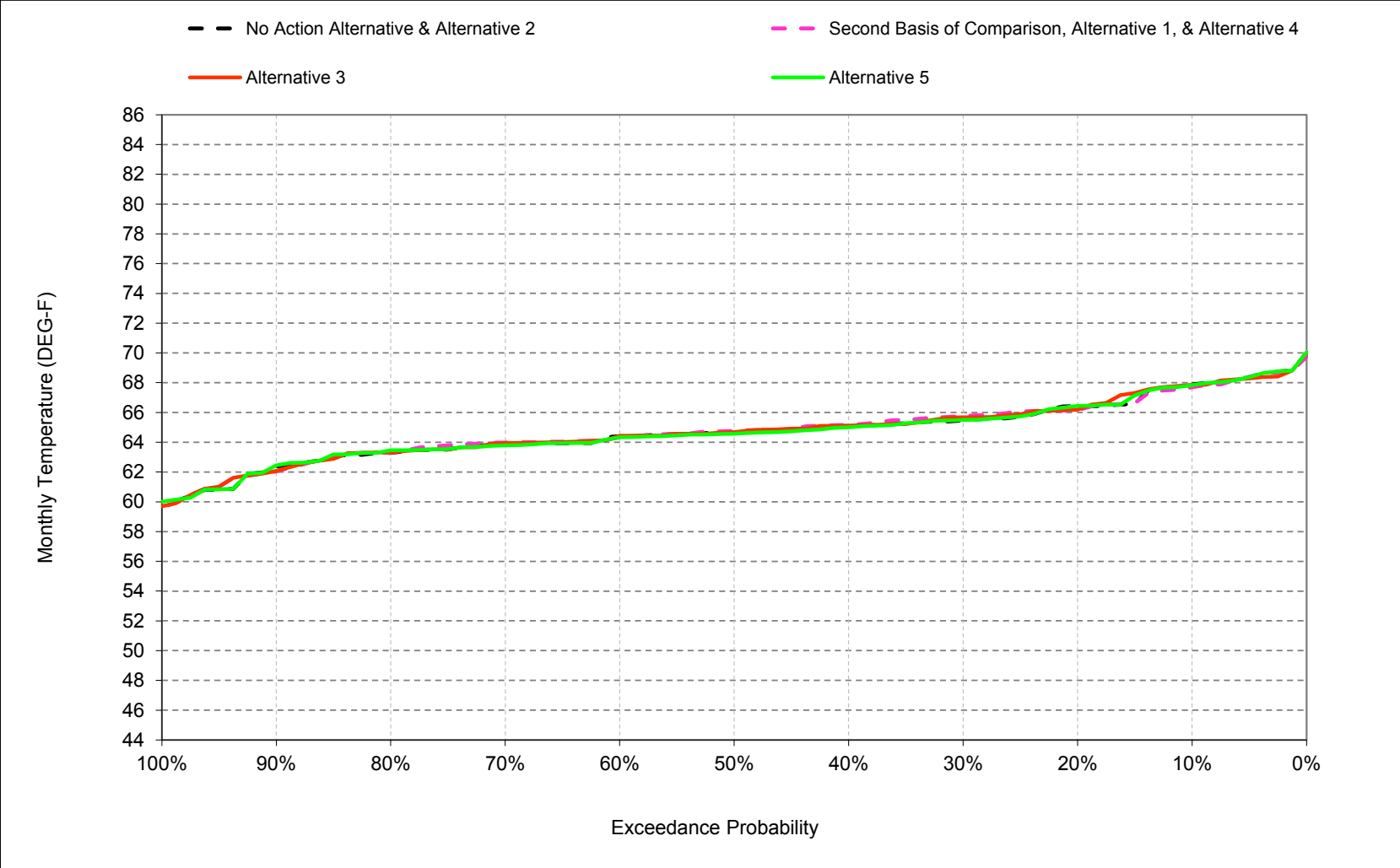
b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

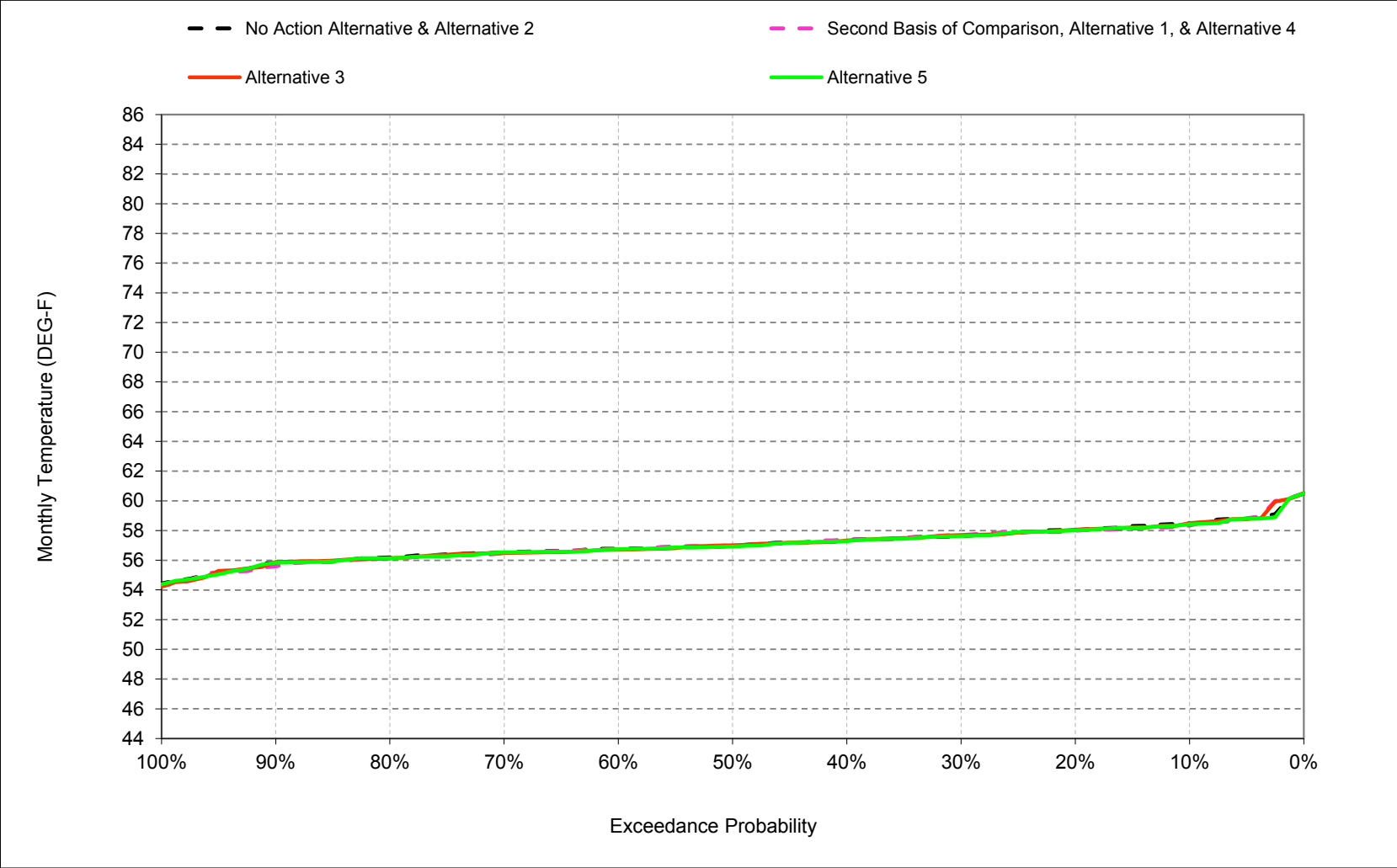
B.14. American River at Mouth Temperature

Figure B-14-1. American River at the Mouth, October



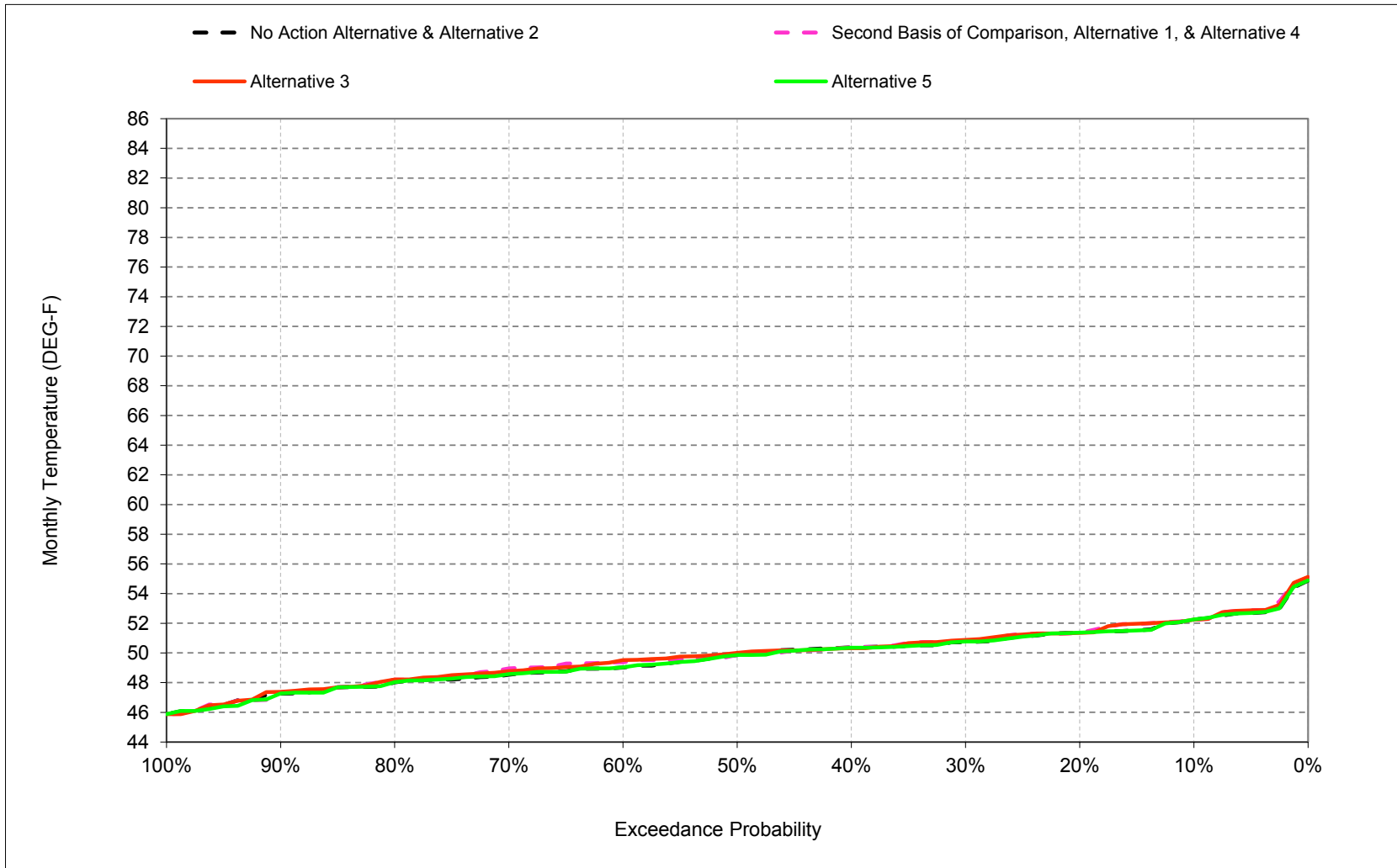
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-14-2. American River at the Mouth, November



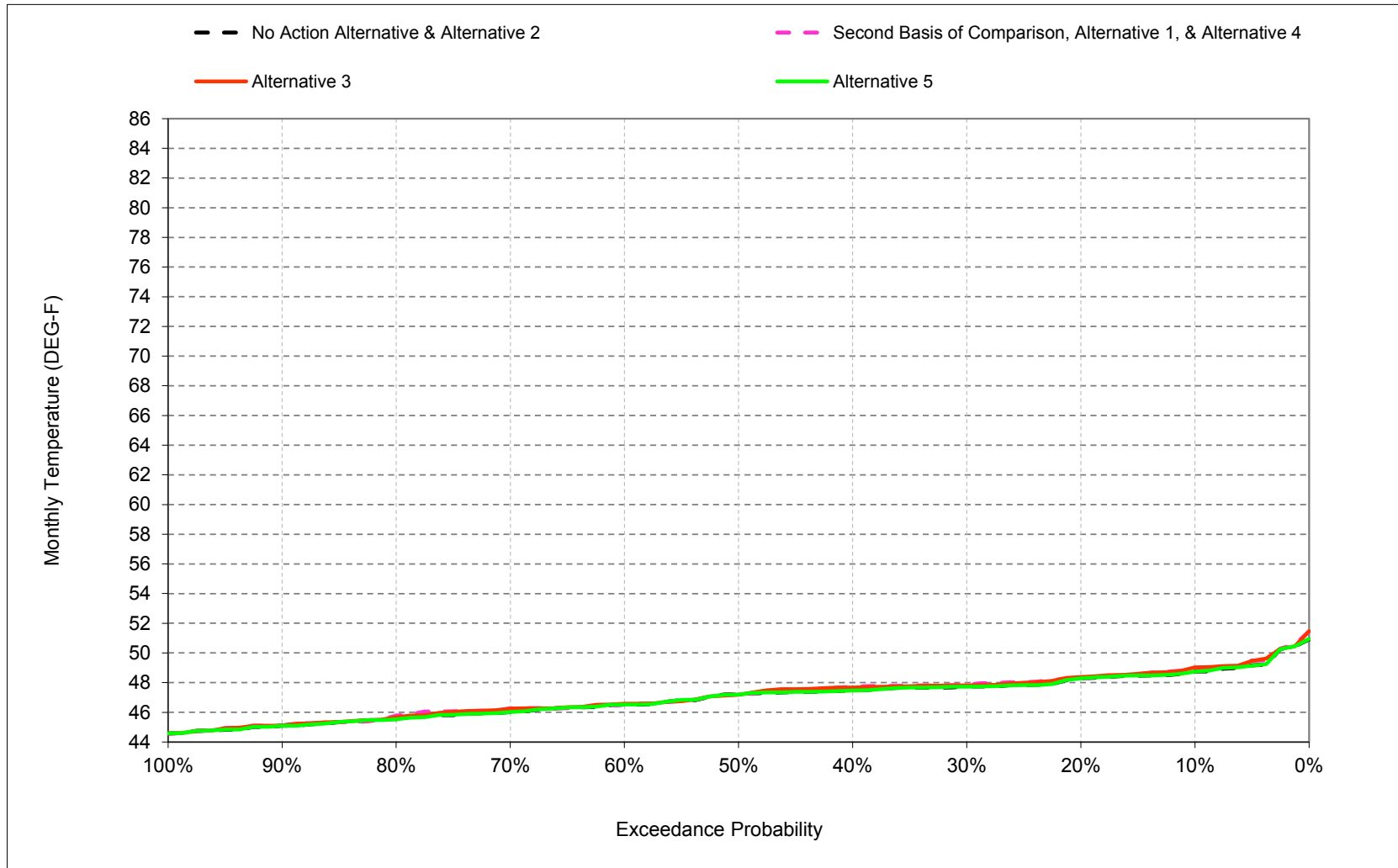
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-14-3. American River at the Mouth, December



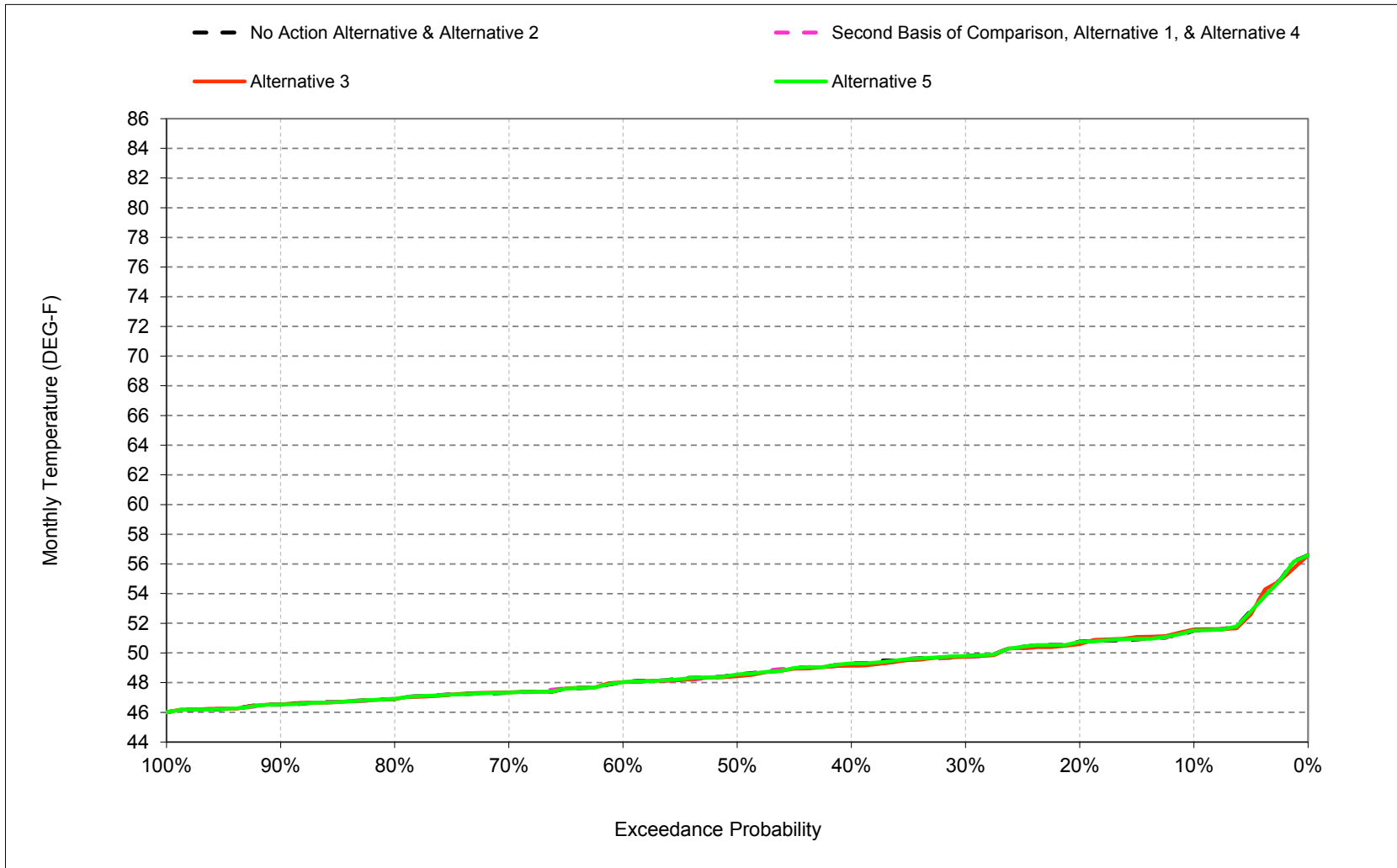
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-14-4. American River at the Mouth, January



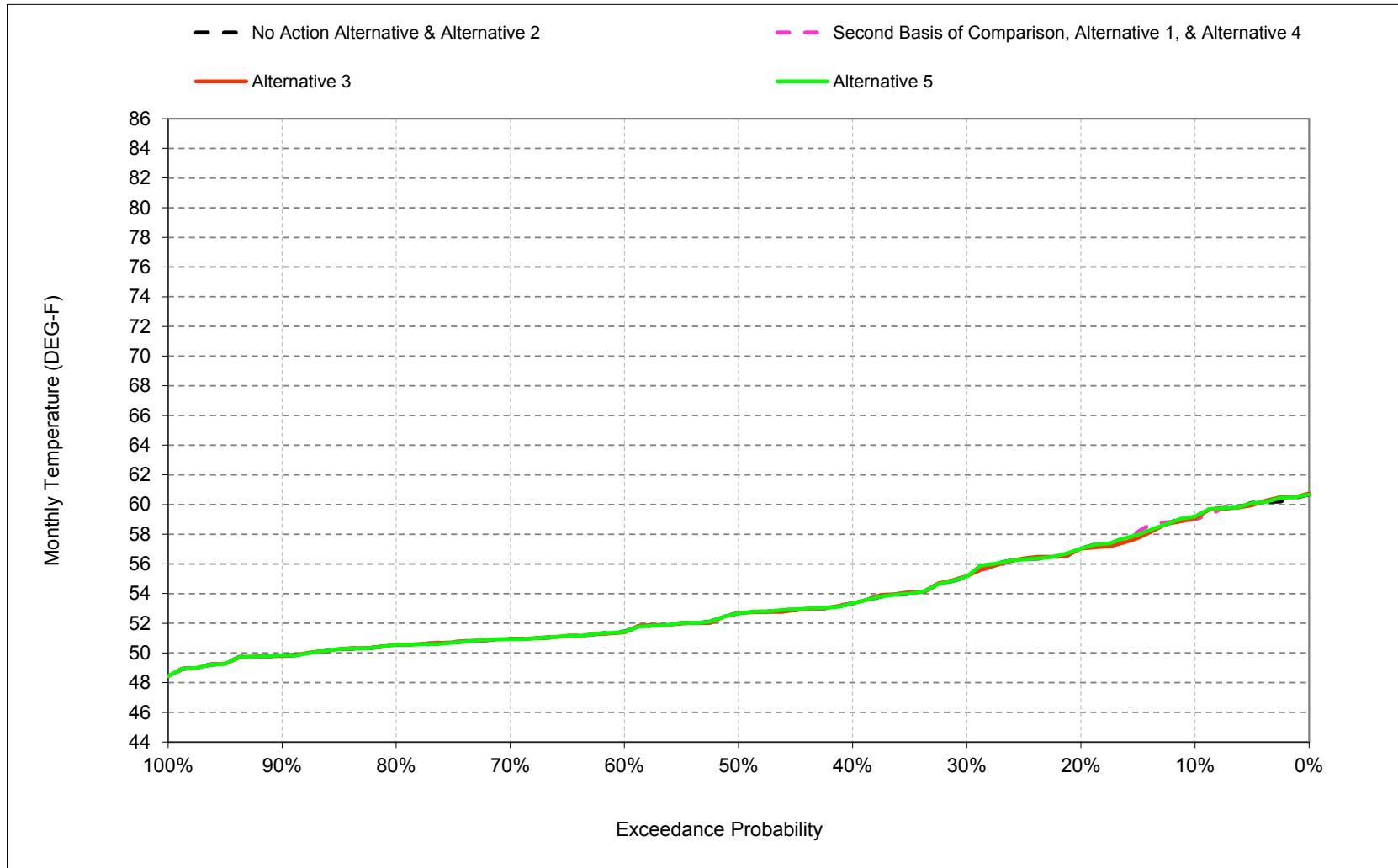
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-14-5. American River at the Mouth, February



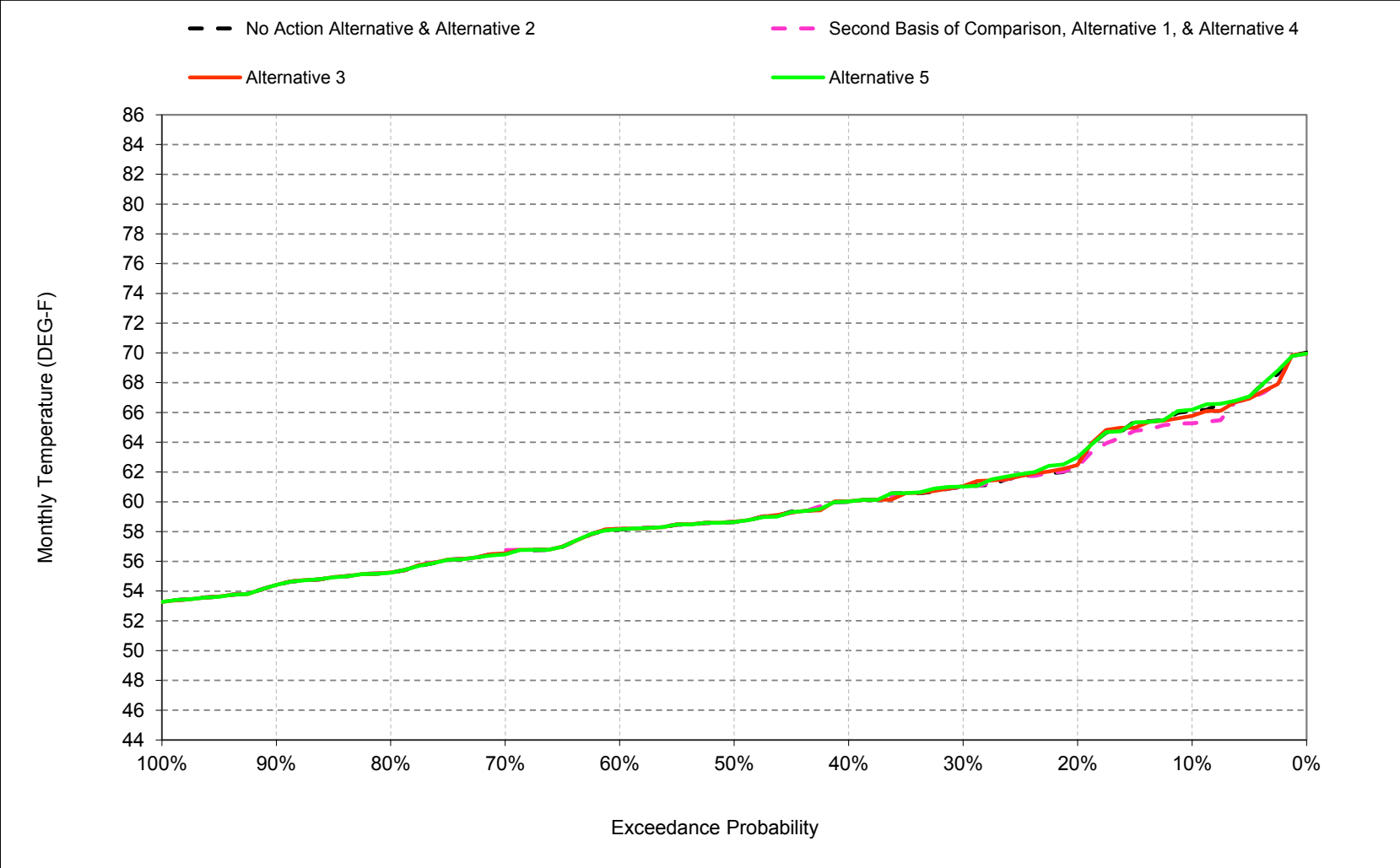
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-14-6. American River at the Mouth, March



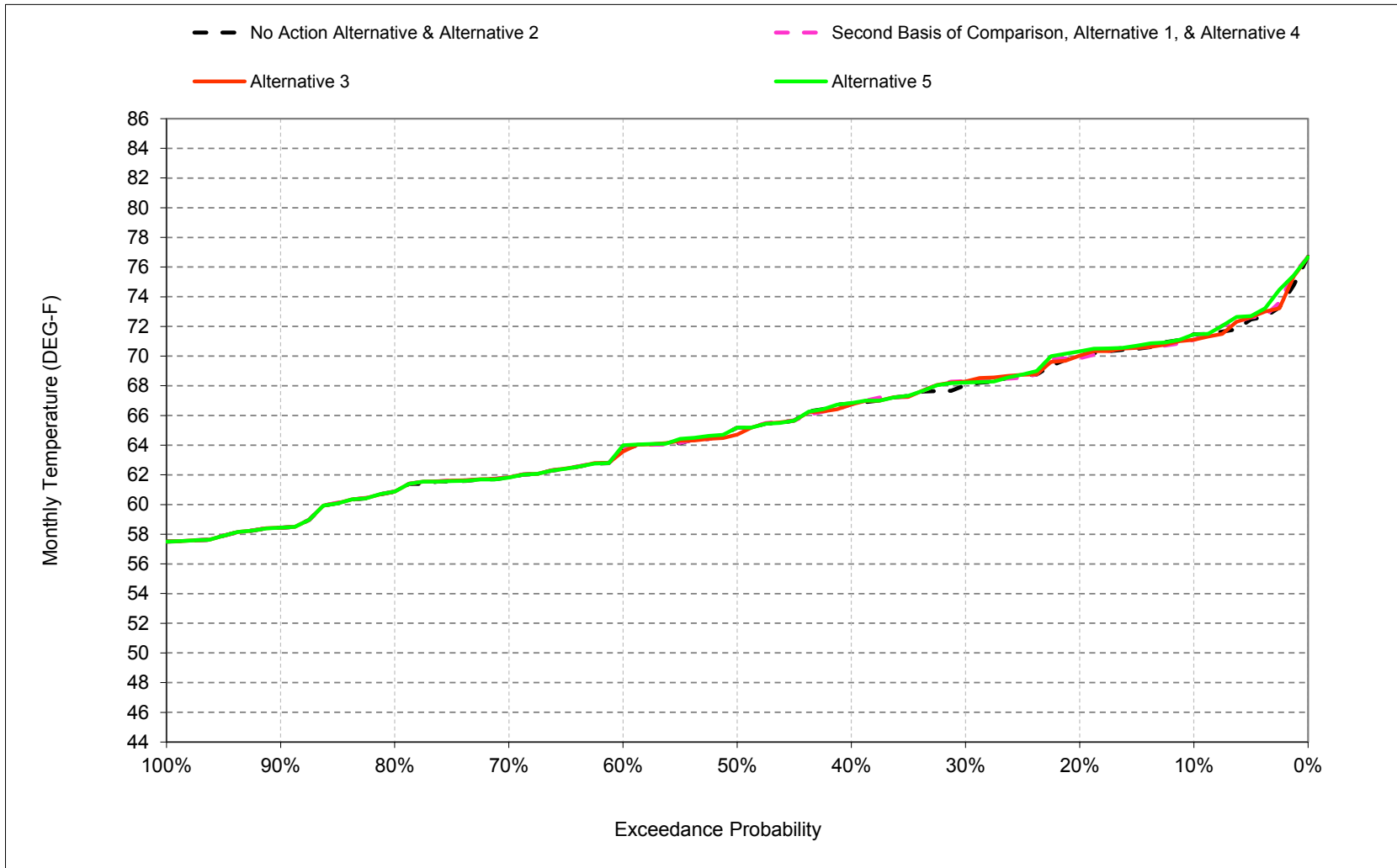
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-14-7. American River at the Mouth, April



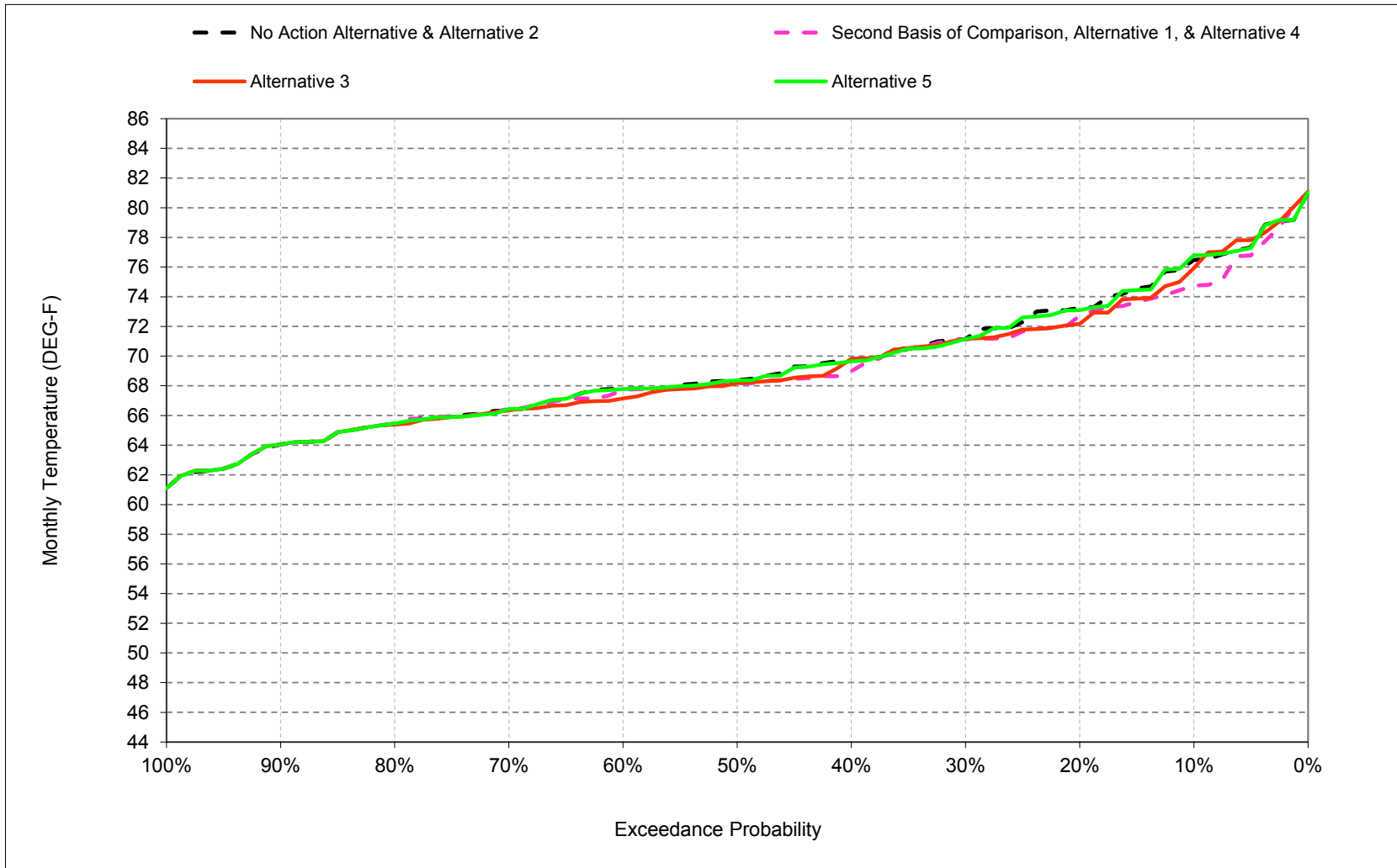
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-14-8. American River at the Mouth, May



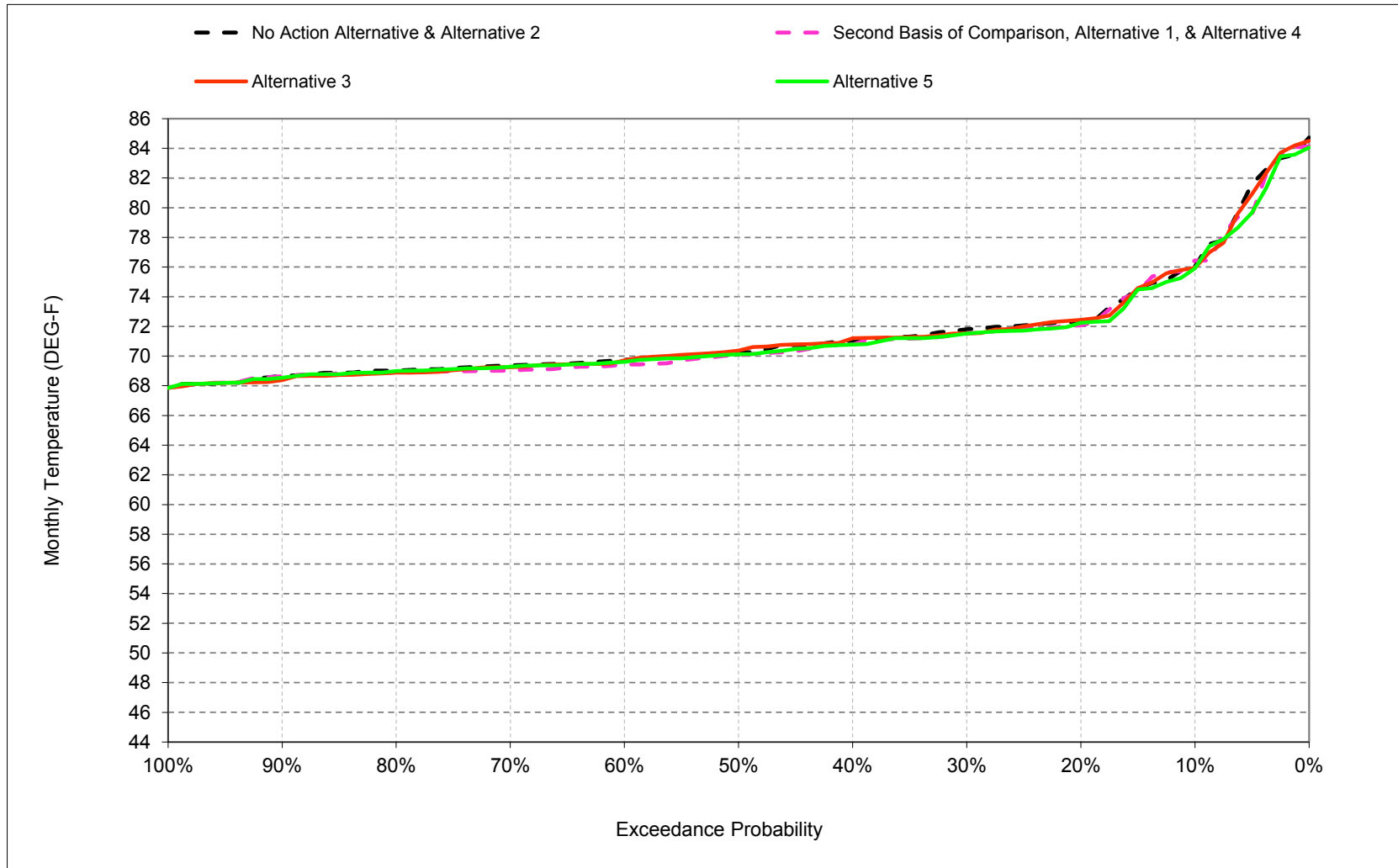
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-14-9. American River at the Mouth, June



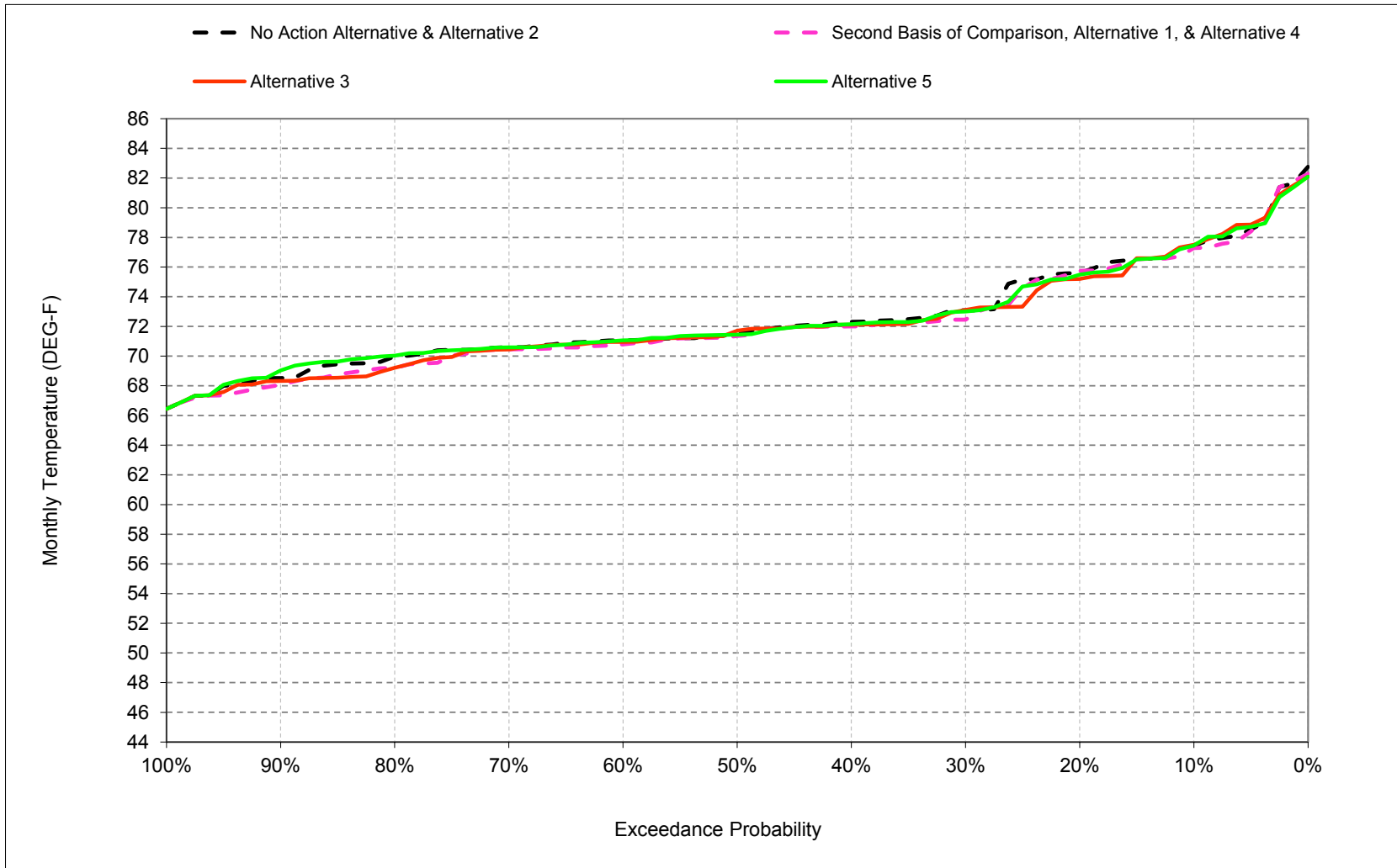
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-14-10. American River at the Mouth, July



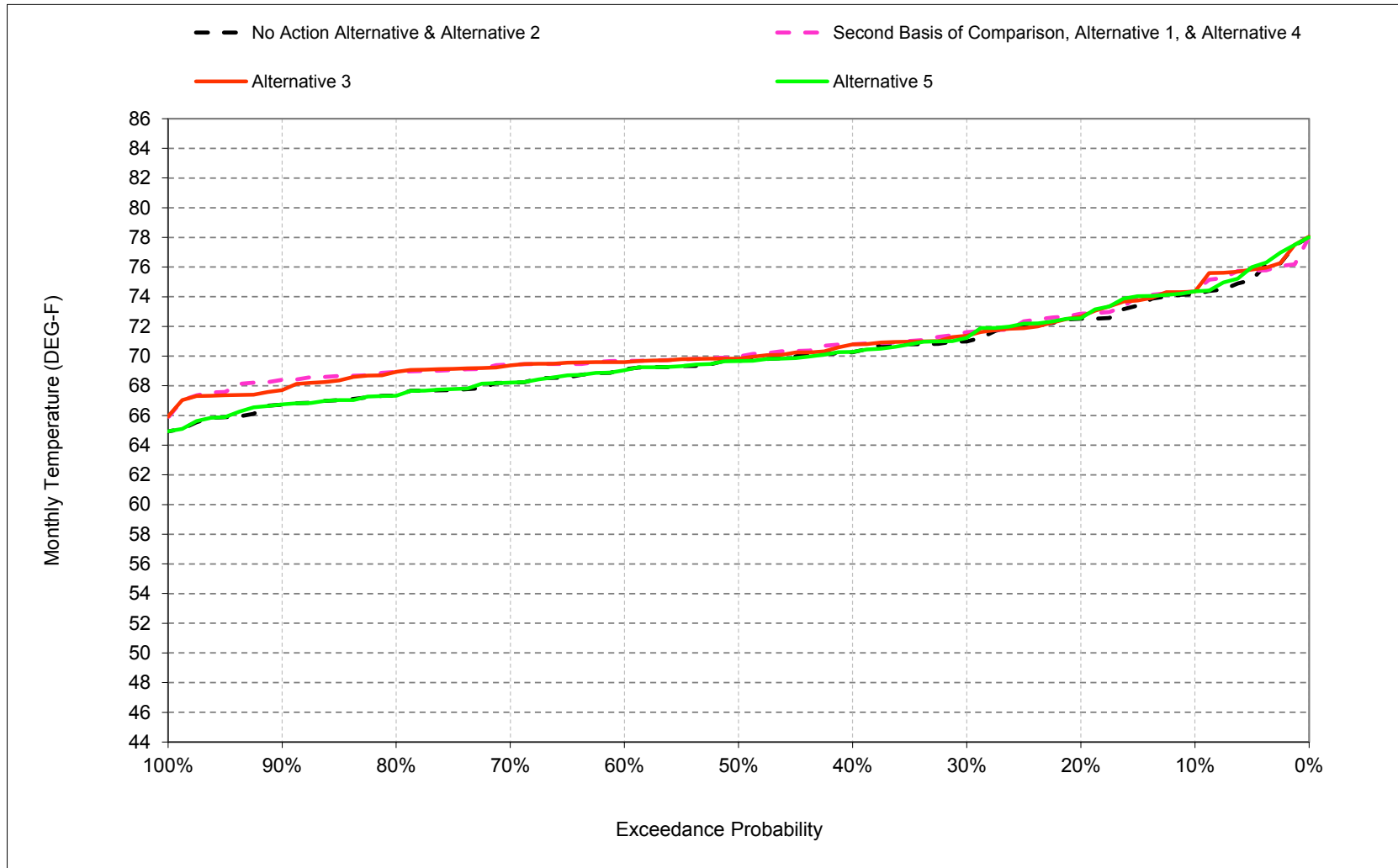
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-14-11. American River at the Mouth, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-14-12. American River at the Mouth, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-14-1. American River at the Mouth, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	68	58	52	49	51	59	66	71	76	76	77	74
20%	66	58	51	48	51	57	62	70	73	72	76	73
30%	65	58	51	48	50	55	61	68	71	72	73	71
40%	65	57	50	47	49	53	60	67	70	71	72	70
50%	65	57	50	47	48	53	59	65	68	70	71	70
60%	64	57	49	47	48	51	58	63	68	70	71	69
70%	64	57	49	46	47	51	57	62	66	69	71	68
80%	63	56	48	46	47	50	55	61	65	69	70	67
90%	62	56	47	45	47	50	54	58	64	69	69	67
Long Term												
Full Simulation Period ^b	65	57	50	47	49	53	59	65	69	72	72	70
Water Year Types ^c												
Wet (32%)	61	55	47	46	47	51	56	61	66	70	70	67
Above Normal (16%)	65	57	50	47	48	51	58	65	69	69	71	69
Below Normal (13%)	64	56	50	47	49	54	61	67	71	70	73	71
Dry (24%)	65	57	50	47	50	55	61	67	71	72	74	72
Critical (15%)	66	58	50	48	52	58	64	69	73	78	76	74

Alternative 1												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	68	58	52	49	52	59	65	71	75	76	77	74
20%	66	58	51	48	51	57	62	70	73	72	76	73
30%	66	58	51	48	50	55	61	68	71	72	72	72
40%	65	57	50	48	49	53	60	67	69	71	72	71
50%	65	57	50	47	48	53	59	65	68	70	71	70
60%	64	57	49	46	48	51	58	63	67	69	71	70
70%	64	56	49	46	47	51	57	62	66	69	70	69
80%	63	56	48	46	47	50	55	61	65	69	69	69
90%	62	56	47	45	47	50	54	58	64	69	68	68
Long Term												
Full Simulation Period ^b	65	57	50	47	49	53	59	65	69	71	72	71
Water Year Types ^c												
Wet (32%)	61	55	47	46	47	51	56	61	66	70	69	69
Above Normal (16%)	65	57	50	47	48	51	58	65	68	69	71	70
Below Normal (13%)	64	56	50	48	49	54	61	67	69	70	73	71
Dry (24%)	65	57	50	48	50	55	61	67	70	72	74	72
Critical (15%)	66	58	50	48	52	58	64	69	74	78	76	74

Alternative 1 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	-0.2	-0.2	0.0	0.2	0.0	-0.1	-0.8	-0.4	-1.7	0.4	-0.2	0.2
0.2	-0.3	0.0	0.0	0.0	-0.1	0.0	-0.1	-0.1	-0.7	-0.2	0.1	0.3
0.3	0.3	0.1	0.1	0.1	0.0	0.0	0.0	0.4	0.0	-0.3	-0.6	0.6
0.4	0.1	0.0	0.0	0.2	-0.1	0.0	0.0	-0.2	-0.8	-0.3	-0.3	0.5
0.5	0.1	0.1	0.0	0.0	-0.1	0.0	0.0	0.0	-0.2	-0.2	-0.1	0.2
0.6	-0.1	0.0	0.4	0.0	0.0	-0.1	0.1	0.1	-0.3	-0.3	-0.3	0.7
0.7	0.1	0.0	0.4	0.2	0.0	0.0	0.1	0.0	0.0	-0.3	-0.1	1.2
0.8	0.0	-0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.5	1.6
0.9	-0.3	-0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.0	-0.6	1.6
Long Term												
Full Simulation Period ^b	0.1	0.0	0.1	0.1	0.0	0.0	-0.1	0.0	-0.3	-0.2	-0.3	0.7
Water Year Types ^c												
Wet (32%)	0.0	-0.1	0.2	0.1	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.6	1.7
Above Normal (16%)	-0.1	-0.2	0.1	0.2	-0.1	0.0	0.0	0.0	-0.5	-0.2	0.1	0.8
Below Normal (13%)	0.2	0.1	0.3	0.2	-0.1	0.0	-0.3	0.1	-2.0	-0.4	-0.5	0.1
Dry (24%)	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.1	-0.2	-0.4	0.1	0.0
Critical (15%)	0.0	0.2	0.1	0.1	0.0	0.0	-0.4	-0.1	0.6	0.1	-0.3	0.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-14-2. American River at the Mouth, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	68	58	52	49	51	59	66	71	76	76	77	74
20%	66	58	51	48	51	57	62	70	73	72	76	73
30%	65	58	51	48	50	55	61	68	71	72	73	71
40%	65	57	50	47	49	53	60	67	70	71	72	70
50%	65	57	50	47	48	53	59	65	68	70	71	70
60%	64	57	49	47	48	51	58	63	68	70	71	69
70%	64	57	49	46	47	51	57	62	66	69	71	68
80%	63	56	48	46	47	50	55	61	65	69	70	67
90%	62	56	47	45	47	50	54	58	64	69	69	67
Long Term												
Full Simulation Period ^b	65	57	50	47	49	53	59	65	69	72	72	70
Water Year Types ^c												
Wet (32%)	61	55	47	46	47	51	56	61	66	70	70	67
Above Normal (16%)	65	57	50	47	48	51	58	65	69	69	71	69
Below Normal (13%)	64	56	50	47	49	54	61	67	71	70	73	71
Dry (24%)	65	57	50	47	50	55	61	67	71	72	74	72
Critical (15%)	66	58	50	48	52	58	64	69	73	78	76	74

Alternative 3												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	68	59	52	49	52	59	66	71	76	76	77	74
20%	66	58	51	48	51	57	62	70	72	72	75	73
30%	66	58	51	48	50	55	61	68	71	72	73	71
40%	65	57	50	48	49	53	60	67	70	71	72	71
50%	65	57	50	47	48	53	59	65	68	70	72	70
60%	64	57	50	47	48	51	58	63	67	70	71	70
70%	64	56	49	46	47	51	57	62	66	69	70	69
80%	63	56	48	46	47	50	55	61	65	69	69	69
90%	62	56	47	45	47	50	54	58	64	68	68	68
Long Term												
Full Simulation Period ^b	65	57	50	47	49	53	59	65	69	71	72	71
Water Year Types ^c												
Wet (32%)	61	55	47	46	47	51	56	61	65	70	69	69
Above Normal (16%)	65	57	50	47	48	51	58	65	68	69	71	70
Below Normal (13%)	64	57	50	48	49	54	61	67	70	70	73	71
Dry (24%)	65	57	50	48	50	55	61	67	71	72	73	72
Critical (15%)	66	58	50	48	52	58	64	69	74	78	76	74

Alternative 3 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	0.0	0.0	0.0	0.3	0.1	-0.1	-0.3	-0.3	-0.6	-0.1	0.1	0.2
0.2	-0.2	0.0	0.0	0.1	-0.2	0.0	0.0	0.0	-1.1	0.1	-0.4	0.1
0.3	0.2	0.1	0.2	0.1	0.0	0.0	0.0	0.3	0.0	-0.2	0.0	0.4
0.4	0.0	0.0	-0.1	0.2	-0.1	0.0	0.0	-0.2	-0.1	0.1	-0.2	0.5
0.5	0.0	0.0	0.1	-0.1	-0.1	0.0	0.0	-0.3	-0.3	0.1	0.1	0.2
0.6	0.0	-0.1	0.5	0.0	0.0	-0.1	0.1	0.0	-0.7	-0.1	-0.1	0.6
0.7	0.1	0.0	0.2	0.2	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.1	1.1
0.8	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	-0.7	1.4
0.9	-0.3	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	-0.3	-0.2	0.9
Long Term												
Full Simulation Period ^b	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.0	-0.3	-0.1	-0.2	0.7
Water Year Types ^c												
Wet (32%)	0.0	-0.1	0.2	0.1	0.0	0.0	0.0	0.0	-0.2	0.1	-0.5	1.6
Above Normal (16%)	0.0	-0.1	0.0	0.1	-0.1	0.0	0.0	0.0	-0.6	-0.3	0.3	0.9
Below Normal (13%)	0.2	0.2	0.3	0.3	0.0	0.0	-0.1	-0.1	-0.7	-0.2	-0.8	-0.1
Dry (24%)	0.1	0.0	0.1	0.1	0.0	0.0	0.1	0.1	-0.2	0.0	-0.2	-0.1
Critical (15%)	0.0	0.1	0.0	0.0	0.0	0.0	-0.2	0.0	0.4	-0.1	0.1	0.4

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-14-3. American River at the Mouth, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	68	58	52	49	51	59	66	71	76	76	77	74
20%	66	58	51	48	51	57	62	70	73	72	76	73
30%	65	58	51	48	50	55	61	68	71	72	73	71
40%	65	57	50	47	49	53	60	67	70	71	72	70
50%	65	57	50	47	48	53	59	65	68	70	71	70
60%	64	57	49	47	48	51	58	63	68	70	71	69
70%	64	57	49	46	47	51	57	62	66	69	71	68
80%	63	56	48	46	47	50	55	61	65	69	70	67
90%	62	56	47	45	47	50	54	58	64	69	69	67
Long Term												
Full Simulation Period ^b	65	57	50	47	49	53	59	65	69	72	72	70
Water Year Types ^c												
Wet (32%)	61	55	47	46	47	51	56	61	66	70	70	67
Above Normal (16%)	65	57	50	47	48	51	58	65	69	69	71	69
Below Normal (13%)	64	56	50	47	49	54	61	67	71	70	73	71
Dry (24%)	65	57	50	47	50	55	61	67	71	72	74	72
Critical (15%)	66	58	50	48	52	58	64	69	73	78	76	74

Alternative 5												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	68	58	52	49	51	59	66	71	77	76	77	74
20%	66	58	51	48	51	57	63	70	73	72	75	73
30%	65	58	51	48	50	55	61	68	71	71	73	71
40%	65	57	50	47	49	53	60	67	70	71	72	70
50%	65	57	50	47	48	53	59	65	68	70	71	70
60%	64	57	49	47	48	51	58	63	68	70	71	69
70%	64	57	49	46	47	51	56	62	66	69	71	68
80%	63	56	48	45	47	50	55	61	65	69	70	67
90%	62	56	47	45	47	50	54	58	64	68	69	67
Long Term												
Full Simulation Period ^b	65	57	50	47	49	53	59	65	69	71	72	70
Water Year Types ^c												
Wet (32%)	61	55	47	46	47	51	56	61	66	70	70	67
Above Normal (16%)	65	57	50	47	48	51	58	65	69	69	71	69
Below Normal (13%)	64	56	50	47	49	54	61	67	71	70	74	71
Dry (24%)	65	57	50	47	50	55	61	67	71	72	74	72
Critical (15%)	66	58	50	48	52	58	65	70	73	77	76	74

Alternative 5 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	0.0	-0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.3	-0.2	0.0	0.2
0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.3	-0.1	-0.1	-0.2	0.0
0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	-0.1	-0.3	-0.1	0.2
0.4	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.3	-0.2	0.0
0.5	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0
0.6	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-0.1	0.0	0.0
0.7	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	-0.1	-0.1	0.0	0.0
0.8	0.2	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	-0.1	0.3	0.0
0.9	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	0.1	0.0
Long Term												
Full Simulation Period ^b	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-0.2	0.0	0.1
Water Year Types ^c												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	0.2	0.0
Above Normal (16%)	0.0	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Below Normal (13%)	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.2	0.1	-0.1	0.1	0.1
Dry (24%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1	-0.3	-0.1	0.0
Critical (15%)	0.0	-0.1	0.0	0.0	0.0	0.0	0.2	0.1	-0.5	-0.4	-0.5	0.6

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-14-4. American River at the Mouth, Monthly Temperature

Second Basis of Comparison		Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	
Probability of Exceedance^a													
10%	68	58	52	49	52	59	65	71	75	76	77	74	
20%	66	58	51	48	51	57	62	70	73	72	76	73	
30%	66	58	51	48	50	55	61	68	71	72	72	72	
40%	65	57	50	48	49	53	60	67	69	71	72	71	
50%	65	57	50	47	48	53	59	65	68	70	71	70	
60%	64	57	49	46	48	51	58	63	67	69	71	70	
70%	64	56	49	46	47	51	57	62	66	69	70	69	
80%	63	56	48	46	47	50	55	61	65	69	69	69	
90%	62	56	47	45	47	50	54	58	64	69	68	68	
Long Term													
Full Simulation Period ^b	65	57	50	47	49	53	59	65	69	71	72	71	
Water Year Types^c													
Wet (32%)	61	55	47	46	47	51	56	61	66	70	69	69	
Above Normal (16%)	65	57	50	47	48	51	58	65	68	69	71	70	
Below Normal (13%)	64	56	50	48	49	54	61	67	69	70	73	71	
Dry (24%)	65	57	50	48	50	55	61	67	70	72	74	72	
Critical (15%)	66	58	50	48	52	58	64	69	74	78	76	74	

No Action Alternative		Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	
Probability of Exceedance^a													
10%	68	58	52	49	51	59	66	71	76	76	77	74	
20%	66	58	51	48	51	57	62	70	73	72	76	73	
30%	65	58	51	48	50	55	61	68	71	72	73	71	
40%	65	57	50	47	49	53	60	67	70	71	72	70	
50%	65	57	50	47	48	53	59	65	68	70	71	70	
60%	64	57	49	47	48	51	58	63	68	70	71	69	
70%	64	57	49	46	47	51	57	62	66	69	71	68	
80%	63	56	48	46	47	50	55	61	65	69	70	67	
90%	62	56	47	45	47	50	54	58	64	69	69	67	
Long Term													
Full Simulation Period ^b	65	57	50	47	49	53	59	65	69	72	72	70	
Water Year Types^c													
Wet (32%)	61	55	47	46	47	51	56	61	66	70	70	67	
Above Normal (16%)	65	57	50	47	48	51	58	65	69	69	71	69	
Below Normal (13%)	64	56	50	47	49	54	61	67	71	70	73	71	
Dry (24%)	65	57	50	47	50	55	61	67	71	72	74	72	
Critical (15%)	66	58	50	48	52	58	64	69	73	78	76	74	

No Action Alternative minus Second Basis of Comparison		Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	
Probability of Exceedance^a													
0.1	0.2	0.2	0.0	-0.2	0.0	0.1	0.8	0.4	1.7	-0.4	0.2	-0.2	
0.2	0.3	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.7	0.2	-0.1	-0.3	
0.3	-0.3	-0.1	-0.1	-0.1	0.0	0.0	0.0	-0.4	0.0	0.3	0.6	-0.6	
0.4	-0.1	0.0	0.0	-0.2	0.1	0.0	0.0	0.2	0.8	0.3	0.3	-0.5	
0.5	-0.1	-0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.2	0.2	0.1	-0.2	
0.6	0.1	0.0	-0.4	0.0	0.0	0.1	-0.1	-0.1	0.3	0.3	0.3	-0.7	
0.7	-0.1	0.0	-0.4	-0.2	0.0	0.0	-0.1	0.0	0.0	0.3	0.1	-1.2	
0.8	0.0	0.1	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	-1.6	
0.9	0.3	0.2	-0.1	-0.1	0.0	0.0	0.0	0.0	-0.1	0.0	0.6	-1.6	
Long Term													
Full Simulation Period ^b	-0.1	0.0	-0.1	-0.1	0.0	0.0	0.1	0.0	0.3	0.2	0.3	-0.7	
Water Year Types^c													
Wet (32%)	0.0	0.1	-0.2	-0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.6	-1.7	
Above Normal (16%)	0.1	0.2	-0.1	-0.2	0.1	0.0	0.0	0.0	0.5	0.2	-0.1	-0.8	
Below Normal (13%)	-0.2	-0.1	-0.3	-0.2	0.1	0.0	0.3	-0.1	2.0	0.4	0.5	-0.1	
Dry (24%)	-0.2	0.0	0.0	-0.1	0.0	0.0	0.0	-0.1	0.2	0.4	-0.1	0.0	
Critical (15%)	0.0	-0.2	-0.1	-0.1	0.0	0.0	0.4	0.1	-0.6	-0.1	0.3	-0.3	

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-14-5. American River at the Mouth, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	68	58	52	49	52	59	65	71	75	76	77	74
20%	66	58	51	48	51	57	62	70	73	72	76	73
30%	66	58	51	48	50	55	61	68	71	72	72	72
40%	65	57	50	48	49	53	60	67	69	71	72	71
50%	65	57	50	47	48	53	59	65	68	70	71	70
60%	64	57	49	46	48	51	58	63	67	69	71	70
70%	64	56	49	46	47	51	57	62	66	69	70	69
80%	63	56	48	46	47	50	55	61	65	69	69	69
90%	62	56	47	45	47	50	54	58	64	69	68	68
Long Term												
Full Simulation Period ^b	65	57	50	47	49	53	59	65	69	71	72	71
Water Year Types ^c												
Wet (32%)	61	55	47	46	47	51	56	61	66	70	69	69
Above Normal (16%)	65	57	50	47	48	51	58	65	68	69	71	70
Below Normal (13%)	64	56	50	48	49	54	61	67	69	70	73	71
Dry (24%)	65	57	50	48	50	55	61	67	70	72	74	72
Critical (15%)	66	58	50	48	52	58	64	69	74	78	76	74

Alternative 3

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	68	59	52	49	52	59	66	71	76	76	77	74
20%	66	58	51	48	51	57	62	70	72	72	75	73
30%	66	58	51	48	50	55	61	68	71	72	73	71
40%	65	57	50	48	49	53	60	67	70	71	72	71
50%	65	57	50	47	48	53	59	65	68	70	72	70
60%	64	57	50	47	48	51	58	63	67	70	71	70
70%	64	56	49	46	47	51	57	62	66	69	70	69
80%	63	56	48	46	47	50	55	61	65	69	69	69
90%	62	56	47	45	47	50	54	58	64	68	68	68
Long Term												
Full Simulation Period ^b	65	57	50	47	49	53	59	65	69	71	72	71
Water Year Types ^c												
Wet (32%)	61	55	47	46	47	51	56	61	65	70	69	69
Above Normal (16%)	65	57	50	47	48	51	58	65	68	69	71	70
Below Normal (13%)	64	57	50	48	49	54	61	67	70	70	73	71
Dry (24%)	65	57	50	48	50	55	61	67	71	72	73	72
Critical (15%)	66	58	50	48	52	58	64	69	74	78	76	74

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	0.1	0.2	0.0	0.1	0.0	0.0	0.5	0.0	1.1	-0.4	0.3	0.0
0.2	0.0	0.1	0.0	0.1	-0.1	0.0	0.1	0.1	-0.4	0.4	-0.5	-0.2
0.3	-0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	-0.2
0.4	-0.1	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.7	0.3	0.1	-0.1
0.5	-0.1	0.0	0.1	0.0	0.0	0.0	0.0	-0.3	-0.1	0.3	0.2	-0.1
0.6	0.1	0.0	0.1	0.1	0.0	0.0	0.0	-0.1	-0.5	0.2	0.2	-0.1
0.7	0.0	0.0	-0.2	0.0	0.0	0.0	-0.1	0.0	0.0	0.2	0.0	-0.1
0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	-0.1
0.9	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.3	0.4	-0.7
Long Term												
Full Simulation Period ^b	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	-0.1
Water Year Types ^c												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	0.2	0.2	-0.1
Above Normal (16%)	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	0.2	0.1
Below Normal (13%)	0.0	0.1	0.0	0.0	0.0	0.0	0.2	-0.2	1.3	0.2	-0.2	-0.3
Dry (24%)	-0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.4	-0.3	-0.1
Critical (15%)	0.0	-0.1	-0.1	0.0	0.0	-0.1	0.2	0.0	-0.2	-0.2	0.5	0.0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-14-6. American River at the Mouth, Monthly Temperature

Second Basis of Comparison												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	68	58	52	49	52	59	65	71	75	76	77	74
20%	66	58	51	48	51	57	62	70	73	72	76	73
30%	66	58	51	48	50	55	61	68	71	72	72	72
40%	65	57	50	48	49	53	60	67	69	71	72	71
50%	65	57	50	47	48	53	59	65	68	70	71	70
60%	64	57	49	46	48	51	58	63	67	69	71	70
70%	64	56	49	46	47	51	57	62	66	69	70	69
80%	63	56	48	46	47	50	55	61	65	69	69	69
90%	62	56	47	45	47	50	54	58	64	69	68	68
Long Term												
Full Simulation Period ^b	65	57	50	47	49	53	59	65	69	71	72	71
Water Year Types ^c												
Wet (32%)	61	55	47	46	47	51	56	61	66	70	69	69
Above Normal (16%)	65	57	50	47	48	51	58	65	68	69	71	70
Below Normal (13%)	64	56	50	48	49	54	61	67	69	70	73	71
Dry (24%)	65	57	50	48	50	55	61	67	70	72	74	72
Critical (15%)	66	58	50	48	52	58	64	69	74	78	76	74

Alternative 5												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	68	58	52	49	51	59	66	71	77	76	77	74
20%	66	58	51	48	51	57	63	70	73	72	75	73
30%	65	58	51	48	50	55	61	68	71	71	73	71
40%	65	57	50	47	49	53	60	67	70	71	72	70
50%	65	57	50	47	48	53	59	65	68	70	71	70
60%	64	57	49	47	48	51	58	63	68	70	71	69
70%	64	57	49	46	47	51	56	62	66	69	71	68
80%	63	56	48	45	47	50	55	61	65	69	70	67
90%	62	56	47	45	47	50	54	58	64	68	69	67
Long Term												
Full Simulation Period ^b	65	57	50	47	49	53	59	65	69	71	72	70
Water Year Types ^c												
Wet (32%)	61	55	47	46	47	51	56	61	66	70	70	67
Above Normal (16%)	65	57	50	47	48	51	58	65	69	69	71	69
Below Normal (13%)	64	56	50	47	49	54	61	67	71	70	74	71
Dry (24%)	65	57	50	47	50	55	61	67	71	72	74	72
Critical (15%)	66	58	50	48	52	58	65	70	73	77	76	74

Alternative 5 minus Second Basis of Comparison												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	0.1	0.1	0.0	-0.2	0.0	0.2	0.9	0.4	2.0	-0.5	0.2	0.0
0.2	0.3	0.0	0.0	0.0	0.1	0.0	0.6	0.4	0.5	0.1	-0.2	-0.3
0.3	-0.3	-0.1	-0.1	-0.1	0.1	0.0	0.0	-0.1	0.0	0.0	0.5	-0.4
0.4	-0.1	-0.1	0.0	-0.2	0.1	0.0	0.0	0.2	0.7	0.0	0.1	-0.5
0.5	-0.2	-0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.2	0.1	0.1	-0.3
0.6	0.0	0.0	-0.3	0.0	0.0	0.0	-0.1	0.0	0.2	0.2	0.3	-0.7
0.7	-0.2	0.1	-0.4	-0.2	0.0	0.0	-0.1	0.0	-0.1	0.2	0.1	-1.2
0.8	0.2	0.0	-0.2	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.8	-1.6
0.9	0.4	0.2	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	-0.1	0.7	-1.6
Long Term												
Full Simulation Period ^b	-0.1	0.0	-0.2	-0.1	0.0	0.0	0.1	0.1	0.3	0.0	0.2	-0.6
Water Year Types ^c												
Wet (32%)	0.0	0.0	-0.2	-0.1	0.0	0.0	0.0	0.0	0.1	-0.1	0.8	-1.7
Above Normal (16%)	0.1	0.0	-0.1	-0.2	0.1	0.0	0.0	0.0	0.5	0.2	-0.1	-0.8
Below Normal (13%)	-0.2	0.0	-0.4	-0.3	0.0	0.0	0.4	0.0	2.1	0.3	0.6	0.0
Dry (24%)	-0.2	0.0	0.0	-0.1	0.0	0.0	0.0	0.2	0.3	0.1	-0.2	0.0
Critical (15%)	0.0	-0.2	-0.1	-0.1	0.0	0.0	0.6	0.2	-1.1	-0.5	-0.2	0.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

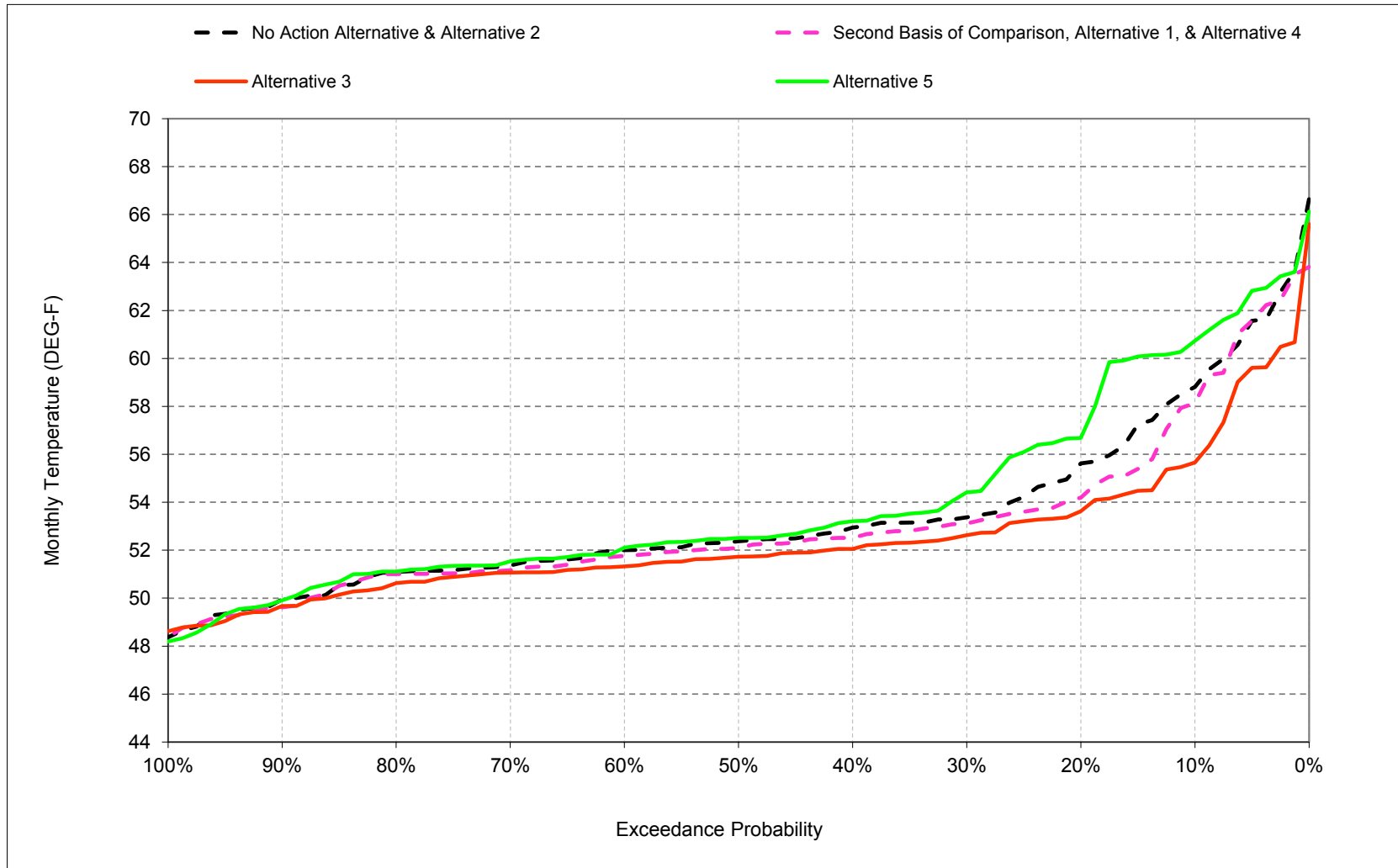
b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

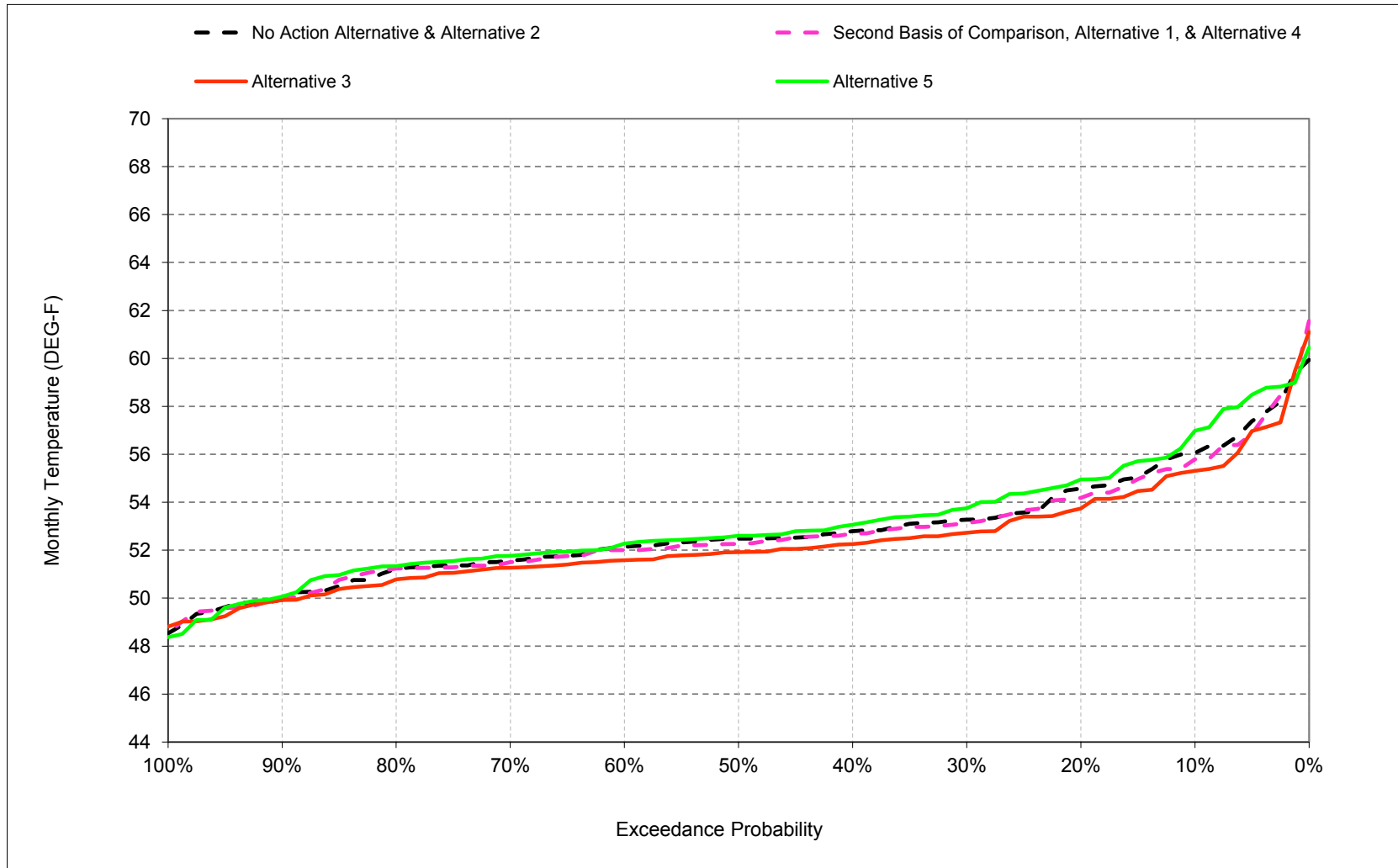
B.15. Stanislaus River below New Melones Temperature

Figure B-15-1. Stanislaus River below New Melones Reservoir, October



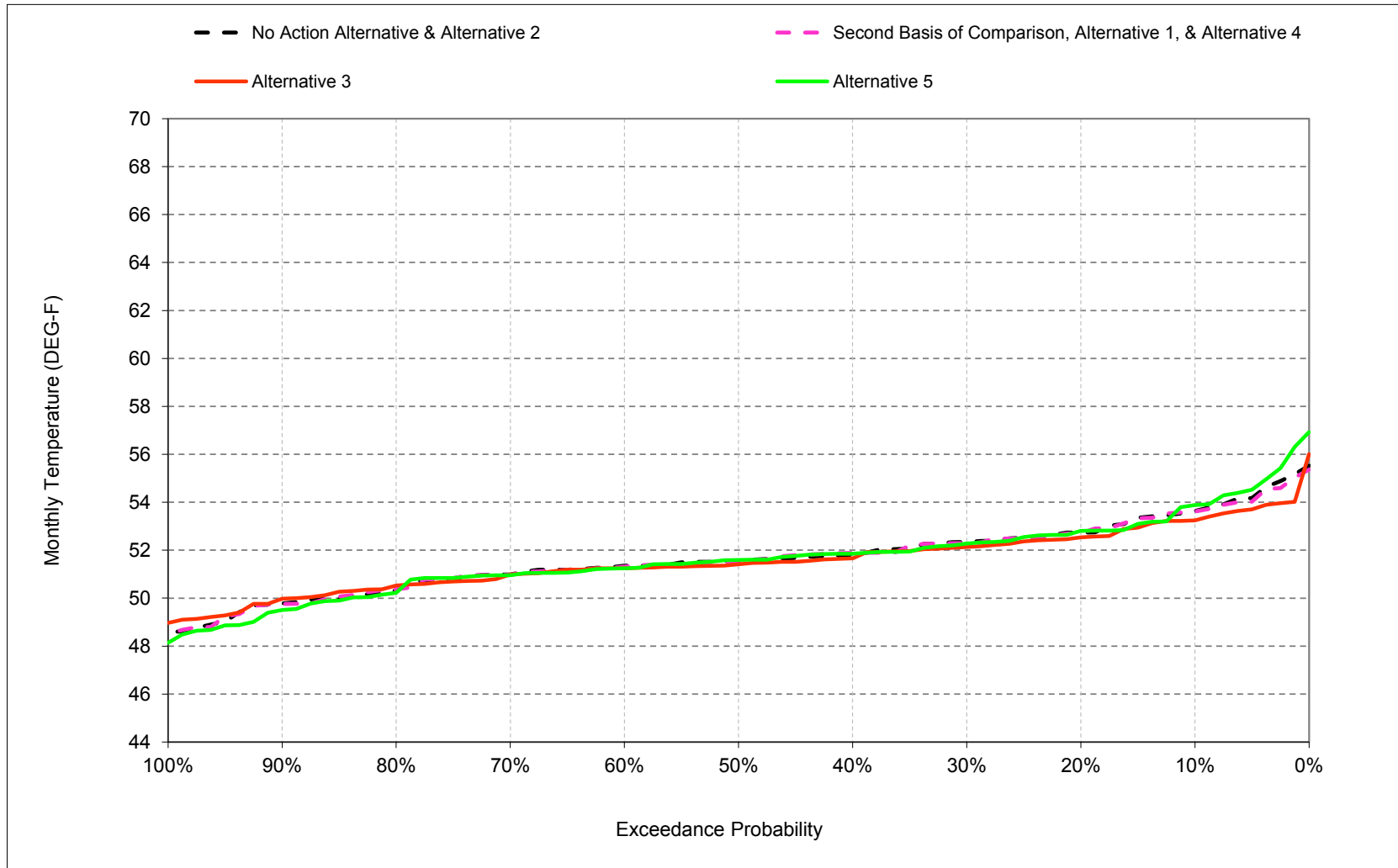
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-15-2. Stanislaus River below New Melones Reservoir, November



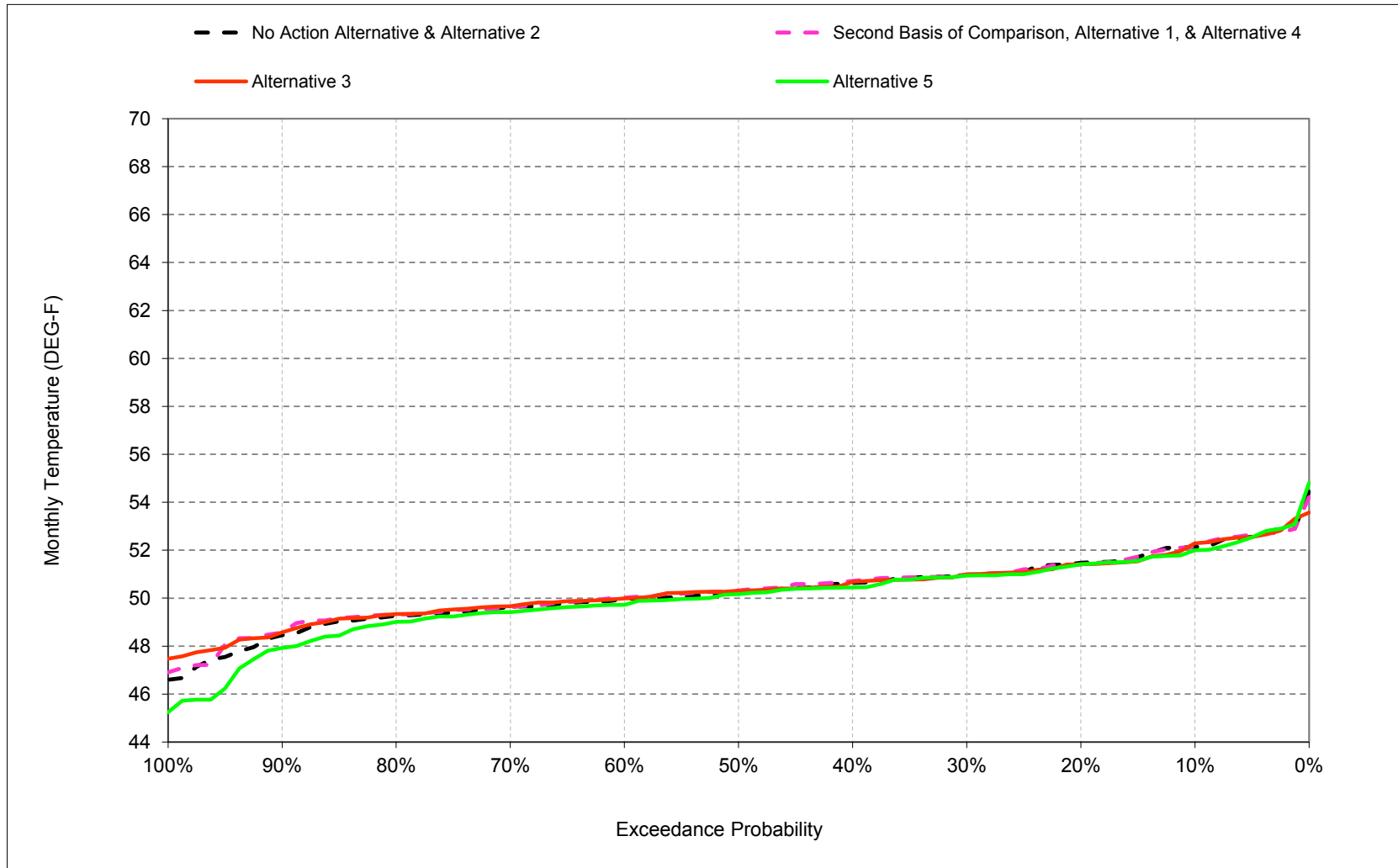
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-15-3. Stanislaus River below New Melones Reservoir, December



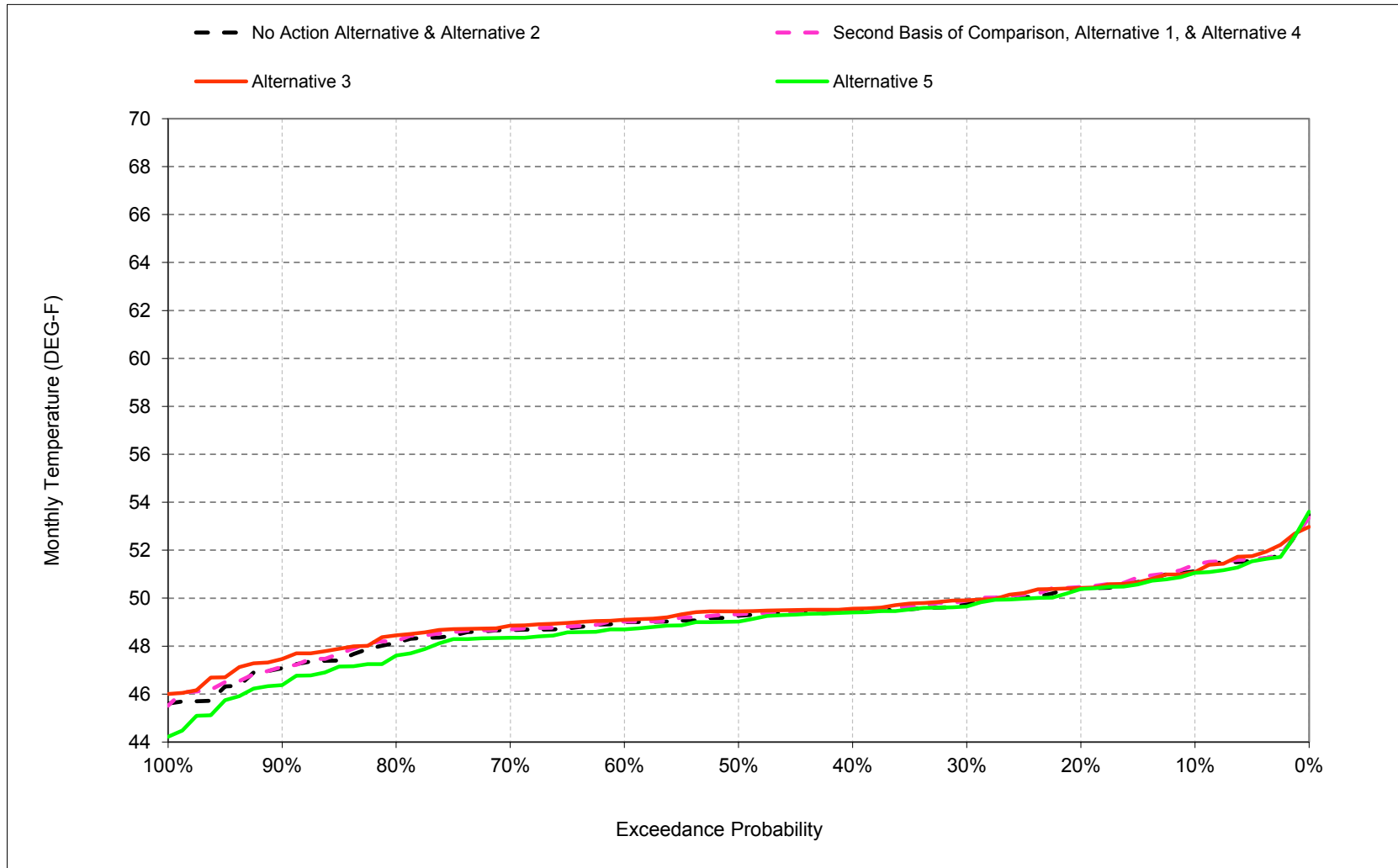
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-15-4. Stanislaus River below New Melones Reservoir, January



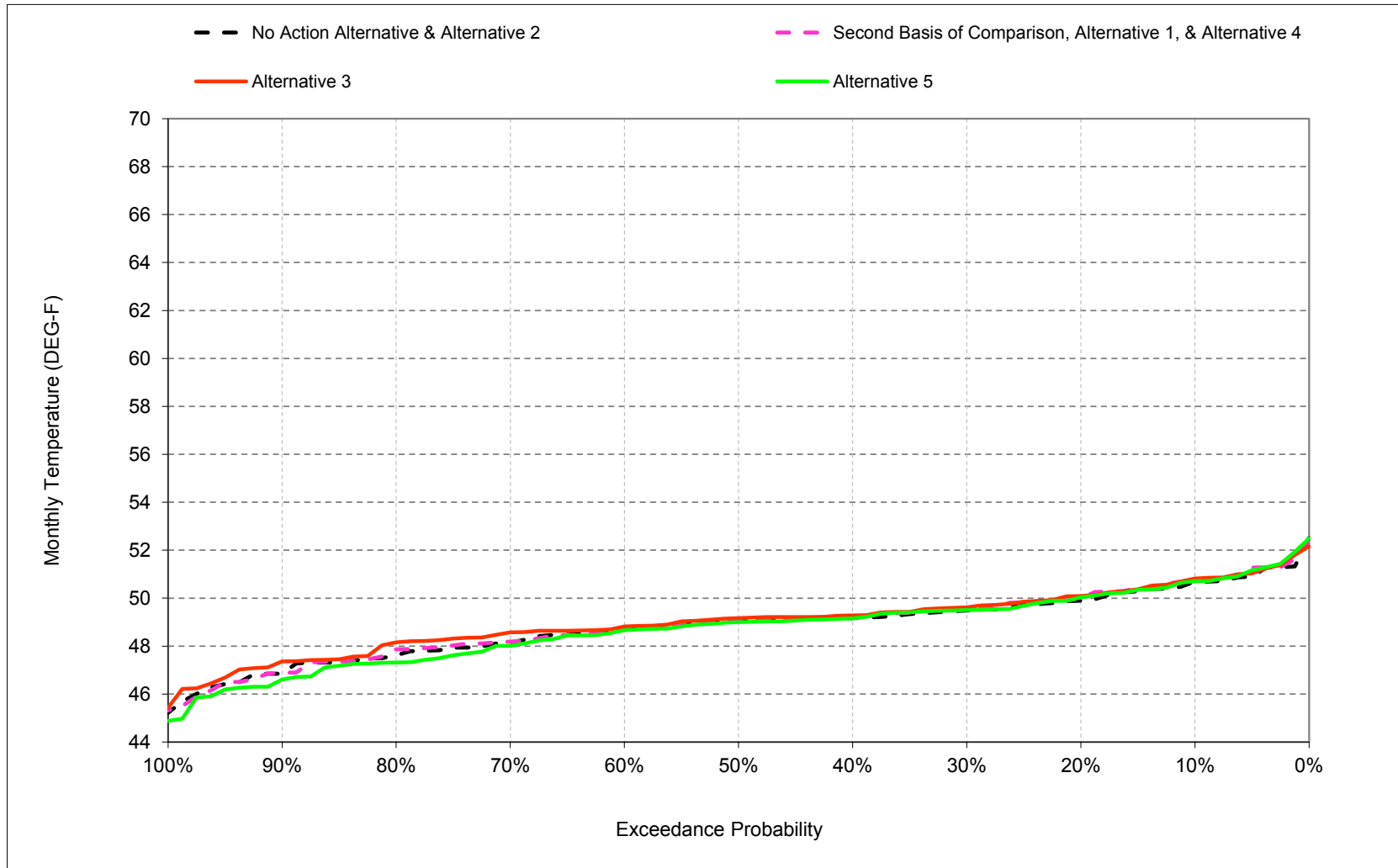
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-15-5. Stanislaus River below New Melones Reservoir, February



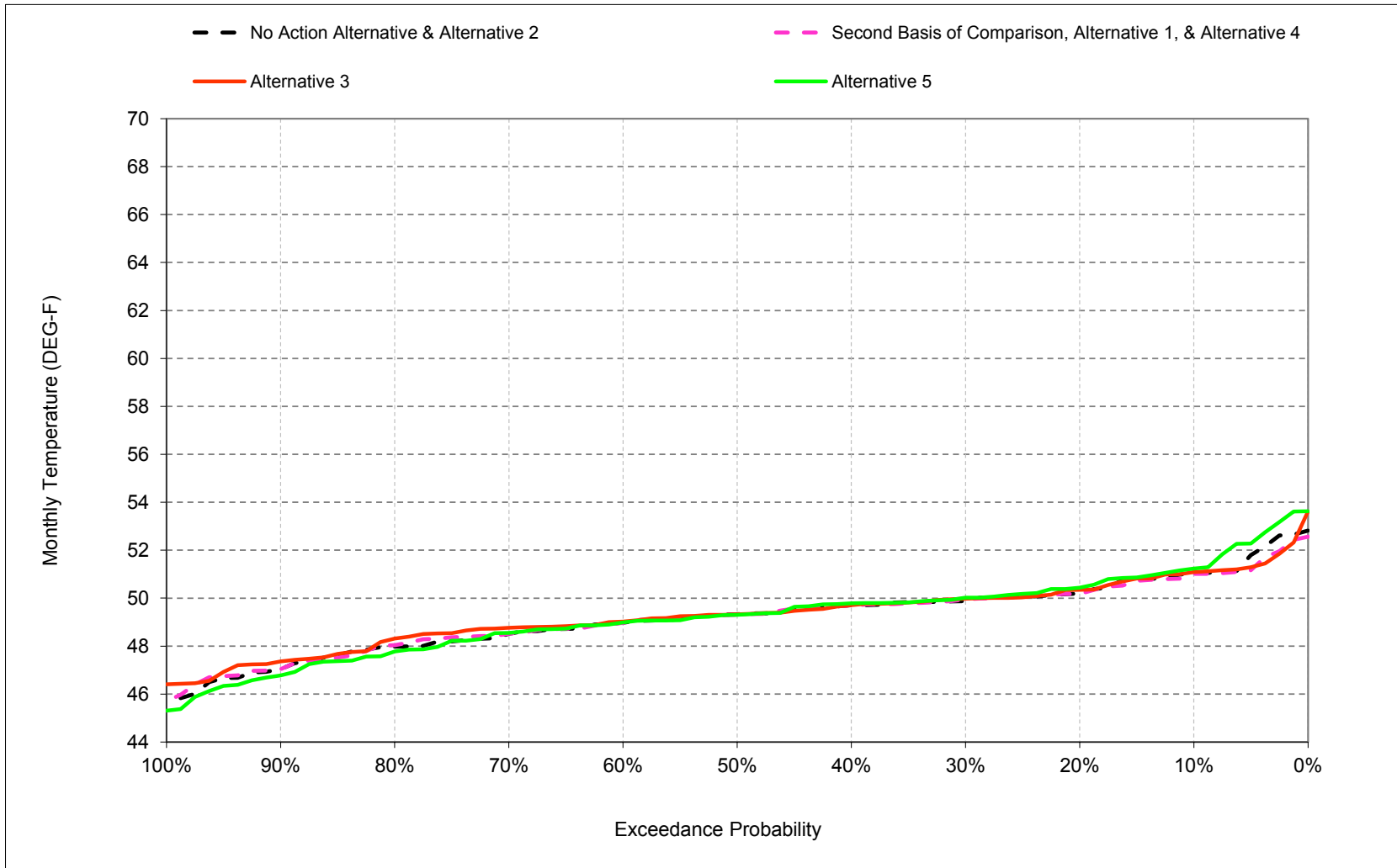
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-15-6. Stanislaus River below New Melones Reservoir, March



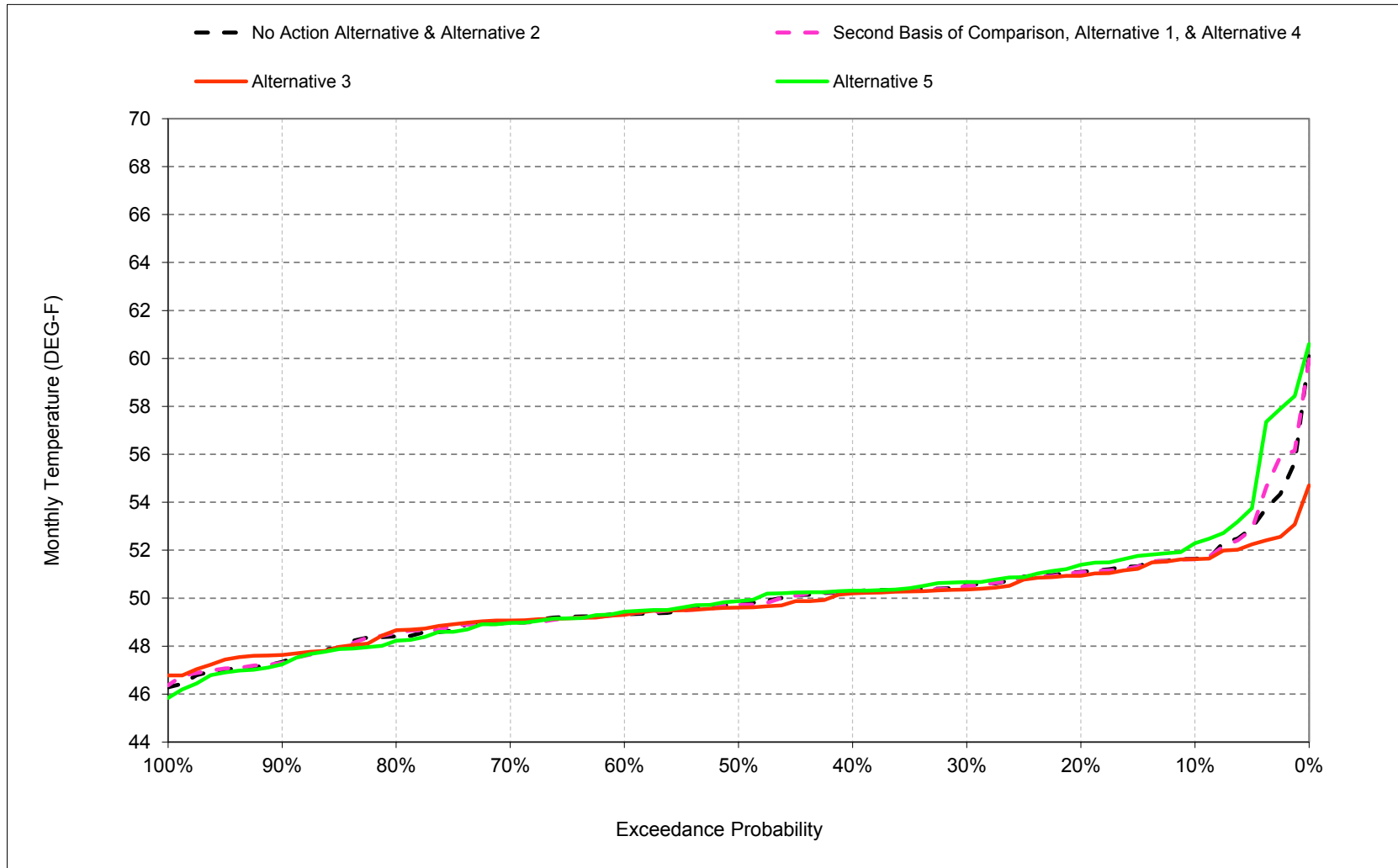
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-15-7. Stanislaus River below New Melones Reservoir, April



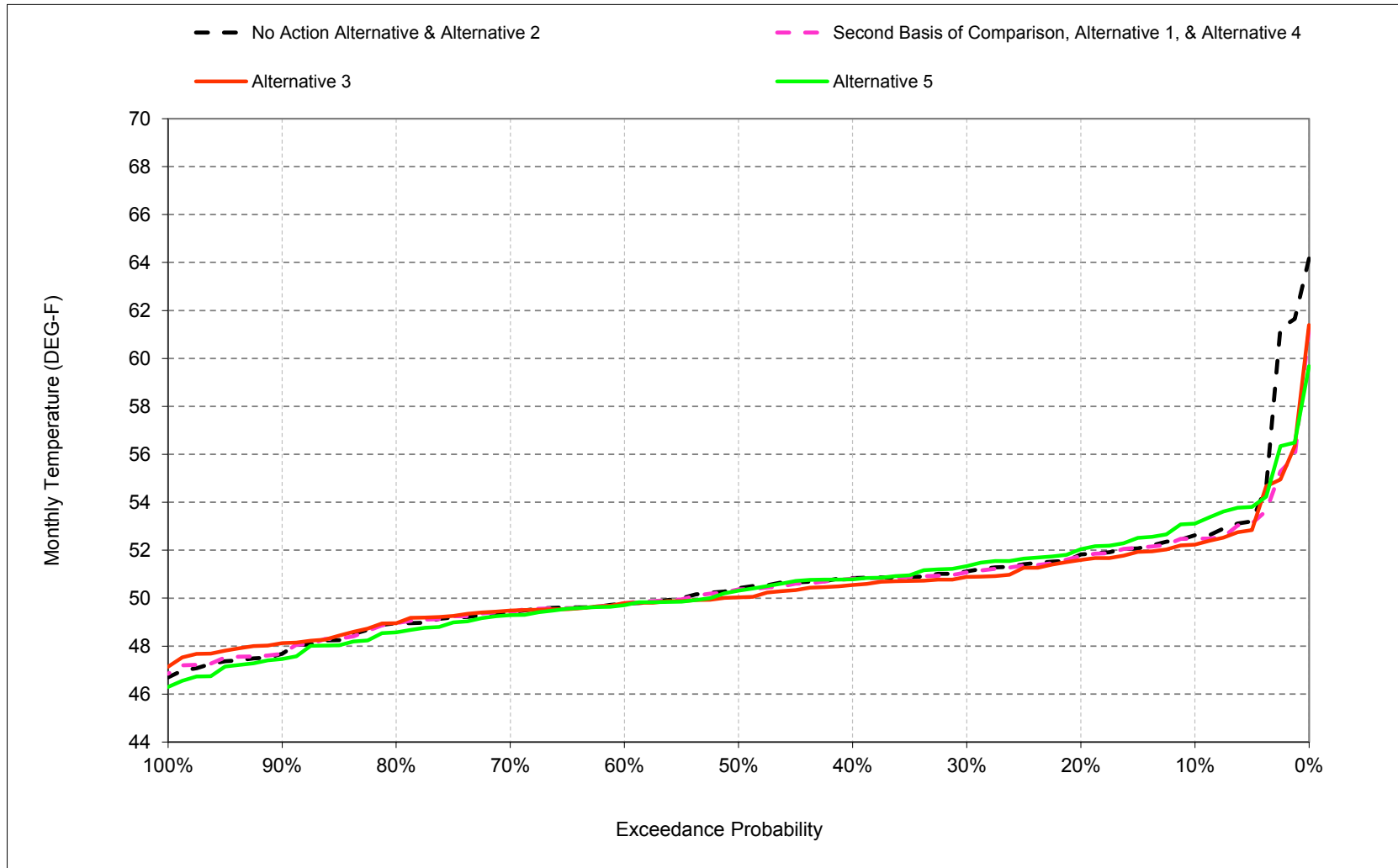
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-15-8. Stanislaus River below New Melones Reservoir, May



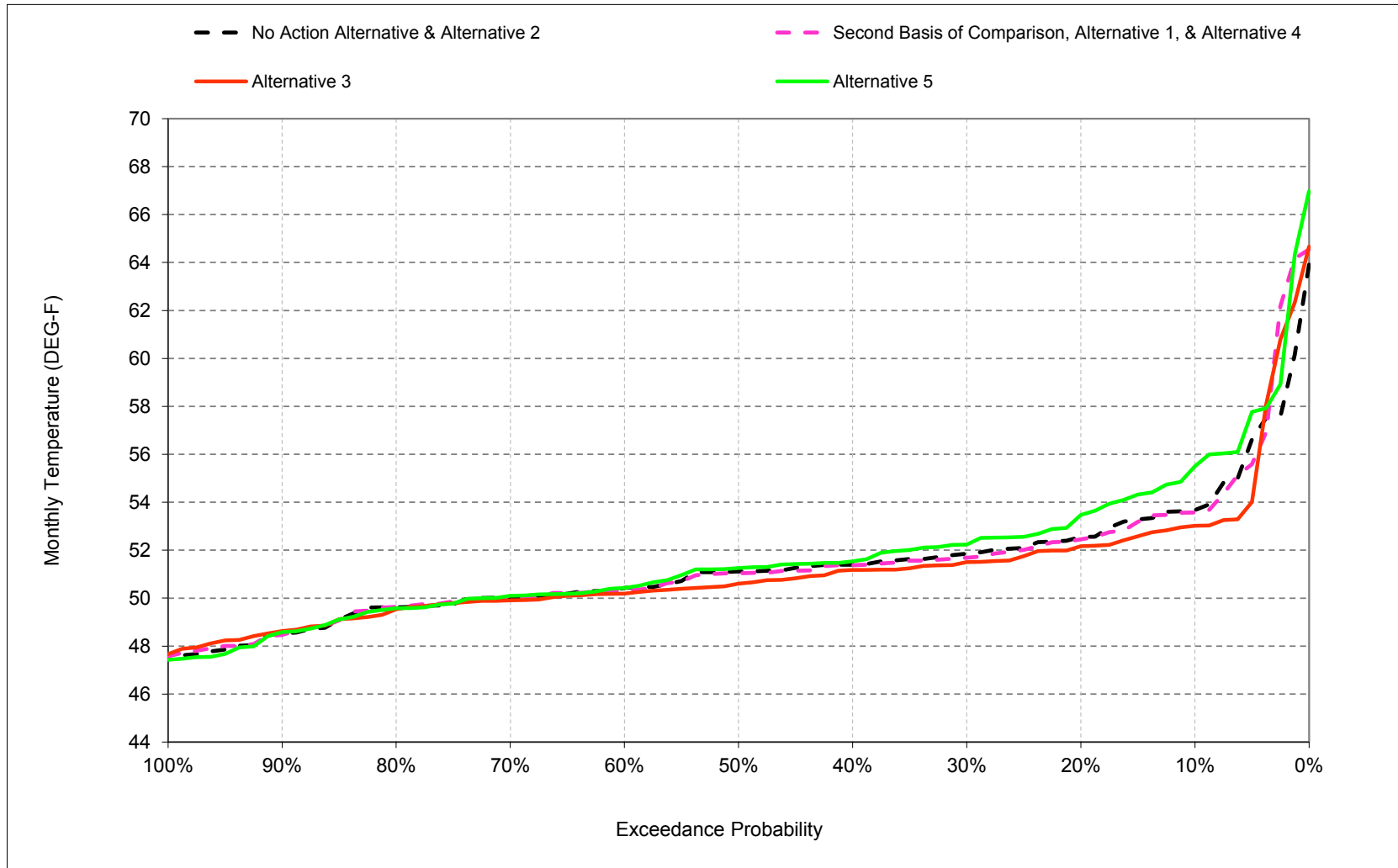
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-15-9. Stanislaus River below New Melones Reservoir, June



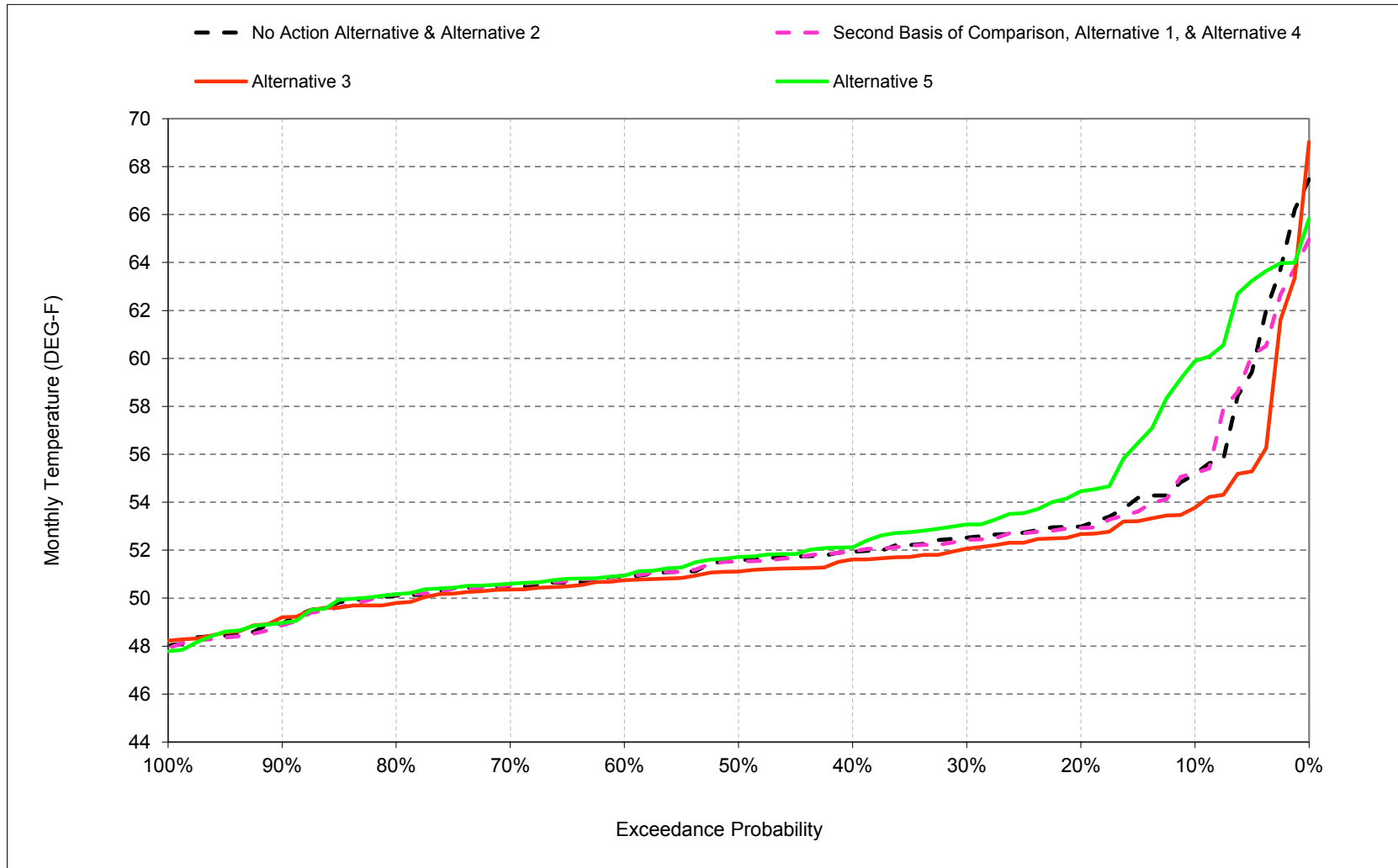
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-15-10. Stanislaus River below New Melones Reservoir, July



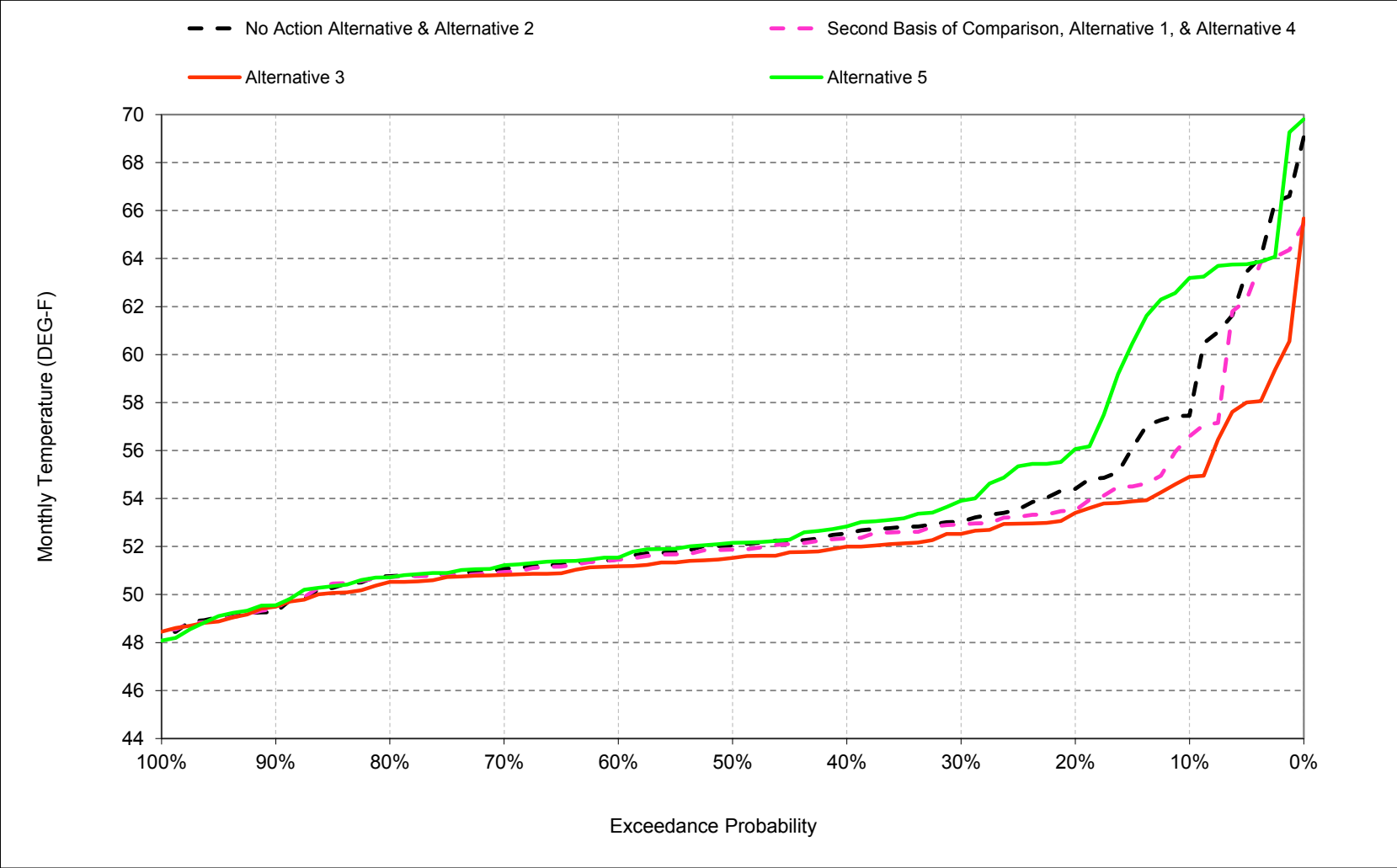
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-15-11. Stanislaus River below New Melones Reservoir, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-15-12. Stanislaus River below New Melones Reservoir, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-15-1. Stanislaus River below New Melones Reservoir, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	59	56	54	52	51	51	51	52	53	54	55	57
20%	56	55	53	51	50	50	50	51	52	53	53	54
30%	53	53	52	51	50	49	50	51	51	52	53	53
40%	53	53	52	51	49	49	50	50	51	51	52	53
50%	52	52	52	50	49	49	49	50	50	51	52	52
60%	52	52	51	50	49	49	49	49	50	50	51	51
70%	51	52	51	50	49	48	48	49	49	50	50	51
80%	51	51	50	49	48	48	48	48	49	50	50	51
90%	50	50	50	48	47	47	47	47	48	48	49	49
Long Term												
Full Simulation Period ^b	53	53	52	50	49	49	49	50	51	51	52	53
Water Year Types ^c												
Wet (32%)	50	50	49	49	48	48	48	48	49	49	50	50
Above Normal (16%)	53	53	52	50	49	48	49	49	50	50	51	52
Below Normal (13%)	53	52	52	51	49	49	49	50	50	51	52	52
Dry (24%)	53	53	52	51	50	50	50	50	51	52	53	54
Critical (15%)	57	54	52	50	50	50	51	53	55	56	57	60

Alternative 1												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	58	56	54	52	51	51	51	52	52	54	55	57
20%	54	54	53	51	50	50	50	51	52	52	53	54
30%	53	53	52	51	50	50	50	50	51	52	52	53
40%	53	53	52	51	49	49	50	50	51	51	52	52
50%	52	52	52	50	49	49	49	50	50	51	52	52
60%	52	52	51	50	49	49	49	49	50	50	51	51
70%	51	52	51	50	49	48	48	49	49	50	50	51
80%	51	51	50	49	48	48	48	48	49	50	50	51
90%	50	50	50	48	47	47	47	47	48	48	49	49
Long Term												
Full Simulation Period ^b	53	53	52	50	49	49	49	50	50	51	52	53
Water Year Types ^c												
Wet (32%)	50	50	49	49	48	48	48	48	49	49	50	50
Above Normal (16%)	53	53	52	50	49	48	49	49	50	50	51	52
Below Normal (13%)	52	52	51	51	49	49	49	50	50	51	52	52
Dry (24%)	53	53	52	51	50	50	50	50	51	52	53	54
Critical (15%)	57	55	53	51	50	50	51	53	53	56	57	58

Alternative 1 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	-0.7	-0.3	0.0	0.0	0.3	0.1	0.0	0.0	-0.1	-0.1	0.1	-0.9
0.2	-1.4	-0.4	0.0	-0.1	0.1	0.1	0.0	0.0	0.0	-0.1	-0.1	-0.9
0.3	-0.3	-0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.0	-0.2	-0.1	-0.1
0.4	-0.4	-0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.2
0.5	-0.3	-0.2	0.0	0.1	0.1	0.0	0.0	0.0	0.0	-0.1	0.0	-0.2
0.6	-0.2	-0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.7	-0.2	-0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.0	0.0	-0.1
0.8	-0.1	0.0	0.0	0.1	0.2	0.1	0.1	0.1	0.0	0.0	0.1	-0.1
0.9	-0.3	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.1	0.0	-0.2	0.1
Long Term												
Full Simulation Period ^b	-0.3	-0.1	0.0	0.1	0.1	0.0	0.0	0.0	-0.2	0.1	-0.1	-0.4
Water Year Types ^c												
Wet (32%)	-0.3	-0.2	0.0	0.1	0.1	-0.1	0.1	0.0	0.1	0.0	0.0	0.0
Above Normal (16%)	-0.4	-0.3	-0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	-0.1
Below Normal (13%)	-0.6	-0.4	-0.1	0.1	0.1	0.1	0.0	0.0	-0.1	-0.1	-0.2	-0.3
Dry (24%)	-0.3	-0.3	-0.1	0.0	0.1	0.0	0.0	0.0	0.0	-0.1	-0.2	-0.3
Critical (15%)	-0.1	1.0	0.3	0.3	0.3	0.2	-0.3	0.2	-1.4	0.6	-0.1	-2.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.
 b Based on an 81-year simulation period.
 c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.
 Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-15-2. Stanislaus River below New Melones Reservoir, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	59	56	54	52	51	51	51	52	53	54	55	57
20%	56	55	53	51	50	50	50	51	52	53	53	54
30%	53	53	52	51	50	49	50	51	51	52	53	53
40%	53	53	52	51	49	49	50	50	51	51	52	53
50%	52	52	52	50	49	49	49	50	50	51	52	52
60%	52	52	51	50	49	49	49	49	50	50	51	51
70%	51	52	51	50	49	48	48	49	49	50	50	51
80%	51	51	50	49	48	48	48	48	49	50	50	51
90%	50	50	50	48	47	47	47	47	48	48	49	49
Long Term												
Full Simulation Period ^b	53	53	52	50	49	49	49	50	51	51	52	53
Water Year Types ^c												
Wet (32%)	50	50	49	49	48	48	48	48	49	49	50	50
Above Normal (16%)	53	53	52	50	49	48	49	49	50	50	51	52
Below Normal (13%)	53	52	52	51	49	49	49	50	50	51	52	52
Dry (24%)	53	53	52	51	50	50	50	50	51	52	53	54
Critical (15%)	57	54	52	50	50	50	51	53	55	56	57	60

Alternative 3												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	56	55	53	52	51	51	51	52	52	53	54	55
20%	54	54	53	51	50	50	50	51	52	52	53	53
30%	53	53	52	51	50	50	50	50	51	51	52	53
40%	52	52	52	51	50	49	50	50	51	51	52	52
50%	52	52	51	50	49	49	49	50	50	51	51	51
60%	51	52	51	50	49	49	49	49	50	50	51	51
70%	51	51	51	50	49	49	49	49	49	50	50	51
80%	51	51	51	49	48	48	48	48	49	49	50	50
90%	50	50	50	48	47	47	47	48	48	49	49	49
Long Term												
Full Simulation Period ^b	52	52	52	50	49	49	49	50	50	51	52	52
Water Year Types ^c												
Wet (32%)	49	50	49	49	48	48	48	49	49	49	50	50
Above Normal (16%)	52	52	51	50	49	49	49	49	50	50	51	51
Below Normal (13%)	52	51	51	50	49	49	49	50	50	51	51	52
Dry (24%)	52	52	52	51	50	50	50	50	51	51	52	53
Critical (15%)	56	55	53	51	50	50	51	52	54	56	56	57

Alternative 3 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	-3.2	-0.7	-0.4	0.1	0.0	0.1	0.1	0.0	-0.4	-0.7	-1.4	-2.6
0.2	-2.0	-0.8	-0.2	0.0	0.0	0.2	0.2	-0.2	-0.2	-0.4	-0.3	-1.1
0.3	-0.8	-0.5	-0.2	0.0	0.2	0.1	0.1	-0.1	-0.2	-0.4	-0.5	-0.5
0.4	-0.9	-0.5	-0.2	0.0	0.1	0.1	0.0	-0.1	-0.3	-0.2	-0.3	-0.6
0.5	-0.7	-0.6	-0.1	0.1	0.2	0.1	0.0	-0.1	-0.3	-0.6	-0.5	-0.5
0.6	-0.7	-0.6	-0.1	0.1	0.1	0.1	0.1	0.0	0.0	-0.2	-0.2	-0.3
0.7	-0.3	-0.3	0.0	0.1	0.1	0.4	0.4	0.1	0.1	-0.1	-0.1	-0.2
0.8	-0.5	-0.4	0.2	0.1	0.3	0.5	0.2	0.1	0.0	-0.3	-0.3	-0.3
0.9	-0.3	0.0	0.2	0.1	0.4	0.3	0.3	0.4	0.5	0.1	0.0	0.2
Long Term												
Full Simulation Period ^b	-0.9	-0.4	-0.1	0.1	0.2	0.2	0.1	-0.1	-0.2	-0.2	-0.5	-1.0
Water Year Types ^c												
Wet (32%)	-0.6	-0.5	-0.1	0.0	0.2	0.1	0.2	0.1	0.1	0.0	-0.1	-0.1
Above Normal (16%)	-1.0	-0.8	-0.3	0.0	0.2	0.2	0.2	0.1	0.0	-0.2	-0.4	-0.5
Below Normal (13%)	-1.3	-1.0	-0.5	-0.1	0.1	0.2	0.1	0.0	-0.2	-0.3	-0.5	-0.6
Dry (24%)	-0.7	-0.5	-0.2	-0.1	0.0	0.1	0.1	-0.1	-0.3	-0.5	-0.8	-1.2
Critical (15%)	-1.6	0.7	0.5	0.8	0.8	0.5	-0.2	-1.2	-1.1	-0.1	-1.1	-3.6

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-15-3. Stanislaus River below New Melones Reservoir, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	59	56	54	52	51	51	51	52	53	54	55	57
20%	56	55	53	51	50	50	50	51	52	53	53	54
30%	53	53	52	51	50	49	50	51	51	52	53	53
40%	53	53	52	51	49	49	50	50	51	51	52	53
50%	52	52	52	50	49	49	49	50	50	51	52	52
60%	52	52	51	50	49	49	49	49	50	50	51	51
70%	51	52	51	50	49	48	48	49	49	50	50	51
80%	51	51	50	49	48	48	48	48	49	50	50	51
90%	50	50	50	48	47	47	47	47	48	48	49	49
Long Term												
Full Simulation Period ^b	53	53	52	50	49	49	49	50	51	51	52	53
Water Year Types ^c												
Wet (32%)	50	50	49	49	48	48	48	48	49	49	50	50
Above Normal (16%)	53	53	52	50	49	48	49	49	50	50	51	52
Below Normal (13%)	53	52	52	51	49	49	49	50	50	51	52	52
Dry (24%)	53	53	52	51	50	50	50	50	51	52	53	54
Critical (15%)	57	54	52	50	50	50	51	53	55	56	57	60

Alternative 5												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	61	57	54	52	51	51	51	52	53	55	60	63
20%	57	55	53	51	50	50	50	51	52	53	54	56
30%	54	54	52	51	50	49	50	51	51	52	53	54
40%	53	53	52	50	49	49	50	50	51	52	52	53
50%	53	53	52	50	49	49	49	50	50	51	52	52
60%	52	52	51	50	49	49	49	49	50	50	51	52
70%	52	52	51	49	48	48	49	49	49	50	51	51
80%	51	51	50	49	47	47	48	48	49	50	50	51
90%	50	50	50	48	46	46	47	47	47	48	49	50
Long Term												
Full Simulation Period ^b	54	53	52	50	49	49	49	50	50	52	53	54
Water Year Types ^c												
Wet (32%)	51	50	49	49	48	48	48	48	49	49	50	50
Above Normal (16%)	54	53	52	50	49	48	48	49	50	50	51	52
Below Normal (13%)	53	52	51	50	49	49	49	50	51	52	53	53
Dry (24%)	54	53	52	51	50	49	50	51	51	53	54	56
Critical (15%)	58	55	52	50	49	50	52	54	53	56	58	61

Alternative 5 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	1.9	0.9	0.3	-0.2	-0.1	0.0	0.2	0.6	0.5	1.8	4.7	5.7
0.2	1.1	0.4	0.1	-0.1	0.0	0.1	0.2	0.3	0.2	0.8	1.4	1.6
0.3	1.0	0.5	-0.1	0.0	-0.1	0.0	0.1	0.2	0.2	0.4	0.5	0.8
0.4	0.3	0.3	0.0	-0.2	0.0	0.0	0.1	0.0	-0.1	0.1	0.2	0.3
0.5	0.1	0.1	0.0	0.0	-0.2	0.0	0.0	0.1	-0.1	0.1	0.1	0.1
0.6	0.1	0.1	-0.1	-0.2	-0.2	-0.1	0.0	0.0	-0.1	0.0	0.0	0.1
0.7	0.2	0.2	0.0	-0.2	-0.3	-0.1	0.2	0.0	-0.1	0.0	0.1	0.1
0.8	0.0	0.1	-0.1	-0.3	-0.7	-0.2	-0.3	-0.3	-0.4	-0.1	0.1	0.0
0.9	0.0	0.1	-0.3	-0.5	-0.6	-0.5	-0.2	-0.1	-0.1	0.0	0.0	0.3
Long Term												
Full Simulation Period ^b	0.6	0.3	0.0	-0.2	-0.3	-0.1	0.0	0.2	-0.2	0.4	0.7	0.7
Water Year Types ^c												
Wet (32%)	0.7	0.2	-0.1	-0.2	-0.2	-0.2	-0.2	-0.1	-0.1	0.0	0.1	0.1
Above Normal (16%)	0.5	0.4	0.1	0.0	-0.1	-0.1	-0.1	0.0	0.1	0.1	0.2	0.3
Below Normal (13%)	0.3	-0.2	-0.3	-0.4	-0.3	-0.2	0.0	0.2	0.3	0.5	0.7	0.9
Dry (24%)	0.7	0.6	0.3	-0.1	-0.1	-0.1	0.0	0.1	0.3	0.8	1.6	1.9
Critical (15%)	0.5	0.6	-0.1	-0.7	-0.7	0.2	0.8	1.1	-2.1	0.7	0.8	0.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-15-4. Stanislaus River below New Melones Reservoir, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	58	56	54	52	51	51	51	52	52	54	55	57
20%	54	54	53	51	50	50	50	51	52	52	53	54
30%	53	53	52	51	50	50	50	50	51	52	52	53
40%	53	53	52	51	49	49	50	50	51	51	52	52
50%	52	52	52	50	49	49	49	50	50	51	52	52
60%	52	52	51	50	49	49	49	49	50	50	51	51
70%	51	52	51	50	49	48	48	49	49	50	50	51
80%	51	51	50	49	48	48	48	48	49	50	50	51
90%	50	50	50	48	47	47	47	47	48	48	49	49
Long Term												
Full Simulation Period ^b	53	53	52	50	49	49	49	50	50	51	52	53
Water Year Types ^c												
Wet (32%)	50	50	49	49	48	48	48	48	49	49	50	50
Above Normal (16%)	53	53	52	50	49	48	49	49	50	50	51	52
Below Normal (13%)	52	52	51	51	49	49	49	50	50	51	52	52
Dry (24%)	53	53	52	51	50	50	50	50	51	52	53	54
Critical (15%)	57	55	53	51	50	50	51	53	53	56	57	58

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	59	56	54	52	51	51	51	52	53	54	55	57
20%	56	55	53	51	50	50	50	51	52	53	53	54
30%	53	53	52	51	50	49	50	51	51	52	53	53
40%	53	53	52	51	49	49	50	50	51	51	52	53
50%	52	52	52	50	49	49	49	50	50	51	52	52
60%	52	52	51	50	49	49	49	49	50	50	51	51
70%	51	52	51	50	49	48	48	49	49	50	50	51
80%	51	51	50	49	48	48	48	48	49	50	50	51
90%	50	50	50	48	47	47	47	47	48	48	49	49
Long Term												
Full Simulation Period ^b	53	53	52	50	49	49	49	50	51	51	52	53
Water Year Types ^c												
Wet (32%)	50	50	49	49	48	48	48	48	49	49	50	50
Above Normal (16%)	53	53	52	50	49	48	49	49	50	50	51	52
Below Normal (13%)	53	52	52	51	49	49	49	50	50	51	52	52
Dry (24%)	53	53	52	51	50	50	50	50	51	52	53	54
Critical (15%)	57	54	52	50	50	50	51	53	55	56	57	60

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	0.7	0.3	0.0	0.0	-0.3	-0.1	0.0	0.0	0.1	0.1	-0.1	0.9
0.2	1.4	0.4	0.0	0.1	-0.1	-0.1	0.0	0.0	0.0	0.1	0.1	0.9
0.3	0.3	0.1	0.0	0.0	-0.1	-0.1	-0.1	0.0	0.0	0.2	0.1	0.1
0.4	0.4	0.1	-0.1	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2
0.5	0.3	0.2	0.0	-0.1	-0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.2
0.6	0.2	0.1	0.0	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.7	0.2	0.1	0.0	0.0	0.0	0.0	-0.1	0.0	-0.1	0.0	0.0	0.1
0.8	0.1	0.0	0.0	-0.1	-0.2	-0.1	-0.1	-0.1	0.0	0.0	-0.1	0.1
0.9	0.3	0.0	0.0	-0.2	0.0	0.0	0.0	0.0	-0.1	0.0	0.2	-0.1
Long Term												
Full Simulation Period ^b	0.3	0.1	0.0	-0.1	-0.1	0.0	0.0	0.0	0.2	-0.1	0.1	0.4
Water Year Types ^c												
Wet (32%)	0.3	0.2	0.0	-0.1	-0.1	0.1	-0.1	0.0	-0.1	0.0	0.0	0.0
Above Normal (16%)	0.4	0.3	0.1	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.1
Below Normal (13%)	0.6	0.4	0.1	-0.1	-0.1	-0.1	0.0	0.0	0.1	0.1	0.2	0.3
Dry (24%)	0.3	0.3	0.1	0.0	-0.1	0.0	0.0	0.0	0.0	0.1	0.2	0.3
Critical (15%)	0.1	-1.0	-0.3	-0.3	-0.3	-0.2	0.3	-0.2	1.4	-0.6	0.1	2.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-15-5. Stanislaus River below New Melones Reservoir, Monthly Temperature

Second Basis of Comparison												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	58	56	54	52	51	51	51	52	52	54	55	57
20%	54	54	53	51	50	50	50	51	52	52	53	54
30%	53	53	52	51	50	50	50	50	51	52	52	53
40%	53	53	52	51	49	49	50	50	51	51	52	52
50%	52	52	52	50	49	49	49	50	50	51	52	52
60%	52	52	51	50	49	49	49	49	50	50	51	51
70%	51	52	51	50	49	48	48	49	49	50	50	51
80%	51	51	50	49	48	48	48	48	49	50	50	51
90%	50	50	50	48	47	47	47	47	48	48	49	49
Long Term												
Full Simulation Period ^b	53	53	52	50	49	49	49	50	50	51	52	53
Water Year Types ^c												
Wet (32%)	50	50	49	49	48	48	48	48	49	49	50	50
Above Normal (16%)	53	53	52	50	49	48	49	49	50	50	51	52
Below Normal (13%)	52	52	51	51	49	49	49	50	50	51	52	52
Dry (24%)	53	53	52	51	50	50	50	50	51	52	53	54
Critical (15%)	57	55	53	51	50	50	51	53	53	56	57	58

Alternative 3												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	56	55	53	52	51	51	51	52	52	53	54	55
20%	54	54	53	51	50	50	50	51	52	52	53	53
30%	53	53	52	51	50	50	50	50	51	51	52	53
40%	52	52	52	51	50	49	50	50	51	51	52	52
50%	52	52	51	50	49	49	49	50	50	51	51	51
60%	51	52	51	50	49	49	49	49	50	50	51	51
70%	51	51	51	50	49	49	49	49	49	50	50	51
80%	51	51	51	49	48	48	48	48	49	49	50	50
90%	50	50	50	48	47	47	47	48	48	49	49	49
Long Term												
Full Simulation Period ^b	52	52	52	50	49	49	49	50	50	51	52	52
Water Year Types ^c												
Wet (32%)	49	50	49	49	48	48	48	49	49	49	50	50
Above Normal (16%)	52	52	51	50	49	49	49	49	50	50	51	51
Below Normal (13%)	52	51	51	50	49	49	49	50	50	51	51	52
Dry (24%)	52	52	52	51	50	50	50	50	51	51	52	53
Critical (15%)	56	55	53	51	50	50	51	52	54	56	56	57

Alternative 3 minus Second Basis of Comparison												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	-2.5	-0.5	-0.4	0.1	-0.3	0.1	0.1	0.0	-0.3	-0.6	-1.5	-1.6
0.2	-0.6	-0.4	-0.2	0.0	0.0	0.1	0.2	-0.1	-0.1	-0.3	-0.3	-0.2
0.3	-0.5	-0.4	-0.2	0.0	0.0	0.1	0.0	-0.1	-0.2	-0.2	-0.4	-0.4
0.4	-0.5	-0.4	-0.2	-0.1	0.0	0.1	0.0	-0.1	-0.3	-0.2	-0.3	-0.4
0.5	-0.4	-0.3	-0.1	0.0	0.1	0.1	0.0	-0.1	-0.3	-0.5	-0.4	-0.4
0.6	-0.4	-0.4	-0.1	0.0	0.0	0.1	0.1	0.0	0.0	-0.1	-0.2	-0.2
0.7	-0.1	-0.2	0.0	0.1	0.1	0.3	0.3	0.1	0.0	-0.1	-0.1	-0.1
0.8	-0.4	-0.4	0.2	0.0	0.2	0.4	0.2	0.0	0.1	-0.3	-0.4	-0.3
0.9	0.1	0.0	0.2	-0.1	0.4	0.3	0.3	0.4	0.4	0.1	0.3	0.1
Long Term												
Full Simulation Period ^b	-0.6	-0.3	-0.1	0.0	0.1	0.1	0.1	-0.2	0.0	-0.3	-0.4	-0.6
Water Year Types ^c												
Wet (32%)	-0.3	-0.2	-0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.0	-0.1	-0.1
Above Normal (16%)	-0.6	-0.5	-0.2	0.0	0.1	0.2	0.2	0.1	0.0	-0.2	-0.3	-0.4
Below Normal (13%)	-0.7	-0.6	-0.3	-0.2	0.0	0.1	0.1	0.0	-0.1	-0.2	-0.3	-0.4
Dry (24%)	-0.3	-0.3	-0.1	-0.2	0.0	0.0	0.1	-0.1	-0.2	-0.4	-0.6	-0.9
Critical (15%)	-1.5	-0.3	0.2	0.5	0.5	0.3	0.0	-1.4	0.3	-0.7	-1.0	-1.5

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-15-6. Stanislaus River below New Melones Reservoir, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	58	56	54	52	51	51	51	52	52	54	55	57
20%	54	54	53	51	50	50	50	51	52	52	53	54
30%	53	53	52	51	50	50	50	50	51	52	52	53
40%	53	53	52	51	49	49	50	50	51	51	52	52
50%	52	52	52	50	49	49	49	50	50	51	52	52
60%	52	52	51	50	49	49	49	49	50	50	51	51
70%	51	52	51	50	49	48	48	49	49	50	50	51
80%	51	51	50	49	48	48	48	48	49	50	50	51
90%	50	50	50	48	47	47	47	47	48	48	49	49
Long Term												
Full Simulation Period ^b	53	53	52	50	49	49	49	50	50	51	52	53
Water Year Types ^c												
Wet (32%)	50	50	49	49	48	48	48	48	49	49	50	50
Above Normal (16%)	53	53	52	50	49	48	49	49	50	50	51	52
Below Normal (13%)	52	52	51	51	49	49	49	50	50	51	52	52
Dry (24%)	53	53	52	51	50	50	50	50	51	52	53	54
Critical (15%)	57	55	53	51	50	50	51	53	53	56	57	58

Alternative 5

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	61	57	54	52	51	51	51	52	53	55	60	63
20%	57	55	53	51	50	50	50	51	52	53	54	56
30%	54	54	52	51	50	49	50	51	51	52	53	54
40%	53	53	52	50	49	49	50	50	51	52	52	53
50%	53	53	52	50	49	49	49	50	50	51	52	52
60%	52	52	51	50	49	49	49	49	50	50	51	52
70%	52	52	51	49	48	48	49	49	49	50	51	51
80%	51	51	50	49	47	47	48	48	49	50	50	51
90%	50	50	50	48	46	46	47	47	47	48	49	50
Long Term												
Full Simulation Period ^b	54	53	52	50	49	49	49	50	50	52	53	54
Water Year Types ^c												
Wet (32%)	51	50	49	49	48	48	48	48	49	49	50	50
Above Normal (16%)	54	53	52	50	49	48	48	49	50	50	51	52
Below Normal (13%)	53	52	51	50	49	49	49	50	51	52	53	53
Dry (24%)	54	53	52	51	50	49	50	51	51	53	54	56
Critical (15%)	58	55	52	50	49	50	52	54	53	56	58	61

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	2.6	1.2	0.3	-0.2	-0.3	0.0	0.2	0.6	0.6	1.9	4.6	6.6
0.2	2.5	0.8	0.1	0.0	-0.1	0.0	0.3	0.3	0.3	0.9	1.5	2.4
0.3	1.3	0.6	0.0	0.0	-0.2	0.0	0.1	0.2	0.3	0.6	0.6	0.9
0.4	0.7	0.4	0.0	-0.2	-0.1	0.0	0.1	0.0	0.0	0.1	0.2	0.5
0.5	0.4	0.3	0.1	-0.1	-0.3	-0.1	0.0	0.1	0.0	0.2	0.2	0.3
0.6	0.3	0.3	-0.1	-0.3	-0.3	-0.1	0.0	0.1	-0.1	0.1	0.0	0.1
0.7	0.4	0.3	0.0	-0.2	-0.3	-0.2	0.1	0.0	-0.1	0.0	0.1	0.2
0.8	0.1	0.1	-0.1	-0.4	-0.9	-0.3	-0.4	-0.4	-0.3	-0.1	0.0	0.0
0.9	0.3	0.1	-0.3	-0.7	-0.6	-0.5	-0.3	-0.1	-0.2	0.0	0.2	0.2
Long Term												
Full Simulation Period ^b	1.0	0.4	0.0	-0.3	-0.4	-0.1	0.0	0.2	0.0	0.3	0.8	1.2
Water Year Types ^c												
Wet (32%)	1.0	0.4	-0.1	-0.3	-0.3	-0.2	-0.3	-0.2	-0.1	0.0	0.1	0.1
Above Normal (16%)	0.9	0.7	0.2	0.0	-0.1	-0.2	-0.1	0.0	0.1	0.2	0.3	0.4
Below Normal (13%)	0.9	0.2	-0.2	-0.5	-0.3	-0.3	0.0	0.2	0.4	0.7	0.9	1.2
Dry (24%)	1.0	0.8	0.4	-0.1	-0.2	-0.1	0.0	0.1	0.4	0.9	1.8	2.3
Critical (15%)	0.6	-0.4	-0.5	-0.9	-1.0	0.0	1.1	1.0	-0.7	0.1	0.9	2.4

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

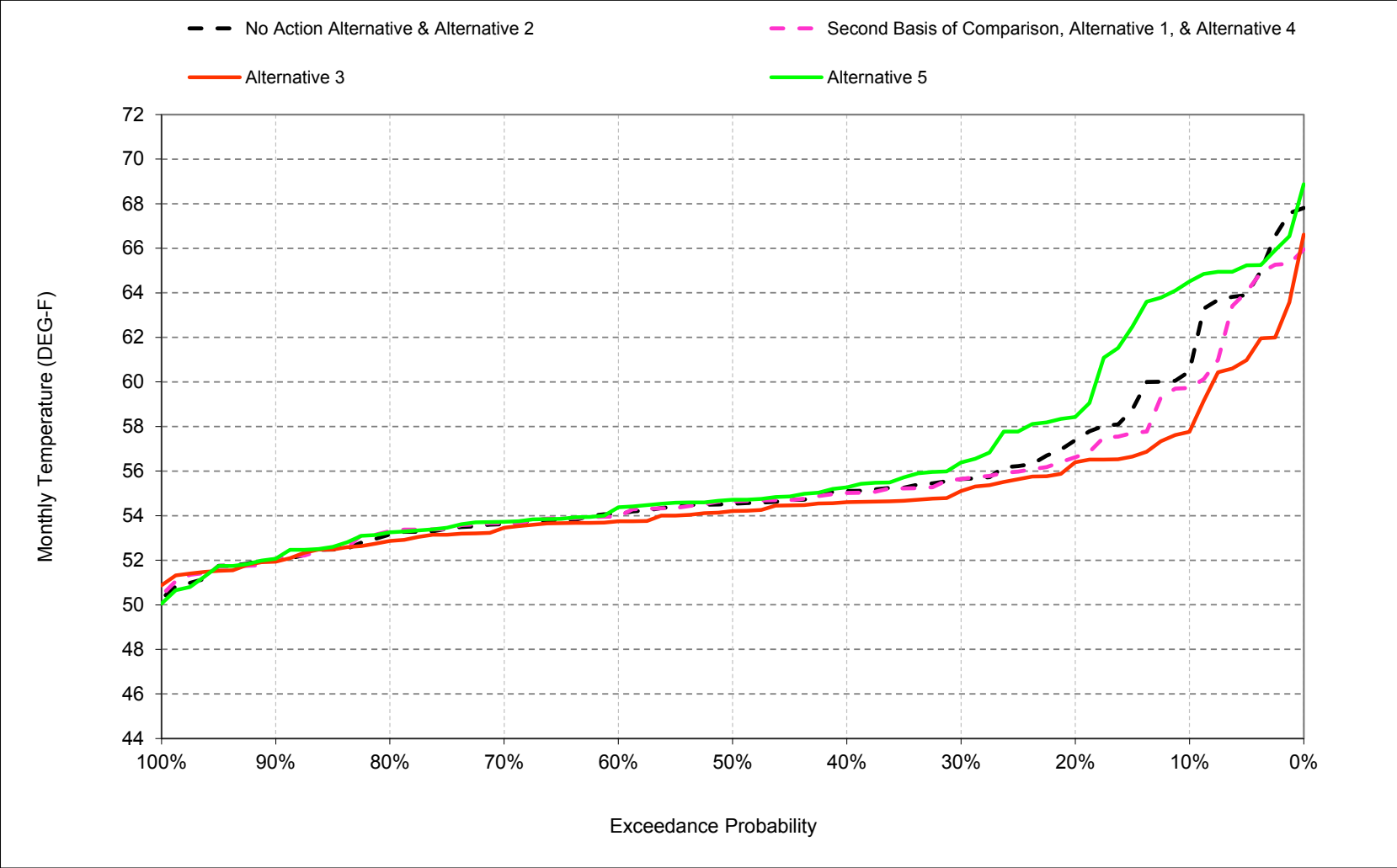
b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

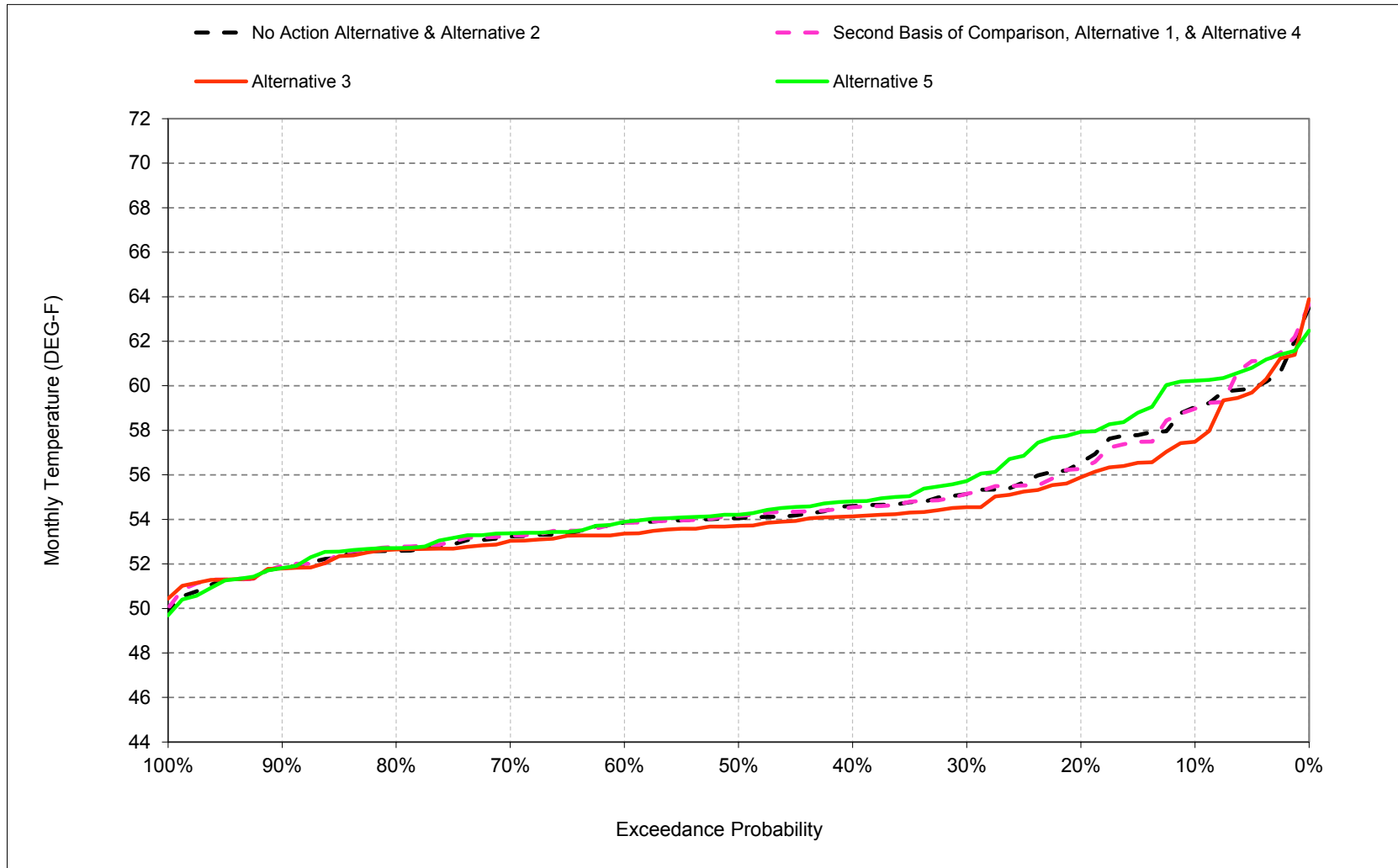
B.16. Stanislaus River below Tulloch Temperature

Figure B-16-1. Stanislaus River below Tulloch Reservoir, October



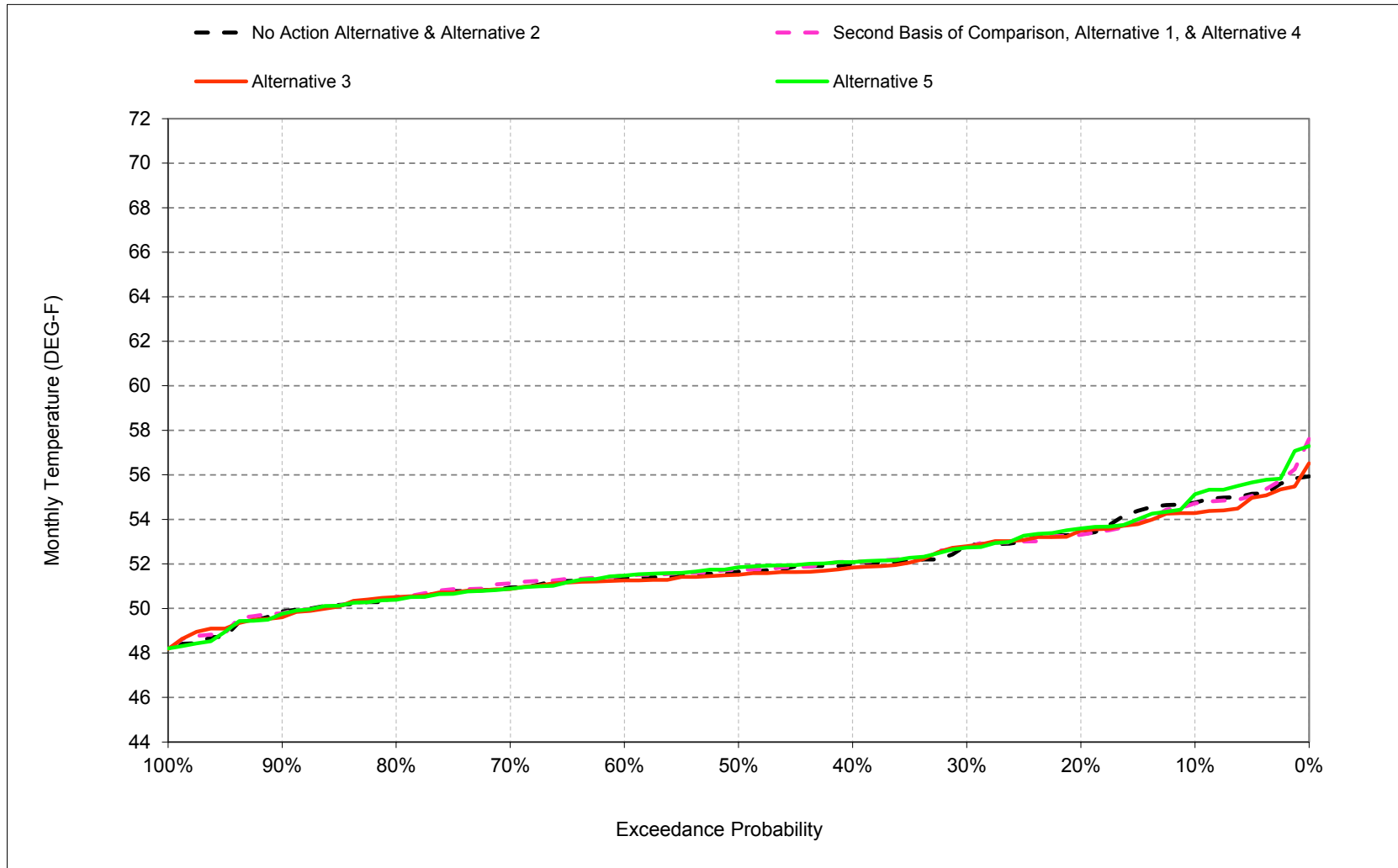
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-16-2. Stanislaus River below Tulloch Reservoir, November



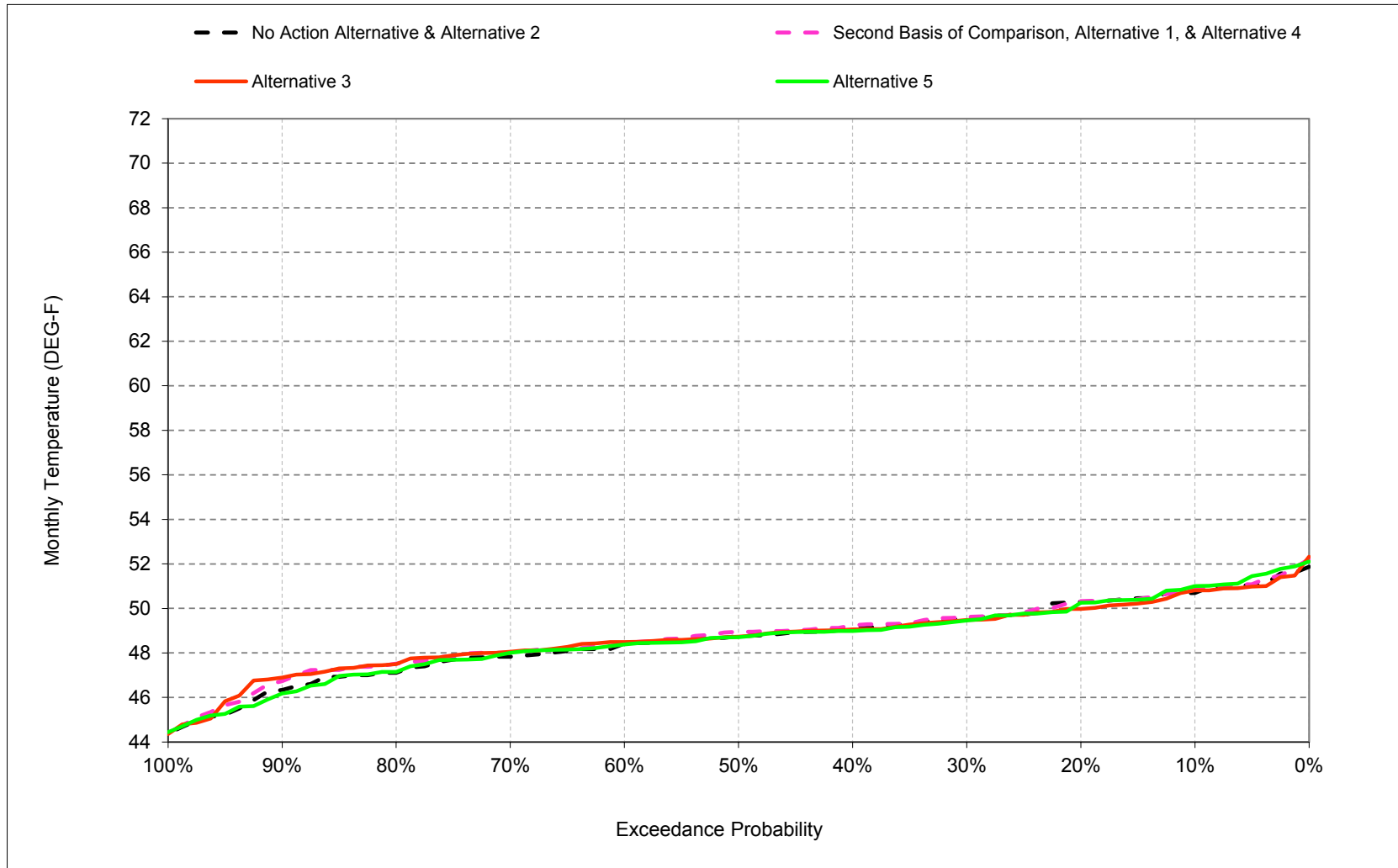
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-16-3. Stanislaus River below Tulloch Reservoir, December



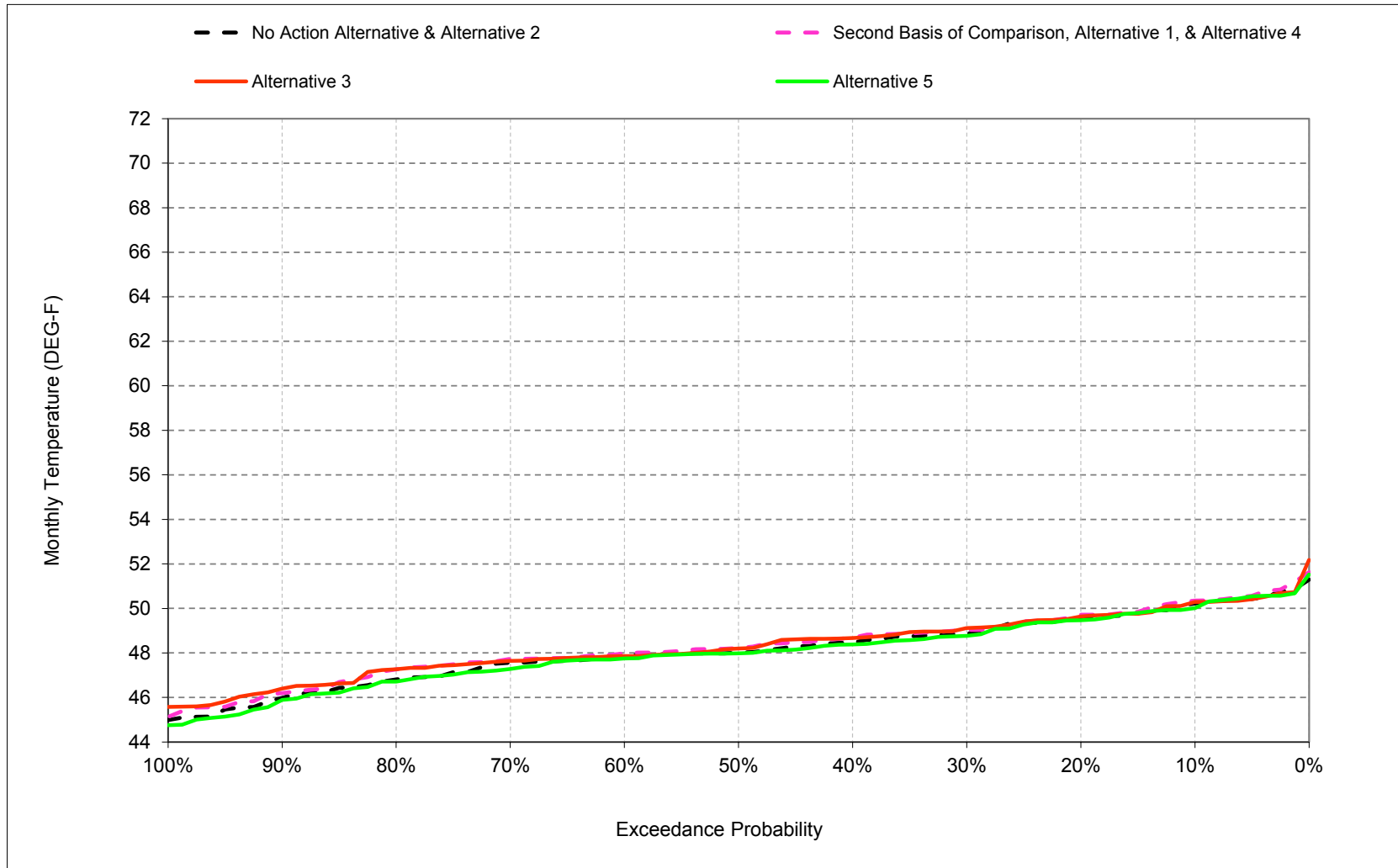
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-16-4. Stanislaus River below Tulloch Reservoir, January



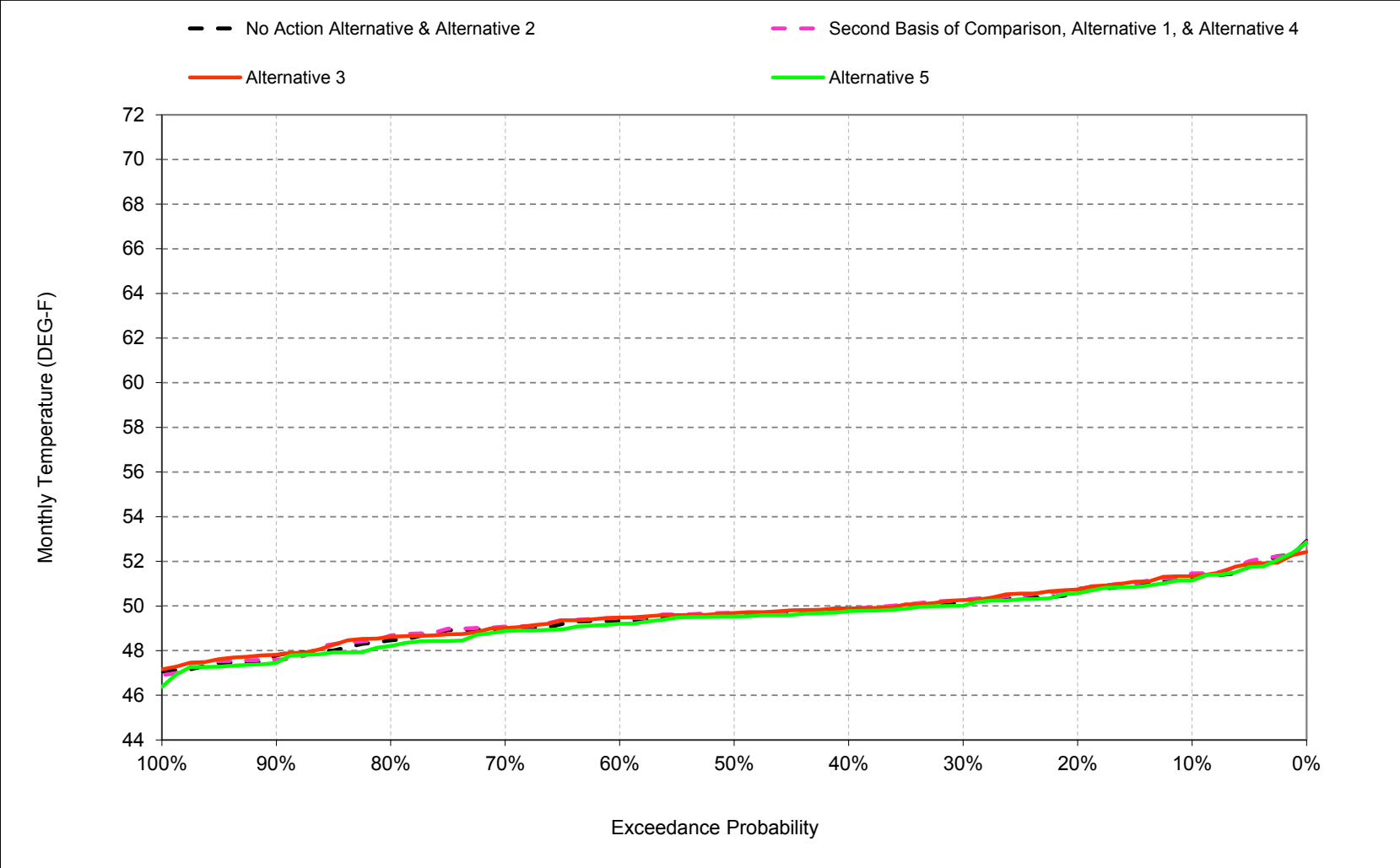
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-16-5. Stanislaus River below Tulloch Reservoir, February



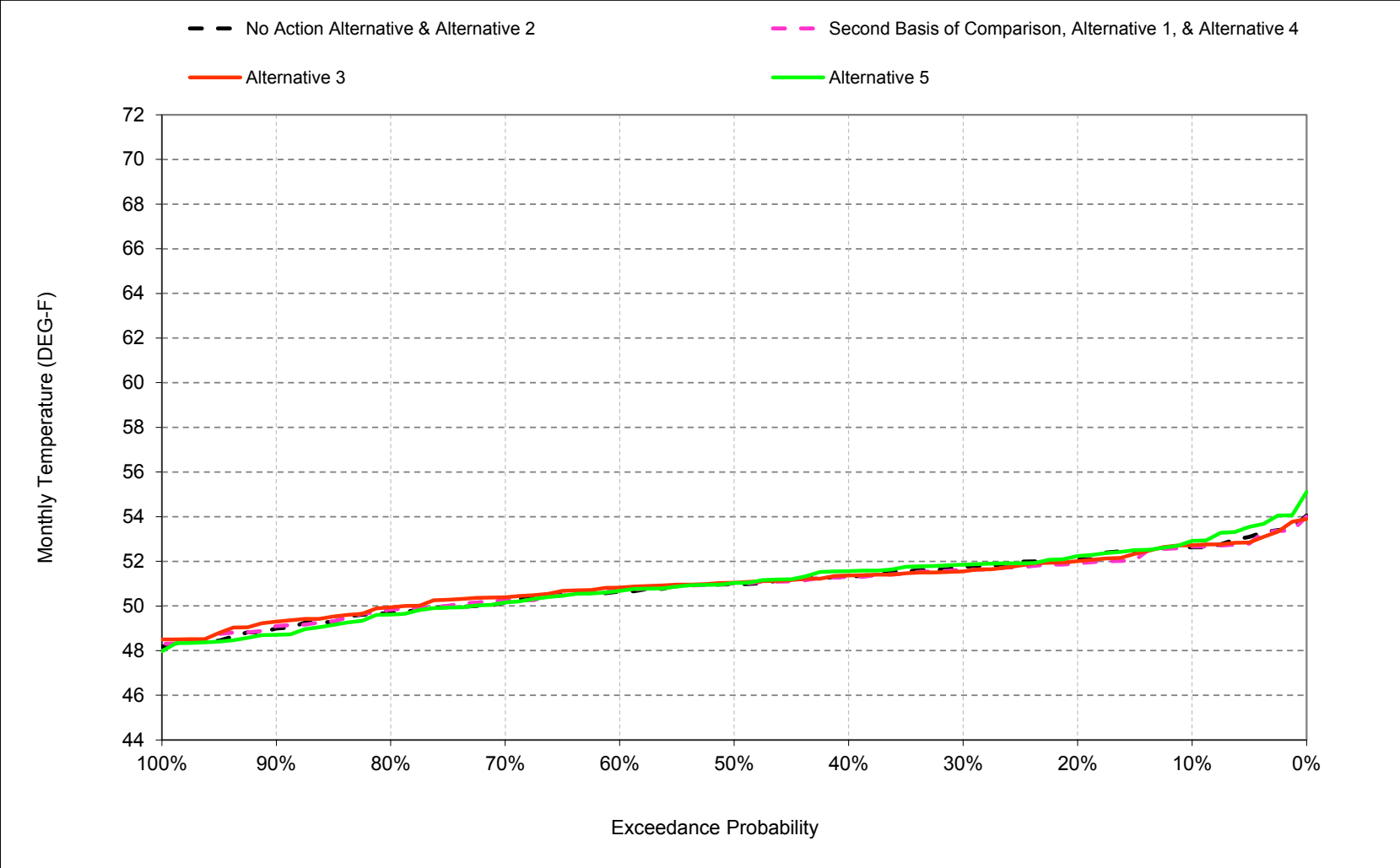
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-16-6. Stanislaus River below Tulloch Reservoir, March



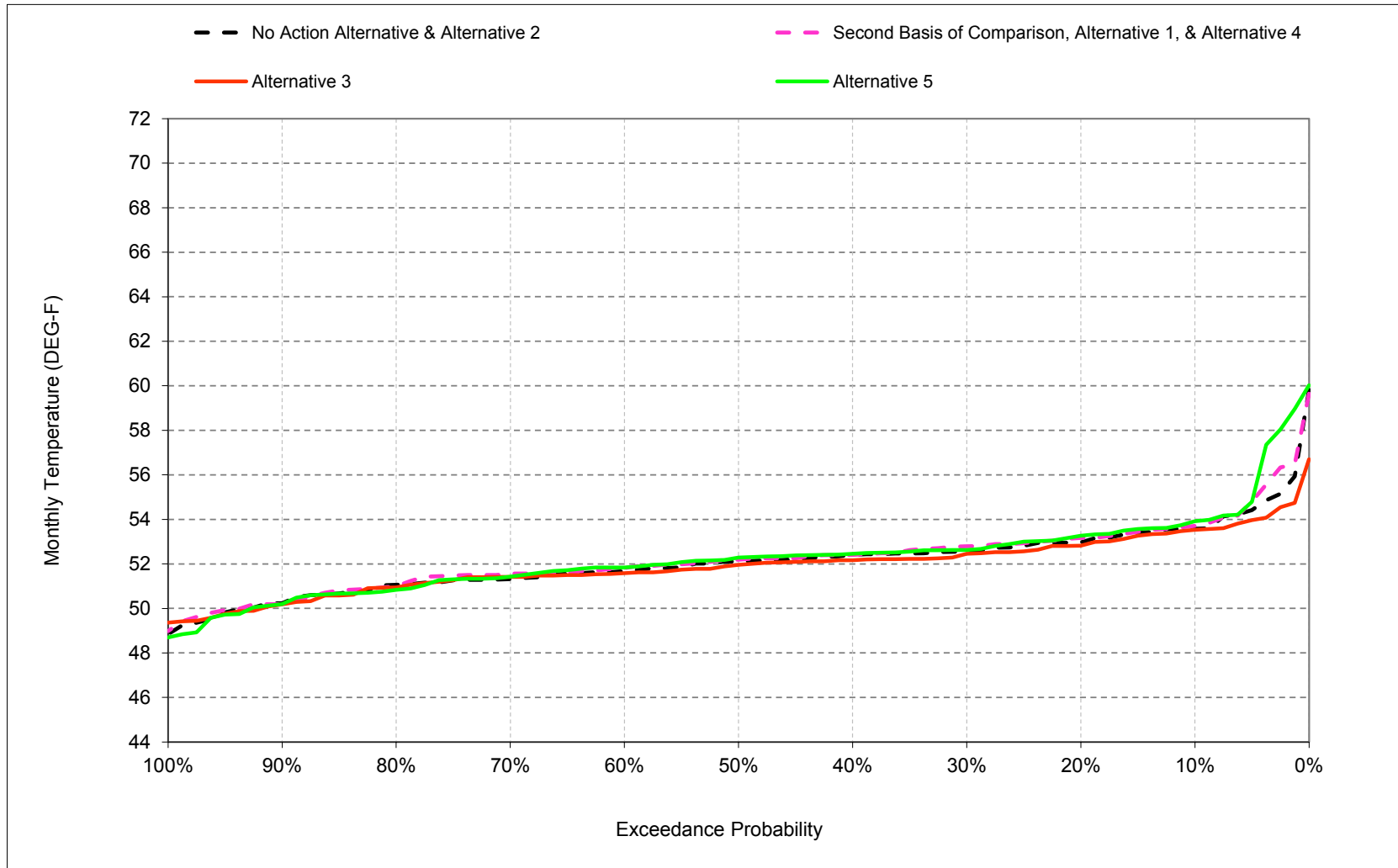
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-16-7. Stanislaus River below Tulloch Reservoir, April



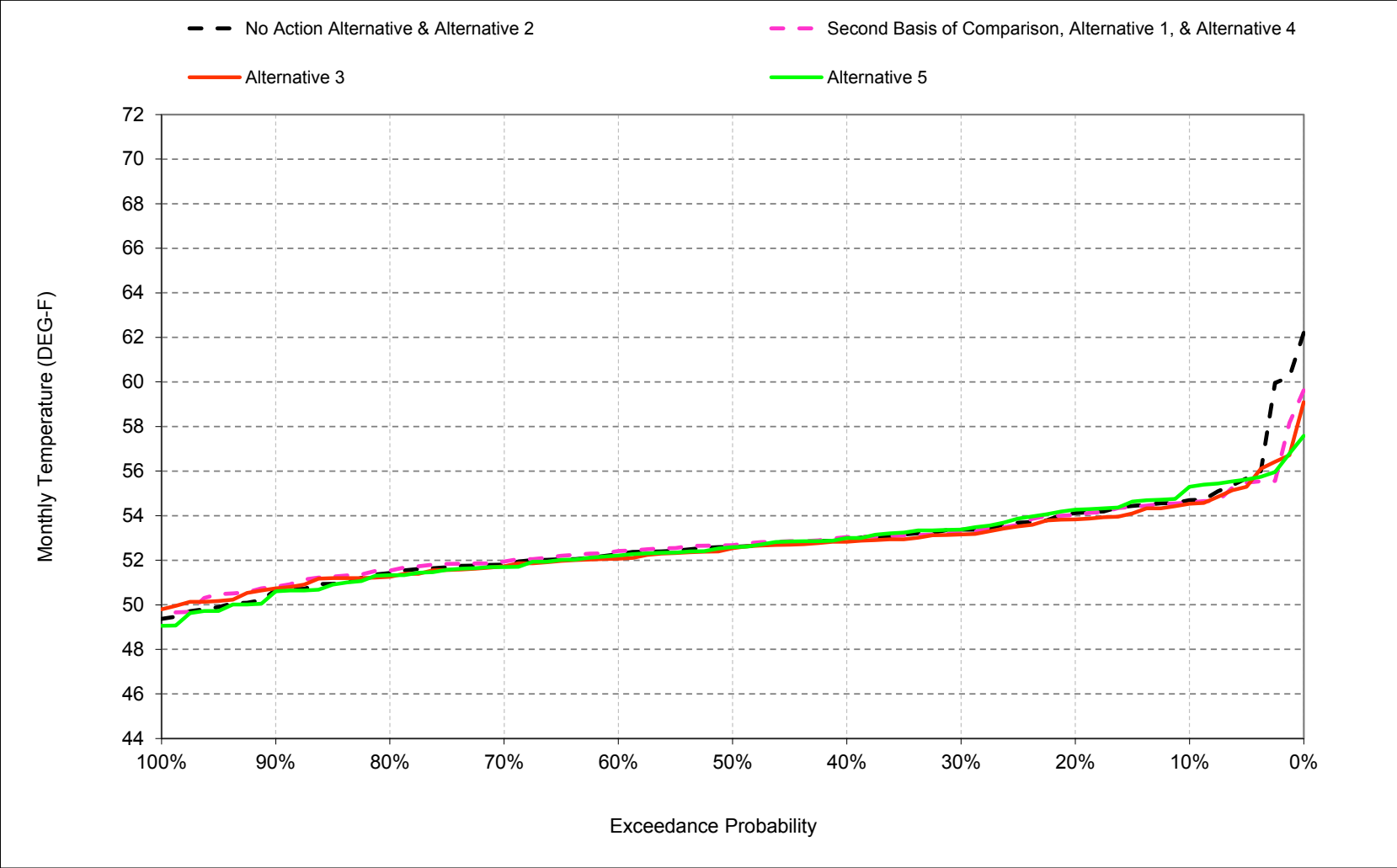
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-16-8. Stanislaus River below Tulloch Reservoir, May



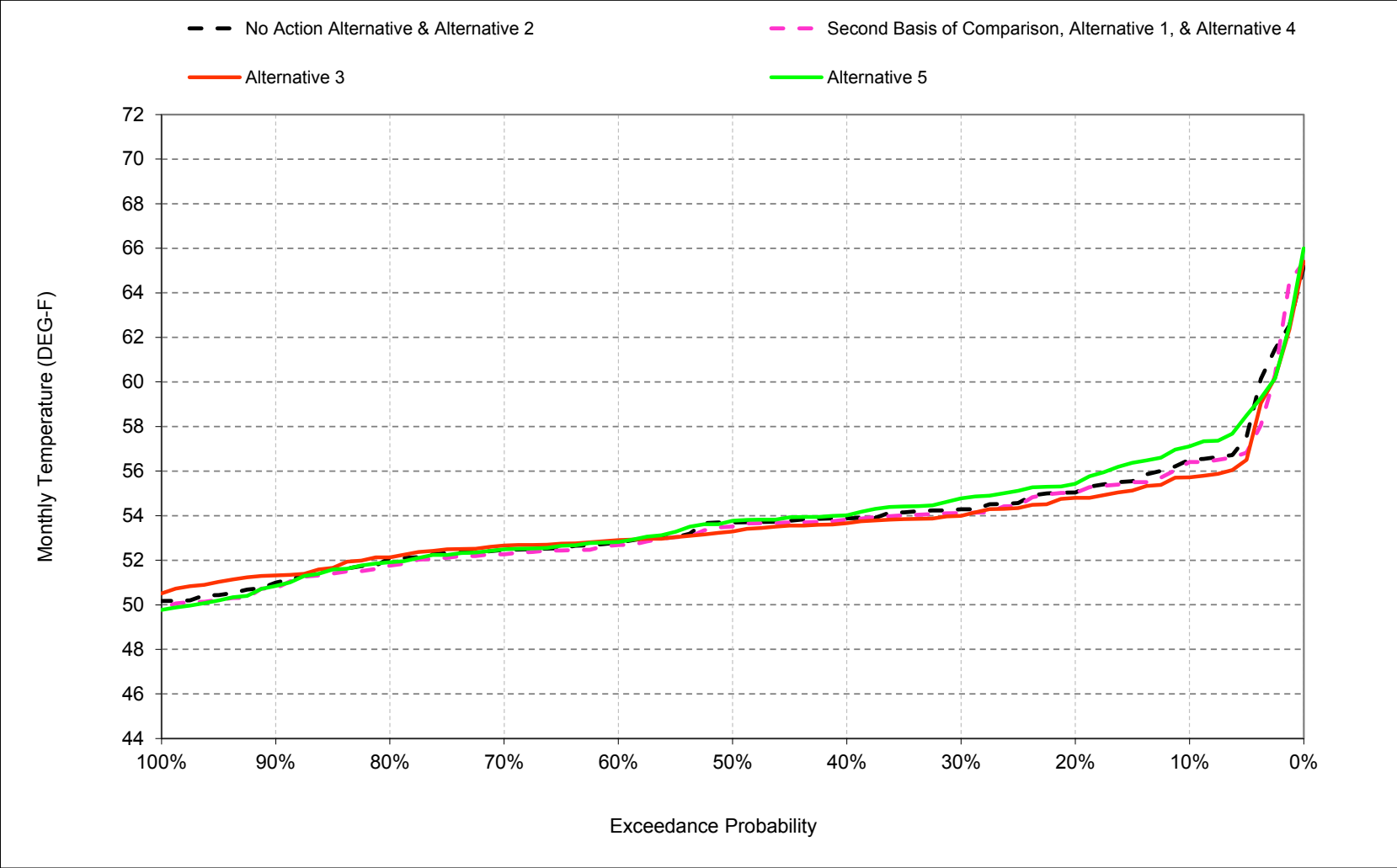
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-16-9. Stanislaus River below Tulloch Reservoir, June



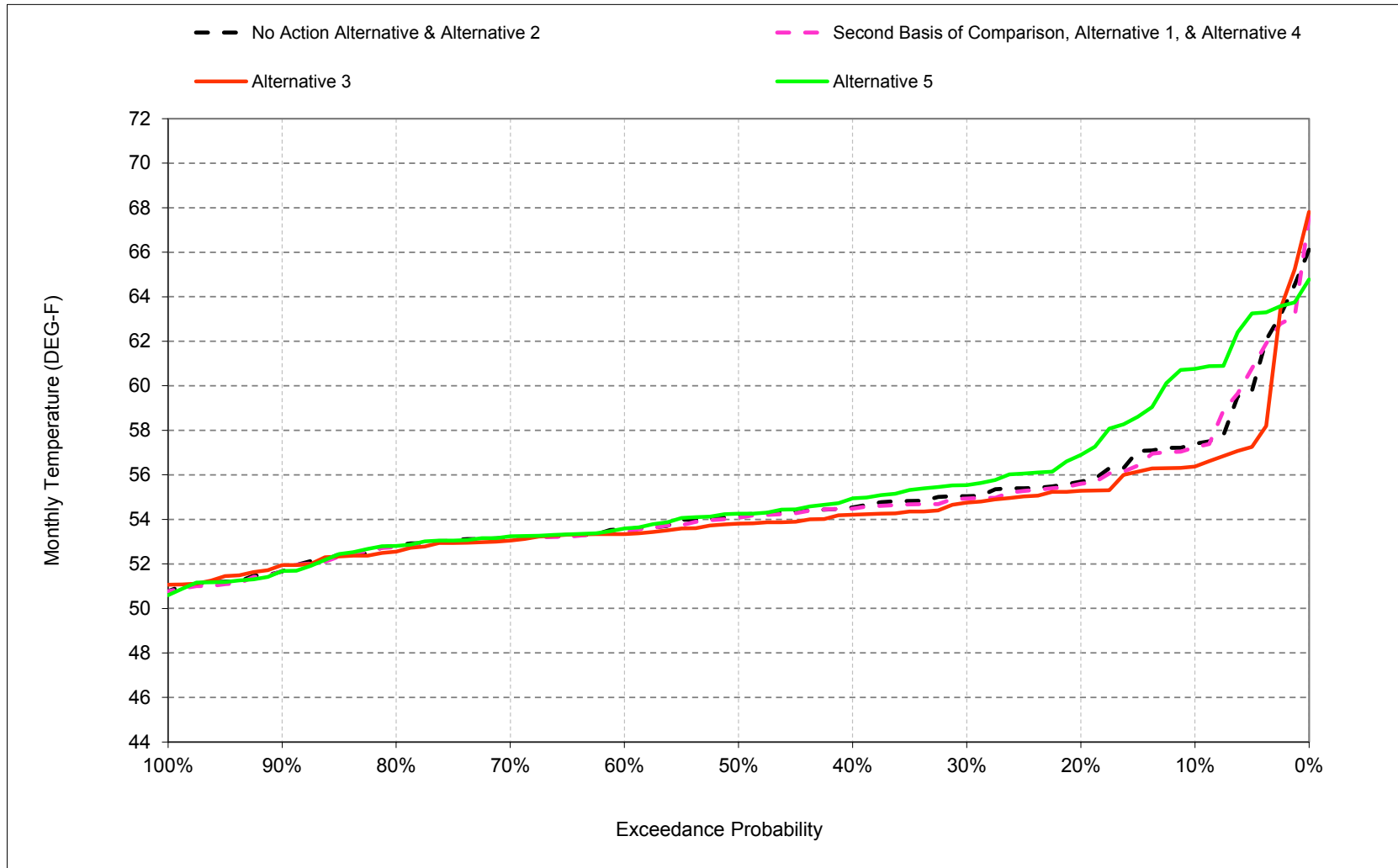
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-16-10. Stanislaus River below Tulloch Reservoir, July



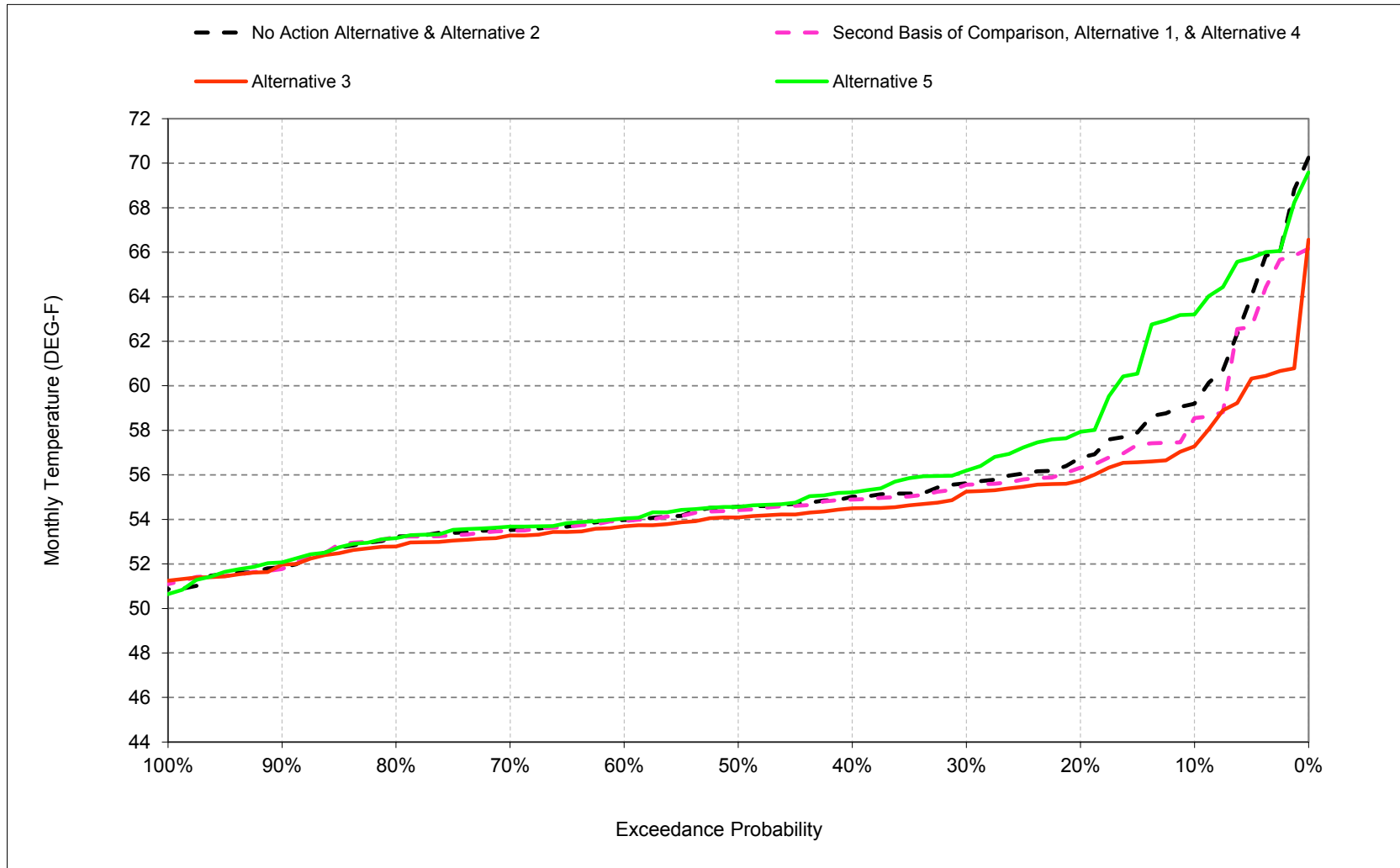
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-16-11. Stanislaus River below Tulloch Reservoir, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-16-12. Stanislaus River below Tulloch Reservoir, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-16-1. Stanislaus River below Tulloch Reservoir, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	60	59	55	51	50	51	53	54	55	56	57	59
20%	57	57	53	50	49	51	52	53	54	55	56	57
30%	56	55	53	50	49	50	52	53	53	54	55	56
40%	55	55	52	49	48	50	51	52	53	54	55	55
50%	55	54	52	49	48	50	51	52	53	54	54	55
60%	54	54	51	48	48	49	51	52	52	53	54	54
70%	54	53	51	48	48	49	50	51	52	52	53	54
80%	53	53	50	47	47	48	50	51	51	52	53	53
90%	52	52	50	46	46	48	49	50	50	51	52	52
Long Term												
Full Simulation Period ^b	56	55	52	49	48	50	51	52	53	54	55	55
Water Year Types ^c												
Wet (32%)	52	52	49	48	48	49	50	51	51	52	52	53
Above Normal (16%)	56	55	52	49	48	49	51	51	52	53	53	54
Below Normal (13%)	55	54	51	49	48	50	51	52	52	54	54	55
Dry (24%)	55	55	52	49	48	50	51	52	53	54	55	56
Critical (15%)	60	57	54	50	49	51	52	54	56	58	59	62

Alternative 1												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	60	59	55	51	50	51	53	54	55	56	57	58
20%	57	56	53	50	50	51	52	53	54	55	56	56
30%	56	55	53	50	49	50	52	53	53	54	55	55
40%	55	55	52	49	49	50	51	52	53	54	54	55
50%	55	54	52	49	48	50	51	52	53	53	54	54
60%	54	54	51	48	48	49	51	52	52	53	53	54
70%	54	53	51	48	48	49	50	52	52	52	53	53
80%	53	53	51	47	47	49	50	51	52	52	53	53
90%	52	52	50	47	46	48	49	50	51	51	51	52
Long Term												
Full Simulation Period ^b	55	55	52	49	48	50	51	52	53	54	55	55
Water Year Types ^c												
Wet (32%)	52	51	49	48	48	49	50	51	52	52	52	53
Above Normal (16%)	56	55	52	49	48	49	51	52	52	53	53	54
Below Normal (13%)	55	54	51	49	48	50	51	52	52	53	54	55
Dry (24%)	55	55	52	49	49	50	51	53	53	54	55	56
Critical (15%)	59	58	54	50	49	51	52	54	55	58	59	60

Alternative 1 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	-0.7	-0.1	0.0	0.2	0.1	0.2	0.0	0.1	-0.1	-0.1	-0.2	-0.7
0.2	-0.8	-0.3	0.0	0.0	0.2	0.2	-0.2	0.2	-0.1	0.0	-0.1	-0.4
0.3	0.0	0.0	-0.1	0.0	0.2	0.1	-0.1	0.2	-0.1	-0.2	-0.1	-0.1
0.4	-0.1	-0.1	0.1	0.1	0.2	0.0	0.0	0.0	0.1	-0.1	0.0	-0.1
0.5	0.1	0.1	0.1	0.2	0.2	0.1	0.0	0.1	0.1	-0.2	-0.1	-0.2
0.6	-0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-0.1	-0.1	0.0
0.7	0.0	0.0	0.2	0.2	0.1	0.1	0.2	0.2	0.1	-0.2	0.0	0.0
0.8	0.2	0.2	0.1	0.3	0.5	0.1	0.1	-0.1	0.1	-0.2	0.0	0.0
0.9	0.1	0.1	-0.1	0.3	0.3	0.1	0.1	0.0	0.5	0.0	0.0	-0.1
Long Term												
Full Simulation Period ^b	-0.2	0.1	0.1	0.1	0.2	0.1	0.0	0.1	0.0	-0.2	-0.1	-0.3
Water Year Types ^c												
Wet (32%)	-0.1	-0.1	0.0	0.1	0.2	0.0	0.1	0.0	0.4	-0.2	0.0	0.0
Above Normal (16%)	-0.2	0.1	0.1	0.1	0.2	0.1	-0.1	0.2	0.0	-0.1	-0.1	-0.1
Below Normal (13%)	-0.2	-0.2	-0.1	0.1	0.2	0.1	-0.3	0.3	-0.1	-0.2	-0.2	-0.2
Dry (24%)	-0.2	0.0	0.1	0.2	0.2	0.1	0.0	0.1	-0.1	-0.1	-0.2	-0.3
Critical (15%)	-0.6	0.7	0.3	0.2	0.2	0.2	-0.1	0.2	-0.9	-0.2	0.2	-1.4

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-16-2. Stanislaus River below Tulloch Reservoir, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	60	59	55	51	50	51	53	54	55	56	57	59
20%	57	57	53	50	49	51	52	53	54	55	56	57
30%	56	55	53	50	49	50	52	53	53	54	55	56
40%	55	55	52	49	48	50	51	52	53	54	55	55
50%	55	54	52	49	48	50	51	52	53	54	54	55
60%	54	54	51	48	48	49	51	52	52	53	54	54
70%	54	53	51	48	48	49	50	51	52	52	53	54
80%	53	53	50	47	47	48	50	51	51	52	53	53
90%	52	52	50	46	46	48	49	50	50	51	52	52
Long Term												
Full Simulation Period ^b	56	55	52	49	48	50	51	52	53	54	55	55
Water Year Types ^c												
Wet (32%)	52	52	49	48	48	49	50	51	51	52	52	53
Above Normal (16%)	56	55	52	49	48	49	51	51	52	53	53	54
Below Normal (13%)	55	54	51	49	48	50	51	52	52	54	54	55
Dry (24%)	55	55	52	49	48	50	51	52	53	54	55	56
Critical (15%)	60	57	54	50	49	51	52	54	56	58	59	62

Alternative 3												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	58	57	54	51	50	51	53	54	55	56	56	57
20%	56	56	53	50	50	51	52	53	54	55	55	56
30%	55	55	53	49	49	50	52	52	53	54	55	55
40%	55	54	52	49	49	50	51	52	53	54	54	54
50%	54	54	52	49	48	50	51	52	52	53	54	54
60%	54	53	51	48	48	49	51	52	52	53	53	54
70%	53	53	51	48	48	49	50	51	52	53	53	53
80%	53	53	51	47	47	49	50	51	51	52	53	53
90%	52	52	50	47	46	48	49	50	51	51	52	52
Long Term												
Full Simulation Period ^b	55	54	52	49	48	50	51	52	53	54	54	55
Water Year Types ^c												
Wet (32%)	52	51	49	48	48	49	50	51	51	52	52	53
Above Normal (16%)	55	54	52	49	48	49	51	51	52	53	53	54
Below Normal (13%)	54	53	51	49	48	50	51	52	52	53	54	54
Dry (24%)	55	54	52	49	48	50	52	52	53	54	55	55
Critical (15%)	58	57	54	50	49	51	52	54	55	57	59	59

Alternative 3 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	-2.7	-1.6	-0.5	0.1	0.1	0.1	0.1	-0.1	-0.2	-0.8	-1.0	-1.9
0.2	-1.0	-0.7	0.2	-0.3	0.1	0.2	-0.1	-0.1	-0.3	-0.2	-0.4	-1.0
0.3	-0.5	-0.6	0.0	-0.1	0.2	0.1	-0.2	-0.1	-0.2	-0.3	-0.3	-0.5
0.4	-0.5	-0.5	-0.2	0.0	0.2	0.1	0.1	-0.2	-0.1	-0.2	-0.3	-0.5
0.5	-0.3	-0.3	-0.1	0.0	0.2	0.1	0.1	-0.2	-0.1	-0.4	-0.4	-0.5
0.6	-0.3	-0.5	-0.1	0.2	0.0	0.1	0.2	-0.1	-0.2	0.1	-0.2	-0.3
0.7	-0.2	-0.2	-0.1	0.2	0.1	0.1	0.3	0.1	-0.1	0.2	-0.1	-0.3
0.8	-0.3	0.1	0.1	0.3	0.5	0.2	0.2	-0.1	-0.2	0.3	-0.3	-0.3
0.9	-0.1	0.0	-0.3	0.5	0.4	0.3	0.4	-0.1	0.4	0.5	0.2	-0.1
Long Term												
Full Simulation Period ^b	-0.8	-0.3	-0.1	0.1	0.2	0.1	0.1	-0.2	-0.2	-0.1	-0.3	-0.8
Water Year Types ^c												
Wet (32%)	-0.4	-0.3	-0.1	0.1	0.4	0.1	0.2	-0.1	0.1	0.3	0.0	-0.2
Above Normal (16%)	-0.8	-0.4	0.0	0.1	0.2	0.1	0.1	0.0	-0.1	0.1	-0.2	-0.4
Below Normal (13%)	-1.0	-0.7	-0.3	0.0	0.1	0.1	-0.2	-0.1	0.0	-0.2	-0.4	-0.5
Dry (24%)	-0.5	-0.4	-0.1	0.0	-0.1	0.0	0.1	-0.1	-0.2	-0.3	-0.6	-0.9
Critical (15%)	-1.9	-0.1	0.1	0.2	0.2	0.3	0.0	-0.8	-1.2	-0.7	-0.6	-2.8

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-16-3. Stanislaus River below Tulloch Reservoir, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	60	59	55	51	50	51	53	54	55	56	57	59
20%	57	57	53	50	49	51	52	53	54	55	56	57
30%	56	55	53	50	49	50	52	53	53	54	55	56
40%	55	55	52	49	48	50	51	52	53	54	55	55
50%	55	54	52	49	48	50	51	52	53	54	54	55
60%	54	54	51	48	48	49	51	52	52	53	54	54
70%	54	53	51	48	48	49	50	51	52	52	53	54
80%	53	53	50	47	47	48	50	51	51	52	53	53
90%	52	52	50	46	46	48	49	50	50	51	52	52
Long Term												
Full Simulation Period ^b	56	55	52	49	48	50	51	52	53	54	55	55
Water Year Types ^c												
Wet (32%)	52	52	49	48	48	49	50	51	51	52	52	53
Above Normal (16%)	56	55	52	49	48	49	51	51	52	53	53	54
Below Normal (13%)	55	54	51	49	48	50	51	52	52	54	54	55
Dry (24%)	55	55	52	49	48	50	51	52	53	54	55	56
Critical (15%)	60	57	54	50	49	51	52	54	56	58	59	62

Alternative 5												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	65	60	55	51	50	51	53	54	55	57	61	63
20%	58	58	54	50	49	51	52	53	54	55	57	58
30%	56	56	53	49	49	50	52	53	53	55	56	56
40%	55	55	52	49	48	50	52	52	53	54	55	55
50%	55	54	52	49	48	50	51	52	53	54	54	55
60%	54	54	51	48	48	49	51	52	52	53	54	54
70%	54	53	51	48	47	49	50	51	52	52	53	54
80%	53	53	50	47	47	48	50	51	51	52	53	53
90%	52	52	50	46	46	47	49	50	50	51	51	52
Long Term												
Full Simulation Period ^b	56	55	52	49	48	49	51	52	53	54	55	56
Water Year Types ^c												
Wet (32%)	53	52	49	48	47	49	50	51	51	52	53	53
Above Normal (16%)	56	55	52	49	48	49	51	52	52	53	54	54
Below Normal (13%)	56	54	52	49	48	49	51	52	53	54	55	56
Dry (24%)	56	55	52	49	48	50	51	53	54	55	56	58
Critical (15%)	60	58	54	50	49	50	53	55	55	58	60	62

Alternative 5 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	4.0	1.2	0.4	0.3	-0.2	-0.1	0.3	0.3	0.6	0.6	3.4	4.0
0.2	1.1	1.4	0.3	-0.1	0.0	0.0	0.1	0.3	0.2	0.4	1.2	1.2
0.3	0.8	0.6	-0.1	-0.1	-0.1	-0.2	0.1	0.1	0.0	0.5	0.5	0.5
0.4	0.2	0.2	0.1	-0.1	-0.1	-0.1	0.3	0.1	0.1	0.1	0.3	0.2
0.5	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0
0.6	0.3	0.0	0.1	0.1	-0.1	-0.2	0.0	0.2	0.0	0.1	0.0	0.0
0.7	0.1	0.1	-0.1	0.1	-0.3	-0.1	0.0	0.1	-0.1	0.0	0.0	0.1
0.8	0.1	0.1	-0.1	0.0	0.0	-0.2	-0.1	-0.3	-0.1	0.0	0.0	0.1
0.9	0.1	0.0	-0.1	-0.3	-0.2	-0.1	-0.1	-0.1	-0.2	0.0	-0.1	0.2
Long Term												
Full Simulation Period ^b	0.6	0.4	0.1	0.0	-0.1	-0.1	0.0	0.2	-0.2	0.1	0.5	0.7
Water Year Types ^c												
Wet (32%)	0.7	0.3	0.1	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.0	0.2
Above Normal (16%)	0.4	0.4	0.2	0.1	0.0	-0.1	-0.1	0.2	-0.1	0.1	0.2	0.3
Below Normal (13%)	0.7	0.0	0.1	-0.1	-0.1	-0.1	0.0	0.2	0.2	0.4	0.6	0.8
Dry (24%)	0.7	0.5	0.2	0.1	0.0	-0.1	0.0	0.1	0.2	0.5	1.1	1.7
Critical (15%)	0.5	0.7	-0.2	-0.3	-0.3	-0.2	0.6	0.8	-1.1	-0.2	0.8	0.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-16-4. Stanislaus River below Tulloch Reservoir, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	60	59	55	51	50	51	53	54	55	56	57	58
20%	57	56	53	50	50	51	52	53	54	55	56	56
30%	56	55	53	50	49	50	52	53	53	54	55	55
40%	55	55	52	49	49	50	51	52	53	54	54	55
50%	55	54	52	49	48	50	51	52	53	53	54	54
60%	54	54	51	48	48	49	51	52	52	53	53	54
70%	54	53	51	48	48	49	50	52	52	52	53	53
80%	53	53	51	47	47	49	50	51	52	52	53	53
90%	52	52	50	47	46	48	49	50	51	51	51	52
Long Term												
Full Simulation Period ^b	55	55	52	49	48	50	51	52	53	54	55	55
Water Year Types ^c												
Wet (32%)	52	51	49	48	48	49	50	51	52	52	52	53
Above Normal (16%)	56	55	52	49	48	49	51	52	52	53	53	54
Below Normal (13%)	55	54	51	49	48	50	51	52	52	53	54	55
Dry (24%)	55	55	52	49	49	50	51	53	53	54	55	56
Critical (15%)	59	58	54	50	49	51	52	54	55	58	59	60

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	60	59	55	51	50	51	53	54	55	56	57	59
20%	57	57	53	50	49	51	52	53	54	55	56	57
30%	56	55	53	50	49	50	52	53	53	54	55	56
40%	55	55	52	49	48	50	51	52	53	54	55	55
50%	55	54	52	49	48	50	51	52	53	54	54	55
60%	54	54	51	48	48	49	51	52	52	53	54	54
70%	54	53	51	48	48	49	50	51	52	52	53	54
80%	53	53	50	47	47	48	50	51	51	52	53	53
90%	52	52	50	46	46	48	49	50	50	51	52	52
Long Term												
Full Simulation Period ^b	56	55	52	49	48	50	51	52	53	54	55	55
Water Year Types ^c												
Wet (32%)	52	52	49	48	48	49	50	51	51	52	52	53
Above Normal (16%)	56	55	52	49	48	49	51	51	52	53	53	54
Below Normal (13%)	55	54	51	49	48	50	51	52	52	54	54	55
Dry (24%)	55	55	52	49	48	50	51	52	53	54	55	56
Critical (15%)	60	57	54	50	49	51	52	54	56	58	59	62

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	0.7	0.1	0.0	-0.2	-0.1	-0.2	0.0	-0.1	0.1	0.1	0.2	0.7
0.2	0.8	0.3	0.0	0.0	-0.2	-0.2	0.2	-0.2	0.1	0.0	0.1	0.4
0.3	0.0	0.0	0.1	0.0	-0.2	-0.1	0.1	-0.2	0.1	0.2	0.1	0.1
0.4	0.1	0.1	-0.1	-0.1	-0.2	0.0	0.0	0.0	-0.1	0.1	0.0	0.1
0.5	-0.1	-0.1	-0.1	-0.2	-0.2	-0.1	0.0	-0.1	-0.1	0.2	0.1	0.2
0.6	0.1	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.1	0.1	0.0
0.7	0.0	0.0	-0.2	-0.2	-0.1	-0.1	-0.2	-0.2	-0.1	0.2	0.0	0.0
0.8	-0.2	-0.2	-0.1	-0.3	-0.5	-0.1	-0.1	0.1	-0.1	0.2	0.0	0.0
0.9	-0.1	-0.1	0.1	-0.3	-0.3	-0.1	-0.1	0.0	-0.5	0.0	0.0	0.1
Long Term												
Full Simulation Period ^b	0.2	-0.1	-0.1	-0.1	-0.2	-0.1	0.0	-0.1	0.0	0.2	0.1	0.3
Water Year Types ^c												
Wet (32%)	0.1	0.1	0.0	-0.1	-0.2	0.0	-0.1	0.0	-0.4	0.2	0.0	0.0
Above Normal (16%)	0.2	-0.1	-0.1	-0.1	-0.2	-0.1	0.1	-0.2	0.0	0.1	0.1	0.1
Below Normal (13%)	0.2	0.2	0.1	-0.1	-0.2	-0.1	0.3	-0.3	0.1	0.2	0.2	0.2
Dry (24%)	0.2	0.0	-0.1	-0.2	-0.2	-0.1	0.0	-0.1	0.1	0.1	0.2	0.3
Critical (15%)	0.6	-0.7	-0.3	-0.2	-0.2	-0.2	0.1	-0.2	0.9	0.2	-0.2	1.4

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-16-5. Stanislaus River below Tulloch Reservoir, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	60	59	55	51	50	51	53	54	55	56	57	58
20%	57	56	53	50	50	51	52	53	54	55	56	56
30%	56	55	53	50	49	50	52	53	53	54	55	55
40%	55	55	52	49	49	50	51	52	53	54	54	55
50%	55	54	52	49	48	50	51	52	53	53	54	54
60%	54	54	51	48	48	49	51	52	52	53	53	54
70%	54	53	51	48	48	49	50	52	52	52	53	53
80%	53	53	51	47	47	49	50	51	52	52	53	53
90%	52	52	50	47	46	48	49	50	51	51	51	52
Long Term												
Full Simulation Period ^b	55	55	52	49	48	50	51	52	53	54	55	55
Water Year Types ^c												
Wet (32%)	52	51	49	48	48	49	50	51	52	52	52	53
Above Normal (16%)	56	55	52	49	48	49	51	52	52	53	53	54
Below Normal (13%)	55	54	51	49	48	50	51	52	52	53	54	55
Dry (24%)	55	55	52	49	49	50	51	53	53	54	55	56
Critical (15%)	59	58	54	50	49	51	52	54	55	58	59	60

Alternative 3

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	58	57	54	51	50	51	53	54	55	56	56	57
20%	56	56	53	50	50	51	52	53	54	55	55	56
30%	55	55	53	49	49	50	52	52	53	54	55	55
40%	55	54	52	49	49	50	51	52	53	54	54	54
50%	54	54	52	49	48	50	51	52	52	53	54	54
60%	54	53	51	48	48	49	51	52	52	53	53	54
70%	53	53	51	48	48	49	50	51	52	53	53	53
80%	53	53	51	47	47	49	50	51	51	52	53	53
90%	52	52	50	47	46	48	49	50	51	51	52	52
Long Term												
Full Simulation Period ^b	55	54	52	49	48	50	51	52	53	54	54	55
Water Year Types ^c												
Wet (32%)	52	51	49	48	48	49	50	51	51	52	52	53
Above Normal (16%)	55	54	52	49	48	49	51	51	52	53	53	54
Below Normal (13%)	54	53	51	49	48	50	51	52	52	53	54	54
Dry (24%)	55	54	52	49	48	50	52	52	53	54	55	55
Critical (15%)	58	57	54	50	49	51	52	54	55	57	59	59

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	-2.0	-1.5	-0.4	-0.1	-0.1	-0.1	0.1	-0.2	-0.1	-0.7	-0.8	-1.2
0.2	-0.2	-0.4	0.2	-0.3	-0.1	0.0	0.1	-0.3	-0.2	-0.2	-0.3	-0.6
0.3	-0.5	-0.6	0.1	-0.1	0.1	0.0	-0.1	-0.4	-0.1	-0.1	-0.2	-0.4
0.4	-0.4	-0.4	-0.3	-0.2	0.0	0.0	0.1	-0.2	-0.2	-0.2	-0.3	-0.4
0.5	-0.4	-0.4	-0.2	-0.2	0.0	0.0	0.0	-0.3	-0.2	-0.2	-0.3	-0.3
0.6	-0.2	-0.5	-0.2	0.1	-0.1	0.0	0.1	-0.2	-0.3	0.2	-0.1	-0.3
0.7	-0.2	-0.2	-0.3	0.0	0.0	0.0	0.2	-0.1	-0.2	0.4	-0.1	-0.3
0.8	-0.4	-0.1	0.0	0.0	0.1	0.0	0.2	0.0	-0.3	0.5	-0.2	-0.3
0.9	-0.1	-0.1	-0.2	0.2	0.1	0.2	0.3	-0.1	-0.1	0.6	0.3	0.0
Long Term												
Full Simulation Period ^b	-0.5	-0.4	-0.1	-0.1	0.0	0.0	0.1	-0.3	-0.2	0.1	-0.3	-0.5
Water Year Types ^c												
Wet (32%)	-0.3	-0.2	-0.1	0.0	0.3	0.0	0.1	-0.2	-0.3	0.5	0.0	-0.2
Above Normal (16%)	-0.5	-0.4	-0.2	0.0	0.0	0.0	0.2	-0.2	-0.1	0.1	-0.1	-0.3
Below Normal (13%)	-0.7	-0.5	-0.2	-0.1	-0.1	-0.1	0.1	-0.3	0.0	-0.1	-0.2	-0.3
Dry (24%)	-0.3	-0.3	-0.1	-0.1	-0.3	-0.1	0.1	-0.2	-0.1	-0.2	-0.5	-0.7
Critical (15%)	-1.3	-0.8	-0.2	-0.1	-0.1	0.1	0.1	-0.9	-0.2	-0.5	-0.8	-1.5

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-16-6. Stanislaus River below Tulloch Reservoir, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	60	59	55	51	50	51	53	54	55	56	57	58
20%	57	56	53	50	50	51	52	53	54	55	56	56
30%	56	55	53	50	49	50	52	53	53	54	55	55
40%	55	55	52	49	49	50	51	52	53	54	54	55
50%	55	54	52	49	48	50	51	52	53	53	54	54
60%	54	54	51	48	48	49	51	52	52	53	53	54
70%	54	53	51	48	48	49	50	52	52	52	53	53
80%	53	53	51	47	47	49	50	51	52	52	53	53
90%	52	52	50	47	46	48	49	50	51	51	51	52
Long Term												
Full Simulation Period ^b	55	55	52	49	48	50	51	52	53	54	55	55
Water Year Types ^c												
Wet (32%)	52	51	49	48	48	49	50	51	52	52	52	53
Above Normal (16%)	56	55	52	49	48	49	51	52	52	53	53	54
Below Normal (13%)	55	54	51	49	48	50	51	52	52	53	54	55
Dry (24%)	55	55	52	49	49	50	51	53	53	54	55	56
Critical (15%)	59	58	54	50	49	51	52	54	55	58	59	60

Alternative 5

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	65	60	55	51	50	51	53	54	55	57	61	63
20%	58	58	54	50	49	51	52	53	54	55	57	58
30%	56	56	53	49	49	50	52	53	53	55	56	56
40%	55	55	52	49	48	50	52	52	53	54	55	55
50%	55	54	52	49	48	50	51	52	53	54	54	55
60%	54	54	51	48	48	49	51	52	52	53	54	54
70%	54	53	51	48	47	49	50	51	52	52	53	54
80%	53	53	50	47	47	48	50	51	51	52	53	53
90%	52	52	50	46	46	47	49	50	50	51	51	52
Long Term												
Full Simulation Period ^b	56	55	52	49	48	49	51	52	53	54	55	56
Water Year Types ^c												
Wet (32%)	53	52	49	48	47	49	50	51	51	52	53	53
Above Normal (16%)	56	55	52	49	48	49	51	52	52	53	54	54
Below Normal (13%)	56	54	52	49	48	49	51	52	53	54	55	56
Dry (24%)	56	55	52	49	48	50	51	53	54	55	56	58
Critical (15%)	60	58	54	50	49	50	53	55	55	58	60	62

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	4.8	1.3	0.4	0.1	-0.3	-0.3	0.2	0.2	0.7	0.7	3.5	4.8
0.2	1.8	1.7	0.3	-0.1	-0.2	-0.2	0.3	0.1	0.2	0.4	1.3	1.6
0.3	0.8	0.6	0.0	-0.2	-0.3	-0.2	0.2	-0.2	0.1	0.6	0.6	0.6
0.4	0.3	0.3	0.0	-0.2	-0.3	-0.1	0.3	0.0	-0.1	0.2	0.4	0.3
0.5	0.1	0.1	0.1	-0.2	-0.2	-0.2	0.0	0.0	-0.1	0.2	0.2	0.2
0.6	0.4	0.0	0.0	0.0	-0.2	-0.3	0.0	0.0	-0.2	0.2	0.1	0.1
0.7	0.1	0.1	-0.2	-0.1	-0.4	-0.2	-0.1	-0.1	-0.2	0.2	0.1	0.2
0.8	-0.1	-0.1	-0.1	-0.3	-0.5	-0.4	-0.1	-0.2	-0.2	0.2	0.1	0.0
0.9	0.0	-0.1	0.0	-0.7	-0.6	-0.2	-0.2	-0.1	-0.6	0.0	0.0	0.3
Long Term												
Full Simulation Period ^b	0.9	0.3	0.0	-0.1	-0.3	-0.2	0.1	0.0	-0.1	0.3	0.6	1.0
Water Year Types ^c												
Wet (32%)	0.9	0.4	0.1	-0.1	-0.2	-0.1	-0.2	-0.1	-0.5	0.2	0.1	0.1
Above Normal (16%)	0.7	0.4	0.1	-0.1	-0.2	-0.2	0.0	0.0	-0.1	0.2	0.3	0.4
Below Normal (13%)	0.9	0.2	0.1	-0.2	-0.3	-0.2	0.2	-0.1	0.3	0.6	0.8	1.0
Dry (24%)	0.8	0.5	0.2	-0.1	-0.2	-0.2	0.0	0.0	0.2	0.6	1.3	1.9
Critical (15%)	1.1	0.0	-0.5	-0.5	-0.6	-0.4	0.7	0.7	-0.2	0.0	0.6	1.7

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

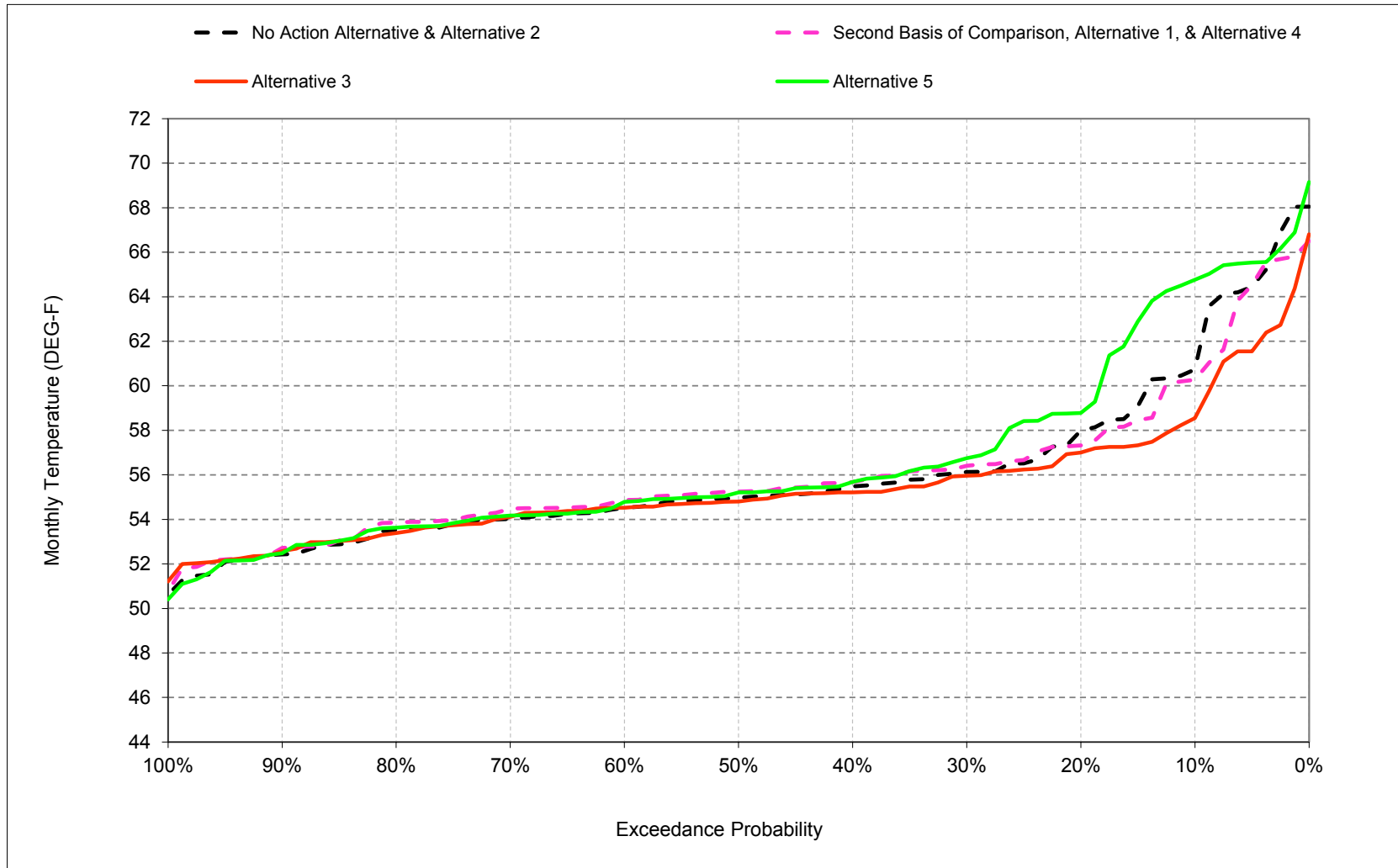
b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

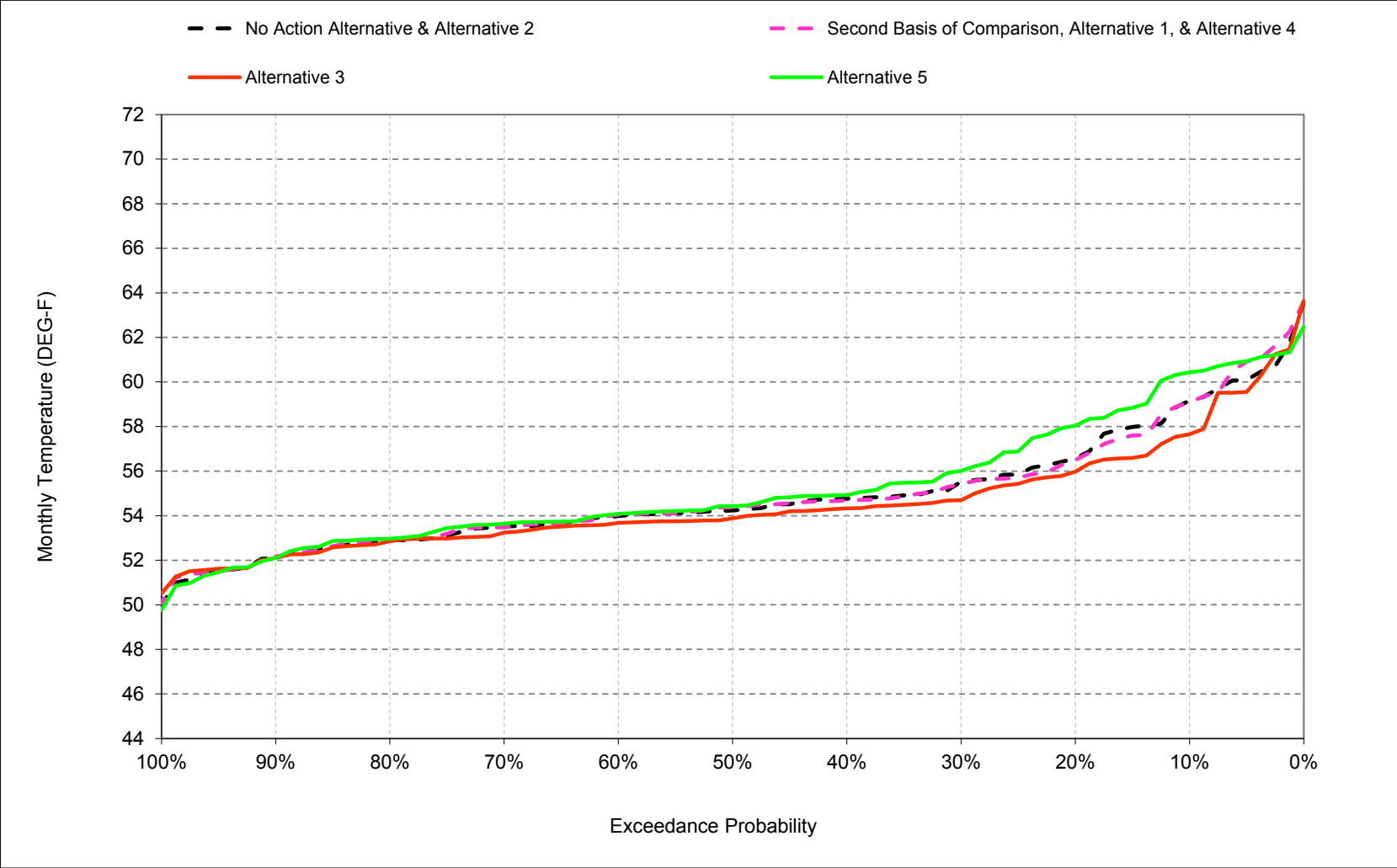
B.17. Stanislaus River below Goodwin Temperature

Figure B-17-1. Stanislaus River below Goodwin Dam, October



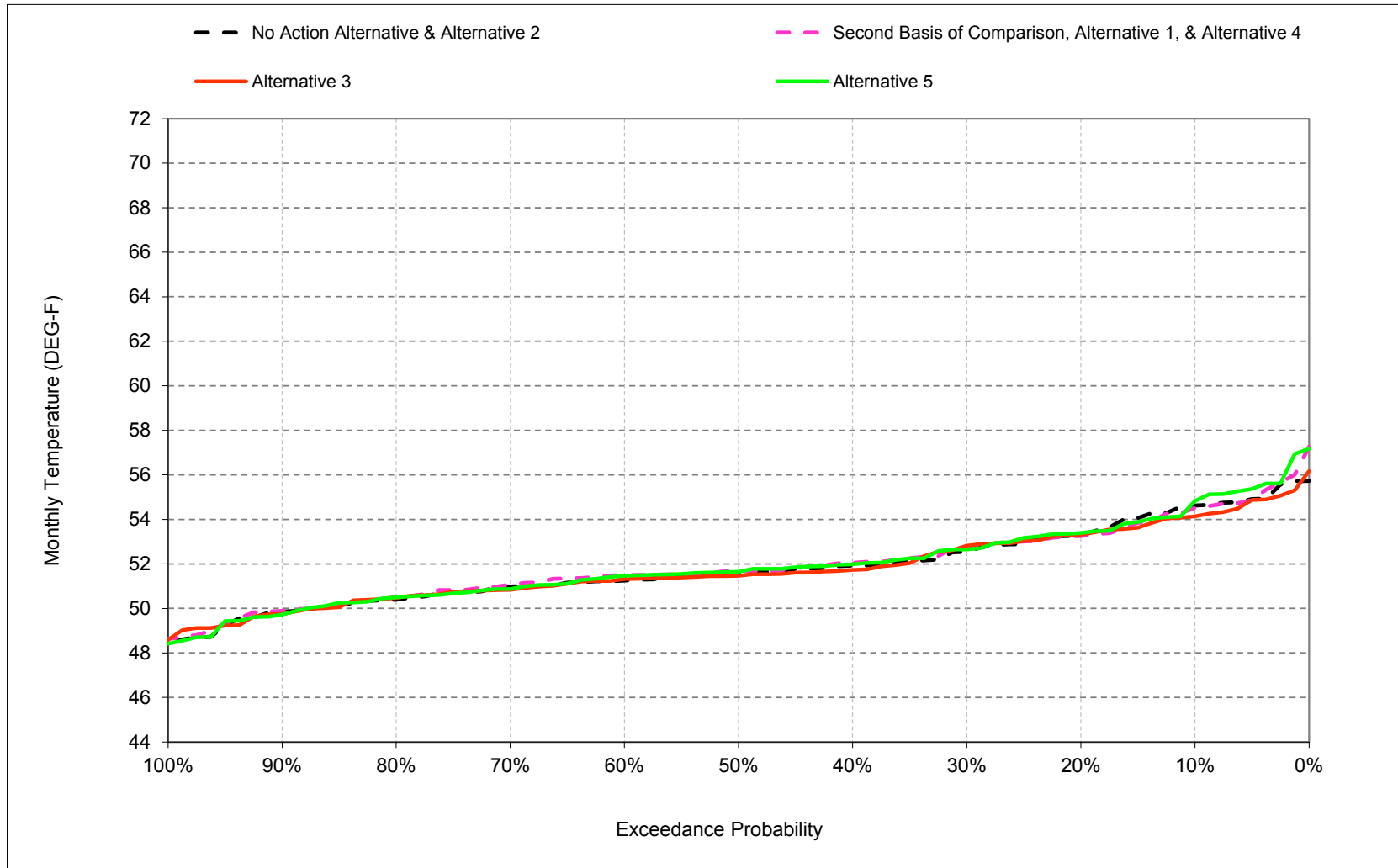
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-17-2. Stanislaus River below Goodwin Dam, November



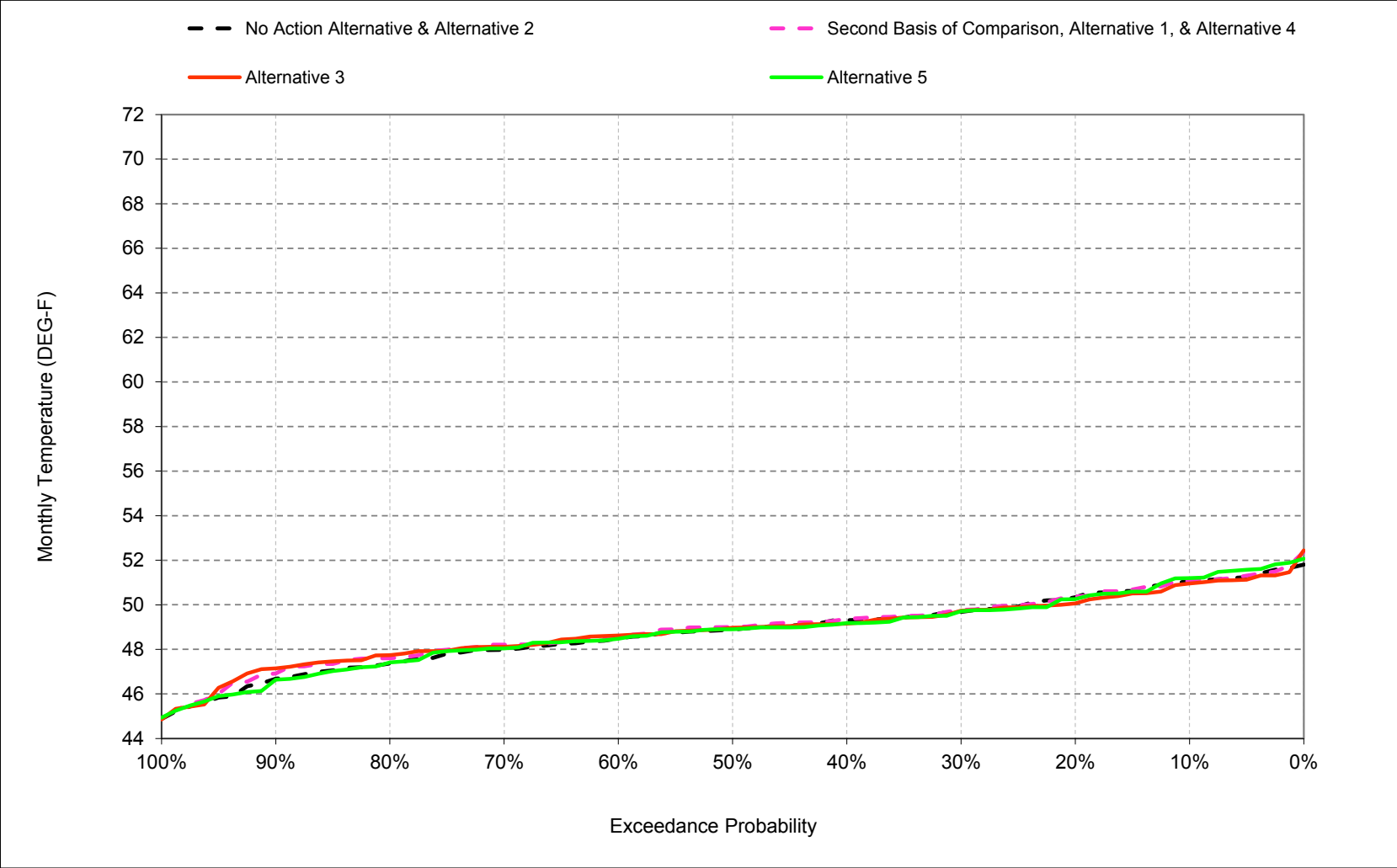
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-17-3. Stanislaus River below Goodwin Dam, December



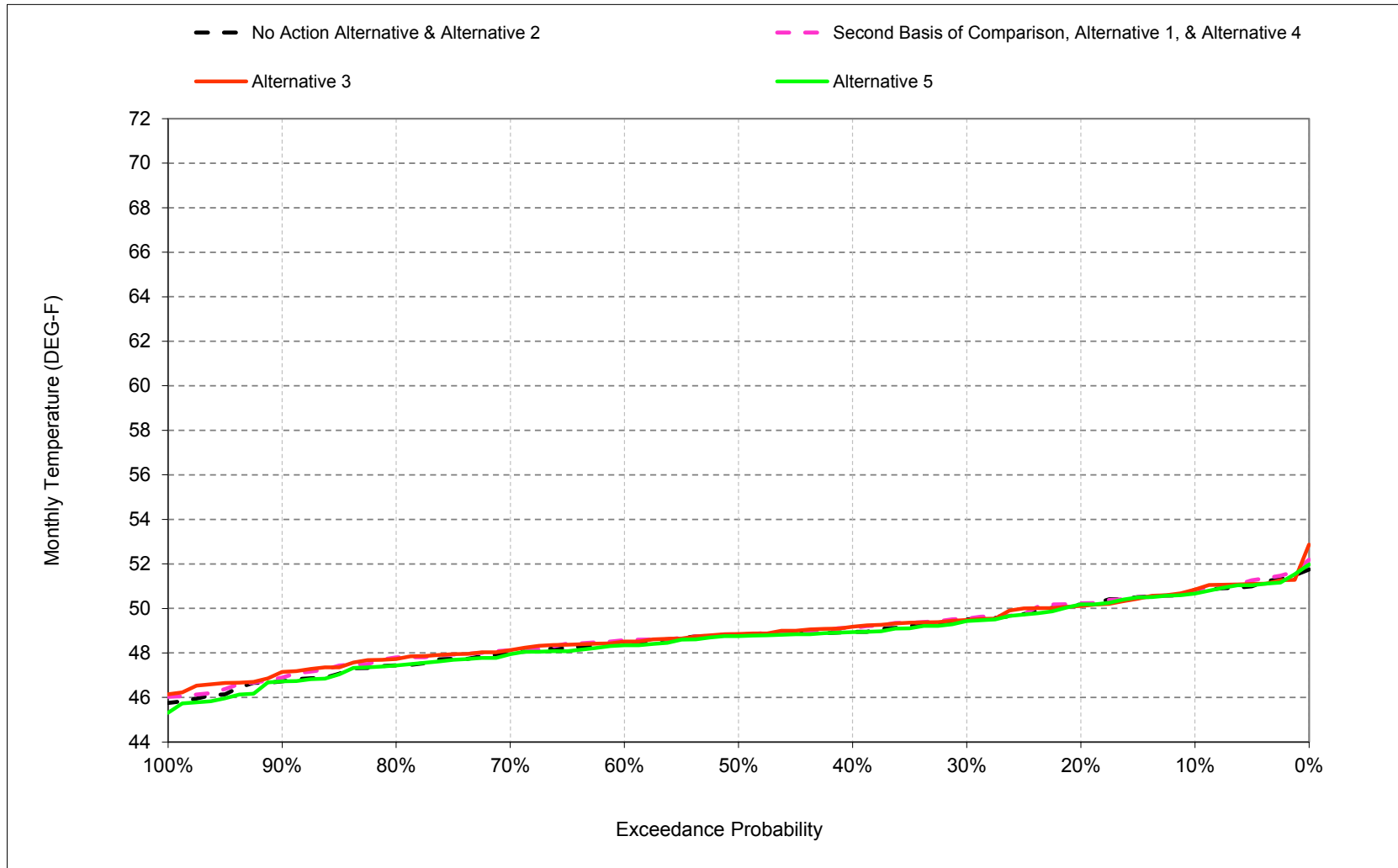
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-17-4. Stanislaus River below Goodwin Dam, January



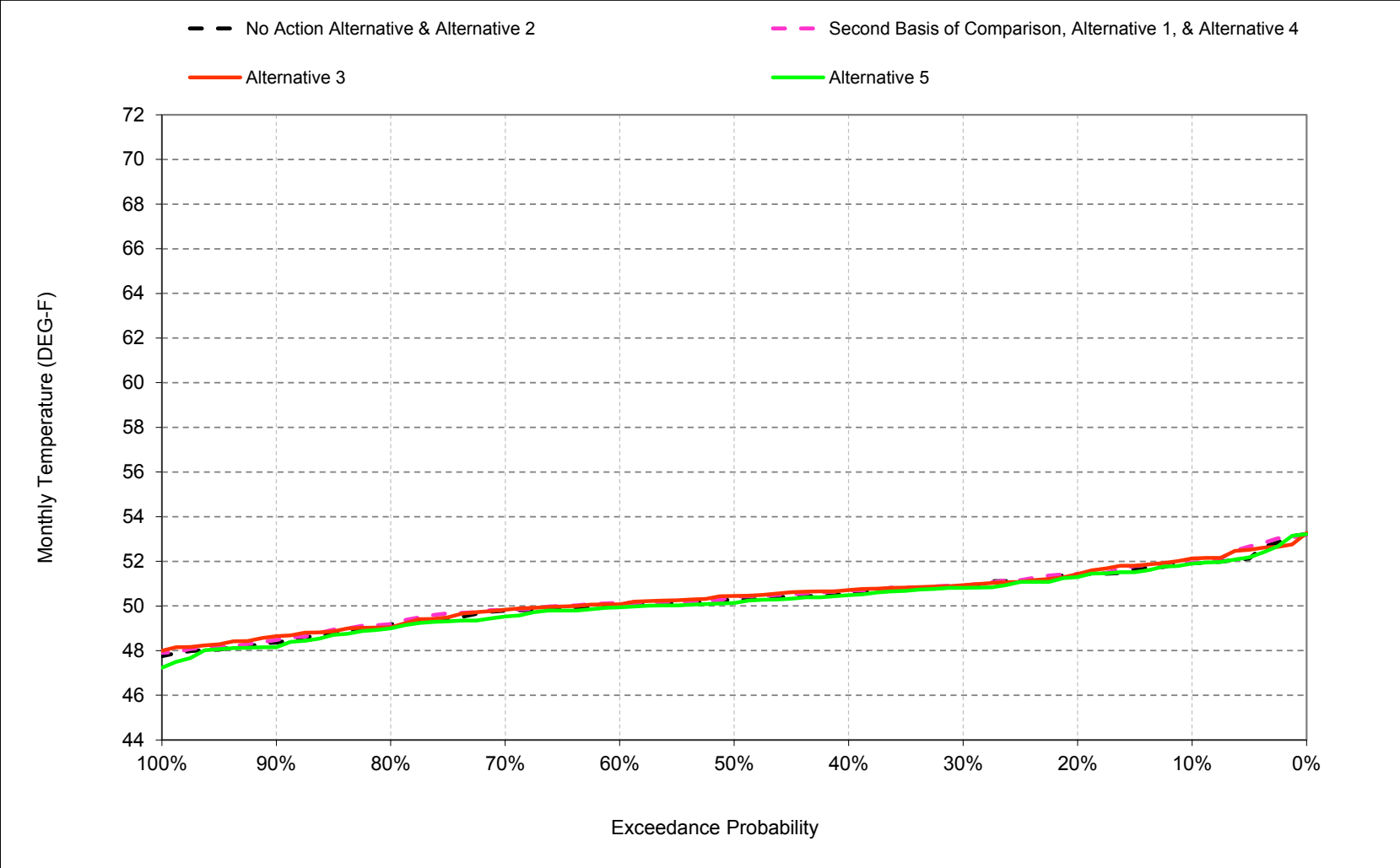
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-17-5. Stanislaus River below Goodwin Dam, February



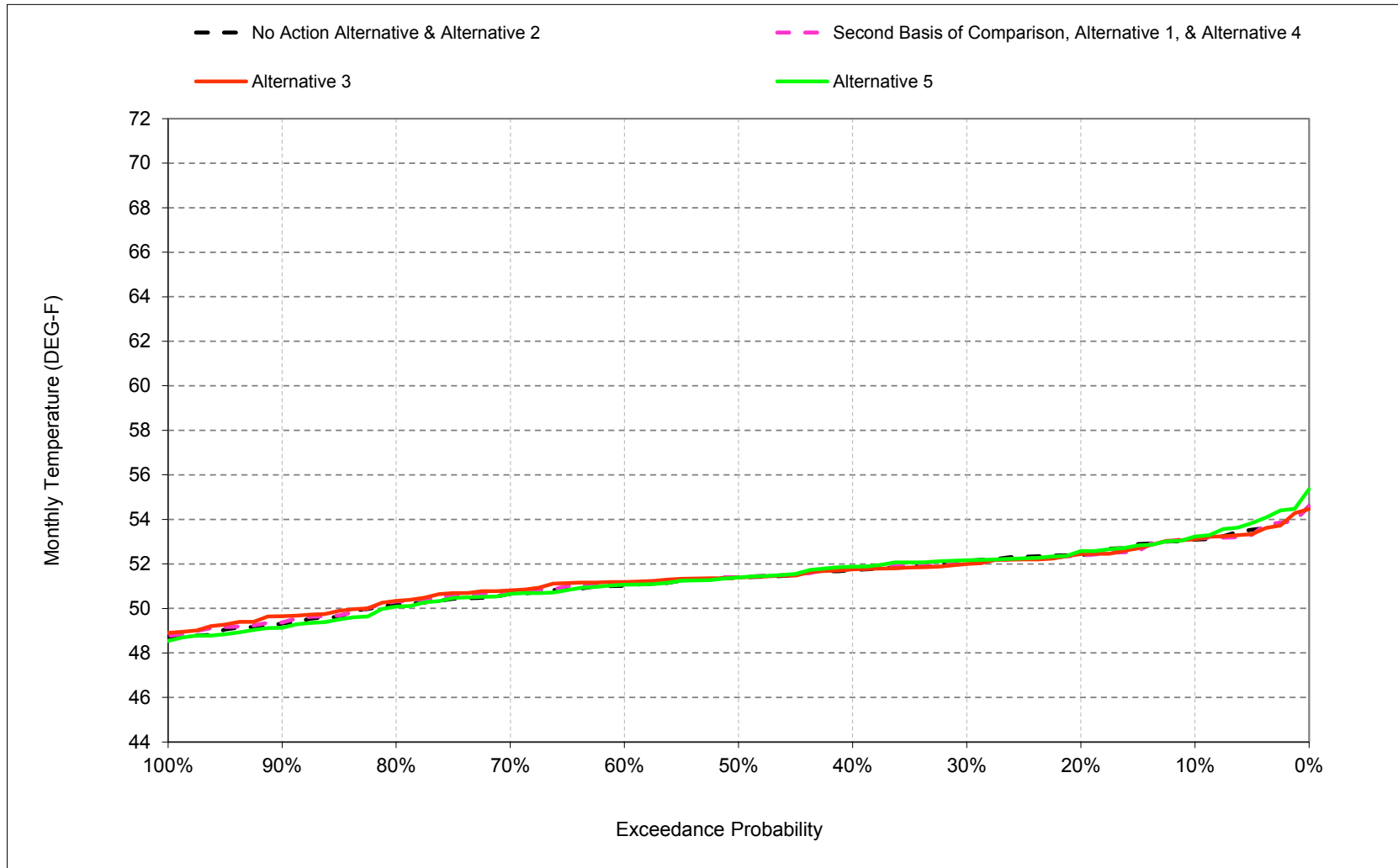
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-17-6. Stanislaus River below Goodwin Dam, March



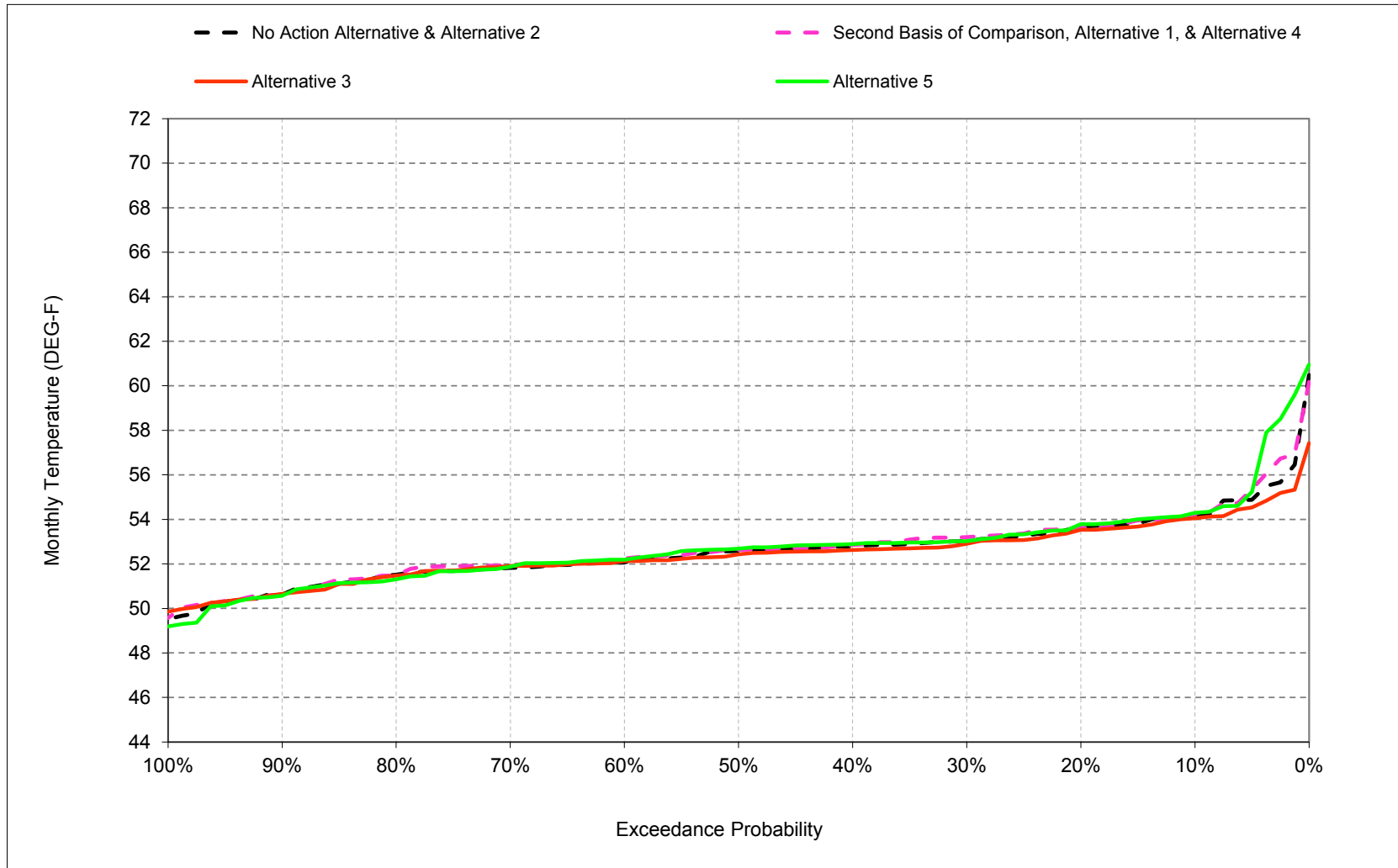
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-17-7. Stanislaus River below Goodwin Dam, April



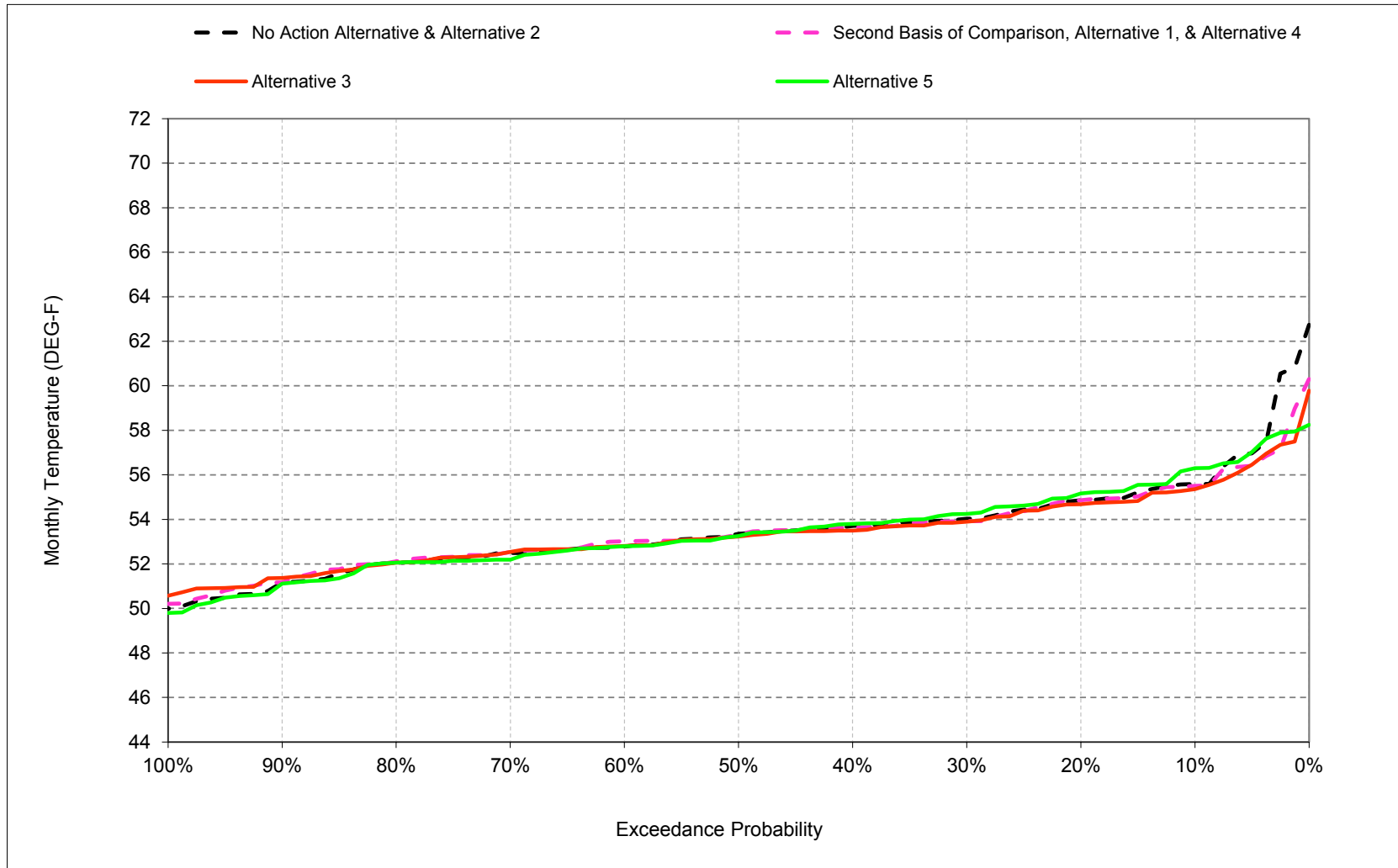
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-17-8. Stanislaus River below Goodwin Dam, May



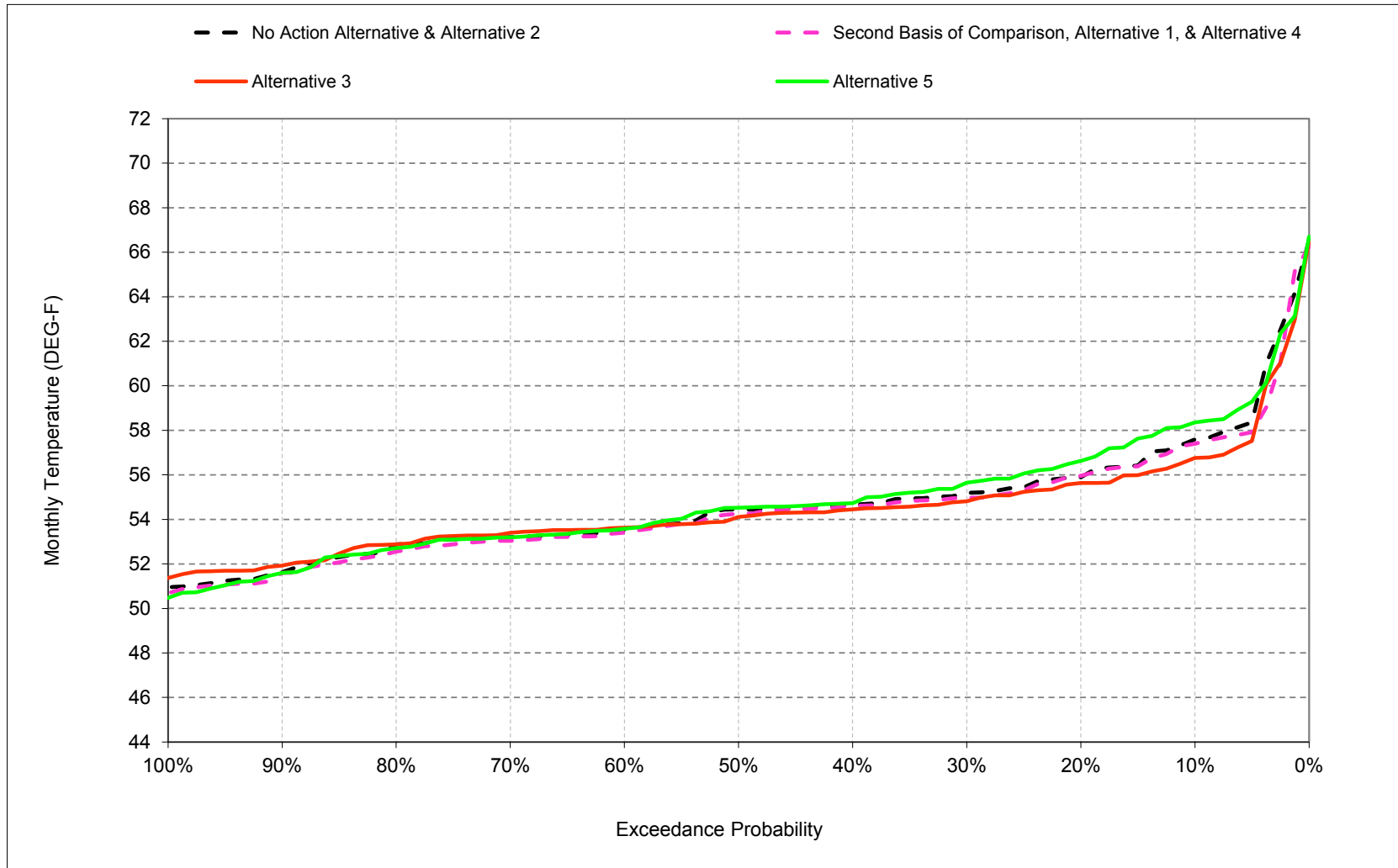
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-17-9. Stanislaus River below Goodwin Dam, June



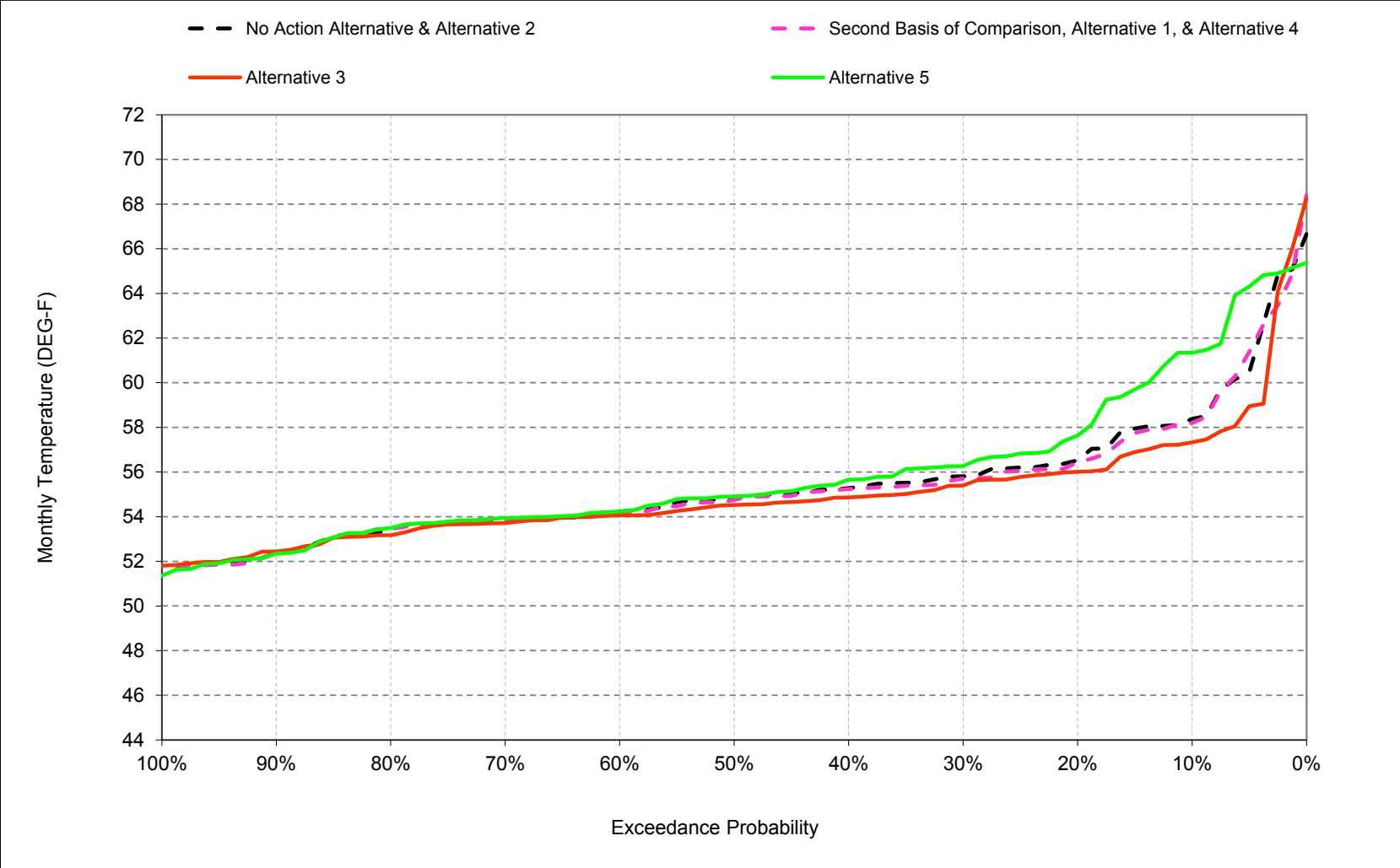
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-17-10. Stanislaus River below Goodwin Dam, July



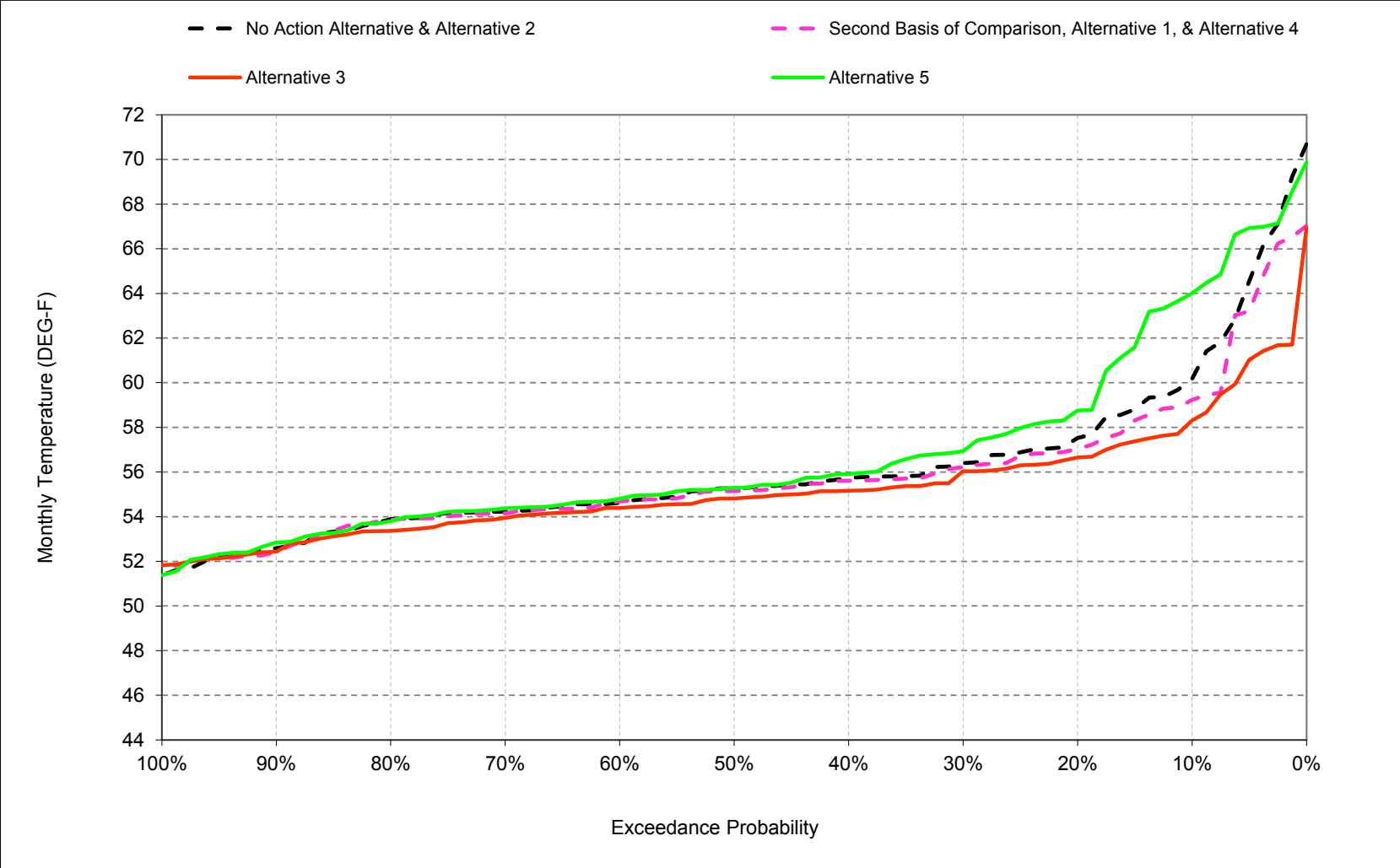
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-17-11. Stanislaus River below Goodwin Dam, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-17-12. Stanislaus River below Goodwin Dam, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-17-1. Stanislaus River below Goodwin Dam, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	61	59	55	51	51	52	53	54	56	58	58	60
20%	58	57	53	50	50	51	52	54	55	56	56	57
30%	56	56	53	50	49	51	52	53	54	55	56	56
40%	55	55	52	49	49	51	52	53	54	55	55	56
50%	55	54	52	49	49	50	51	53	53	54	55	55
60%	55	54	51	48	48	50	51	52	53	53	54	55
70%	54	54	51	48	48	50	51	52	52	53	54	54
80%	54	53	50	47	47	49	50	51	52	53	53	54
90%	52	52	50	46	47	48	49	51	51	52	52	53
Long Term												
Full Simulation Period ^b	56	55	52	49	49	50	51	53	53	55	55	56
Water Year Types ^c												
Wet (32%)	52	52	49	48	48	49	50	52	52	53	53	53
Above Normal (16%)	56	55	52	49	49	50	51	52	53	53	54	55
Below Normal (13%)	55	54	51	49	49	50	52	52	53	54	55	56
Dry (24%)	56	55	52	49	49	51	52	53	54	55	56	57
Critical (15%)	60	58	54	50	50	51	53	55	57	59	60	63

Alternative 1												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	60	59	55	51	51	52	53	54	56	57	58	59
20%	57	56	53	50	50	51	52	54	55	56	56	57
30%	56	55	53	50	50	51	52	53	54	55	56	56
40%	56	55	52	49	49	51	52	53	54	55	55	56
50%	55	54	52	49	49	50	51	53	53	54	55	55
60%	55	54	51	49	49	50	51	52	53	53	54	55
70%	54	53	51	48	48	50	51	52	52	53	54	54
80%	54	53	51	48	48	49	50	51	52	52	53	54
90%	53	52	50	47	47	48	49	51	51	51	52	52
Long Term												
Full Simulation Period ^b	56	55	52	49	49	50	51	53	53	54	55	56
Water Year Types ^c												
Wet (32%)	52	52	49	48	48	49	50	52	52	52	53	53
Above Normal (16%)	56	55	52	49	49	50	51	52	53	53	54	55
Below Normal (13%)	55	54	51	49	49	50	51	53	53	54	55	55
Dry (24%)	56	55	52	49	49	51	52	53	54	55	56	57
Critical (15%)	60	58	54	50	50	52	53	55	56	59	60	61

Alternative 1 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	-0.5	-0.1	-0.1	0.0	0.0	0.0	0.0	0.1	-0.1	-0.2	-0.2	-0.9
0.2	-0.7	-0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	-0.1	-0.4
0.3	0.3	-0.1	0.2	0.1	0.1	0.1	-0.1	0.2	-0.1	-0.2	-0.1	-0.2
0.4	0.2	-0.1	0.1	0.0	0.2	0.1	0.0	0.1	0.0	-0.1	0.0	-0.1
0.5	0.3	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	-0.2	-0.1	-0.1
0.6	0.3	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.3	-0.1	-0.1	0.0
0.7	0.5	0.0	0.1	0.2	0.1	0.1	0.1	0.1	0.0	-0.1	-0.1	-0.1
0.8	0.3	0.0	0.1	0.3	0.3	0.1	0.1	0.0	0.0	-0.2	0.1	0.0
0.9	0.3	0.1	0.0	0.4	0.1	0.0	0.1	0.0	0.3	-0.3	0.0	-0.3
Long Term												
Full Simulation Period ^b	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.1	-0.1	-0.2	-0.1	-0.3
Water Year Types ^c												
Wet (32%)	0.1	-0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.3	-0.2	0.0	0.0
Above Normal (16%)	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.2	0.0	-0.1	-0.1	-0.1
Below Normal (13%)	0.0	-0.2	0.0	0.1	0.1	0.1	-0.2	0.2	-0.1	-0.2	-0.2	-0.2
Dry (24%)	0.1	-0.1	0.1	0.1	0.1	0.1	0.1	0.1	-0.1	-0.1	-0.1	-0.3
Critical (15%)	-0.4	0.7	0.4	0.2	0.2	0.2	0.0	0.1	-0.8	-0.3	0.1	-1.3

^a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

^b Based on an 81-year simulation period.

^c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-17-2. Stanislaus River below Goodwin Dam, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	61	59	55	51	51	52	53	54	56	58	58	60
20%	58	57	53	50	50	51	52	54	55	56	56	57
30%	56	56	53	50	49	51	52	53	54	55	56	56
40%	55	55	52	49	49	51	52	53	54	55	55	56
50%	55	54	52	49	49	50	51	53	53	54	55	55
60%	55	54	51	48	48	50	51	52	53	53	54	55
70%	54	54	51	48	48	50	51	52	52	53	54	54
80%	54	53	50	47	47	49	50	51	52	53	53	54
90%	52	52	50	46	47	48	49	51	51	52	52	53
Long Term												
Full Simulation Period ^b	56	55	52	49	49	50	51	53	53	55	55	56
Water Year Types ^c												
Wet (32%)	52	52	49	48	48	49	50	52	52	53	53	53
Above Normal (16%)	56	55	52	49	49	50	51	52	53	53	54	55
Below Normal (13%)	55	54	51	49	49	50	52	52	53	54	55	56
Dry (24%)	56	55	52	49	49	51	52	53	54	55	56	57
Critical (15%)	60	58	54	50	50	51	53	55	57	59	60	63

Alternative 3												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	59	58	54	51	51	52	53	54	55	57	57	58
20%	57	56	53	50	50	51	52	53	55	56	56	57
30%	56	55	53	50	49	51	52	53	54	55	55	56
40%	55	54	52	49	49	51	52	53	53	54	55	55
50%	55	54	51	49	49	50	51	52	53	54	55	55
60%	55	54	51	49	48	50	51	52	53	54	54	54
70%	54	53	51	48	48	50	51	52	52	53	54	54
80%	53	53	50	48	48	49	50	51	52	53	53	53
90%	53	52	50	47	47	49	50	51	51	52	52	52
Long Term												
Full Simulation Period ^b	55	55	52	49	49	50	51	52	53	54	55	55
Water Year Types ^c												
Wet (32%)	52	51	49	48	48	50	50	51	52	53	53	53
Above Normal (16%)	56	55	52	49	49	50	51	52	53	54	54	54
Below Normal (13%)	55	54	51	49	49	50	51	52	53	54	55	55
Dry (24%)	55	54	52	49	49	51	52	53	54	55	55	56
Critical (15%)	59	57	54	50	50	52	53	54	56	58	60	60

Alternative 3 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	-2.2	-1.5	-0.5	-0.1	0.0	0.2	0.0	-0.1	-0.2	-0.8	-1.0	-1.9
0.2	-1.0	-0.6	0.0	-0.3	-0.1	0.0	0.0	-0.1	-0.2	-0.3	-0.5	-0.8
0.3	-0.2	-0.8	0.3	0.0	0.0	0.1	-0.1	-0.2	-0.1	-0.3	-0.4	-0.5
0.4	-0.3	-0.4	-0.2	-0.2	0.2	0.1	0.0	-0.2	-0.2	-0.2	-0.4	-0.6
0.5	-0.2	-0.4	-0.1	0.1	0.0	0.2	0.0	-0.2	-0.1	-0.4	-0.3	-0.5
0.6	0.0	-0.3	0.1	0.2	0.1	0.1	0.2	0.0	0.0	0.1	-0.2	-0.2
0.7	0.1	-0.3	-0.2	0.1	0.1	0.0	0.2	0.1	0.0	0.1	-0.2	-0.3
0.8	-0.1	0.0	0.1	0.4	0.3	0.0	0.2	-0.1	0.0	0.3	-0.1	-0.4
0.9	0.2	0.0	-0.1	0.6	0.2	0.2	0.4	0.0	0.5	0.4	0.3	-0.2
Long Term												
Full Simulation Period ^b	-0.5	-0.4	-0.1	0.1	0.2	0.1	0.1	-0.1	-0.1	-0.2	-0.4	-0.8
Water Year Types ^c												
Wet (32%)	-0.2	-0.3	-0.1	0.1	0.4	0.2	0.2	-0.1	0.2	0.2	0.0	-0.2
Above Normal (16%)	-0.4	-0.4	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.1	-0.2	-0.4
Below Normal (13%)	-0.7	-0.7	-0.3	0.0	0.0	0.1	-0.1	-0.1	0.0	-0.2	-0.4	-0.5
Dry (24%)	-0.2	-0.4	0.0	0.0	0.0	0.0	0.1	-0.1	-0.1	-0.3	-0.6	-0.9
Critical (15%)	-1.7	-0.1	0.2	0.1	0.2	0.2	0.0	-0.7	-1.2	-0.9	-0.8	-2.9

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-17-3. Stanislaus River below Goodwin Dam, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	61	59	55	51	51	52	53	54	56	58	58	60
20%	58	57	53	50	50	51	52	54	55	56	56	57
30%	56	56	53	50	49	51	52	53	54	55	56	56
40%	55	55	52	49	49	51	52	53	54	55	55	56
50%	55	54	52	49	49	50	51	53	53	54	55	55
60%	55	54	51	48	48	50	51	52	53	53	54	55
70%	54	54	51	48	48	50	51	52	52	53	54	54
80%	54	53	50	47	47	49	50	51	52	53	53	54
90%	52	52	50	46	47	48	49	51	51	52	52	53
Long Term												
Full Simulation Period ^b	56	55	52	49	49	50	51	53	53	55	55	56
Water Year Types ^c												
Wet (32%)	52	52	49	48	48	49	50	52	52	53	53	53
Above Normal (16%)	56	55	52	49	49	50	51	52	53	53	54	55
Below Normal (13%)	55	54	51	49	49	50	52	52	53	54	55	56
Dry (24%)	56	55	52	49	49	51	52	53	54	55	56	57
Critical (15%)	60	58	54	50	50	51	53	55	57	59	60	63

Alternative 5												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	65	60	55	51	51	52	53	54	56	58	61	64
20%	59	58	53	50	50	51	53	54	55	57	58	59
30%	57	56	53	50	49	51	52	53	54	56	56	57
40%	56	55	52	49	49	50	52	53	54	55	56	56
50%	55	54	52	49	49	50	51	53	53	55	55	55
60%	55	54	51	48	48	50	51	52	53	54	54	55
70%	54	54	51	48	48	49	51	52	53	53	54	54
80%	54	53	50	47	47	49	50	51	52	53	53	54
90%	52	52	50	46	47	48	49	51	51	51	52	53
Long Term												
Full Simulation Period ^b	57	55	52	49	49	50	51	53	53	55	56	57
Water Year Types ^c												
Wet (32%)	53	52	49	48	48	49	50	51	52	52	53	54
Above Normal (16%)	57	55	52	49	49	50	51	52	53	54	54	55
Below Normal (13%)	56	54	51	49	49	50	52	53	53	55	56	56
Dry (24%)	56	55	52	49	49	51	52	53	54	56	57	58
Critical (15%)	61	58	53	50	50	51	53	56	57	59	61	63

Alternative 5 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	4.0	1.3	0.2	0.1	-0.2	0.0	0.1	0.2	0.7	0.8	3.0	3.9
0.2	0.8	1.5	0.1	-0.1	0.0	-0.1	0.1	0.1	0.3	0.7	1.1	1.2
0.3	0.6	0.5	0.1	0.0	-0.1	0.0	0.0	0.0	0.2	0.4	0.5	0.6
0.4	0.2	0.2	0.1	-0.2	0.0	-0.1	0.2	0.1	0.1	0.1	0.3	0.2
0.5	0.2	0.2	0.1	0.0	-0.1	-0.1	0.0	0.1	-0.1	0.1	0.1	0.0
0.6	0.3	0.1	0.2	0.0	0.0	-0.1	0.0	0.1	0.0	0.1	0.0	0.1
0.7	0.2	0.1	-0.1	0.1	-0.1	-0.3	0.0	0.0	-0.3	0.0	0.0	0.1
0.8	0.1	0.1	0.1	0.0	0.0	-0.1	-0.1	-0.2	0.0	0.0	0.1	0.0
0.9	0.1	0.0	-0.1	-0.3	0.0	-0.2	-0.1	-0.1	-0.1	0.0	0.0	0.1
Long Term												
Full Simulation Period ^b	0.6	0.4	0.1	0.0	-0.1	-0.1	0.0	0.1	-0.1	0.2	0.5	0.6
Water Year Types ^c												
Wet (32%)	0.7	0.3	0.1	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	0.0	0.1	0.2
Above Normal (16%)	0.4	0.4	0.2	0.1	0.0	-0.1	-0.1	0.1	-0.1	0.1	0.2	0.3
Below Normal (13%)	0.7	0.0	0.1	0.0	-0.1	-0.1	0.0	0.1	0.2	0.4	0.6	0.8
Dry (24%)	0.7	0.5	0.2	0.1	0.0	-0.1	0.0	0.0	0.2	0.5	1.1	1.6
Critical (15%)	0.5	0.7	-0.1	-0.2	-0.3	-0.2	0.5	0.8	-0.7	0.0	0.9	0.4

^a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

^b Based on an 81-year simulation period.

^c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-17-4. Stanislaus River below Goodwin Dam, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	60	59	55	51	51	52	53	54	56	57	58	59
20%	57	56	53	50	50	51	52	54	55	56	56	57
30%	56	55	53	50	50	51	52	53	54	55	56	56
40%	56	55	52	49	49	51	52	53	54	55	55	56
50%	55	54	52	49	49	50	51	53	53	54	55	55
60%	55	54	51	49	49	50	51	52	53	53	54	55
70%	54	53	51	48	48	50	51	52	52	53	54	54
80%	54	53	51	48	48	49	50	51	52	52	53	54
90%	53	52	50	47	47	48	49	51	51	51	52	52
Long Term												
Full Simulation Period ^b	56	55	52	49	49	50	51	53	53	54	55	56
Water Year Types ^c												
Wet (32%)	52	52	49	48	48	49	50	52	52	52	53	53
Above Normal (16%)	56	55	52	49	49	50	51	52	53	53	54	55
Below Normal (13%)	55	54	51	49	49	50	51	53	53	54	55	55
Dry (24%)	56	55	52	49	49	51	52	53	54	55	56	57
Critical (15%)	60	58	54	50	50	52	53	55	56	59	60	61

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	61	59	55	51	51	52	53	54	56	58	58	60
20%	58	57	53	50	50	51	52	54	55	56	56	57
30%	56	56	53	50	49	51	52	53	54	55	56	56
40%	55	55	52	49	49	51	52	53	54	55	55	56
50%	55	54	52	49	49	50	51	53	53	54	55	55
60%	55	54	51	48	48	50	51	52	53	53	54	55
70%	54	54	51	48	48	50	51	52	53	53	54	54
80%	54	53	50	47	47	49	50	51	52	53	53	54
90%	52	52	50	46	47	48	49	51	51	52	52	53
Long Term												
Full Simulation Period ^b	56	55	52	49	49	50	51	53	53	55	55	56
Water Year Types ^c												
Wet (32%)	52	52	49	48	48	49	50	52	52	53	53	53
Above Normal (16%)	56	55	52	49	49	50	51	52	53	53	54	55
Below Normal (13%)	55	54	51	49	49	50	52	52	53	54	55	56
Dry (24%)	56	55	52	49	49	51	52	53	54	55	56	57
Critical (15%)	60	58	54	50	50	51	53	55	57	59	60	63

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	0.5	0.1	0.1	0.0	0.0	0.0	0.0	-0.1	0.1	0.2	0.2	0.9
0.2	0.7	0.1	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	-0.1	0.1	0.4
0.3	-0.3	0.1	-0.2	-0.1	-0.1	-0.1	0.1	-0.2	0.1	0.2	0.1	0.2
0.4	-0.2	0.1	-0.1	0.0	-0.2	-0.1	0.0	-0.1	0.0	0.1	0.0	0.1
0.5	-0.3	-0.1	-0.1	-0.1	0.0	-0.1	0.0	0.0	0.0	0.2	0.1	0.1
0.6	-0.3	-0.1	-0.2	-0.1	-0.2	-0.1	-0.1	-0.1	-0.3	0.1	0.1	0.0
0.7	-0.5	0.0	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	0.0	0.1	0.1	0.1
0.8	-0.3	0.0	-0.1	-0.3	-0.3	-0.1	-0.1	0.0	0.0	0.2	-0.1	0.0
0.9	-0.3	-0.1	0.0	-0.4	-0.1	0.0	-0.1	0.0	-0.3	0.3	0.0	0.3
Long Term												
Full Simulation Period ^b	0.0	0.0	-0.1	-0.1	-0.1	-0.1	0.0	-0.1	0.1	0.2	0.1	0.3
Water Year Types ^c												
Wet (32%)	-0.1	0.1	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.3	0.2	0.0	0.0
Above Normal (16%)	-0.1	0.0	-0.1	-0.1	-0.1	-0.1	0.0	-0.2	0.0	0.1	0.1	0.1
Below Normal (13%)	0.0	0.2	0.0	-0.1	-0.1	-0.1	0.2	-0.2	0.1	0.2	0.2	0.2
Dry (24%)	-0.1	0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.1	0.1	0.1	0.3
Critical (15%)	0.4	-0.7	-0.4	-0.2	-0.2	-0.2	0.0	-0.1	0.8	0.3	-0.1	1.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-17-5. Stanislaus River below Goodwin Dam, Monthly Temperature

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Second Basis of Comparison												
Probability of Exceedance ^a												
10%	60	59	55	51	51	52	53	54	56	57	58	59
20%	57	56	53	50	50	51	52	54	55	56	56	57
30%	56	55	53	50	50	51	52	53	54	55	56	56
40%	56	55	52	49	49	51	52	53	54	55	55	56
50%	55	54	52	49	49	50	51	53	53	54	55	55
60%	55	54	51	49	49	50	51	52	53	53	54	55
70%	54	53	51	48	48	50	51	52	52	53	54	54
80%	54	53	51	48	48	49	50	51	52	52	53	54
90%	53	52	50	47	47	48	49	51	51	51	52	52
Long Term												
Full Simulation Period ^b	56	55	52	49	49	50	51	53	53	54	55	56
Water Year Types ^c												
Wet (32%)	52	52	49	48	48	49	50	52	52	52	53	53
Above Normal (16%)	56	55	52	49	49	50	51	52	53	53	54	55
Below Normal (13%)	55	54	51	49	49	50	51	53	53	54	55	55
Dry (24%)	56	55	52	49	49	51	52	53	54	55	56	57
Critical (15%)	60	58	54	50	50	52	53	55	56	59	60	61

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Alternative 3												
Probability of Exceedance ^a												
10%	59	58	54	51	51	52	53	54	55	57	57	58
20%	57	56	53	50	50	51	52	53	55	56	56	57
30%	56	55	53	50	49	51	52	53	54	55	55	56
40%	55	54	52	49	49	51	52	53	53	54	55	55
50%	55	54	51	49	49	50	51	52	53	54	55	55
60%	55	54	51	49	48	50	51	52	53	54	54	54
70%	54	53	51	48	48	50	51	52	52	53	54	54
80%	53	53	50	48	48	49	50	51	52	53	53	53
90%	53	52	50	47	47	49	50	51	51	52	52	52
Long Term												
Full Simulation Period ^b	55	55	52	49	49	50	51	52	53	54	55	55
Water Year Types ^c												
Wet (32%)	52	51	49	48	48	50	50	51	52	53	53	53
Above Normal (16%)	56	55	52	49	49	50	51	52	53	54	54	54
Below Normal (13%)	55	54	51	49	49	50	51	52	53	54	55	55
Dry (24%)	55	54	52	49	49	51	52	53	54	55	55	56
Critical (15%)	59	57	54	50	50	52	53	54	56	58	60	60

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Alternative 3 minus Second Basis of Comparison												
Probability of Exceedance ^a												
0.1	-1.7	-1.4	-0.4	-0.1	0.0	0.2	0.0	-0.2	-0.2	-0.7	-0.9	-0.9
0.2	-0.3	-0.5	0.1	-0.3	-0.1	0.0	0.1	-0.1	-0.2	-0.3	-0.4	-0.4
0.3	-0.4	-0.7	0.1	-0.1	-0.1	0.0	0.0	-0.3	0.0	-0.2	-0.3	-0.3
0.4	-0.5	-0.4	-0.3	-0.2	0.0	0.0	0.0	-0.2	-0.1	-0.1	-0.4	-0.4
0.5	-0.4	-0.5	-0.2	-0.1	0.0	0.1	0.0	-0.2	-0.1	-0.2	-0.2	-0.3
0.6	-0.3	-0.4	-0.2	0.1	-0.1	-0.1	0.0	-0.1	-0.2	0.2	0.0	-0.2
0.7	-0.4	-0.2	-0.2	-0.1	0.0	0.0	0.1	-0.1	0.0	0.3	-0.1	-0.3
0.8	-0.5	-0.1	-0.1	0.1	0.0	-0.1	0.0	-0.1	0.0	0.4	-0.3	-0.4
0.9	-0.1	-0.1	-0.1	0.3	0.1	0.2	0.3	0.0	0.2	0.6	0.2	0.1
Long Term												
Full Simulation Period ^b	-0.5	-0.4	-0.1	-0.1	0.0	0.0	0.0	-0.3	-0.1	0.0	-0.3	-0.5
Water Year Types ^c												
Wet (32%)	-0.3	-0.2	-0.1	0.0	0.2	0.1	0.1	-0.1	-0.1	0.5	0.0	-0.2
Above Normal (16%)	-0.5	-0.4	-0.2	0.0	0.0	0.0	0.1	-0.1	0.1	0.2	-0.1	-0.3
Below Normal (13%)	-0.7	-0.5	-0.2	-0.1	-0.1	0.0	0.0	-0.3	0.1	-0.1	-0.2	-0.3
Dry (24%)	-0.3	-0.3	-0.1	-0.1	-0.1	0.0	0.0	-0.1	-0.1	-0.2	-0.5	-0.7
Critical (15%)	-1.3	-0.8	-0.2	-0.1	0.0	0.1	0.0	-0.8	-0.4	-0.6	-0.9	-1.5

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-17-6. Stanislaus River below Goodwin Dam, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	60	59	55	51	51	52	53	54	56	57	58	59
20%	57	56	53	50	50	51	52	54	55	56	56	57
30%	56	55	53	50	50	51	52	53	54	55	56	56
40%	56	55	52	49	49	51	52	53	54	55	55	56
50%	55	54	52	49	49	50	51	53	53	54	55	55
60%	55	54	51	49	49	50	51	52	53	53	54	55
70%	54	53	51	48	48	50	51	52	52	53	54	54
80%	54	53	51	48	48	49	50	51	52	52	53	54
90%	53	52	50	47	47	48	49	51	51	51	52	52
Long Term												
Full Simulation Period ^b	56	55	52	49	49	50	51	53	53	54	55	56
Water Year Types ^c												
Wet (32%)	52	52	49	48	48	49	50	52	52	52	53	53
Above Normal (16%)	56	55	52	49	49	50	51	52	53	53	54	55
Below Normal (13%)	55	54	51	49	49	50	51	53	53	54	55	55
Dry (24%)	56	55	52	49	49	51	52	53	54	55	56	57
Critical (15%)	60	58	54	50	50	52	53	55	56	59	60	61

Alternative 5

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	65	60	55	51	51	52	53	54	56	58	61	64
20%	59	58	53	50	50	51	53	54	55	57	58	59
30%	57	56	53	50	49	51	52	53	54	56	56	57
40%	56	55	52	49	49	50	52	53	54	55	56	56
50%	55	54	52	49	49	50	51	53	53	55	55	55
60%	55	54	51	48	48	50	51	52	53	54	54	55
70%	54	54	51	48	48	49	51	52	53	53	54	54
80%	54	53	50	47	47	49	50	51	52	53	53	54
90%	52	52	50	46	47	48	49	51	51	51	52	53
Long Term												
Full Simulation Period ^b	57	55	52	49	49	50	51	53	53	55	56	57
Water Year Types ^c												
Wet (32%)	53	52	49	48	48	49	50	51	52	52	53	54
Above Normal (16%)	57	55	52	49	49	50	51	52	53	54	54	55
Below Normal (13%)	56	54	51	49	49	50	52	53	53	55	56	56
Dry (24%)	56	55	52	49	49	51	52	53	54	56	57	58
Critical (15%)	61	58	53	50	50	51	53	56	57	59	61	63

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	4.5	1.4	0.3	0.1	-0.2	-0.1	0.1	0.1	0.8	1.0	3.2	4.8
0.2	1.4	1.6	0.1	-0.1	-0.1	-0.1	0.2	0.1	0.3	0.6	1.2	1.7
0.3	0.3	0.6	-0.1	-0.1	-0.1	-0.1	0.2	-0.2	0.3	0.6	0.6	0.7
0.4	0.0	0.2	-0.1	-0.2	-0.2	-0.2	0.1	0.0	0.2	0.1	0.4	0.3
0.5	0.0	0.1	0.0	-0.1	-0.1	-0.2	0.0	0.0	0.0	0.3	0.2	0.1
0.6	-0.1	0.0	0.0	-0.1	-0.2	-0.2	-0.1	0.0	-0.2	0.2	0.1	0.1
0.7	-0.3	0.2	-0.2	-0.2	-0.3	-0.3	-0.1	-0.1	-0.3	0.1	0.1	0.2
0.8	-0.2	0.0	0.0	-0.3	-0.3	-0.2	-0.2	-0.2	0.0	0.2	0.0	-0.1
0.9	-0.2	-0.1	-0.2	-0.7	-0.1	-0.2	-0.2	-0.1	-0.5	0.2	0.0	0.4
Long Term												
Full Simulation Period ^b	0.6	0.4	0.0	-0.1	-0.2	-0.2	0.0	0.0	0.0	0.4	0.6	1.0
Water Year Types ^c												
Wet (32%)	0.6	0.4	0.1	-0.1	-0.2	-0.2	-0.2	-0.1	-0.4	0.2	0.1	0.2
Above Normal (16%)	0.3	0.4	0.1	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	0.2	0.3	0.4
Below Normal (13%)	0.7	0.2	0.1	-0.1	-0.2	-0.2	0.1	-0.1	0.3	0.5	0.8	1.0
Dry (24%)	0.5	0.5	0.1	0.0	-0.1	-0.1	-0.1	0.0	0.2	0.6	1.2	1.9
Critical (15%)	0.8	0.0	-0.5	-0.4	-0.5	-0.4	0.5	0.7	0.1	0.3	0.8	1.7

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

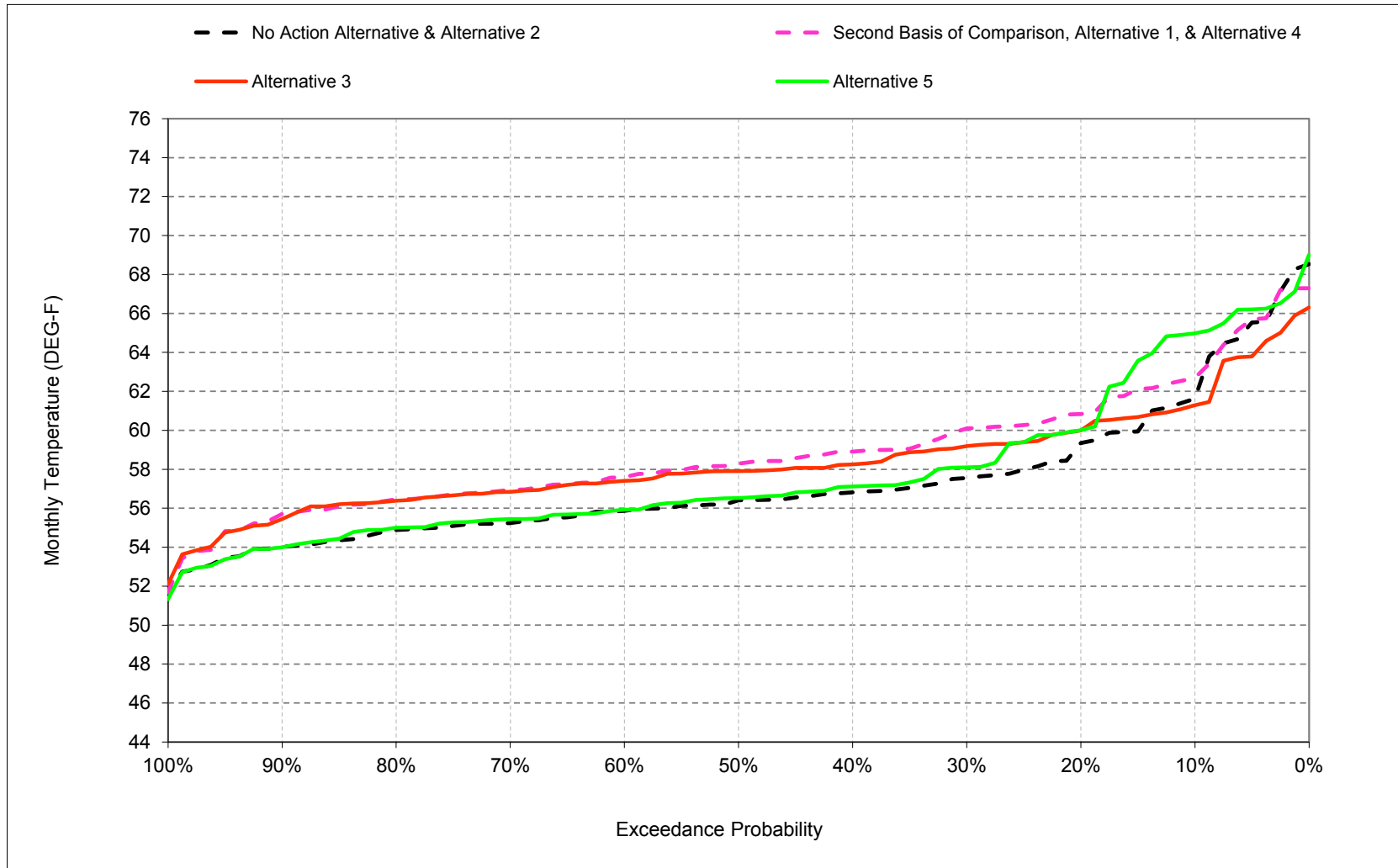
b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

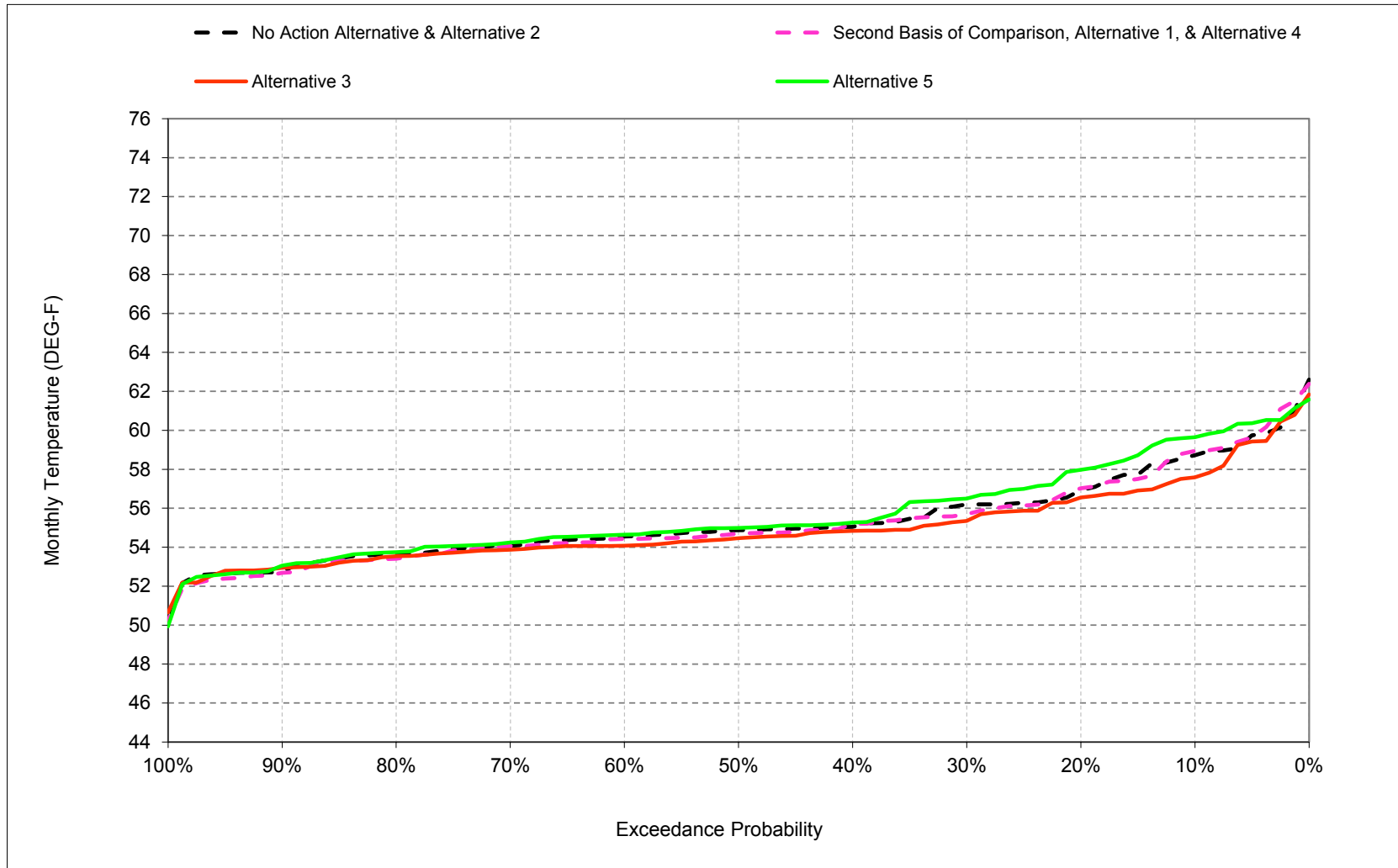
B.18. Stanislaus River at Orange Blossom Bridge Temperature

Figure B-18-1. Stanislaus River at Orange Blossom Bridge, October



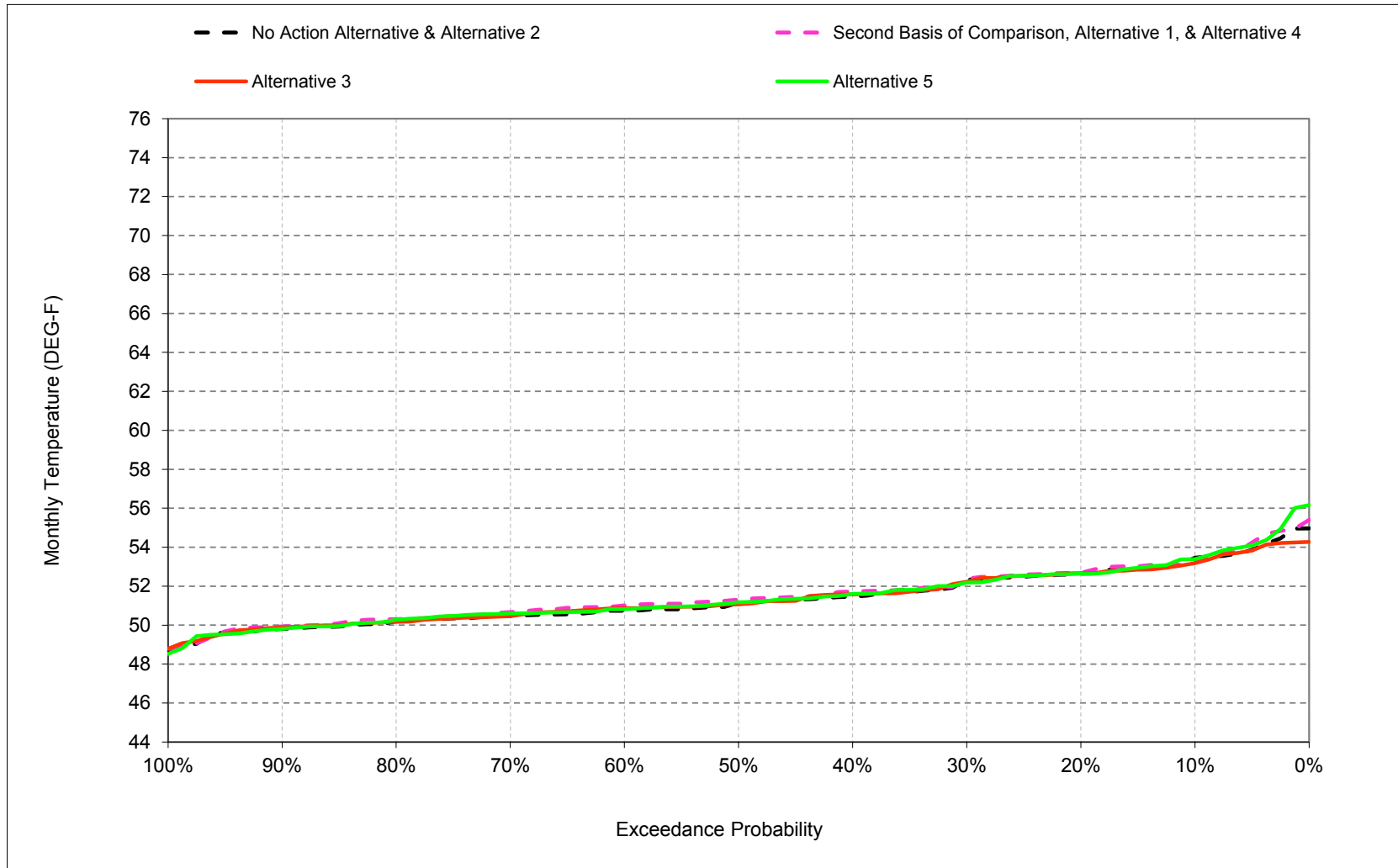
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-18-2. Stanislaus River at Orange Blossom Bridge, November



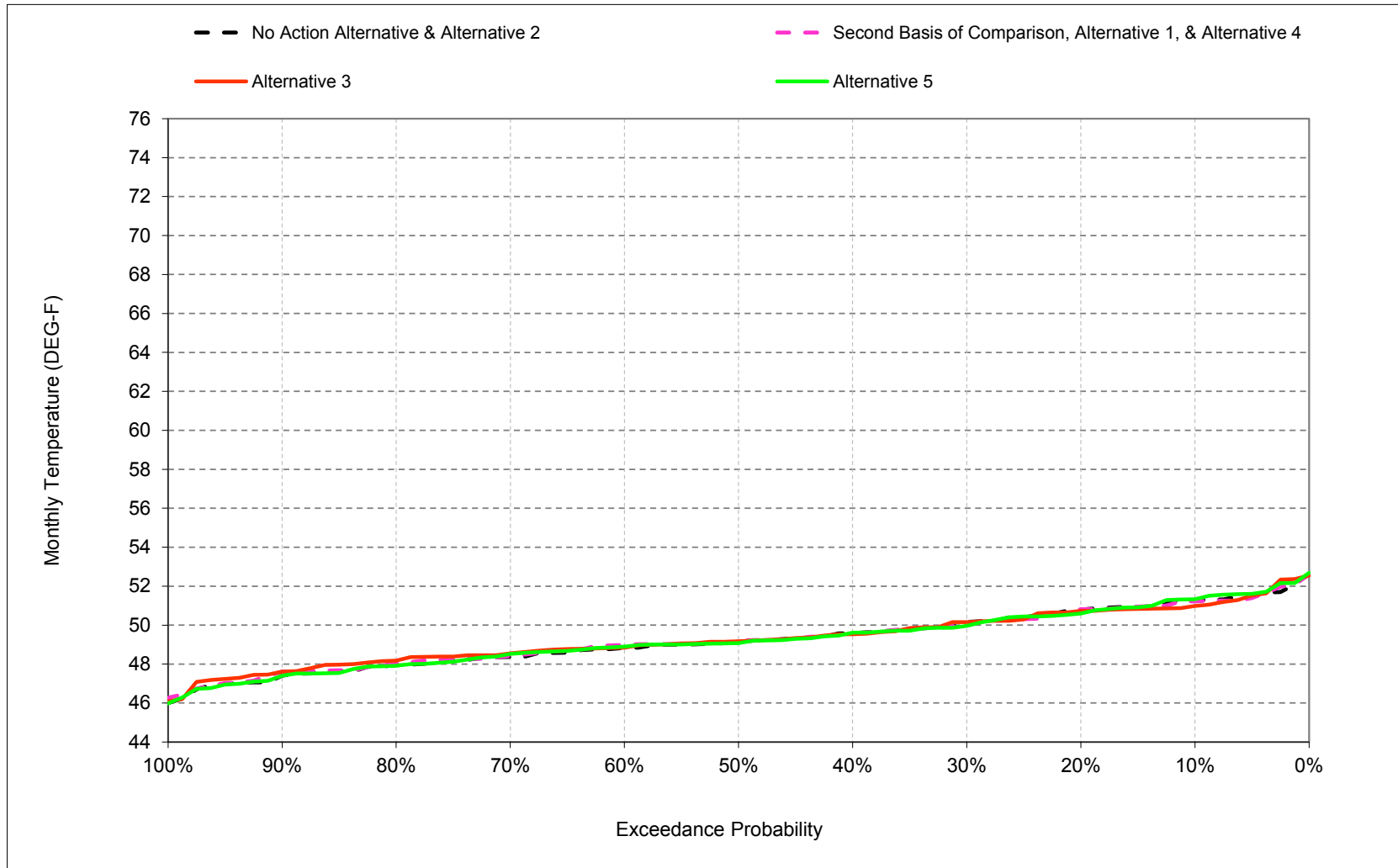
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-18-3. Stanislaus River at Orange Blossom Bridge, December



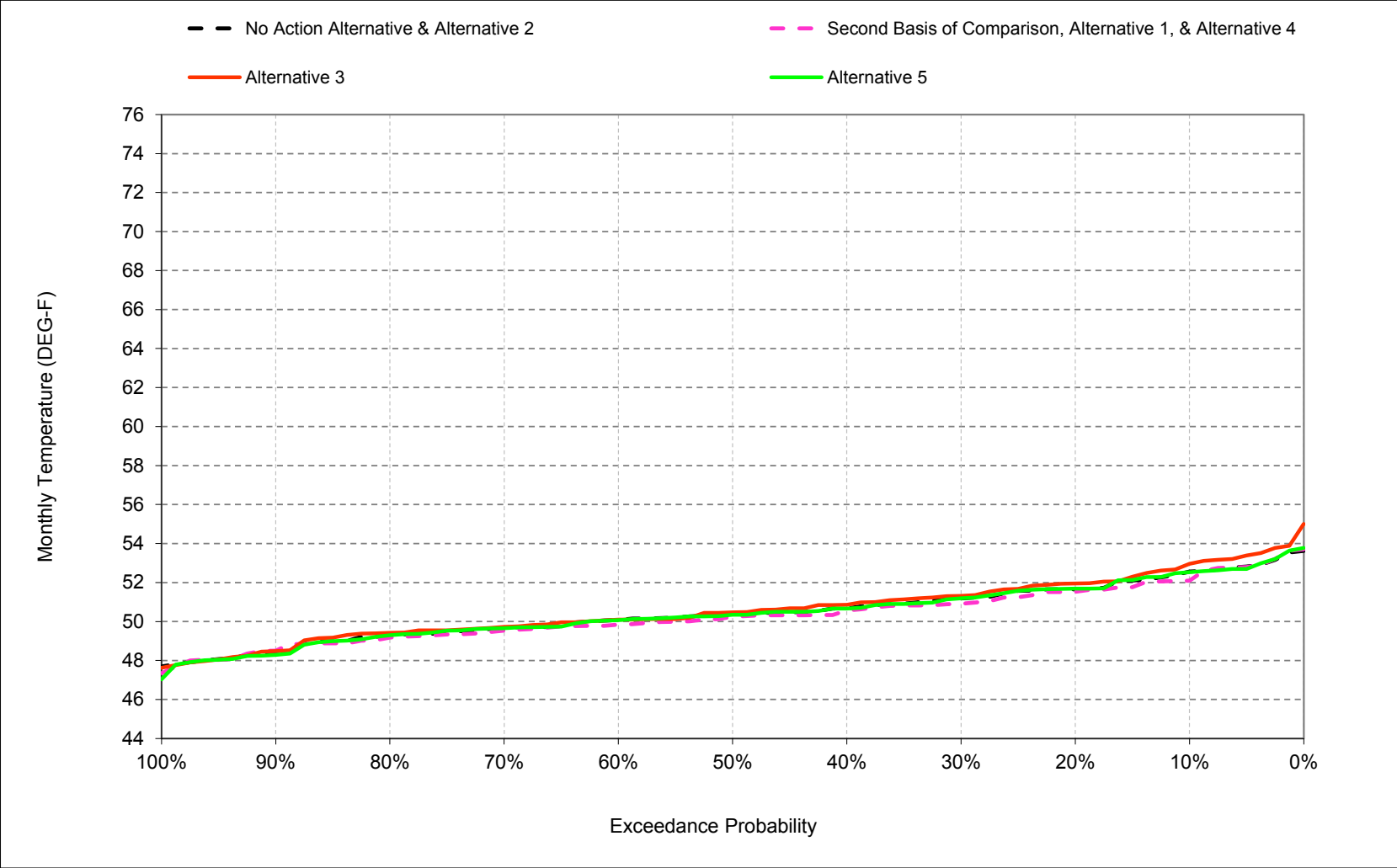
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-18-4. Stanislaus River at Orange Blossom Bridge, January



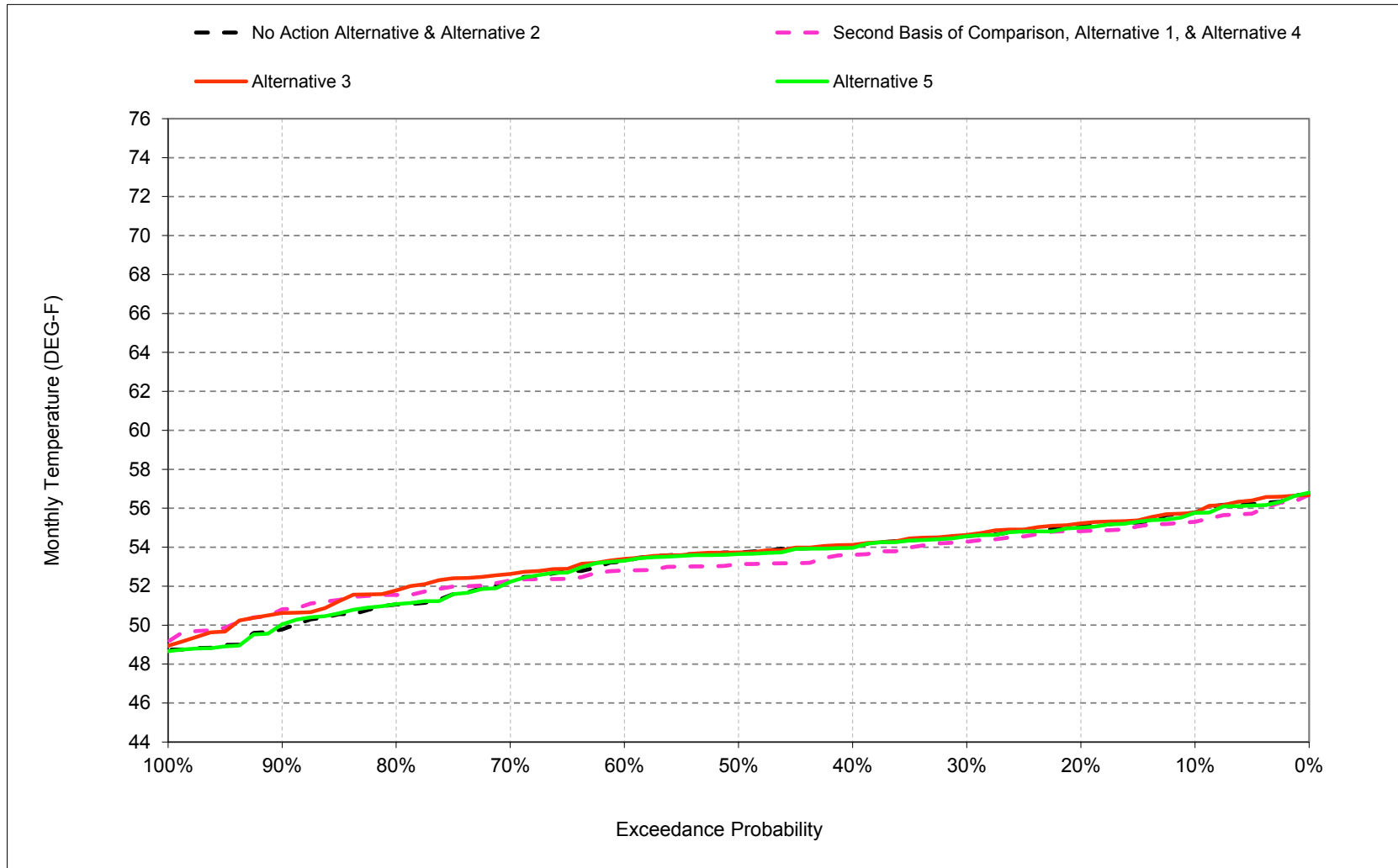
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-18-5. Stanislaus River at Orange Blossom Bridge, February



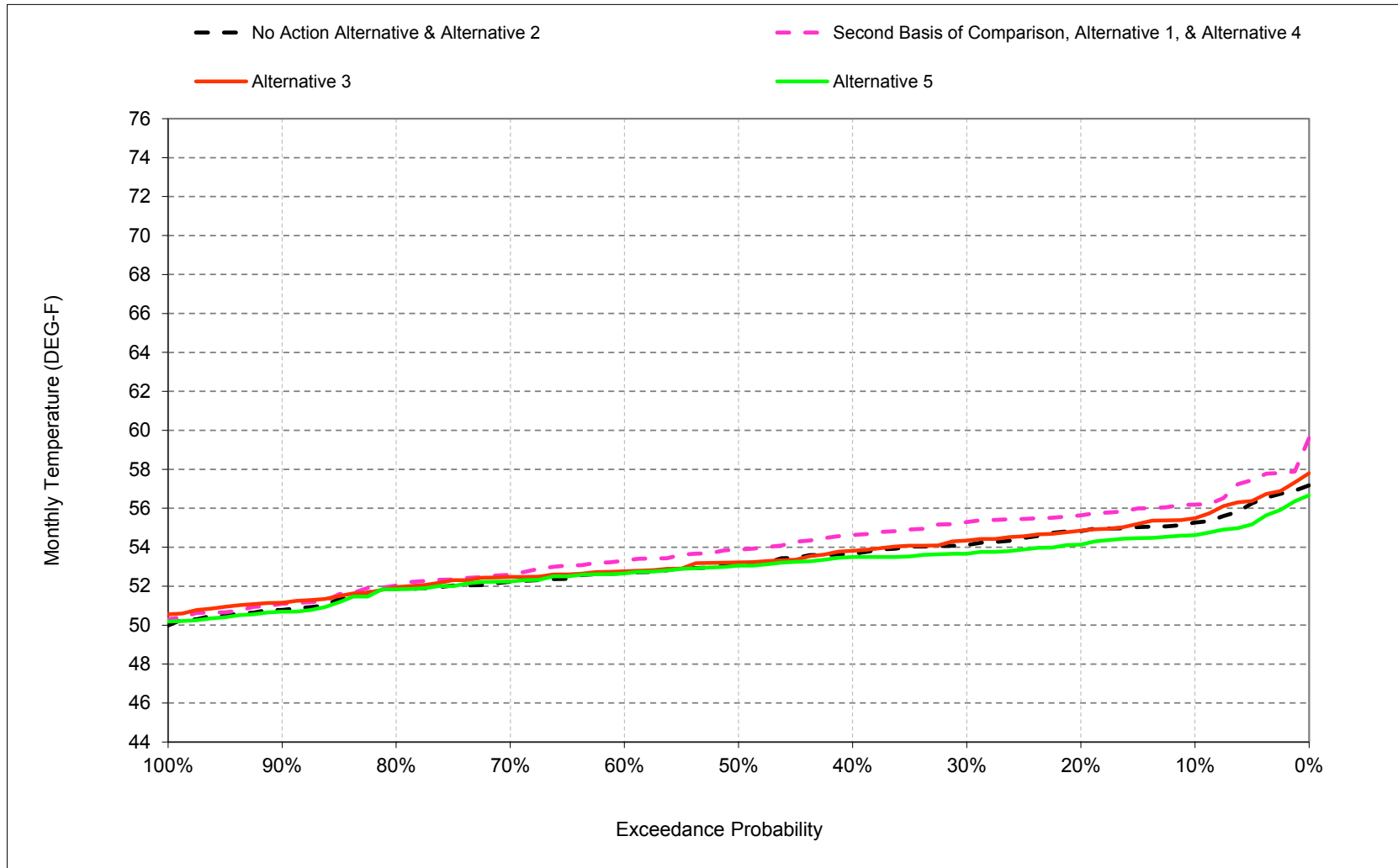
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-18-6. Stanislaus River at Orange Blossom Bridge, March



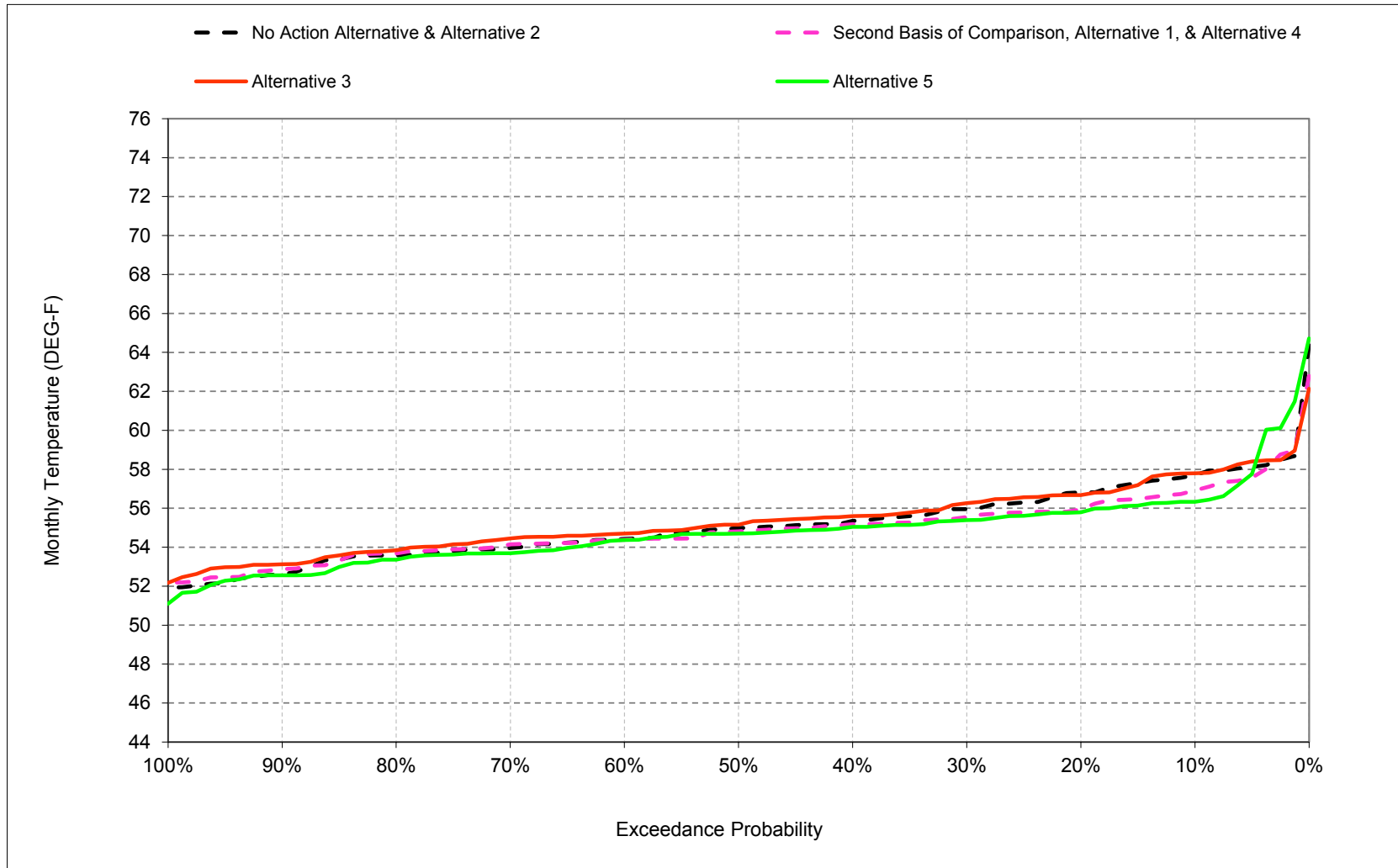
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-18-7. Stanislaus River at Orange Blossom Bridge, April



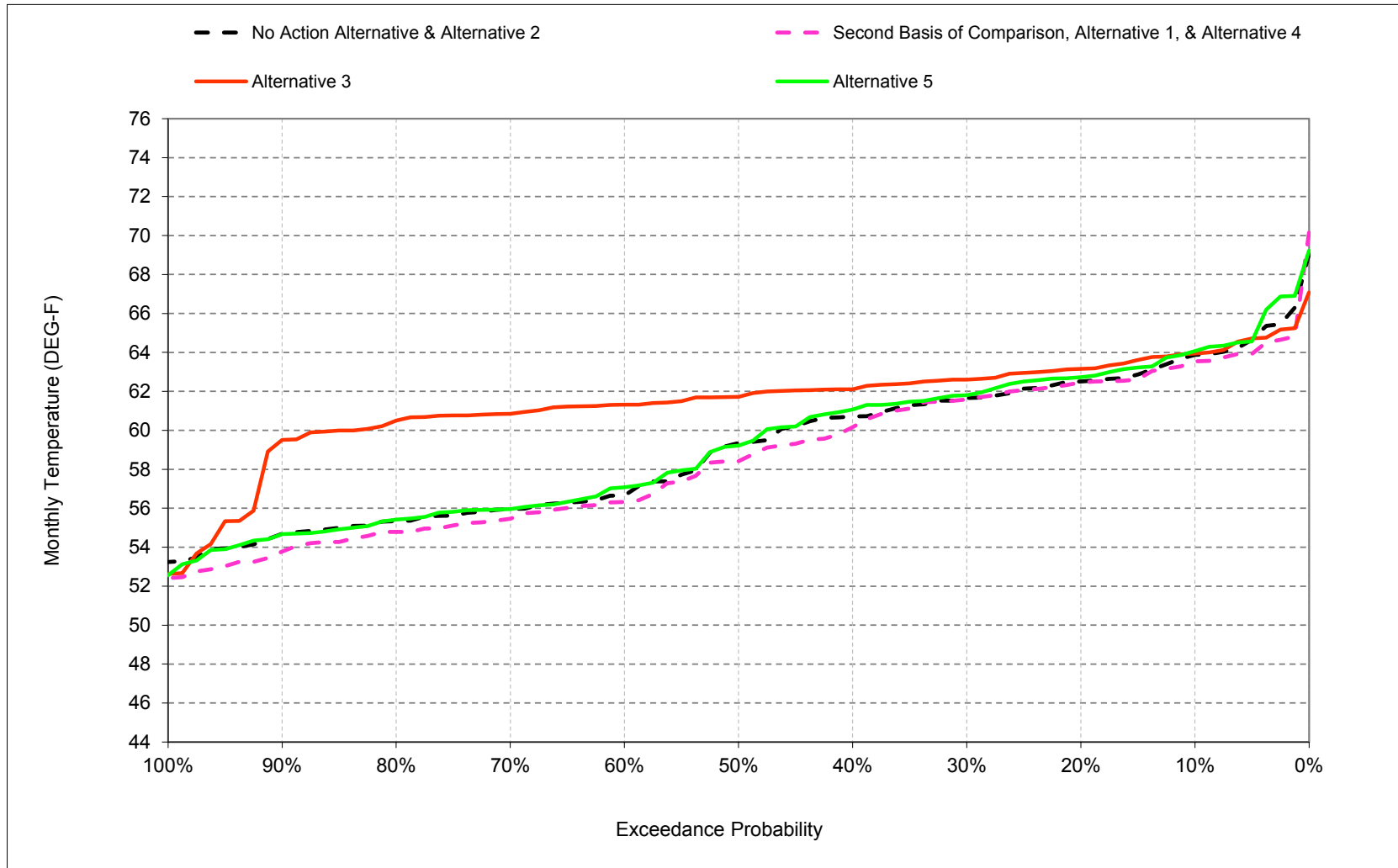
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-18-8. Stanislaus River at Orange Blossom Bridge, May



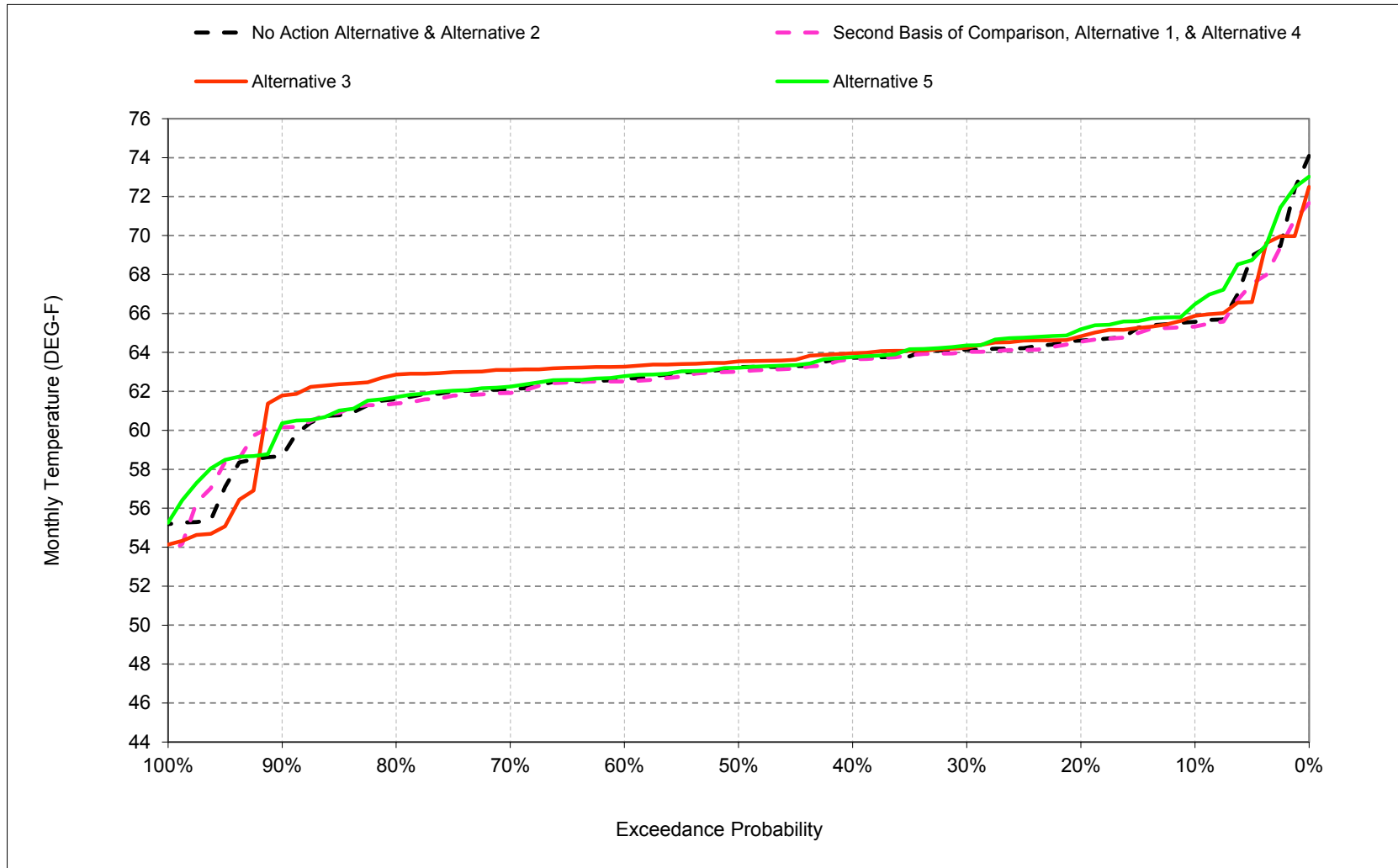
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-18-9. Stanislaus River at Orange Blossom Bridge, June



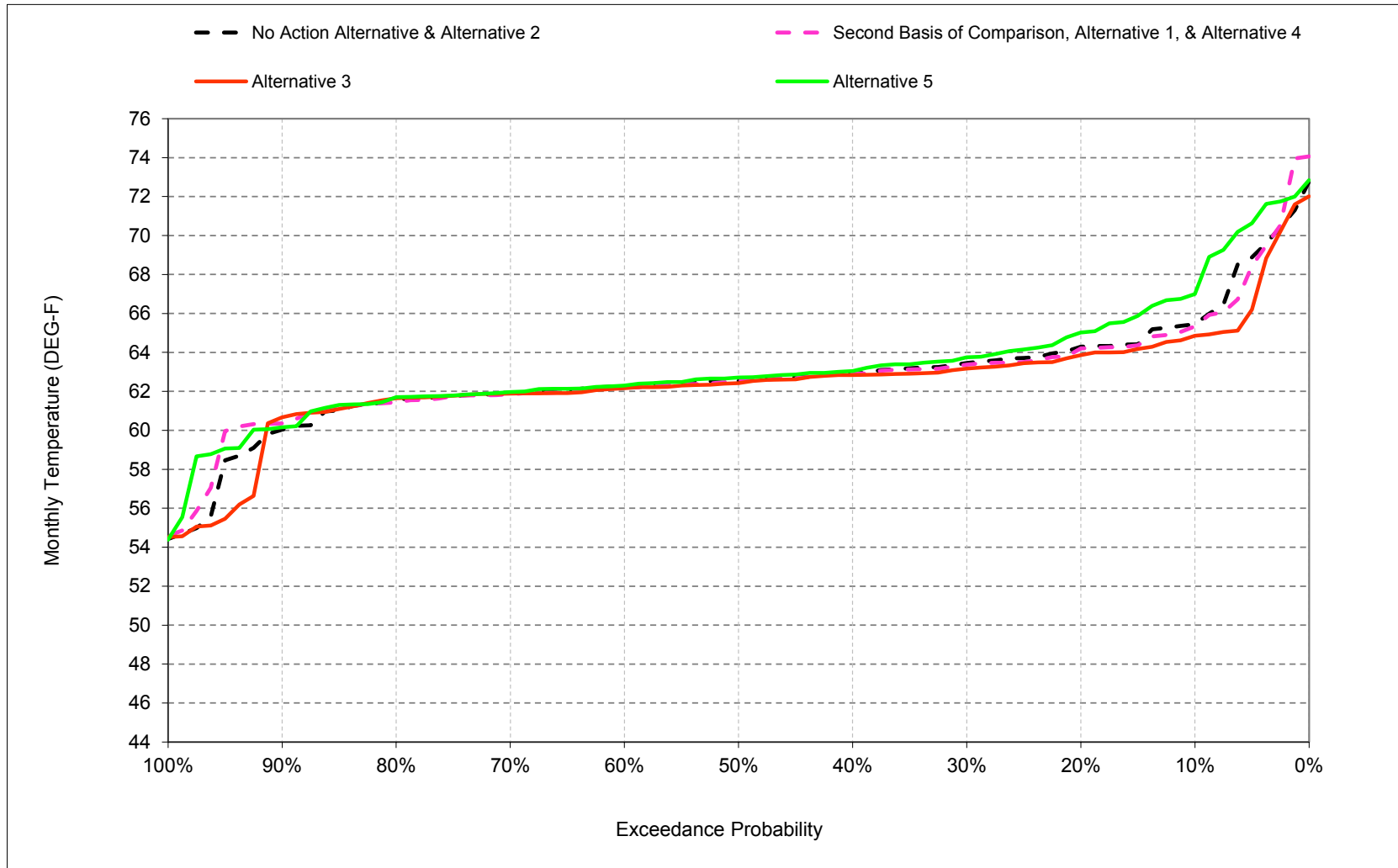
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-18-10. Stanislaus River at Orange Blossom Bridge, July



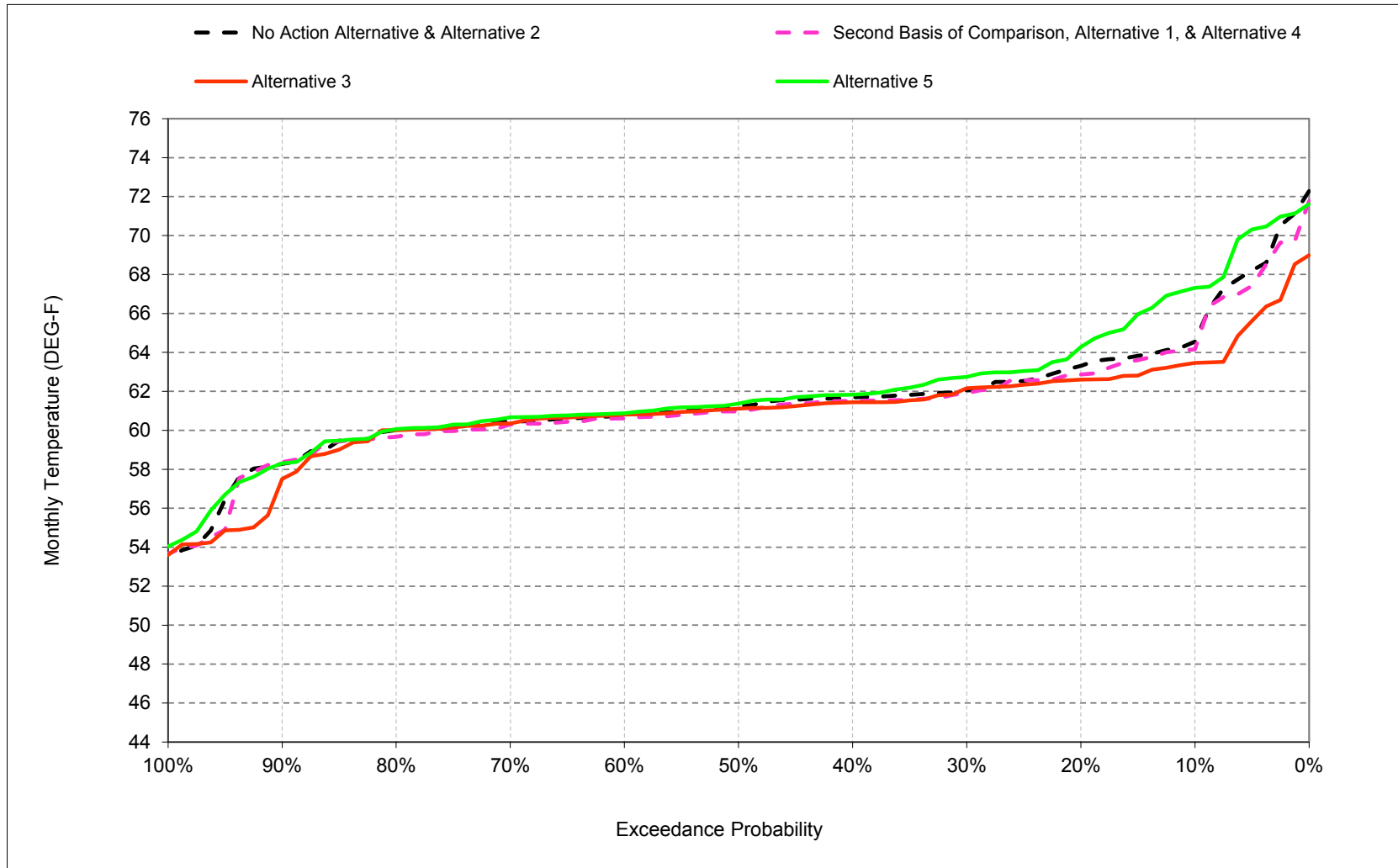
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-18-11. Stanislaus River at Orange Blossom Bridge, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-18-12. Stanislaus River at Orange Blossom Bridge, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-18-1. Stanislaus River at Orange Blossom Bridge, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	62	59	53	51	53	56	55	58	64	66	65	65
20%	59	57	53	51	52	55	55	57	63	65	64	63
30%	58	56	52	50	51	55	54	56	62	64	63	62
40%	57	55	51	50	51	54	54	55	61	64	63	62
50%	56	55	51	49	50	54	53	55	59	63	63	61
60%	56	55	51	49	50	53	53	54	57	63	62	61
70%	55	54	50	48	50	52	52	54	56	62	62	60
80%	55	54	50	48	49	51	52	54	55	62	61	60
90%	54	53	50	47	48	50	51	53	54	59	60	58
Long Term												
Full Simulation Period ^b	57	55	51	49	50	53	53	55	59	63	63	61
Water Year Types ^c												
Wet (32%)	54	52	49	49	49	51	52	53	55	60	60	59
Above Normal (16%)	57	56	52	50	51	54	53	55	58	63	62	61
Below Normal (13%)	57	55	51	49	50	54	53	55	59	63	63	61
Dry (24%)	57	55	51	49	51	55	54	56	61	64	63	62
Critical (15%)	61	58	53	50	52	55	55	58	64	67	68	67

Alternative 1												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	63	59	53	51	52	55	56	57	64	65	65	64
20%	61	57	53	51	52	55	56	56	62	65	64	63
30%	60	56	52	50	51	54	55	56	62	64	63	62
40%	59	55	52	50	50	54	55	55	60	64	63	62
50%	58	55	51	49	50	53	54	55	58	63	63	61
60%	58	54	51	49	50	53	53	54	56	63	62	61
70%	57	54	51	48	49	52	53	54	55	62	62	60
80%	56	53	50	48	49	52	52	54	55	61	61	60
90%	56	53	50	47	48	50	51	53	53	60	60	58
Long Term												
Full Simulation Period ^b	59	55	52	49	50	53	54	55	59	63	63	61
Water Year Types ^c												
Wet (32%)	55	52	49	49	49	51	52	53	54	60	60	58
Above Normal (16%)	59	56	52	50	51	53	53	54	58	62	62	61
Below Normal (13%)	58	54	51	49	50	53	54	55	59	63	63	61
Dry (24%)	59	55	51	49	51	54	55	56	61	64	63	62
Critical (15%)	63	58	53	50	52	55	56	58	63	67	68	66

Alternative 1 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	1.1	0.2	-0.1	0.0	-0.4	-0.5	0.9	-0.8	-0.3	-0.2	-0.1	-0.4
0.2	1.5	0.1	0.0	0.0	-0.1	-0.2	0.8	-0.9	-0.1	-0.1	-0.1	-0.4
0.3	2.5	-0.5	0.1	-0.1	-0.3	-0.3	1.2	-0.4	-0.1	-0.1	-0.1	-0.1
0.4	2.1	0.2	0.3	-0.1	-0.2	-0.4	1.0	-0.1	-0.7	-0.1	0.0	-0.2
0.5	1.9	-0.2	0.2	0.0	-0.1	-0.6	0.8	-0.2	-0.9	-0.2	0.0	-0.2
0.6	1.7	-0.1	0.3	0.2	-0.3	-0.4	0.6	0.0	-0.3	-0.1	0.0	-0.1
0.7	1.7	0.0	0.2	0.0	-0.1	0.1	0.4	0.1	-0.5	-0.2	0.0	-0.3
0.8	1.6	-0.2	0.1	0.1	-0.2	0.6	0.1	0.1	-0.5	-0.2	-0.1	-0.3
0.9	1.7	0.0	0.1	0.3	0.1	0.8	0.2	0.2	-1.0	1.5	0.5	0.1
Long Term												
Full Simulation Period ^b	1.6	-0.1	0.2	0.0	-0.1	-0.1	0.7	-0.2	-0.4	-0.1	0.1	-0.2
Water Year Types ^c												
Wet (32%)	1.4	-0.2	0.0	0.0	-0.1	0.5	0.2	0.1	-0.7	0.2	0.3	-0.1
Above Normal (16%)	1.8	-0.2	0.2	0.0	-0.2	-0.3	0.6	-0.2	-0.3	-0.1	-0.1	-0.2
Below Normal (13%)	1.4	-0.3	0.1	0.0	-0.3	-0.6	0.8	0.0	-0.6	-0.2	-0.1	-0.3
Dry (24%)	1.9	-0.1	0.2	0.1	-0.1	-0.5	1.2	-0.5	-0.1	-0.1	-0.1	-0.2
Critical (15%)	1.2	0.5	0.4	0.2	0.1	0.1	1.0	-0.7	-0.4	-0.7	0.1	-0.4

^a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

^b Based on an 81-year simulation period.

^c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-18-2. Stanislaus River at Orange Blossom Bridge, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	62	59	53	51	53	56	55	58	64	66	65	65
20%	59	57	53	51	52	55	55	57	63	65	64	63
30%	58	56	52	50	51	55	54	56	62	64	63	62
40%	57	55	51	50	51	54	54	55	61	64	63	62
50%	56	55	51	49	50	54	53	55	59	63	63	61
60%	56	55	51	49	50	53	53	54	57	63	62	61
70%	55	54	50	48	50	52	52	54	56	62	62	60
80%	55	54	50	48	49	51	52	54	55	62	61	60
90%	54	53	50	47	48	50	51	53	54	59	60	58
Long Term												
Full Simulation Period ^b	57	55	51	49	50	53	53	55	59	63	63	61
Water Year Types ^c												
Wet (32%)	54	52	49	49	49	51	52	53	55	60	60	59
Above Normal (16%)	57	56	52	50	51	54	53	55	58	63	62	61
Below Normal (13%)	57	55	51	49	50	54	53	55	59	63	63	61
Dry (24%)	57	55	51	49	51	55	54	56	61	64	63	62
Critical (15%)	61	58	53	50	52	55	55	58	64	67	68	67

Alternative 3												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	61	58	53	51	53	56	55	58	64	66	65	63
20%	60	57	53	51	52	55	55	57	63	65	64	63
30%	59	55	52	50	51	55	54	56	63	64	63	62
40%	58	55	52	50	51	54	54	56	62	64	63	61
50%	58	54	51	49	50	54	53	55	62	63	62	61
60%	57	54	51	49	50	53	53	55	61	63	62	61
70%	57	54	50	48	50	53	52	54	61	63	62	60
80%	56	54	50	48	49	52	52	54	60	63	62	60
90%	55	53	50	47	48	51	51	53	59	61	60	56
Long Term												
Full Simulation Period ^b	58	55	51	49	51	53	53	55	61	63	62	61
Water Year Types ^c												
Wet (32%)	55	52	49	49	50	52	52	54	59	61	60	58
Above Normal (16%)	59	55	52	50	51	53	53	55	62	63	62	61
Below Normal (13%)	57	54	51	49	50	54	53	55	62	64	63	61
Dry (24%)	58	55	51	49	51	55	54	56	62	64	63	62
Critical (15%)	61	58	53	50	52	55	56	58	64	67	67	65

Alternative 3 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	-0.3	-1.1	-0.3	-0.3	0.4	0.0	0.2	0.1	0.1	0.3	-0.6	-1.1
0.2	0.6	-0.4	0.0	-0.1	0.3	0.2	0.0	-0.1	0.6	0.2	-0.4	-0.7
0.3	1.6	-0.8	-0.1	0.1	0.1	0.0	0.2	0.3	1.0	0.1	-0.3	0.0
0.4	1.4	-0.2	0.1	0.0	0.2	0.1	0.2	0.3	1.4	0.2	-0.1	-0.2
0.5	1.5	-0.4	-0.1	0.0	0.1	0.0	0.2	0.2	2.4	0.3	-0.1	-0.1
0.6	1.6	-0.5	0.1	0.0	0.0	0.1	0.1	0.3	4.7	0.7	-0.1	0.0
0.7	1.6	-0.2	0.0	0.1	0.1	0.5	0.3	0.5	4.9	1.0	0.0	-0.1
0.8	1.5	-0.1	0.0	0.3	0.2	0.6	0.0	0.2	5.0	1.2	0.1	0.1
0.9	1.4	0.2	0.1	0.4	0.1	0.8	0.4	0.5	4.5	2.8	0.6	-2.3
Long Term												
Full Simulation Period ^b	1.1	-0.4	0.0	0.1	0.2	0.3	0.2	0.2	2.3	0.4	-0.3	-0.6
Water Year Types ^c												
Wet (32%)	1.1	-0.3	0.0	0.1	0.1	0.8	0.2	0.4	3.6	0.6	-0.2	-0.4
Above Normal (16%)	1.4	-0.4	0.0	0.2	0.0	-0.2	0.2	0.3	3.7	1.0	0.0	-0.1
Below Normal (13%)	0.9	-0.6	-0.2	0.0	-0.2	0.2	0.1	0.4	2.3	0.2	-0.2	-0.3
Dry (24%)	1.5	-0.3	0.1	0.0	0.3	0.1	0.2	0.3	1.1	0.2	-0.4	-0.6
Critical (15%)	-0.1	-0.2	0.2	0.1	0.6	0.3	0.1	-0.3	0.3	-0.4	-1.0	-2.1

^a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

^b Based on an 81-year simulation period.

^c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-18-3. Stanislaus River at Orange Blossom Bridge, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	62	59	53	51	53	56	55	58	64	66	65	65
20%	59	57	53	51	52	55	55	57	63	65	64	63
30%	58	56	52	50	51	55	54	56	62	64	63	62
40%	57	55	51	50	51	54	54	55	61	64	63	62
50%	56	55	51	49	50	54	53	55	59	63	63	61
60%	56	55	51	49	50	53	53	54	57	63	62	61
70%	55	54	50	48	50	52	52	54	56	62	62	60
80%	55	54	50	48	49	51	52	54	55	62	61	60
90%	54	53	50	47	48	50	51	53	54	59	60	58
Long Term												
Full Simulation Period ^b	57	55	51	49	50	53	53	55	59	63	63	61
Water Year Types ^c												
Wet (32%)	54	52	49	49	49	51	52	53	55	60	60	59
Above Normal (16%)	57	56	52	50	51	54	53	55	58	63	62	61
Below Normal (13%)	57	55	51	49	50	54	53	55	59	63	63	61
Dry (24%)	57	55	51	49	51	55	54	56	61	64	63	62
Critical (15%)	61	58	53	50	52	55	55	58	64	67	68	67

Alternative 5												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	65	60	53	51	53	56	55	56	64	66	67	67
20%	60	58	53	51	52	55	54	56	63	65	65	64
30%	58	56	52	50	51	55	54	55	62	64	64	63
40%	57	55	52	50	51	54	53	55	61	64	63	62
50%	57	55	51	49	50	54	53	55	59	63	63	61
60%	56	55	51	49	50	53	53	54	57	63	62	61
70%	55	54	51	48	50	52	52	54	56	62	62	61
80%	55	54	50	48	49	51	52	53	55	62	61	60
90%	54	53	50	47	48	50	51	53	54	59	60	58
Long Term												
Full Simulation Period ^b	58	56	51	49	50	53	53	55	59	63	63	62
Water Year Types ^c												
Wet (32%)	54	53	49	49	49	51	51	53	55	60	61	59
Above Normal (16%)	58	56	52	50	51	54	53	54	58	63	62	61
Below Normal (13%)	57	55	51	49	50	54	53	55	60	64	63	62
Dry (24%)	58	56	51	49	51	55	54	55	62	64	64	63
Critical (15%)	62	58	53	50	52	55	55	58	64	68	68	67

Alternative 5 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	3.4	0.9	-0.1	0.1	0.0	0.0	-0.6	-1.4	0.2	0.8	1.5	2.8
0.2	0.7	1.0	0.0	-0.2	0.0	-0.1	-0.7	-1.0	0.2	0.5	0.7	0.9
0.3	0.5	0.3	-0.1	-0.2	0.0	0.0	-0.4	-0.6	0.2	0.2	0.3	0.7
0.4	0.3	0.2	0.1	0.0	0.0	-0.1	-0.2	-0.3	0.3	0.0	0.1	0.2
0.5	0.1	0.1	0.0	0.0	0.0	-0.1	0.0	-0.3	-0.1	0.0	0.1	0.1
0.6	0.1	0.1	0.1	0.1	0.0	0.0	0.0	-0.1	0.4	0.1	0.0	0.1
0.7	0.2	0.2	0.1	0.1	0.0	-0.1	0.1	-0.2	0.0	0.1	0.1	0.1
0.8	0.1	0.1	0.1	0.0	0.0	0.0	0.0	-0.2	0.0	0.1	0.0	0.0
0.9	0.0	0.3	0.0	0.1	-0.1	0.0	-0.1	0.0	0.0	0.3	0.2	-0.1
Long Term												
Full Simulation Period ^b	0.6	0.3	0.1	0.0	0.0	0.0	-0.3	-0.3	0.2	0.3	0.5	0.5
Water Year Types ^c												
Wet (32%)	0.6	0.3	0.1	0.0	-0.1	0.0	0.0	-0.2	0.0	0.5	0.5	0.2
Above Normal (16%)	0.4	0.3	0.1	0.1	0.0	0.0	-0.2	-0.4	-0.1	0.1	0.1	0.2
Below Normal (13%)	0.7	0.0	0.0	0.0	0.0	-0.1	-0.2	-0.2	0.5	0.3	0.4	0.5
Dry (24%)	0.6	0.4	0.2	0.1	0.0	0.0	-0.5	-0.6	0.2	0.3	0.7	1.1
Critical (15%)	0.4	0.6	0.0	-0.2	-0.1	-0.1	-0.6	-0.2	0.5	0.5	0.9	0.4

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-18-4. Stanislaus River at Orange Blossom Bridge, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	63	59	53	51	52	55	56	57	64	65	65	64
20%	61	57	53	51	52	55	56	56	62	65	64	63
30%	60	56	52	50	51	54	55	56	62	64	63	62
40%	59	55	52	50	50	54	55	55	60	64	63	62
50%	58	55	51	49	50	53	54	55	58	63	63	61
60%	58	54	51	49	50	53	53	54	56	63	62	61
70%	57	54	51	48	49	52	53	54	55	62	62	60
80%	56	53	50	48	49	52	52	54	55	61	61	60
90%	56	53	50	47	48	50	51	53	53	60	60	58
Long Term												
Full Simulation Period ^b	59	55	52	49	50	53	54	55	59	63	63	61
Water Year Types ^c												
Wet (32%)	55	52	49	49	49	51	52	53	54	60	60	58
Above Normal (16%)	59	56	52	50	51	53	53	54	58	62	62	61
Below Normal (13%)	58	54	51	49	50	53	54	55	59	63	63	61
Dry (24%)	59	55	51	49	51	54	55	56	61	64	63	62
Critical (15%)	63	58	53	50	52	55	56	58	63	67	68	66

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	62	59	53	51	53	56	55	58	64	66	65	65
20%	59	57	53	51	52	55	55	57	63	65	64	63
30%	58	56	52	50	51	55	54	56	62	64	63	62
40%	57	55	51	50	51	54	54	55	61	64	63	62
50%	56	55	51	49	50	54	53	55	59	63	63	61
60%	56	55	51	49	50	53	53	54	57	63	62	61
70%	55	54	50	48	50	52	52	54	56	62	62	60
80%	55	54	50	48	49	51	52	54	55	62	61	60
90%	54	53	50	47	48	50	51	53	54	59	60	58
Long Term												
Full Simulation Period ^b	57	55	51	49	50	53	53	55	59	63	63	61
Water Year Types ^c												
Wet (32%)	54	52	49	49	49	51	52	53	55	60	60	59
Above Normal (16%)	57	56	52	50	51	54	53	55	58	63	62	61
Below Normal (13%)	57	55	51	49	50	54	53	55	59	63	63	61
Dry (24%)	57	55	51	49	51	55	54	56	61	64	63	62
Critical (15%)	61	58	53	50	52	55	55	58	64	67	68	67

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	-1.1	-0.2	0.1	0.0	0.4	0.5	-0.9	0.8	0.3	0.2	0.1	0.4
0.2	-1.5	-0.1	0.0	0.0	0.1	0.2	-0.8	0.9	0.1	0.1	0.1	0.4
0.3	-2.5	0.5	-0.1	0.1	0.3	0.3	-1.2	0.4	0.1	0.1	0.1	0.1
0.4	-2.1	-0.2	-0.3	0.1	0.2	0.4	-1.0	0.1	0.7	0.1	0.0	0.2
0.5	-1.9	0.2	-0.2	0.0	0.1	0.6	-0.8	0.2	0.9	0.2	0.0	0.2
0.6	-1.7	0.1	-0.3	-0.2	0.3	0.4	-0.6	0.0	0.3	0.1	0.0	0.1
0.7	-1.7	0.0	-0.2	0.0	0.1	-0.1	-0.4	-0.1	0.5	0.2	0.0	0.3
0.8	-1.6	0.2	-0.1	-0.1	0.2	-0.6	-0.1	-0.1	0.5	0.2	0.1	0.3
0.9	-1.7	0.0	-0.1	-0.3	-0.1	-0.8	-0.2	-0.2	1.0	-1.5	-0.5	-0.1
Long Term												
Full Simulation Period ^b	-1.6	0.1	-0.2	0.0	0.1	0.1	-0.7	0.2	0.4	0.1	-0.1	0.2
Water Year Types ^c												
Wet (32%)	-1.4	0.2	0.0	0.0	0.1	-0.5	-0.2	-0.1	0.7	-0.2	-0.3	0.1
Above Normal (16%)	-1.8	0.2	-0.2	0.0	0.2	0.3	-0.6	0.2	0.3	0.1	0.1	0.2
Below Normal (13%)	-1.4	0.3	-0.1	0.0	0.3	0.6	-0.8	0.0	0.6	0.2	0.1	0.3
Dry (24%)	-1.9	0.1	-0.2	-0.1	0.1	0.5	-1.2	0.5	0.1	0.1	0.1	0.2
Critical (15%)	-1.2	-0.5	-0.4	-0.2	-0.1	-0.1	-1.0	0.7	0.4	0.7	-0.1	0.4

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-18-5. Stanislaus River at Orange Blossom Bridge, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	63	59	53	51	52	55	56	57	64	65	65	64
20%	61	57	53	51	52	55	56	56	62	65	64	63
30%	60	56	52	50	51	54	55	56	62	64	63	62
40%	59	55	52	50	50	54	55	55	60	64	63	62
50%	58	55	51	49	50	53	54	55	58	63	63	61
60%	58	54	51	49	50	53	53	54	56	63	62	61
70%	57	54	51	48	49	52	53	54	55	62	62	60
80%	56	53	50	48	49	52	52	54	55	61	61	60
90%	56	53	50	47	48	50	51	53	53	60	60	58
Long Term												
Full Simulation Period ^b	59	55	52	49	50	53	54	55	59	63	63	61
Water Year Types ^c												
Wet (32%)	55	52	49	49	49	51	52	53	54	60	60	58
Above Normal (16%)	59	56	52	50	51	53	53	54	58	62	62	61
Below Normal (13%)	58	54	51	49	50	53	54	55	59	63	63	61
Dry (24%)	59	55	51	49	51	54	55	56	61	64	63	62
Critical (15%)	63	58	53	50	52	55	56	58	63	67	68	66

Alternative 3

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	61	58	53	51	53	56	55	58	64	66	65	63
20%	60	57	53	51	52	55	55	57	63	65	64	63
30%	59	55	52	50	51	55	54	56	63	64	63	62
40%	58	55	52	50	51	54	54	56	62	64	63	61
50%	58	54	51	49	50	54	53	55	62	63	62	61
60%	57	54	51	49	50	53	53	55	61	63	62	61
70%	57	54	50	48	50	53	52	54	61	63	62	60
80%	56	54	50	48	49	52	52	54	60	63	62	60
90%	55	53	50	47	48	51	51	53	59	61	60	56
Long Term												
Full Simulation Period ^b	58	55	51	49	51	53	53	55	61	63	62	61
Water Year Types ^c												
Wet (32%)	55	52	49	49	50	52	52	54	59	61	60	58
Above Normal (16%)	59	55	52	50	51	53	53	55	62	63	62	61
Below Normal (13%)	57	54	51	49	50	54	53	55	62	64	63	61
Dry (24%)	58	55	51	49	51	55	54	56	62	64	63	62
Critical (15%)	61	58	53	50	52	55	56	58	64	67	67	65

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	-1.4	-1.4	-0.2	-0.3	0.8	0.5	-0.7	0.9	0.4	0.5	-0.5	-0.7
0.2	-0.8	-0.5	0.0	-0.1	0.4	0.4	-0.8	0.8	0.7	0.3	-0.3	-0.3
0.3	-0.9	-0.3	-0.2	0.2	0.4	0.3	-0.9	0.7	1.0	0.2	-0.2	0.2
0.4	-0.7	-0.4	-0.1	0.0	0.4	0.5	-0.8	0.4	2.1	0.3	-0.1	-0.1
0.5	-0.4	-0.2	-0.2	0.0	0.3	0.6	-0.6	0.4	3.3	0.5	-0.1	0.1
0.6	-0.2	-0.3	-0.1	-0.1	0.3	0.6	-0.5	0.3	5.0	0.7	-0.1	0.2
0.7	-0.1	-0.2	-0.2	0.1	0.2	0.4	-0.1	0.4	5.4	1.2	0.1	0.2
0.8	-0.1	0.1	-0.1	0.2	0.3	0.1	-0.1	0.1	5.5	1.4	0.2	0.4
0.9	-0.3	0.3	-0.1	0.1	0.0	0.1	0.1	0.3	5.5	1.3	0.1	-2.4
Long Term												
Full Simulation Period ^b	-0.5	-0.3	-0.1	0.1	0.3	0.4	-0.5	0.4	2.8	0.5	-0.4	-0.4
Water Year Types ^c												
Wet (32%)	-0.3	-0.1	-0.1	0.1	0.3	0.3	0.0	0.2	4.3	0.4	-0.5	-0.3
Above Normal (16%)	-0.4	-0.3	-0.2	0.2	0.2	0.1	-0.4	0.5	4.0	1.1	0.0	0.1
Below Normal (13%)	-0.4	-0.3	-0.2	0.0	0.1	0.7	-0.6	0.4	2.9	0.4	-0.1	0.1
Dry (24%)	-0.4	-0.2	-0.1	0.0	0.4	0.5	-1.0	0.7	1.2	0.3	-0.3	-0.4
Critical (15%)	-1.2	-0.7	-0.3	-0.1	0.5	0.2	-0.9	0.3	0.7	0.2	-1.1	-1.6

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-18-6. Stanislaus River at Orange Blossom Bridge, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	63	59	53	51	52	55	56	57	64	65	65	64
20%	61	57	53	51	52	55	56	56	62	65	64	63
30%	60	56	52	50	51	54	55	56	62	64	63	62
40%	59	55	52	50	50	54	55	55	60	64	63	62
50%	58	55	51	49	50	53	54	55	58	63	63	61
60%	58	54	51	49	50	53	53	54	56	63	62	61
70%	57	54	51	48	49	52	53	54	55	62	62	60
80%	56	53	50	48	49	52	52	54	55	61	61	60
90%	56	53	50	47	48	50	51	53	53	60	60	58
Long Term												
Full Simulation Period ^b	59	55	52	49	50	53	54	55	59	63	63	61
Water Year Types ^c												
Wet (32%)	55	52	49	49	49	51	52	53	54	60	60	58
Above Normal (16%)	59	56	52	50	51	53	53	54	58	62	62	61
Below Normal (13%)	58	54	51	49	50	53	54	55	59	63	63	61
Dry (24%)	59	55	51	49	51	54	55	56	61	64	63	62
Critical (15%)	63	58	53	50	52	55	56	58	63	67	68	66

Alternative 5

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	65	60	53	51	53	56	55	56	64	66	67	67
20%	60	58	53	51	52	55	54	56	63	65	65	64
30%	58	56	52	50	51	55	54	55	62	64	64	63
40%	57	55	52	50	51	54	53	55	61	64	63	62
50%	57	55	51	49	50	54	53	55	59	63	63	61
60%	56	55	51	49	50	53	53	54	57	63	62	61
70%	55	54	51	48	50	52	52	54	56	62	62	61
80%	55	54	50	48	49	51	52	53	55	62	61	60
90%	54	53	50	47	48	50	51	53	54	59	60	58
Long Term												
Full Simulation Period ^b	58	56	51	49	50	53	53	55	59	63	63	62
Water Year Types ^c												
Wet (32%)	54	53	49	49	49	51	51	53	55	60	61	59
Above Normal (16%)	58	56	52	50	51	54	53	54	58	63	62	61
Below Normal (13%)	57	55	51	49	50	54	53	55	60	64	63	62
Dry (24%)	58	56	51	49	51	55	54	55	62	64	64	63
Critical (15%)	62	58	53	50	52	55	55	58	64	68	68	67

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	2.3	0.7	0.0	0.1	0.4	0.4	-1.6	-0.6	0.5	1.1	1.7	3.1
0.2	-0.8	0.9	0.0	-0.2	0.2	0.2	-1.5	-0.1	0.3	0.6	0.8	1.3
0.3	-2.0	0.8	-0.2	0.0	0.3	0.3	-1.6	-0.1	0.2	0.3	0.4	0.8
0.4	-1.8	0.1	-0.1	0.0	0.2	0.4	-1.1	-0.2	1.0	0.1	0.1	0.3
0.5	-1.8	0.3	-0.1	-0.1	0.1	0.5	-0.8	-0.1	0.8	0.2	0.2	0.3
0.6	-1.7	0.2	-0.2	-0.1	0.2	0.5	-0.6	0.0	0.7	0.2	0.1	0.3
0.7	-1.5	0.2	-0.1	0.1	0.2	-0.2	-0.3	-0.4	0.5	0.3	0.1	0.4
0.8	-1.5	0.3	0.0	-0.1	0.2	-0.6	-0.1	-0.3	0.6	0.3	0.1	0.3
0.9	-1.7	0.4	-0.1	-0.2	-0.2	-0.9	-0.3	-0.2	0.9	-1.2	-0.3	-0.2
Long Term												
Full Simulation Period ^b	-1.0	0.4	-0.1	0.0	0.1	0.0	-0.9	-0.1	0.6	0.4	0.5	0.7
Water Year Types ^c												
Wet (32%)	-0.8	0.5	0.1	0.0	0.1	-0.4	-0.2	-0.4	0.8	0.3	0.2	0.3
Above Normal (16%)	-1.4	0.5	0.0	0.1	0.2	0.3	-0.8	-0.2	0.2	0.2	0.2	0.4
Below Normal (13%)	-0.7	0.4	0.0	0.0	0.3	0.5	-0.9	-0.2	1.0	0.4	0.5	0.8
Dry (24%)	-1.3	0.5	0.0	0.0	0.2	0.4	-1.6	-0.1	0.2	0.4	0.8	1.3
Critical (15%)	-0.8	0.1	-0.5	-0.3	-0.2	-0.2	-1.5	0.5	0.9	1.1	0.8	0.8

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

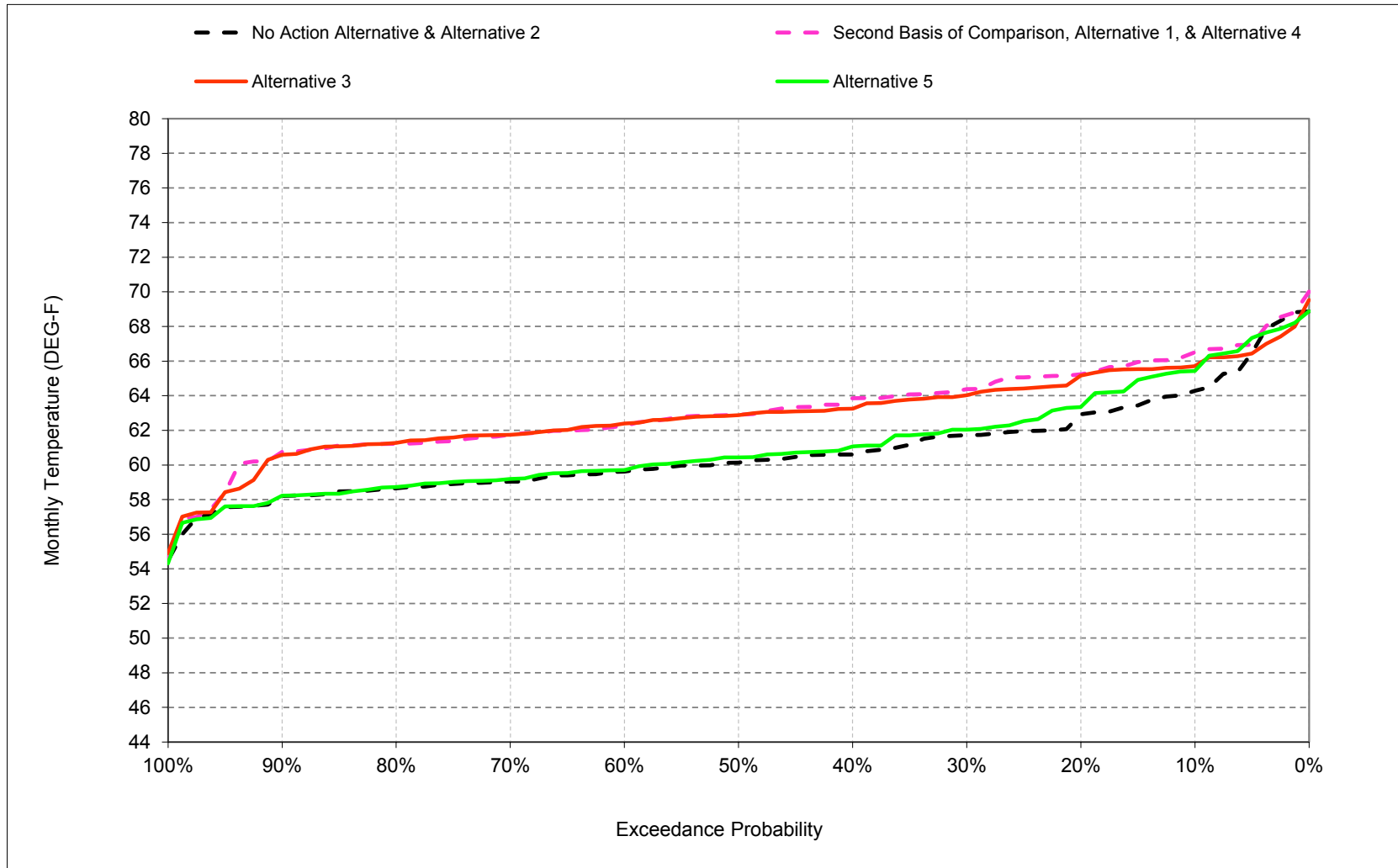
b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

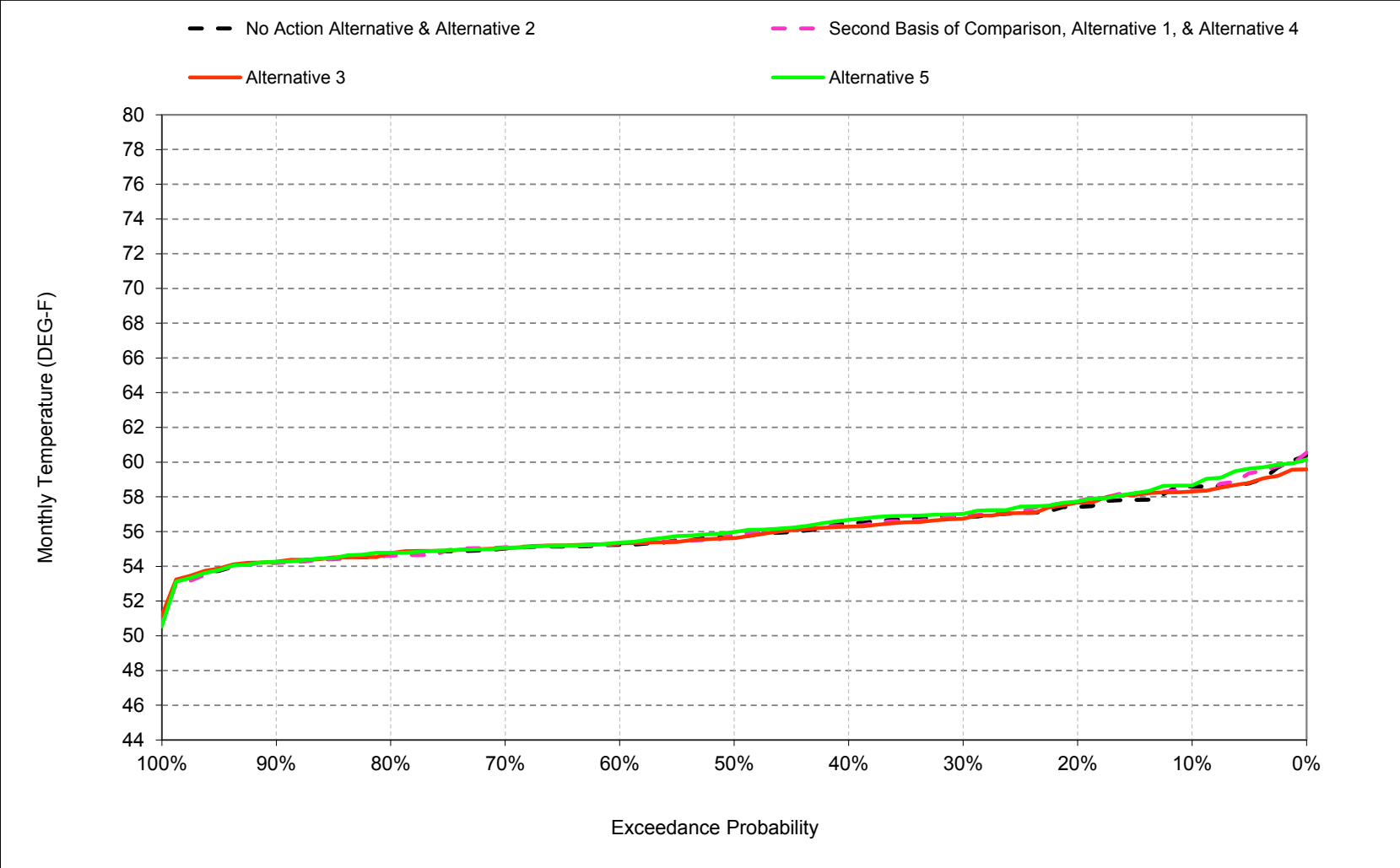
B.19. Stanislaus River at Mouth Temperature

Figure B-19-1. Stanislaus River at Mouth, October



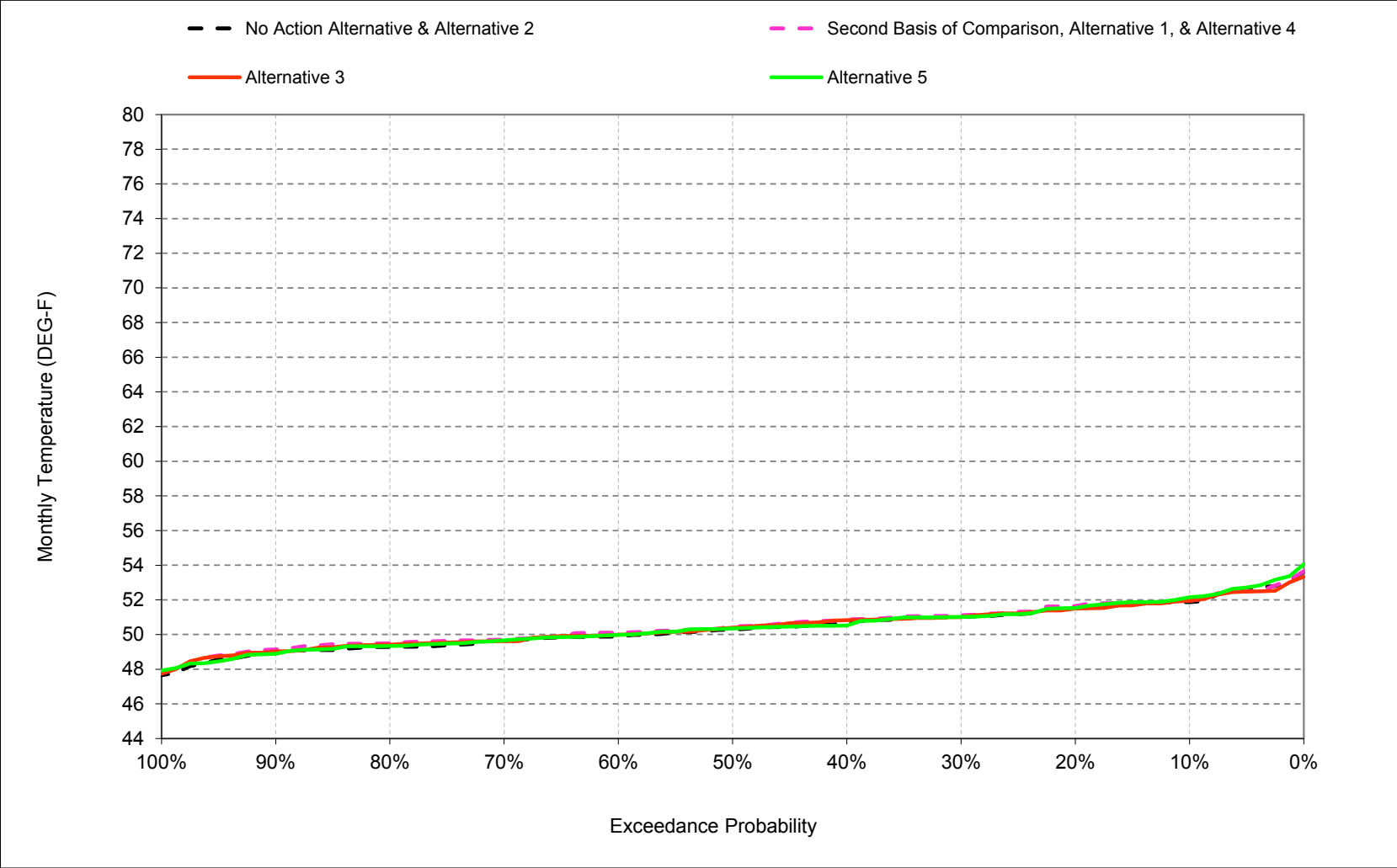
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-19-2. Stanislaus River at Mouth, November



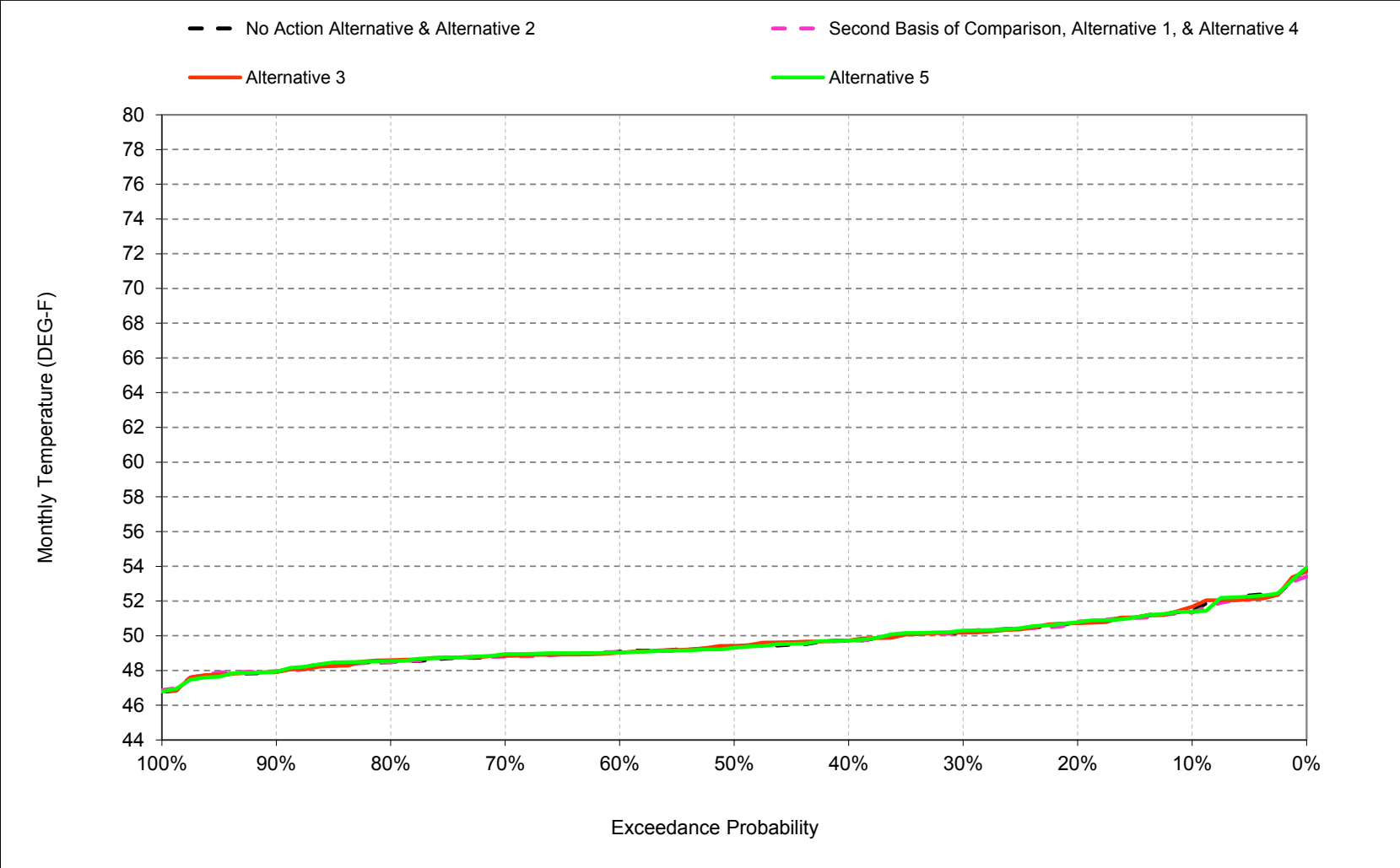
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-19-3. Stanislaus River at Mouth, December



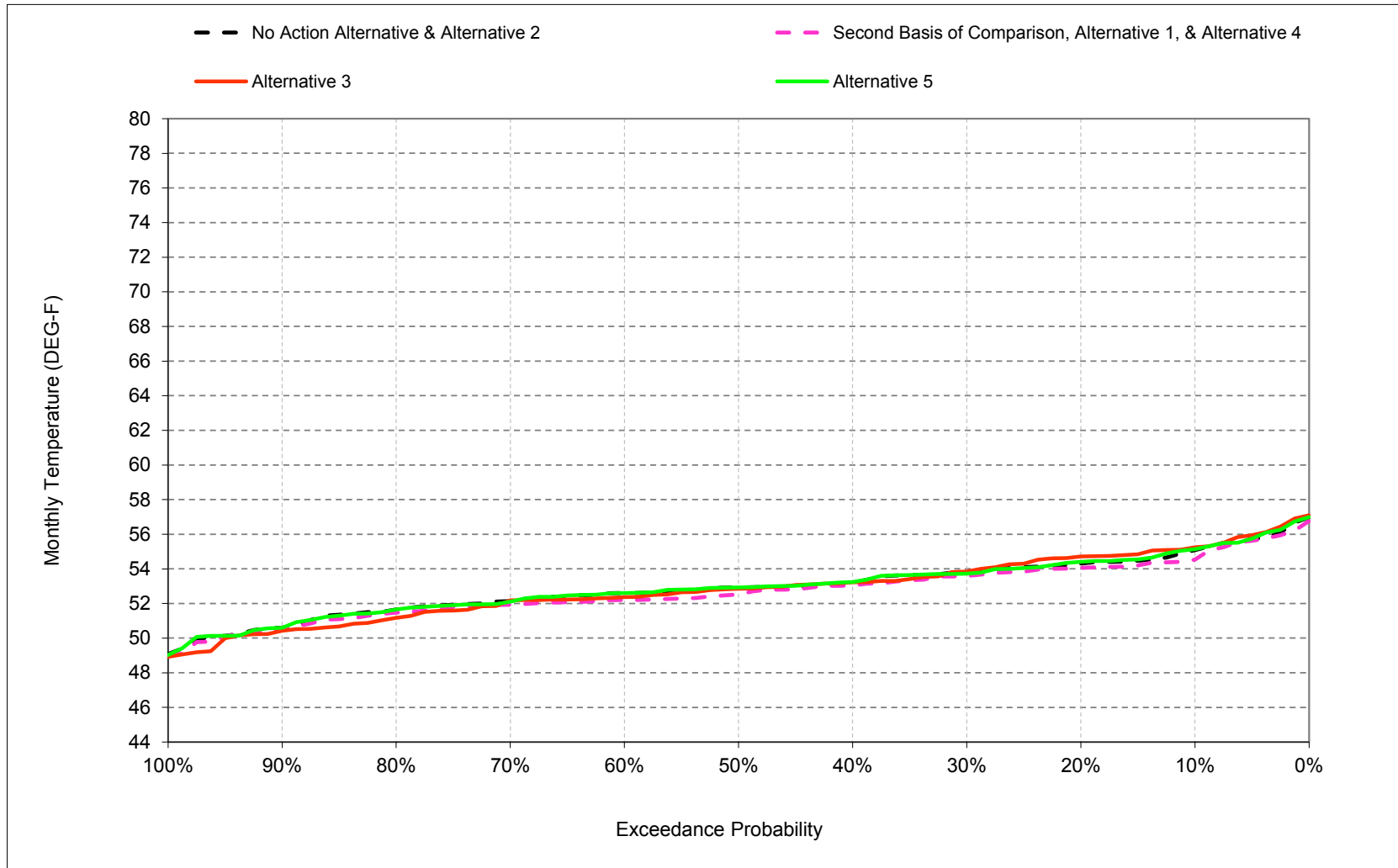
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-19-4. Stanislaus River at Mouth, January



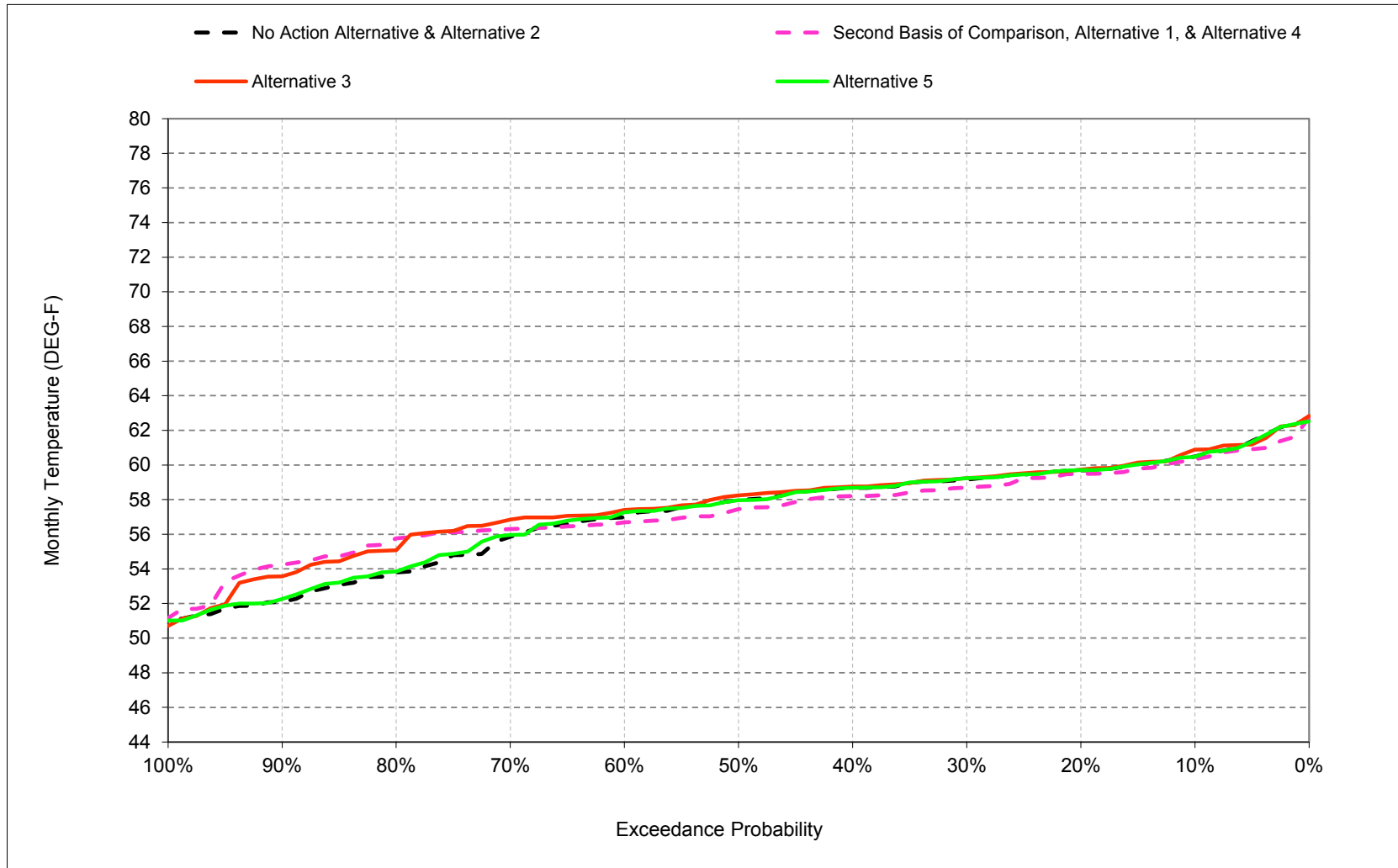
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-19-5. Stanislaus River at Mouth, February



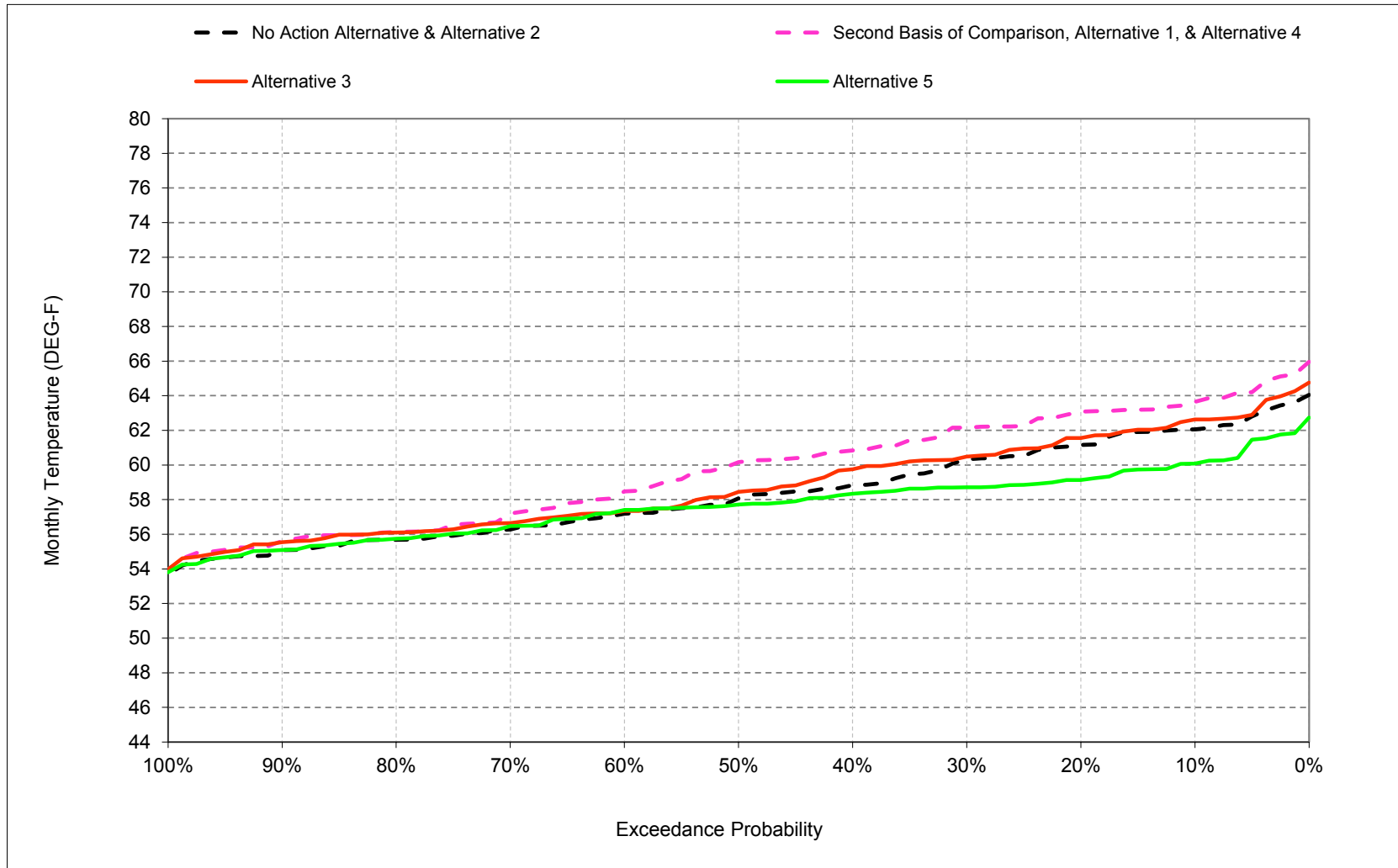
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-19-6. Stanislaus River at Mouth, March



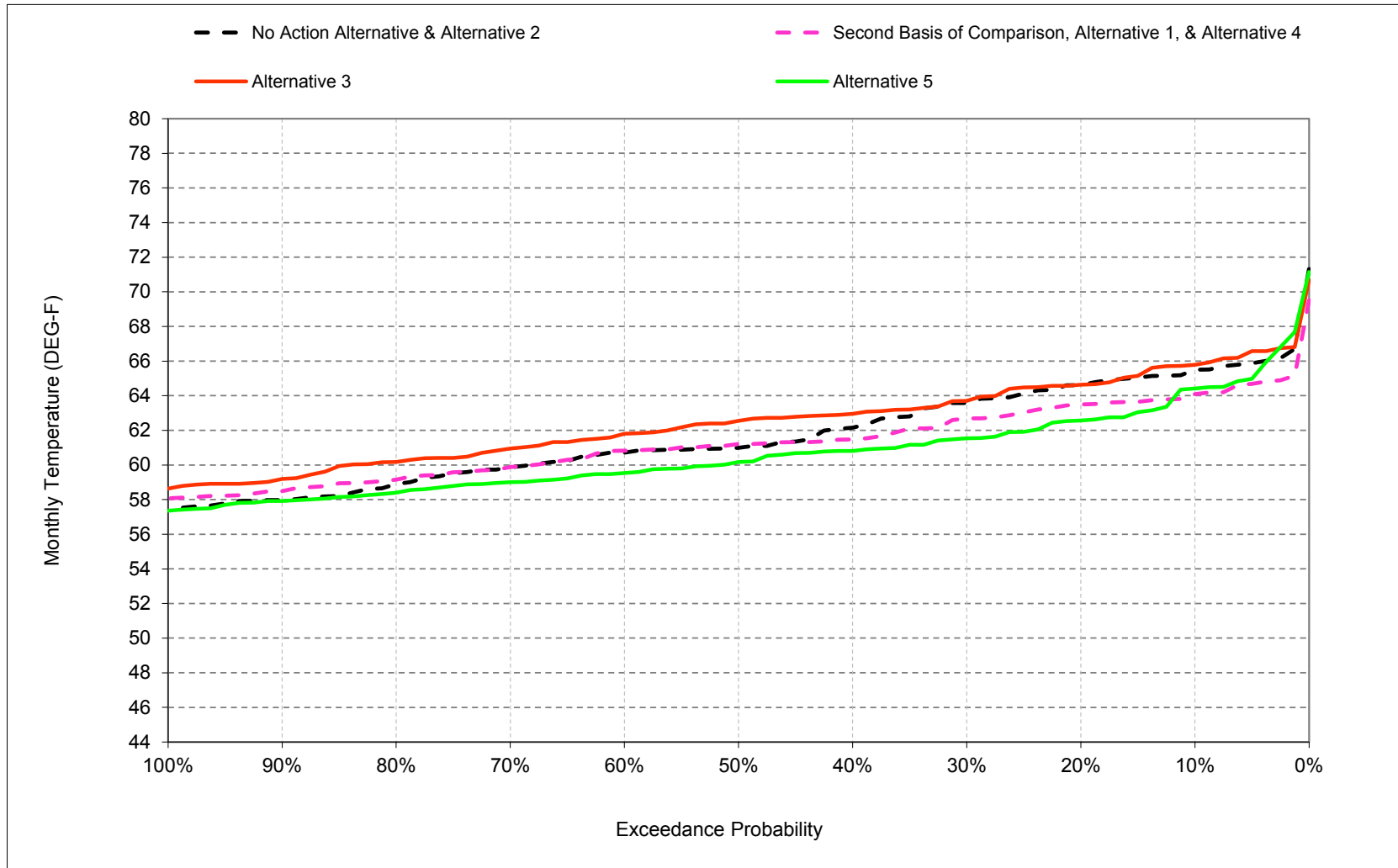
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-19-7. Stanislaus River at Mouth, April



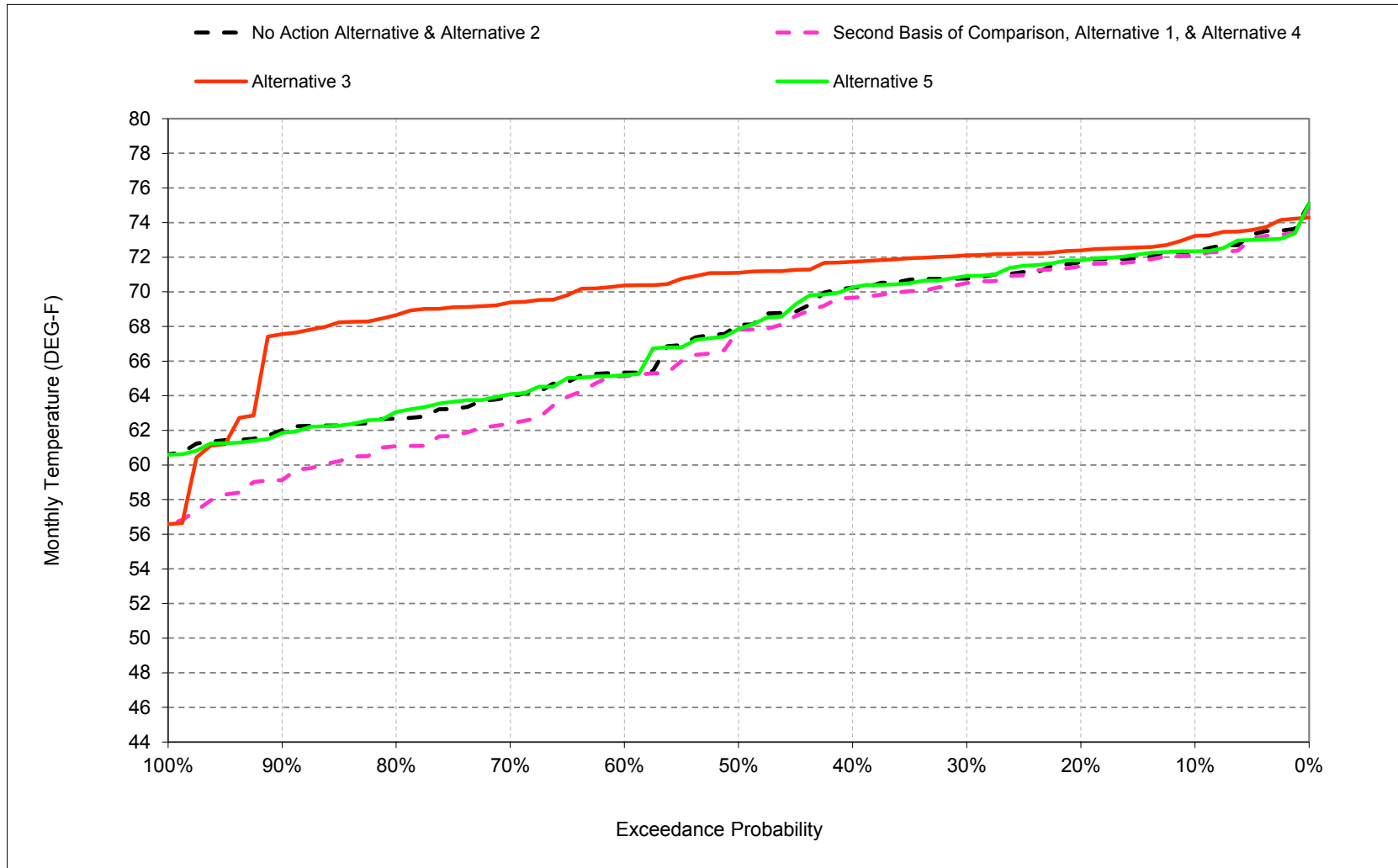
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-19-8. Stanislaus River at Mouth, May



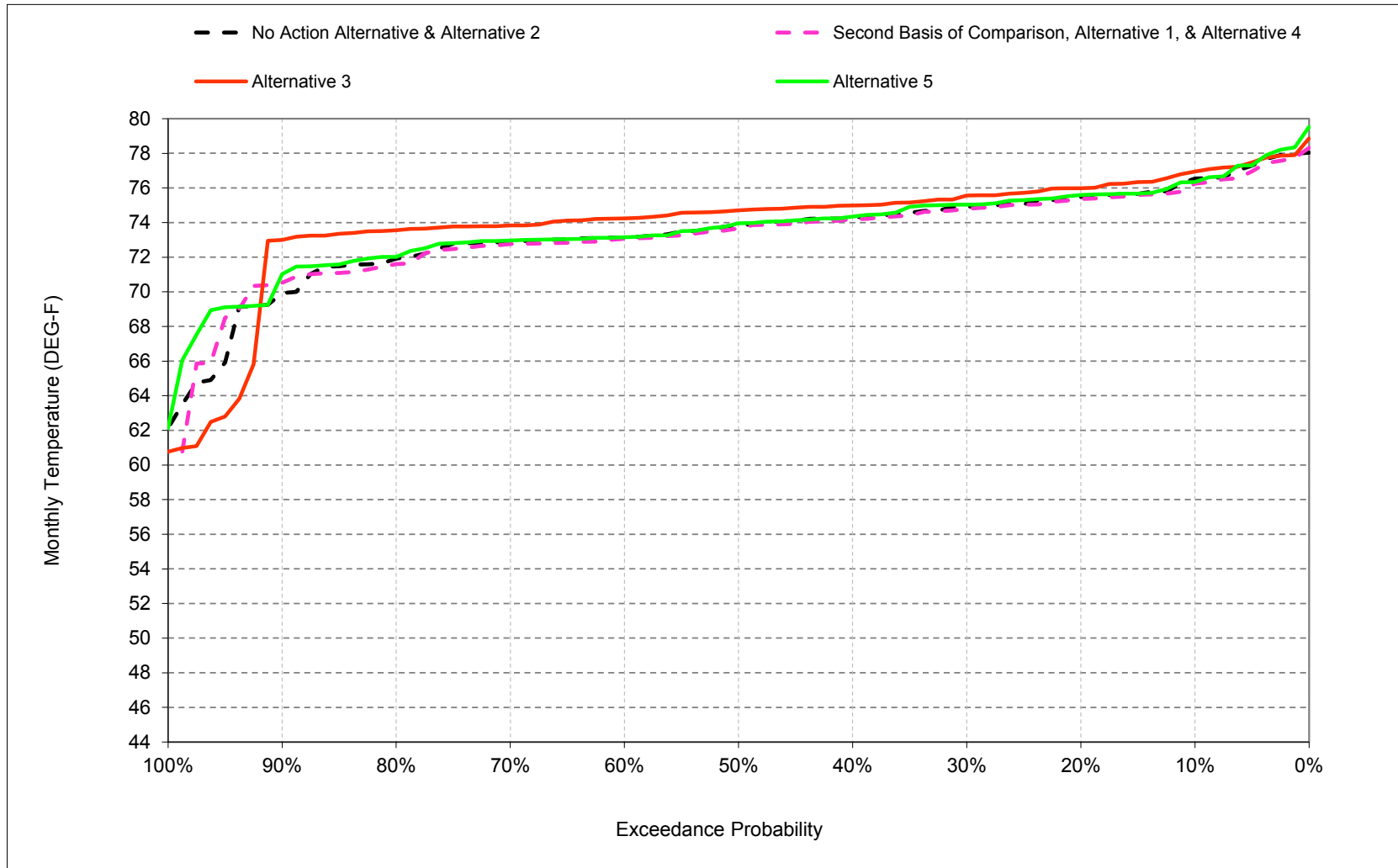
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-19-9. Stanislaus River at Mouth, June



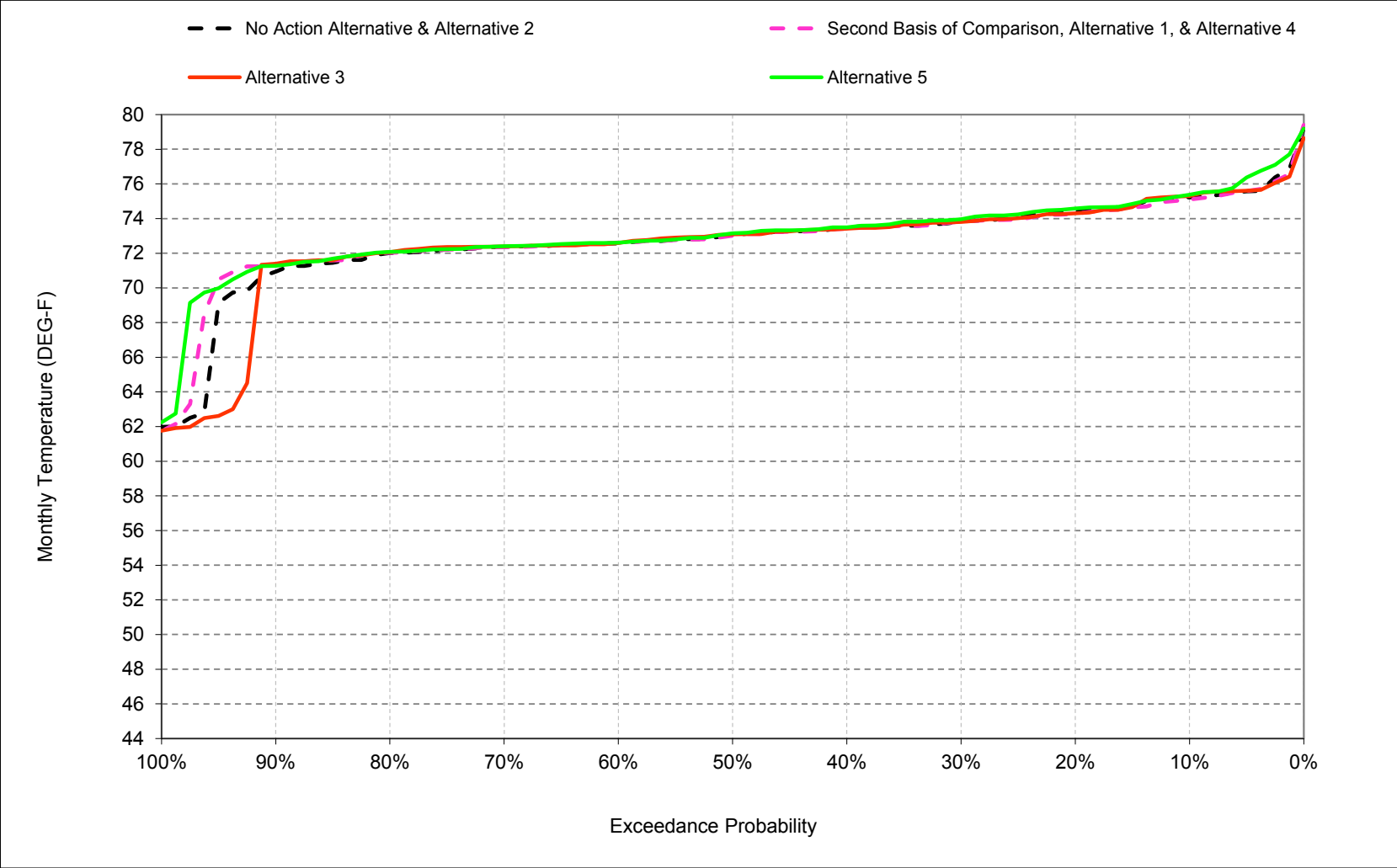
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-19-10. Stanislaus River at Mouth, July



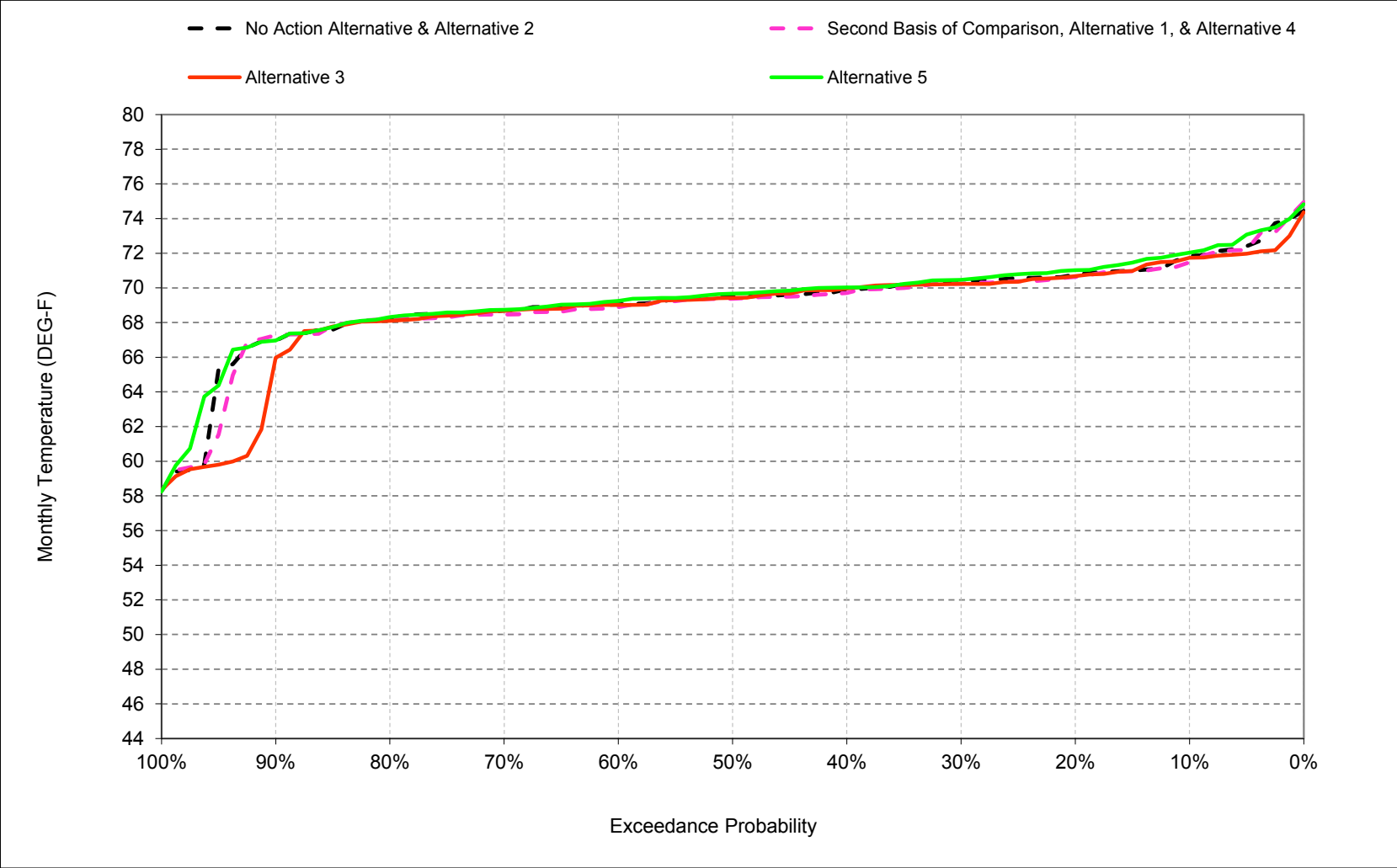
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-19-11. Stanislaus River at Mouth, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-19-12. Stanislaus River at Mouth, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-19-1. Stanislaus River at Mouth, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	64	59	52	51	55	60	62	65	72	77	75	72
20%	63	57	52	51	54	60	61	65	72	75	74	71
30%	62	57	51	50	54	59	60	64	71	75	74	70
40%	61	56	51	50	53	59	59	62	70	74	73	70
50%	60	56	50	49	53	58	58	61	68	74	73	69
60%	60	55	50	49	53	57	57	61	65	73	73	69
70%	59	55	50	49	52	56	56	60	64	73	72	69
80%	59	55	49	48	52	54	56	59	63	72	72	68
90%	58	54	49	48	51	52	55	58	62	69	71	67
Long Term												
Full Simulation Period ^b	61	56	50	50	53	57	58	62	67	73	73	69
Water Year Types ^c												
Wet (32%)	57	53	49	49	52	54	55	59	63	70	70	67
Above Normal (16%)	61	57	51	50	53	58	58	62	67	73	73	69
Below Normal (13%)	60	55	50	49	53	58	59	61	69	74	73	70
Dry (24%)	61	56	50	49	53	59	60	63	70	75	73	70
Critical (15%)	64	58	51	50	54	60	62	66	71	76	75	72
Alternative 1												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	67	58	52	51	55	60	64	64	72	76	75	71
20%	65	58	52	51	54	59	63	63	71	75	74	71
30%	64	57	51	50	54	59	62	63	70	75	74	70
40%	64	56	51	50	53	58	61	61	70	74	73	70
50%	63	56	50	49	52	57	60	61	67	74	73	69
60%	62	55	50	49	52	57	58	61	65	73	73	69
70%	62	55	50	49	52	56	57	60	62	73	72	68
80%	61	55	49	48	51	55	56	59	61	71	72	68
90%	61	54	49	48	50	54	55	58	59	70	71	67
Long Term												
Full Simulation Period ^b	63	56	51	50	53	57	60	61	66	73	73	69
Water Year Types ^c												
Wet (32%)	59	53	49	49	52	55	56	59	61	70	71	66
Above Normal (16%)	64	57	51	50	53	58	59	61	66	73	73	69
Below Normal (13%)	62	55	50	49	52	58	60	61	68	74	73	69
Dry (24%)	63	56	50	49	53	58	62	63	70	75	73	70
Critical (15%)	66	58	51	50	54	60	64	64	71	76	75	72
Alternative 1 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	2.2	-0.2	0.1	-0.1	-0.5	-0.2	1.6	-1.4	-0.2	-0.3	-0.1	-0.4
0.2	2.3	0.3	0.1	0.0	-0.2	-0.2	1.9	-1.1	-0.2	-0.1	-0.1	-0.1
0.3	2.6	0.1	0.1	0.0	-0.2	-0.4	1.9	-0.9	-0.3	-0.1	0.0	-0.2
0.4	3.2	-0.2	0.1	0.0	-0.2	-0.5	2.0	-0.7	-0.6	-0.1	0.0	-0.2
0.5	2.8	0.2	0.2	-0.1	-0.4	-0.6	2.1	0.2	-0.6	-0.2	0.0	-0.1
0.6	2.6	0.1	0.2	0.0	-0.4	-0.3	1.1	0.1	-0.2	-0.1	0.0	-0.2
0.7	2.7	0.1	0.0	0.0	-0.2	0.6	0.6	0.0	-1.5	-0.2	0.0	-0.2
0.8	2.6	0.0	0.2	0.0	-0.1	1.9	0.4	0.4	-1.6	-0.2	0.1	0.0
0.9	2.5	0.0	0.1	0.1	-0.2	2.1	0.5	0.5	-2.6	1.1	0.6	0.2
Long Term												
Full Simulation Period ^b	2.4	0.1	0.1	0.0	-0.2	0.2	1.3	-0.4	-1.0	-0.1	0.1	-0.1
Water Year Types ^c												
Wet (32%)	2.2	-0.1	0.0	-0.1	-0.2	1.1	0.4	0.4	-2.4	0.0	0.5	-0.1
Above Normal (16%)	2.6	0.0	0.1	-0.1	-0.3	0.0	1.3	-0.5	-0.6	-0.1	0.0	-0.1
Below Normal (13%)	2.2	-0.2	0.1	-0.1	-0.4	-0.4	1.9	-0.2	-0.7	-0.2	0.0	-0.2
Dry (24%)	2.7	0.2	0.2	0.0	-0.3	-0.4	2.0	-0.8	-0.2	0.0	0.0	-0.1
Critical (15%)	1.8	0.4	0.3	0.1	0.0	0.0	1.5	-1.2	-0.3	-0.2	-0.1	-0.1

^a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

^b Based on an 81-year simulation period.

^c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-19-2. Stanislaus River at Mouth, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
10%	64	59	52	51	55	60	62	65	72	77	75	72
20%	63	57	52	51	54	60	61	65	72	75	74	71
30%	62	57	51	50	54	59	60	64	71	75	74	70
40%	61	56	51	50	53	59	59	62	70	74	73	70
50%	60	56	50	49	53	58	58	61	68	74	73	69
60%	60	55	50	49	53	57	57	61	65	73	73	69
70%	59	55	50	49	52	56	56	60	64	73	72	69
80%	59	55	49	48	52	54	56	59	63	72	72	68
90%	58	54	49	48	51	52	55	58	62	69	71	67
Long Term												
Full Simulation Period ^b	61	56	50	50	53	57	58	62	67	73	73	69
Water Year Types^c												
Wet (32%)	57	53	49	49	52	54	55	59	63	70	70	67
Above Normal (16%)	61	57	51	50	53	58	58	62	67	73	73	69
Below Normal (13%)	60	55	50	49	53	58	59	61	69	74	73	70
Dry (24%)	61	56	50	49	53	59	60	63	70	75	73	70
Critical (15%)	64	58	51	50	54	60	62	66	71	76	75	72

Alternative 3												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
10%	66	58	52	52	55	61	63	66	73	77	75	72
20%	65	58	52	51	55	60	62	65	72	76	74	71
30%	64	57	51	50	54	59	60	64	72	75	74	70
40%	63	56	51	50	53	59	60	63	72	75	73	70
50%	63	56	50	49	53	58	58	62	71	75	73	69
60%	62	55	50	49	52	57	57	62	70	74	73	69
70%	62	55	50	49	52	57	57	61	69	74	72	69
80%	61	55	49	49	51	55	56	60	68	74	72	68
90%	61	54	49	48	50	54	55	59	67	73	71	62
Long Term												
Full Simulation Period ^b	63	56	50	50	53	58	59	62	70	74	72	69
Water Year Types^c												
Wet (32%)	59	53	49	49	51	55	56	60	67	71	70	66
Above Normal (16%)	64	57	51	50	53	58	58	62	71	75	73	69
Below Normal (13%)	62	55	50	49	52	58	59	62	71	75	73	69
Dry (24%)	63	56	50	49	54	59	60	64	72	75	73	70
Critical (15%)	65	58	51	50	55	60	62	66	72	76	75	71

Alternative 3 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
0.1	1.4	-0.3	0.1	0.2	0.2	0.4	0.6	0.3	0.9	0.4	0.1	-0.1
0.2	2.2	0.2	-0.1	0.0	0.4	0.0	0.4	0.0	0.7	0.5	-0.1	-0.1
0.3	2.3	-0.1	0.0	0.0	0.0	0.1	0.2	0.1	1.3	0.6	0.0	-0.2
0.4	2.6	-0.2	0.1	0.0	0.0	0.1	1.0	0.8	1.5	0.7	-0.1	0.1
0.5	2.7	-0.1	0.1	0.0	-0.1	0.3	0.4	1.5	3.3	0.9	0.1	0.0
0.6	2.8	0.1	0.1	0.0	-0.3	0.3	0.2	1.0	5.0	1.1	0.0	0.0
0.7	2.7	0.0	0.0	0.0	-0.2	1.1	0.4	1.1	5.4	0.9	0.0	0.0
0.8	2.6	0.1	0.1	0.1	-0.5	1.4	0.4	1.5	5.8	1.8	0.1	-0.1
0.9	2.4	0.0	0.0	0.0	-0.3	1.5	0.6	1.1	5.7	3.6	0.7	-4.7
Long Term												
Full Simulation Period ^b	2.2	0.0	0.0	0.0	-0.1	0.5	0.4	0.8	2.6	0.6	-0.2	-0.4
Water Year Types^c												
Wet (32%)	2.0	0.0	0.0	0.0	-0.3	1.3	0.3	1.2	3.8	0.4	-0.6	-0.8
Above Normal (16%)	2.6	0.0	0.0	0.0	-0.3	-0.2	0.4	0.8	4.2	1.7	0.2	0.1
Below Normal (13%)	2.1	-0.1	0.0	0.0	-0.4	0.3	0.7	1.0	2.1	0.6	0.0	0.0
Dry (24%)	2.6	0.1	0.1	0.0	0.3	0.1	0.4	0.6	1.3	0.4	-0.1	-0.2
Critical (15%)	1.2	0.0	0.1	0.0	0.5	0.3	0.3	0.2	0.9	0.3	-0.2	-0.6

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.
 b Based on an 81-year simulation period.
 c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.
 Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-19-3. Stanislaus River at Mouth, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
10%	64	59	52	51	55	60	62	65	72	77	75	72
20%	63	57	52	51	54	60	61	65	72	75	74	71
30%	62	57	51	50	54	59	60	64	71	75	74	70
40%	61	56	51	50	53	59	59	62	70	74	73	70
50%	60	56	50	49	53	58	58	61	68	74	73	69
60%	60	55	50	49	53	57	57	61	65	73	73	69
70%	59	55	50	49	52	56	56	60	64	73	72	69
80%	59	55	49	48	52	54	56	59	63	72	72	68
90%	58	54	49	48	51	52	55	58	62	69	71	67
Long Term												
Full Simulation Period ^b	61	56	50	50	53	57	58	62	67	73	73	69
Water Year Types^c												
Wet (32%)	57	53	49	49	52	54	55	59	63	70	70	67
Above Normal (16%)	61	57	51	50	53	58	58	62	67	73	73	69
Below Normal (13%)	60	55	50	49	53	58	59	61	69	74	73	70
Dry (24%)	61	56	50	49	53	59	60	63	70	75	73	70
Critical (15%)	64	58	51	50	54	60	62	66	71	76	75	72

Alternative 5												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
10%	65	59	52	51	55	60	60	64	72	76	75	72
20%	63	58	52	51	54	60	59	63	72	76	75	71
30%	62	57	51	50	54	59	59	62	71	75	74	70
40%	61	57	51	50	53	59	58	61	70	74	73	70
50%	60	56	50	49	53	58	58	60	68	74	73	70
60%	60	55	50	49	53	57	57	60	65	73	73	69
70%	59	55	50	49	52	56	56	59	64	73	72	69
80%	59	55	49	49	52	54	56	58	63	72	72	68
90%	58	54	49	48	51	52	55	58	62	69	71	67
Long Term												
Full Simulation Period ^b	61	56	50	50	53	57	58	61	67	73	73	69
Water Year Types^c												
Wet (32%)	57	53	49	49	52	54	56	58	63	71	71	67
Above Normal (16%)	61	57	51	50	53	58	58	60	67	73	73	69
Below Normal (13%)	61	55	50	49	53	58	58	60	69	74	73	70
Dry (24%)	61	56	50	49	53	59	59	62	70	75	74	70
Critical (15%)	64	58	51	50	54	60	60	64	72	76	76	72

Alternative 5 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
0.1	1.1	0.1	0.3	0.0	0.1	0.0	-2.0	-1.1	0.0	-0.2	0.1	0.2
0.2	0.4	0.3	-0.1	0.0	0.1	0.0	-2.0	-2.0	0.1	0.1	0.2	0.3
0.3	0.3	0.2	0.0	0.1	-0.1	0.1	-1.5	-2.1	0.1	0.1	0.1	0.0
0.4	0.5	0.2	-0.2	0.0	0.1	0.0	-0.5	-1.3	-0.1	0.0	0.0	0.2
0.5	0.3	0.3	0.1	-0.1	0.0	0.0	-0.2	-0.9	-0.2	0.1	0.1	0.2
0.6	0.1	0.1	0.1	0.0	0.0	0.1	0.2	-1.2	-0.2	0.0	0.0	0.2
0.7	0.2	0.0	0.0	0.0	-0.1	0.2	0.1	-0.8	0.2	0.1	0.0	0.1
0.8	0.1	0.1	0.1	0.0	0.0	0.2	0.0	-0.4	0.1	0.3	0.1	0.1
0.9	0.0	0.0	-0.2	0.0	0.0	0.0	0.2	-0.1	-0.2	0.1	0.6	0.0
Long Term												
Full Simulation Period ^b	0.3	0.2	0.1	0.0	0.0	0.1	-0.6	-1.0	0.0	0.3	0.4	0.2
Water Year Types^c												
Wet (32%)	0.4	0.2	0.1	0.0	0.0	0.2	0.1	-0.5	0.1	0.7	0.8	0.3
Above Normal (16%)	0.3	0.1	0.1	0.0	0.0	0.0	-0.3	-1.2	-0.2	0.0	0.0	0.0
Below Normal (13%)	0.5	0.0	0.0	0.0	0.0	0.0	-0.4	-0.8	0.2	0.1	0.1	0.2
Dry (24%)	0.4	0.2	0.1	0.0	0.1	0.0	-1.1	-1.3	-0.1	0.1	0.2	0.3
Critical (15%)	0.2	0.3	0.0	0.0	0.0	0.0	-2.1	-1.6	0.1	0.3	0.3	0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-19-4. Stanislaus River at Mouth, Monthly Temperature

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Second Basis of Comparison												
Probability of Exceedance ^a												
10%	67	58	52	51	55	60	64	64	72	76	75	71
20%	65	58	52	51	54	59	63	63	71	75	74	71
30%	64	57	51	50	54	59	62	63	70	75	74	70
40%	64	56	51	50	53	58	61	61	70	74	73	70
50%	63	56	50	49	52	57	60	61	67	74	73	69
60%	62	55	50	49	52	57	58	61	65	73	73	69
70%	62	55	50	49	52	56	57	60	62	73	72	68
80%	61	55	49	48	51	55	56	59	61	71	72	68
90%	61	54	49	48	50	54	55	58	59	70	71	67
Long Term												
Full Simulation Period ^b	63	56	51	50	53	57	60	61	66	73	73	69
Water Year Types ^c												
Wet (32%)	59	53	49	49	52	55	56	59	61	70	71	66
Above Normal (16%)	64	57	51	50	53	58	59	61	66	73	73	69
Below Normal (13%)	62	55	50	49	52	58	60	61	68	74	73	69
Dry (24%)	63	56	50	49	53	58	62	63	70	75	73	70
Critical (15%)	66	58	51	50	54	60	64	64	71	76	75	72

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
No Action Alternative												
Probability of Exceedance ^a												
10%	64	59	52	51	55	60	62	65	72	77	75	72
20%	63	57	52	51	54	60	61	65	72	75	74	71
30%	62	57	51	50	54	59	60	64	71	75	74	70
40%	61	56	51	50	53	59	59	62	70	74	73	70
50%	60	56	50	49	53	58	58	61	68	74	73	69
60%	60	55	50	49	53	57	57	61	65	73	73	69
70%	59	55	50	49	52	56	56	60	64	73	72	69
80%	59	55	49	48	52	54	56	59	63	72	72	68
90%	58	54	49	48	51	52	55	58	62	69	71	67
Long Term												
Full Simulation Period ^b	61	56	50	50	53	57	58	62	67	73	73	69
Water Year Types ^c												
Wet (32%)	57	53	49	49	52	54	55	59	63	70	70	67
Above Normal (16%)	61	57	51	50	53	58	58	62	67	73	73	69
Below Normal (13%)	60	55	50	49	53	58	59	61	69	74	73	70
Dry (24%)	61	56	50	49	53	59	60	63	70	75	73	70
Critical (15%)	64	58	51	50	54	60	62	66	71	76	75	72

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
No Action Alternative minus Second Basis of Comparison												
Probability of Exceedance ^a												
0.1	-2.2	0.2	-0.1	0.1	0.5	0.2	-1.6	1.4	0.2	0.3	0.1	0.4
0.2	-2.3	-0.3	-0.1	0.0	0.2	0.2	-1.9	1.1	0.2	0.1	0.1	0.1
0.3	-2.6	-0.1	-0.1	0.0	0.2	0.4	-1.9	0.9	0.3	0.1	0.0	0.2
0.4	-3.2	0.2	-0.1	0.0	0.2	0.5	-2.0	0.7	0.6	0.1	0.0	0.2
0.5	-2.8	-0.2	-0.2	0.1	0.4	0.6	-2.1	-0.2	0.6	0.2	0.0	0.1
0.6	-2.6	-0.1	-0.2	0.0	0.4	0.3	-1.1	-0.1	0.2	0.1	0.0	0.2
0.7	-2.7	-0.1	0.0	0.0	0.2	-0.6	-0.6	0.0	1.5	0.2	0.0	0.2
0.8	-2.6	0.0	-0.2	0.0	0.1	-1.9	-0.4	-0.4	1.6	0.2	-0.1	0.0
0.9	-2.5	0.0	-0.1	-0.1	0.2	-2.1	-0.5	-0.5	2.6	-1.1	-0.6	-0.2
Long Term												
Full Simulation Period ^b	-2.4	-0.1	-0.1	0.0	0.2	-0.2	-1.3	0.4	1.0	0.1	-0.1	0.1
Water Year Types ^c												
Wet (32%)	-2.2	0.1	0.0	0.1	0.2	-1.1	-0.4	-0.4	2.4	0.0	-0.5	0.1
Above Normal (16%)	-2.6	0.0	-0.1	0.1	0.3	0.0	-1.3	0.5	0.6	0.1	0.0	0.1
Below Normal (13%)	-2.2	0.2	-0.1	0.1	0.4	0.4	-1.9	0.2	0.7	0.2	0.0	0.2
Dry (24%)	-2.7	-0.2	-0.2	0.0	0.3	0.4	-2.0	0.8	0.2	0.0	0.0	0.1
Critical (15%)	-1.8	-0.4	-0.3	-0.1	0.0	0.0	-1.5	1.2	0.3	0.2	0.1	0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-19-5. Stanislaus River at Mouth, Monthly Temperature

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Second Basis of Comparison												
Probability of Exceedance ^a												
10%	67	58	52	51	55	60	64	64	72	76	75	71
20%	65	58	52	51	54	59	63	63	71	75	74	71
30%	64	57	51	50	54	59	62	63	70	75	74	70
40%	64	56	51	50	53	58	61	61	70	74	73	70
50%	63	56	50	49	52	57	60	61	67	74	73	69
60%	62	55	50	49	52	57	58	61	65	73	73	69
70%	62	55	50	49	52	56	57	60	62	73	72	68
80%	61	55	49	48	51	55	56	59	61	71	72	68
90%	61	54	49	48	50	54	55	58	59	70	71	67
Long Term												
Full Simulation Period ^b	63	56	51	50	53	57	60	61	66	73	73	69
Water Year Types ^c												
Wet (32%)	59	53	49	49	52	55	56	59	61	70	71	66
Above Normal (16%)	64	57	51	50	53	58	59	61	66	73	73	69
Below Normal (13%)	62	55	50	49	52	58	60	61	68	74	73	69
Dry (24%)	63	56	50	49	53	58	62	63	70	75	73	70
Critical (15%)	66	58	51	50	54	60	64	64	71	76	75	72

Alternative 3

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	66	58	52	52	55	61	63	66	73	77	75	72
20%	65	58	52	51	55	60	62	65	72	76	74	71
30%	64	57	51	50	54	59	60	64	72	75	74	70
40%	63	56	51	50	53	59	60	63	72	75	73	70
50%	63	56	50	49	53	58	58	62	71	75	73	69
60%	62	55	50	49	52	57	57	62	70	74	73	69
70%	62	55	50	49	52	57	57	61	69	74	72	69
80%	61	55	49	49	51	55	56	60	68	74	72	68
90%	61	54	49	48	50	54	55	59	67	73	71	62
Long Term												
Full Simulation Period ^b	63	56	50	50	53	58	59	62	70	74	72	69
Water Year Types ^c												
Wet (32%)	59	53	49	49	51	55	56	60	67	71	70	66
Above Normal (16%)	64	57	51	50	53	58	58	62	71	75	73	69
Below Normal (13%)	62	55	50	49	52	58	59	62	71	75	73	69
Dry (24%)	63	56	50	49	54	59	60	64	72	75	73	70
Critical (15%)	65	58	51	50	55	60	62	66	72	76	75	71

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	-0.8	-0.1	0.0	0.3	0.7	0.5	-1.0	1.7	1.1	0.7	0.2	0.3
0.2	-0.1	-0.1	-0.1	0.0	0.6	0.2	-1.5	1.1	0.9	0.6	0.0	0.1
0.3	-0.3	-0.2	-0.1	0.0	0.3	0.5	-1.7	1.0	1.6	0.7	0.0	0.0
0.4	-0.6	0.0	0.0	0.0	0.2	0.5	-1.1	1.5	2.1	0.8	0.0	0.3
0.5	0.0	-0.2	-0.1	0.1	0.3	0.9	-1.7	1.3	3.9	1.1	0.1	0.0
0.6	0.1	0.0	-0.1	-0.1	0.1	0.7	-1.0	0.9	5.2	1.2	-0.1	0.2
0.7	0.0	-0.1	-0.1	0.0	0.0	0.4	-0.2	1.1	7.0	1.1	0.0	0.2
0.8	0.1	0.1	-0.1	0.1	-0.4	-0.4	0.0	1.1	7.5	2.0	0.0	-0.1
0.9	-0.2	0.1	-0.1	0.0	-0.1	-0.6	0.1	0.6	8.3	2.6	0.1	-4.8
Long Term												
Full Simulation Period ^b	-0.2	-0.1	-0.1	0.0	0.1	0.3	-0.9	1.2	3.6	0.7	-0.3	-0.2
Water Year Types ^c												
Wet (32%)	-0.2	0.0	0.0	0.1	-0.1	0.2	-0.1	0.8	6.1	0.4	-1.1	-0.6
Above Normal (16%)	0.0	0.0	-0.1	0.1	0.0	-0.1	-0.9	1.2	4.9	1.8	0.2	0.2
Below Normal (13%)	-0.2	0.0	-0.2	0.0	0.0	0.6	-1.2	1.2	2.8	0.7	0.0	0.2
Dry (24%)	-0.2	0.0	0.0	0.0	0.5	0.5	-1.6	1.4	1.5	0.4	0.0	-0.1
Critical (15%)	-0.6	-0.4	-0.2	-0.1	0.5	0.3	-1.2	1.4	1.2	0.5	-0.1	-0.5

^a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

^b Based on an 81-year simulation period.

^c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-19-6. Stanislaus River at Mouth, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	67	58	52	51	55	60	64	64	72	76	75	71
20%	65	58	52	51	54	59	63	63	71	75	74	71
30%	64	57	51	50	54	59	62	63	70	75	74	70
40%	64	56	51	50	53	58	61	61	70	74	73	70
50%	63	56	50	49	52	57	60	61	67	74	73	69
60%	62	55	50	49	52	57	58	61	65	73	73	69
70%	62	55	50	49	52	56	57	60	62	73	72	68
80%	61	55	49	48	51	55	56	59	61	71	72	68
90%	61	54	49	48	50	54	55	58	59	70	71	67
Long Term												
Full Simulation Period ^b	63	56	51	50	53	57	60	61	66	73	73	69
Water Year Types ^c												
Wet (32%)	59	53	49	49	52	55	56	59	61	70	71	66
Above Normal (16%)	64	57	51	50	53	58	59	61	66	73	73	69
Below Normal (13%)	62	55	50	49	52	58	60	61	68	74	73	69
Dry (24%)	63	56	50	49	53	58	62	63	70	75	73	70
Critical (15%)	66	58	51	50	54	60	64	64	71	76	75	72

Alternative 5

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	65	59	52	51	55	60	60	64	72	76	75	72
20%	63	58	52	51	54	60	59	63	72	76	75	71
30%	62	57	51	50	54	59	59	62	71	75	74	70
40%	61	57	51	50	53	59	58	61	70	74	73	70
50%	60	56	50	49	53	58	58	60	68	74	73	70
60%	60	55	50	49	53	57	57	60	65	73	73	69
70%	59	55	50	49	52	56	56	59	64	73	72	69
80%	59	55	49	49	52	54	56	58	63	72	72	68
90%	58	54	49	48	51	52	55	58	62	69	71	67
Long Term												
Full Simulation Period ^b	61	56	50	50	53	57	58	61	67	73	73	69
Water Year Types ^c												
Wet (32%)	57	53	49	49	52	54	56	58	63	71	71	67
Above Normal (16%)	61	57	51	50	53	58	58	60	67	73	73	69
Below Normal (13%)	61	55	50	49	53	58	58	60	69	74	73	70
Dry (24%)	61	56	50	49	53	59	59	62	70	75	74	70
Critical (15%)	64	58	51	50	54	60	60	64	72	76	76	72

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	-1.1	0.3	0.2	0.1	0.6	0.2	-3.5	0.3	0.3	0.1	0.3	0.6
0.2	-1.9	0.0	-0.1	0.0	0.3	0.2	-3.9	-0.9	0.4	0.2	0.3	0.4
0.3	-2.3	0.1	-0.1	0.1	0.1	0.5	-3.4	-1.1	0.4	0.3	0.1	0.2
0.4	-2.8	0.4	-0.4	0.0	0.2	0.5	-2.5	-0.7	0.5	0.1	0.1	0.3
0.5	-2.5	0.1	-0.1	0.0	0.4	0.6	-2.3	-1.1	0.4	0.3	0.1	0.3
0.6	-2.5	0.1	-0.1	0.0	0.4	0.5	-0.9	-1.3	0.0	0.1	0.0	0.4
0.7	-2.6	0.0	0.0	0.1	0.1	-0.4	-0.5	-0.8	1.7	0.2	0.0	0.3
0.8	-2.5	0.2	-0.2	0.1	0.1	-1.7	-0.4	-0.8	1.7	0.5	0.0	0.0
0.9	-2.5	0.0	-0.2	0.0	0.2	-2.1	-0.3	-0.6	2.4	-1.0	0.0	-0.2
Long Term												
Full Simulation Period ^b	-2.0	0.1	-0.1	0.0	0.3	-0.1	-1.9	-0.6	1.1	0.4	0.2	0.3
Water Year Types ^c												
Wet (32%)	-1.8	0.2	0.0	0.1	0.2	-0.9	-0.3	-0.8	2.5	0.7	0.3	0.4
Above Normal (16%)	-2.3	0.1	-0.1	0.1	0.3	0.0	-1.6	-0.8	0.5	0.1	0.0	0.2
Below Normal (13%)	-1.8	0.2	-0.1	0.1	0.4	0.4	-2.3	-0.6	0.9	0.3	0.1	0.3
Dry (24%)	-2.4	0.1	-0.1	0.0	0.4	0.5	-3.1	-0.5	0.1	0.1	0.2	0.4
Critical (15%)	-1.6	0.0	-0.3	-0.1	0.0	0.0	-3.5	-0.3	0.4	0.5	0.4	0.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

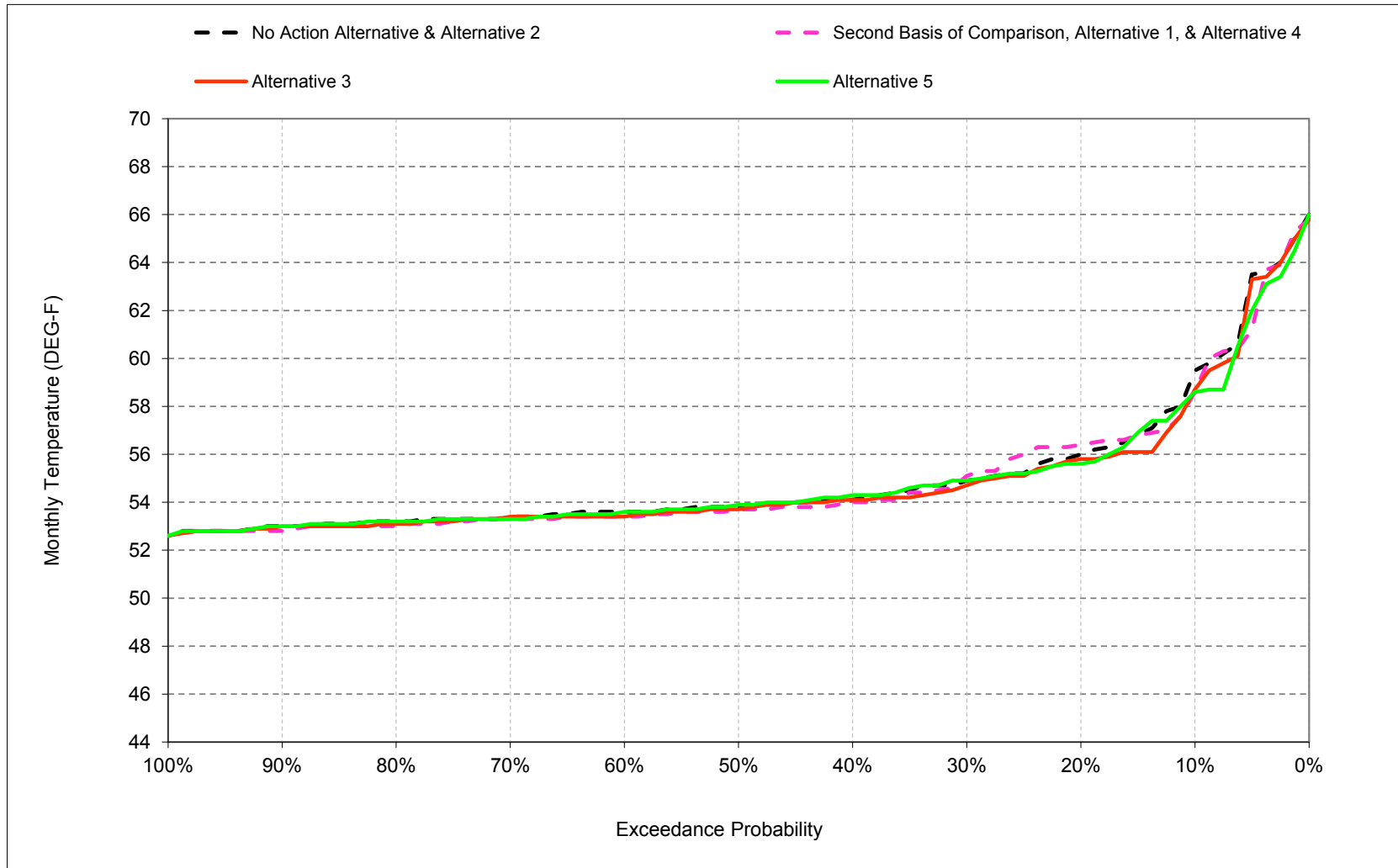
b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

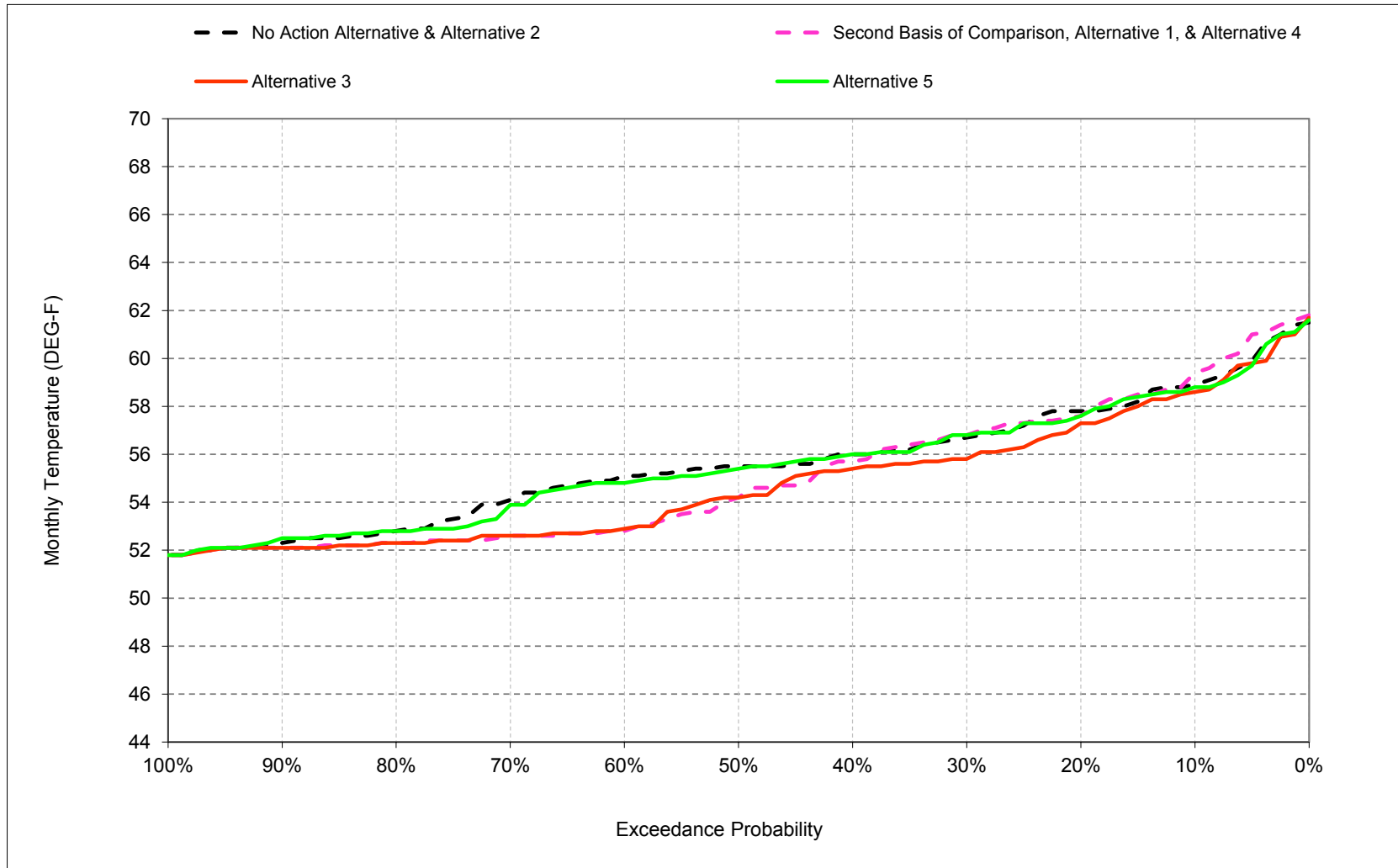
B.20. Feather River Low Flow Channel

Figure B-20-1. Feather River Low Flow Channel, October



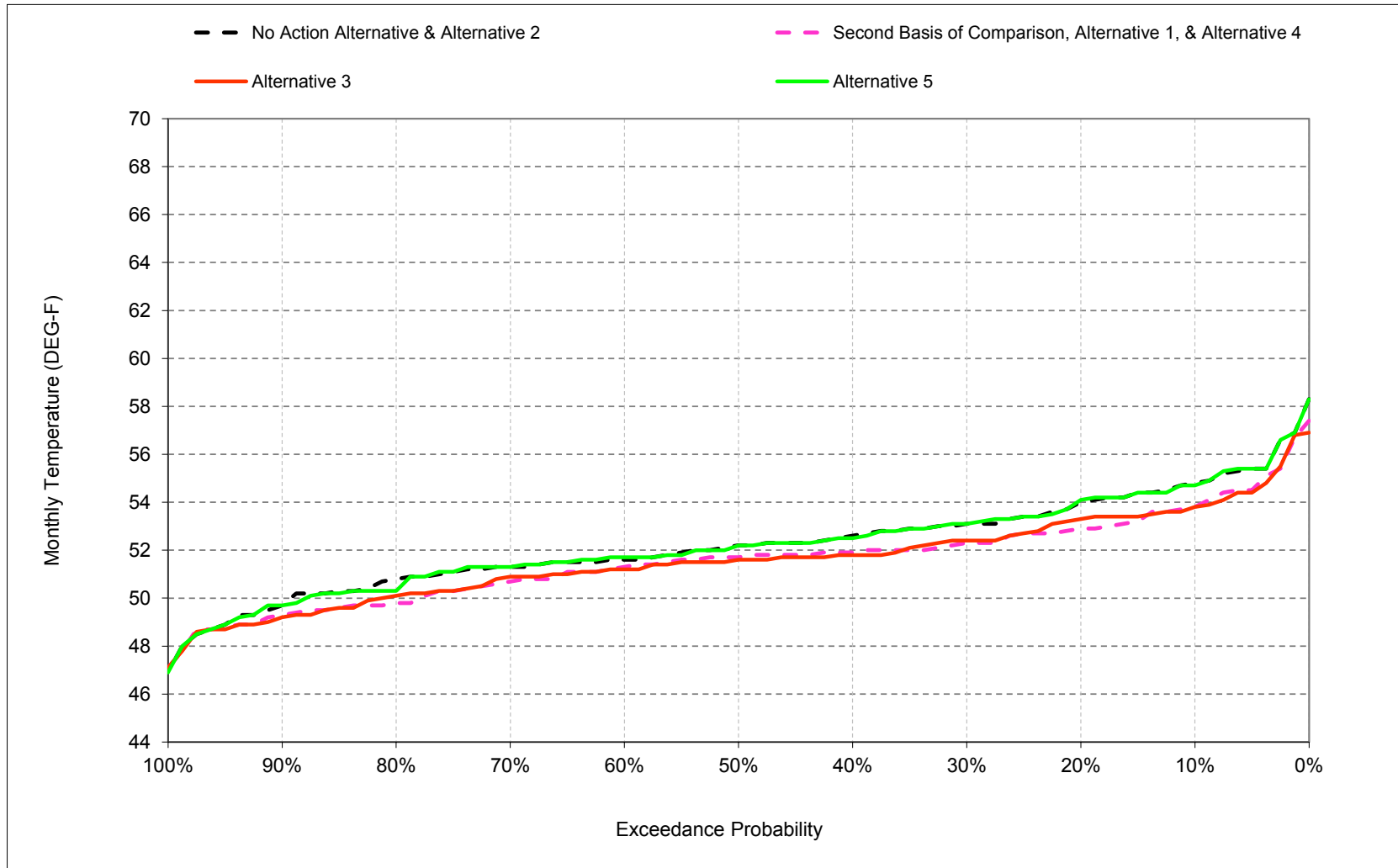
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-20-2. Feather River Low Flow Channel, November



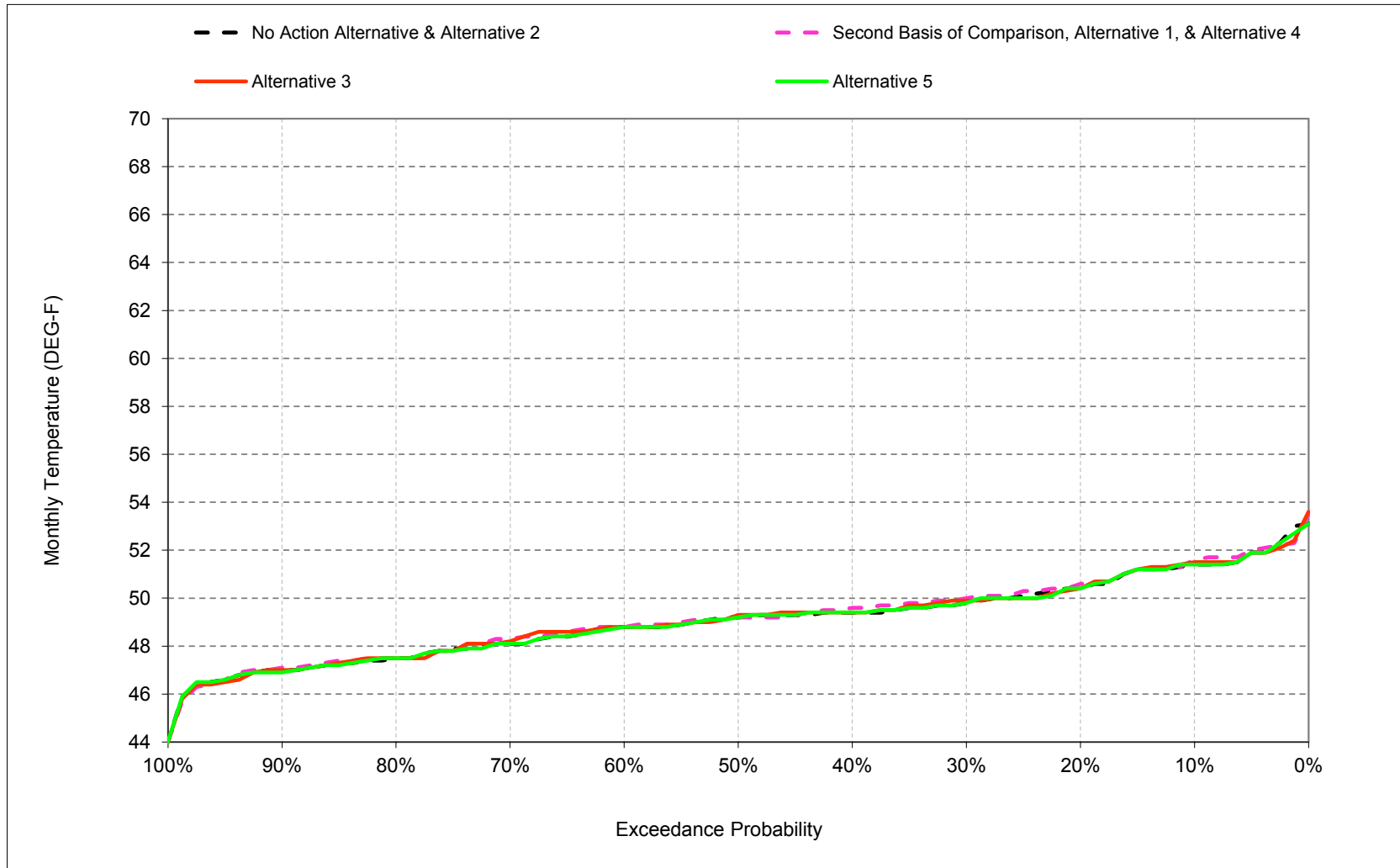
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-20-3. Feather River Low Flow Channel, December



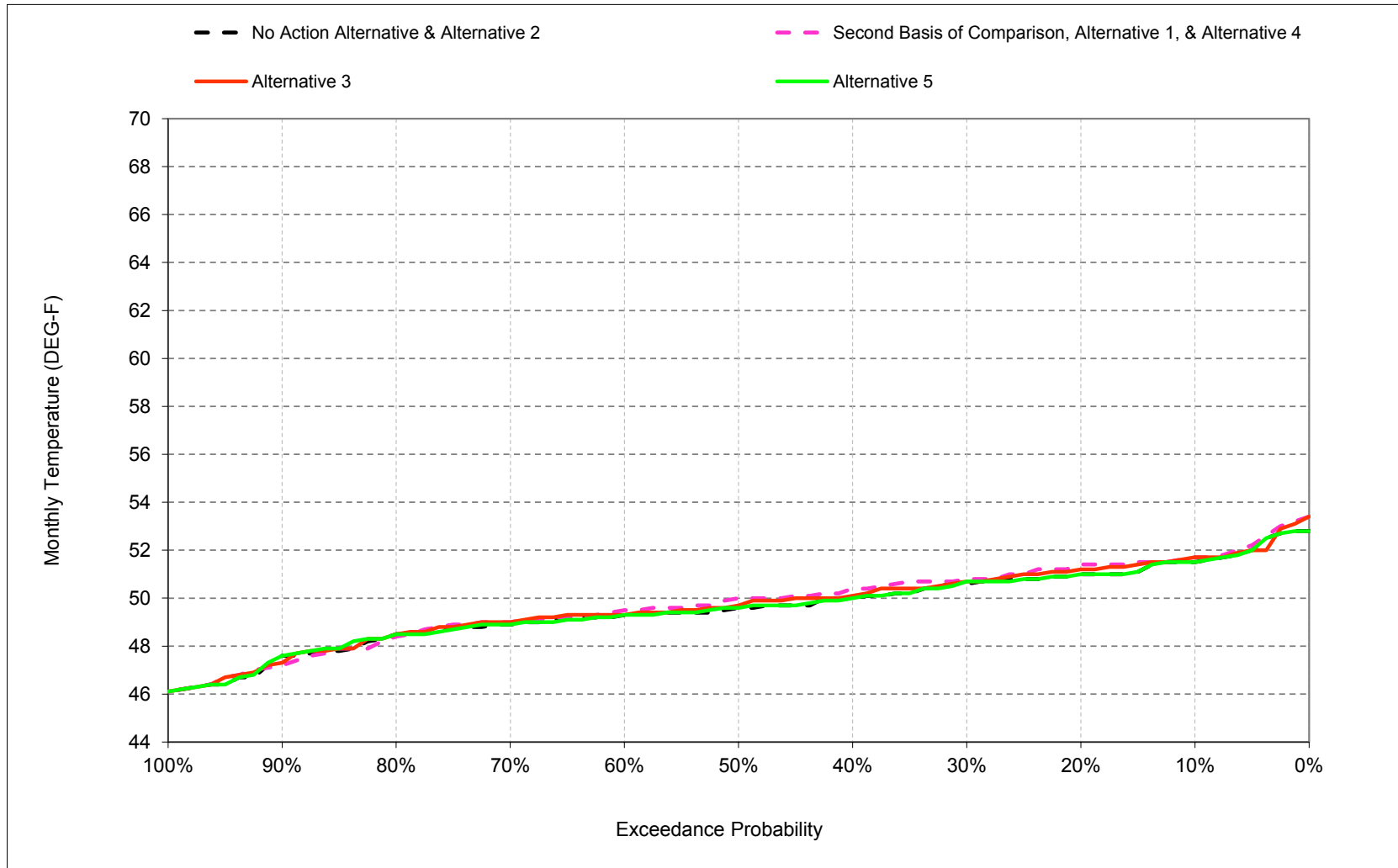
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-20-4. Feather River Low Flow Channel, January



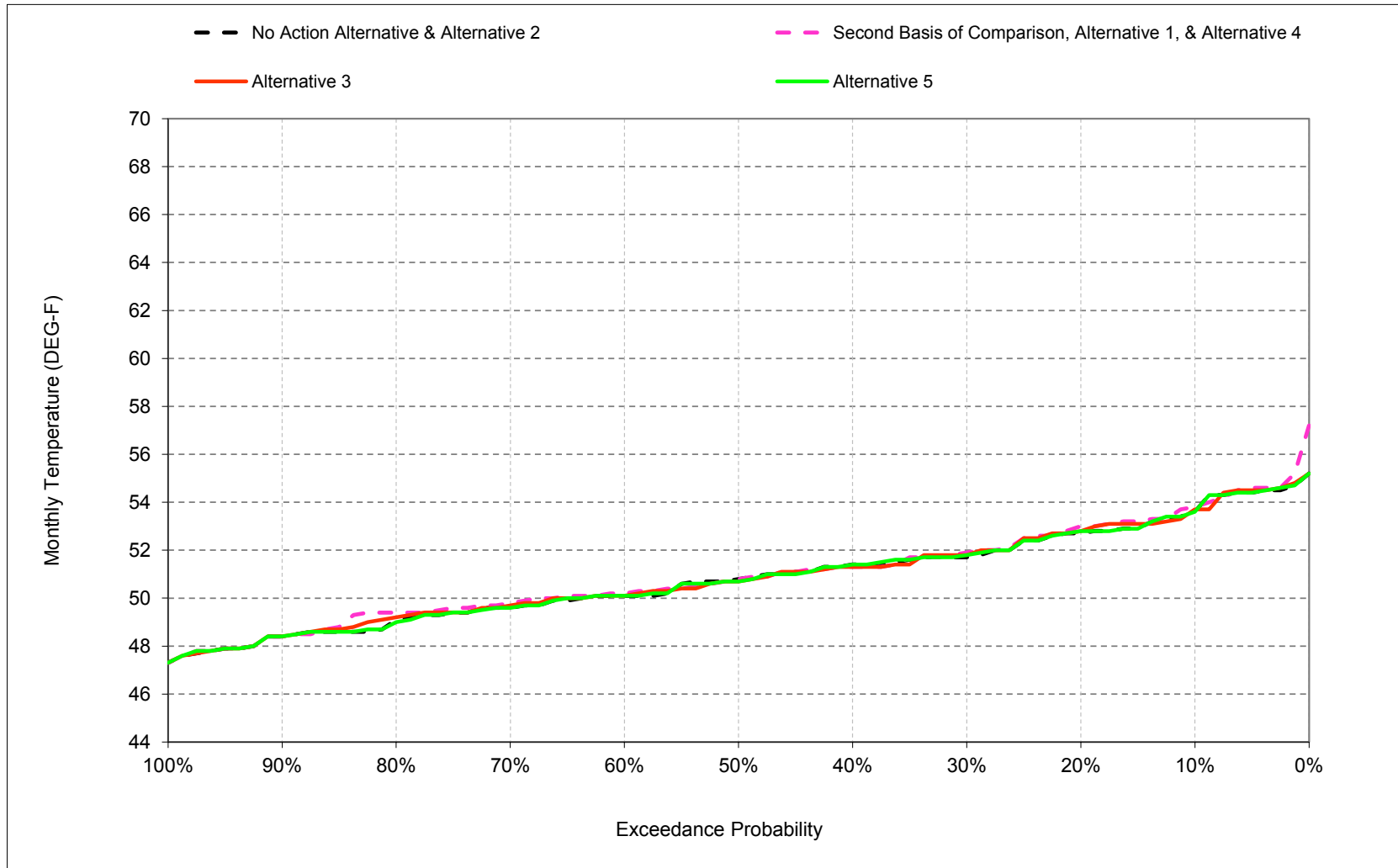
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-20-5. Feather River Low Flow Channel, February



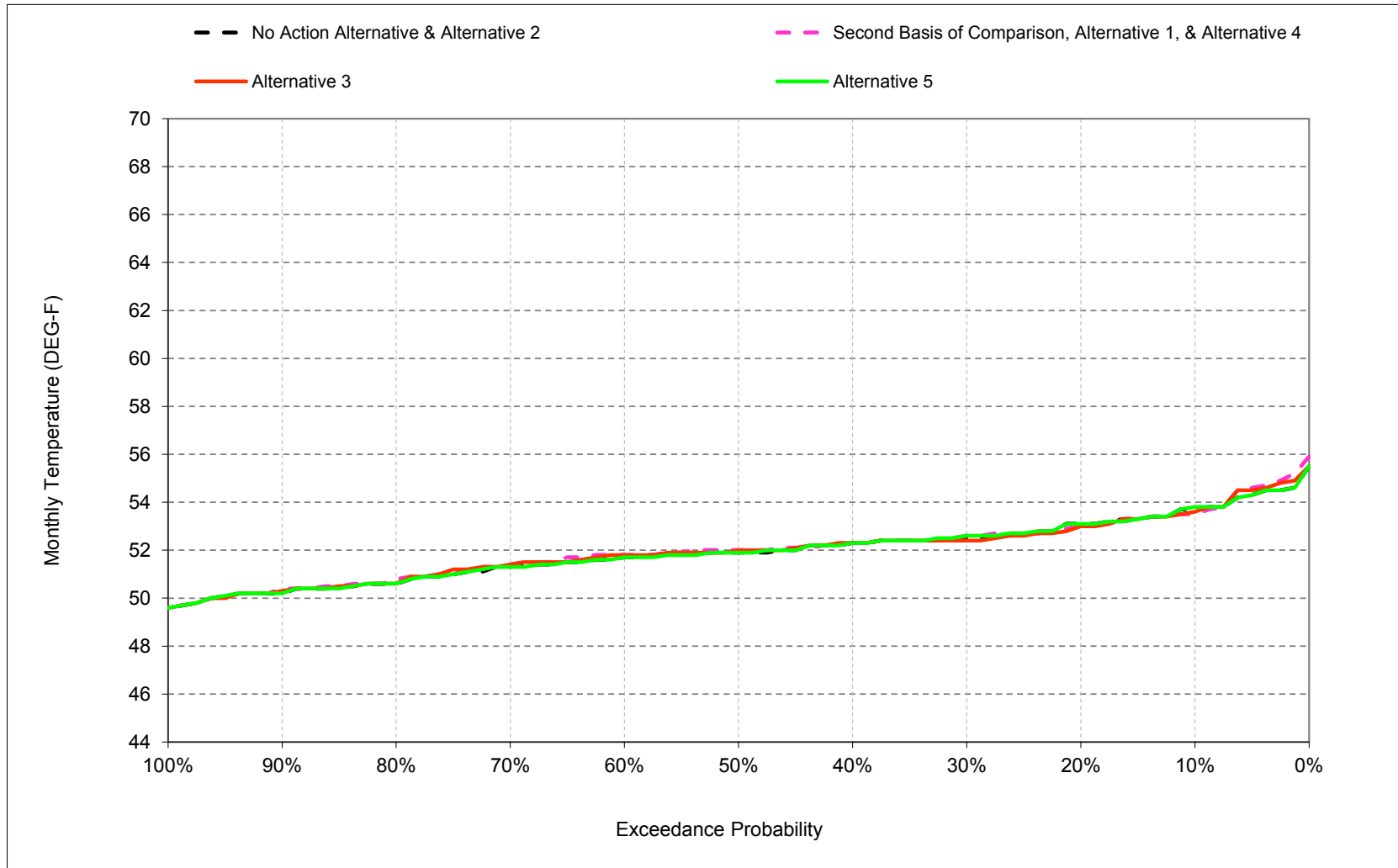
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-20-6. Feather River Low Flow Channel, March



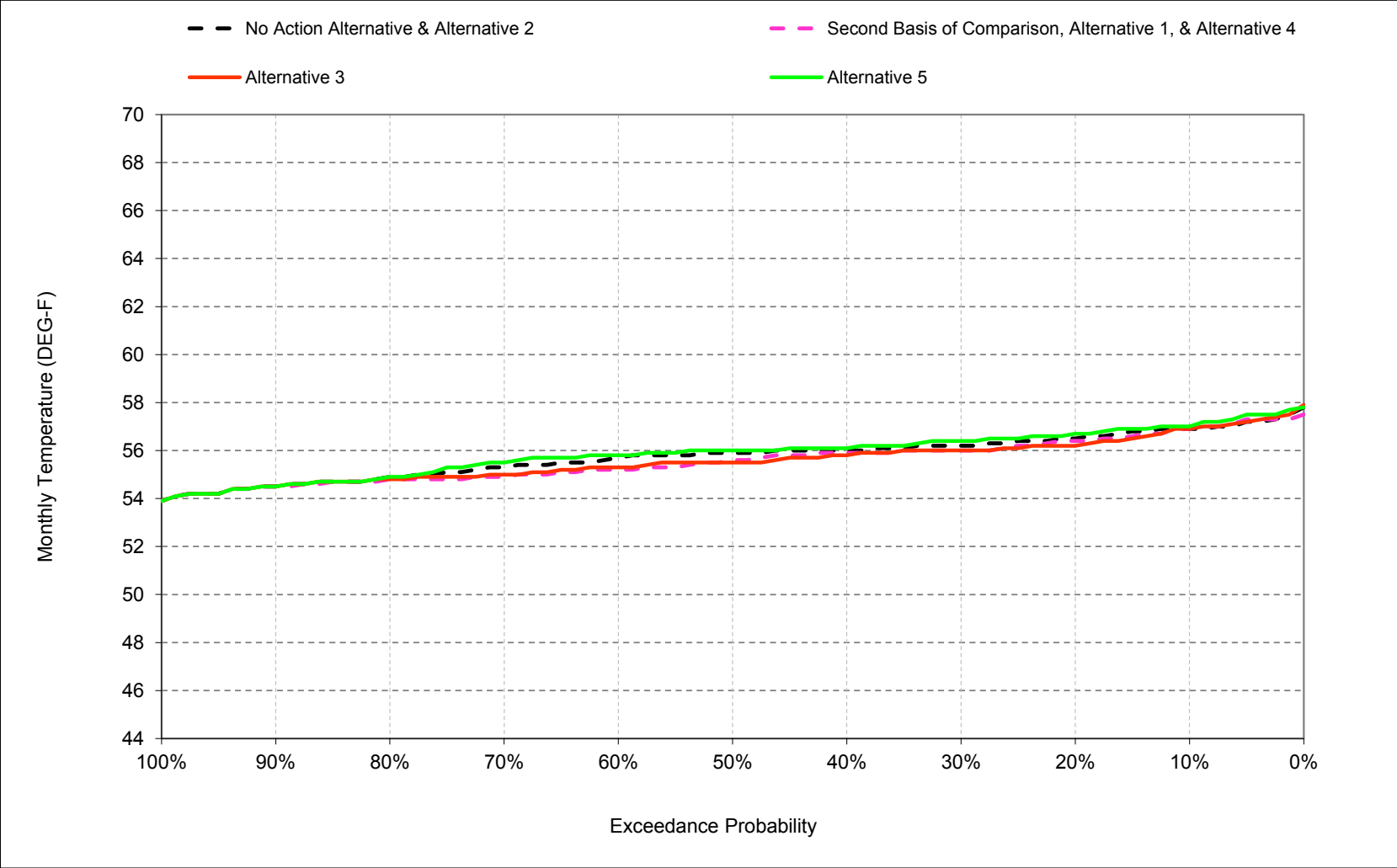
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-20-7. Feather River Low Flow Channel, April



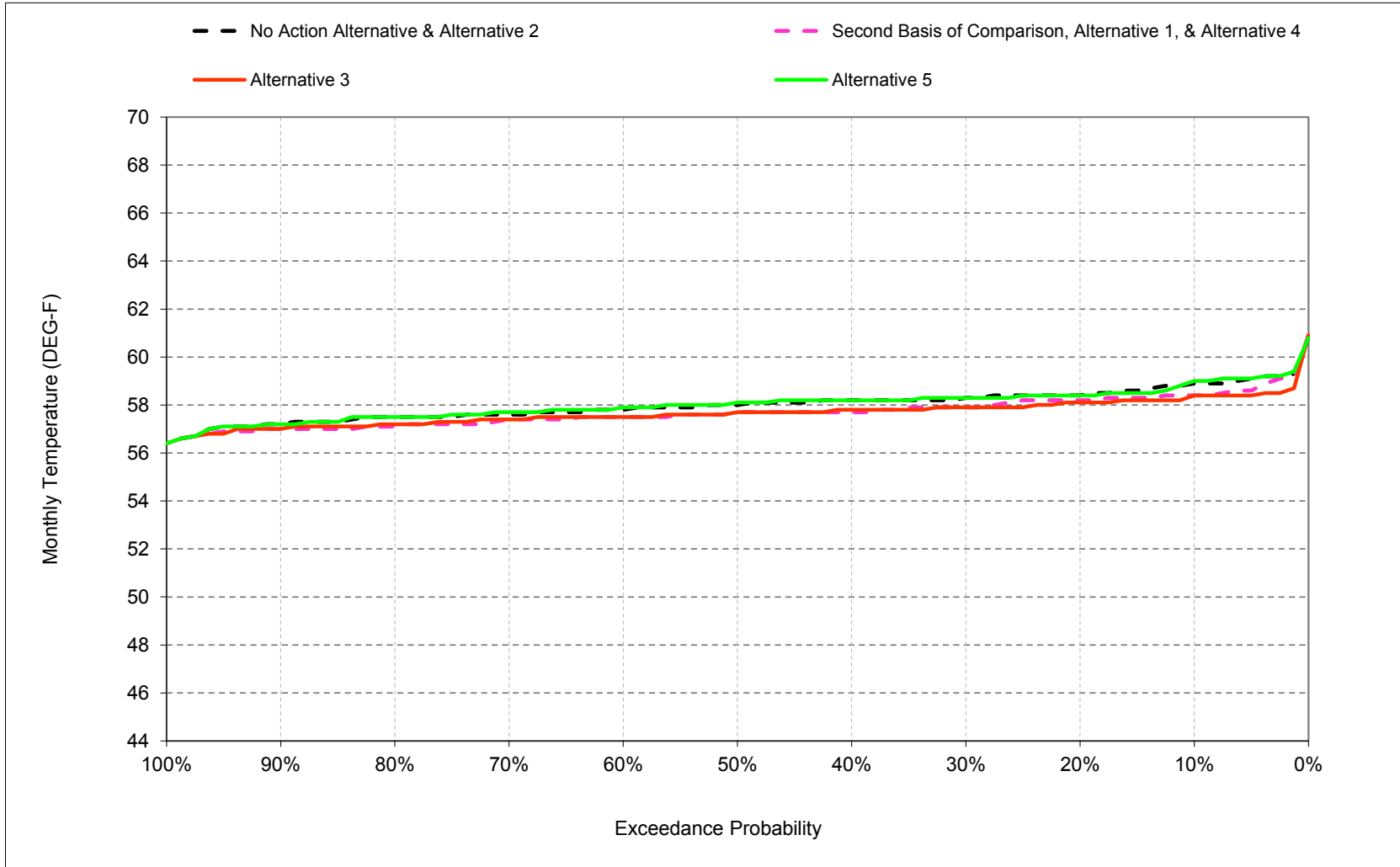
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-20-8. Feather River Low Flow Channel, May



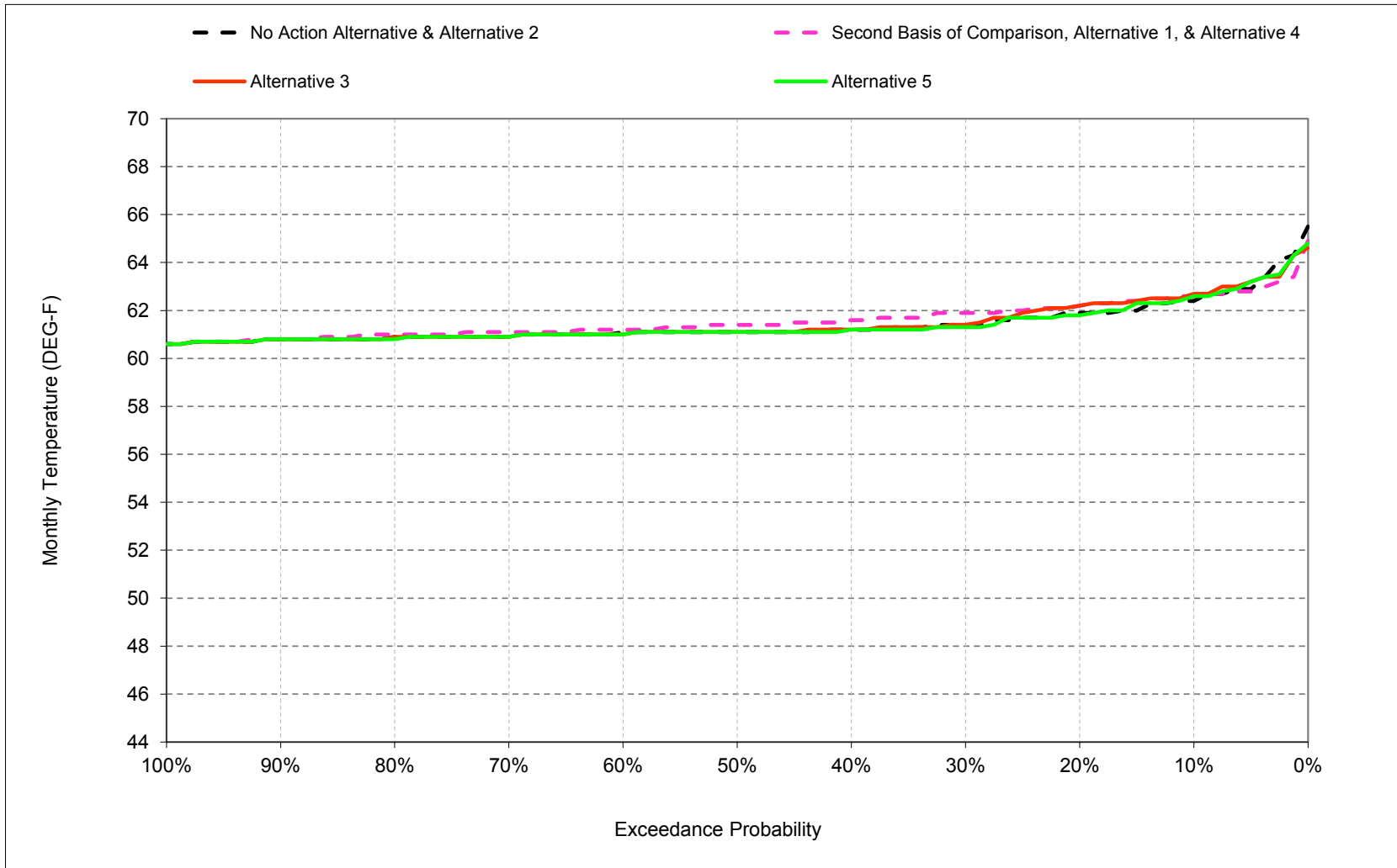
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-20-9. Feather River Low Flow Channel, June



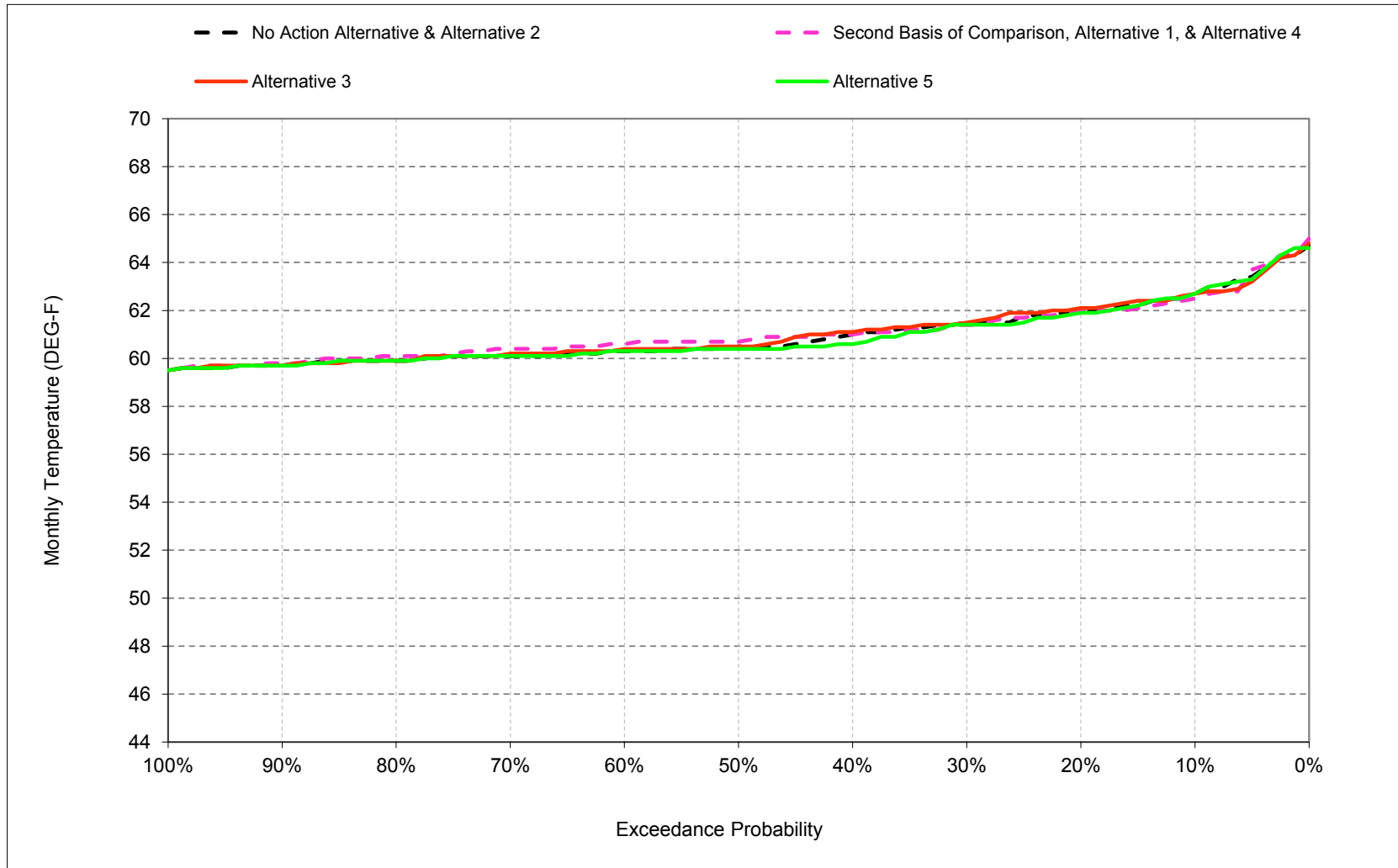
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-20-10. Feather River Low Flow Channel, July



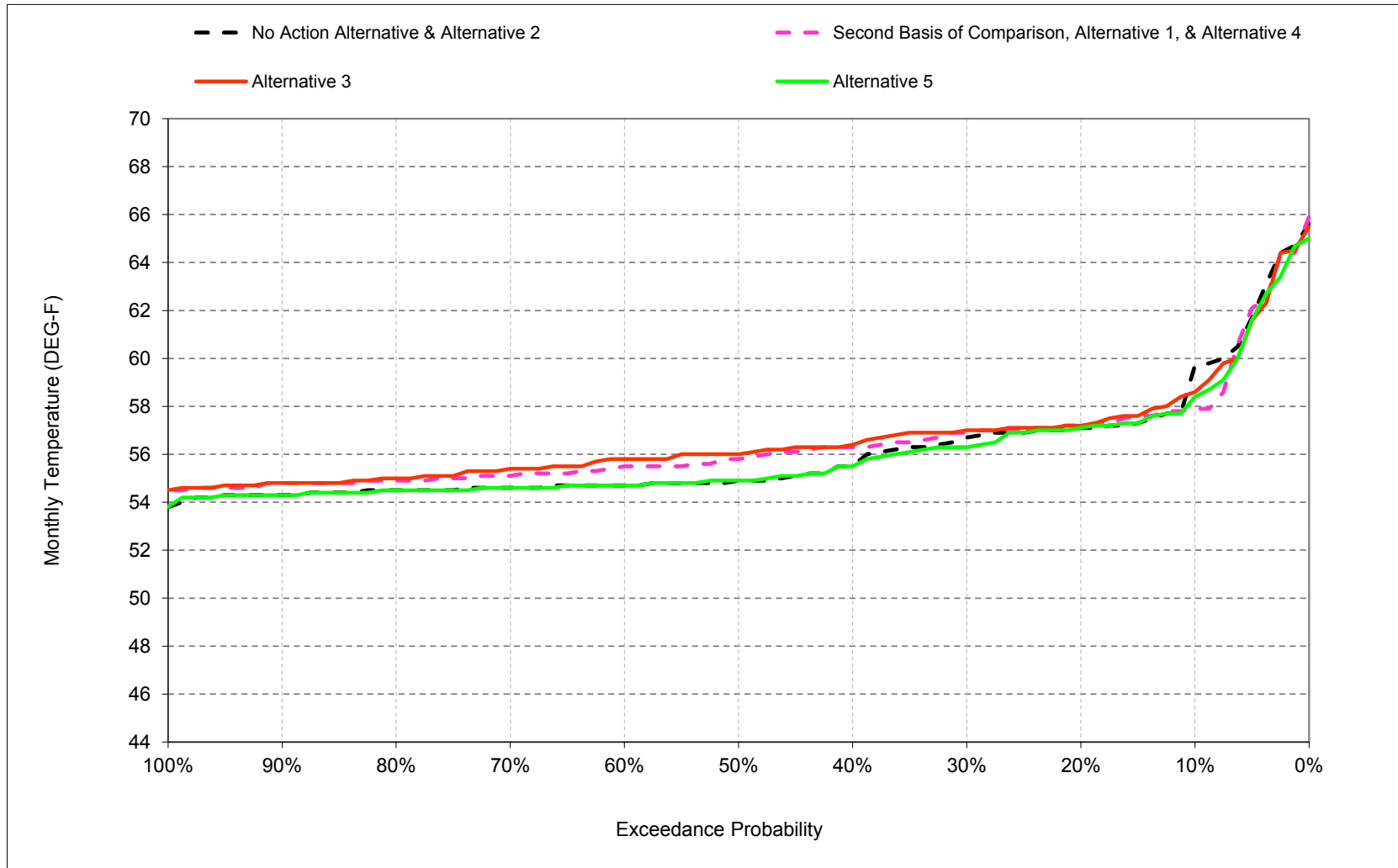
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-20-11. Feather River Low Flow Channel, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-20-12. Feather River Low Flow Channel, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-20-1. Feather River Low Flow Channel, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	60	59	55	51	52	54	54	57	59	62	63	60
20%	56	58	54	50	51	53	53	57	58	62	62	57
30%	55	57	53	50	51	52	53	56	58	61	62	57
40%	54	56	53	49	50	51	52	56	58	61	61	56
50%	54	56	52	49	50	51	52	56	58	61	61	55
60%	54	55	52	49	49	50	52	56	58	61	60	55
70%	53	54	51	48	49	50	51	55	58	61	60	55
80%	53	53	51	48	49	49	51	55	58	61	60	55
90%	53	52	50	47	48	48	50	55	57	61	60	54
Long Term												
Full Simulation Period ^b	55	56	52	49	50	51	52	56	58	61	61	56
Water Year Types ^c												
Wet (32%)	52	53	49	49	49	49	51	55	58	61	60	55
Above Normal (16%)	55	56	53	45	46	46	48	52	54	56	55	50
Below Normal (13%)	54	56	53	50	50	52	53	56	58	61	60	56
Dry (24%)	56	56	53	49	50	52	53	56	58	61	61	57
Critical (15%)	56	56	53	49	50	52	52	56	58	63	63	60

Alternative 1												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	59	59	54	52	52	54	54	57	58	63	63	58
20%	56	58	53	51	51	53	53	56	58	62	62	57
30%	55	57	52	50	51	52	53	56	58	62	61	57
40%	54	56	52	50	50	51	52	56	58	62	61	56
50%	54	54	52	49	50	51	52	56	58	61	61	56
60%	53	53	51	49	50	50	52	55	58	61	61	56
70%	53	53	51	48	49	50	51	55	57	61	60	55
80%	53	52	50	48	48	49	51	55	57	61	60	55
90%	53	52	49	47	47	48	50	55	57	61	60	55
Long Term												
Full Simulation Period ^b	55	55	52	49	50	51	52	56	58	62	61	56
Water Year Types ^c												
Wet (32%)	52	52	49	49	49	50	51	55	58	61	61	56
Above Normal (16%)	56	55	52	46	46	46	48	52	53	56	56	51
Below Normal (13%)	54	55	52	50	50	52	53	55	57	61	61	56
Dry (24%)	55	56	52	49	50	52	53	56	58	62	61	56
Critical (15%)	56	57	52	49	50	52	52	56	58	63	63	60

Alternative 1 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	-0.9	0.5	-1.0	0.2	0.2	0.2	-0.2	0.0	-0.5	0.2	-0.2	-1.8
0.2	0.4	-0.2	-1.1	0.2	0.4	0.3	-0.1	-0.1	-0.2	0.3	0.1	0.1
0.3	0.2	0.1	-0.8	0.2	0.2	0.2	0.1	-0.2	-0.4	0.5	-0.1	0.2
0.4	-0.1	-0.3	-0.7	0.2	0.4	-0.1	0.0	-0.1	-0.5	0.4	0.0	0.8
0.5	-0.1	-1.3	-0.5	0.0	0.4	0.0	0.1	-0.3	-0.3	0.3	0.2	0.9
0.6	-0.2	-2.3	-0.3	0.0	0.2	0.1	0.1	-0.5	-0.3	0.1	0.3	0.8
0.7	-0.1	-1.5	-0.6	0.2	0.1	0.2	0.1	-0.4	-0.2	0.2	0.3	0.5
0.8	-0.2	-0.5	-1.0	0.0	-0.1	0.3	0.2	-0.1	-0.4	0.1	0.2	0.4
0.9	-0.2	-0.2	-0.4	0.1	-0.4	0.0	0.2	0.0	-0.2	0.0	0.1	0.5
Long Term												
Full Simulation Period ^b	-0.1	-0.5	-0.6	0.1	0.2	0.1	0.1	-0.2	-0.3	0.2	0.1	0.4
Water Year Types ^c												
Wet (32%)	-0.3	-1.0	-0.4	0.1	0.2	0.2	0.1	-0.1	-0.2	0.1	0.5	1.3
Above Normal (16%)	0.3	-0.3	-0.9	0.1	0.2	0.0	0.0	-0.4	-0.4	0.1	0.3	0.6
Below Normal (13%)	0.0	-1.2	-1.4	-0.1	0.0	0.0	0.1	-0.4	-0.7	0.2	0.4	0.0
Dry (24%)	-0.2	-0.4	-0.7	0.0	0.3	0.0	0.1	-0.2	-0.2	0.4	-0.6	-0.5
Critical (15%)	0.2	0.9	-0.2	0.1	0.1	0.4	-0.1	0.0	-0.3	0.0	-0.1	-0.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-20-2. Feather River Low Flow Channel, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	60	59	55	51	52	54	54	57	59	62	63	60
20%	56	58	54	50	51	53	53	57	58	62	62	57
30%	55	57	53	50	51	52	53	56	58	61	62	57
40%	54	56	53	49	50	51	52	56	58	61	61	56
50%	54	56	52	49	50	51	52	56	58	61	61	55
60%	54	55	52	49	49	50	52	56	58	61	60	55
70%	53	54	51	48	49	50	51	55	58	61	60	55
80%	53	53	51	48	49	49	51	55	58	61	60	55
90%	53	52	50	47	48	48	50	55	57	61	60	54
Long Term												
Full Simulation Period ^b	55	56	52	49	50	51	52	56	58	61	61	56
Water Year Types ^c												
Wet (32%)	52	53	49	49	49	49	51	55	58	61	60	55
Above Normal (16%)	55	56	53	45	46	46	48	52	54	56	55	50
Below Normal (13%)	54	56	53	50	50	52	53	56	58	61	60	56
Dry (24%)	56	56	53	49	50	52	53	56	58	61	61	57
Critical (15%)	56	56	53	49	50	52	52	56	58	63	63	60

Alternative 3												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	59	59	54	52	52	54	54	57	58	63	63	59
20%	56	57	53	50	51	53	53	56	58	62	62	57
30%	55	56	52	50	51	52	52	56	58	61	62	57
40%	54	55	52	49	50	51	52	56	58	61	61	56
50%	54	54	52	49	50	51	52	56	58	61	61	56
60%	53	53	51	49	49	50	52	55	58	61	60	56
70%	53	53	51	48	49	50	51	55	57	61	60	55
80%	53	52	50	48	49	49	51	55	57	61	60	55
90%	53	52	49	47	47	48	50	55	57	61	60	55
Long Term												
Full Simulation Period ^b	55	55	52	49	50	51	52	56	58	61	61	57
Water Year Types ^c												
Wet (32%)	52	52	49	49	49	50	51	55	57	61	61	56
Above Normal (16%)	55	55	52	46	46	46	48	52	53	56	55	51
Below Normal (13%)	54	54	51	50	50	52	53	56	58	61	60	56
Dry (24%)	56	55	52	49	50	52	53	56	58	62	61	57
Critical (15%)	56	56	52	49	50	52	52	56	58	63	63	60

Alternative 3 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	-0.8	-0.3	-1.0	0.1	0.2	0.1	-0.1	0.0	-0.5	0.3	0.0	-1.1
0.2	-0.2	-0.5	-0.7	0.0	0.2	0.1	-0.1	-0.3	-0.3	0.3	0.2	0.1
0.3	-0.2	-0.9	-0.7	0.1	0.1	0.1	-0.1	-0.2	-0.4	0.0	0.0	0.3
0.4	0.0	-0.6	-0.8	0.0	0.1	-0.1	0.0	-0.2	-0.4	0.0	0.1	0.9
0.5	-0.1	-1.3	-0.6	0.1	0.1	-0.1	0.1	-0.4	-0.3	0.0	0.0	1.1
0.6	-0.2	-2.2	-0.4	0.0	0.0	0.0	0.1	-0.4	-0.3	-0.1	0.1	1.1
0.7	0.0	-1.5	-0.4	0.1	0.1	0.1	0.1	-0.3	-0.2	0.0	0.1	0.8
0.8	-0.1	-0.5	-0.7	0.0	0.0	0.1	0.0	-0.1	-0.3	0.0	0.0	0.5
0.9	0.0	-0.2	-0.5	0.0	-0.3	0.0	0.1	0.0	-0.2	0.0	0.0	0.5
Long Term												
Full Simulation Period ^b	-0.2	-0.8	-0.6	0.0	0.1	0.0	0.0	-0.2	-0.3	0.0	0.0	0.5
Water Year Types ^c												
Wet (32%)	-0.2	-1.0	-0.4	0.1	0.2	0.1	0.1	-0.1	-0.3	0.0	0.3	1.5
Above Normal (16%)	-0.2	-0.7	-0.7	0.1	0.1	0.0	-0.1	-0.3	-0.3	0.0	0.1	0.6
Below Normal (13%)	0.0	-1.3	-1.6	-0.1	0.0	0.0	0.0	-0.3	-0.4	-0.1	-0.2	0.3
Dry (24%)	0.0	-0.7	-0.6	0.0	0.1	0.1	0.1	-0.2	-0.3	0.2	-0.1	-0.2
Critical (15%)	-0.4	-0.1	-0.3	0.0	0.1	-0.1	0.0	0.1	-0.3	0.0	-0.1	-0.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-20-3. Feather River Low Flow Channel, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	60	59	55	51	52	54	54	57	59	62	63	60
20%	56	58	54	50	51	53	53	57	58	62	62	57
30%	55	57	53	50	51	52	53	56	58	61	62	57
40%	54	56	53	49	50	51	52	56	58	61	61	56
50%	54	56	52	49	50	51	52	56	58	61	61	55
60%	54	55	52	49	49	50	52	56	58	61	60	55
70%	53	54	51	48	49	50	51	55	58	61	60	55
80%	53	53	51	48	49	49	51	55	58	61	60	55
90%	53	52	50	47	48	48	50	55	57	61	60	54
Long Term												
Full Simulation Period ^b	55	56	52	49	50	51	52	56	58	61	61	56
Water Year Types ^c												
Wet (32%)	52	53	49	49	49	49	51	55	58	61	60	55
Above Normal (16%)	55	56	53	45	46	46	48	52	54	56	55	50
Below Normal (13%)	54	56	53	50	50	52	53	56	58	61	60	56
Dry (24%)	56	56	53	49	50	52	53	56	58	61	61	57
Critical (15%)	56	56	53	49	50	52	52	56	58	63	63	60

Alternative 5												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	59	59	55	51	52	54	54	57	59	63	63	58
20%	56	58	54	50	51	53	53	57	58	62	62	57
30%	55	57	53	50	51	52	53	56	58	61	61	56
40%	54	56	53	49	50	51	52	56	58	61	61	56
50%	54	55	52	49	50	51	52	56	58	61	60	55
60%	54	55	52	49	49	50	52	56	58	61	60	55
70%	53	54	51	48	49	50	51	56	58	61	60	55
80%	53	53	50	48	49	49	51	55	58	61	60	55
90%	53	53	50	47	48	48	50	55	57	61	60	54
Long Term												
Full Simulation Period ^b	55	55	52	49	50	51	52	56	58	61	61	56
Water Year Types ^c												
Wet (32%)	52	53	49	49	49	49	51	55	58	61	60	55
Above Normal (16%)	55	56	53	45	46	46	48	52	54	56	55	50
Below Normal (13%)	54	56	53	50	50	52	53	56	58	61	60	56
Dry (24%)	55	56	53	49	50	52	53	56	58	61	61	57
Critical (15%)	56	56	53	49	50	52	53	57	59	63	63	60

Alternative 5 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	-0.9	-0.1	-0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.0	-1.3
0.2	-0.4	-0.2	0.1	0.0	0.0	0.1	0.0	0.2	0.0	-0.1	0.0	0.0
0.3	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.2	0.0	-0.1	-0.1	-0.4
0.4	0.2	0.0	-0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	-0.4	0.0
0.5	0.1	-0.1	0.0	0.0	0.0	-0.1	0.0	0.1	0.1	0.0	-0.1	0.0
0.6	0.0	-0.3	0.1	0.0	0.0	0.0	0.0	0.1	0.1	-0.1	0.0	0.0
0.7	-0.1	-0.2	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.0
0.8	0.0	0.0	-0.5	0.0	0.0	-0.1	0.0	0.0	0.0	-0.1	0.0	0.0
0.9	0.0	0.2	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Long Term												
Full Simulation Period ^b	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	-0.1	-0.1
Water Year Types ^c												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Above Normal (16%)	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Below Normal (13%)	-0.2	-0.2	0.0	0.0	0.1	0.0	0.0	0.2	0.1	0.0	-0.1	-0.1
Dry (24%)	-0.2	-0.3	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	-0.1	-0.1
Critical (15%)	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.1	-0.1	-0.1	-0.5

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-20-4. Feather River Low Flow Channel, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	59	59	54	52	52	54	54	57	58	63	63	58
20%	56	58	53	51	51	53	53	56	58	62	62	57
30%	55	57	52	50	51	52	53	56	58	62	61	57
40%	54	56	52	50	50	51	52	56	58	62	61	56
50%	54	54	52	49	50	51	52	56	58	61	61	56
60%	53	53	51	49	50	50	52	55	58	61	61	56
70%	53	53	51	48	49	50	51	55	57	61	60	55
80%	53	52	50	48	48	49	51	55	57	61	60	55
90%	53	52	49	47	47	48	50	55	57	61	60	55
Long Term												
Full Simulation Period ^b	55	55	52	49	50	51	52	56	58	62	61	56
Water Year Types ^c												
Wet (32%)	52	52	49	49	49	50	51	55	58	61	61	56
Above Normal (16%)	56	55	52	46	46	46	48	52	53	56	56	51
Below Normal (13%)	54	55	52	50	50	52	53	55	57	61	61	56
Dry (24%)	55	56	52	49	50	52	53	56	58	62	61	56
Critical (15%)	56	57	52	49	50	52	52	56	58	63	63	60

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	60	59	55	51	52	54	54	57	59	62	63	60
20%	56	58	54	50	51	53	53	57	58	62	62	57
30%	55	57	53	50	51	52	53	56	58	61	62	57
40%	54	56	53	49	50	51	52	56	58	61	61	56
50%	54	56	52	49	50	51	52	56	58	61	61	55
60%	54	55	52	49	49	50	52	56	58	61	60	55
70%	53	54	51	48	49	50	51	55	58	61	60	55
80%	53	53	51	48	49	49	51	55	58	61	60	55
90%	53	52	50	47	48	48	50	55	57	61	60	54
Long Term												
Full Simulation Period ^b	55	56	52	49	50	51	52	56	58	61	61	56
Water Year Types ^c												
Wet (32%)	52	53	49	49	49	49	51	55	58	61	60	55
Above Normal (16%)	55	56	53	45	46	46	48	52	54	56	55	50
Below Normal (13%)	54	56	53	50	50	52	53	56	58	61	60	56
Dry (24%)	56	56	53	49	50	52	53	56	58	61	61	57
Critical (15%)	56	56	53	49	50	52	52	56	58	63	63	60

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	0.9	-0.5	1.0	-0.2	-0.2	-0.2	0.2	0.0	0.5	-0.2	0.2	1.8
0.2	-0.4	0.2	1.1	-0.2	-0.4	-0.3	0.1	0.1	0.2	-0.3	-0.1	-0.1
0.3	-0.2	-0.1	0.8	-0.2	-0.2	-0.2	-0.1	0.2	0.4	-0.5	0.1	-0.2
0.4	0.1	0.3	0.7	-0.2	-0.4	0.1	0.0	0.1	0.5	-0.4	0.0	-0.8
0.5	0.1	1.3	0.5	0.0	-0.4	0.0	-0.1	0.3	0.3	-0.3	-0.2	-0.9
0.6	0.2	2.3	0.3	0.0	-0.2	-0.1	-0.1	0.5	0.3	-0.1	-0.3	-0.8
0.7	0.1	1.5	0.6	-0.2	-0.1	-0.2	-0.1	0.4	0.2	-0.2	-0.3	-0.5
0.8	0.2	0.5	1.0	0.0	0.1	-0.3	-0.2	0.1	0.4	-0.1	-0.2	-0.4
0.9	0.2	0.2	0.4	-0.1	0.4	0.0	-0.2	0.0	0.2	0.0	-0.1	-0.5
Long Term												
Full Simulation Period ^b	0.1	0.5	0.6	-0.1	-0.2	-0.1	-0.1	0.2	0.3	-0.2	-0.1	-0.4
Water Year Types ^c												
Wet (32%)	0.3	1.0	0.4	-0.1	-0.2	-0.2	-0.1	0.1	0.2	-0.1	-0.5	-1.3
Above Normal (16%)	-0.3	0.3	0.9	-0.1	-0.2	0.0	0.0	0.4	0.4	-0.1	-0.3	-0.6
Below Normal (13%)	0.0	1.2	1.4	0.1	0.0	0.0	-0.1	0.4	0.7	-0.2	-0.4	0.0
Dry (24%)	0.2	0.4	0.7	0.0	-0.3	0.0	-0.1	0.2	0.2	-0.4	0.6	0.5
Critical (15%)	-0.2	-0.9	0.2	-0.1	-0.1	-0.4	0.1	0.0	0.3	0.0	0.1	0.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-20-5. Feather River Low Flow Channel, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	59	59	54	52	52	54	54	57	58	63	63	58
20%	56	58	53	51	51	53	53	56	58	62	62	57
30%	55	57	52	50	51	52	53	56	58	62	61	57
40%	54	56	52	50	50	51	52	56	58	62	61	56
50%	54	54	52	49	50	51	52	56	58	61	61	56
60%	53	53	51	49	50	50	52	55	58	61	61	56
70%	53	53	51	48	49	50	51	55	57	61	60	55
80%	53	52	50	48	48	49	51	55	57	61	60	55
90%	53	52	49	47	47	48	50	55	57	61	60	55
Long Term												
Full Simulation Period ^b	55	55	52	49	50	51	52	56	58	62	61	56
Water Year Types ^c												
Wet (32%)	52	52	49	49	49	50	51	55	58	61	61	56
Above Normal (16%)	56	55	52	46	46	46	48	52	53	56	56	51
Below Normal (13%)	54	55	52	50	50	52	53	55	57	61	61	56
Dry (24%)	55	56	52	49	50	52	53	56	58	62	61	56
Critical (15%)	56	57	52	49	50	52	52	56	58	63	63	60

Alternative 3

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	59	59	54	52	52	54	54	57	58	63	63	59
20%	56	57	53	50	51	53	53	56	58	62	62	57
30%	55	56	52	50	51	52	52	56	58	61	62	57
40%	54	55	52	49	50	51	52	56	58	61	61	56
50%	54	54	52	49	50	51	52	56	58	61	61	56
60%	53	53	51	49	49	50	52	55	58	61	60	56
70%	53	53	51	48	49	50	51	55	57	61	60	55
80%	53	52	50	48	49	49	51	55	57	61	60	55
90%	53	52	49	47	47	48	50	55	57	61	60	55
Long Term												
Full Simulation Period ^b	55	55	52	49	50	51	52	56	58	61	61	57
Water Year Types ^c												
Wet (32%)	52	52	49	49	49	50	51	55	57	61	61	56
Above Normal (16%)	55	55	52	46	46	46	48	52	53	56	55	51
Below Normal (13%)	54	54	51	50	50	52	53	56	58	61	60	56
Dry (24%)	56	55	52	49	50	52	53	56	58	62	61	57
Critical (15%)	56	56	52	49	50	52	52	56	58	63	63	60

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	0.1	-0.8	0.0	-0.1	0.0	-0.1	0.1	0.0	0.0	0.1	0.2	0.7
0.2	-0.6	-0.3	0.4	-0.2	-0.2	-0.2	0.0	-0.2	-0.1	0.0	0.1	0.0
0.3	-0.4	-1.0	0.1	-0.1	-0.1	-0.1	-0.2	0.0	0.0	-0.5	0.1	0.1
0.4	0.1	-0.3	-0.1	-0.2	-0.3	0.0	0.0	-0.1	0.1	-0.4	0.1	0.1
0.5	0.0	0.0	-0.1	0.1	-0.3	-0.1	0.0	-0.1	0.0	-0.3	-0.2	0.2
0.6	0.0	0.1	-0.1	0.0	-0.2	-0.1	0.0	0.1	0.0	-0.2	-0.2	0.3
0.7	0.1	0.0	0.2	-0.1	0.0	-0.1	0.0	0.1	0.0	-0.2	-0.2	0.3
0.8	0.1	0.0	0.3	0.0	0.1	-0.2	-0.2	0.0	0.1	-0.1	-0.2	0.1
0.9	0.2	0.0	-0.1	-0.1	0.1	0.0	-0.1	0.0	0.0	0.0	-0.1	0.0
Long Term												
Full Simulation Period ^b	-0.1	-0.3	0.0	-0.1	-0.1	-0.1	0.0	0.0	0.0	-0.1	0.0	0.2
Water Year Types ^c												
Wet (32%)	0.1	0.1	0.0	-0.1	0.0	-0.1	0.0	0.0	-0.1	-0.1	-0.2	0.2
Above Normal (16%)	-0.5	-0.4	0.2	-0.1	-0.1	0.0	-0.1	0.0	0.1	-0.1	-0.2	0.0
Below Normal (13%)	0.0	0.0	-0.2	0.0	0.0	0.0	0.0	0.1	0.2	-0.2	-0.7	0.3
Dry (24%)	0.2	-0.3	0.1	0.0	-0.2	0.0	-0.1	-0.1	-0.1	-0.2	0.5	0.3
Critical (15%)	-0.5	-1.0	-0.1	-0.1	0.0	-0.5	0.0	0.1	0.0	0.0	0.0	-0.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-20-6. Feather River Low Flow Channel, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	59	59	54	52	52	54	54	57	58	63	63	58
20%	56	58	53	51	51	53	53	56	58	62	62	57
30%	55	57	52	50	51	52	53	56	58	62	61	57
40%	54	56	52	50	50	51	52	56	58	62	61	56
50%	54	54	52	49	50	51	52	56	58	61	61	56
60%	53	53	51	49	50	50	52	55	58	61	61	56
70%	53	53	51	48	49	50	51	55	57	61	60	55
80%	53	52	50	48	48	49	51	55	57	61	60	55
90%	53	52	49	47	47	48	50	55	57	61	60	55
Long Term												
Full Simulation Period ^b	55	55	52	49	50	51	52	56	58	62	61	56
Water Year Types ^c												
Wet (32%)	52	52	49	49	49	50	51	55	58	61	61	56
Above Normal (16%)	56	55	52	46	46	46	48	52	53	56	56	51
Below Normal (13%)	54	55	52	50	50	52	53	55	57	61	61	56
Dry (24%)	55	56	52	49	50	52	53	56	58	62	61	56
Critical (15%)	56	57	52	49	50	52	52	56	58	63	63	60

Alternative 5

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	59	59	55	51	52	54	54	57	59	63	63	58
20%	56	58	54	50	51	53	53	57	58	62	62	57
30%	55	57	53	50	51	52	53	56	58	61	61	56
40%	54	56	53	49	50	51	52	56	58	61	61	56
50%	54	55	52	49	50	51	52	56	58	61	60	55
60%	54	55	52	49	49	50	52	56	58	61	60	55
70%	53	54	51	48	49	50	51	56	58	61	60	55
80%	53	53	50	48	49	49	51	55	58	61	60	55
90%	53	53	50	47	48	48	50	55	57	61	60	54
Long Term												
Full Simulation Period ^b	55	55	52	49	50	51	52	56	58	61	61	56
Water Year Types ^c												
Wet (32%)	52	53	49	49	49	49	51	55	58	61	60	55
Above Normal (16%)	55	56	53	45	46	46	48	52	54	56	55	50
Below Normal (13%)	54	56	53	50	50	52	53	56	58	61	60	56
Dry (24%)	55	56	53	49	50	52	53	56	58	61	61	57
Critical (15%)	56	56	53	49	50	52	53	57	59	63	63	60

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	0.0	-0.6	0.9	-0.2	-0.2	-0.2	0.3	0.1	0.6	0.0	0.2	0.5
0.2	-0.8	0.0	1.2	-0.2	-0.4	-0.2	0.1	0.3	0.2	-0.4	-0.1	-0.1
0.3	-0.2	0.0	0.8	-0.2	-0.1	-0.1	0.0	0.4	0.4	-0.6	0.0	-0.6
0.4	0.3	0.3	0.6	-0.2	-0.4	0.1	0.0	0.2	0.5	-0.4	-0.4	-0.8
0.5	0.2	1.2	0.5	0.0	-0.4	-0.1	-0.1	0.4	0.4	-0.3	-0.3	-0.9
0.6	0.2	2.0	0.4	0.0	-0.2	-0.1	-0.1	0.6	0.4	-0.2	-0.3	-0.8
0.7	0.0	1.3	0.6	-0.2	-0.1	-0.2	-0.1	0.6	0.3	-0.2	-0.3	-0.5
0.8	0.2	0.5	0.5	0.0	0.1	-0.4	-0.2	0.1	0.4	-0.2	-0.2	-0.4
0.9	0.2	0.4	0.4	-0.2	0.4	0.0	-0.2	0.0	0.2	0.0	-0.1	-0.5
Long Term												
Full Simulation Period ^b	0.0	0.4	0.6	-0.1	-0.2	-0.1	-0.1	0.3	0.3	-0.2	-0.2	-0.5
Water Year Types ^c												
Wet (32%)	0.3	1.1	0.4	-0.2	-0.2	-0.2	-0.1	0.1	0.2	-0.1	-0.5	-1.2
Above Normal (16%)	-0.4	0.2	0.8	-0.2	-0.2	0.0	0.0	0.4	0.4	-0.1	-0.3	-0.6
Below Normal (13%)	-0.2	1.0	1.5	0.1	0.1	0.0	-0.1	0.6	0.7	-0.2	-0.6	-0.1
Dry (24%)	0.1	0.2	0.7	0.0	-0.3	0.0	-0.1	0.4	0.2	-0.4	0.6	0.4
Critical (15%)	-0.3	-1.0	0.2	-0.1	-0.1	-0.4	0.1	0.2	0.3	0.0	0.0	-0.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

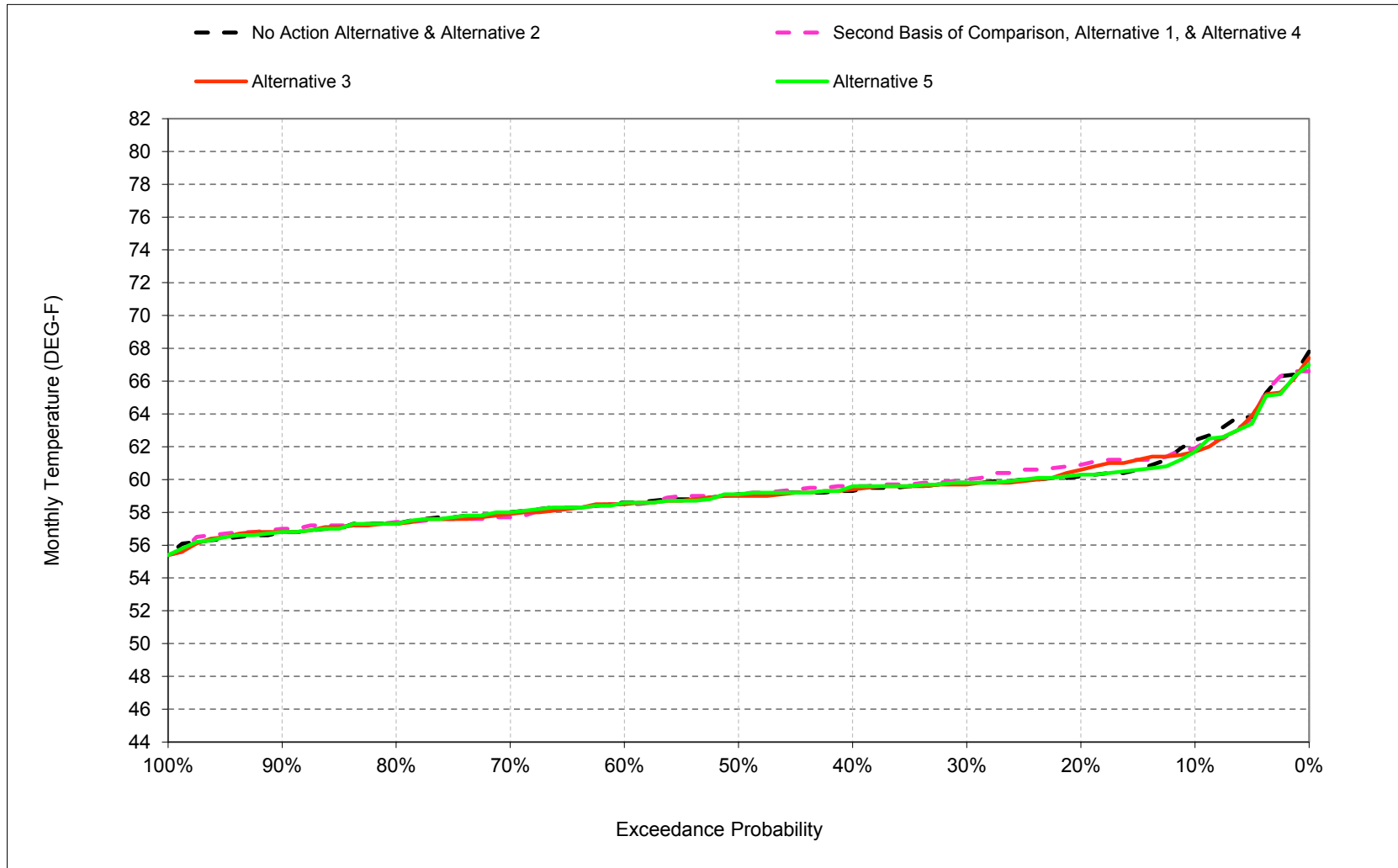
b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

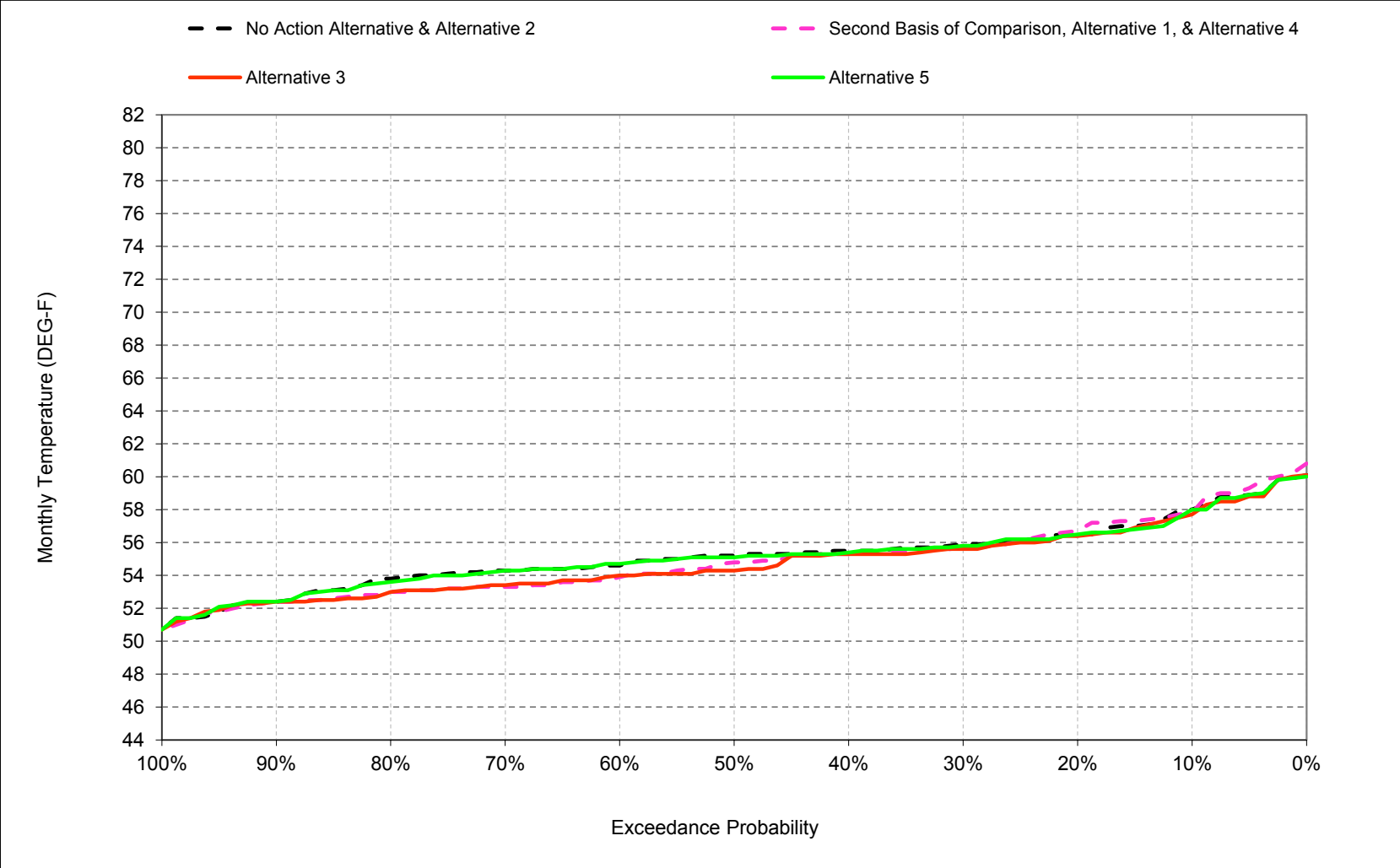
B.21. Feather River at Robinson Riffle

Figure B-21-1. Feather River at Robinson Riffle, October



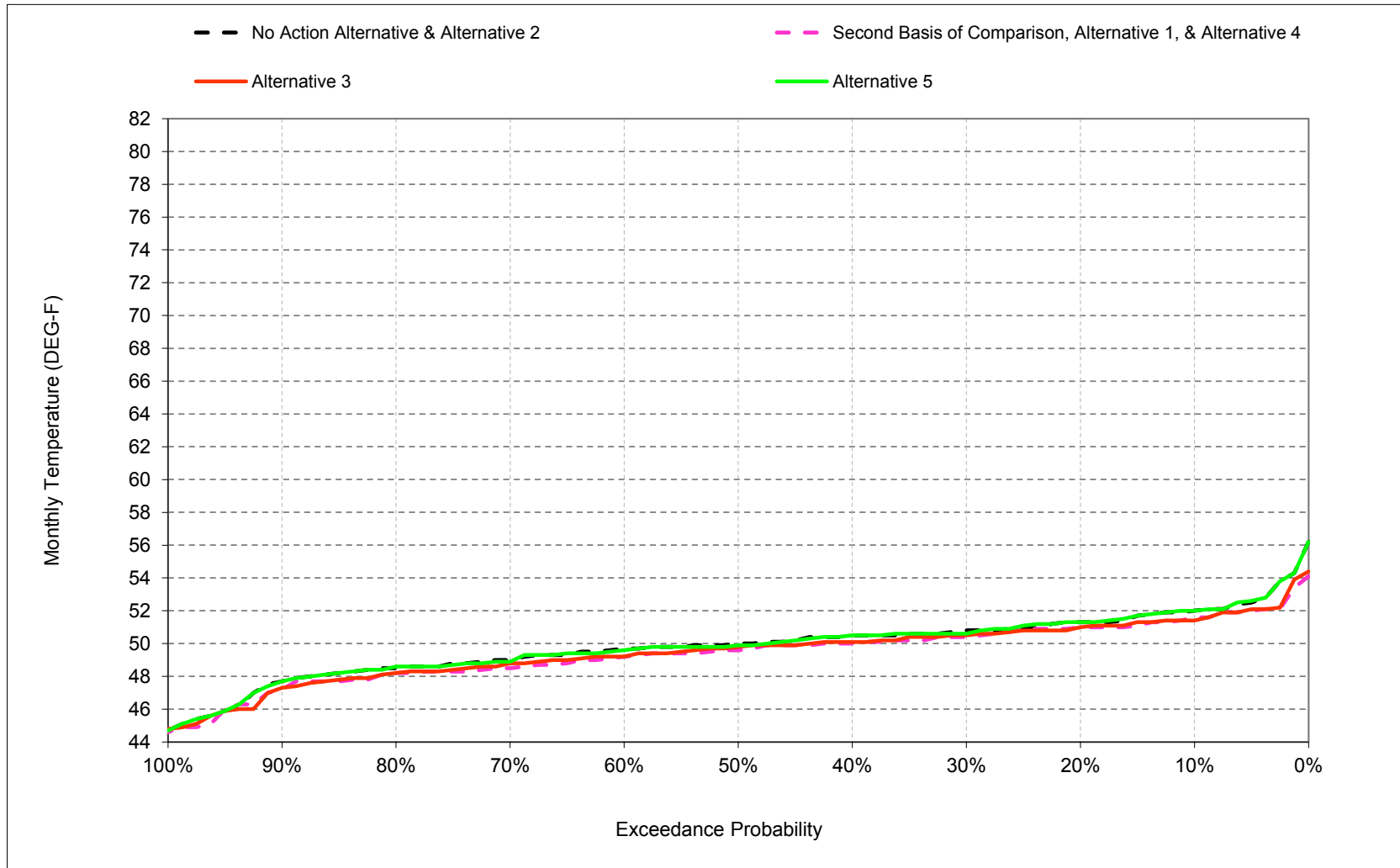
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-21-2. Feather River at Robinson Riffle, November



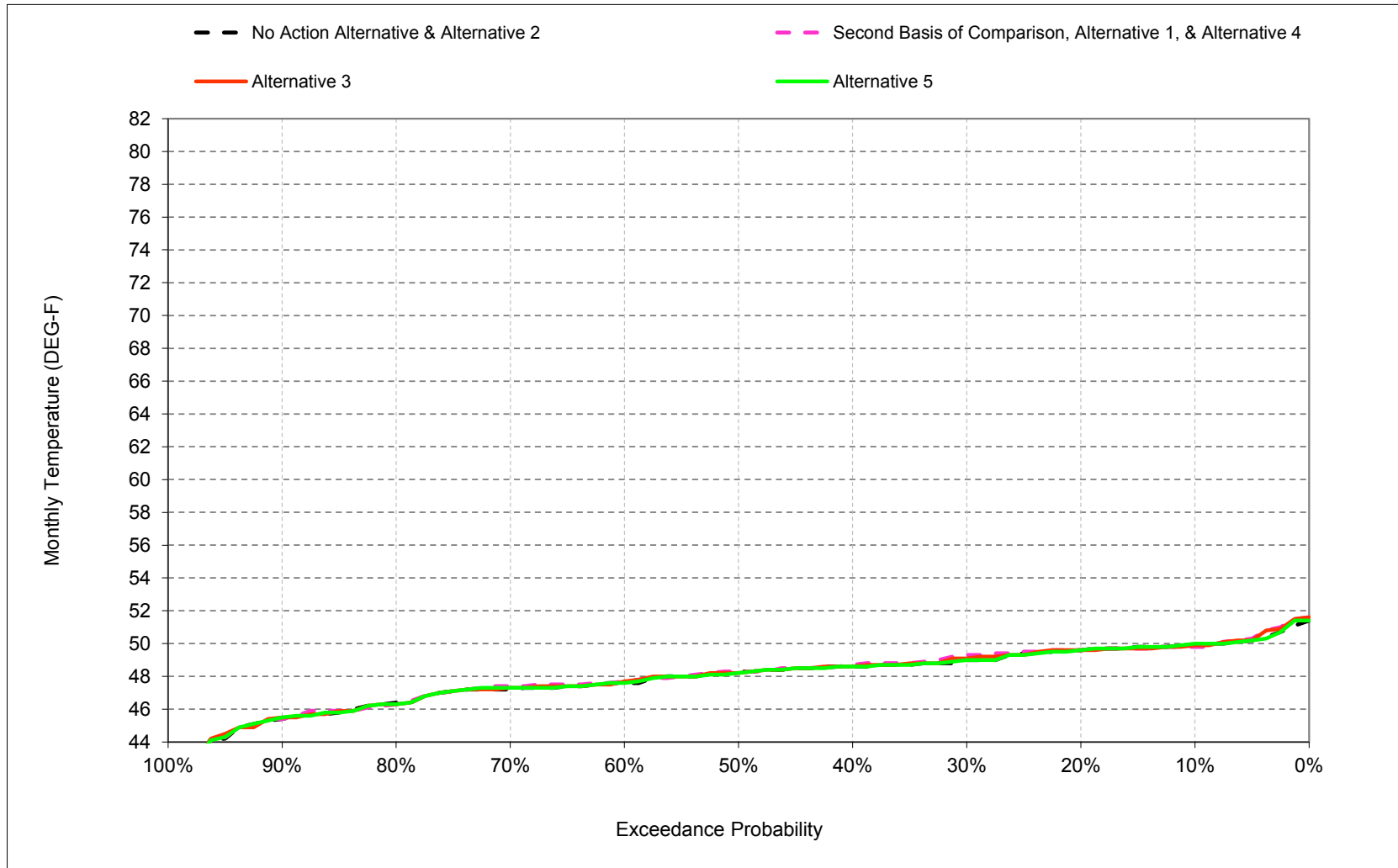
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-21-3. Feather River at Robinson Riffle, December



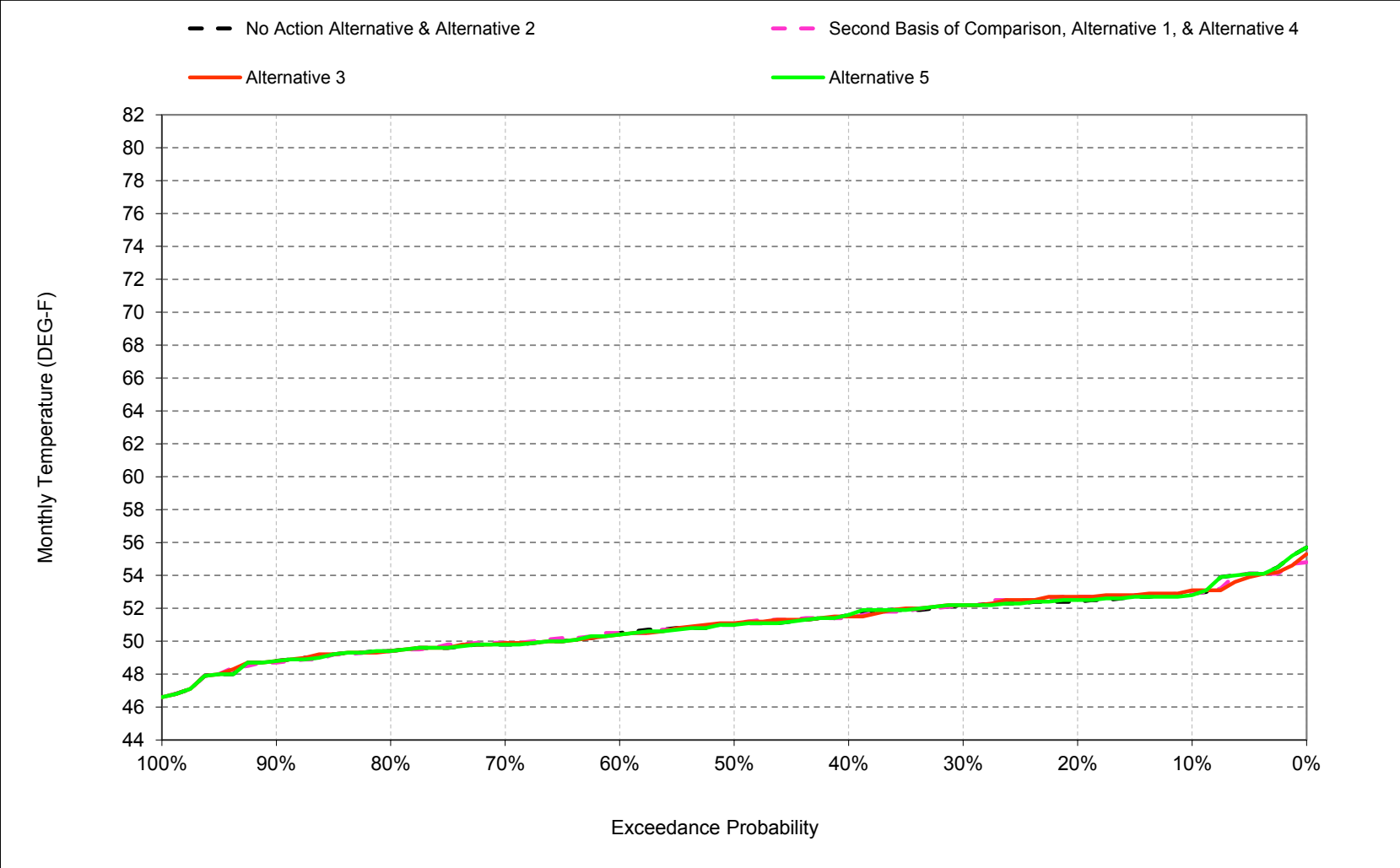
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-21-4. Feather River at Robinson Riffle, January



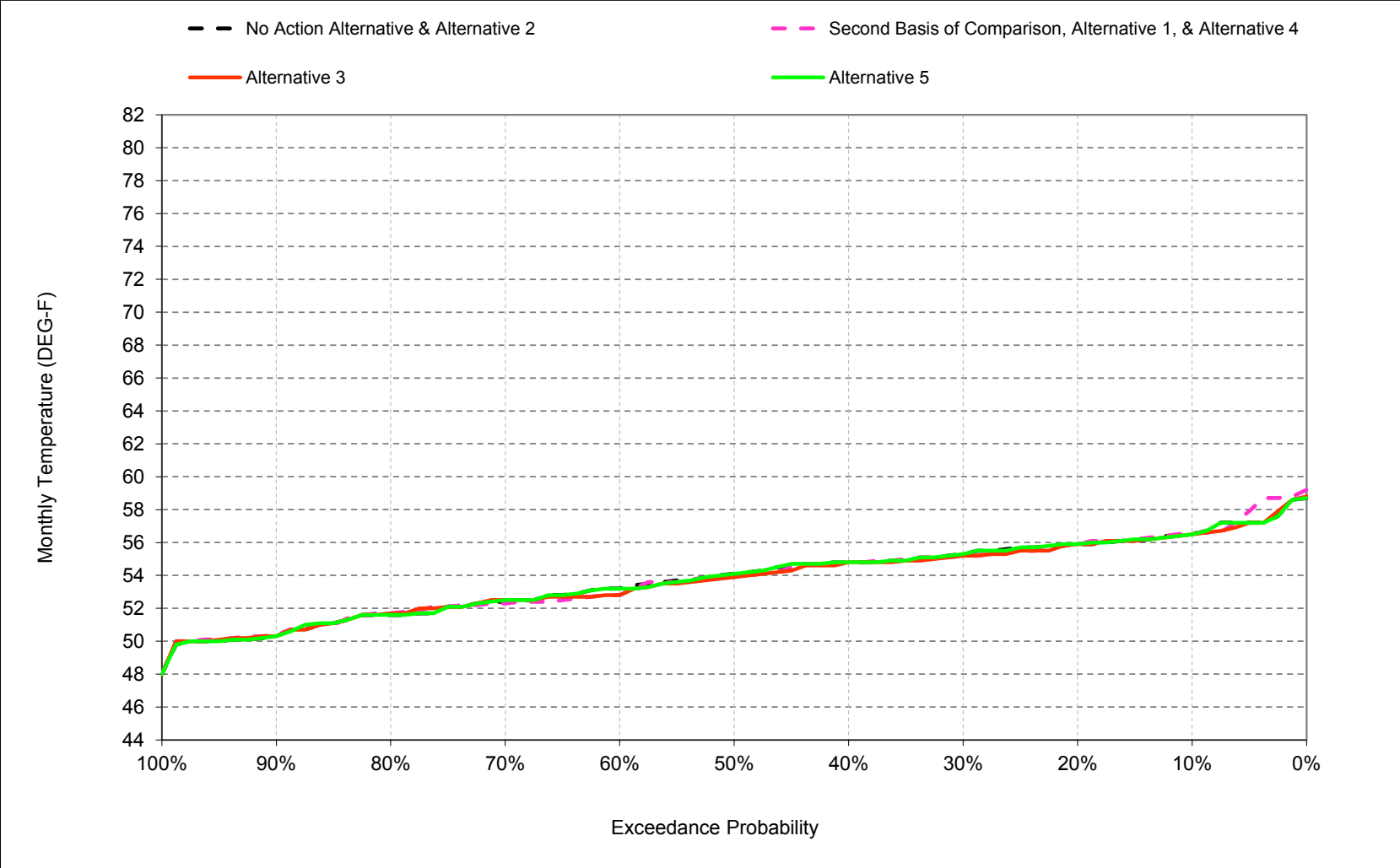
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-21-5. Feather River at Robinson Riffle, February



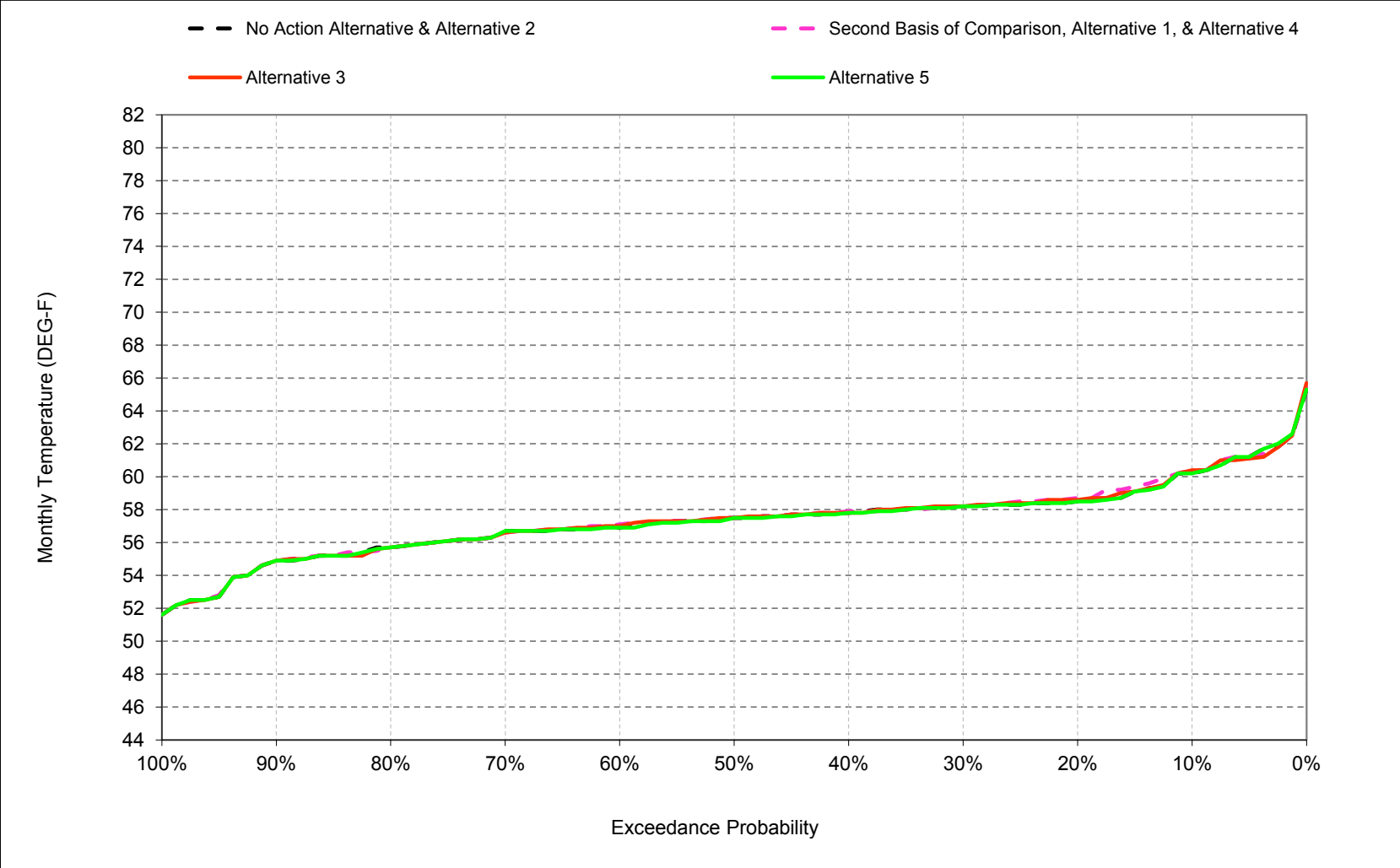
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-21-6. Feather River at Robinson Riffle, March



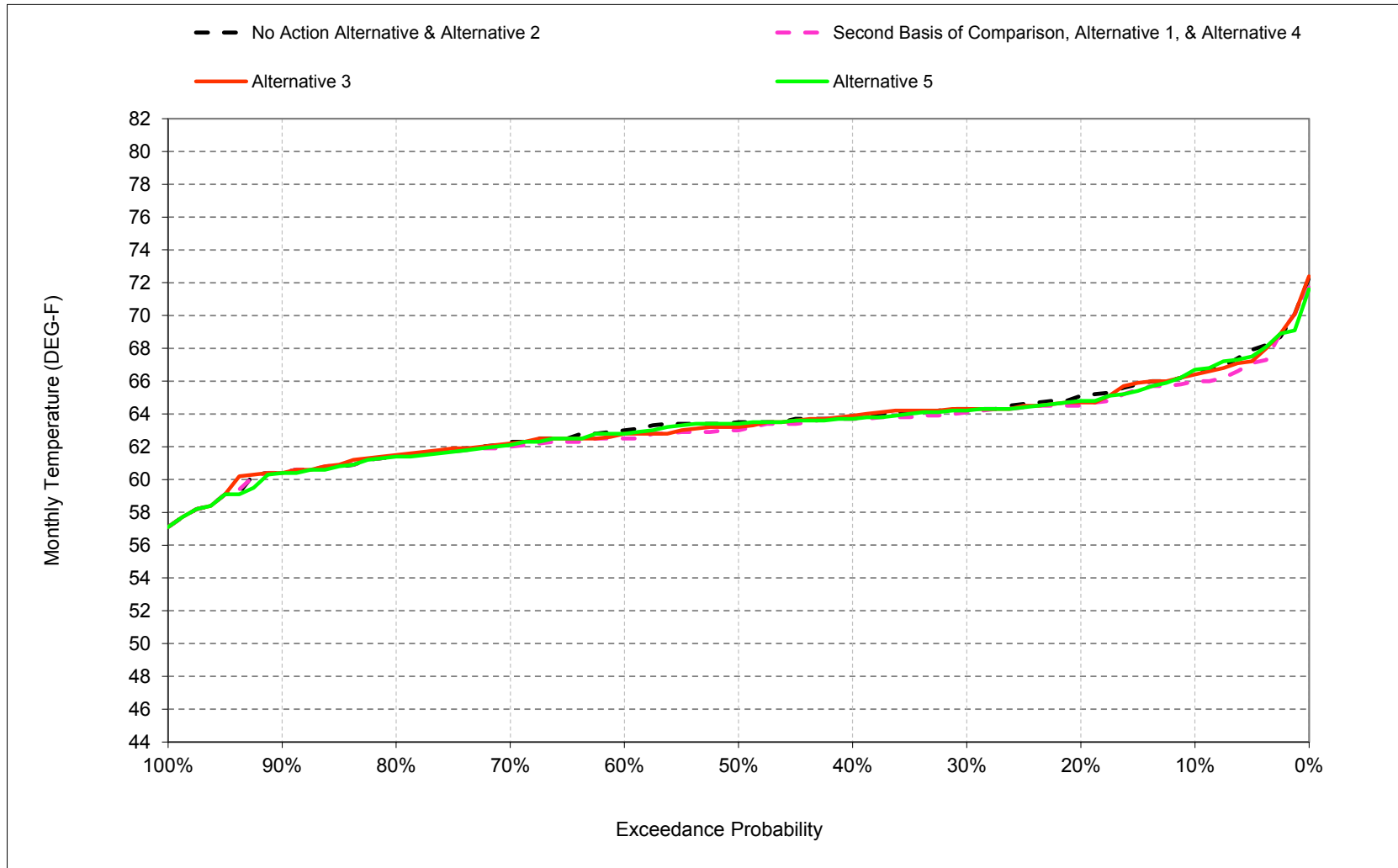
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-21-7. Feather River at Robinson Riffle, April



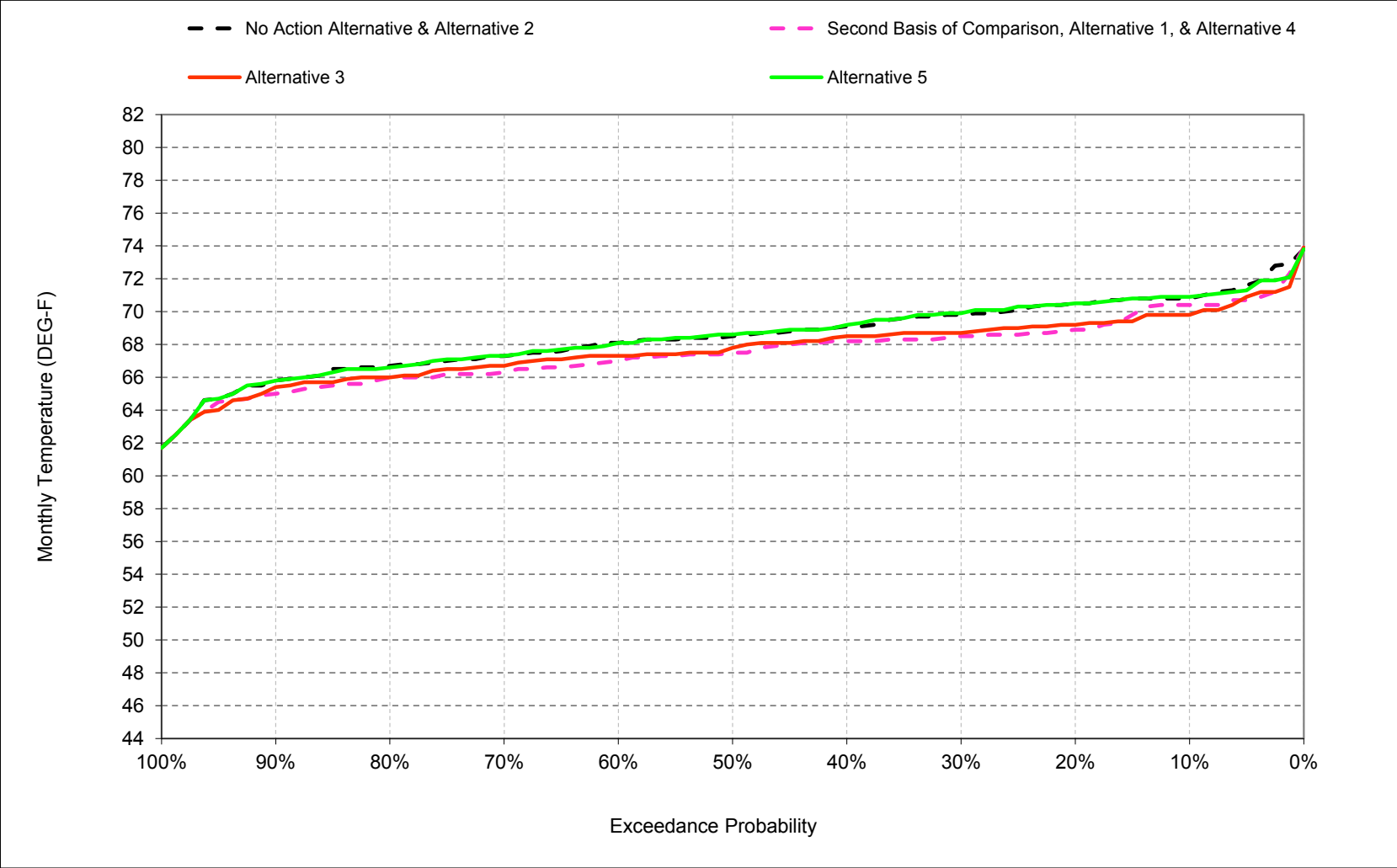
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-21-8. Feather River at Robinson Riffle, May



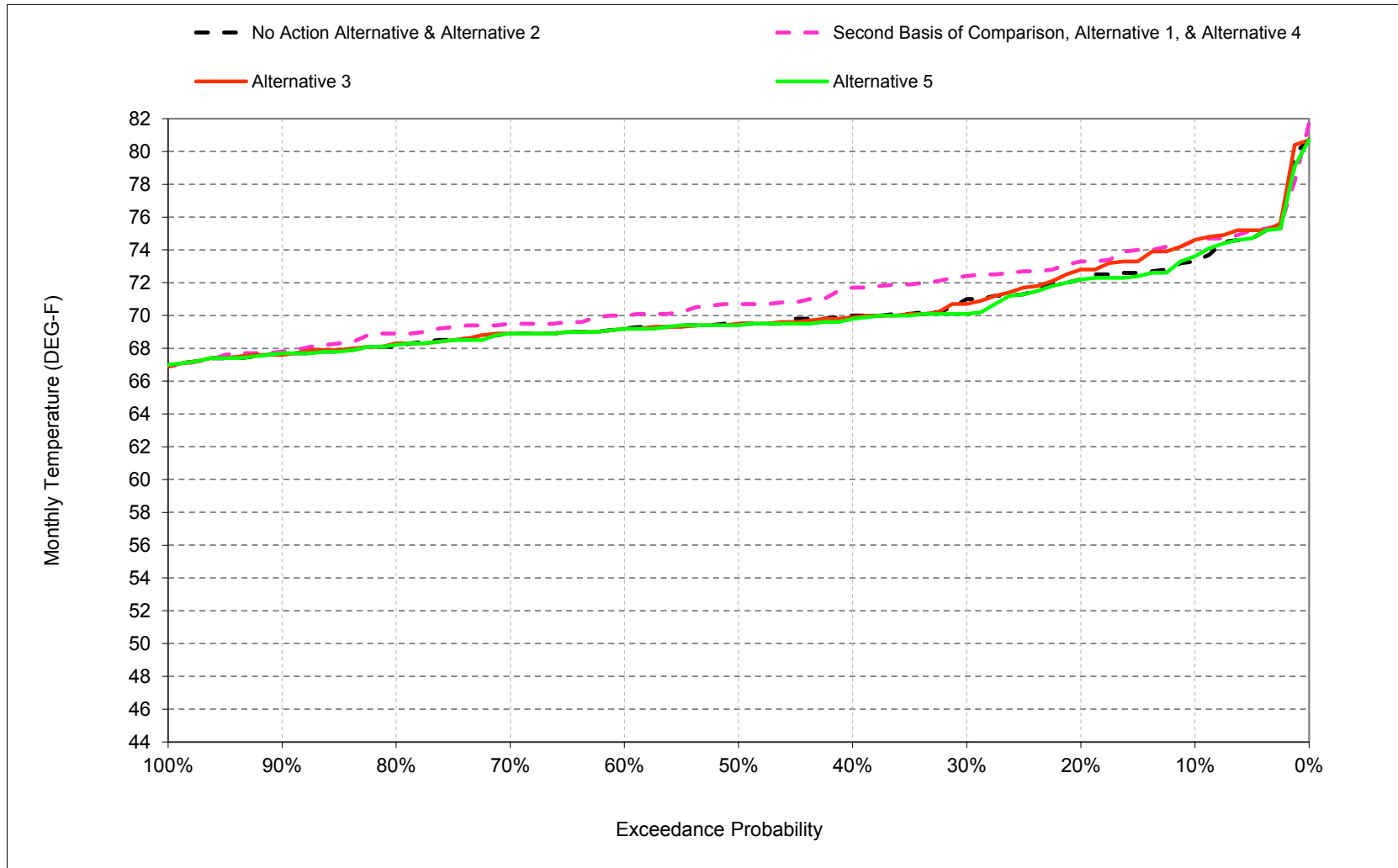
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-21-9. Feather River at Robinson Riffle, June



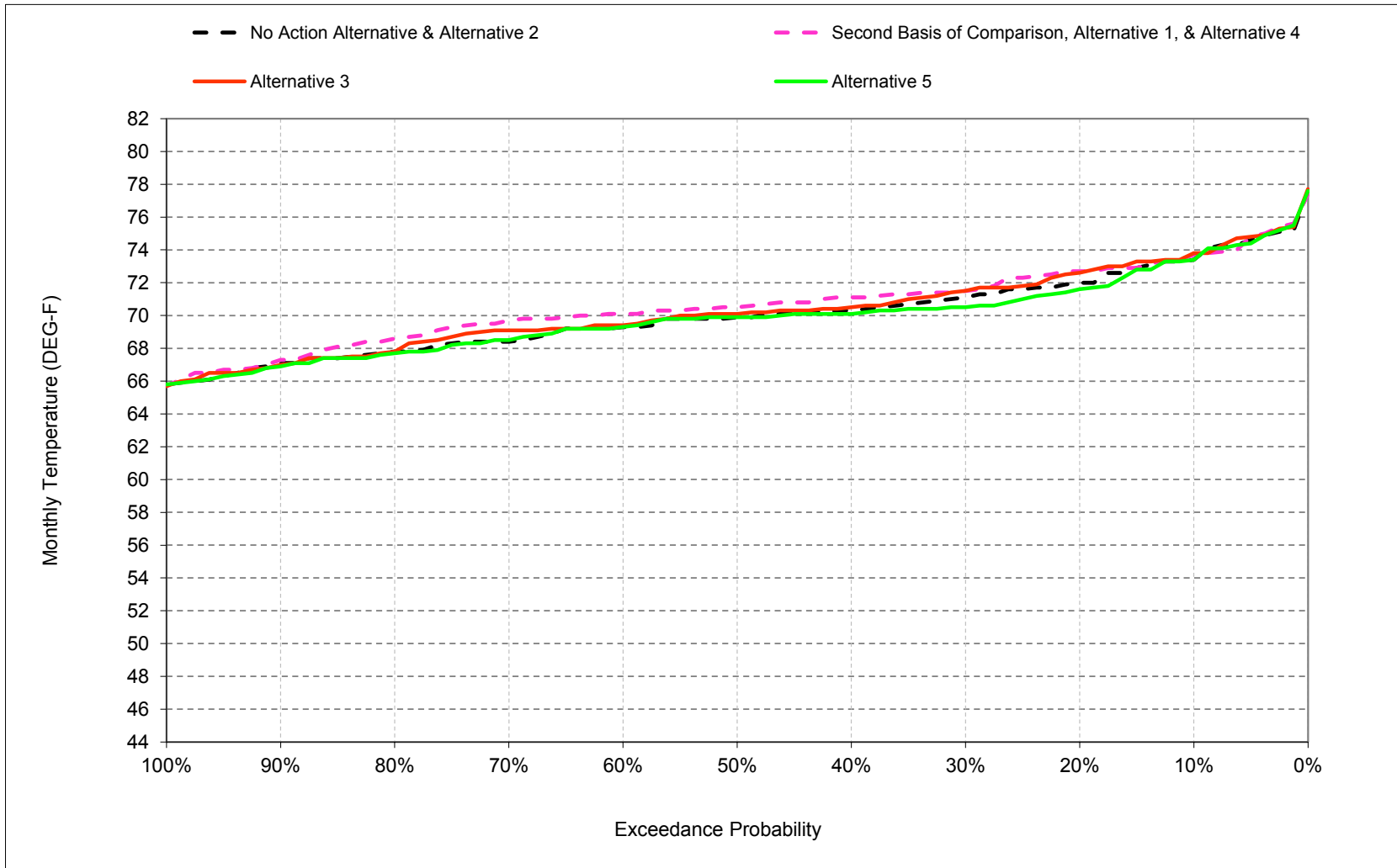
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-21-10. Feather River at Robinson Riffle, July



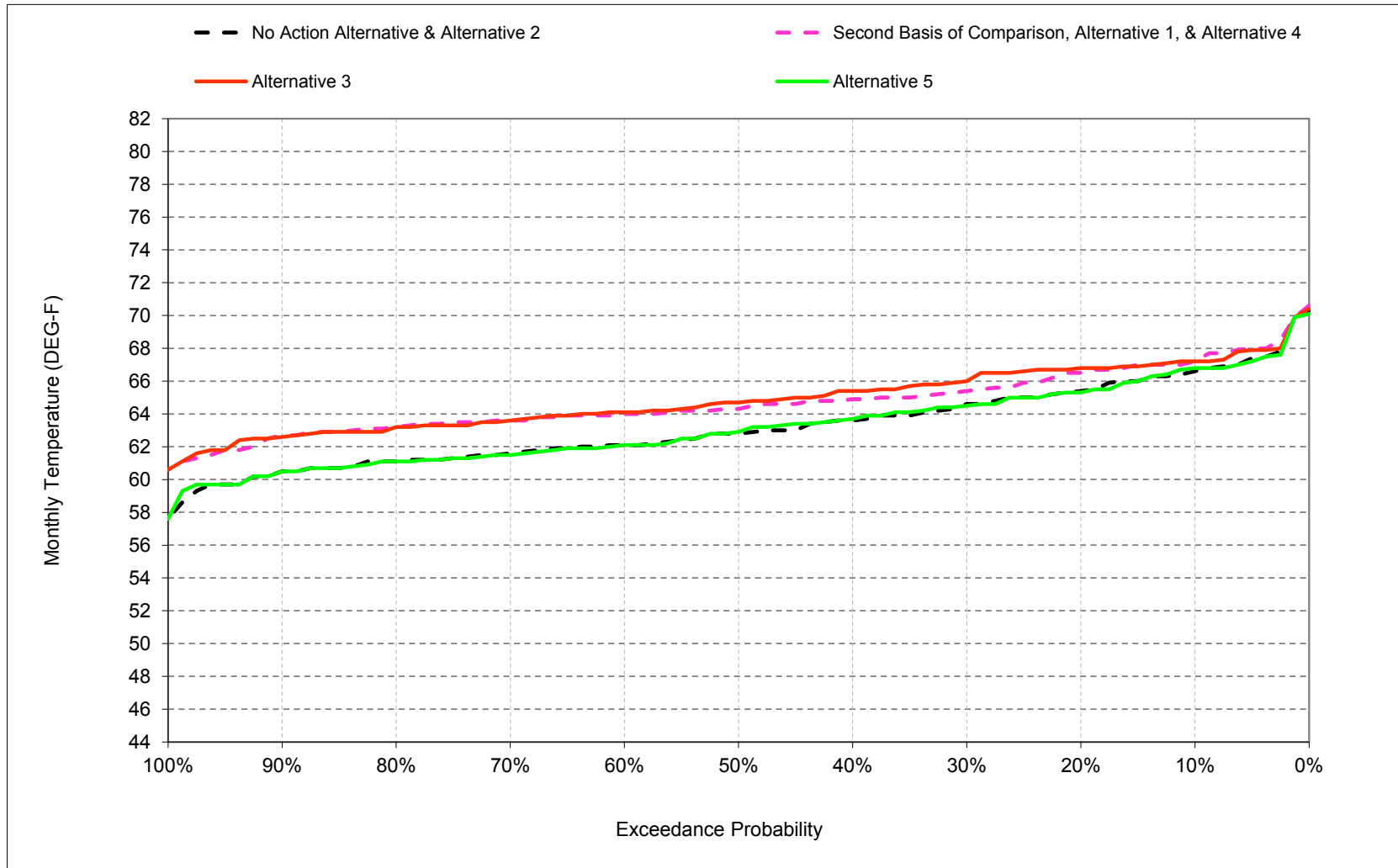
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-21-11. Feather River at Robinson Riffle, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-21-12. Feather River at Robinson Riffle, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-21-1. Feather River at Robinson Riffle, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
10%	62	58	52	50	53	57	60	67	71	73	73	67
20%	60	57	51	50	52	56	59	65	71	72	72	65
30%	60	56	51	49	52	55	58	64	70	71	71	65
40%	59	56	51	49	52	55	58	64	69	70	70	64
50%	59	55	50	48	51	54	58	64	69	70	70	63
60%	59	55	50	48	51	53	57	63	68	69	69	62
70%	58	54	49	47	50	52	57	62	67	69	68	62
80%	57	54	49	46	49	52	56	61	67	68	68	61
90%	57	52	48	45	49	50	55	60	66	68	67	61
Long Term												
Full Simulation Period ^b	59	55	50	48	51	54	57	63	68	70	70	63
Water Year Types^c												
Wet (32%)	57	53	48	48	50	52	56	62	67	70	69	61
Above Normal (16%)	60	56	50	45	47	49	54	59	63	63	62	57
Below Normal (13%)	59	55	50	48	51	55	59	64	69	69	69	65
Dry (24%)	59	56	50	47	51	55	58	64	69	70	71	64
Critical (15%)	60	56	50	48	52	55	58	64	70	74	73	66

Alternative 1												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
10%	62	58	52	50	53	57	60	66	70	75	74	67
20%	61	57	51	50	53	56	59	65	69	73	73	67
30%	60	56	50	49	52	55	58	64	69	72	72	65
40%	60	55	50	49	51	55	58	64	68	72	71	65
50%	59	55	50	48	51	54	58	63	68	71	71	64
60%	59	54	49	48	51	53	57	63	67	70	70	64
70%	58	53	49	47	50	52	57	62	66	70	70	64
80%	57	53	48	46	49	52	56	61	66	69	69	63
90%	57	52	47	45	49	50	55	60	65	68	67	63
Long Term												
Full Simulation Period ^b	59	55	49	48	51	54	57	63	68	71	71	65
Water Year Types^c												
Wet (32%)	56	52	48	48	50	52	56	62	67	70	70	65
Above Normal (16%)	60	55	50	45	47	49	53	59	62	63	63	59
Below Normal (13%)	59	54	49	48	51	55	59	63	67	70	71	65
Dry (24%)	60	55	49	47	51	55	58	64	68	72	71	65
Critical (15%)	60	56	49	48	52	55	58	64	69	75	73	67

Alternative 1 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
0.1	-0.5	-0.2	-0.4	-0.1	0.0	0.1	0.2	-0.6	-0.4	1.3	0.3	0.6
0.2	0.7	0.2	-0.3	0.0	0.3	0.0	0.2	-0.6	-1.6	1.1	0.7	1.1
0.3	0.2	-0.2	-0.4	0.3	0.0	-0.1	0.0	-0.2	-1.3	1.4	0.4	0.8
0.4	0.3	-0.2	-0.5	0.1	-0.2	0.0	0.1	-0.1	-0.9	1.7	0.8	1.3
0.5	0.0	-0.4	-0.4	0.0	0.1	-0.2	0.0	-0.5	-1.0	1.2	0.6	1.5
0.6	-0.1	-0.7	-0.5	0.1	0.0	-0.4	0.2	-0.5	-1.1	0.8	0.8	1.9
0.7	-0.3	-1.0	-0.5	0.2	0.1	-0.1	-0.1	-0.3	-1.0	0.6	1.3	2.0
0.8	0.1	-0.8	-0.3	-0.1	0.0	0.1	0.0	0.0	-0.7	0.8	0.8	2.1
0.9	0.2	0.0	-0.5	0.0	-0.1	0.1	0.0	0.0	-0.8	0.1	0.2	2.2
Long Term												
Full Simulation Period ^b	0.1	-0.3	-0.4	0.1	0.0	0.0	0.1	-0.2	-0.9	0.9	0.5	1.5
Water Year Types^c												
Wet (32%)	-0.2	-0.6	-0.1	0.2	0.1	0.0	0.1	-0.3	0.6	0.9	3.4	
Above Normal (16%)	0.4	-0.1	-0.6	0.1	-0.2	-0.3	-0.1	-0.3	-1.5	0.4	0.8	1.9
Below Normal (13%)	0.1	-0.7	-0.9	0.0	-0.1	0.0	0.0	-0.7	-2.5	0.8	1.5	0.0
Dry (24%)	0.2	-0.3	-0.5	0.0	0.2	0.1	0.1	-0.4	-0.9	1.7	-0.2	0.2
Critical (15%)	0.4	0.6	-0.4	0.1	-0.1	0.3	0.2	-0.1	-0.3	0.4	-0.1	0.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-21-2. Feather River at Robinson Riffle, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	62	58	52	50	53	57	60	67	71	73	73	67
20%	60	57	51	50	52	56	59	65	71	72	72	65
30%	60	56	51	49	52	55	58	64	70	71	71	65
40%	59	56	51	49	52	55	58	64	69	70	70	64
50%	59	55	50	48	51	54	58	64	69	70	70	63
60%	59	55	50	48	51	53	57	63	68	69	69	62
70%	58	54	49	47	50	52	57	62	67	69	68	62
80%	57	54	49	46	49	52	56	61	67	68	68	61
90%	57	52	48	45	49	50	55	60	66	68	67	61
Long Term												
Full Simulation Period ^b	59	55	50	48	51	54	57	63	68	70	70	63
Water Year Types ^c												
Wet (32%)	57	53	48	48	50	52	56	62	67	70	69	61
Above Normal (16%)	60	56	50	45	47	49	54	59	63	63	62	57
Below Normal (13%)	59	55	50	48	51	55	59	64	69	69	69	65
Dry (24%)	59	56	50	47	51	55	58	64	69	70	71	64
Critical (15%)	60	56	50	48	52	55	58	64	70	74	73	66

Alternative 3												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	62	58	51	50	53	57	60	66	70	75	74	67
20%	61	56	51	50	53	56	59	65	69	73	73	67
30%	60	56	51	49	52	55	58	64	69	71	72	66
40%	59	55	50	49	52	55	58	64	69	70	71	65
50%	59	54	50	48	51	54	58	63	68	70	70	65
60%	59	54	49	48	50	53	57	63	67	69	69	64
70%	58	53	49	47	50	53	57	62	67	69	69	64
80%	57	53	48	46	49	52	56	62	66	68	68	63
90%	57	52	47	46	49	50	55	60	65	68	67	63
Long Term												
Full Simulation Period ^b	59	55	50	48	51	54	57	63	68	70	70	65
Water Year Types ^c												
Wet (32%)	56	52	48	48	50	52	56	62	67	70	70	65
Above Normal (16%)	60	55	50	45	47	49	53	59	62	63	63	59
Below Normal (13%)	59	54	49	48	51	55	58	64	68	69	69	65
Dry (24%)	60	55	49	47	51	55	58	64	68	71	71	65
Critical (15%)	60	56	49	48	52	55	58	64	69	75	73	66

Alternative 3 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	-0.7	-0.3	-0.6	0.0	0.2	0.0	0.2	-0.2	-1.0	1.3	0.4	0.6
0.2	0.4	-0.1	-0.3	0.0	0.3	0.0	0.1	-0.4	-1.3	0.6	0.6	1.4
0.3	-0.1	-0.3	-0.3	0.1	0.0	-0.1	0.0	0.0	-1.1	-0.3	0.4	1.4
0.4	0.1	-0.2	-0.4	0.0	-0.1	0.0	0.0	0.1	-0.6	-0.1	0.2	1.8
0.5	-0.1	-0.9	-0.2	-0.1	0.1	-0.2	0.0	-0.3	-0.7	0.0	0.2	1.9
0.6	-0.1	-0.6	-0.5	0.1	-0.1	-0.4	0.1	-0.2	-0.8	0.0	0.1	2.0
0.7	-0.1	-0.9	-0.2	0.1	0.1	0.1	-0.1	-0.1	-0.6	0.0	0.7	2.0
0.8	0.0	-0.8	-0.3	-0.1	0.0	0.1	0.0	0.1	-0.7	0.2	0.0	2.1
0.9	0.0	0.0	-0.4	0.1	0.0	0.0	0.0	0.0	-0.4	-0.1	-0.1	2.1
Long Term												
Full Simulation Period ^b	0.0	-0.4	-0.4	0.0	0.0	-0.1	0.0	-0.1	-0.8	0.1	0.2	1.7
Water Year Types ^c												
Wet (32%)	-0.2	-0.5	-0.1	0.1	0.1	0.0	0.0	0.0	-0.4	0.1	0.7	3.5
Above Normal (16%)	-0.1	-0.4	-0.5	0.0	0.0	-0.2	-0.1	-0.3	-0.8	0.0	0.3	2.2
Below Normal (13%)	0.1	-0.7	-1.0	0.0	-0.2	0.0	-0.1	-0.2	-1.1	-0.4	-0.5	0.8
Dry (24%)	0.2	-0.4	-0.4	0.0	0.1	0.0	0.1	-0.1	-1.1	0.6	0.1	0.4
Critical (15%)	-0.3	0.0	-0.1	0.0	0.1	-0.2	0.2	0.1	-0.5	0.3	-0.1	-0.2

^a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

^b Based on an 81-year simulation period.

^c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-21-3. Feather River at Robinson Riffle, Monthly Temperature

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
No Action Alternative												
Probability of Exceedance ^a												
10%	62	58	52	50	53	57	60	67	71	73	73	67
20%	60	57	51	50	52	56	59	65	71	72	72	65
30%	60	56	51	49	52	55	58	64	70	71	71	65
40%	59	56	51	49	52	55	58	64	69	70	70	64
50%	59	55	50	48	51	54	58	64	69	70	70	63
60%	59	55	50	48	51	53	57	63	68	69	69	62
70%	58	54	49	47	50	52	57	62	67	69	68	62
80%	57	54	49	46	49	52	56	61	67	68	68	61
90%	57	52	48	45	49	50	55	60	66	68	67	61
Long Term												
Full Simulation Period ^b	59	55	50	48	51	54	57	63	68	70	70	63
Water Year Types ^c												
Wet (32%)	57	53	48	48	50	52	56	62	67	70	69	61
Above Normal (16%)	60	56	50	45	47	49	54	59	63	63	62	57
Below Normal (13%)	59	55	50	48	51	55	59	64	69	69	69	65
Dry (24%)	59	56	50	47	51	55	58	64	69	70	71	64
Critical (15%)	60	56	50	48	52	55	58	64	70	74	73	66

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Alternative 5												
Probability of Exceedance ^a												
10%	62	58	52	50	53	57	60	67	71	74	73	67
20%	60	57	51	50	53	56	59	65	71	72	72	65
30%	60	56	51	49	52	55	58	64	70	70	71	65
40%	60	55	51	49	52	55	58	64	69	70	70	64
50%	59	55	50	48	51	54	58	63	69	69	70	63
60%	59	55	50	48	50	53	57	63	68	69	69	62
70%	58	54	49	47	50	53	57	62	67	69	69	62
80%	57	54	49	46	49	52	56	61	67	68	68	61
90%	57	52	48	46	49	50	55	60	66	68	67	61
Long Term												
Full Simulation Period ^b	59	55	50	48	51	54	57	63	68	70	70	63
Water Year Types ^c												
Wet (32%)	57	53	48	48	50	52	56	62	67	70	69	61
Above Normal (16%)	60	55	50	45	47	49	54	59	63	63	62	57
Below Normal (13%)	59	55	50	48	52	55	59	64	69	69	69	65
Dry (24%)	59	55	50	47	51	55	58	64	69	70	71	64
Critical (15%)	60	56	49	48	52	55	58	64	70	74	72	66

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Alternative 5 minus No Action Alternative												
Probability of Exceedance ^a												
0.1	-0.7	0.0	0.0	0.1	-0.1	0.0	0.0	0.1	0.1	0.3	0.0	0.2
0.2	0.1	0.0	0.0	0.0	0.1	0.0	0.0	-0.3	0.0	0.0	-0.4	-0.1
0.3	0.0	-0.1	-0.2	0.0	0.0	0.0	0.0	-0.1	0.1	-0.9	-0.6	-0.1
0.4	0.3	-0.1	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	-0.2	-0.2	0.1
0.5	0.0	-0.1	-0.1	-0.1	0.0	0.0	0.0	-0.1	0.1	-0.1	0.0	0.1
0.6	0.0	0.1	-0.1	0.0	-0.1	0.0	0.0	-0.2	0.0	0.0	0.0	0.0
0.7	0.0	0.0	-0.1	0.1	0.0	0.1	0.0	-0.2	0.0	0.0	0.1	-0.1
0.8	0.0	-0.2	0.1	-0.1	0.0	0.0	0.0	0.0	-0.1	0.1	-0.1	0.0
0.9	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	0.0
Long Term												
Full Simulation Period ^b	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	-0.1	-0.1	0.0
Water Year Types ^c												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	0.0
Above Normal (16%)	0.0	-0.1	0.0	0.0	0.0	0.1	0.0	-0.1	0.0	0.0	0.0	0.0
Below Normal (13%)	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.0	-0.3	0.1
Dry (24%)	-0.1	-0.2	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.2	-0.1	0.1
Critical (15%)	-0.2	0.0	0.0	0.0	0.0	0.0	-0.1	-0.4	0.1	-0.1	-0.2	-0.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-21-4. Feather River at Robinson Riffle, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	62	58	52	50	53	57	60	66	70	75	74	67
20%	61	57	51	50	53	56	59	65	69	73	73	67
30%	60	56	50	49	52	55	58	64	69	72	72	65
40%	60	55	50	49	51	55	58	64	68	72	71	65
50%	59	55	50	48	51	54	58	63	68	71	71	64
60%	59	54	49	48	51	53	57	63	67	70	70	64
70%	58	53	49	47	50	52	57	62	66	70	70	64
80%	57	53	48	46	49	52	56	61	66	69	69	63
90%	57	52	47	45	49	50	55	60	65	68	67	63
Long Term												
Full Simulation Period ^b	59	55	49	48	51	54	57	63	68	71	71	65
Water Year Types ^c												
Wet (32%)	56	52	48	48	50	52	56	62	67	70	70	65
Above Normal (16%)	60	55	50	45	47	49	53	59	62	63	63	59
Below Normal (13%)	59	54	49	48	51	55	59	63	67	70	71	65
Dry (24%)	60	55	49	47	51	55	58	64	68	72	71	65
Critical (15%)	60	56	49	48	52	55	58	64	69	75	73	67

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	62	58	52	50	53	57	60	67	71	73	73	67
20%	60	57	51	50	52	56	59	65	71	72	72	65
30%	60	56	51	49	52	55	58	64	70	71	71	65
40%	59	56	51	49	52	55	58	64	69	70	70	64
50%	59	55	50	48	51	54	58	64	69	70	70	63
60%	59	55	50	48	51	53	57	63	68	69	69	62
70%	58	54	49	47	50	52	57	62	67	69	68	62
80%	57	54	49	46	49	52	56	61	67	68	68	61
90%	57	52	48	45	49	50	55	60	66	68	67	61
Long Term												
Full Simulation Period ^b	59	55	50	48	51	54	57	63	68	70	70	63
Water Year Types ^c												
Wet (32%)	57	53	48	48	50	52	56	62	67	70	69	61
Above Normal (16%)	60	56	50	45	47	49	54	59	63	63	62	57
Below Normal (13%)	59	55	50	48	51	55	59	64	69	69	69	65
Dry (24%)	59	56	50	47	51	55	58	64	69	70	71	64
Critical (15%)	60	56	50	48	52	55	58	64	70	74	73	66

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	0.5	0.2	0.4	0.1	0.0	-0.1	-0.2	0.6	0.4	-1.3	-0.3	-0.6
0.2	-0.7	-0.2	0.3	0.0	-0.3	0.0	-0.2	0.6	1.6	-1.1	-0.7	-1.1
0.3	-0.2	0.2	0.4	-0.3	0.0	0.1	0.0	0.2	1.3	-1.4	-0.4	-0.8
0.4	-0.3	0.2	0.5	-0.1	0.2	0.0	-0.1	0.1	0.9	-1.7	-0.8	-1.3
0.5	0.0	0.4	0.4	0.0	-0.1	0.2	0.0	0.5	1.0	-1.2	-0.6	-1.5
0.6	0.1	0.7	0.5	-0.1	0.0	0.4	-0.2	0.5	1.1	-0.8	-0.8	-1.9
0.7	0.3	1.0	0.5	-0.2	-0.1	0.1	0.1	0.3	1.0	-0.6	-1.3	-2.0
0.8	-0.1	0.8	0.3	0.1	0.0	-0.1	0.0	0.0	0.7	-0.8	-0.8	-2.1
0.9	-0.2	0.0	0.5	0.0	0.1	-0.1	0.0	0.0	0.8	-0.1	-0.2	-2.2
Long Term												
Full Simulation Period ^b	-0.1	0.3	0.4	-0.1	0.0	0.0	-0.1	0.2	0.9	-0.9	-0.5	-1.5
Water Year Types ^c												
Wet (32%)	0.2	0.6	0.1	-0.2	-0.1	0.0	0.0	-0.1	0.3	-0.6	-0.9	-3.4
Above Normal (16%)	-0.4	0.1	0.6	-0.1	0.2	0.3	0.1	0.3	1.5	-0.4	-0.8	-1.9
Below Normal (13%)	-0.1	0.7	0.9	0.0	0.1	0.0	0.0	0.7	2.5	-0.8	-1.5	0.0
Dry (24%)	-0.2	0.3	0.5	0.0	-0.2	-0.1	-0.1	0.4	0.9	-1.7	0.2	-0.2
Critical (15%)	-0.4	-0.6	0.4	-0.1	0.1	-0.3	-0.2	0.1	0.3	-0.4	0.1	-0.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-21-5. Feather River at Robinson Riffle, Monthly Temperature

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Second Basis of Comparison												
Probability of Exceedance ^a												
10%	62	58	52	50	53	57	60	66	70	75	74	67
20%	61	57	51	50	53	56	59	65	69	73	73	67
30%	60	56	50	49	52	55	58	64	69	72	72	65
40%	60	55	50	49	51	55	58	64	68	72	71	65
50%	59	55	50	48	51	54	58	63	68	71	71	64
60%	59	54	49	48	51	53	57	63	67	70	70	64
70%	58	53	49	47	50	52	57	62	66	70	70	64
80%	57	53	48	46	49	52	56	61	66	69	69	63
90%	57	52	47	45	49	50	55	60	65	68	67	63
Long Term												
Full Simulation Period ^b	59	55	49	48	51	54	57	63	68	71	71	65
Water Year Types ^c												
Wet (32%)	56	52	48	48	50	52	56	62	67	70	70	65
Above Normal (16%)	60	55	50	45	47	49	53	59	62	63	63	59
Below Normal (13%)	59	54	49	48	51	55	59	63	67	70	71	65
Dry (24%)	60	55	49	47	51	55	58	64	68	72	71	65
Critical (15%)	60	56	49	48	52	55	58	64	69	75	73	67

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Alternative 3												
Probability of Exceedance ^a												
10%	62	58	51	50	53	57	60	66	70	75	74	67
20%	61	56	51	50	53	56	59	65	69	73	73	67
30%	60	56	51	49	52	55	58	64	69	71	72	66
40%	59	55	50	49	52	55	58	64	69	70	71	65
50%	59	54	50	48	51	54	58	63	68	70	70	65
60%	59	54	49	48	50	53	57	63	67	69	69	64
70%	58	53	49	47	50	53	57	62	67	69	69	64
80%	57	53	48	46	49	52	56	62	66	68	68	63
90%	57	52	47	46	49	50	55	60	65	68	67	63
Long Term												
Full Simulation Period ^b	59	55	50	48	51	54	57	63	68	70	70	65
Water Year Types ^c												
Wet (32%)	56	52	48	48	50	52	56	62	67	70	70	65
Above Normal (16%)	60	55	50	45	47	49	53	59	62	63	63	59
Below Normal (13%)	59	54	49	48	51	55	58	64	68	69	69	65
Dry (24%)	60	55	49	47	51	55	58	64	68	71	71	65
Critical (15%)	60	56	49	48	52	55	58	64	69	75	73	66

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Alternative 3 minus Second Basis of Comparison												
Probability of Exceedance ^a												
0.1	-0.2	-0.1	-0.2	0.1	0.2	-0.1	0.0	0.4	-0.6	0.0	0.1	0.0
0.2	-0.3	-0.3	0.0	0.0	0.0	0.0	-0.1	0.2	0.3	-0.5	-0.1	0.3
0.3	-0.3	-0.1	0.1	-0.2	0.0	0.0	0.0	0.2	0.2	-1.7	0.0	0.6
0.4	-0.2	0.0	0.1	-0.1	0.1	0.0	-0.1	0.2	0.3	-1.8	-0.6	0.5
0.5	-0.1	-0.5	0.2	-0.1	0.0	0.0	0.0	0.2	0.3	-1.2	-0.4	0.4
0.6	0.0	0.1	0.0	0.0	-0.1	0.0	-0.1	0.3	0.3	-0.8	-0.7	0.1
0.7	0.2	0.1	0.3	-0.1	0.0	0.2	0.0	0.2	0.4	-0.6	-0.6	0.0
0.8	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-0.6	-0.8	0.0
0.9	-0.2	0.0	0.1	0.1	0.1	-0.1	0.0	0.0	0.4	-0.2	-0.3	-0.1
Long Term												
Full Simulation Period ^b	-0.1	-0.1	0.1	0.0	0.0	-0.1	0.0	0.2	0.2	-0.7	-0.3	0.2
Water Year Types ^c												
Wet (32%)	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	-0.5	-0.2	0.2
Above Normal (16%)	-0.5	-0.2	0.2	-0.1	0.2	0.1	0.0	0.1	0.6	-0.5	-0.5	0.3
Below Normal (13%)	0.0	0.0	-0.1	0.0	-0.1	0.0	0.0	0.5	1.4	-1.2	-2.0	0.8
Dry (24%)	0.1	-0.2	0.1	0.0	-0.1	-0.1	-0.1	0.3	-0.2	-1.2	0.3	0.2
Critical (15%)	-0.8	-0.5	0.3	-0.1	0.2	-0.5	0.0	0.3	-0.2	-0.1	0.0	-0.5

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-21-6. Feather River at Robinson Riffle, Monthly Temperature

Second Basis of Comparison		Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	
Probability of Exceedance^a													
10%	62	58	52	50	53	57	60	66	70	75	74	67	
20%	61	57	51	50	53	56	59	65	69	73	73	67	
30%	60	56	50	49	52	55	58	64	69	72	72	65	
40%	60	55	50	49	51	55	58	64	68	72	71	65	
50%	59	55	50	48	51	54	58	63	68	71	71	64	
60%	59	54	49	48	51	53	57	63	67	70	70	64	
70%	58	53	49	47	50	52	57	62	66	70	70	64	
80%	57	53	48	46	49	52	56	61	66	69	69	63	
90%	57	52	47	45	49	50	55	60	65	68	67	63	
Long Term													
Full Simulation Period ^b	59	55	49	48	51	54	57	63	68	71	71	65	
Water Year Types^c													
Wet (32%)	56	52	48	48	50	52	56	62	67	70	70	65	
Above Normal (16%)	60	55	50	45	47	49	53	59	62	63	63	59	
Below Normal (13%)	59	54	49	48	51	55	59	63	67	70	71	65	
Dry (24%)	60	55	49	47	51	55	58	64	68	72	71	65	
Critical (15%)	60	56	49	48	52	55	58	64	69	75	73	67	

Alternative 5		Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	
Probability of Exceedance^a													
10%	62	58	52	50	53	57	60	67	71	74	73	67	
20%	60	57	51	50	53	56	59	65	71	72	72	65	
30%	60	56	51	49	52	55	58	64	70	70	71	65	
40%	60	55	51	49	52	55	58	64	69	70	70	64	
50%	59	55	50	48	51	54	58	63	69	69	70	63	
60%	59	55	50	48	50	53	57	63	68	69	69	62	
70%	58	54	49	47	50	53	57	62	67	69	69	62	
80%	57	54	49	46	49	52	56	61	67	68	68	61	
90%	57	52	48	46	49	50	55	60	66	68	67	61	
Long Term													
Full Simulation Period ^b	59	55	50	48	51	54	57	63	68	70	70	63	
Water Year Types^c													
Wet (32%)	57	53	48	48	50	52	56	62	67	70	69	61	
Above Normal (16%)	60	55	50	45	47	49	54	59	63	63	62	57	
Below Normal (13%)	59	55	50	48	52	55	59	64	69	69	69	65	
Dry (24%)	59	55	50	47	51	55	58	64	69	70	71	64	
Critical (15%)	60	56	49	48	52	55	58	64	70	74	72	66	

Alternative 5 minus Second Basis of Comparison		Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	
Probability of Exceedance^a													
0.1	-0.2	0.2	0.4	0.2	-0.1	-0.1	-0.2	0.7	0.5	-1.0	-0.3	-0.4	
0.2	-0.6	-0.2	0.3	0.0	-0.2	0.0	-0.2	0.3	1.6	-1.1	-1.1	-1.2	
0.3	-0.2	0.1	0.2	-0.3	0.0	0.1	0.0	0.1	1.4	-2.3	-1.0	-0.9	
0.4	0.0	0.1	0.5	-0.1	0.2	0.0	-0.1	0.0	1.0	-1.9	-1.0	-1.2	
0.5	0.0	0.3	0.3	-0.1	-0.1	0.2	0.0	0.4	1.1	-1.3	-0.6	-1.4	
0.6	0.1	0.8	0.4	-0.1	-0.1	0.4	-0.2	0.3	1.1	-0.8	-0.8	-1.9	
0.7	0.3	1.0	0.4	-0.1	-0.1	0.2	0.1	0.1	1.0	-0.6	-1.2	-2.1	
0.8	-0.1	0.6	0.4	0.0	0.0	-0.1	0.0	0.0	0.6	-0.7	-0.9	-2.1	
0.9	-0.2	0.0	0.5	0.1	0.1	-0.1	0.0	0.0	0.8	-0.1	-0.4	-2.2	
Long Term													
Full Simulation Period ^b	-0.2	0.2	0.4	-0.1	0.0	0.0	-0.1	0.1	0.9	-0.9	-0.7	-1.5	
Water Year Types^c													
Wet (32%)	0.2	0.6	0.1	-0.2	-0.1	0.0	0.0	-0.1	0.3	-0.6	-1.0	-3.3	
Above Normal (16%)	-0.4	0.0	0.6	-0.1	0.2	0.3	0.1	0.2	1.5	-0.4	-0.8	-1.9	
Below Normal (13%)	-0.2	0.6	0.9	0.0	0.2	0.0	0.0	0.6	2.6	-0.9	-1.9	0.1	
Dry (24%)	-0.3	0.1	0.4	0.0	-0.2	-0.1	-0.1	0.3	0.8	-1.9	0.1	-0.1	
Critical (15%)	-0.6	-0.6	0.4	0.0	0.1	-0.3	-0.4	-0.2	0.4	-0.5	0.0	-0.6	

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

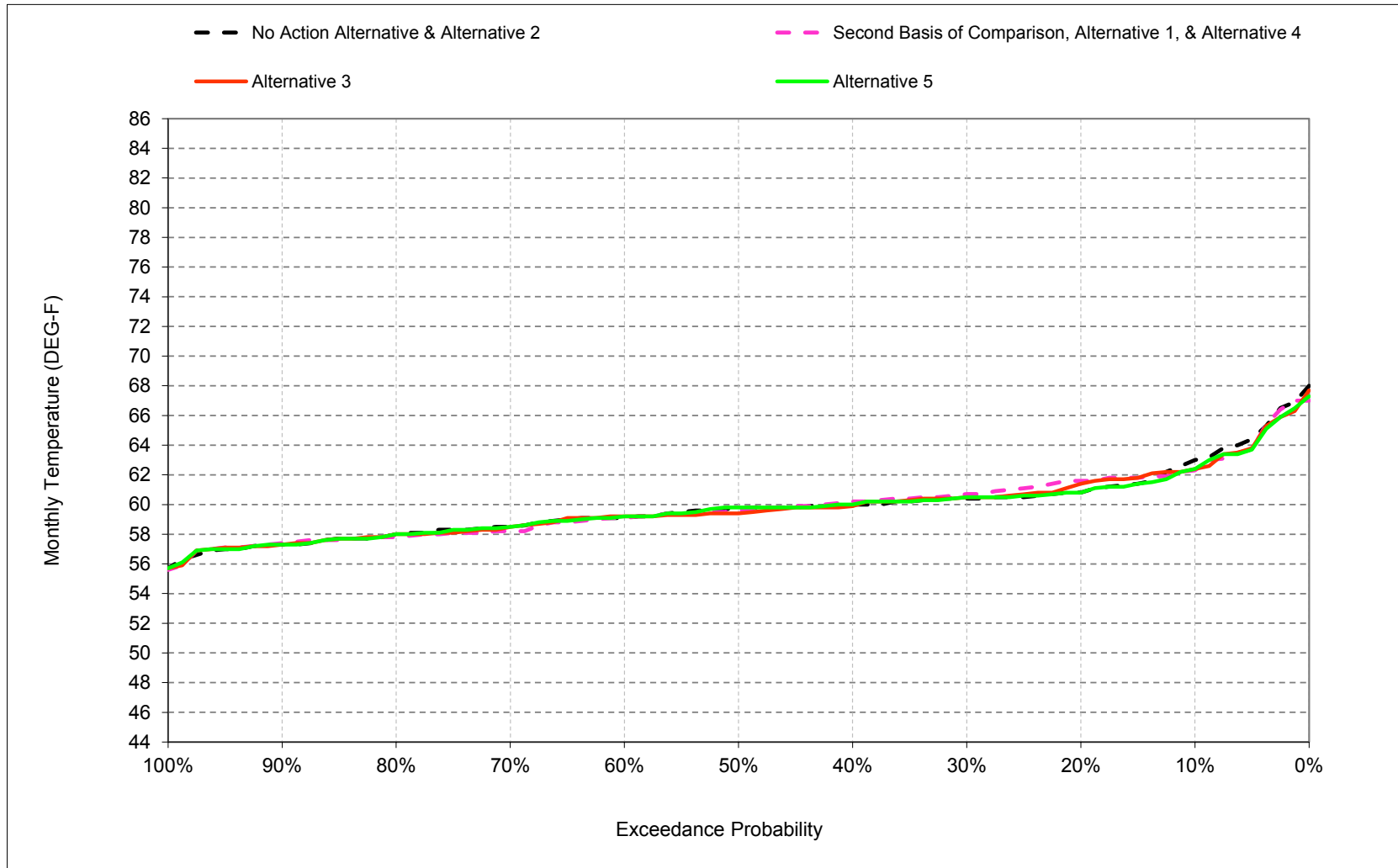
b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

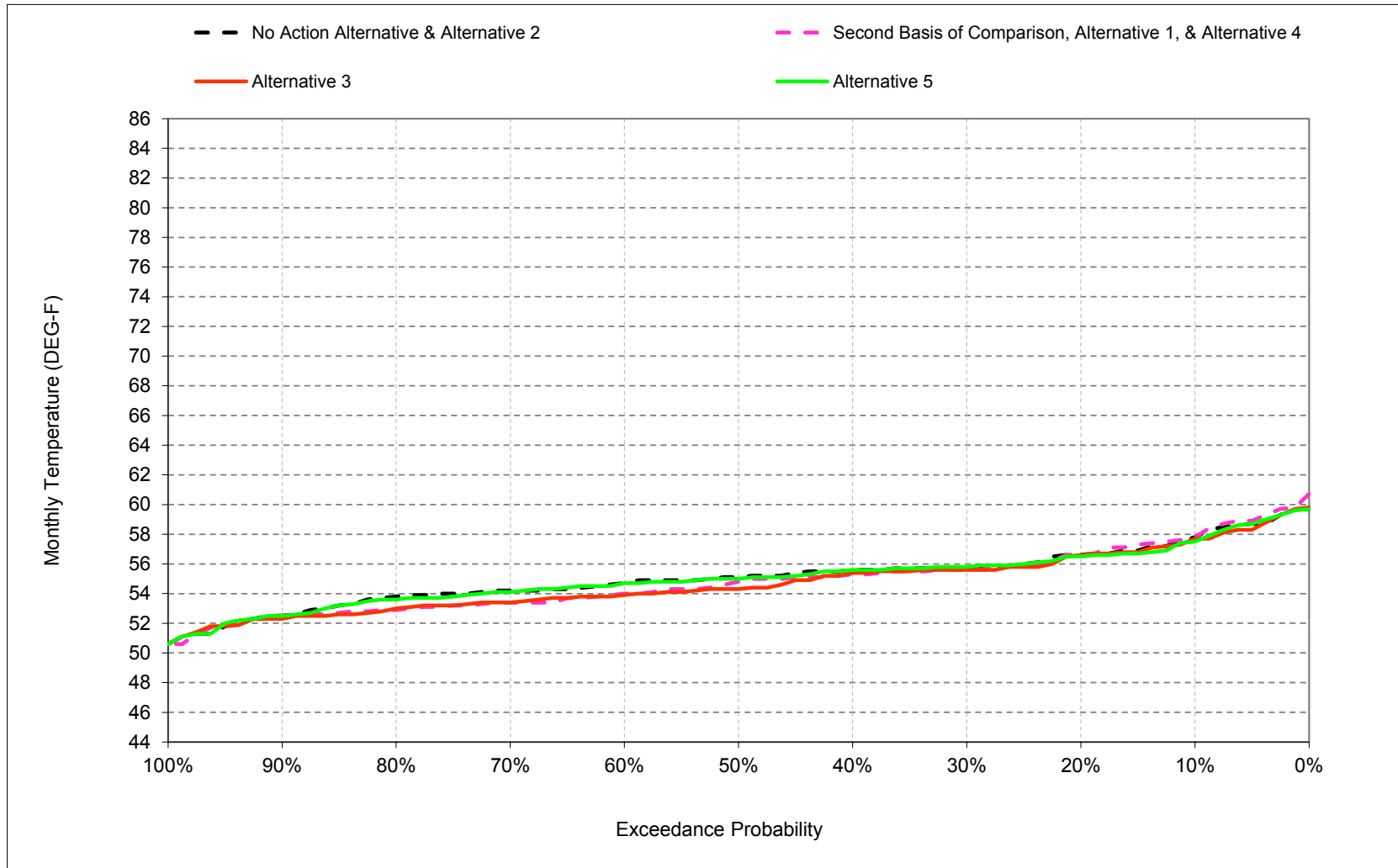
B.22. Feather River at Gridley Bridge

Figure B-22-1. Feather River at Gridley Bridge, October



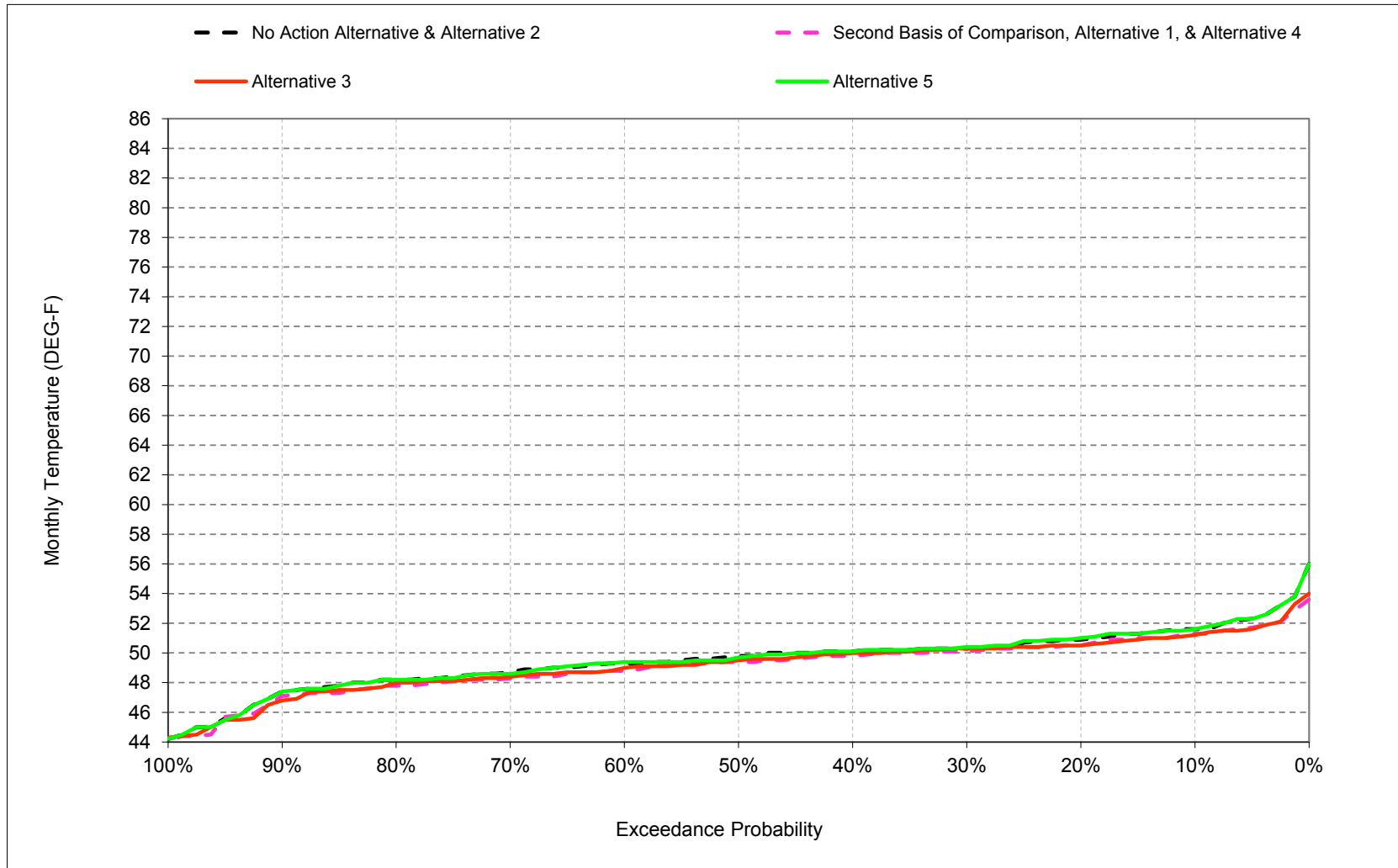
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-22-2. Feather River at Gridley Bridge, November



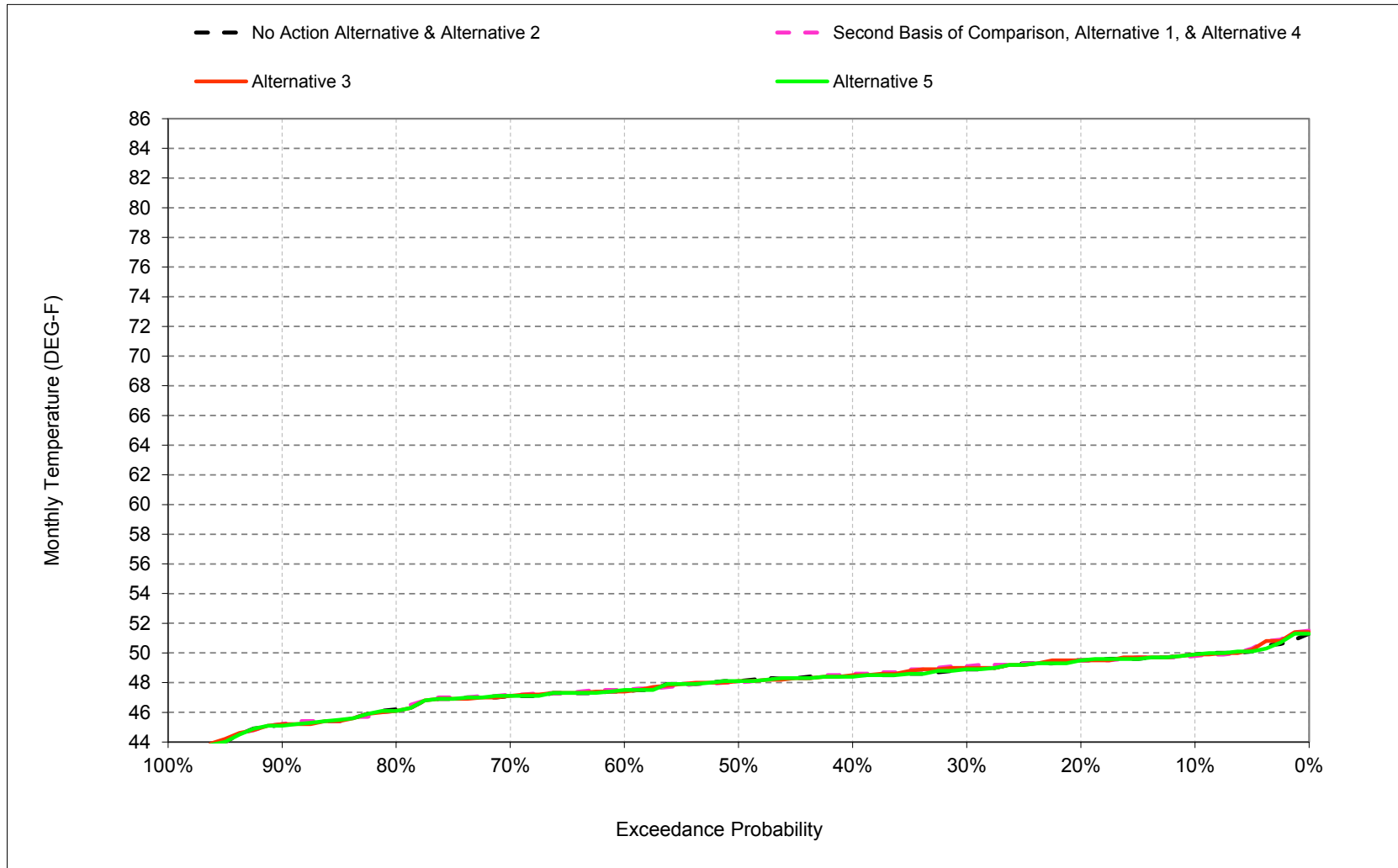
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-22-3. Feather River at Gridley Bridge, December



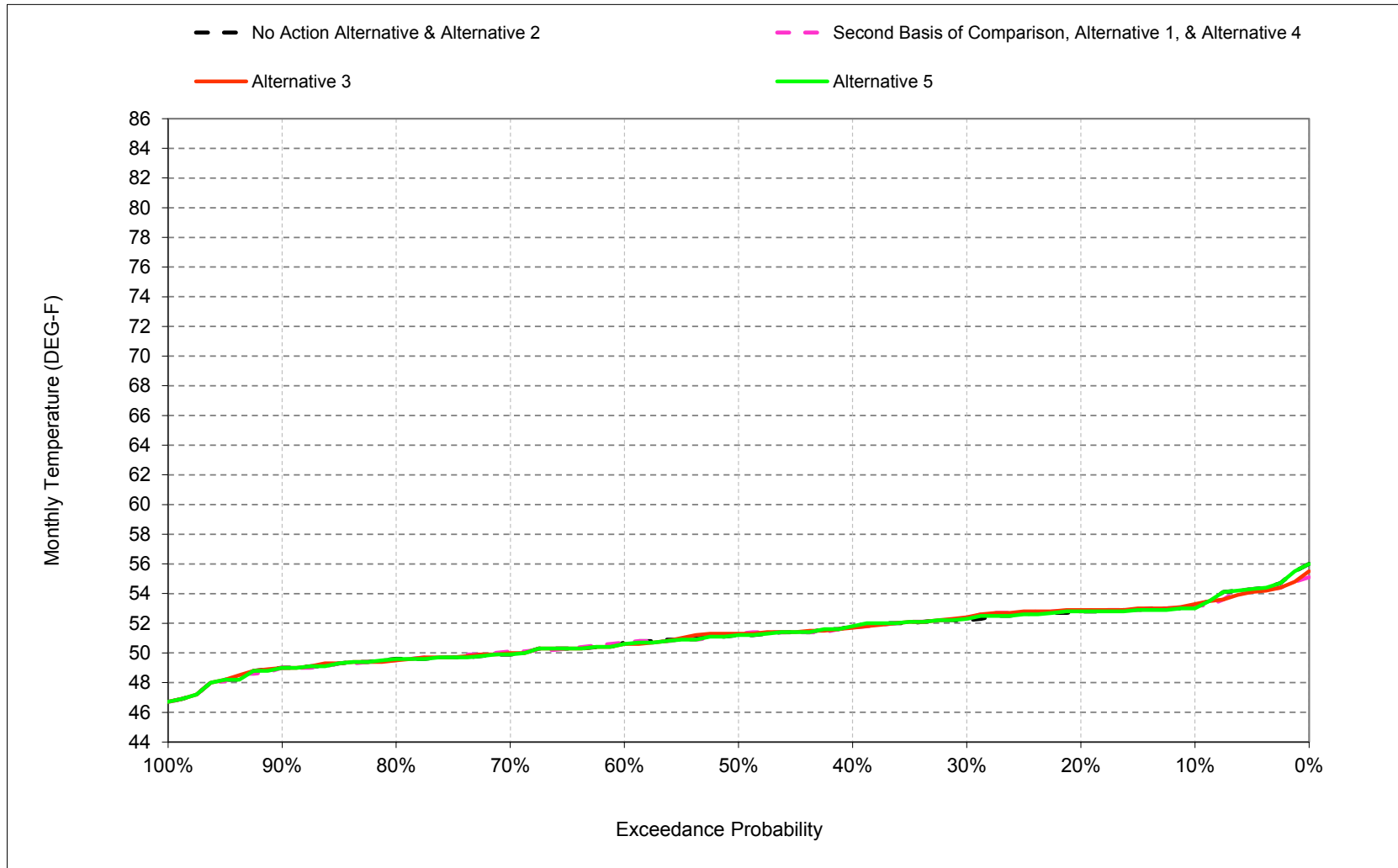
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-22-4. Feather River at Gridley Bridge, January



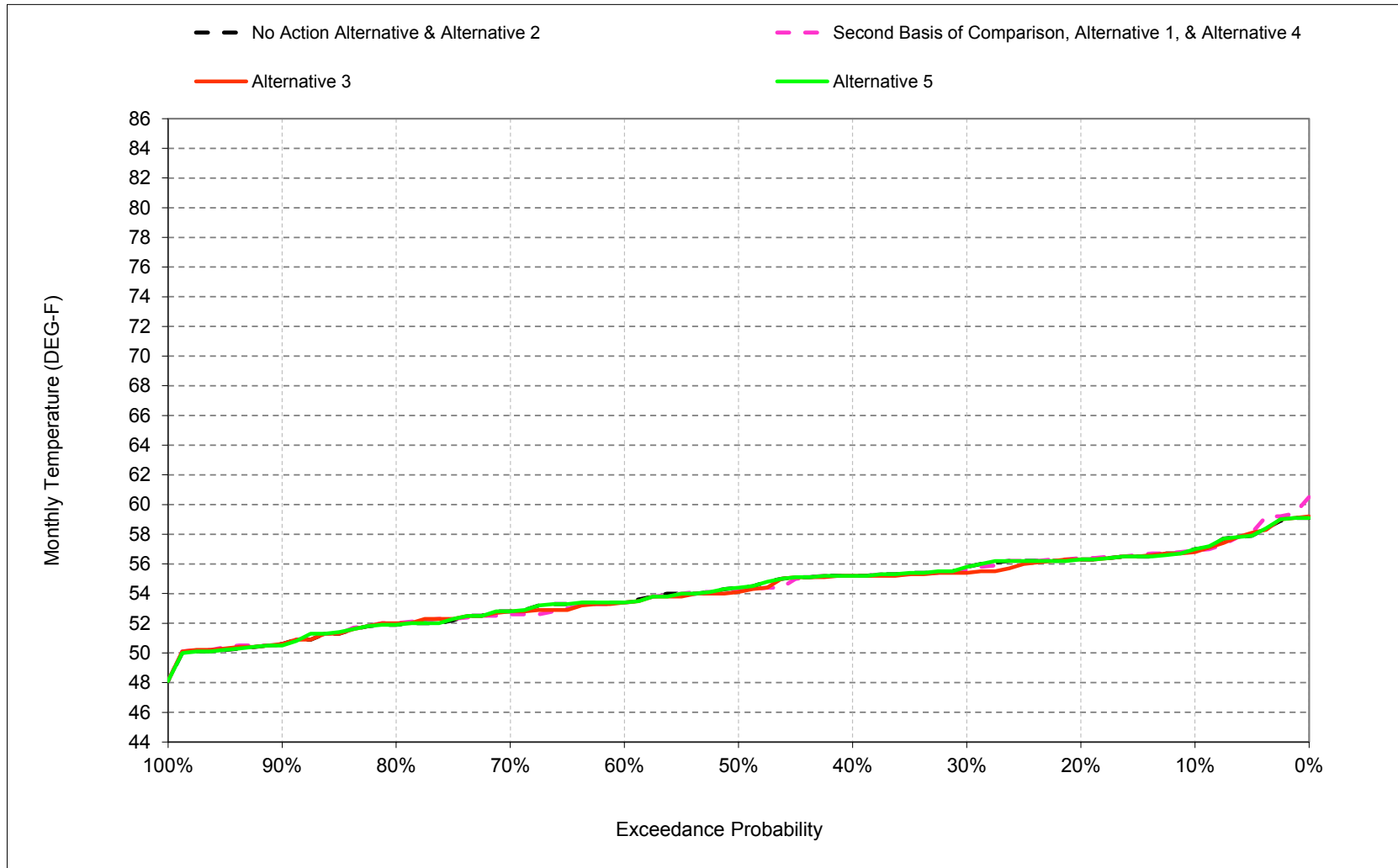
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-22-5. Feather River at Gridley Bridge, February



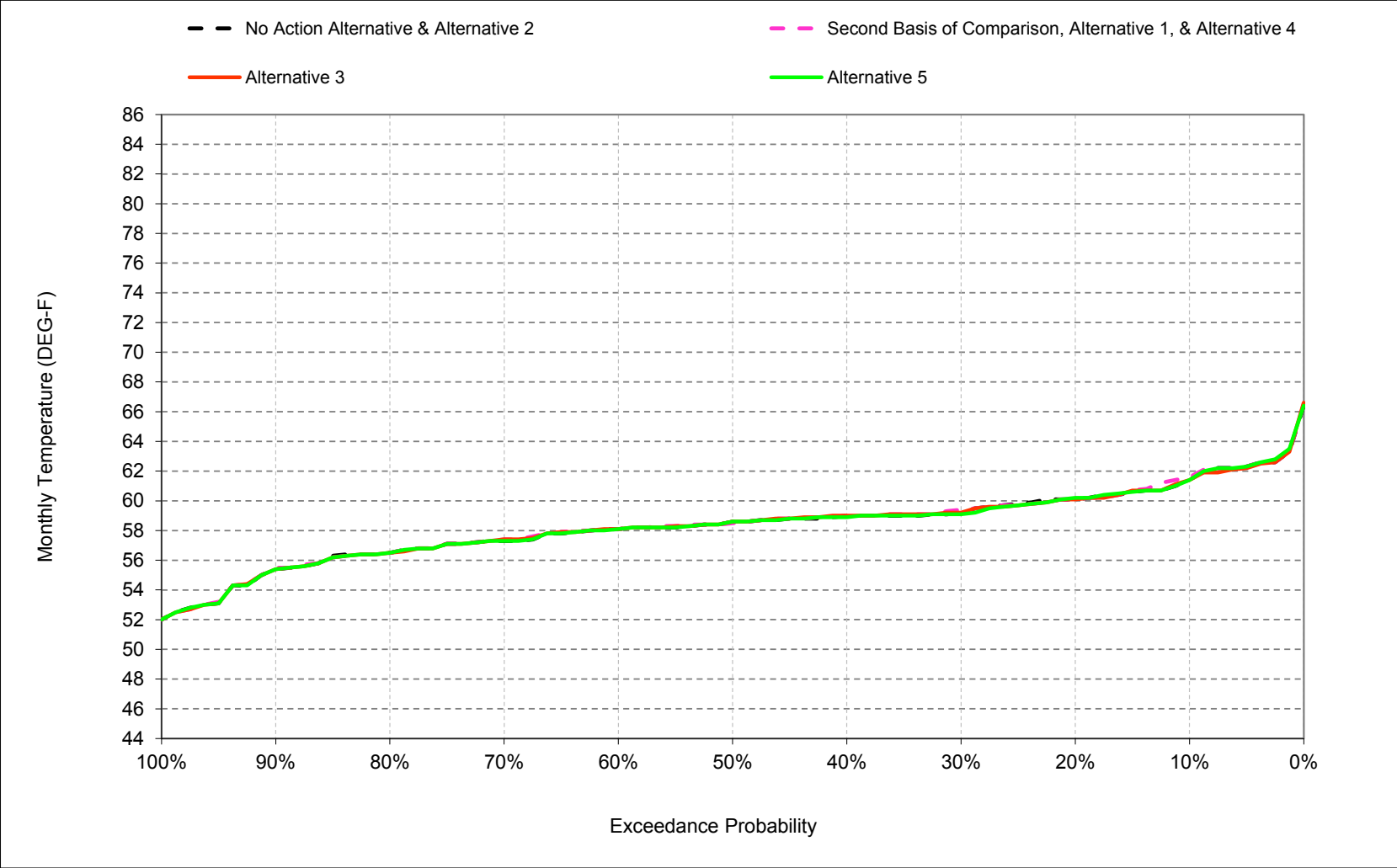
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-22-6. Feather River at Gridley Bridge, March



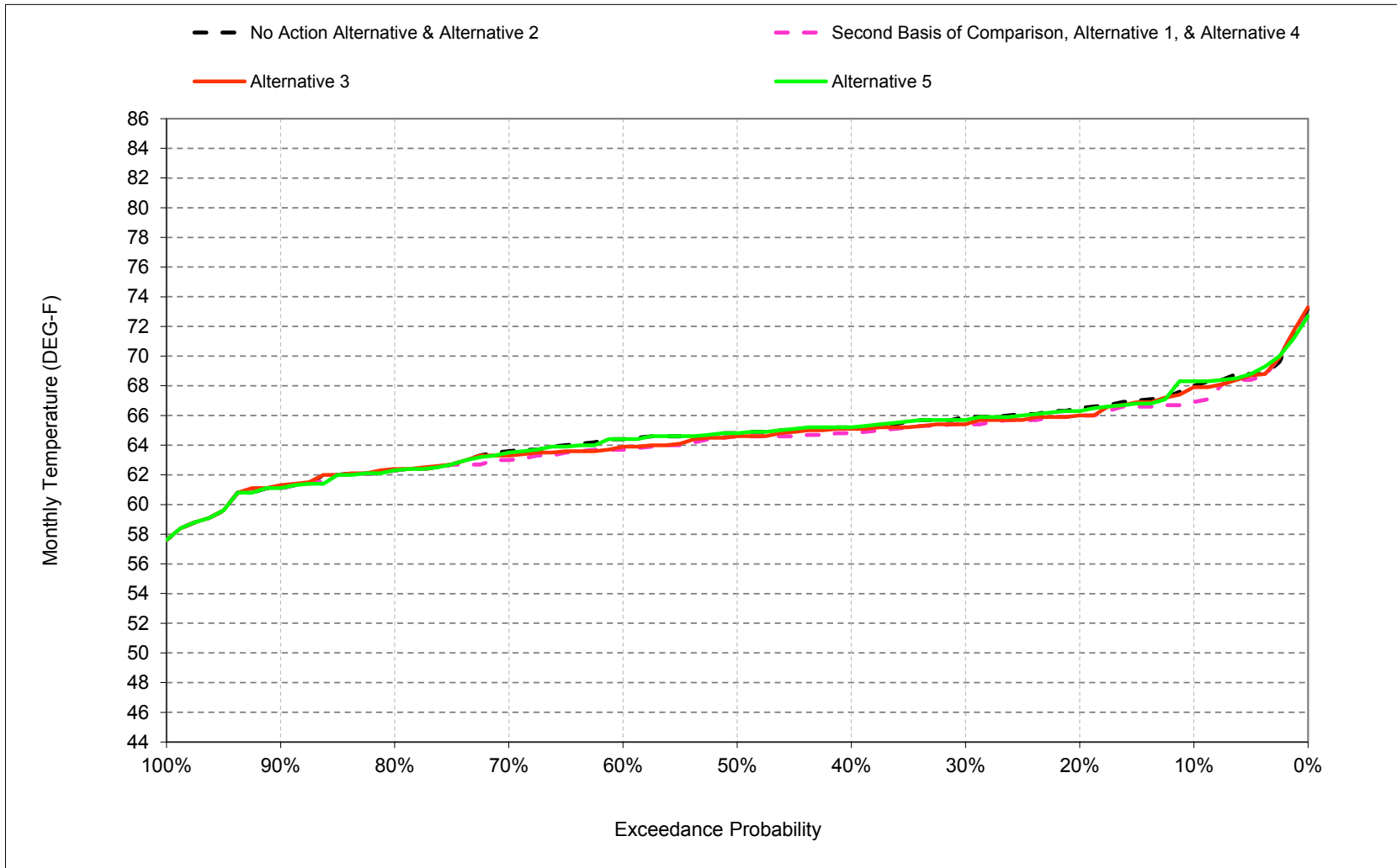
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-22-7. Feather River at Gridley Bridge, April



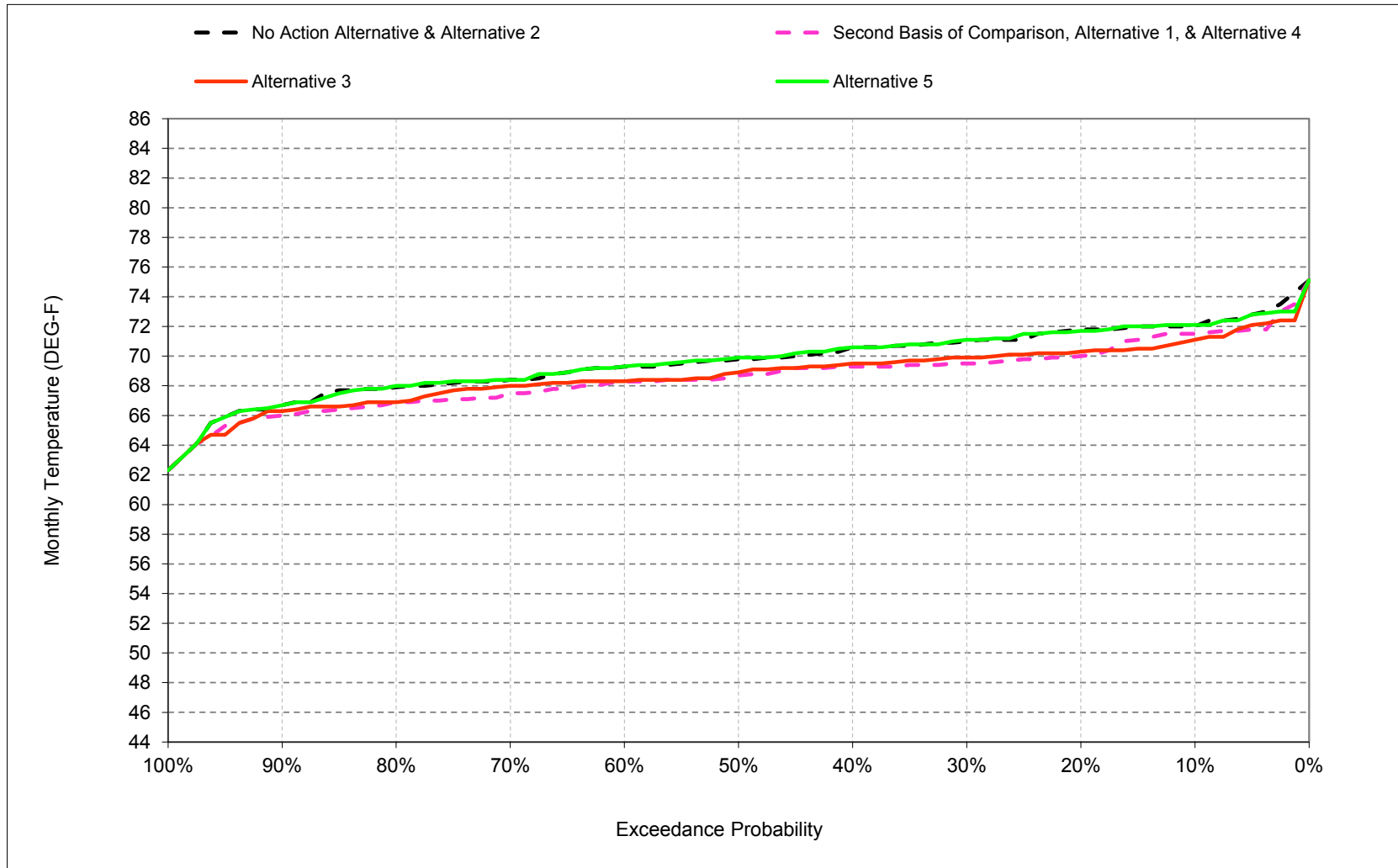
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-22-8. Feather River at Gridley Bridge, May



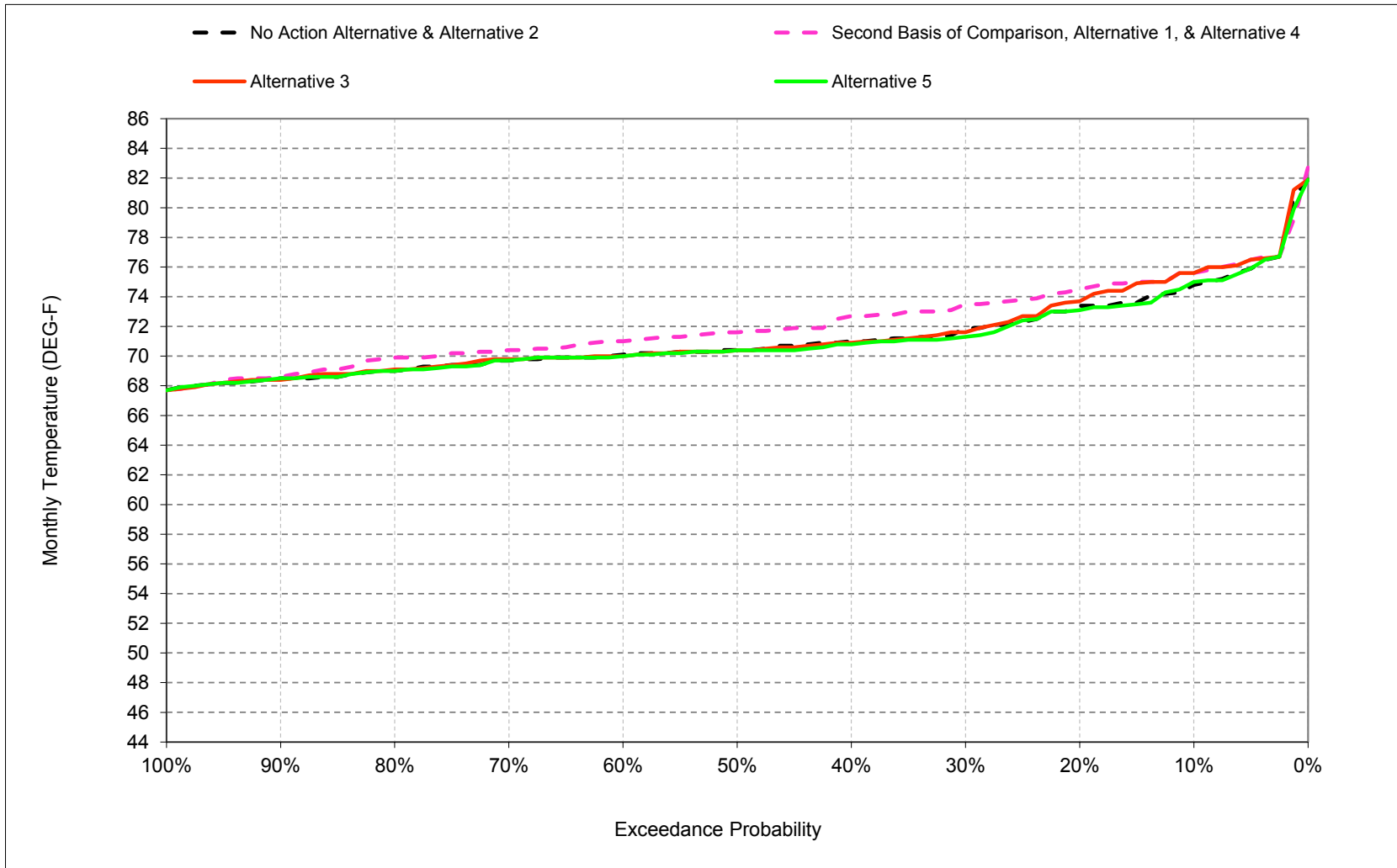
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-22-9. Feather River at Gridley Bridge, June



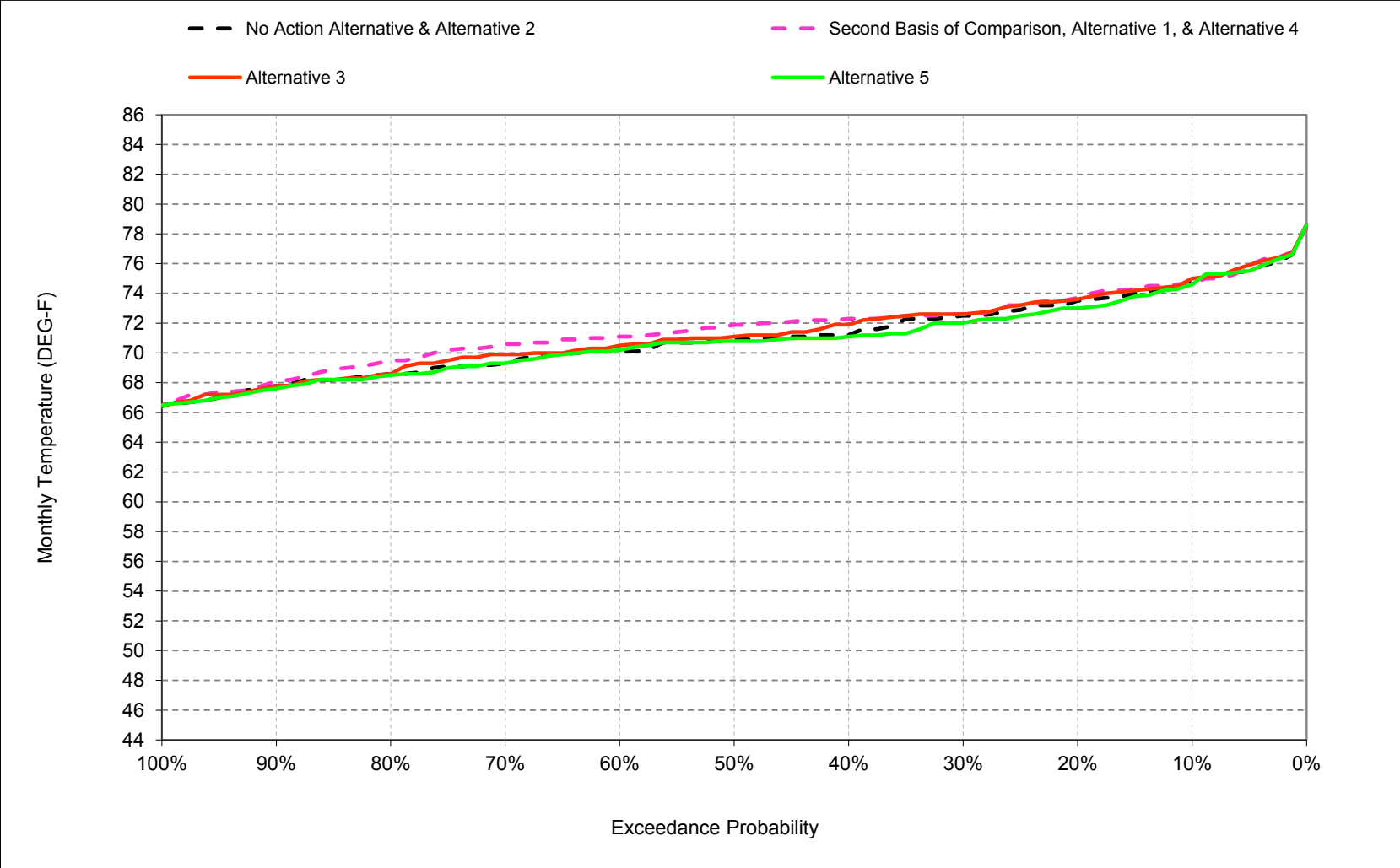
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-22-10. Feather River at Gridley Bridge, July



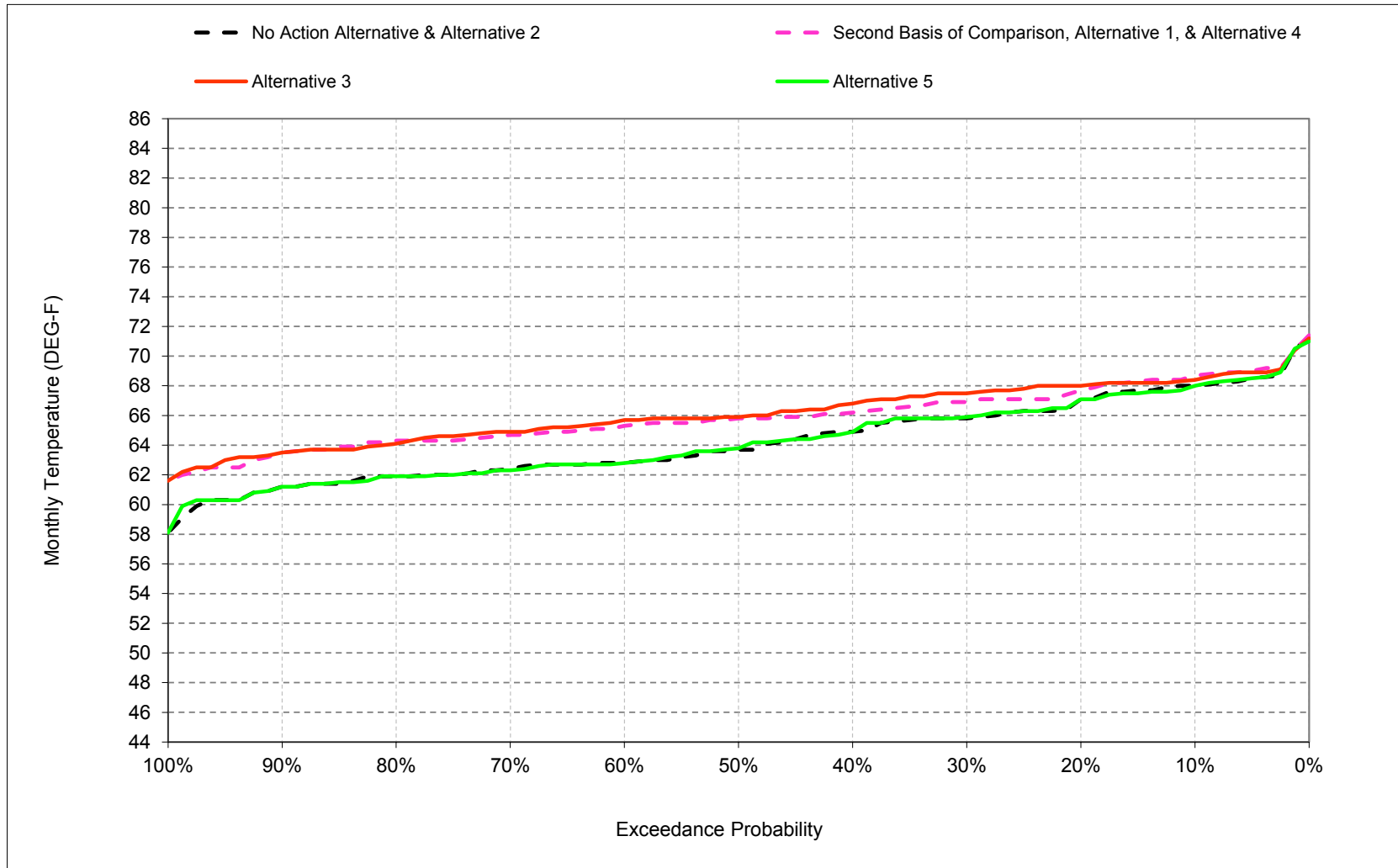
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-22-11. Feather River at Gridley Bridge, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-22-12. Feather River at Gridley Bridge, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-22-1. Feather River at Gridley Bridge, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	63	58	52	50	53	57	61	68	72	75	75	68
20%	61	57	51	50	53	56	60	67	72	73	74	67
30%	60	56	50	49	52	56	59	66	71	72	73	66
40%	60	56	50	49	52	55	59	65	71	71	71	65
50%	60	55	50	48	51	54	59	65	70	70	71	64
60%	59	55	49	47	51	53	58	64	69	70	70	63
70%	59	54	49	47	50	53	57	64	68	70	69	62
80%	58	54	48	46	50	52	57	62	68	69	69	62
90%	57	53	47	45	49	51	55	61	67	69	68	61
Long Term												
Full Simulation Period ^b	60	55	50	48	51	54	58	65	70	71	71	64
Water Year Types ^c												
Wet (32%)	57	52	47	48	50	52	56	63	68	71	70	62
Above Normal (16%)	60	56	50	45	48	50	55	60	65	64	63	57
Below Normal (13%)	59	55	50	48	52	55	60	65	70	70	70	66
Dry (24%)	60	55	49	47	51	56	59	66	70	71	72	66
Critical (15%)	61	56	49	48	52	56	59	66	71	75	74	68

Alternative 1												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	62	58	51	50	53	57	62	67	72	76	75	69
20%	62	57	51	50	53	56	60	66	70	75	74	68
30%	61	56	50	49	52	56	59	65	70	74	73	67
40%	60	55	50	49	52	55	59	65	69	73	72	66
50%	60	55	49	48	51	54	59	65	69	72	72	66
60%	59	54	49	48	51	53	58	64	68	71	71	65
70%	58	53	48	47	50	53	57	63	68	70	71	65
80%	58	53	48	46	50	52	57	62	67	70	70	64
90%	57	53	47	45	49	51	56	61	66	69	68	64
Long Term												
Full Simulation Period ^b	60	55	49	48	51	54	58	64	69	72	72	66
Water Year Types ^c												
Wet (32%)	57	52	47	48	50	52	56	63	68	71	71	66
Above Normal (16%)	61	55	50	45	47	49	54	60	63	64	64	60
Below Normal (13%)	59	54	49	48	51	55	60	64	68	71	72	66
Dry (24%)	60	55	49	47	52	56	59	65	69	73	72	66
Critical (15%)	61	56	49	48	52	56	59	66	70	76	74	68

Alternative 1 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	-0.7	0.0	-0.3	-0.1	0.0	-0.1	0.2	-1.1	-0.5	0.8	-0.2	0.7
0.2	0.8	0.0	-0.4	0.0	0.0	0.1	0.0	-0.5	-1.8	1.1	0.2	0.6
0.3	0.3	-0.2	-0.2	0.2	0.1	-0.2	0.2	-0.5	-1.5	1.6	0.1	1.1
0.4	0.2	-0.3	-0.3	0.1	-0.1	0.0	0.0	-0.4	-1.3	1.7	1.1	1.3
0.5	-0.1	-0.3	-0.4	-0.1	0.1	-0.2	-0.1	-0.2	-1.1	1.2	1.0	2.1
0.6	0.0	-0.7	-0.5	0.1	0.0	0.0	0.0	-0.7	-1.0	0.9	1.0	2.5
0.7	-0.3	-0.8	-0.4	0.1	0.2	-0.2	0.1	-0.6	-0.9	0.7	1.3	2.3
0.8	-0.2	-0.9	-0.4	-0.1	-0.1	0.1	0.0	0.0	-1.0	0.9	0.9	2.4
0.9	0.1	0.0	-0.3	0.0	0.0	-0.1	0.1	0.0	-0.7	0.1	0.3	2.3
Long Term												
Full Simulation Period ^b	0.0	-0.3	-0.4	0.1	0.0	0.0	0.0	-0.3	-1.0	0.9	0.6	1.6
Water Year Types ^c												
Wet (32%)	-0.2	-0.5	-0.1	0.2	0.1	0.0	0.0	0.0	-0.3	0.6	1.0	3.9
Above Normal (16%)	0.3	-0.2	-0.6	0.0	-0.2	-0.3	-0.1	-0.5	-1.5	0.4	0.9	2.1
Below Normal (13%)	0.0	-0.6	-0.9	0.0	-0.2	0.0	0.0	-1.0	-2.7	0.9	1.6	0.0
Dry (24%)	0.1	-0.3	-0.4	0.0	0.1	0.1	0.1	-0.4	-1.0	1.8	-0.4	0.1
Critical (15%)	0.2	0.5	-0.3	0.0	-0.1	0.2	0.1	-0.1	-0.4	0.4	-0.2	0.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-22-2. Feather River at Gridley Bridge, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	63	58	52	50	53	57	61	68	72	75	75	68
20%	61	57	51	50	53	56	60	67	72	73	74	67
30%	60	56	50	49	52	56	59	66	71	72	73	66
40%	60	56	50	49	52	55	59	65	71	71	71	65
50%	60	55	50	48	51	54	59	65	70	70	71	64
60%	59	55	49	47	51	53	58	64	69	70	70	63
70%	59	54	49	47	50	53	57	64	68	70	69	62
80%	58	54	48	46	50	52	57	62	68	69	69	62
90%	57	53	47	45	49	51	55	61	67	69	68	61
Long Term												
Full Simulation Period ^b	60	55	50	48	51	54	58	65	70	71	71	64
Water Year Types ^c												
Wet (32%)	57	52	47	48	50	52	56	63	68	71	70	62
Above Normal (16%)	60	56	50	45	48	50	55	60	65	64	63	57
Below Normal (13%)	59	55	50	48	52	55	60	65	70	70	70	66
Dry (24%)	60	55	49	47	51	56	59	66	70	71	72	66
Critical (15%)	61	56	49	48	52	56	59	66	71	75	74	68

Alternative 3												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	62	58	51	50	53	57	61	68	71	76	75	68
20%	61	57	51	50	53	56	60	66	70	74	74	68
30%	61	56	50	49	52	55	59	65	70	72	73	68
40%	60	55	50	49	52	55	59	65	70	71	72	67
50%	59	54	50	48	51	54	59	65	69	70	71	66
60%	59	54	49	47	51	53	58	64	68	70	71	66
70%	59	53	48	47	50	53	57	63	68	70	70	65
80%	58	53	48	46	50	52	57	62	67	69	69	64
90%	57	52	47	45	49	51	55	61	66	68	68	64
Long Term												
Full Simulation Period ^b	60	55	49	48	51	54	58	64	69	71	71	66
Water Year Types ^c												
Wet (32%)	57	52	47	48	50	52	56	63	68	71	71	66
Above Normal (16%)	60	55	50	45	48	49	54	60	64	64	64	60
Below Normal (13%)	59	54	49	48	51	55	60	65	69	70	70	67
Dry (24%)	60	55	49	47	51	56	59	66	69	72	72	66
Critical (15%)	60	56	49	48	52	55	59	66	70	76	74	67

Alternative 3 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	-0.6	-0.1	-0.4	0.0	0.1	-0.2	0.0	-0.1	-0.9	0.8	0.1	0.4
0.2	0.6	0.0	-0.4	0.0	0.1	0.0	0.0	-0.5	-1.5	0.3	0.1	0.9
0.3	0.1	-0.2	0.0	0.1	0.2	-0.4	0.0	-0.5	-1.1	-0.3	0.1	1.7
0.4	-0.1	-0.2	-0.1	0.0	-0.1	0.0	0.0	-0.1	-1.1	-0.1	0.7	1.9
0.5	-0.3	-0.8	-0.3	0.0	0.1	-0.3	0.0	-0.2	-0.9	0.0	0.2	2.2
0.6	0.1	-0.8	-0.3	0.0	-0.1	0.0	0.0	-0.5	-1.0	-0.1	0.4	2.9
0.7	0.0	-0.8	-0.3	0.0	0.1	0.0	0.1	-0.3	-0.4	0.1	0.6	2.5
0.8	0.0	-0.8	-0.2	-0.1	-0.1	0.1	0.0	0.1	-1.0	0.1	0.0	2.2
0.9	0.0	-0.2	-0.6	0.0	0.0	0.0	0.0	0.2	-0.4	-0.1	0.0	2.3
Long Term												
Full Simulation Period ^b	0.0	-0.4	-0.3	0.0	0.0	-0.1	0.0	-0.2	-0.9	0.2	0.2	1.9
Water Year Types ^c												
Wet (32%)	-0.1	-0.5	-0.1	0.1	0.0	0.0	0.0	-0.1	-0.6	0.1	0.8	4.1
Above Normal (16%)	-0.1	-0.4	-0.5	0.0	0.0	-0.2	-0.2	-0.4	-0.9	0.0	0.4	2.4
Below Normal (13%)	0.1	-0.6	-1.0	0.0	-0.2	0.0	-0.1	-0.4	-1.3	-0.4	-0.5	0.8
Dry (24%)	0.2	-0.4	-0.3	0.0	0.0	0.0	0.0	-0.2	-1.2	0.6	0.0	0.3
Critical (15%)	-0.3	0.0	-0.1	0.0	0.0	-0.1	0.1	0.1	-0.6	0.3	-0.1	-0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-22-3. Feather River at Gridley Bridge, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	63	58	52	50	53	57	61	68	72	75	75	68
20%	61	57	51	50	53	56	60	67	72	73	74	67
30%	60	56	50	49	52	56	59	66	71	72	73	66
40%	60	56	50	49	52	55	59	65	71	71	71	65
50%	60	55	50	48	51	54	59	65	70	70	71	64
60%	59	55	49	47	51	53	58	64	69	70	70	63
70%	59	54	49	47	50	53	57	64	68	70	69	62
80%	58	54	48	46	50	52	57	62	68	69	69	62
90%	57	53	47	45	49	51	55	61	67	69	68	61
Long Term												
Full Simulation Period ^b	60	55	50	48	51	54	58	65	70	71	71	64
Water Year Types ^c												
Wet (32%)	57	52	47	48	50	52	56	63	68	71	70	62
Above Normal (16%)	60	56	50	45	48	50	55	60	65	64	63	57
Below Normal (13%)	59	55	50	48	52	55	60	65	70	70	70	66
Dry (24%)	60	55	49	47	51	56	59	66	70	71	72	66
Critical (15%)	61	56	49	48	52	56	59	66	71	75	74	68

Alternative 5												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	62	58	52	50	53	57	61	68	72	75	75	68
20%	61	57	51	50	53	56	60	66	72	73	73	67
30%	61	56	50	49	52	56	59	66	71	71	72	66
40%	60	56	50	48	52	55	59	65	71	71	71	65
50%	60	55	50	48	51	54	59	65	70	70	71	64
60%	59	55	49	48	51	53	58	64	69	70	70	63
70%	59	54	49	47	50	53	57	64	68	70	69	62
80%	58	54	48	46	50	52	57	62	68	69	69	62
90%	57	53	47	45	49	51	55	61	67	69	68	61
Long Term												
Full Simulation Period ^b	60	55	50	48	51	54	58	65	70	71	71	64
Water Year Types ^c												
Wet (32%)	57	52	47	48	50	52	56	63	68	71	70	62
Above Normal (16%)	60	55	50	45	48	50	55	60	65	64	63	57
Below Normal (13%)	59	55	50	48	52	55	60	65	71	70	70	66
Dry (24%)	60	55	49	47	51	56	59	66	70	71	72	66
Critical (15%)	61	56	49	48	52	56	59	65	71	75	74	67

Alternative 5 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	-0.6	-0.3	0.0	0.0	-0.2	0.0	0.0	0.3	0.1	0.2	-0.3	0.0
0.2	0.0	-0.1	0.1	0.0	0.0	0.0	0.1	-0.2	-0.1	-0.3	-0.5	0.0
0.3	0.1	0.0	0.1	0.0	0.1	0.0	-0.1	-0.2	0.1	-0.6	-0.5	0.1
0.4	0.0	0.0	0.0	-0.1	0.0	0.0	-0.1	0.0	0.0	-0.2	-0.1	0.0
0.5	0.1	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-0.1	0.1
0.6	0.1	0.0	0.1	0.1	-0.1	0.0	0.0	0.0	0.0	-0.1	0.1	0.0
0.7	0.0	-0.1	-0.1	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	-0.1
0.8	0.0	-0.2	0.0	-0.1	0.0	0.0	0.0	0.0	0.1	0.0	-0.1	0.0
0.9	0.0	0.0	0.0	-0.1	0.0	-0.1	0.0	0.0	0.0	0.0	-0.2	0.0
Long Term												
Full Simulation Period ^b	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.2	0.0
Water Year Types ^c												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.2	0.0
Above Normal (16%)	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Below Normal (13%)	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-0.4	0.1
Dry (24%)	-0.1	-0.2	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	-0.2	-0.1	0.1
Critical (15%)	-0.1	0.0	0.0	0.0	0.0	0.0	-0.1	-0.2	0.1	0.0	-0.1	-0.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-22-4. Feather River at Gridley Bridge, Monthly Temperature

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Second Basis of Comparison												
Probability of Exceedance ^a												
10%	62	58	51	50	53	57	62	67	72	76	75	69
20%	62	57	51	50	53	56	60	66	70	75	74	68
30%	61	56	50	49	52	56	59	65	70	74	73	67
40%	60	55	50	49	52	55	59	65	69	73	72	66
50%	60	55	49	48	51	54	59	65	69	72	72	66
60%	59	54	49	48	51	53	58	64	68	71	71	65
70%	58	53	48	47	50	53	57	63	68	70	71	65
80%	58	53	48	46	50	52	57	62	67	70	70	64
90%	57	53	47	45	49	51	56	61	66	69	68	64
Long Term												
Full Simulation Period ^b	60	55	49	48	51	54	58	64	69	72	72	66
Water Year Types ^c												
Wet (32%)	57	52	47	48	50	52	56	63	68	71	71	66
Above Normal (16%)	61	55	50	45	47	49	54	60	63	64	64	60
Below Normal (13%)	59	54	49	48	51	55	60	64	68	71	72	66
Dry (24%)	60	55	49	47	52	56	59	65	69	73	72	66
Critical (15%)	61	56	49	48	52	56	59	66	70	76	74	68

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
No Action Alternative												
Probability of Exceedance ^a												
10%	63	58	52	50	53	57	61	68	72	75	75	68
20%	61	57	51	50	53	56	60	67	72	73	74	67
30%	60	56	50	49	52	56	59	66	71	72	73	66
40%	60	56	50	49	52	55	59	65	71	71	71	65
50%	60	55	50	48	51	54	59	65	70	70	71	64
60%	59	55	49	47	51	53	58	64	69	70	70	63
70%	59	54	49	47	50	53	57	64	68	70	69	62
80%	58	54	48	46	50	52	57	62	68	69	69	62
90%	57	53	47	45	49	51	55	61	67	69	68	61
Long Term												
Full Simulation Period ^b	60	55	50	48	51	54	58	65	70	71	71	64
Water Year Types ^c												
Wet (32%)	57	52	47	48	50	52	56	63	68	71	70	62
Above Normal (16%)	60	56	50	45	48	50	55	60	65	64	63	57
Below Normal (13%)	59	55	50	48	52	55	60	65	70	70	70	66
Dry (24%)	60	55	49	47	51	56	59	66	70	71	72	66
Critical (15%)	61	56	49	48	52	56	59	66	71	75	74	68

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
No Action Alternative minus Second Basis of Comparison												
Probability of Exceedance ^a												
0.1	0.7	0.0	0.3	0.1	0.0	0.1	-0.2	1.1	0.5	-0.8	0.2	-0.7
0.2	-0.8	0.0	0.4	0.0	0.0	-0.1	0.0	0.5	1.8	-1.1	-0.2	-0.6
0.3	-0.3	0.2	0.2	-0.2	-0.1	0.2	-0.2	0.5	1.5	-1.6	-0.1	-1.1
0.4	-0.2	0.3	0.3	-0.1	0.1	0.0	0.0	0.4	1.3	-1.7	-1.1	-1.3
0.5	0.1	0.3	0.4	0.1	-0.1	0.2	0.1	0.2	1.1	-1.2	-1.0	-2.1
0.6	0.0	0.7	0.5	-0.1	0.0	0.0	0.0	0.7	1.0	-0.9	-1.0	-2.5
0.7	0.3	0.8	0.4	-0.1	-0.2	0.2	-0.1	0.6	0.9	-0.7	-1.3	-2.3
0.8	0.2	0.9	0.4	0.1	0.1	-0.1	0.0	0.0	1.0	-0.9	-0.9	-2.4
0.9	-0.1	0.0	0.3	0.0	0.0	0.1	-0.1	0.0	0.7	-0.1	-0.3	-2.3
Long Term												
Full Simulation Period ^b	0.0	0.3	0.4	-0.1	0.0	0.0	0.0	0.3	1.0	-0.9	-0.6	-1.6
Water Year Types ^c												
Wet (32%)	0.2	0.5	0.1	-0.2	-0.1	0.0	0.0	0.0	0.3	-0.6	-1.0	-3.9
Above Normal (16%)	-0.3	0.2	0.6	0.0	0.2	0.3	0.1	0.5	1.5	-0.4	-0.9	-2.1
Below Normal (13%)	0.0	0.6	0.9	0.0	0.2	0.0	0.0	1.0	2.7	-0.9	-1.6	0.0
Dry (24%)	-0.1	0.3	0.4	0.0	-0.1	-0.1	-0.1	0.4	1.0	-1.8	0.4	-0.1
Critical (15%)	-0.2	-0.5	0.3	0.0	0.1	-0.2	-0.1	0.1	0.4	-0.4	0.2	-0.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-22-5. Feather River at Gridley Bridge, Monthly Temperature

Second Basis of Comparison		Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	
Probability of Exceedance^a													
10%	62	58	51	50	53	57	62	67	72	76	75	69	
20%	62	57	51	50	53	56	60	66	70	75	74	68	
30%	61	56	50	49	52	56	59	65	70	74	73	67	
40%	60	55	50	49	52	55	59	65	69	73	72	66	
50%	60	55	49	48	51	54	59	65	69	72	72	66	
60%	59	54	49	48	51	53	58	64	68	71	71	65	
70%	58	53	48	47	50	53	57	63	68	70	71	65	
80%	58	53	48	46	50	52	57	62	67	70	70	64	
90%	57	53	47	45	49	51	56	61	66	69	68	64	
Long Term													
Full Simulation Period ^b	60	55	49	48	51	54	58	64	69	72	72	66	
Water Year Types^c													
Wet (32%)	57	52	47	48	50	52	56	63	68	71	71	66	
Above Normal (16%)	61	55	50	45	47	49	54	60	63	64	64	60	
Below Normal (13%)	59	54	49	48	51	55	60	64	68	71	72	66	
Dry (24%)	60	55	49	47	52	56	59	65	69	73	72	66	
Critical (15%)	61	56	49	48	52	56	59	66	70	76	74	68	

Alternative 3		Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	
Probability of Exceedance^a													
10%	62	58	51	50	53	57	61	68	71	76	75	68	
20%	61	57	51	50	53	56	60	66	70	74	74	68	
30%	61	56	50	49	52	55	59	65	70	72	73	68	
40%	60	55	50	49	52	55	59	65	70	71	72	67	
50%	59	54	50	48	51	54	59	65	69	70	71	66	
60%	59	54	49	47	51	53	58	64	68	70	71	66	
70%	59	53	48	47	50	53	57	63	68	70	70	65	
80%	58	53	48	46	50	52	57	62	67	69	69	64	
90%	57	52	47	45	49	51	55	61	66	68	68	64	
Long Term													
Full Simulation Period ^b	60	55	49	48	51	54	58	64	69	71	71	66	
Water Year Types^c													
Wet (32%)	57	52	47	48	50	52	56	63	68	71	71	66	
Above Normal (16%)	60	55	50	45	48	49	54	60	64	64	64	60	
Below Normal (13%)	59	54	49	48	51	55	60	65	69	70	70	67	
Dry (24%)	60	55	49	47	51	56	59	66	69	72	72	66	
Critical (15%)	60	56	49	48	52	55	59	66	70	76	74	67	

Alternative 3 minus Second Basis of Comparison		Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	
Probability of Exceedance^a													
0.1	0.1	-0.1	-0.1	0.1	0.1	-0.1	-0.2	1.0	-0.4	0.0	0.3	-0.3	
0.2	-0.2	0.0	0.0	0.0	0.1	-0.1	0.0	0.0	0.3	-0.8	-0.1	0.3	
0.3	-0.2	0.0	0.2	-0.1	0.1	-0.2	-0.2	0.0	0.4	-1.9	0.0	0.6	
0.4	-0.3	0.1	0.2	-0.1	0.0	0.0	0.0	0.3	0.2	-1.8	-0.4	0.6	
0.5	-0.2	-0.5	0.1	0.1	0.0	-0.1	0.1	0.0	0.2	-1.2	-0.8	0.1	
0.6	0.1	-0.1	0.2	-0.1	-0.1	0.0	0.0	0.2	0.0	-1.0	-0.6	0.4	
0.7	0.3	0.0	0.1	-0.1	-0.1	0.2	0.0	0.3	0.5	-0.6	-0.7	0.2	
0.8	0.2	0.1	0.2	0.0	0.0	0.0	0.0	0.1	0.0	-0.8	-0.9	-0.2	
0.9	-0.1	-0.2	-0.3	0.0	0.0	0.1	-0.1	0.2	0.3	-0.2	-0.3	0.0	
Long Term													
Full Simulation Period ^b	-0.1	-0.1	0.0	0.0	0.0	-0.1	0.0	0.2	0.1	-0.7	-0.3	0.2	
Water Year Types^c													
Wet (32%)	0.1	0.1	0.0	0.0	0.0	0.0	0.0	-0.1	-0.3	-0.5	-0.3	0.3	
Above Normal (16%)	-0.3	-0.2	0.2	0.0	0.2	0.1	0.0	0.1	0.6	-0.5	-0.5	0.2	
Below Normal (13%)	0.1	0.0	-0.1	0.0	0.0	0.0	-0.1	0.6	1.5	-1.3	-2.1	0.8	
Dry (24%)	0.1	-0.1	0.1	0.0	-0.1	-0.1	0.0	0.2	-0.2	-1.2	0.5	0.2	
Critical (15%)	-0.5	-0.5	0.2	-0.1	0.1	-0.4	0.0	0.2	-0.2	-0.1	0.1	-0.3	

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-22-6. Feather River at Gridley Bridge, Monthly Temperature

Second Basis of Comparison												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	62	58	51	50	53	57	62	67	72	76	75	69
20%	62	57	51	50	53	56	60	66	70	75	74	68
30%	61	56	50	49	52	56	59	65	70	74	73	67
40%	60	55	50	49	52	55	59	65	69	73	72	66
50%	60	55	49	48	51	54	59	65	69	72	72	66
60%	59	54	49	48	51	53	58	64	68	71	71	65
70%	58	53	48	47	50	53	57	63	68	70	71	65
80%	58	53	48	46	50	52	57	62	67	70	70	64
90%	57	53	47	45	49	51	56	61	66	69	68	64
Long Term												
Full Simulation Period ^b	60	55	49	48	51	54	58	64	69	72	72	66
Water Year Types ^c												
Wet (32%)	57	52	47	48	50	52	56	63	68	71	71	66
Above Normal (16%)	61	55	50	45	47	49	54	60	63	64	64	60
Below Normal (13%)	59	54	49	48	51	55	60	64	68	71	72	66
Dry (24%)	60	55	49	47	52	56	59	65	69	73	72	66
Critical (15%)	61	56	49	48	52	56	59	66	70	76	74	68

Alternative 5												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	62	58	52	50	53	57	61	68	72	75	75	68
20%	61	57	51	50	53	56	60	66	72	73	73	67
30%	61	56	50	49	52	56	59	66	71	71	72	66
40%	60	56	50	48	52	55	59	65	71	71	71	65
50%	60	55	50	48	51	54	59	65	70	70	71	64
60%	59	55	49	48	51	53	58	64	69	70	70	63
70%	59	54	49	47	50	53	57	64	68	70	69	62
80%	58	54	48	46	50	52	57	62	68	69	69	62
90%	57	53	47	45	49	51	55	61	67	69	68	61
Long Term												
Full Simulation Period ^b	60	55	50	48	51	54	58	65	70	71	71	64
Water Year Types ^c												
Wet (32%)	57	52	47	48	50	52	56	63	68	71	70	62
Above Normal (16%)	60	55	50	45	48	50	55	60	65	64	63	57
Below Normal (13%)	59	55	50	48	52	55	60	65	71	70	70	66
Dry (24%)	60	55	49	47	51	56	59	66	70	71	72	66
Critical (15%)	61	56	49	48	52	56	59	65	71	75	74	67

Alternative 5 minus Second Basis of Comparison												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	0.1	-0.3	0.3	0.1	-0.2	0.1	-0.2	1.4	0.6	-0.6	-0.1	-0.7
0.2	-0.8	-0.1	0.5	0.0	0.0	-0.1	0.1	0.3	1.7	-1.4	-0.7	-0.6
0.3	-0.2	0.2	0.3	-0.2	0.0	0.2	-0.3	0.3	1.6	-2.2	-0.6	-1.0
0.4	-0.2	0.3	0.3	-0.2	0.1	0.0	-0.1	0.4	1.3	-1.9	-1.2	-1.3
0.5	0.2	0.2	0.3	0.1	-0.1	0.2	0.1	0.2	1.2	-1.2	-1.1	-2.0
0.6	0.1	0.7	0.6	0.0	-0.1	0.0	0.0	0.7	1.0	-1.0	-0.9	-2.5
0.7	0.3	0.7	0.3	-0.1	-0.2	0.2	-0.1	0.5	0.9	-0.7	-1.3	-2.4
0.8	0.2	0.7	0.4	0.0	0.1	-0.1	0.0	0.0	1.1	-0.9	-1.0	-2.4
0.9	-0.1	0.0	0.3	-0.1	0.0	0.0	-0.1	0.0	0.7	-0.1	-0.5	-2.3
Long Term												
Full Simulation Period ^b	-0.1	0.2	0.4	-0.1	0.0	0.0	0.0	0.3	1.0	-1.0	-0.7	-1.6
Water Year Types ^c												
Wet (32%)	0.2	0.6	0.1	-0.2	-0.1	0.0	0.0	0.0	0.4	-0.7	-1.2	-3.8
Above Normal (16%)	-0.3	0.1	0.6	-0.1	0.2	0.3	0.1	0.5	1.5	-0.5	-0.9	-2.1
Below Normal (13%)	-0.1	0.5	0.9	0.1	0.2	0.0	0.0	1.0	2.8	-1.0	-2.0	0.1
Dry (24%)	-0.2	0.1	0.4	0.0	-0.1	-0.1	-0.1	0.5	0.9	-2.0	0.3	0.0
Critical (15%)	-0.3	-0.5	0.4	0.0	0.1	-0.2	-0.2	-0.1	0.5	-0.5	0.0	-0.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

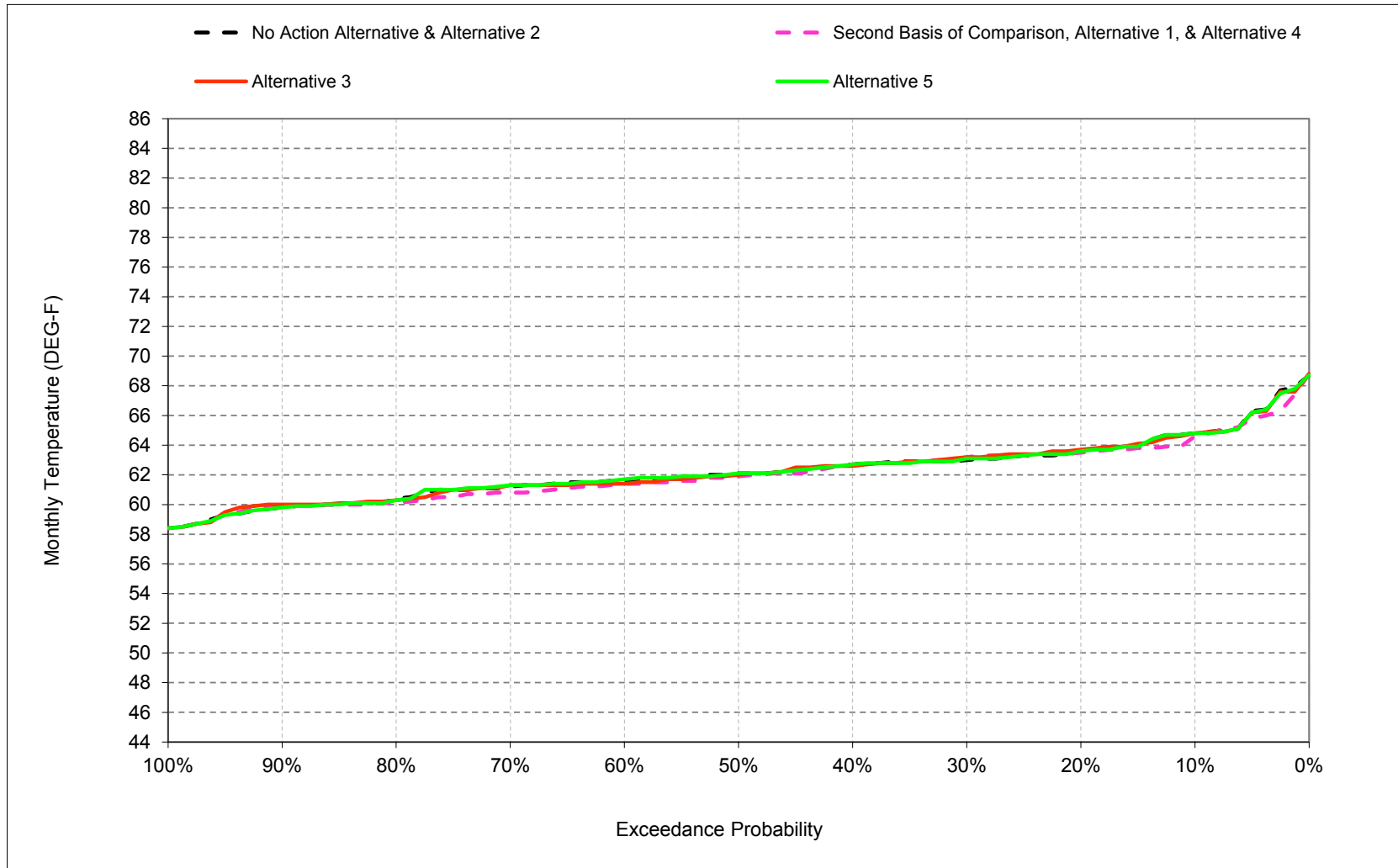
b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

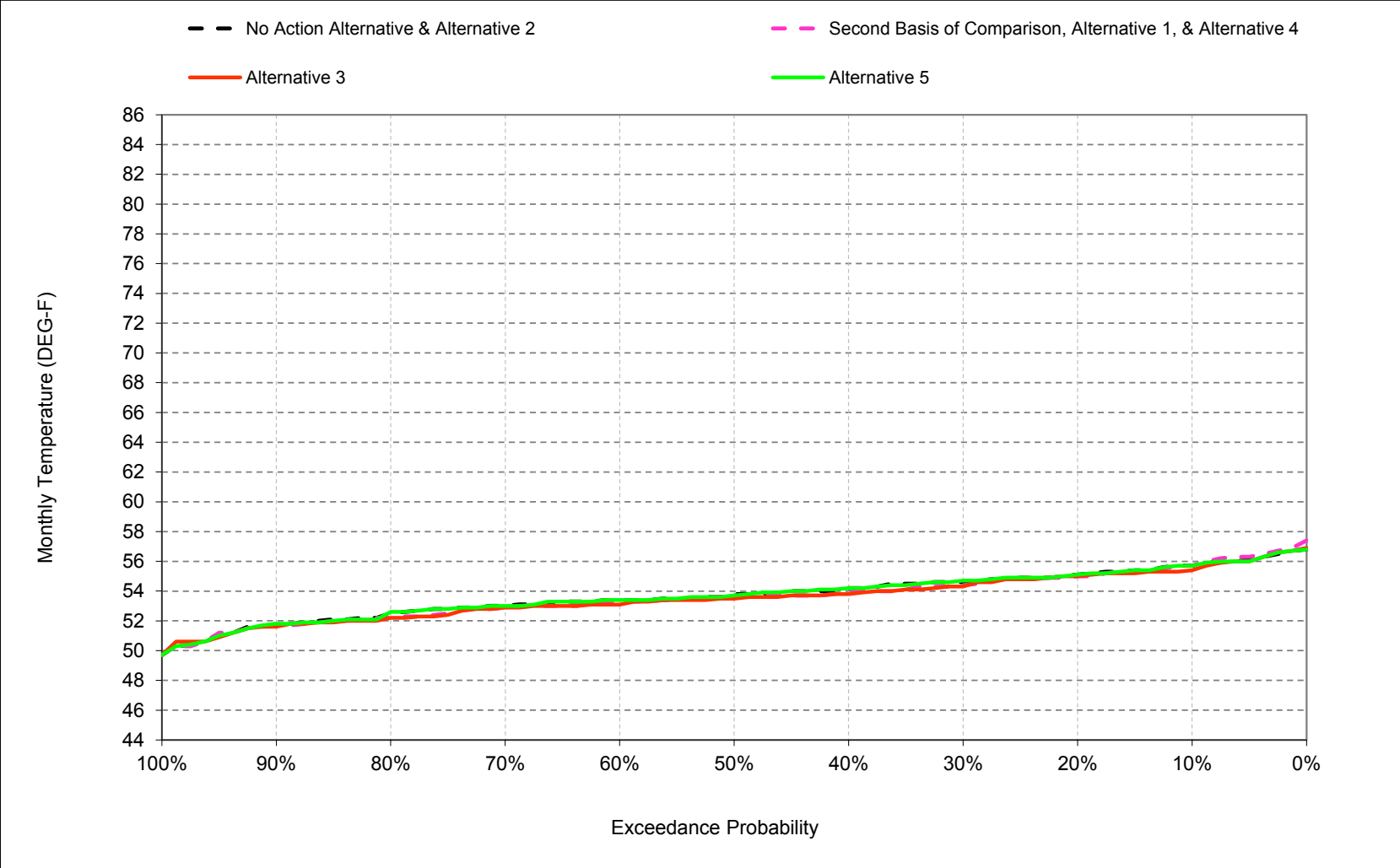
B.23. Feather River at Mouth

Figure B-23-1. Feather River at Mouth, October



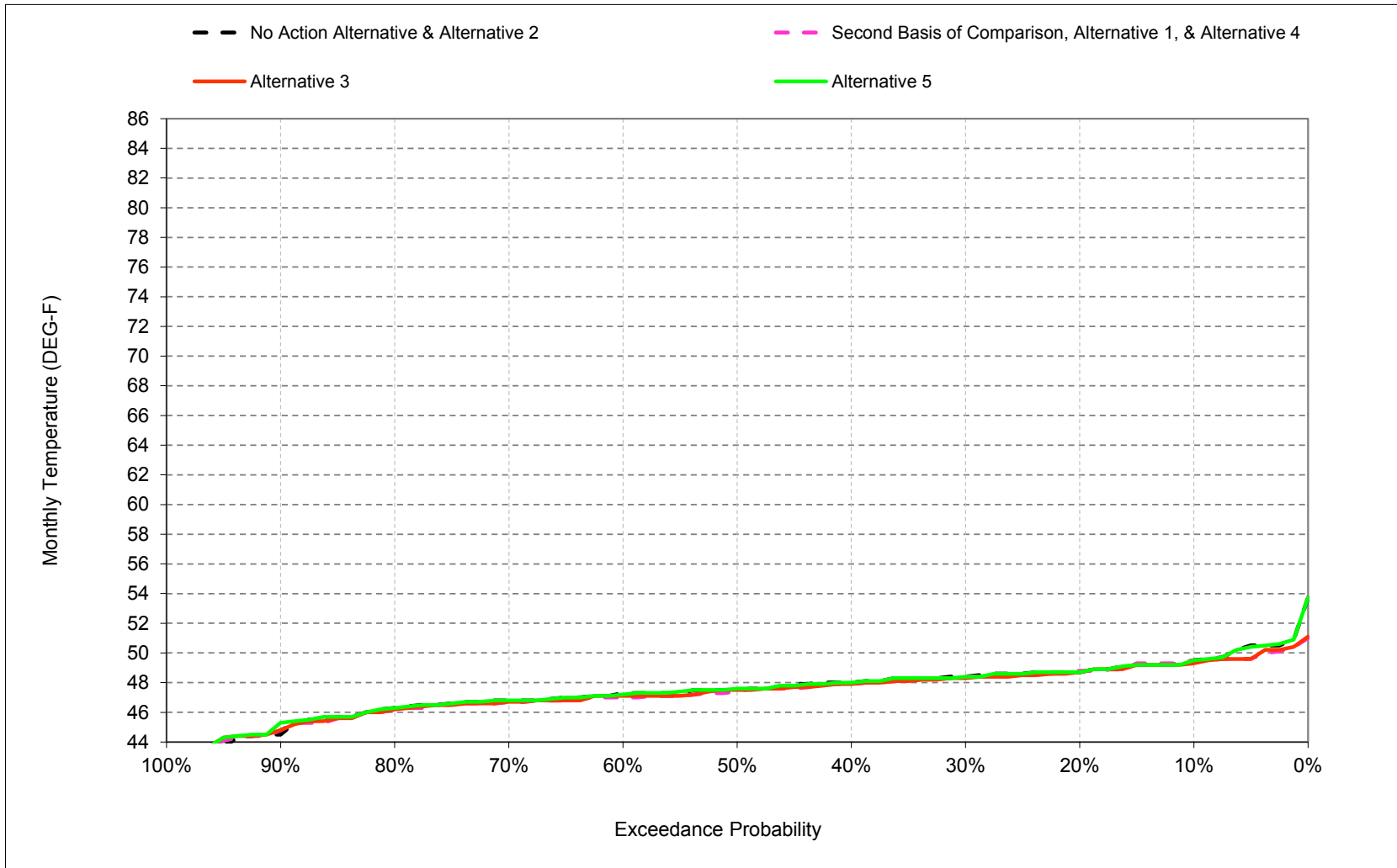
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-23-2. Feather River at Mouth, November



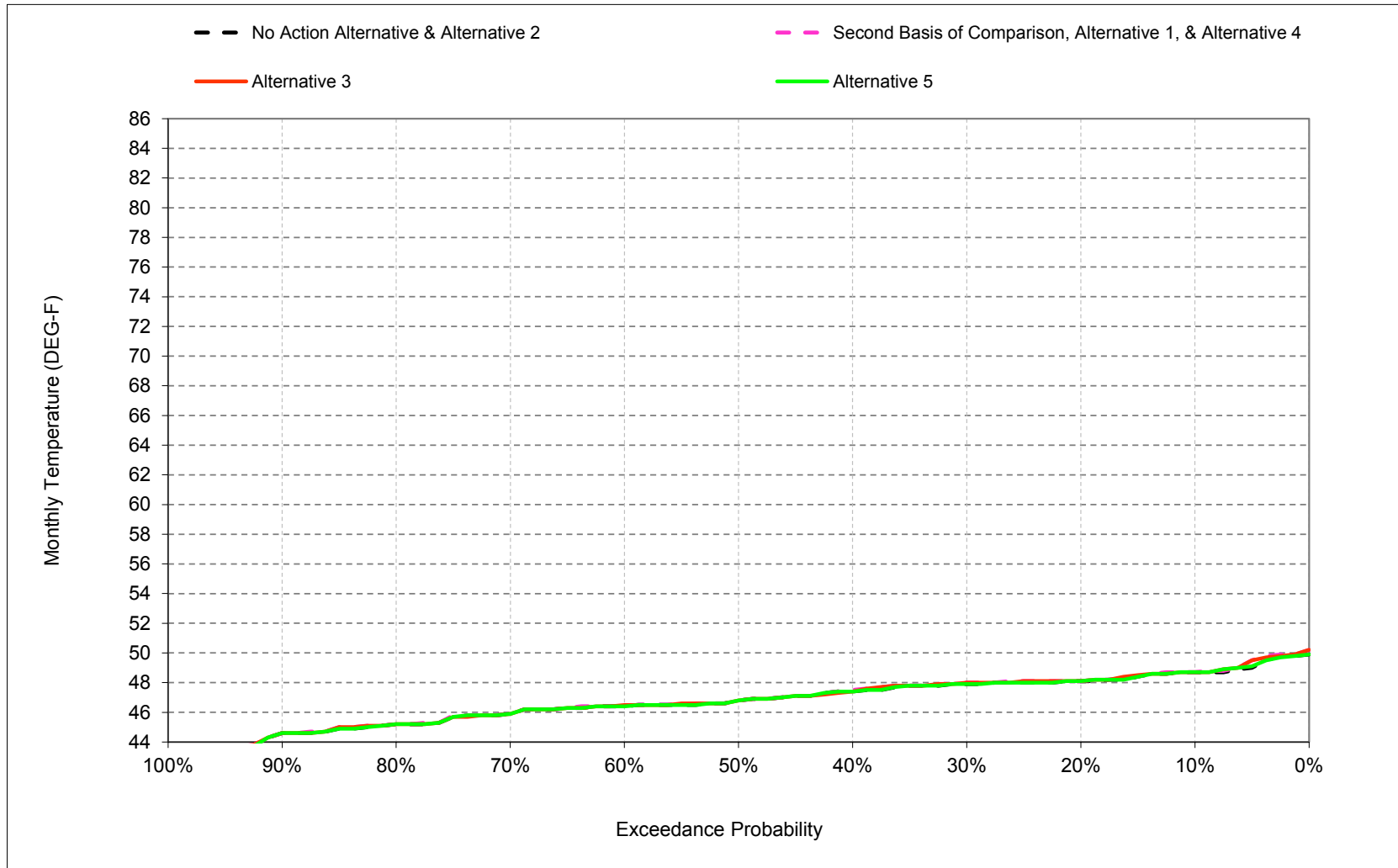
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-23-3. Feather River at Mouth, December



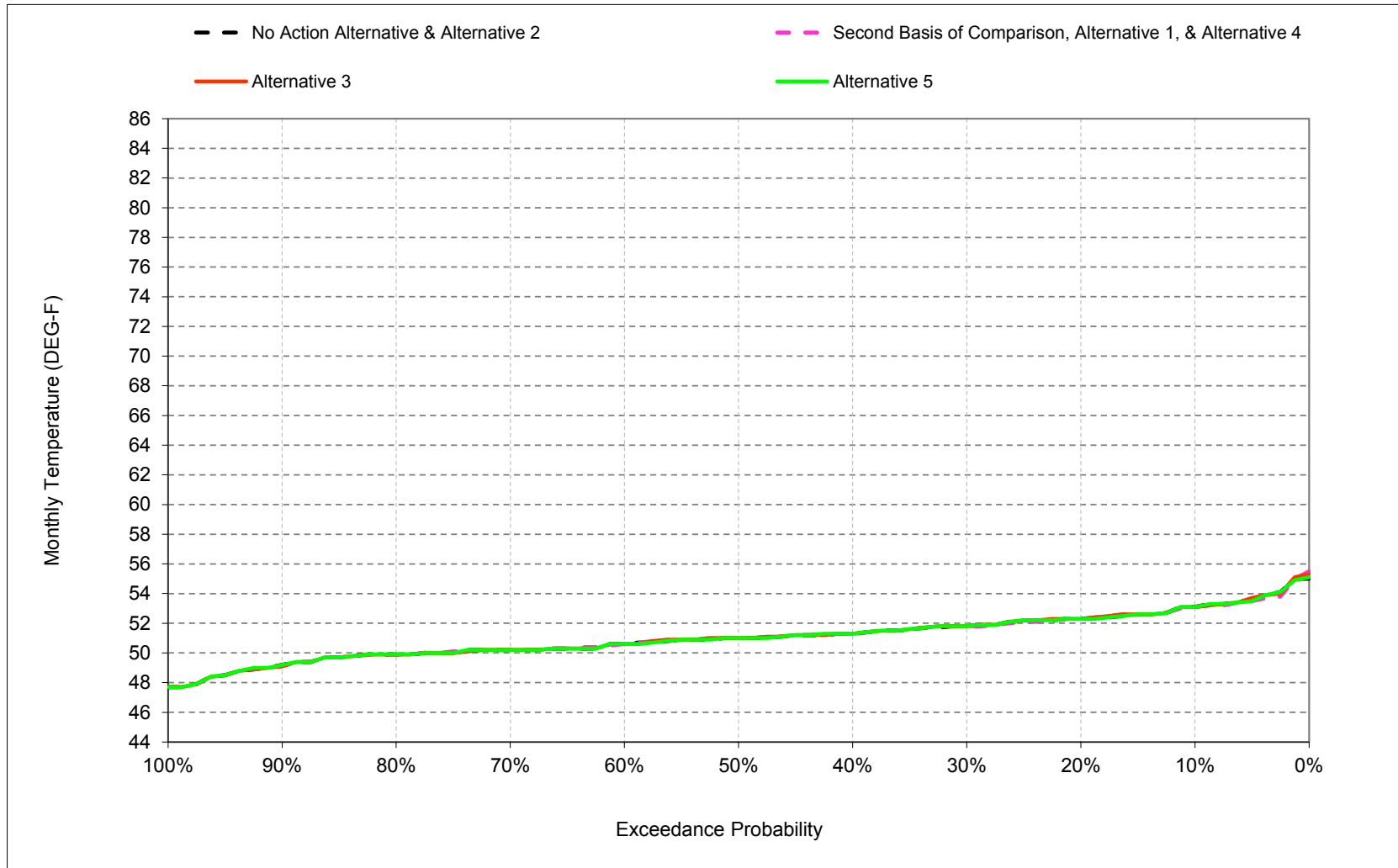
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-23-4. Feather River at Mouth, January



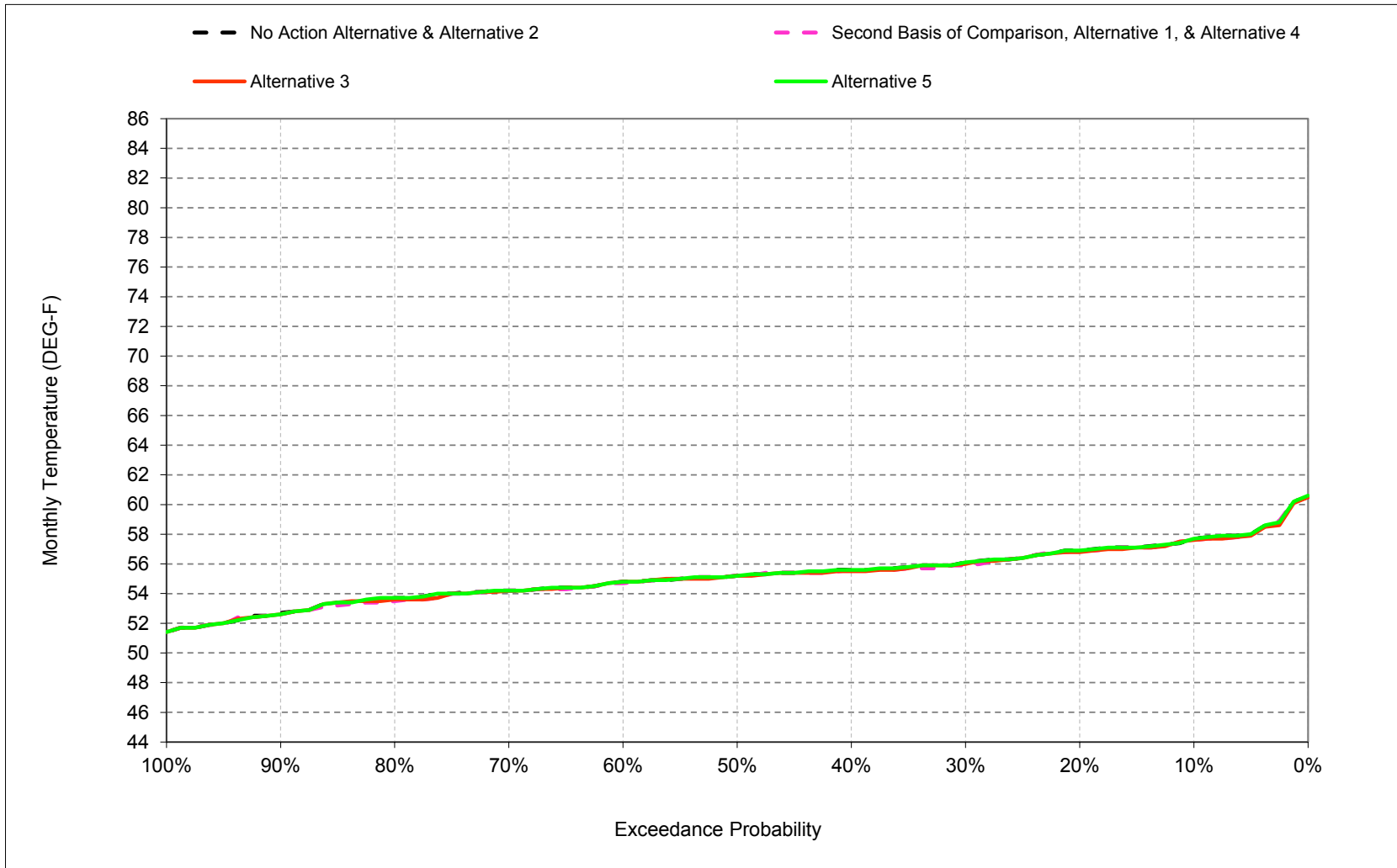
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-23-5. Feather River at Mouth, February



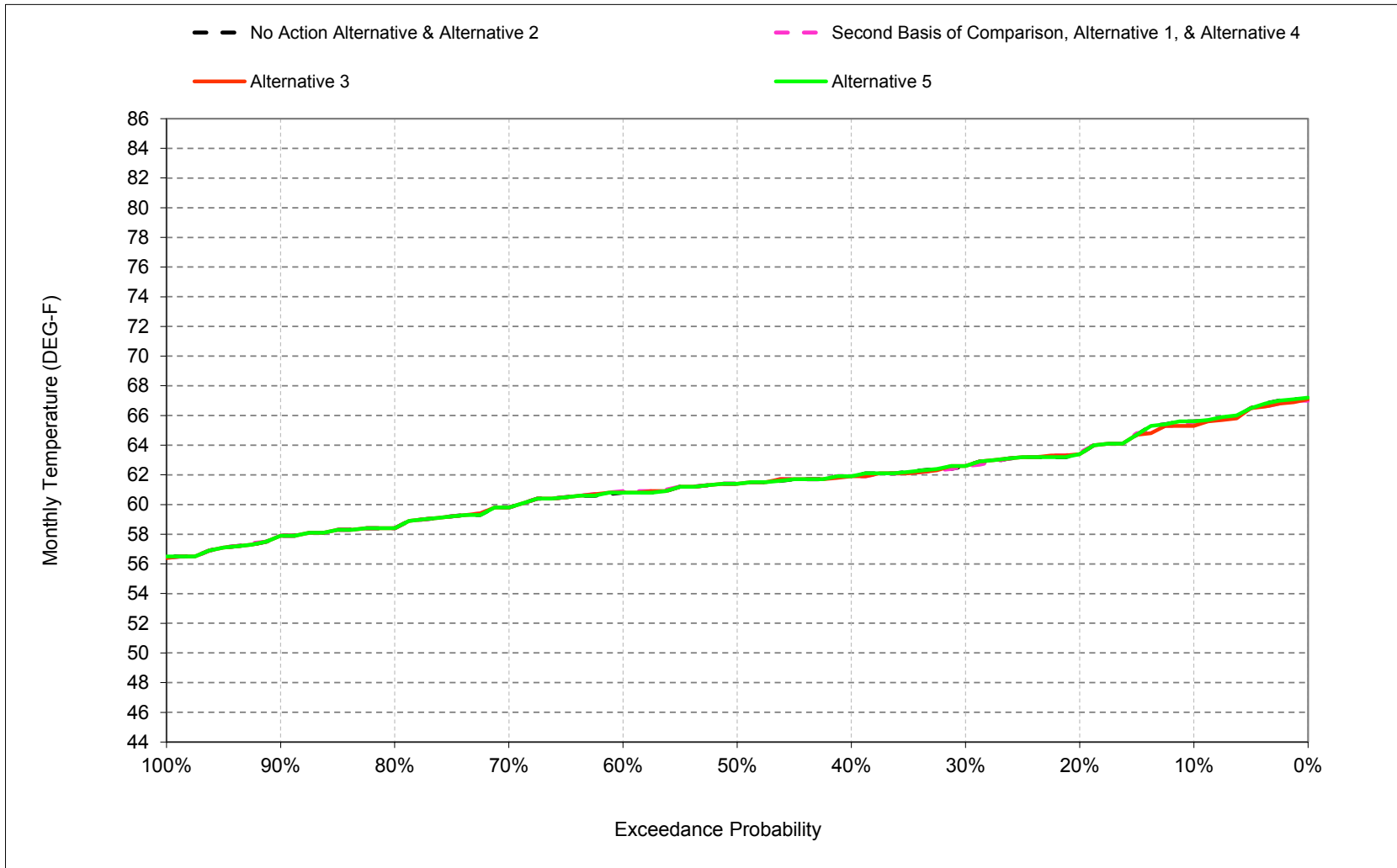
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-23-6. Feather River at Mouth, March



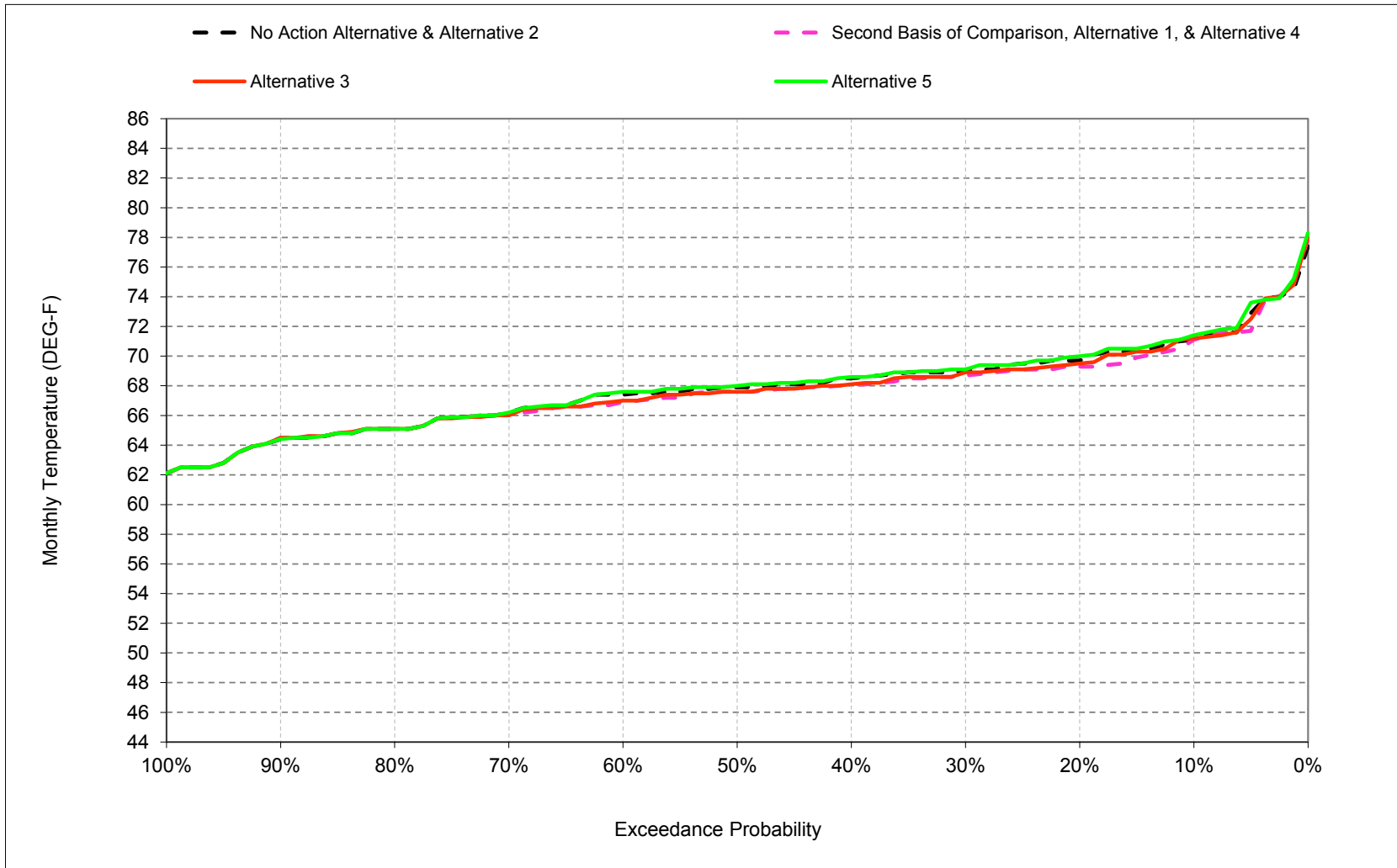
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-23-7. Feather River at Mouth, April



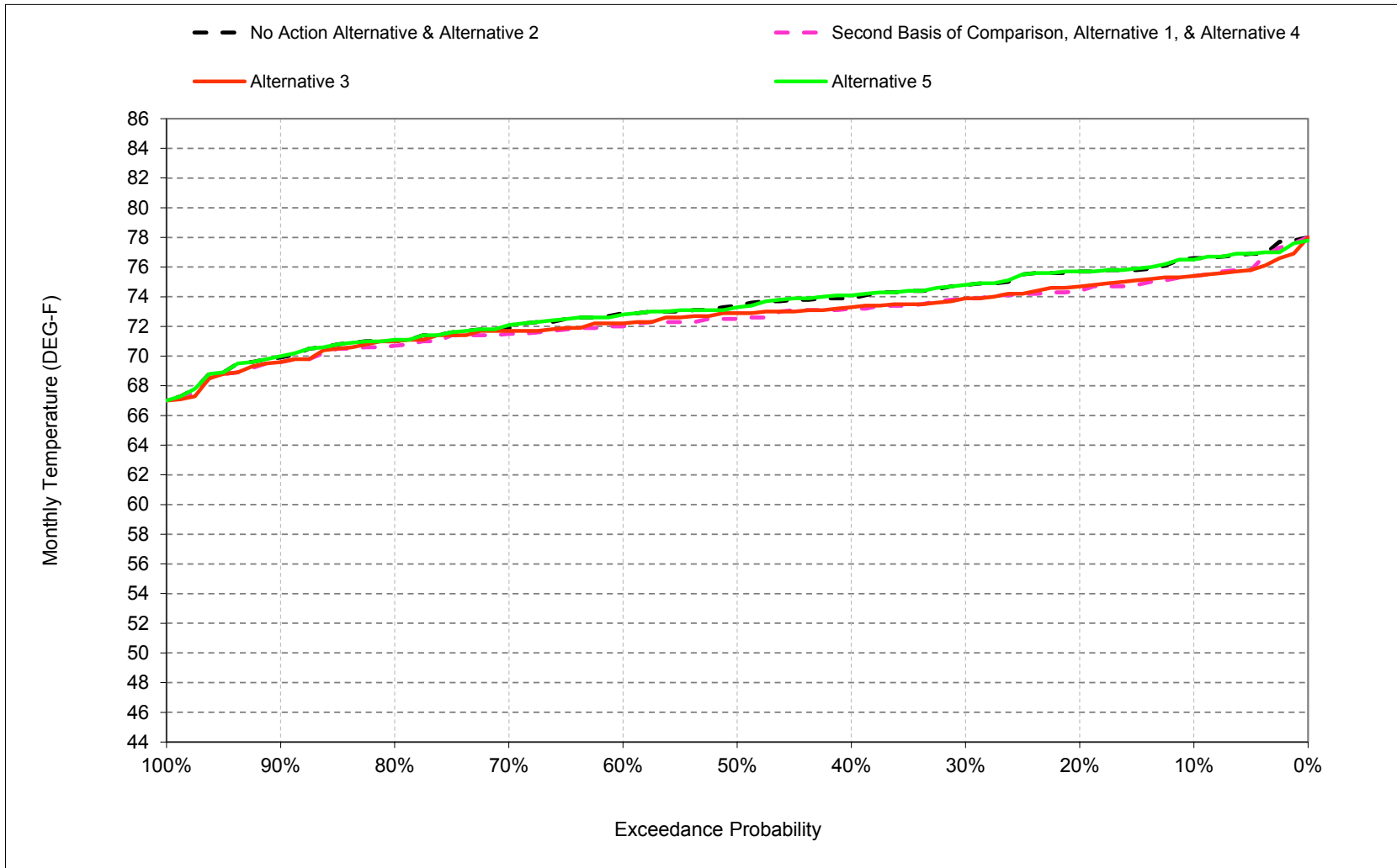
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-23-8. Feather River at Mouth, May



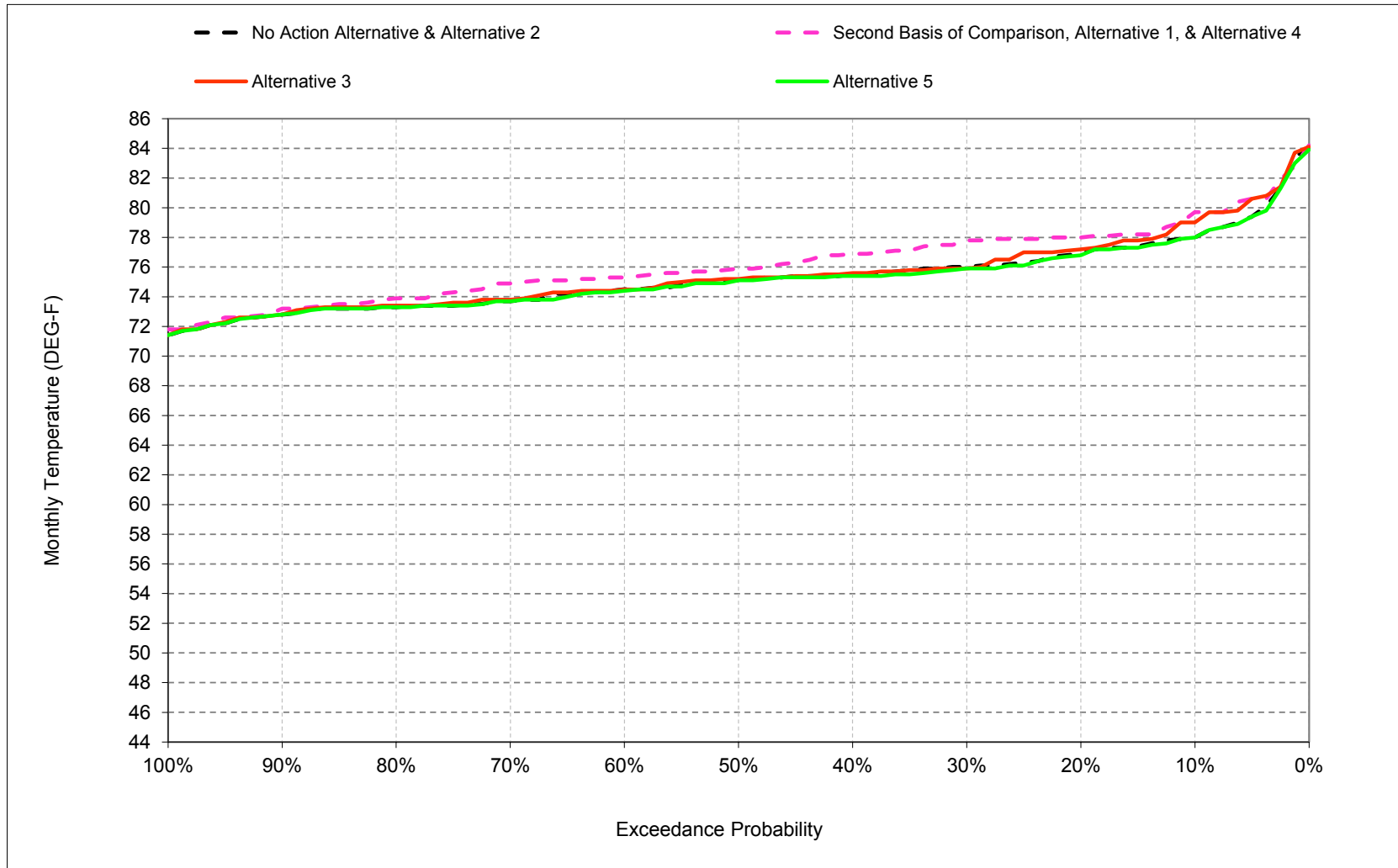
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-23-9. Feather River at Mouth, June



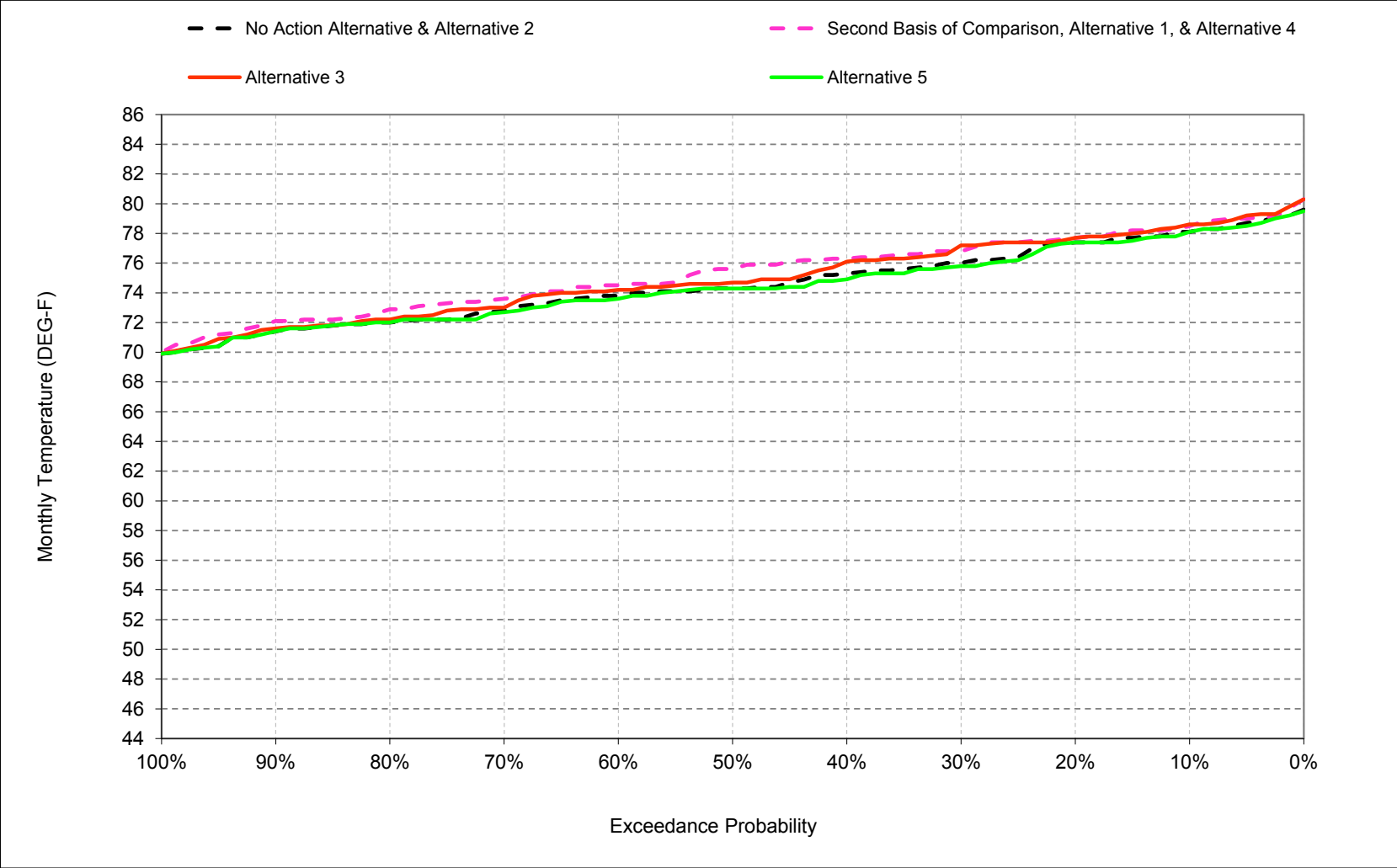
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-23-10. Feather River at Mouth, July



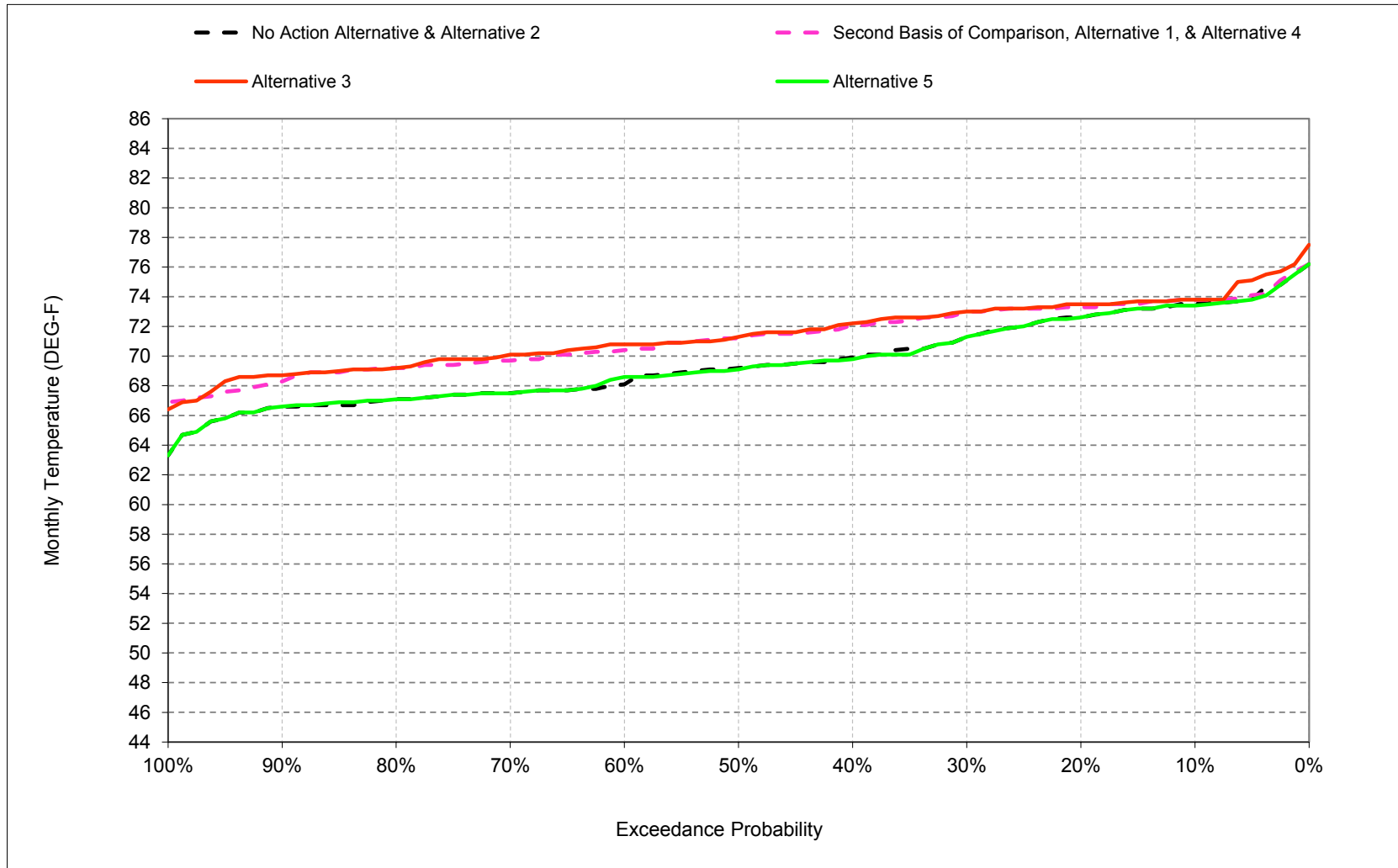
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-23-11. Feather River at Mouth, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-23-12. Feather River at Mouth, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-23-1. Feather River at Mouth, Monthly Temperature

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
10%	65	56	50	49	53	58	66	71	77	78	78	74
20%	64	55	49	48	52	57	63	70	76	77	77	73
30%	63	55	48	48	52	56	63	69	75	76	76	71
40%	63	54	48	47	51	56	62	69	74	76	75	70
50%	62	54	48	47	51	55	61	68	73	75	74	69
60%	62	53	47	46	51	55	61	67	73	75	74	68
70%	61	53	47	46	50	54	60	66	72	74	73	68
80%	60	53	46	45	50	54	58	65	71	73	72	67
90%	60	52	45	45	49	53	58	64	70	73	71	67
Long Term												
Full Simulation Period ^b	62	54	47	47	51	55	61	68	73	75	75	70
Water Year Types^c												
Wet (32%)	59	51	46	47	51	54	59	66	72	75	74	68
Above Normal (16%)	62	54	48	44	47	51	57	63	68	68	66	62
Below Normal (13%)	62	53	48	47	51	56	63	68	74	74	74	71
Dry (24%)	62	54	47	46	51	56	62	69	74	75	76	71
Critical (15%)	64	54	46	46	52	57	64	69	74	79	78	72

Alternative 1

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
10%	65	56	50	49	53	58	66	71	75	80	79	74
20%	64	55	49	48	52	57	64	69	74	78	78	73
30%	63	54	48	48	52	56	63	69	74	78	77	73
40%	63	54	48	48	51	56	62	68	73	77	76	72
50%	62	54	47	47	51	55	61	68	73	76	76	71
60%	61	53	47	46	51	55	61	67	72	75	75	70
70%	61	53	47	46	50	54	60	66	72	75	74	70
80%	60	52	46	45	50	54	58	65	71	74	73	69
90%	60	52	45	45	49	53	58	65	70	73	72	68
Long Term												
Full Simulation Period ^b	62	54	47	47	51	55	61	68	73	76	75	71
Water Year Types^c												
Wet (32%)	59	51	46	47	51	54	59	66	71	75	75	72
Above Normal (16%)	62	54	48	44	47	51	57	62	67	68	67	64
Below Normal (13%)	62	53	47	47	51	56	62	67	72	75	75	71
Dry (24%)	62	54	47	46	51	56	62	69	74	77	76	71
Critical (15%)	63	55	46	46	52	57	64	69	74	79	78	72

Alternative 1 minus No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance^a												
0.1	-0.2	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	-1.2	1.7	0.4	0.3
0.2	-0.1	-0.1	0.1	0.0	0.0	0.0	0.1	-0.4	-1.3	1.1	0.3	0.7
0.3	0.2	-0.2	0.0	0.1	0.0	-0.2	0.0	-0.3	-0.9	1.8	0.8	1.7
0.4	0.0	-0.3	-0.1	0.1	0.0	0.0	0.0	-0.4	-0.7	1.4	1.0	2.2
0.5	-0.2	-0.2	-0.1	0.0	0.0	0.0	0.0	-0.3	-0.9	0.8	1.3	2.0
0.6	-0.2	-0.2	-0.3	0.0	0.0	-0.1	0.1	-0.5	-0.9	0.8	0.7	2.3
0.7	-0.4	-0.1	-0.1	0.0	0.0	0.0	0.0	-0.1	-0.4	1.2	0.8	2.2
0.8	-0.3	-0.3	-0.1	0.0	0.0	-0.2	0.0	0.0	-0.3	0.6	0.9	2.1
0.9	0.1	-0.1	0.3	0.0	-0.1	-0.1	0.0	0.1	-0.3	0.4	0.7	1.7
Long Term												
Full Simulation Period ^b	-0.2	-0.1	-0.1	0.1	0.0	-0.1	0.0	-0.2	-0.7	0.9	0.7	1.6
Water Year Types^c												
Wet (32%)	-0.1	-0.2	0.1	0.1	0.0	0.0	0.0	0.0	-0.2	0.6	1.2	4.0
Above Normal (16%)	-0.1	-0.1	-0.4	0.0	0.0	-0.1	0.0	-0.3	-0.9	0.5	0.8	2.1
Below Normal (13%)	-0.1	-0.3	-0.6	0.0	0.1	-0.1	-0.1	-0.8	-2.0	0.9	1.5	0.2
Dry (24%)	-0.1	-0.1	-0.2	0.0	0.0	0.0	0.0	-0.3	-0.6	1.6	0.0	-0.1
Critical (15%)	-0.5	0.3	0.1	0.0	-0.1	0.0	-0.1	0.0	-0.5	0.6	0.0	-0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-23-2. Feather River at Mouth, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	65	56	50	49	53	58	66	71	77	78	78	74
20%	64	55	49	48	52	57	63	70	76	77	77	73
30%	63	55	48	48	52	56	63	69	75	76	76	71
40%	63	54	48	47	51	56	62	69	74	76	75	70
50%	62	54	48	47	51	55	61	68	73	75	74	69
60%	62	53	47	46	51	55	61	67	73	75	74	68
70%	61	53	47	46	50	54	60	66	72	74	73	68
80%	60	53	46	45	50	54	58	65	71	73	72	67
90%	60	52	45	45	49	53	58	64	70	73	71	67
Long Term												
Full Simulation Period ^b	62	54	47	47	51	55	61	68	73	75	75	70
Water Year Types ^c												
Wet (32%)	59	51	46	47	51	54	59	66	72	75	74	68
Above Normal (16%)	62	54	48	44	47	51	57	63	68	68	66	62
Below Normal (13%)	62	53	48	47	51	56	63	68	74	74	74	71
Dry (24%)	62	54	47	46	51	56	62	69	74	75	76	71
Critical (15%)	64	54	46	46	52	57	64	69	74	79	78	72
Alternative 3												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	65	55	49	49	53	58	65	71	75	79	79	74
20%	64	55	49	48	52	57	63	70	75	77	78	74
30%	63	54	48	48	52	56	63	69	74	76	77	73
40%	63	54	48	47	51	56	62	68	73	76	76	72
50%	62	54	48	47	51	55	61	68	73	75	75	71
60%	61	53	47	47	51	55	61	67	72	75	74	71
70%	61	53	47	46	50	54	60	66	72	74	73	70
80%	60	52	46	45	50	54	58	65	71	73	72	69
90%	60	52	45	45	49	53	58	65	70	73	72	69
Long Term												
Full Simulation Period ^b	62	54	47	47	51	55	61	68	73	76	75	71
Water Year Types ^c												
Wet (32%)	59	51	46	47	51	54	59	66	71	75	75	72
Above Normal (16%)	62	54	48	44	47	51	57	62	67	68	67	64
Below Normal (13%)	62	53	47	47	51	56	62	68	73	74	73	71
Dry (24%)	62	54	47	46	51	56	62	69	74	76	76	72
Critical (15%)	63	54	46	46	52	57	64	69	74	79	78	72
Alternative 3 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	0.0	-0.3	-0.2	0.0	0.0	-0.1	-0.3	0.1	-1.2	1.0	0.5	0.3
0.2	0.1	-0.1	0.0	0.0	0.0	-0.1	0.0	-0.2	-1.0	0.3	0.3	0.9
0.3	0.2	-0.3	-0.1	0.1	0.0	-0.1	0.0	-0.1	-0.9	-0.1	1.2	1.7
0.4	-0.1	-0.4	-0.1	0.0	0.0	-0.1	0.0	-0.4	-0.6	0.1	0.8	2.3
0.5	-0.1	-0.3	0.0	0.0	0.0	0.0	0.0	-0.3	-0.5	0.1	0.4	2.1
0.6	-0.2	-0.3	-0.2	0.1	0.0	0.0	0.0	-0.4	-0.7	0.0	0.4	2.7
0.7	0.1	-0.1	-0.1	0.0	0.0	0.0	0.0	-0.2	-0.2	0.1	0.2	2.6
0.8	-0.1	-0.3	-0.1	0.0	0.0	-0.1	0.0	0.0	0.0	0.1	0.2	2.1
0.9	0.2	-0.2	0.3	0.0	-0.1	-0.1	0.0	0.1	-0.3	0.0	0.2	2.1
Long Term												
Full Simulation Period ^b	0.0	-0.2	-0.1	0.0	0.0	0.0	0.0	-0.2	-0.6	0.2	0.4	1.8
Water Year Types ^c												
Wet (32%)	0.0	-0.2	0.1	0.1	0.0	0.0	0.0	0.0	-0.4	0.2	1.0	4.4
Above Normal (16%)	-0.1	-0.2	-0.3	0.0	0.0	0.0	-0.3	-0.5	0.0	0.4	2.1	
Below Normal (13%)	0.1	-0.3	-0.6	0.0	0.1	0.0	-0.1	-0.4	-0.8	-0.3	-0.2	0.5
Dry (24%)	0.2	-0.2	-0.2	0.0	0.0	-0.1	0.0	-0.2	-0.8	0.5	0.3	0.1
Critical (15%)	-0.2	0.0	0.2	0.0	0.0	-0.1	0.0	0.0	-0.7	0.3	0.0	0.0

^a Exceedance probability is defined as the probability a given value will be exceeded in any one year.
^b Based on an 81-year simulation period.
^c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-23-3. Feather River at Mouth, Monthly Temperature

No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	65	56	50	49	53	58	66	71	77	78	78	74
20%	64	55	49	48	52	57	63	70	76	77	77	73
30%	63	55	48	48	52	56	63	69	75	76	76	71
40%	63	54	48	47	51	56	62	69	74	76	75	70
50%	62	54	48	47	51	55	61	68	73	75	74	69
60%	62	53	47	46	51	55	61	67	73	75	74	68
70%	61	53	47	46	50	54	60	66	72	74	73	68
80%	60	53	46	45	50	54	58	65	71	73	72	67
90%	60	52	45	45	49	53	58	64	70	73	71	67
Long Term												
Full Simulation Period ^b	62	54	47	47	51	55	61	68	73	75	75	70
Water Year Types ^c												
Wet (32%)	59	51	46	47	51	54	59	66	72	75	74	68
Above Normal (16%)	62	54	48	44	47	51	57	63	68	68	66	62
Below Normal (13%)	62	53	48	47	51	56	63	68	74	74	74	71
Dry (24%)	62	54	47	46	51	56	62	69	74	75	76	71
Critical (15%)	64	54	46	46	52	57	64	69	74	79	78	72

Alternative 5												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	65	56	50	49	53	58	66	71	77	78	78	73
20%	64	55	49	48	52	57	63	70	76	77	77	73
30%	63	55	48	48	52	56	63	69	75	76	76	71
40%	63	54	48	47	51	56	62	69	74	75	75	70
50%	62	54	48	47	51	55	61	68	73	75	74	69
60%	62	53	47	46	51	55	61	68	73	74	74	69
70%	61	53	47	46	50	54	60	66	72	74	73	68
80%	60	53	46	45	50	54	58	65	71	73	72	67
90%	60	52	45	45	49	53	58	64	70	73	71	67
Long Term												
Full Simulation Period ^b	62	54	47	47	51	55	61	68	73	75	74	70
Water Year Types ^c												
Wet (32%)	59	51	46	47	51	54	59	66	72	75	74	68
Above Normal (16%)	62	54	48	44	47	51	57	63	68	68	66	62
Below Normal (13%)	62	53	48	47	51	56	63	68	74	74	73	70
Dry (24%)	62	54	47	46	51	56	62	70	74	75	75	71
Critical (15%)	64	54	46	46	52	57	64	69	74	79	77	72

Alternative 5 minus No Action Alternative												
Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	-0.1	0.0	0.0	-0.1
0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	-0.1	0.0	0.0
0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-0.1	-0.2	0.0
0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	-0.1	-0.4	-0.1
0.5	0.0	-0.1	0.1	0.0	0.0	0.0	0.0	0.1	-0.1	0.0	0.0	-0.1
0.6	0.1	0.0	-0.1	0.0	0.0	0.0	0.0	0.2	-0.1	-0.1	-0.2	0.5
0.7	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	-0.1	0.0
0.8	-0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
0.9	0.0	0.0	0.8	0.0	0.0	-0.1	0.0	0.0	0.1	0.0	0.0	0.0
Long Term												
Full Simulation Period ^b	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-0.1	-0.1	0.0
Water Year Types ^c												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1
Above Normal (16%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Below Normal (13%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	-0.2	-0.1
Dry (24%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	-0.2	-0.1	0.0
Critical (15%)	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.1	0.0	-0.1	-0.2	-0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-23-4. Feather River at Mouth, Monthly Temperature

Second Basis of Comparison		Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	
Probability of Exceedance ^a													
10%	65	56	50	49	53	58	66	71	75	80	79	74	
20%	64	55	49	48	52	57	64	69	74	78	78	73	
30%	63	54	48	48	52	56	63	69	74	78	77	73	
40%	63	54	48	48	51	56	62	68	73	77	76	72	
50%	62	54	47	47	51	55	61	68	73	76	76	71	
60%	61	53	47	46	51	55	61	67	72	75	75	70	
70%	61	53	47	46	50	54	60	66	72	75	74	70	
80%	60	52	46	45	50	54	58	65	71	74	73	69	
90%	60	52	45	45	49	53	58	65	70	73	72	68	
Long Term													
Full Simulation Period ^b	62	54	47	47	51	55	61	68	73	76	75	71	
Water Year Types ^c													
Wet (32%)	59	51	46	47	51	54	59	66	71	75	75	72	
Above Normal (16%)	62	54	48	44	47	51	57	62	67	68	67	64	
Below Normal (13%)	62	53	47	47	51	56	62	67	72	75	75	71	
Dry (24%)	62	54	47	46	51	56	62	69	74	77	76	71	
Critical (15%)	63	55	46	46	52	57	64	69	74	79	78	72	

No Action Alternative		Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	
Probability of Exceedance ^a													
10%	65	56	50	49	53	58	66	71	77	78	78	74	
20%	64	55	49	48	52	57	63	70	76	77	77	73	
30%	63	55	48	48	52	56	63	69	75	76	76	71	
40%	63	54	48	47	51	56	62	69	74	76	75	70	
50%	62	54	48	47	51	55	61	68	73	75	74	69	
60%	62	53	47	46	51	55	61	67	73	75	74	68	
70%	61	53	47	46	50	54	60	66	72	74	73	68	
80%	60	53	46	45	50	54	58	65	71	73	72	67	
90%	60	52	45	45	49	53	58	64	70	73	71	67	
Long Term													
Full Simulation Period ^b	62	54	47	47	51	55	61	68	73	75	75	70	
Water Year Types ^c													
Wet (32%)	59	51	46	47	51	54	59	66	72	75	74	68	
Above Normal (16%)	62	54	48	44	47	51	57	63	68	68	66	62	
Below Normal (13%)	62	53	48	47	51	56	63	68	74	74	74	71	
Dry (24%)	62	54	47	46	51	56	62	69	74	75	76	71	
Critical (15%)	64	54	46	46	52	57	64	69	74	79	78	72	

No Action Alternative minus Second Basis of Comparison		Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	
Probability of Exceedance ^a													
0.1	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.0	1.2	-1.7	-0.4	-0.3	
0.2	0.1	0.1	-0.1	0.0	0.0	0.0	-0.1	0.4	1.3	-1.1	-0.3	-0.7	
0.3	-0.2	0.2	0.0	-0.1	0.0	0.2	0.0	0.3	0.9	-1.8	-0.8	-1.7	
0.4	0.0	0.3	0.1	-0.1	0.0	0.0	0.0	0.4	0.7	-1.4	-1.0	-2.2	
0.5	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.3	0.9	-0.8	-1.3	-2.0	
0.6	0.2	0.2	0.3	0.0	0.0	0.1	-0.1	0.5	0.9	-0.8	-0.7	-2.3	
0.7	0.4	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.4	-1.2	-0.8	-2.2	
0.8	0.3	0.3	0.1	0.0	0.0	0.2	0.0	0.0	0.3	-0.6	-0.9	-2.1	
0.9	-0.1	0.1	-0.3	0.0	0.1	0.1	0.0	-0.1	0.3	-0.4	-0.7	-1.7	
Long Term													
Full Simulation Period ^b	0.2	0.1	0.1	-0.1	0.0	0.1	0.0	0.2	0.7	-0.9	-0.7	-1.6	
Water Year Types ^c													
Wet (32%)	0.1	0.2	-0.1	-0.1	0.0	0.0	0.0	0.0	0.2	-0.6	-1.2	-4.0	
Above Normal (16%)	0.1	0.1	0.4	0.0	0.0	0.1	0.0	0.3	0.9	-0.5	-0.8	-2.1	
Below Normal (13%)	0.1	0.3	0.6	0.0	-0.1	0.1	0.1	0.8	2.0	-0.9	-1.5	-0.2	
Dry (24%)	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.3	0.6	-1.6	0.0	0.1	
Critical (15%)	0.5	-0.3	-0.1	0.0	0.1	0.0	0.1	0.0	0.5	-0.6	0.0	0.1	

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-23-5. Feather River at Mouth, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	65	56	50	49	53	58	66	71	75	80	79	74
20%	64	55	49	48	52	57	64	69	74	78	78	73
30%	63	54	48	48	52	56	63	69	74	78	77	73
40%	63	54	48	48	51	56	62	68	73	77	76	72
50%	62	54	47	47	51	55	61	68	73	76	76	71
60%	61	53	47	46	51	55	61	67	72	75	75	70
70%	61	53	47	46	50	54	60	66	72	75	74	70
80%	60	52	46	45	50	54	58	65	71	74	73	69
90%	60	52	45	45	49	53	58	65	70	73	72	68
Long Term												
Full Simulation Period ^b	62	54	47	47	51	55	61	68	73	76	75	71
Water Year Types ^c												
Wet (32%)	59	51	46	47	51	54	59	66	71	75	75	72
Above Normal (16%)	62	54	48	44	47	51	57	62	67	68	67	64
Below Normal (13%)	62	53	47	47	51	56	62	67	72	75	75	71
Dry (24%)	62	54	47	46	51	56	62	69	74	77	76	71
Critical (15%)	63	55	46	46	52	57	64	69	74	79	78	72

Alternative 3

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	65	55	49	49	53	58	65	71	75	79	79	74
20%	64	55	49	48	52	57	63	70	75	77	78	74
30%	63	54	48	48	52	56	63	69	74	76	77	73
40%	63	54	48	47	51	56	62	68	73	76	76	72
50%	62	54	48	47	51	55	61	68	73	75	75	71
60%	61	53	47	47	51	55	61	67	72	75	74	71
70%	61	53	47	46	50	54	60	66	72	74	73	70
80%	60	52	46	45	50	54	58	65	71	73	72	69
90%	60	52	45	45	49	53	58	65	70	73	72	69
Long Term												
Full Simulation Period ^b	62	54	47	47	51	55	61	68	73	76	75	71
Water Year Types ^c												
Wet (32%)	59	51	46	47	51	54	59	66	71	75	75	72
Above Normal (16%)	62	54	48	44	47	51	57	62	67	68	67	64
Below Normal (13%)	62	53	47	47	51	56	62	68	73	74	73	71
Dry (24%)	62	54	47	46	51	56	62	69	74	76	76	72
Critical (15%)	63	54	46	46	52	57	64	69	74	79	78	72

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	0.2	-0.3	-0.2	0.0	0.0	0.0	-0.3	0.1	0.0	-0.7	0.1	0.0
0.2	0.2	0.0	-0.1	0.0	0.0	-0.1	-0.1	0.2	0.3	-0.8	0.0	0.2
0.3	0.0	-0.1	-0.1	0.0	0.0	0.1	0.0	0.2	0.0	-1.9	0.4	0.0
0.4	-0.1	-0.1	0.0	-0.1	0.0	-0.1	0.0	0.0	0.1	-1.3	-0.2	0.1
0.5	0.1	-0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.4	-0.7	-0.9	0.1
0.6	0.0	-0.1	0.1	0.1	0.0	0.1	-0.1	0.1	0.2	-0.8	-0.3	0.4
0.7	0.5	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.2	-1.1	-0.6	0.4
0.8	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.3	-0.5	-0.7	0.0
0.9	0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.4	-0.5	0.4
Long Term												
Full Simulation Period ^b	0.2	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	-0.7	-0.3	0.2
Water Year Types ^c												
Wet (32%)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	-0.5	-0.2	0.4
Above Normal (16%)	0.0	-0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.4	-0.4	-0.5	-0.1
Below Normal (13%)	0.1	0.0	0.0	0.0	0.0	0.0	-0.1	0.4	1.1	-1.1	-1.7	0.3
Dry (24%)	0.3	-0.1	-0.1	0.0	0.0	0.0	0.0	0.1	-0.2	-1.1	0.3	0.2
Critical (15%)	0.3	-0.3	0.1	0.0	0.1	0.0	0.0	0.0	-0.2	-0.3	0.0	0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-23-6. Feather River at Mouth, Monthly Temperature

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Second Basis of Comparison												
Probability of Exceedance ^a												
10%	65	56	50	49	53	58	66	71	75	80	79	74
20%	64	55	49	48	52	57	64	69	74	78	78	73
30%	63	54	48	48	52	56	63	69	74	78	77	73
40%	63	54	48	48	51	56	62	68	73	77	76	72
50%	62	54	47	47	51	55	61	68	73	76	76	71
60%	61	53	47	46	51	55	61	67	72	75	75	70
70%	61	53	47	46	50	54	60	66	72	75	74	70
80%	60	52	46	45	50	54	58	65	71	74	73	69
90%	60	52	45	45	49	53	58	65	70	73	72	68
Long Term												
Full Simulation Period ^b	62	54	47	47	51	55	61	68	73	76	75	71
Water Year Types ^c												
Wet (32%)	59	51	46	47	51	54	59	66	71	75	75	72
Above Normal (16%)	62	54	48	44	47	51	57	62	67	68	67	64
Below Normal (13%)	62	53	47	47	51	56	62	67	72	75	75	71
Dry (24%)	62	54	47	46	51	56	62	69	74	77	76	71
Critical (15%)	63	55	46	46	52	57	64	69	74	79	78	72

Alternative 5

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
10%	65	56	50	49	53	58	66	71	77	78	78	73
20%	64	55	49	48	52	57	63	70	76	77	77	73
30%	63	55	48	48	52	56	63	69	75	76	76	71
40%	63	54	48	47	51	56	62	69	74	75	75	70
50%	62	54	48	47	51	55	61	68	73	75	74	69
60%	62	53	47	46	51	55	61	68	73	74	74	69
70%	61	53	47	46	50	54	60	66	72	74	73	68
80%	60	53	46	45	50	54	58	65	71	73	72	67
90%	60	52	45	45	49	53	58	64	70	73	71	67
Long Term												
Full Simulation Period ^b	62	54	47	47	51	55	61	68	73	75	74	70
Water Year Types ^c												
Wet (32%)	59	51	46	47	51	54	59	66	72	75	74	68
Above Normal (16%)	62	54	48	44	47	51	57	63	68	68	66	62
Below Normal (13%)	62	53	48	47	51	56	63	68	74	74	73	70
Dry (24%)	62	54	47	46	51	56	62	70	74	75	75	71
Critical (15%)	64	54	46	46	52	57	64	69	74	79	77	72

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance ^a												
0.1	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.3	1.1	-1.7	-0.4	-0.4
0.2	0.1	0.1	-0.1	0.0	0.0	0.0	-0.1	0.7	1.3	-1.2	-0.3	-0.7
0.3	-0.1	0.3	0.0	-0.1	0.0	0.2	0.0	0.4	0.9	-1.9	-1.0	-1.7
0.4	0.0	0.3	0.1	-0.1	0.0	0.0	0.0	0.5	0.9	-1.5	-1.4	-2.3
0.5	0.2	0.1	0.2	0.0	0.0	0.0	0.0	0.4	0.8	-0.8	-1.3	-2.1
0.6	0.3	0.2	0.2	0.0	0.0	0.1	-0.1	0.7	0.8	-0.9	-0.9	-1.8
0.7	0.5	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.6	-1.2	-0.9	-2.2
0.8	0.2	0.4	0.1	0.0	0.0	0.2	0.0	0.0	0.4	-0.6	-0.9	-2.1
0.9	-0.1	0.1	0.5	0.0	0.1	0.0	0.0	-0.1	0.4	-0.4	-0.7	-1.7
Long Term												
Full Simulation Period ^b	0.2	0.1	0.2	0.0	0.0	0.1	0.0	0.3	0.7	-1.0	-0.8	-1.6
Water Year Types ^c												
Wet (32%)	0.1	0.3	-0.1	-0.1	0.0	0.0	0.0	0.0	0.2	-0.7	-1.3	-3.9
Above Normal (16%)	0.1	0.1	0.4	0.0	0.0	0.1	0.0	0.3	0.9	-0.5	-0.8	-2.1
Below Normal (13%)	0.1	0.2	0.6	0.0	-0.1	0.1	0.1	1.0	2.0	-0.9	-1.7	-0.3
Dry (24%)	0.1	0.0	0.2	0.0	0.0	0.0	0.0	0.6	0.6	-1.8	-0.1	0.0
Critical (15%)	0.5	-0.3	0.2	0.0	0.1	0.1	0.1	0.1	0.4	-0.7	-0.2	0.0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

1 **Appendix 6B, Section C**

2 **Surface Water Temperature Modeling –**
3 **HEC-5Q Model Update**

4 Information about the methods and assumptions used for the Coordinated Long-
5 Term Operation of the Central Valley Project (CVP) and State Water Project
6 (SWP) Environmental Impact Statement (EIS) analysis on surface water
7 temperature is provided in this appendix. This appendix is organized into three
8 sections that are briefly described below:

- 9 • Appendix 6B, Section A: Surface Water Temperature Modeling Methodology,
10 Simulations, and Assumptions
- 11 – The water quality impacts analysis uses the HEC-5Q and Reclamation
12 Monthly Temperature models to assess and quantify effects of the
13 alternatives on the environment. This section provides information about
14 the overall analytical framework linkages with other models.
- 15 – This section provides a brief description of the assumptions for the surface
16 water temperature model simulations of the No Action Alternative,
17 Second Basis of Comparison, and other alternatives.
- 18 • Appendix 6B, Section B: Surface Water Temperature Modeling Results
- 19 – This section provides model outputs and a description of the model
20 simulation output formats used in the analysis and interpretation of
21 modeling results for the alternatives impacts assessment.
- 22 • Appendix 6B, Section C: HEC-5Q Model Update for Surface Water
23 Temperature Modeling
- 24 – This section provides a detailed description of the compilation and updates
25 of the HEC-5Q models performed during development of the EIS for the
26 Trinity-Sacramento, American, and Stanislaus Rivers.

27 **6B.C.1 Introduction**

28 This section describes tasks that were undertaken to update the Trinity-
29 Sacramento River, American River, and San Joaquin River HEC-5Q models. The
30 work performed was for the Bureau of Reclamation (Reclamation). Four tasks
31 were performed as part of this update:

- 32 • A housekeeping task where all existing work prior to the updates was
33 compiled, organized, and modified to create a base version from which all
34 future work would be based from.
- 35 • A validation task where the Trinity-Sacramento and American River models
36 were modified to better match observed data.

- 1 • A flow mapping task where improvements to the input flows coming from
2 CalSim II were made where necessary.
- 3 • A temperature targeting and selective withdrawal task where the logic used to
4 define temperature targets major reservoirs operate as well as the withdrawal
5 logic used to meet those targets was refined.
- 6 The following sections in this appendix describe the background for the model
7 updates, the five tasks, and the quality assurance/quality control (QA/QC) process
8 used to ensure the quality of the work.

9 **6B.C.2 Background**

10 In January and February of 2014, there were three separate HEC-5Q modeling
11 toolkits for Trinity-Sacramento, American, and San Joaquin River systems
12 specifically for the EIS and based on CalSim II inputs. These toolkits were
13 developed from models that Don Smith of Resource Management Associates
14 (RMA) had delivered to Reclamation previously. Various issues began to arise
15 with the model output results that resulted in a need to update the model files for
16 several projects. This produced project-specific model versions that were
17 different from the model versions delivered by RMA. After new issues continued
18 to arise, it became apparent that there was a need to implement additional logic to
19 the HEC-5Q model as well as provide organization and documentation for the
20 models.

21 **6B.C.3 Housekeeping Task**

22 This section describes the Housekeeping Task, during which the initial work of
23 compiling the Toolkit took place.

24 The goal of the Housekeeping Task was to lay out, structure, and compile an
25 initial temperature model toolkit (Toolkit) that would serve to organize all of the
26 existing work for the San Joaquin River, Trinity-Sacramento River, and American
27 River HEC-5Q models as well provide improvements necessary to create a
28 foundation for future improvements to the temperature models. The
29 Housekeeping Task consisted of deciding on the contents of the Toolkit; laying
30 out its structure; and compiling its contents, testing, improvements, and
31 documentation.

32 The Housekeeping Task first identified the contents of the Toolkit and how it
33 would be structured. It was recommended that there be one central HEC-5Q
34 Toolkit that would contain an individual folder for the San Joaquin River, the
35 Trinity-Sacramento Rivers, and the American River models. Within each river
36 folder, there would be a complete application model (files, data, protocol
37 document, and QA/QC tools) based on CalSim II inputs and that could support
38 climate change scenarios. The river folders would also contain a complete
39 calibration model from which the application model was developed. The Toolkit

1 would support running the model through a batch process, which is the process
 2 through which the previous toolkits were run, as well as through the graphical
 3 user interface (GUI). Both the batch process and the GUI would utilize the same
 4 model files in order to eliminate redundant files. The models would run on the
 5 same executables, contained in a folder separate from the river folders (labeled
 6 bin). There would also be a folder for the GUI, which would include all the files
 7 required to run the GUI and a protocol document. There would also be a central
 8 reference document library and a version control folder that would track the
 9 source and changes of all the files contained within the Toolkit over the course of
 10 the updates.

11 The reference document library is a compilation of documents that were deemed
 12 necessary or useful as references for the user of the Toolkit. Included with the
 13 reference document library was the development of an HEC-5Q Quick Start
 14 Guide that was requested by Reclamation as part of the updates. This quick start
 15 guide provides an overview of how the all the model components work.

16 The file structure was designed to be compatible with either the use of the Batch
 17 Process or the GUI to run the models and to be consistent with the file structure
 18 used for the modeling for EIS. Ideally, the use of the GUI would fit within this
 19 structure. However, after some investigation into how the GUI locates the
 20 required input files, it was determined that using the GUI within the file structure
 21 and using only one set of model files for both the Batch Process and the GUI
 22 would require code changes to the GUI itself. Therefore, a decision was made to
 23 not fully implement the GUI into the Toolkit but to include it anyway.

24 After identifying the contents of the Toolkit and laying out the structure, the next
 25 task was to compile the contents. This involved reconciling different versions of
 26 the model files. Table 6B.C.1 shows the model versions that were reconciled for
 27 each river.

28 **Table 6B.C.1 HEC-5Q Model Toolkits Reconciled during the Housekeeping Task**

River	Models	Toolkits
Trinity-Sacramento	SRWQM** Extension (October 2013)	Remand_SRWQM_Toolkit (January 24, 2014)
San Joaquin	CDFW* SJR Model (June 2013)	Remand_SJR_HEC5Q_Toolkit (February 21, 2014)
American	SRWQM Extension (October 2013)	Remand_FAST_HEC5Q_Toolkit (February 18, 2014)

- 29 a. California Department of Fish and Wildlife
 30 b. Sacramento River Water Quality Model

31 There were substantial differences between the versions of the Trinity-
 32 Sacramento River model. The SRWQM model (January 2014) was originally
 33 developed in 2002 and modeled only the Trinity River (to below Lewiston Dam)
 34 and the Sacramento River (to below Knights Landing). The SRWQM Extension
 35 (October 2013) extended the SRWQM model to include the Feather River (from
 36 Oroville Reservoir), the American River (from Folsom Reservoir), the Sutter

1 Bypass, and the lower Sacramento River (to below Freeport). The SRWQM
2 Extension included new meteorological data that the Feather and American River
3 extensions of the model were calibrated to. However, the older Trinity-
4 Sacramento River section of the model was not recalibrated to the new
5 meteorological data.

6 During compilation of the Toolkit, it was recommended that the Trinity and
7 Sacramento River sections of the SRWQM Extension be the versions used
8 moving forward. Those sections represented the latest modeling logic and nodal
9 layout, including the Sutter Bypass. However, changes had to be made to the
10 SRWQM Extension files before it could be incorporated. First, the Feather River
11 was removed completely from the model files, as well as the lower Sacramento
12 River (from the Feather River confluence to below Freeport) because it receives
13 inputs from the Feather River. Second, a validation procedure was undertaken to
14 adjust the necessary model parameters in order to incorporate the updated Gerber
15 California Irrigation Management Information System (CIMIS) station
16 meteorological data. A detailed description of this validation procedure is
17 described below.

18 The San Joaquin River and American River versions were mostly consistent
19 between the versions. Changes had been made on the Stanislaus River primarily
20 for consistency with CalSim II. During the Housekeeping Task, an increase in the
21 Tulloch power plant outflow capacity was implemented in the Toolkit. It should
22 be noted that the previous versions of the San Joaquin River model included
23 Electrical Conductivity as an additional output parameter of the model. This
24 capability was removed for the Toolkit.

25 The American River version had a spreadsheet that computed downstream
26 temperature targets for Folsom Outflow and Watt Avenue and two file changes
27 for consistency with CalSim II. The spreadsheet and file changes were included
28 in the Toolkit. During the Housekeeping Task, implementation of the Folsom
29 Water Supply Intake Temperature Control Device (Folsom TCD) was included.
30 Implementing the logic for the Folsom TCD required a validation run of the
31 American River, which is described in detail below.

32 Compilation of the Toolkit into the agreed upon file structure included the need to
33 change the reconciled files. These changes included changing path names in the
34 batch files and renaming files so that there was a consistent naming convention
35 across the three different river models. Also, among the changes was the
36 implementation of common executables for the CalSim II pre-processor and
37 HEC-5Q for each of the three models. This would eliminate redundant files and
38 make changes to the CalSim II pre-processor and HEC-5Q codes easier, as code
39 changes would only occur in one file. Also among the changes was the
40 implementation of common executables for the CalSim II pre-processor and
41 HEC-5Q.

42 In addition to the elements required for the models, model files and data from
43 previous work that were part of the development of the models were compiled.
44 These included the 2002 Sacramento River calibration (RMA 2003), the 2013

1 American River calibration (RMA 2013), the 2013 Stanislaus River calibration,
2 and the Sacramento River and American River validations described below.

3 **6B.C.4 Validation**

4 This section describes the validation procedures and required updates to the
5 model for the Trinity-Sacramento and American River models.

6 **6B.C.4.1 Trinity-Sacramento River**

7 The Trinity-Sacramento River model was originally developed and calibrated in
8 2002, using meteorological data from the Gerber CIMIS station (RMA 2003).
9 Since that 2002 calibration, the model code has changed and there are updated
10 meteorological data from the Gerber CIMIS station. During the Housekeeping
11 Task, it was recommended that the Trinity-Sacramento River model incorporate
12 the updated meteorological data from the Gerber CIMIS station. Fully
13 incorporating the updated Gerber meteorological data would require a full
14 recalibration of the model, which was beyond the scope of this project. Instead, a
15 validation task was conducted to produce temperature results similar to the 2002
16 calibration. The validation task assumed the following conditions:

- 17 • 1981-2002 hydrology from the 2002 calibration
- 18 • Ambient temperature data that were used in 2002
- 19 • Revised meteorology developed in 2012
- 20 • Control point configuration consistent with CalSim II
- 21 • Bypasses included in the model representation

22 During the validation process, equilibrium temperature scaling factors for the
23 reservoirs, reaches, reservoir inflows, and tributary inflows were adjusted to
24 match observed data. The scaling factors were adjusted to compensate for higher
25 equilibrium temperatures of the updated Gerber meteorology data. The
26 equilibrium temperatures of the updated Gerber meteorology were higher than the
27 2002 Gerber meteorology because the updated data were computed without a
28 wind speed scaling factor assumption, while the 2002 data had been computed
29 with an assumed wind speed scaling factor.

30 Several comparison plots and tables from select locations that are representative
31 of the computed versus observed temperature results of the Trinity-Sacramento
32 River validation are contained in Appendix 6B, Section A. Comparison plots and
33 tables at additional locations can be found in the document titled *Trinity*
34 *Sacramento River 2014 Validation Plots* included in the file set for this report. In
35 general, the validation task resulted in computed temperatures that had good
36 agreement with observed data. Table 6B.C.2 shows the average computed and
37 observed temperature at select locations in the Trinity-Sacramento River model.

1 **Table 6B.C.2 Average Computed and Observed Temperatures at Select Locations**
 2 **Resulting from the Validation of the Trinity-Sacramento River Model**

Location	Average Computed Temperature (°F)	Average Observed Temperature (°F)
Trinity River below Lewiston Dam	48.3	47.9
Sacramento River below Shasta Dam	49.8	58.6
Sacramento River below Keswick Dam	51.0	51.1
Sacramento River below Clear Creek	51.8	51.6
Sacramento River at Balls Ferry	52.7	52.7
Sacramento River at Bend Bridge	53.3	53.8
Sacramento River at Red Bluff	53.8	54.1
Sacramento River at Tehama	54.2	54.2
Sacramento River at Woodson Bridge	55.1	55.1
Sacramento River at Butte City	57.8	57.9
Sacramento River above Colusa Drain	59.4	58.8

3 **6B.C.4.2 American River**

4 The American River HEC-5Q model was developed in 2013 as part of the
 5 SRWQM Extension (RMA 2013). Subsequent to this initial development, the
 6 model shortcomings listed below were identified and addressed. Implementing
 7 the fixes required for these shortcomings required a validation of the American
 8 River HEC-5Q model data to make sure they still matched observed data.

9 **6B.C.4.2.1 Folsom Water Supply Temperature Control Device**

10 The Folsom Water Supply Intake Temperature Control Device (Folsom TCD)
 11 was not properly represented in the 2013 calibration model, resulting in
 12 withdrawal of cold water at depth. The model was modified to represent the
 13 withdrawal as a movable port that can move based on the following operating
 14 objectives and constraints:

- 15 • Minimum submergence limit of 15 feet. The negative value indicates the
 16 variable level output as opposed to a fixed port representation that was
 17 original envisioned.
- 18 • Maximum temperature constraint of 18°C. The outlet will be lowered to
 19 access this or a lower temperature when constrained by the minimum
 20 submergence requirement.
- 21 • Operating elevation range between 320 feet and 460 feet.

- 1 The LD record in Figure 6B.C.1 shows the change in the American River
- 2 HEC-5Q data file implemented for the Folsom TCD.

```

c.... Diversions
C field Original single port diversion
c (1) ADV Area of the diversion withdrawal port in ft2 or m2.
c (2) QLDV Fraction of the diverted flow assigned to the diversion. (TF)
c (3) ELDV Centerline elevation of diversion point in feet or meters. (TEL1)
C if TELT is negative. the TCD option is triggered

c.... TCD equiped water supply diversion (e.g., American River/Folsom Dam domestic water supply)
c (3) ELDV Minimum depth of submergence - flagged by a minus depth. (TEL1<0.)
c (4) LDT Maximum allowable temperature (C) at active outlet. (TET1)
c The selected port will be the controlling of these two constraint
c (5) DWSELDV(1) Centerline elevation of the lowest diversion point (TELP(1)) or
c -1 for moveable outlet that can access any element

c... If DWSELDV(1) = -1 (moveable outlet)
c (6) DWSELDV(2) Lowest diversion access elevation (TELP(2))
c (7) DWSELDV(2) highest diversion access elevation (TELP(3))

Current assumptions / data

c... Folsom Dam Water Supply TCD - represented as a variable level intake
c... Dec 22, 2014 ... Russ Yaworsky recommendation
c. Withdrawal target temperature between 63-65F (17.2 - 18.3C)
c. Lowest accessible level of approximately 320'
c... TCD operation rules as defined by "LD" record data:
c. minimum submergence constraint = 15'
c. maximum temperature constraint = 18C
c. Folsom Water Supply option flag = -1
c. Operating elevation range between 320 & 460
LD 135 1.0 -15.0 18.0 -1 320 460
    
```

- 3
- 4 **Figure 6B.C.1 Change in the American River HEC-5Q Data File for the Folsom**
- 5 **Water Supply Intake Temperature Control Device**

6 **6B.C.4.2.2 Folsom Inflow Temperatures**

7 Inflow temperatures were lowered relative to observed data in the 2013
 8 calibration model to compensate for the low level extraction of cold water by the
 9 fixed depth domestic water supply outlet. These inflow temperatures were
 10 increased relative to the 2013 calibration model temperatures with the
 11 implementation of the new Folsom TCD logic.

12 **6B.C.4.2.3 Folsom Evaporation**

13 A change in the L2 record (see Figure 6B.C.2) was made to account for the
 14 separation of evaporation in CalSim II. The standard version of HEC-5Q will
 15 only accommodate a single diversion; however, CalSim II reports evaporation as
 16 a flow equivalent rate (E8) which is represented as a surface diversion in HEC-5Q
 17 while the Folsom Lake domestic water supply diversion (D8) is diverted at depth.
 18 Therefore, these two rates cannot be combined for accurate temperature
 19 simulation. From a flow accounting perspective (HEC5), the total flow diverted
 20 from the lake is E8+D8. By setting IQDEV = 2, the evaporation component of
 21 total diversion is defined as a DSS path using the ZR Record and subtracted from
 22 E8+D8 in HEC-5Q.

1	c. Reservoir evaporation using CALSIMII operation data
2	c. HEC5Q can accommodate only one diversion. CALSIM reports evaporation as a flow equivalent
3	c. rate which is represented as a surface diversion in HEC5Q.
4	c. Folsom also has a domestic water supply that is diverted at depth, therefore it cannot
5	c. be combined with evaporation. By setting IQDEV = 2, the evaporation component of
6	c. total diversion is defined as a DSS path using the 2R Record.
7	c. FK2R FK2C FK2S SFMET1 SFMET2 sfmt3 IQDEV
8	L2 1 1 1 0.5 0.90 1.10 2
9	2R EV590 A=American B=Folsom Lake C=flow-evap E=1DAY F=2020D09E-1

1

2 **Figure 6B.C.2 Change in the American River HEC-5Q Data File to Separate**
 3 **Evaporation from Total Diversion at Folsom Dam**

4 **6B.C.4.2.4 River Mile Correction**

5 The river mile location of Nimbus and Folsom Dams were improperly defined in
 6 the 2013 calibration model. A half-mile reach was inserted below Nimbus Dam
 7 to match the river mile locations of Nimbus and Folsom Dams in the HEC-RAS
 8 model. The Nimbus Dam went from river mile 22 to 22.5 and Folsom Dam went
 9 from river mile 28.7 to 29.2. This change affects temperature results.

10 In general, the validation resulted in good agreement between computed and
 11 observed temperatures. The average computed and observed temperatures at
 12 select locations in the American River model are shown in Table 6B.C.3.

13 **Table 6B.C.3 Average Computed and Observed Temperatures at Select Locations**
 14 **Resulting from the Validation of the Trinity-Sacramento River Model**

Location	Average Computed Temperature (°F)	Average Observed Temperature (°F)
American River below Nimbus Dam	56.5	56.7
American River at William Pond Park	57.7	57.7
American River at Watt Avenue	58.5	58.3

15 **6B.C.5 Flow/Boundary Condition Mapping**

16 HEC-5Q receives flow inputs from CalSim II through the CalSim II_HEC-5Q
 17 pre-processing executable. Monthly CalSim II flow and storage time series
 18 outputs are read into the executable where they are combined and mapped to
 19 nodes in the HEC-5Q model based on specifications in the [River model]_CS.dat
 20 (e.g. SR_CS.dat) file, converted to daily time series, and stored in the HEC-5Q
 21 input DSS file (CalSim II_HEC5Q.DSS). In the case of the storage time series, a
 22 daily patterning procedure is applied. As part of the temperature model updates,
 23 several modifications were made to improve the flow mapping of CalSim II to
 24 HEC-5Q. Additionally, HEC-5Q provides flow and temperature inputs to several
 25 fisheries models. These modifications are described below.

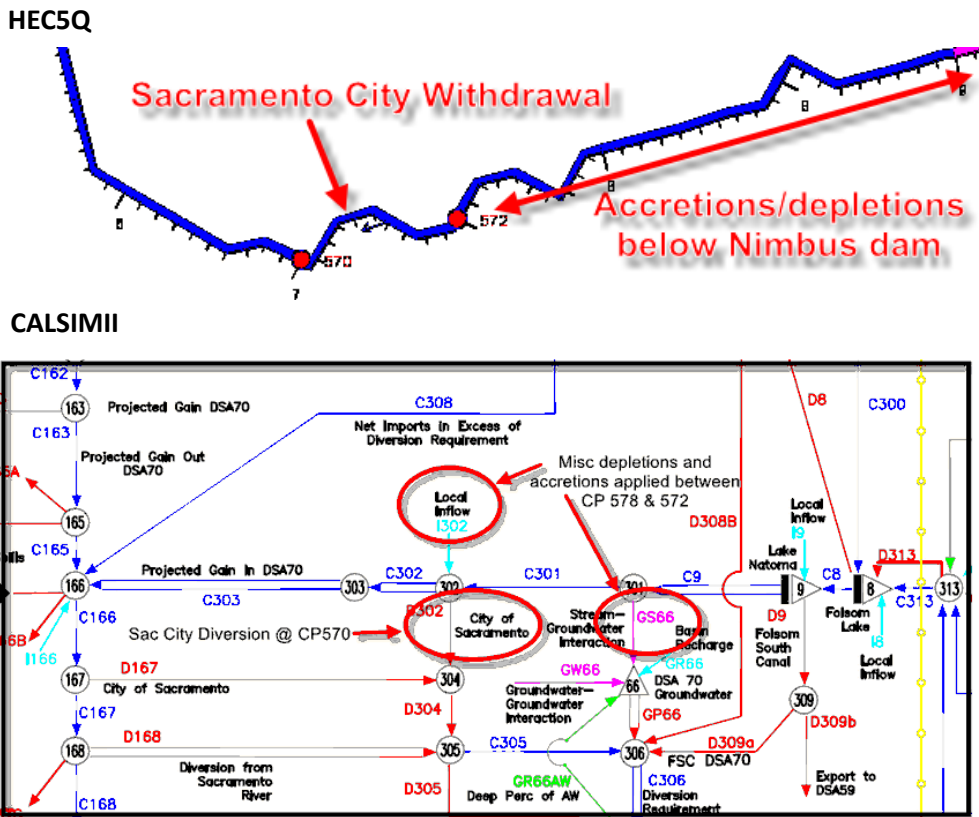
26 **6B.C.5.1 Sutter Bypass Boundary Conditions Mapping**

27 During modifications of the SRWQM Extension model files for the
 28 Trinity-Sacramento River model, it was determined that there was some incorrect

1 mapping with the CalSim II schematic at Butte Creek. Specifically, there was
 2 double-counting of the Butte Creek Inflow at the Knights Landing control point.
 3 In CalSim II, Butte Creek inflow is input into the Sutter Bypass. However, in the
 4 SRWQM Extension, that inflow was added directly into the Sacramento River,
 5 causing higher flows in the Sacramento River at Knights Landing in the HEC-5Q
 6 model as compared to CalSim II. The Butte City inflow record (specifically
 7 IN118 in the SR_CS.dat file) was removed in the SR_5CS.dat file for the final
 8 Trinity-Sacramento River model.

9 **6B.C.5.2 American River Flow Mapping Change**

10 The control point resolution below Nimbus Dam was inadequate in the 2013
 11 calibration model to properly allocate the City of Sacramento withdrawal. This
 12 lack of resolution presented a problem in relating HEC-5Q flows to CalSim II
 13 flows. The additional control point that localizes the City of Sacramento
 14 withdrawal is shown on Figure 6B.C.3. The additional control point (CP) #572
 15 results in the depletions / accretions being distributed uniformly between CP 572
 16 and CP 578 (mile 7.5 to mile 22.0). The City of Sacramento diversion is applied
 17 at CP 570. This change only has a small impact on temperature (it reduces
 18 temperatures at Watt Avenue up to +/- 0.5°F).



19
 20 **Figure 6B.C.3 Schematics of HEC-5Q and CalSim II Models with Additional Control**
 21 **Point 572**

1 **6B.C.5.3 Stanislaus River**

2 The flow mapping between CalSim II and HEC-5Q in the Delta-Mendota Canal
3 section of the San Joaquin River model is currently inadequate and results in
4 serious flow differences. To fully address this requires a modification to the
5 CalSim II schematic, which is beyond the scope of the work to update the
6 temperature models. Since the EIS only focuses on temperature effects from
7 Reclamation operations on the Stanislaus and Lower San Joaquin Rivers, the San
8 Joaquin River model was reduced to only include the Stanislaus River and the San
9 Joaquin River from the Stanislaus River confluence to the head of Old River. A
10 requirement of this model to run and simulate temperatures at Vernalis was to
11 develop a boundary condition time series of inflow temperature at the San Joaquin
12 River above the Stanislaus River confluence. This time series would incorporate
13 all the upstream temperature effects due to water operations above this point in
14 the San Joaquin River basin (including Friant, Mendota Pool, and the Tuolumne
15 and Merced Rivers). This time series was generated with the February 21, 2014
16 San Joaquin River HEC-5Q model using the EIS No Action Alternative Q5
17 CalSim II results for inputs.

18 **6B.C.5.4 Mapping to Fisheries Models**

19 The capability of mapping HEC-5Q flow and temperature outputs with three
20 fisheries models was added to the Sacramento River model, including SALMOD,
21 Reclamation Mortality model, and Cramer Fish Sciences models.

22 **6B.C.6 Temperature Target, Selective Withdrawal,
23 and Operational Outputs**

24 This section describes the temperature targeting and/or selective withdrawal
25 changes and procedures for the Trinity, Shasta, and Folsom Dams. These changes
26 were completed after the validation was deemed appropriate because the
27 temperature targets do not affect the matching of the observed temperatures; the
28 validation period of record occurred when the Trinity Dam auxiliary outlet and
29 Folsom Dam low-level outlets were not used.

30 **6B.C.6.1 Trinity River**

31 **6B.C.6.1.1 Seasonal Temperature Target Schedule**

32 A simplistic approach for seasonal temperature targets was implemented for the
33 Trinity River. The seasonal targets are shown in Table 6B.C.4. The temperature
34 targets of importance are the 49⁰F temperatures between August and November
35 when temperature management is the most crucial on the Trinity River and the
36 auxiliary outlet (described in the next section) is allowed to operate. The 60⁰F
37 temperature target was implemented to force power generation in the model.

1 **Table 6B.C.4 Seasonal Temperature Targets for Trinity Dam to Operate to in the**
 2 **HEC-5Q Model**

Date	Temperature Target
January 1	60 ⁰ F
July 31	60 ⁰ F
August 15	49 ⁰ F
November 30	49 ⁰ F
December 1	60 ⁰ F
December 31	60 ⁰ F

3 Trinity Dam has a low-level (auxiliary) outlet, a morning glory spillway, and a
 4 single-level power intake that doubles as a high capacity river outlet. The
 5 relevant input data for Trinity Dam in the Trinity-Sacramento HEC-5Q data file
 6 are shown on Figure 6B.C.4. (Note that the line numbers are for reference only
 7 and are not line numbers in the Trinity-Sacramento HEC5Q data file.) Additional
 8 diagrams that were used as the basis for the improvements to Trinity Dam
 9 selective withdrawal logic in the Trinity-Sacramento River model are included in
 10 later portions of this appendix.


```

1 c... Trinity Dam power bypass operation is based on Dec 22 conference call, two Figures #2
2 c. flow versus head plots and recent turbine retrofit plots. (references?)
3 c... History
4 c. Power bypass for temperature control (access cold water pool) occurred in 2009 and 2014
5 c. Turbines were upgraded to increase capacity and efficiency during the past few years
6 c... Operating rules for power bypass:
7 c. The low level (Auxiliary) outlet is either open or closed with an outlet capacity computed
8 c. as a function of Lake elevation (approximately 2,000 cfs at typical Lake levels)
9 c. Temperature compliance assumes a blend of power production to maintain minimum flow below the Dam
10 c. and the Auxiliary open for a sufficient time to pass the bypass flow.
11 c. (i.e., daily average flow through the Auxiliary outlet determines the hours of operation)
12 c. Outlet data record definition:
13 c. L5 = Auxiliary Outlet (power bypass)
14 c. L7 = Power/River Outlet
15 c. L6 = Morning Glory Spillway
16 c... Dimensions / elevation based on Figure 2 invert elevations and tunnel diameter
17 c... Invert/crest Elev Diameter Centerline / Crest Elev (assumed)
18 c L5 1995.5 7' 2000
19 c L7 2100.0 20' 2110
20 c L6 2370.0 54' 2370
21 c. Bypass power to achieve temperature compliance is based on targets defined by PT records
22 c. (i.e., summer/fall temperature objective = 47 Fahrenheit)
23 c. The first 72 columns of the L5 Record are standard HEC5Q data
24 c. Data beyond column 72 provide the following power bypass constraints
25 c. Maximum and minimum fraction of flow through the Auxiliary outlet | | |
26 c. Maximum flow through the Auxiliary outlet (e.g., 12 hrs at 2,000 = 1,000) | | |
27 c. Calendar date limits for Power bypass to low level outlet | | |
28 c. area Max Q Elev
29 L5 100 2000 2000 .67 .16 1000. 15-Aug 30-Nov
30 c. Standard HEC5Q input for spillway (L6) and power/river outlet (L7)
31 L6 54 12000 2370
32 L7 400 7800 2110
33 c. The flow limits on the L5 and L7 Records are place holders to meet model requirements
34 c. The actual outlet capacities are computed in the Trinity specific code section of HEC5Q
35 c. as a function of watersurface elevation. These relationships are described in
36 c. "HEC-5Q Water Temperature Model, Sacramento River System" The power generation outflow
37 c. and the river outlet flow share the same outlet conduit, therefore, there is no distinction
38 c. between the generation flow and release of excess flow to the River from a temperature
39 c. perspective. (The Auxiliary outlet is approximately 100' lower than the power/river outlet)
40 c. The outlet operation summary file reports the maximum power potential for information only
41 c. The following Record names the outlet summary file and implements the power bypass operation.
42 c. note that the character string "USBR opp:" is interchangeable with "SAVE opp:"
43 USBR opp: Trinity_Power_Bypass.txt
44 c. Temperature targets control the seasonal limits for power bypass
45 c. (subject to the calendar day constraints on the L5 Record)
46 c. A high target temperature will preclude power bypass operation
47 c. The calendar date input format assumes temperature units of degrees Fahrenheit
48 PT 1/01 60.0 7/31 60.0 8/15 47.0 11/30 47.0
49 PT 12/01 60.0 12/31 60.0

```

1

2 **Figure 6B.C.4 Input Data Relevant to the Trinity Dam Selective Withdrawal**
3 **Procedure in the Trinity-Sacramento HEC-5Q Data File**

4 As the auxiliary outlet and power intake are at a fixed elevation, the only
5 available temperature control option is to bypass power generation and divert
6 colder temperature flows to the auxiliary outlet. The allocation between the
7 auxiliary (power bypass) and power flows is designed to meet the seasonal
8 temperature targets described earlier based on the Trinity-specific data described
9 below.

10 The Line 29 (L5) defines the auxiliary outlet characteristics and serves as the
11 power bypass outlet. The first 72 columns are standard inputs while the
12 additional data beyond column 72 constrain operation rules for power bypass to
13 the auxiliary outlet. The constraints imply that the auxiliary outlet can be
14 throttled to a specified flow rate. In reality, the auxiliary outlet is fully open or
15 completely closed. Therefore, the fraction of the total outflow translates to a time
16 period when the auxiliary outlet is fully open. Power flows would provide the
17 minimum flow requirement for the river above Lewiston Lake. Mixing within
18 Lewiston Lake is assumed to blend the flows of different temperatures.

- 1 • Col 73-80: Maximum fraction of the total out flow allowed through the
2 auxiliary outlet (power bypass)
- 3 • Col 81-88: Minimum fraction of the total outflow required for bypass through
4 the auxiliary outlet
- 5 • Col 89-96: Maximum flow through the auxiliary outlet in cubic feet per
6 second (cfs)
- 7 • Col 97-112: Calendar date limits for power bypass to the low-level outlet.
8 These dates override the limits set by the “PT” record.

9 Lines 31 and 32 (L6 and L7) are standard inputs defining the spillway crest length
10 and power intake area as well as the flow capacity and elevation. The maximum
11 flow for both the auxiliary (L5) and power intake (L7) serve as placeholder data.
12 The actual flow rates are defined within the code as a function of lake elevation.
13 When the flow and elevation conditions fall within the constraints seen in
14 Figure 6B.C.3, the generation flow is added to the river outlet capacity seen in
15 Figure 6B.C.2. From a temperature simulation perspective, there is no difference
16 between power flow and river release flows as they share the same outlet conduit.
17 The power production only adds to the total flow capacity of the common outlet
18 tunnel.

19 **6B.C.6.1.2 Trinity Dam Operations Output**

20 A single comma-delimited output file is generated by the Trinity Dam-specific
21 option. This file is named on the “USBR_OPP ” record that triggers the power
22 bypass option. This comma-delimited file (“Trinity Power Bypass.txt”) when
23 imported into Excel produces a file that summarizes the outlet operation and other
24 pertinent data. The file includes daily lake storage and elevation, flow capacity
25 and allocation to the auxiliary and power outlets, total outflow (release), target
26 and outflow temperature, and spill information. The screen capture shown in
27 Figure 6B.C.5 is an example of the resulting Excel file. There are two flags that
28 indicate constraints on the bypass flow. In the example, August 28 is the day that
29 is constrained by the maximum daily flow limit.

Appendix 6B.C: Surface Water Temperature Modeling – HEC-5Q Model Update

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	Trinity Outlet Operation Log														
2	Units are cfs unless noted														
3	* Minimum Auxiliary outlet flow limitation														
4	*** Maximum Auxiliary outlet flow limitation														
5	Date	storage	Elevation	Auxiliary Outlet		River Outlet + power		Total	Max Power	Temperature (F)				Spill	
6		TAF	Ft	Capacity	Release	Capacity	Release	Release	capacity	Target	Outflow	Auxiliary	Power+River		
7	01-OCT-1993	1945.0	2337.1	2394	0	12126	356	356	4056	47.0	44.9	44.4	44.9	0	
8	02-OCT-1993	1944.6	2337.1	2394	0	12126	974	974	4056	47.0	44.9	44.5	44.9	0	
9	03-OCT-1993	1943.3	2337.0	2394	0	12126	330	330	4057	47.0	44.9	44.4	44.9	0	
20	10-AUG-1994	1412.5	2295.8	2245	0	11780	3044	3044	4101	50.4	47.4	45.1	47.4	0	
21	11-AUG-1994	1406.3	2295.3	2242	0	11771	2993	2993	4097	49.3	47.4	45.1	47.4	0	
22	12-AUG-1994	1399.9	2294.7	2242	0	11761	2754	2754	4093	48.4	47.4	45.1	47.4	0	
23	13-AUG-1994	1394.0	2294.2	2240	0	11752	2926	2926	4089	47.6	47.5	45.1	47.5	0	
24	14-AUG-1994	1387.9	2293.7	2236	328	11742	2628	2956	4085	47.2	47.2	45.1	47.5	0	
25	15-AUG-1994	1381.8	2293.1	2234	562	11733	2395	2957	4081	47.0	47.0	45.1	47.5	0	
26	16-AUG-1994	1375.6	2292.6	2234	602	11723	2308	2910	4076	47.0	47.0	45.1	47.5	0	
27	17-AUG-1994	1369.6	2292.0	2233	621	11714	2278	2899	4072	47.0	47.0	45.1	47.5	0	
28	18-AUG-1994	1363.6	2291.5	2230	631	11704	2216	2846	4068	47.0	47.0	45.1	47.5	0	
29	19-AUG-1994	1357.5	2291.0	2226	729	11695	2394	3123	4064	47.0	47.0	45.1	47.6	0	
30	20-AUG-1994	1350.8	2290.4	2224	736	11684	2316	3052	4059	47.0	47.0	45.2	47.6	0	
31	21-AUG-1994	1344.4	2289.8	2223	648	11674	2045	2693	4055	47.0	47.0	45.2	47.6	0	
32	22-AUG-1994	1338.4	2289.3	2220	712	11664	2034	2746	4051	47.0	47.0	45.2	47.7	0	
33	23-AUG-1994	1333.0	2288.8	2218	707	11656	1950	2657	4047	47.0	47.0	45.2	47.7	0	
34	24-AUG-1994	1327.8	2288.3	2216	749	11647	1999	2748	4043	47.0	47.0	45.2	47.7	0	
35	25-AUG-1994	1322.8	2287.8	2215	803	11639	2031	2833	4040	47.0	47.0	45.2	47.7	0	
36	26-AUG-1994	1317.4	2287.3	2213	871	11631	2128	2999	4036	47.0	47.0	45.2	47.8	0	
37	27-AUG-1994	1311.3	2286.8	2213	884	11621	2084	2968	4032	47.0	47.0	45.2	47.8	0	
38	28-AUG-1994	1304.7	2286.2	2209	1000 **	11610	2307	3307	4027	47.0	47.1	45.2	47.8	0	
39	29-AUG-1994	1298.5	2285.6	2208	959	11600	1989	2948	4023	47.0	47.0	45.2	47.9	0	
40	30-AUG-1994	1292.4	2285.0	2205	959	11590	1923	2882	4018	47.0	47.0	45.2	47.9	0	
41	31-AUG-1994	1286.4	2284.5	2205	951	11580	1875	2826	4014	47.0	47.0	45.3	47.9	0	
42	01-SEP-1994	1281.6	2284.0	2202	183	11571	373	555	4010	47.0	47.0	45.2	47.9	0	

1

2 **Figure 6B.C.5 Example Trinity Outlet Operations File Generated when Running the**
 3 **Model (The file is titled “Trinity Power Bypass.txt after the Trinity-Sacramento**
 4 **River model is run”)**

5 **6B.C.6.2 Shasta Dam**

6 **6B.C.6.2.1 Seasonal Temperature Target Schedule**

7 A Shasta Dam release temperature target scheduling spreadsheet for the Trinity-
 8 Sacramento River model was developed using logic that was derived from the
 9 National Marine Fisheries Service 2009 Biological Opinion on the Long-Term
 10 Operations of the Central Valley Project and State Water Project (NMFS BO) and
 11 actual temperature management operations provided by Reclamation. The
 12 spreadsheet generates a PT record that is referenced at line 580 in the Trinity-
 13 Sacramento HEC-5Q data file.

14 **6B.C.6.2.2 Shasta Operations Output File**

15 Two comma-delimited files (*.2xl) are produced that summarize the Shasta TCD
 16 operation. Both files provide similar information; however, the file
 17 "TCD_xx.log0.2xl" contains zeros while "TCD_xx.log.2xl" contains blanks in the
 18 computed flows and temperatures columns. The blank-filled file is easier to read
 19 but precludes arithmetic manipulation. Figure 6B.C.6 is an example Excel file
 20 generated by the “TCD_xx.log0.2xl” text file. This figure separated into two
 21 parts for ease of reading.

Appendix 6B.C: Surface Water Temperature Modeling – HEC-5Q Model Update

Columns A - U

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	
USBR Sacramento River specific Run date and time: 20MAR15 - 14:01:02																					
Date	Water Surface elevation	total release	Number of Operating Shutters				Shutter Flows - cfs				TCD Leakage (by elevation range) - cfs								Total Generation - cfs		
	- ft	cfs	top	middle	penstock	lower	top	middle	penstock	lower	Total	>1000 (Over)	1000-945	945-900	900-831	831-804	804-780	780-750	Total	(Shutter+Leakage)	
1-Oct-93	1012	8722.1																			
302	26-Jul-94	1004.5	9124				3	1	4922.6	2319.1	7241.7		207.1	60.2	257.3	62	1252.7	42.9	1882.3	9124	
303	27-Jul-94	1003.9	8706.2				3	1	4793.8	2116.3	6910.1		197.6	57.5	245.5	59.2	1195.4	40.9	1796.1	8706.2	
304	28-Jul-94	1003.3	9276.4				3	1	4969.6	2393.1	7362.7		210.6	61.2	261.6	63.1	1279.6	43.6	1913.7	9276.4	
305	29-Jul-94	1002.8	8705.1				3	1	4793.5	2115.7	6909.2		197.6	57.5	245.5	59.2	1195.2	40.9	1795.9	8705.1	
306	30-Jul-94	1002.2	8873.7				3	1	4645.5	2137.6	7043.1		201.4	58.6	250.2	60.3	1218.4	41.7	1830.6	8873.7	
307	31-Jul-94	1001.6	8303.9				3	1	4050.5	2540.3	6590.7		188.5	54.8	234.2	55.5	1140.1	39	1713.1	8303.9	
308	1-Aug-94	1001.1	8353.2				3	1	4063.7	2564.3	6629.9		189.6	55.1	235.6	56.8	1146.9	39.3	1723.3	8353.2	
309	2-Aug-94	1000.6	8040.4				2	1	3980	2401.6	6381.7		182.5	53.1	226.7	54.7	1103.9	37.8	1659.7	8040.4	
310	3-Aug-94	1000.2	8655.6				3	1	4144.5	2725.4	6869.9		196.5	57.1	244.1	58.9	1188.4	40.7	1785.7	8655.6	
311	4-Aug-94	999.8	8946.6				3	1	4222.3	2878.6	7100.9		203.1	59	252.3	60.8	1228.4	42	1845.7	8946.6	
312	5-Aug-94	999.4	9022.8				2	1	3474.7	3686.7	7161.4		204.8	59.6	254.4	61.4	1238.8	42.4	1861.4	9022.8	
313	6-Aug-94	998.8	8555.8				2	1	3372.4	3418.3	6790.7		194.2	56.5	241.3	58.2	1174.7	40.2	1765.1	8555.8	
314	7-Aug-94	998.2	8086.8				2	1	3269.7	3148.8	6418.5		183.6	53.4	228	55	1110.3	38	1668.3	8086.8	
315	8-Aug-94	997.5	8447.6				2	1	2488.6	4266.3	6754.9		191.8	55.8	239.2	57.4	1159.9	39.7	1742.7	8447.6	
316	9-Aug-94	996.9	9069.7				2	1	2588.6	4640	7198.6		205.9	59.9	255.8	61.7	1245.3	42.6	1871.1	9069.7	
317	10-Aug-94	996.4	8930.7				2	1	2536.2	4552.1	7088.3		202.7	58.9	251.8	60.7	1226.2	42	1842.4	8930.7	
318	11-Aug-94	995.9	8345.1				2	1	2442.1	4181.4	6623.5		189.4	55.1	235.3	56.7	1145.8	39.2	1721.6	8345.1	
319	12-Aug-94	995.3	8281				2	1	2431.8	4140.9	6572.6		188	54.7	233.5	56.3	1137	38.9	1708.4	8281	
320	13-Aug-94	994.8	8264.8				1		6559.8	6559.8			187.6	54.5	233.1	56.2	1134.8	38.8	1705	8264.8	
321	14-Aug-94	994.3	8276.9				1		6569.4	6569.4			187.9	54.6	233.4	56.3	1136.4	38.9	1707.5	8276.9	
322	15-Aug-94	993.8	7930.8				1		6294.7	6294.7			180	52.3	223.6	53.9	1088.9	37.3	1636.1	7930.8	
323	16-Aug-94	993.3	8512.1				1		6756.1	6756.1			193.2	56.2	240	57.9	1166.7	40	1756	8512.1	
324	17-Aug-94	992.8	8342.9				1		6621.8	6621.8			189.4	55.1	235.3	56.7	1145.5	39.2	1721.1	8342.9	
325	18-Aug-94	992.3	9607.8				1		7625.7	7625.7			218.1	63.4	270.9	65.3	1319.2	45.2	1982.1	9607.8	
326	19-Aug-94	991.6	8746				1		7735.4	7735.4			221.2	64.3	274.8	66.3	1338.1	45.8	2010.6	8746	
327	20-Aug-94	990.8	10647.8				1		7974.9	7974.9			228.1	66.3	283.9	68.3	1379.6	47.7	2077.9	10647.8	

Columns V-AG

V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ
Sluice Gate Flows - cfs				Drum Spillway flow - cfs	Temperature Target - F	Shutter Temperatures - F				TCD Leakage Temperature (by elevation range) - F						Generation Temperature - F	Sluice Gate Temperatures - F			Drum Spillway Temperature - F	
Upper	Middle	Lower	Total		Target - F	top	middle	penstock	lower	1000 (Over)	945-900	900-831	831-804	804-780	780-750	F	Upper	Middle	Lower		F
1	51.2	73	65.4	52.5	46.5						71.8	64.5	54.7	51.2	49.6	48.1	51.2				51.2
4					49.7	74.3	57.4	49.8	48.1		64.1	54.3	50.1	49.3	48.9	48.5					49.6
2					49.7	74.6	57.6	49.8	48.1		64.3	54.4	50.1	49.3	48.9	48.5					49.6
4					49.7	74.5	57.6	49.9	48.1		64.5	54.5	50.1	49.3	49	48.5					49.6
1					49.7	75	57.8	49.9	48.1		64.6	54.7	50.2	49.4	49	48.5					49.7
7					49.7	75.1	58.2	50	48.1		65.9	55.2	50.3	49.4	49	48.6					49.8
8					49.7	75.1	58.4	49.9	48.2		65.9	55.3	50.3	49.5	49.1	48.6					49.7
2					49.7	75.1	58.5	50	48.2		66	55.5	50.4	49.5	49.1	49.6					49.7
4					49.7	75.1	58.7	50	48.2		66.1	55.6	50.4	49.5	49.1	48.6					49.8
6					49.7	75.3	58.8	50.1	48.2		66.4	55.7	50.5	49.6	49.2	48.7					49.8
8					49.7	75.3	59.1	50.1	48.3		66.7	56.1	50.6	49.6	49.2	48.7					49.7
8					49.7	75.7	59.8	50.2	48.3		67.7	56.7	50.7	49.7	49.3	48.8					49.8
8					49.7	75.6	59.9	50.2	48.3		67.8	56.8	50.7	49.8	49.3	48.8					49.8
6					49.7	75.5	59.9	50.2	48.4		68	56.9	50.8	49.8	49.3	48.8					49.6
7					49.7	75.1	60	50.2	48.5		68	57.1	50.9	49.9	49.4	48.9					49.7
7					49.7	75.1	60.1	50.3	48.5		68.1	57.2	50.9	49.9	49.4	48.9					49.7
1					49.7	75.2	60.7	50.4	48.5		69	57.7	51.1	50	49.5	48.9					49.8
1					49.7	75.2	60.8	50.4	48.5		69	57.8	51.1	50	49.6	49					49.8
8					49.2	75.2	61	50.9	48.7		69.1	58	51.2	50.1	49.6	49					49.4
9					49.2	75.2	61.1	50.9	48.7		69.2	58.1	51.3	50.2	49.7	49.1					49.5
8					49.2	75.3	61.1	51	48.8		69.2	58.3	51.4	50.2	49.7	49.1					49.5
1					49.2	75	61.4	51.2	48.8		69.3	58.5	51.4	50.3	49.8	49.2					49.6
9					49.2	75	61.5	51.2	48.9		69.3	58.6	51.5	50.3	49.9	49.3					49.6
8					49.2	74.6	61.9	51.4	49		70.2	59.6	51.7	50.4	50	49.4					49.7
6					49.2	74.6	62	51.5	49		70.3	59.8	51.8	50.5	50	49.4					49.8

1
2 **Figure 6B.C.6 Example Shasta Outlet Operations File Generated in the Model (The**
3 **file is titled “TCD_xx.log.2xl after the Trinity-Sacramento River model is run”)**

4 Columns D-K list the number of shutters and flow allocation to the top, middle,
5 penstock and lower levels. Columns M-S list the leakage flows by elevation
6 ranges. (Note that these leakage flows may have changed due to shutter
7 maintenance and modification.)

8 Column C equals columns L+T (total release and power flow components) and
9 are identical except when the power flow capacity is exceeded. When the total
10 release exceeds the allowable power flow, the excess is allocated to the sluice gate
11 with the temperature nearest the temperature objective. Use of the spillway
12 occurs only after the power and sluice gate are fully utilized. Columns V-Z list
13 the sluice gate and spillway flows.

14 The remaining columns report water temperatures. The shutter temperatures
15 (AB-AE) are reported for all possible levels even though there may be no flow.

1 Temperatures for all possible leakage levels appear in columns AF-AL. Columns
 2 AA and AM report the temperature object and the power flow temperature
 3 respectively. The remaining columns report the sluice and spillway temperatures
 4 only when there is flow.

5 **6B.C.6.3 Folsom Dam**

6 **6B.C.6.3.1 Seasonal Temperature Target Schedule**

7 A Folsom Dam release temperature target scheduling procedure for the American
 8 River model was developed using logic that was derived from the NMFS BO and
 9 actual temperature management operations provided by Reclamation. The
 10 spreadsheet generates a PT record that is referenced at line 262 in the American
 11 River HEC-5Q data file.

12 **6B.C.6.3.2 Selective Withdrawal Operations**

13 The shutter position and power bypass are set to meet the temperature targets
 14 based on the Folsom-specific data described below. Figure 6B.C.7 shows the
 15 relevant input data for Folsom Dam in the American River HEC-5Q data file and
 16 has additional comments that supplement this text. (Note that the line numbers are
 17 for reference only and are not line numbers in the American River HEC-5Q
 18 data file.)

```

11 c... Folsom Dam shutter operation (Reference Figure 5, 2013 project report)
12 c. P1 - Centerline of the power penstocks
13 c. P2 thru P4 - Centerline elevation of the shutter openings (crest elevation + 26/2)
14 c. Center line 307 Power Penstocks
15 c. Crest elev 336 362 401 (add 13' to crest elevation - P2, P3 & P4 of L7 Record)
16 c. Note that the depth of submergence "Dout" is referenced to the centerline of the equivalent port representation
17 c. e.g. elevation submergence limit for the upper port is 414+20-401 = 33' The minimum required
18 c. submergence is 27' so the L7 data provide a 6' safety factor (approx 1/2 the height of each shutter)
19 c. Minimum fraction of flow through any port before any change | |
20 c Aout Qmax P1 P2 P3 P4 P5 P6 Dout
21 c. CL/crest elev 307 336 362 401 (add 13' to crest elevation - P2, P3 & P4)
22 L7 400 8000 307 349 375 414 20 1 .10
23 c.. check this ^^^^^ may be 290'??? 307' from Figure 5, August 2013 report
24 c. Two adjacent ports may be operated, flow allocation between ports as a function of target temperature.
25 c. The character string "Save opp:" combined with the Control Point Number 590 triggers this outlet option
26 c. The output file "Folsom.TCD.Opp" summarizes outlet structure operation. "FOLSOM.TCD.2XLS" is a
27 c. comma delimited reformatted version of the summary table.
28 c. The word "lower" followed by a series of months defines the period when all shutters are lowered
29 c. (subject to elevation constraints) Two shutter operation approaches during spilling are available.
30 c. If "spill#1" is present of the Save_opp record (example), all shutters lowered with all units at 2,680 cfs
31 c. If "spill#2" is present, two elevations for the three shutters are based on temperature objective
32 c. (e.g., two at 5,360 cfs, one at 2,680 cfs) - both options subject to submergence constraints
33 c. (subject to elevation constraints)
34 c. The "plus" option will add an elevation increment (ft) to the withdrawal elevation to delay adding a shutter (raising environment)
35 Save opp: Folsom.TCD.Opp Lower Dec Jan Feb March spill#1
    
```

19

20 **Figure 6B.C.7 Input Data Relevant to the Folsom Dam Selective Withdrawal**
 21 **Procedure in the American River HEC-5Q Data File**

22 Line 19 (L5) defines the low level outlet characteristics that serves as the power
 23 bypass outlet. The first 72 columns are standard inputs while the additional data
 24 beyond column 72 control operation of the power bypass. The following three
 25 inputs provide limit on flow and date limits for power bypass.

- 26 • Col 73-80: Maximum fraction of flow through the low level power bypass
- 27 • Col 81-88: Minimum fraction of flow through the low level power bypass
- 28 • Col 89-96: Maximum flow through the low level power bypass
- 29 • Col 97-112: Calendar date limits for power bypass to the low level outlet

1 Line 29 (L7) is a standard input for representing a multi-port withdrawal
2 structure. For the Folsom Lake TCD (shutters) option, the standard inputs are
3 used to define the penstock (all shutters raised) and three possible shutter
4 elevations and the shutter submergence criteria. The value defined in columns
5 81-88 (.10) is the threshold fraction of the total flow required for a shutter change.

6 Line 36 initiates the Folsom Dam-specific option. The character string "Save
7 opp:" ("USBR_opp" is an alternate flag) combined with the control point number
8 590 triggers this outlet operation option. Two adjacent shutters are operated and
9 flow is allocation between shutters to provide an outflow that approximates the
10 target temperature. Following the file naming, a series of months (e.g., December
11 thru March) may be included to specify that shutters be set in the lowered
12 position. During tainter gate operation, the shutters are operated to meet the
13 temperature objective after correcting for the temperature of the spill. Including
14 "SPILL#1" following the months will force the outflow at the highest possible
15 level, thus conserving the cold water resource.

16 **6B.C.6.3.3 Folsom Dam Operations Output**

17 There are two output files generated by the Folsom-specific option. The
18 "Folsom.TCD.Opp" is a text file that is produced as the simulation progresses.
19 This text file is reformatted to produce a file with a "2xls" file extension upon
20 completion of the temperature simulation (this file will not be created if the run
21 ends prematurely). This comma-delimited file, when imported into Excel,
22 produces a file that summarizes the Folsom shutter operation and power bypass.
23 The file includes daily flow allocation, outflow temperature, temperature
24 compliance, lake elevation and storage information. An example of the resulting
25 Excel file is shown on Figure 6B.C.8. There are two flags in column A that
26 indicate operation constrained by lake elevation or specified shutter lowering.
27 Shutter changes are indicated by "TRUE" in column C. Shutter changes are
28 indicated when a shutter level is discontinued and when a new shutter level is
29 added. In reality, the two shutter changes indicated on September 22 and 26
30 would actually be one change in which the "middle raised" shutter (one or two
31 shutter bays) would remain unchanged while both remaining shutters in the
32 "upper raised" position would be removed to move from the "upper raised"
33 condition to the "lower raised" condition. The number of shutter bays at the
34 indicated level is not considered in the flow allocation. Therefore, the total
35 generation flow for a shutter level may exceed the capacity of a single penstock.
36 Power bypass assumes that all shutters are raised and the power bypass fraction is
37 indicated only by flow. There are temperatures circled in red in the sample output
38 that have no corresponding flow. These temperatures indicate that a shutter
39 change would have occurred if not for the minimum flow requirement.

Appendix 6B.C: Surface Water Temperature Modeling – HEC-5Q Model Update

Shutter Position (U=Upper raised, M=Middle raised, L=Lower raised, A=All lowered)		Elem elevation constrained												Lower specified lowering per 'Save opp' record												Total Release		Target Compliance		Elevation		Storage		Spillway(est)	
Flag	Date	Change	% of Q	Q-Out	T-Out	% of Q	Q-Out	T-Out	% of Q	Q-Out	T-Out	% of Q	Q-Out	T-Out	% of Q	Q-Out	T-Out	Q-Out	T-Out	T-Targ	T-Diff	Feet	TAF	% of Q	Q-Spill										
1-Jan-22	TRUE	0	0	0	0	100	1737	49.11	0	0	0	0	0	0	0	0	0	0	1737	49.11	52	-2.89	465.96	419.761	0	0									
2-Jan-22		0	0	0	0	100	1737	49.05	0	0	0	0	0	0	0	0	0	0	1737	49.05	52	-2.95	406	419.505	0	0									
3-Sep-22		0	0	74.09	100	5102.9	59.79	0	0	0	0	0	0	0	0	0	0	0	5102.9	59.79	68.4	-0.61	465.79	763.401	0	0									
4-Sep-22		0	0	75.34	100	5102.91	60.33	0	0	0	0	0	0	0	0	0	0	0	5102.9	60.33	68.4	-0.07	444.96	795.062	0	0									
5-Sep-22		0	0	0	0	100	5102.9	60.5	0	0	0	0	0	0	0	0	0	0	5102.9	60.5	68.4	0.1	444.12	746.687	0	0									
6-Sep-22		0	0	0	0	100	5102.9	60.87	0	0	0	0	0	0	0	0	0	0	5102.9	60.87	68.4	0.47	443.28	738.251	0	0									
7-Sep-22	TRUE	0	0	0	0	100	5102.9	60.96	0	0	0	0	0	0	0	0	0	0	5102.9	60.96	68.4	0.56	442.44	730.062	0	0									
8-Sep-22		0	0	0	0	98	4480.56	61.44	12	612.35	52.55	0	0	0	0	0	0	0	5102.9	60.37	68.4	-0.03	441.58	721.032	0	0									
9-Sep-22		0	0	0	0	96	4388.5	61.61	14	714.41	52.68	0	0	0	0	0	0	0	5102.9	60.36	68.4	-0.04	440.73	713.535	0	0									
10-Sep-22		0	0	0	0	81	4133.35	62.39	19	969.55	53.22	0	0	0	0	0	0	0	5102.9	60.65	68.4	0.25	439.87	704.983	0	0									
11-Sep-22		0	0	0	0	77	3929.24	63.01	23	1175.67	53.44	0	0	0	0	0	0	0	5102.9	60.81	68.4	0.41	439	696.593	0	0									
12-Sep-22		0	0	0	0	70	3572.03	63.06	30	1530.87	53.89	0	0	0	0	0	0	0	5102.9	60.31	68.4	-0.09	438.13	688.269	0	0									
13-Sep-22		0	0	0	0	68	3485.98	63.89	32	1623.93	54.24	0	0	0	0	0	0	0	5102.9	60.76	68.4	0.36	437.25	679.513	0	0									
14-Sep-22		0	0	0	0	60	3061.74	64.21	40	2045.16	54.59	0	0	0	0	0	0	0	5102.9	60.37	68.4	-0.03	436.37	671.565	0	0									
15-Sep-22		0	0	0	0	54	2755.57	64.7	46	2347.33	55.18	0	0	0	0	0	0	0	5102.9	60.32	68.4	-0.08	435.49	663.288	0	0									
16-Sep-22		0	0	0	0	51	2602.48	65.01	49	2500.42	55.55	0	0	0	0	0	0	0	5102.9	60.37	68.4	-0.03	434.59	654.913	0	0									
17-Sep-22		0	0	0	0	42	2143.22	65.82	58	2959.68	56.33	0	0	0	0	0	0	0	5102.9	60.32	68.4	-0.08	433.7	646.671	0	0									
18-Sep-22		0	0	0	0	39	1980.13	66.23	61	3112.77	56.52	0	0	0	0	0	0	0	5102.9	60.31	68.4	-0.09	432.79	638.276	0	0									
19-Sep-22		0	0	0	0	28	1428.91	66.94	72	3674.09	57.5	0	0	0	0	0	0	0	5102.9	60.14	68.4	-0.26	431.88	629.927	0	0									
20-Sep-22		0	0	0	0	25	1275.73	67.22	75	3827.18	58.03	0	0	0	0	0	0	0	5102.9	60.33	68.4	-0.07	430.96	621.62	0	0									
21-Sep-22		0	0	0	0	18	918.53	67.08	82	4184.38	58.71	0	0	0	0	0	0	0	5102.9	60.36	68.4	-0.04	430.04	613.335	0	0									
22-Sep-22	TRUE	0	0	0	0	15	765.44	68.42	85	4337.47	59.53	0	0	0	0	0	0	0	5102.9	60.66	68.4	0.46	429.11	605.019	0	0									
23-Sep-22		0	0	0	0	0	0	0	88.76	100	5102.9	59.82	0	0	0	0	0	0	5102.9	59.82	68.4	-0.58	428.17	596.679	0	0									
24-Sep-22		0	0	0	0	0	0	0	0	100	5102.9	60.57	0	0	0	0	0	0	5102.9	60.57	68.4	0.17	427.22	588.339	0	0									
25-Sep-22		0	0	0	0	0	0	0	0	100	5102.9	60.58	0	0	0	0	0	0	5102.9	60.58	68.4	0.18	426.27	580.05	0	0									
26-Sep-22	TRUE	0	0	0	0	0	0	0	0	100	5102.9	61.31	0	0	0	0	0	0	5102.9	61.31	68.4	0.91	425.31	571.733	0	0									
27-Sep-22		0	0	0	0	0	0	0	0	89	4541.58	61.73	11	561.32	60.65	0	0	0	5102.9	60.44	68.4	0.04	424.35	563.499	0	0									
28-Sep-22		0	0	0	0	0	0	0	0	86	4388.5	62.14	14	714.41	58.2	0	0	0	5102.9	60.47	68.4	0.07	423.37	555.167	0	0									
29-Sep-22		0	0	0	0	0	0	0	0	82	4184.38	62.73	18	3183.52	58.48	0	0	0	5102.9	60.52	68.4	0.12	422.39	546.901	0	0									
30-Sep-22		0	0	0	0	0	0	0	0	79	4031.29	63.11	21	1071.61	58.57	0	0	0	5102.9	60.48	68.4	0.08	421.39	538.558	0	0									

Figure 6B.C.8 Example Folsom Outlet Operations File Generated when Running the Model (The file is titled “Folsom.TCD.Opp.txt after the American River model is run”)

The other Folsom operations output (Figure 6B.C.9) is a text file that summarizes the Folsom TCD operation. The file is named “WS_TCD.txt” and includes the operational information seen below. The output is daily except when the reservoir element location changes and there is an additional line of output during that day.

```

CP 590: sliding diversion intake between 61 320.00
and 147 460.00

Elem Height Resel Temp(F)
01-JAN-1922 06:00 105 391.48 405.95 49.10
02-JAN-1922 06:00 105 391.48 405.98 49.19
03-JAN-1922 06:00 105 391.48 406.03 49.02
04-JAN-1922 06:00 105 391.48 406.08 48.95
05-JAN-1922 06:00 105 391.48 406.14 48.82
06-JAN-1922 06:00 105 391.48 406.19 48.75
07-JAN-1922 06:00 105 391.48 406.24 48.64
08-JAN-1922 06:00 105 391.48 406.29 48.60
09-JAN-1922 06:00 105 391.48 406.34 48.55
10-JAN-1922 06:00 105 391.48 406.39 48.36
11-JAN-1922 06:00 105 391.48 406.44 48.19
    
```

Figure 6B.C.9 Example Folsom TCD Operations File Generated when Running the Model (The file is titled “WS_TCD.txt after the American River model is run”)

6B.C.7 Quality Assurance/Quality Control

This section describes two different elements of the QA/QC process used to ensure the quality for the Toolkit. The first section describes the update and review process for the Toolkit. The second section describes the spreadsheets that were developed to perform a QA/QC process on application model runs from the Toolkit.

1 **6B.C.7.1 Update and Review Process**

2 Three QA/QC spreadsheet tools were also developed as part of the updates to the
3 Toolkit. The spreadsheet tools are designed to be used for a QA/QC process of all
4 application model runs from the Toolkit.

5 **6B.C.7.1.1 CalSim II and HEC-5Q Comparison Spreadsheet**

6 The first spreadsheet tool HEC5Q_CalSim II_QA/QC_[River
7 Model]_rev06_011615_Template_NAA_Example compares CalSim II storages
8 and flows with HEC-5Q storages and flows to ensure that storages and flows are
9 translating correctly. A procedure for performing a QA/QC of CalSim II and
10 HEC-5Q flows and storages is described in the spreadsheet. Minor differences
11 between CalSim II input flows and HEC-5Q output flows are expected because
12 HEC-5Q storages and flows are modified to meet downstream temperature
13 targets. In addition, not all HEC-5Q output locations map well with CalSim II
14 nodes, which can cause significant flow differences. The flow mapping task
15 reduced this issue but additional changes to CalSim II are required. Expected
16 differences for each HEC-5Q location are described in the spreadsheet and
17 deviations from those expected results are recommended to be investigated for
18 potential issues.

19 **6B.C.7.1.2 HEC-5Q Alternative Comparison Spreadsheet**

20 The second spreadsheet tool HEC-5Q_AltCompare_[River
21 Model]_rev03_012715_Template_Example compares HEC5Q storages, flows,
22 and temperatures between two alternatives to ensure that temperature results make
23 logical sense based on flow and storage differences. A procedure for performing
24 a temperature comparison procedure is described in the spreadsheet. This
25 spreadsheet assumes that a comparison procedure of flows and storages
26 differences has been already been completed as part of review of CalSim II results
27 and that the flow and storage differences are accurate. Use of this spreadsheet
28 requires the user to have performed a prior HEC-5Q and CalSim II QA/QC
29 procedure with the tool described previously for both alternatives. It also requires
30 the user to have a prepared expectation of temperature differences based on their
31 knowledge of the differences between the alternatives.

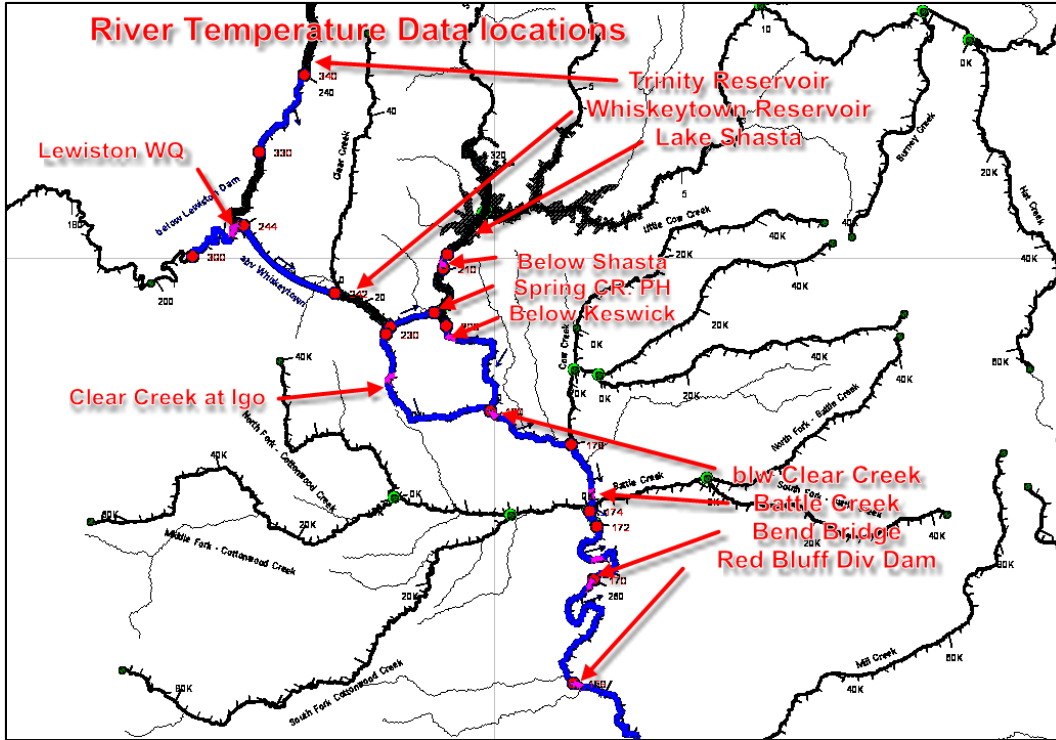
32 **6B.C.7.1.3 Operation Diagnostic Spreadsheets**

33 The third spreadsheet tool is an operation diagnostic tool [Reservoir]
34 _Operations_Diagnostic_rev01_030515. There is one for Shasta, Trinity, and
35 Folsom Dams. The purpose of the tool is to graphically display the flows and
36 temperatures through the various temperature control structures and outlets for
37 Shasta, Trinity, and Folsom Dams to view how the reservoirs are operating to
38 meet downstream temperature targets.

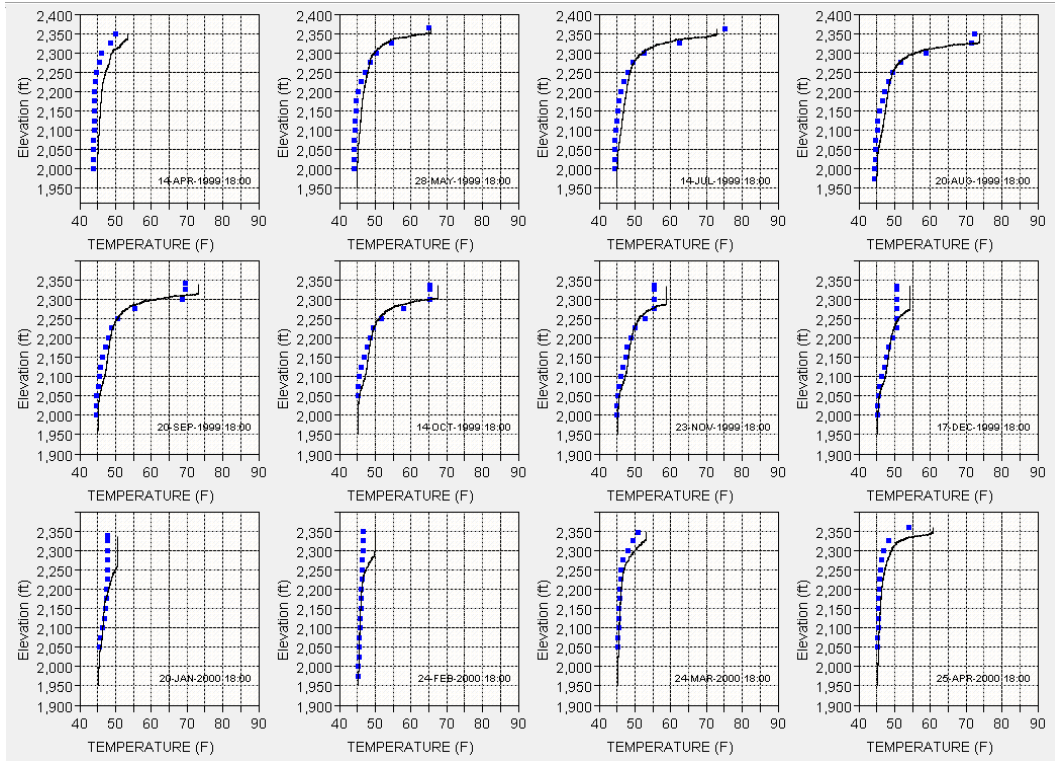
39 **6B.C.8 Trinity-Sacramento River Model Validation**

40 This section provides comparisons between observed temperature data and
41 computed temperature results from the validation task for the Trinity-Sacramento

1 River. Figures 6B.C.10 through 6B.C.42 present geographic locations used in the
2 HEC-5Q Model and comparisons of observed and computed data at these
3 locations. Observed results are from Reclamation, Department of Water
4 Resources (DWR), and U.S. Geological Survey (USGS) data. The results
5 indicate overall good agreement between computed and observed data.

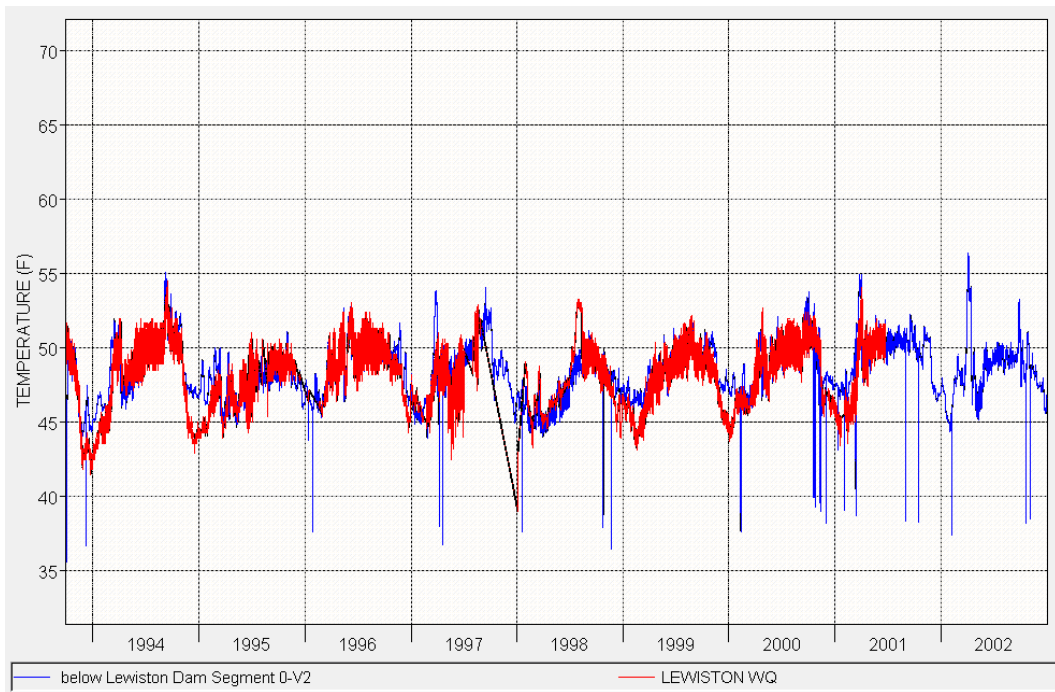


6
7 **Figure 6B.C.10 Schematic of the Trinity-Sacramento River HEC-5Q Model Upstream**
8 **of Red Bluff Diversion Dam Location**



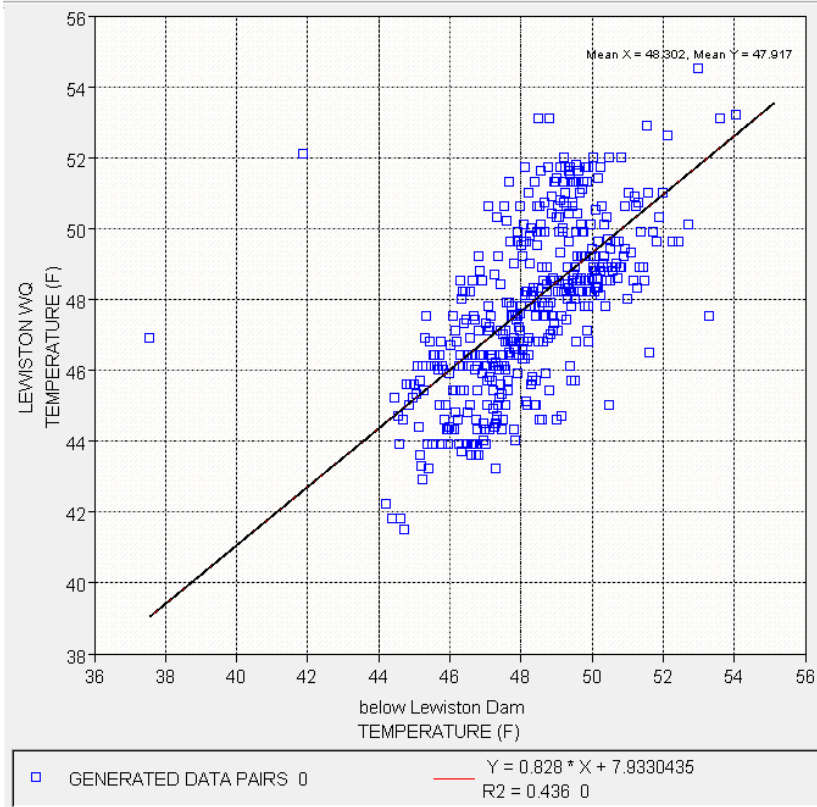
1

2 **Figure 6B.C.11 Trinity Lake Observed (blue dots) and Computed (black line)**
 3 **Temperature Profiles Resulting from the Trinity-Sacramento River Validation**



4

5 **Figure 6B.C.12 Trinity River below Lewiston Dam Observed (red) and Computed**
 6 **(blue) Temperature Time Series Resulting from the Trinity-Sacramento River**
 7 **Validation**



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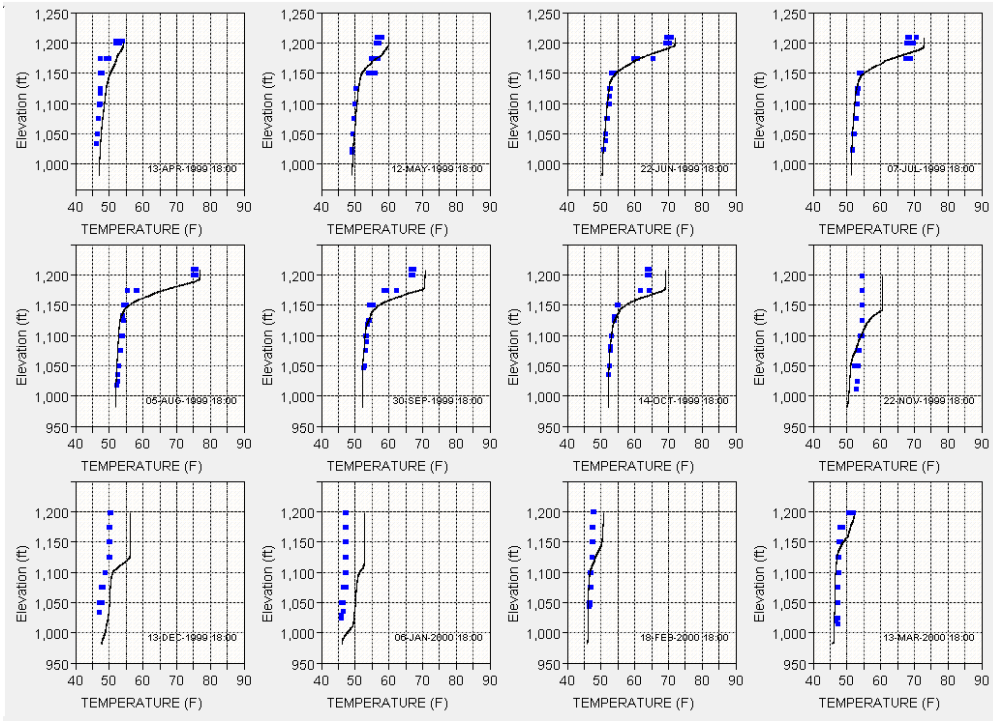
2 **Figure 6B.C.13 Trinity River below Lewiston Dam Observed (Y-Axis) and Computed**
 3 **(X-axis) Temperature Data Pairs Resulting from the Trinity-Sacramento River**
 4 **Validation**

5 **Table 6B.C.5 Trinity River below Lewiston Dam Computed and Observed Statistical**
 6 **Comparison**

Period	Values	Computed (oF)	Observed (oF)	Bias (oF)	RMS Differences (oF)	Mean Differences (oF)
Jan	356	46.60	45.23	1.37	2.04	1.77
Feb	394	46.59	45.60	1.00	1.73	1.37
Mar	468	47.99	46.99	1.00	2.04	1.57
Apr	468	47.79	48.06	-0.27	1.77	1.31
May	490	48.08	48.16	-0.08	1.47	1.12
Jun	452	48.71	48.91	-0.20	1.73	1.42
Jul	336	49.24	49.82	-0.58	1.96	1.72
Aug	344	49.68	50.21	-0.53	1.98	1.72
Sep	356	49.85	49.97	-0.12	1.49	1.22
Oct	366	49.64	49.47	0.16	1.68	1.16
Nov	354	48.58	48.01	0.57	1.58	1.15

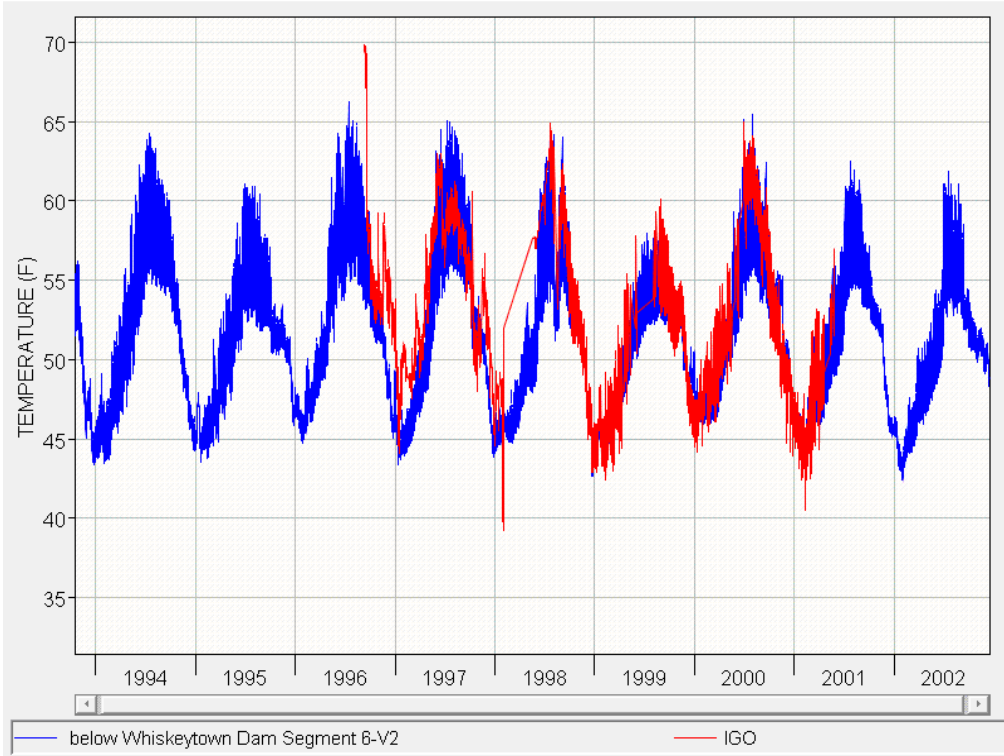
Appendix 6B.C: Surface Water Temperature Modeling – HEC-5Q Model Update

Period	Values	Computed (oF)	Observed (oF)	Bias (oF)	RMS Differences (oF)	Mean Differences (oF)
Dec	296	47.29	45.48	1.81	2.01	1.82
Jan-Mar	1218	47.13	46.02	1.11	1.94	1.56
Apr-Jun	1410	48.19	48.37	-0.18	1.66	1.28
Jul-Sep	1036	49.60	50.00	-0.40	1.82	1.55
Oct-Dec	1016	48.58	47.80	0.79	1.75	1.35
Average Year	4680	48.31	48.00	0.31	1.79	1.43



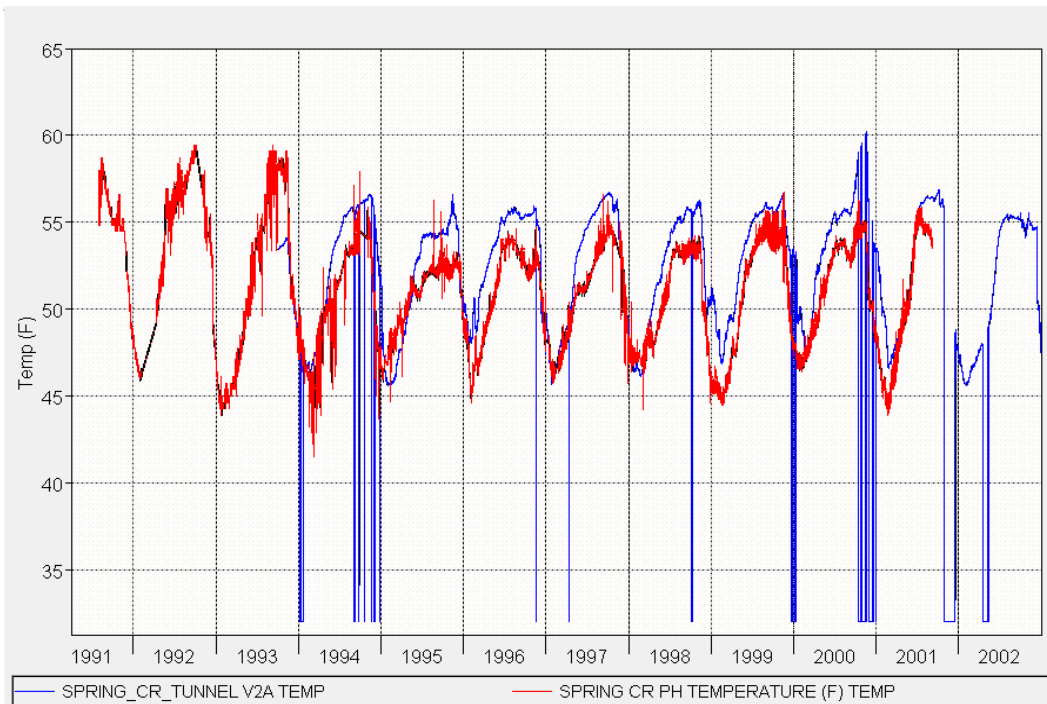
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2 **Figure 6B.C.14** Whiskeytown Lake Observed (blue dots) and Computed (black line)
 3 **Temperature Profiles Resulting from the Trinity-Sacramento River Validation**



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2 **Figure 6B.C.15 Clear Creek below Whiskeytown Lake Observed (red) and**
 3 **Computed (blue) Temperature Time Series Resulting from the Trinity-Sacramento**
 4 **River Validation**



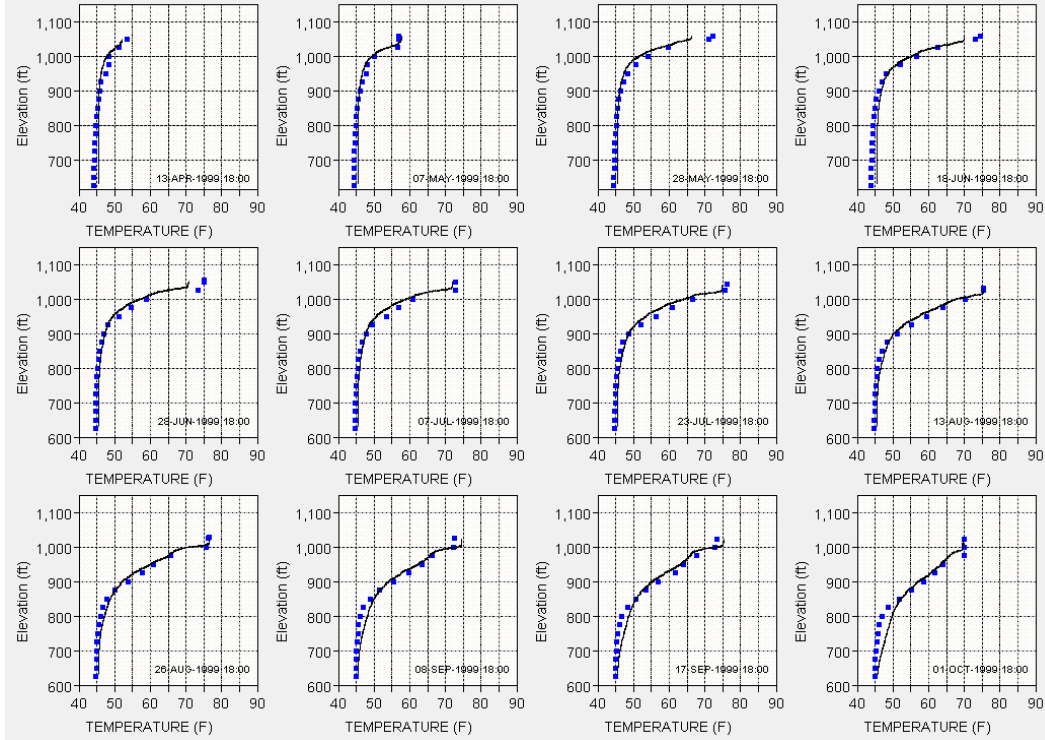
5

6 **Figure 6B.C.16 Spring Creek Powerhouse Observed (red) and Computed (blue)**
 7 **Temperature Time Series Resulting from the Trinity-Sacramento River Validation**

1 **Table 6B.C.6 Clear Creek below Whiskeytown Computed and Observed Statistical**
 2 **Comparison**

Period	Values	Computed (°F)	Observed (°F)	Bias (°F)	RMS Differences (°F)	Mean Differences (°F)
Jan	458	47.11	47.07	0.05	5.17	3.15
Feb	432	47.22	46.37	0.85	1.99	1.64
Mar	464	47.95	47.31	0.64	1.75	1.46
Apr	444	49.43	48.76	0.67	2.16	1.34
May	480	50.89	50.44	0.45	0.97	0.79
Jun	458	52.36	51.93	0.43	1.03	0.75
Jul	460	53.23	53.19	0.04	0.74	0.58
Aug	474	53.57	53.57	0.00	0.50	0.36
Sep	418	53.01	53.54	-0.52	3.81	1.22
Oct	326	52.59	53.55	-0.97	6.01	2.44
Nov	352	51.37	53.14	-1.77	8.04	4.06
Dec	414	48.47	49.72	-1.25	6.63	3.82
Jan-Mar	1354	47.43	46.93	0.50	3.37	2.09
Apr-Jun	1382	50.91	50.40	0.51	1.47	0.95
Jul-Sep	1352	53.28	53.43	-0.15	2.18	0.70
Oct-Dec	1092	50.64	51.97	-1.33	6.95	3.48
Average Year	5180	50.56	50.61	-0.05	3.87	1.72

Appendix 6B.C: Surface Water Temperature Modeling – HEC-5Q Model Update

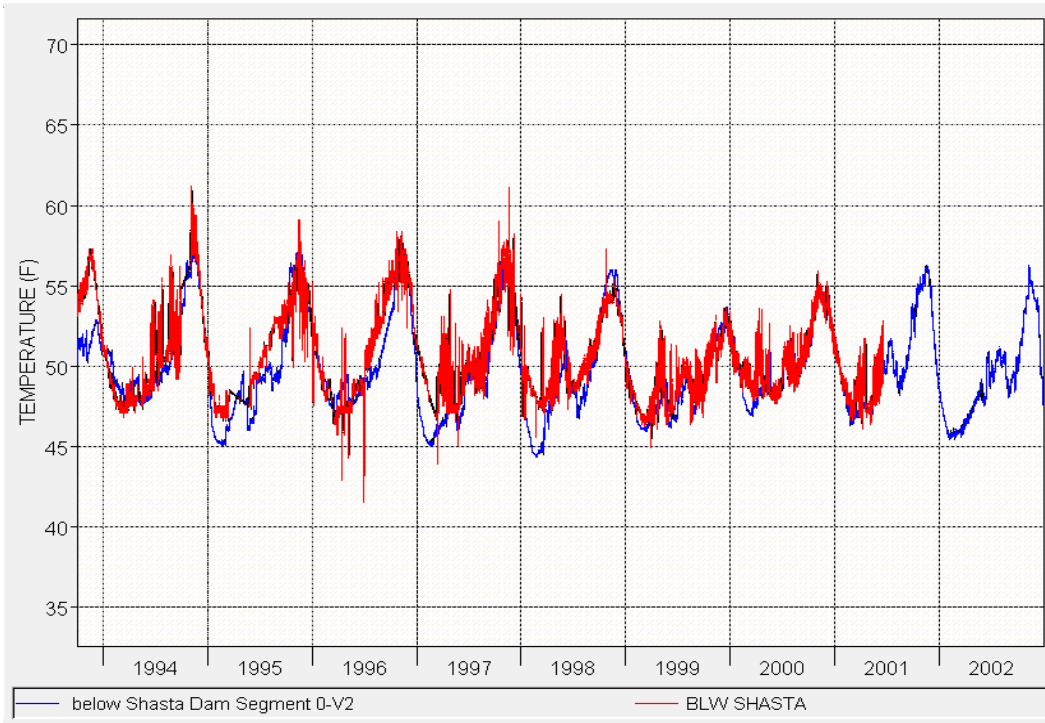


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Figure 6B.C.17 Shasta Lake Observed (blue dots) and Computed (black line) Temperature Profiles Resulting from the Trinity-Sacramento River Validation

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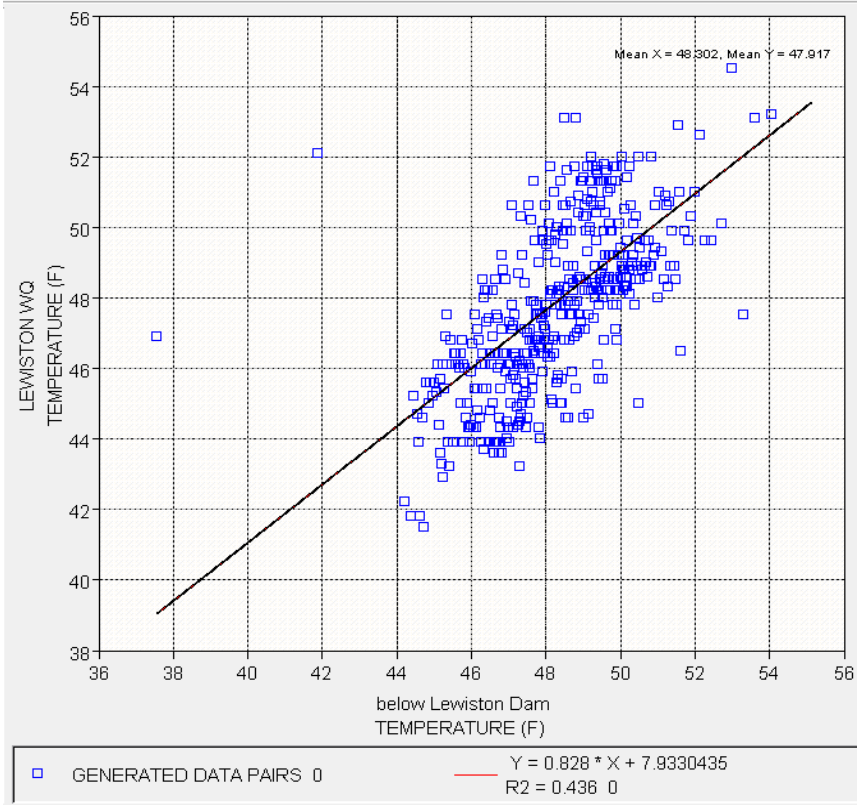


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Figure 6B.C.18 Sacramento River below Shasta Lake Observed (red) and Computed (blue) Temperature Time Series Resulting from the Trinity-Sacramento River Validation

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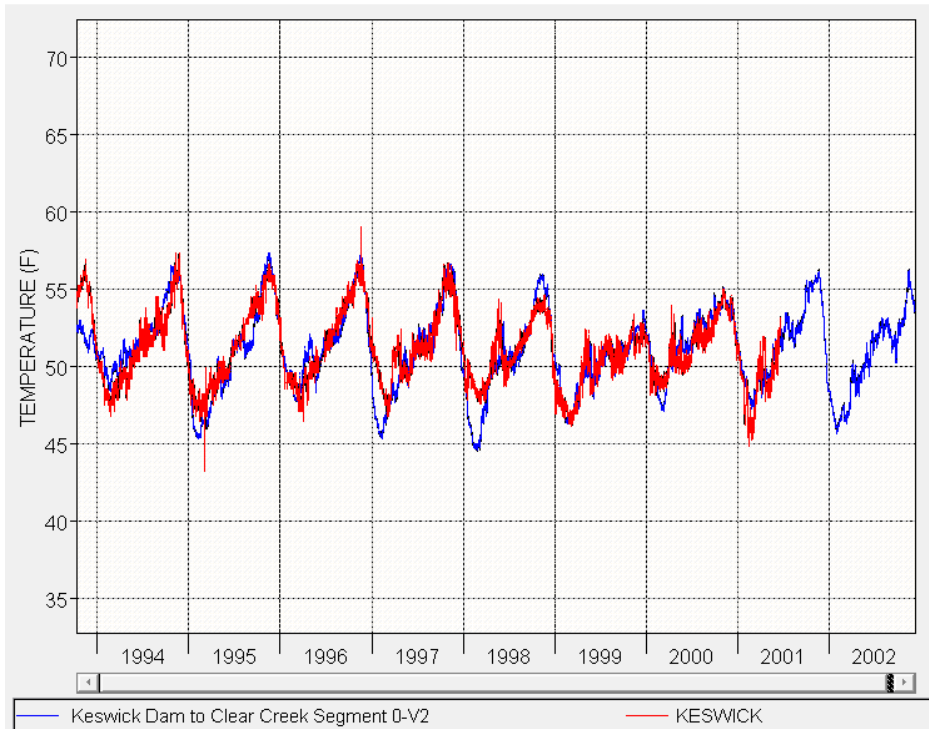
1

2 **Figure 6B.C.19 Sacramento River below Shasta Lake Observed (Y-Axis) and**
 3 **Computed (X-axis) Temperature Data Pairs Resulting from the Trinity-Sacramento**
 4 **River Validation**

5 **Table 6B.C.7 Sacramento River below Shasta Lake Computed and Observed**
 6 **Statistical Comparison**

Period	Values	Computed (°F)	Observed (°F)	Bias (°F)	RMS Differences (°F)	Mean Differences (°F)
Jan	424	49.16	49.82	-0.66	1.69	1.21
Feb	404	47.04	48.19	-1.15	1.92	1.54
Mar	384	46.81	47.89	-1.08	1.83	1.39
Apr	364	47.77	48.74	-0.97	2.12	1.62
May	386	48.27	48.81	-0.54	1.62	1.18
Jun	428	48.46	49.03	-0.56	1.54	1.09
Jul	374	49.19	50.03	-0.84	1.59	1.23
Aug	408	49.40	50.79	-1.39	2.11	1.72
Sep	410	50.80	51.70	-0.90	1.73	1.35
Oct	318	53.10	53.39	-0.28	1.34	1.06
Nov	360	55.27	55.00	0.27	1.49	1.09

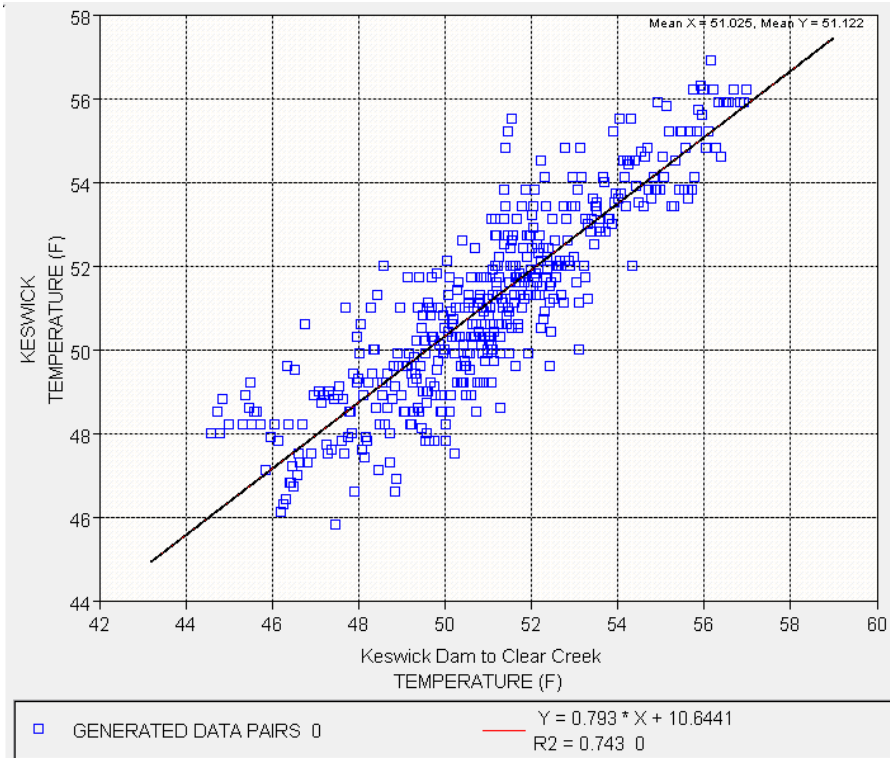
Period	Values	Computed (°F)	Observed (°F)	Bias (°F)	RMS Differences (°F)	Mean Differences (°F)
Dec	318	53.05	53.14	-0.09	1.16	0.86
Jan-Mar	1212	47.71	48.66	-0.96	1.81	1.38
Apr-Jun	1178	48.19	48.87	-0.68	1.77	1.28
Jul-Sep	1192	49.81	50.86	-1.05	1.83	1.44
Oct-Dec	996	53.87	53.89	-0.03	1.34	1.01
Average Year	4578	49.72	50.43	-0.71	1.71	1.29



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Figure 6B.C.20 Sacramento River below Keswick Dam Observed (red) and Computed (blue) Temperature Time Series Resulting from the Trinity-Sacramento River Validation

Appendix 6B.C: Surface Water Temperature Modeling – HEC-5Q Model Update



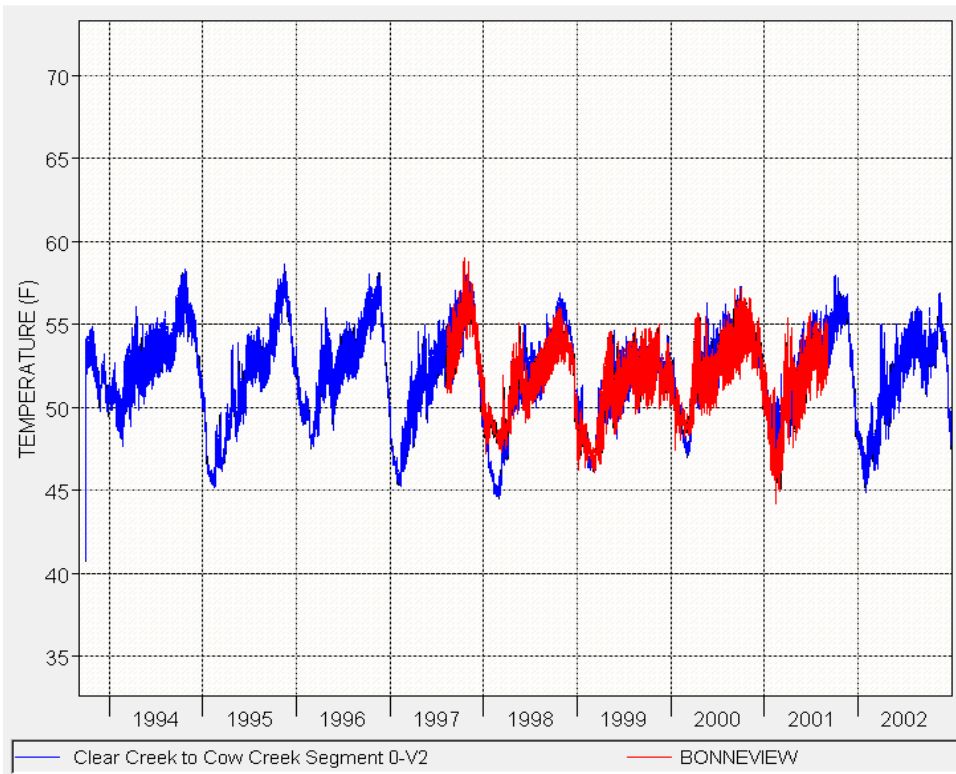
1

2 **Figure 6B.C.21 Sacramento River below Keswick Dam Observed (Y-Axis) and**
 3 **Computed (X-axis) Temperature Data Pairs Resulting from the Trinity-Sacramento**
 4 **River Validation**

5 **Table 6B.C.8 Sacramento River below Keswick Dam Computed and Observed**
 6 **Statistical Comparison**

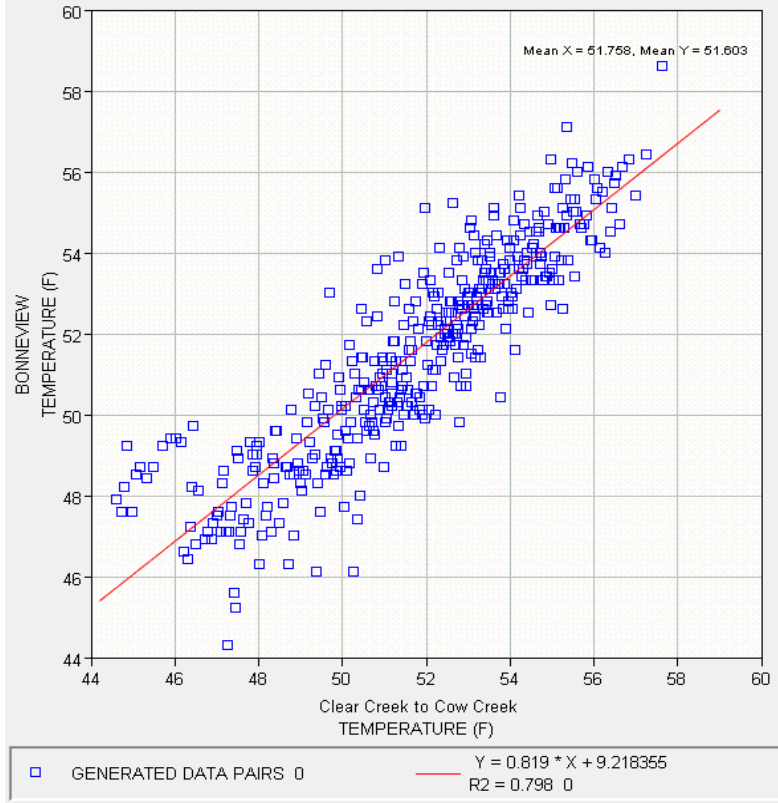
Period	Values	Computed (°F)	Observed (°F)	Bias (°F)	RMS Differences (°F)	Mean Differences (°F)
Jan	468	49.22	49.52	-0.29	1.85	1.40
Feb	434	47.35	48.08	-0.72	1.89	1.52
Mar	496	47.90	48.25	-0.36	1.41	1.17
Apr	466	49.53	49.65	-0.12	1.43	1.19
May	486	50.20	50.06	0.14	1.22	0.98
Jun	400	50.73	50.47	0.26	0.89	0.71
Jul	402	51.47	51.38	0.09	0.65	0.52
Aug	430	51.68	51.89	-0.21	0.97	0.78
Sep	414	52.62	52.65	-0.03	1.11	0.85
Oct	428	54.20	53.82	0.37	0.95	0.75
Nov	418	55.21	54.69	0.53	0.99	0.82
Dec	426	52.83	52.72	0.11	0.90	0.73

Period	Values	Computed (°F)	Observed (°F)	Bias (°F)	RMS Differences (°F)	Mean Differences (°F)
Jan-Mar	1398	48.17	48.62	-0.45	1.72	1.36
Apr-Jun	1352	50.13	50.04	0.09	1.21	0.97
Jul-Sep	1246	51.92	51.98	-0.05	0.93	0.72
Oct-Dec	1272	54.07	53.74	0.33	0.95	0.77
Average Year	5268	50.99	51.02	-0.03	1.26	0.97



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 2 **Figure 6B.C.22 Sacramento River below Clear Creek Observed (red) and Computed**
 3 **(blue) Temperature Time Series Resulting from the Trinity-Sacramento River**
 4 **Validation**

Appendix 6B.C: Surface Water Temperature Modeling – HEC-5Q Model Update



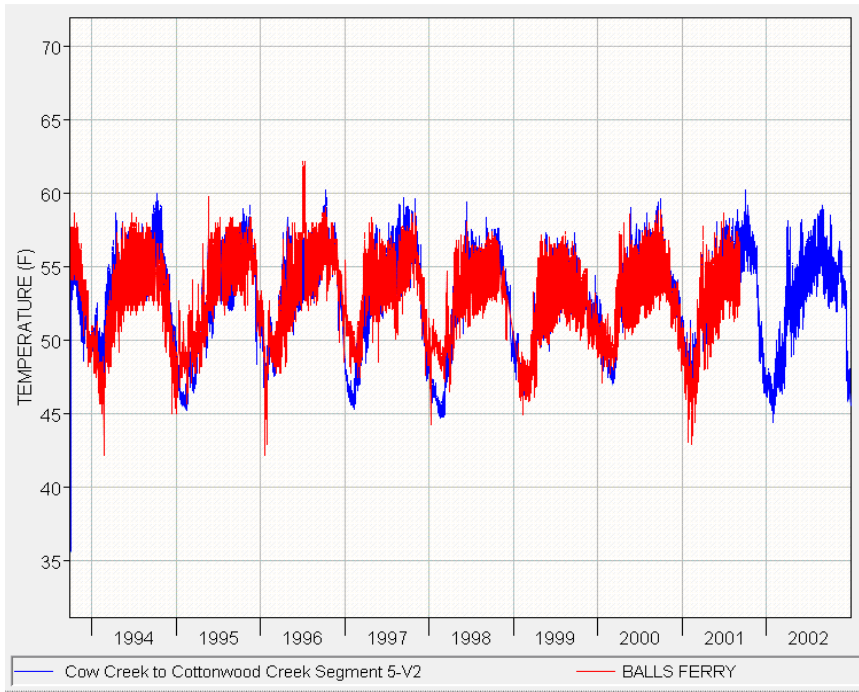
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2 **Figure 6B.C.23 Sacramento River below Clear Creek Observed (Y-Axis) and**
 3 **Computed (X-axis) Temperature Data Pairs Resulting from the Trinity-Sacramento**
 4 **River Validation**

5 **Table 6B.C.9 Sacramento River below Clear Creek Computed and Observed**
 6 **Statistical Comparison**

Period	Values	Computed (°F)	Observed (°F)	Bias (°F)	RMS Differences (°F)	Mean Differences (°F)
Jan	248	49.39	49.27	0.12	1.41	1.08
Feb	226	47.33	48.08	-0.75	1.98	1.57
Mar	248	48.24	48.80	-0.57	1.36	1.06
Apr	240	50.40	50.93	-0.53	1.29	1.00
May	248	51.56	51.38	0.18	1.44	1.16
Jun	236	52.14	51.39	0.75	1.31	1.11
Jul	242	52.88	52.52	0.36	0.87	0.66
Aug	292	53.11	52.69	0.42	0.85	0.68
Sep	252	53.62	53.41	0.21	0.84	0.66
Oct	248	54.17	54.24	-0.07	0.98	0.77
Nov	240	54.48	53.93	0.55	1.07	0.88

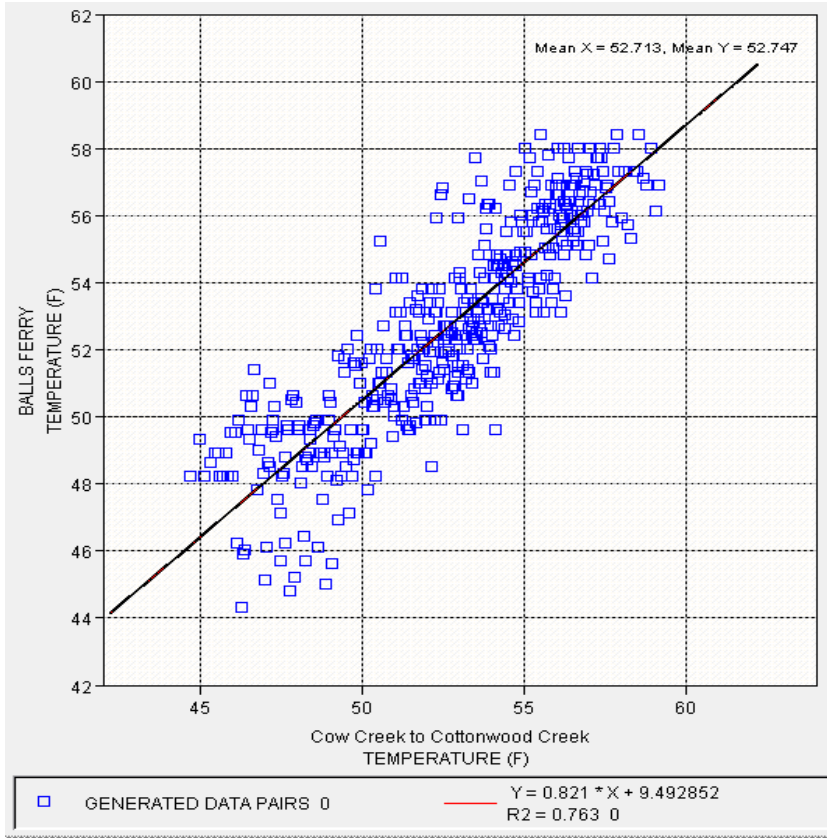
Period	Values	Computed (°F)	Observed (°F)	Bias (°F)	RMS Differences (°F)	Mean Differences (°F)
Dec	246	52.25	52.14	0.11	0.94	0.79
Jan-Mar	722	48.35	48.74	-0.39	1.60	1.23
Apr-Jun	724	51.37	51.24	0.13	1.35	1.09
Jul-Sep	786	53.20	52.87	0.34	0.85	0.67
Oct-Dec	734	53.63	53.43	0.19	0.99	0.81
Average Year	2966	51.68	51.60	0.07	1.23	0.94



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Figure 6B.C.24 Sacramento River at Balls Ferry Observed (red) and Computed (blue) Temperature Time Series Resulting from the Trinity-Sacramento River Validation

Appendix 6B.C: Surface Water Temperature Modeling – HEC-5Q Model Update



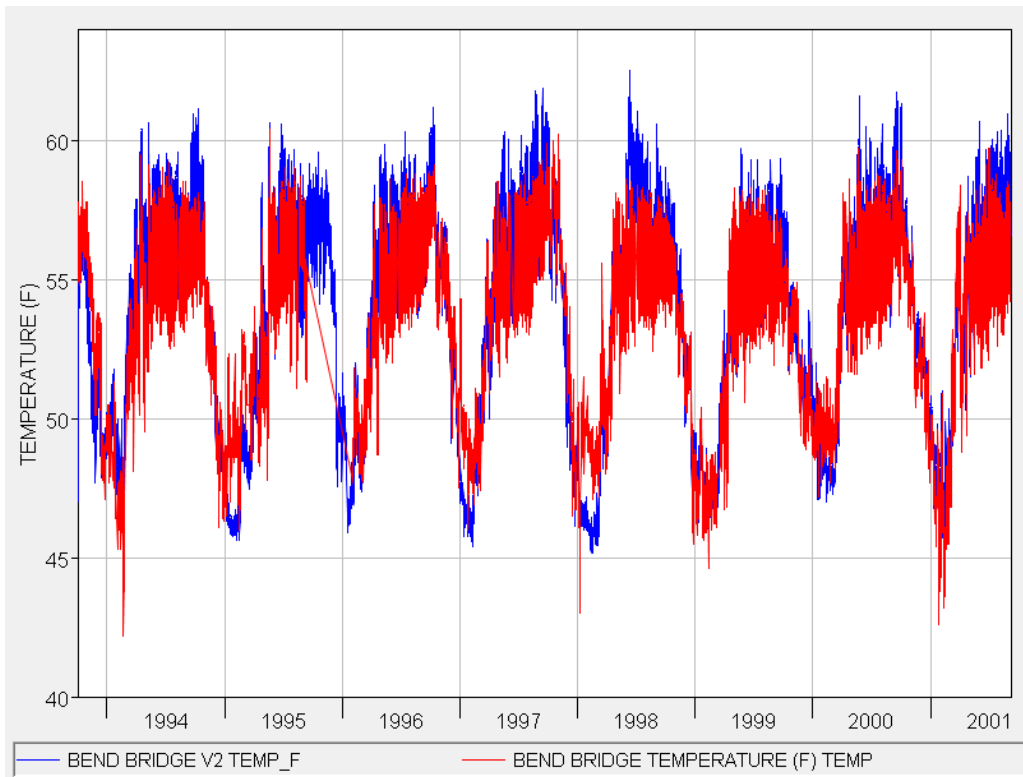
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2 **Figure 6B.C.25 Sacramento River at Balls Ferry Observed (Y-Axis) and Computed**
 3 **(X-axis) Temperature Data Pairs Resulting from the Trinity-Sacramento River**
 4 **Validation**

5 **Table 6B.C.10 Sacramento River at Balls Ferry Computed and Observed Statistical**
 6 **Comparison**

Period	Values	Computed (°F)	Observed (°F)	Bias (°F)	RMS Differences (°F)	Mean Differences (°F)
Jan	442	48.25	49.31	-1.05	2.42	1.93
Feb	432	47.51	48.49	-0.98	2.20	1.79
Mar	496	49.42	50.25	-0.83	1.73	1.43
Apr	452	52.06	52.50	-0.44	1.74	1.41
May	472	53.08	53.34	-0.25	1.51	1.21
Jun	446	53.81	54.10	-0.29	1.48	1.17
Jul	452	54.59	54.76	-0.17	1.44	0.99
Aug	464	54.54	54.62	-0.08	1.34	1.05
Sep	426	55.23	55.08	0.15	1.20	0.97
Oct	410	55.54	54.96	0.59	1.27	0.99
Nov	392	54.50	54.06	0.44	1.08	0.85

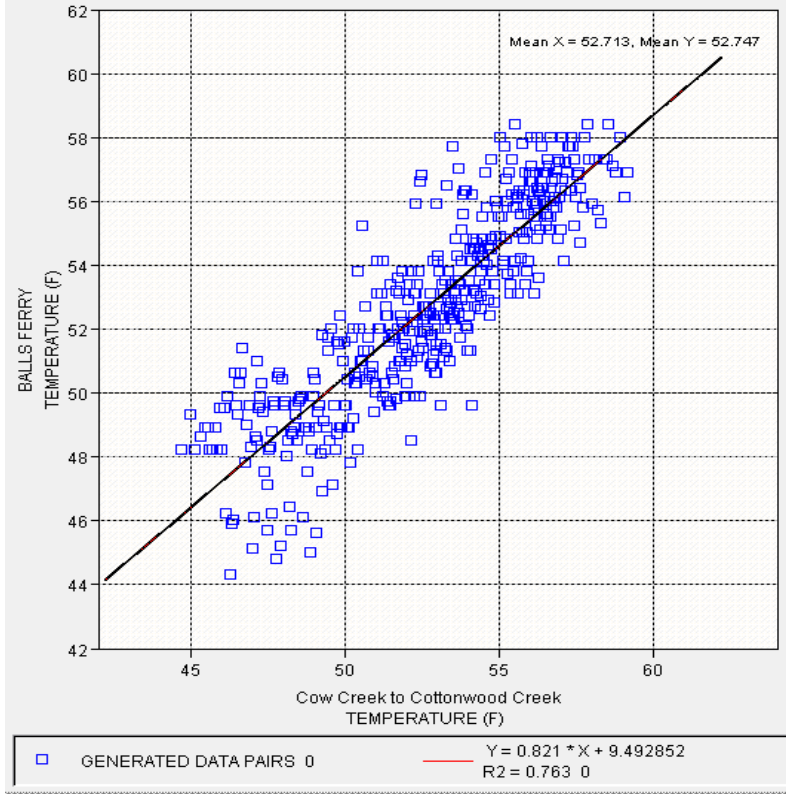
Period	Values	Computed (°F)	Observed (°F)	Bias (°F)	RMS Differences (°F)	Mean Differences (°F)
Dec	374	51.29	51.44	-0.15	1.52	1.21
Jan-Mar	1370	48.44	49.39	-0.95	2.12	1.70
Apr-Jun	1370	52.98	53.31	-0.33	1.58	1.26
Jul-Sep	1342	54.77	54.81	-0.04	1.33	1.01
Oct-Dec	1176	53.84	53.54	0.30	1.30	1.01
Average Year	5258	52.45	52.72	-0.27	1.63	1.26



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Figure 6B.C.26 Sacramento River at Bend Bridge Observed (red) and Computed (blue) Temperature Time Series Resulting from the Trinity-Sacramento River Validation

Appendix 6B.C: Surface Water Temperature Modeling – HEC-5Q Model Update



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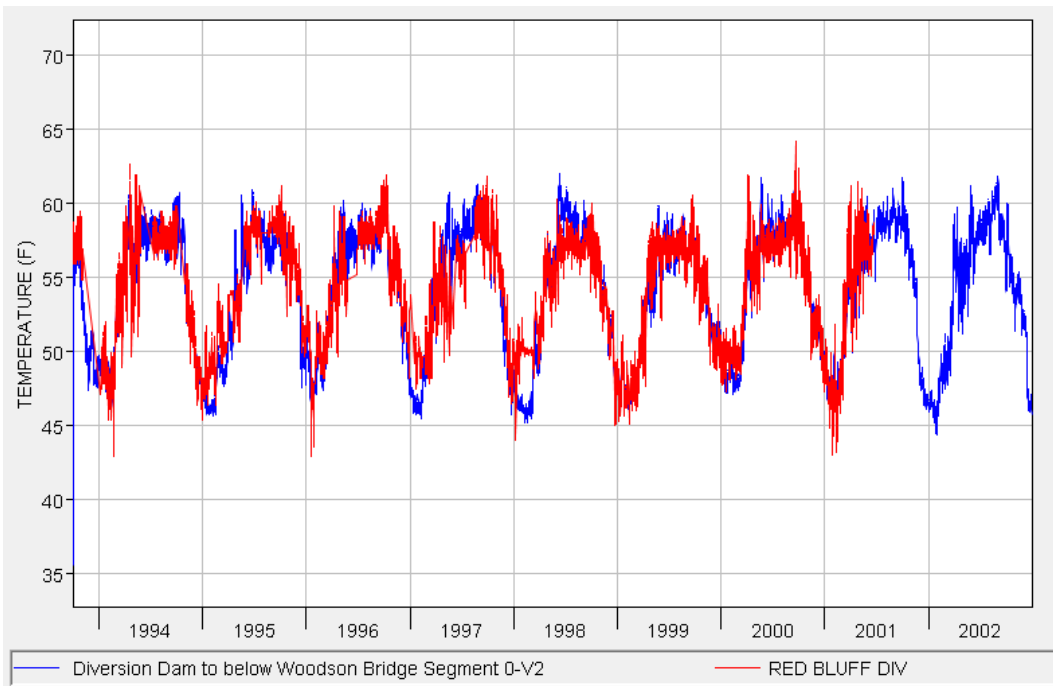
Figure 6B.C.27 Sacramento River at Bend Bridge Observed (Y-Axis) and Computed (X-axis) Temperature Data Pairs Resulting from the Trinity-Sacramento River Validation

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Table 6B.C.11 Sacramento River at Balls Ferry Computed and Observed Statistical Comparison

Period	Values	Computed (°F)	Observed (°F)	Bias (°F)	RMS Differences (°F)	Mean Differences (°F)
Jan	406	47.53	48.79	-1.26	2.25	1.76
Feb	446	47.51	48.45	-0.94	1.95	1.60
Mar	472	50.40	51.08	-0.69	1.52	1.20
Apr	472	53.76	53.64	0.12	1.60	1.29
May	486	55.45	54.74	0.71	1.48	1.18
Jun	432	56.32	55.33	1.00	1.70	1.30
Jul	474	56.72	55.74	0.98	1.42	1.18
Aug	466	56.53	55.81	0.72	1.32	1.11
Sep	390	56.99	56.14	0.85	1.42	1.12
Oct	366	56.25	55.80	0.45	1.17	0.95
Nov	360	53.45	53.70	-0.25	1.16	0.90

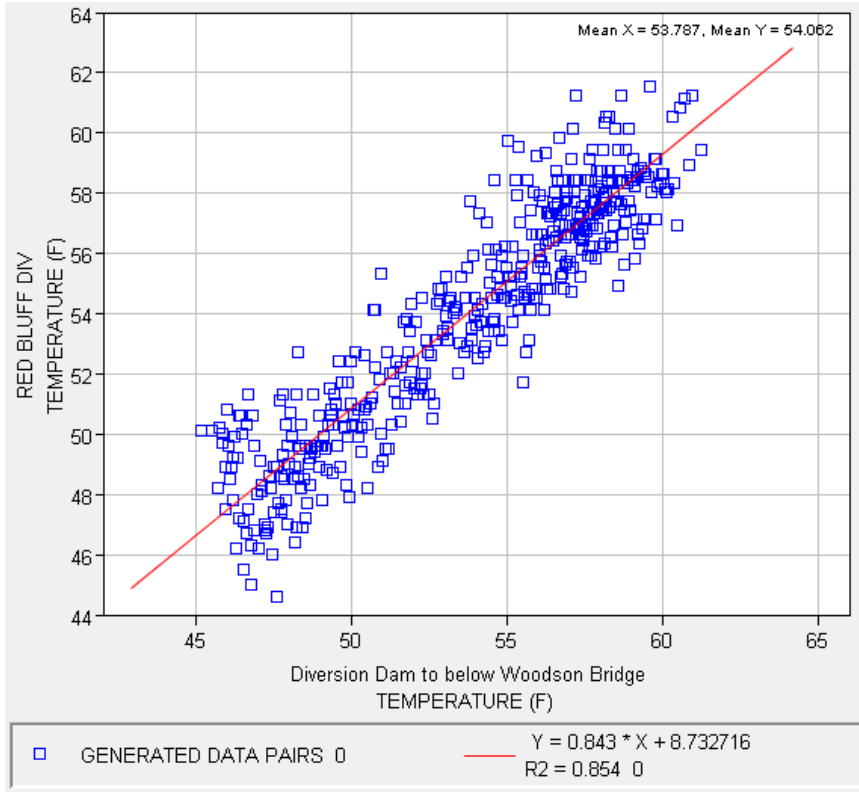
Period	Values	Computed (°F)	Observed (°F)	Bias (°F)	RMS Differences (°F)	Mean Differences (°F)
Dec	366	50.03	50.36	-0.33	1.33	1.04
Jan-Mar	1324	48.55	49.49	-0.95	1.91	1.51
Apr-Jun	1390	55.15	54.55	0.60	1.59	1.26
Jul-Sep	1330	56.73	55.88	0.85	1.39	1.14
Oct-Dec	1092	53.24	53.29	-0.04	1.22	0.97
Average Year	5136	53.45	53.32	0.13	1.56	1.23



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Figure 6B.C.28 Sacramento River at Red Bluff Dam Observed (red) and Computed (blue) Temperature Time Series Resulting from the Trinity-Sacramento River Validation

Appendix 6B.C: Surface Water Temperature Modeling – HEC-5Q Model Update



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2 **Figure 6B.C.29 Sacramento River at Red Bluff Dam Observed (Y-Axis) and**
 3 **Computed (X-axis) Temperature Data Pairs Resulting from the Trinity-Sacramento**
 4 **River Validation**

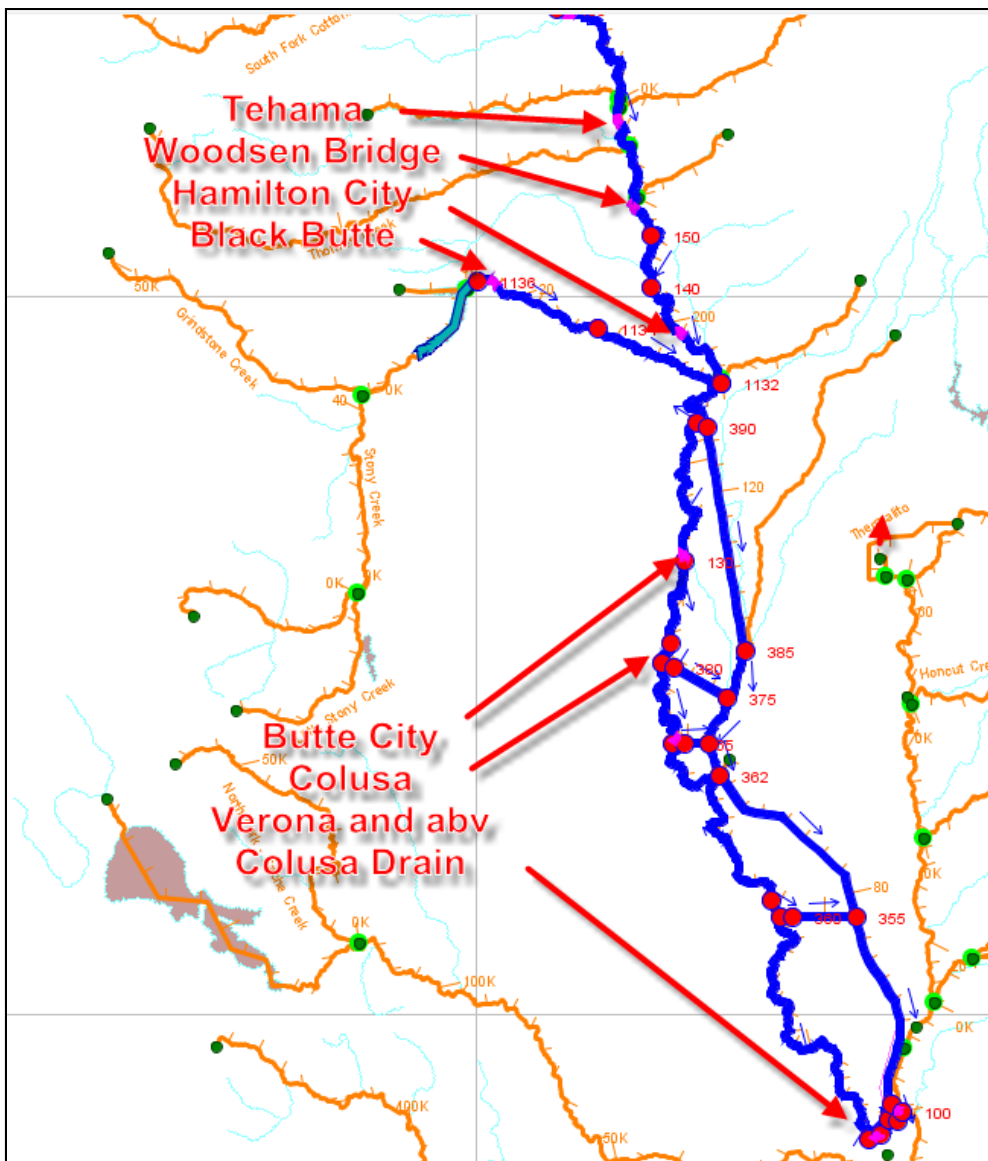
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Table 6B.C.12 Sacramento River at Red Bluff Dam Computed and Observed
Statistical Comparison

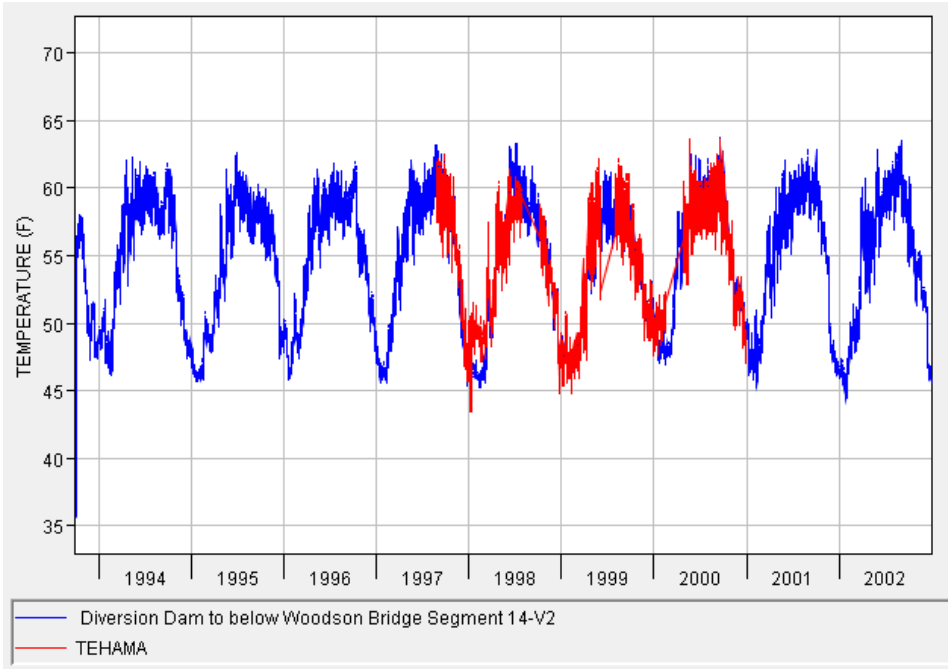
Period	Values	Computed (°F)	Observed (°F)	Bias (°F)	RMS Differences (°F)	Mean Differences (°F)
Jan	448	47.72	48.76	-1.04	2.09	1.65
Feb	434	47.63	48.95	-1.32	2.29	1.83
Mar	485	50.71	51.68	-0.97	1.71	1.38
Apr	460	54.30	54.51	-0.21	1.97	1.57
May	402	56.22	55.77	0.45	1.81	1.39
Jun	312	57.73	56.92	0.81	1.62	1.25
Jul	346	58.09	57.48	0.61	1.19	0.91
Aug	366	57.83	57.65	0.18	1.07	0.86
Sep	416	58.14	58.08	0.07	1.35	1.11
Oct	357	56.70	56.86	-0.16	1.08	0.88
Nov	408	53.97	54.22	-0.25	1.20	0.95

Period	Values	Computed (°F)	Observed (°F)	Bias (°F)	RMS Differences (°F)	Mean Differences (°F)
Dec	430	50.09	50.62	-0.54	1.55	1.20
Jan-Mar	1367	48.75	49.86	-1.11	2.04	1.61
Apr-Jun	1174	55.87	55.58	0.29	1.82	1.42
Jul-Sep	1128	58.03	57.76	0.27	1.21	0.96
Oct-Dec	1195	53.39	53.72	-0.33	1.30	1.02
Average Year	4864	53.76	54.02	-0.26	1.65	1.27



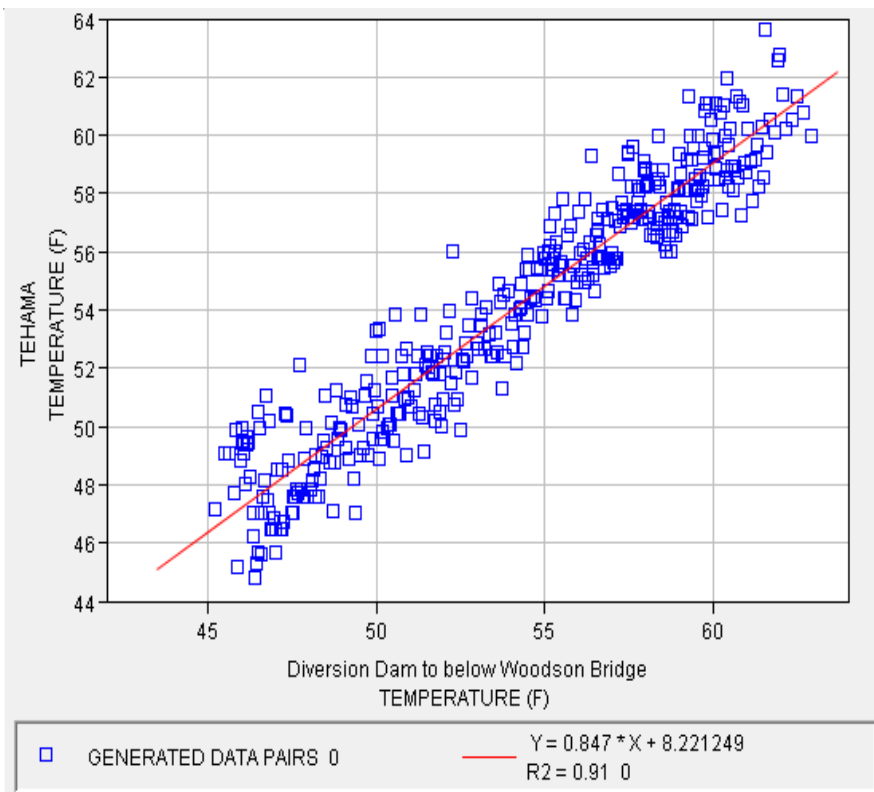
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Figure 6B.C.30 Schematic of the Trinity-Sacramento River HEC-5Q Model Downstream of the Tehama Colusa Canal



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Figure 6B.C.31 Sacramento River at Tehama Colusa Canal Observed (red) and Computed (blue) temperature Time Series Resulting from the Trinity-Sacramento River Validation

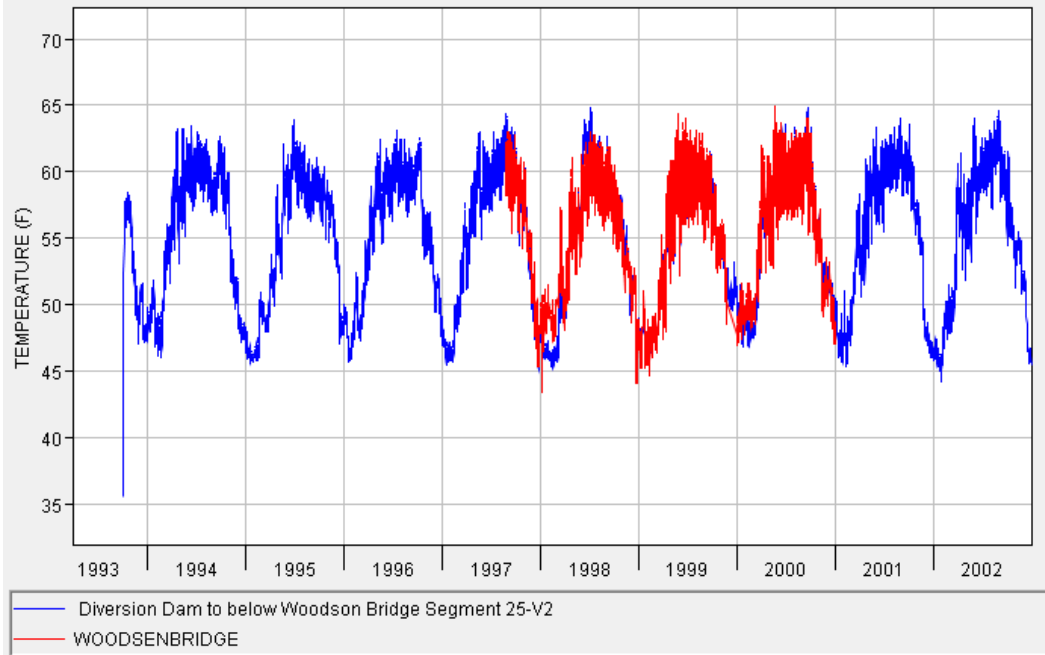


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Figure 6B.C.32 Sacramento River at Tehama Colusa Canal Observed (Y-Axis) and Computed (X-axis) Temperature Data Pairs Resulting from the Trinity-Sacramento River Validation

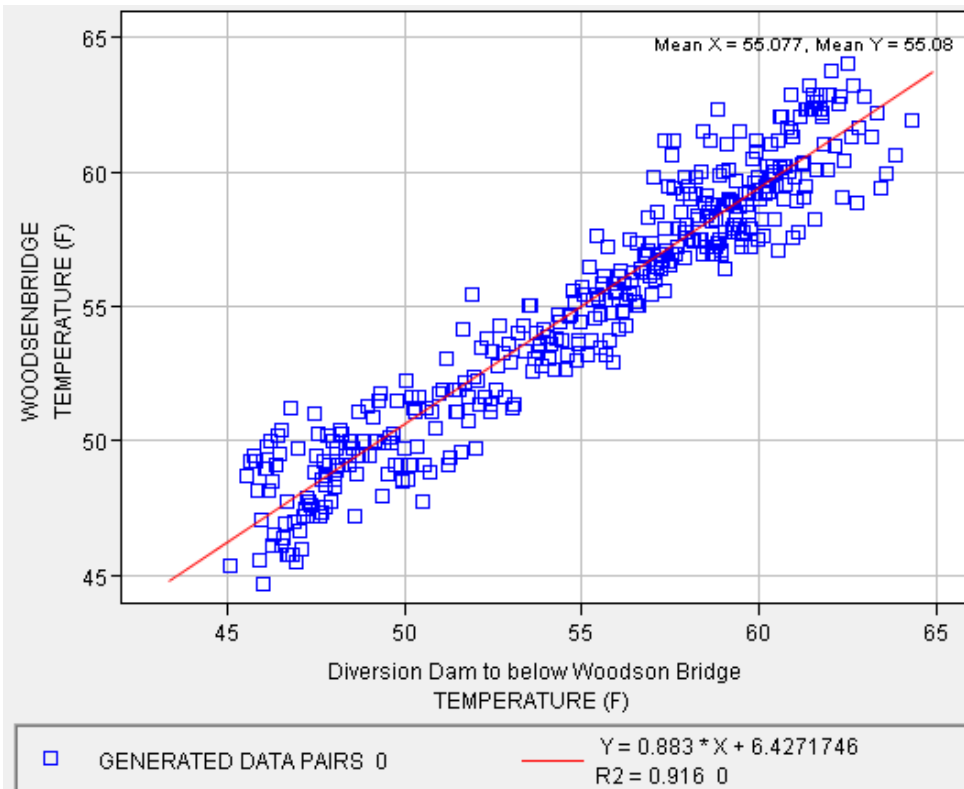
1 **Table 6B.C.13 Sacramento River at Tehama Colusa Canal Computed and Observed**
 2 **Statistical Comparison**

Period	Values	Computed (°F)	Observed (°F)	Bias (°F)	RMS Differences (°F)	Mean Differences (°F)
Jan	448	47.72	48.76	-1.04	2.09	1.65
Feb	434	47.63	48.95	-1.32	2.29	1.83
Mar	485	50.71	51.68	-0.97	1.71	1.38
Apr	460	54.30	54.51	-0.21	1.97	1.57
May	402	56.22	55.77	0.45	1.81	1.39
Jun	312	57.73	56.92	0.81	1.62	1.25
Jul	346	58.09	57.48	0.61	1.19	0.91
Aug	366	57.83	57.65	0.18	1.07	0.86
Sep	416	58.14	58.08	0.07	1.35	1.11
Oct	357	56.70	56.86	-0.16	1.08	0.88
Nov	408	53.97	54.22	-0.25	1.20	0.95
Dec	430	50.09	50.62	-0.54	1.55	1.20
Jan-Mar	1367	48.75	49.86	-1.11	2.04	1.61
Apr-Jun	1174	55.87	55.58	0.29	1.82	1.42
Jul-Sep	1128	58.03	57.76	0.27	1.21	0.96
Oct-Dec	1195	53.39	53.72	-0.33	1.30	1.02
Average Year	4864	53.76	54.02	-0.26	1.65	1.27



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2 **Figure 6B.C.33 Sacramento River below Woodson Bridge Observed (red) and**
 3 **Computed (blue) Temperature Time Series Resulting from the Trinity-Sacramento**
 4 **River Validation**

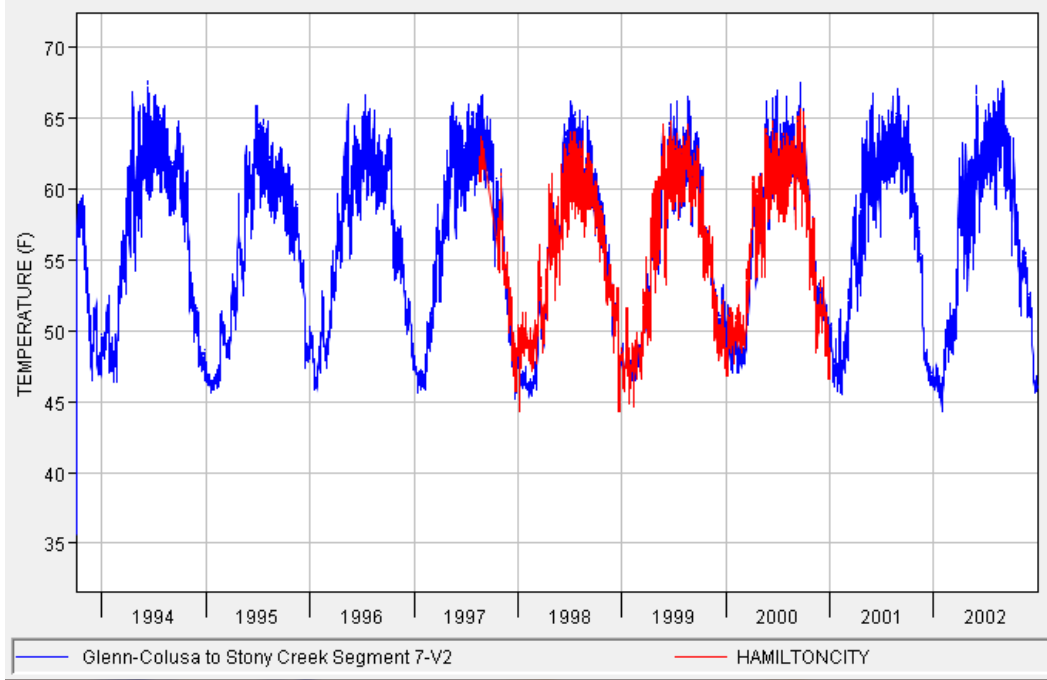


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6 **Figure 6B.C.34 Sacramento River below Woodson Bridge Observed (Y-Axis) and**
 7 **Computed (X-axis) Temperature Data Pairs Resulting from the Trinity-Sacramento**
 8 **River Validation**

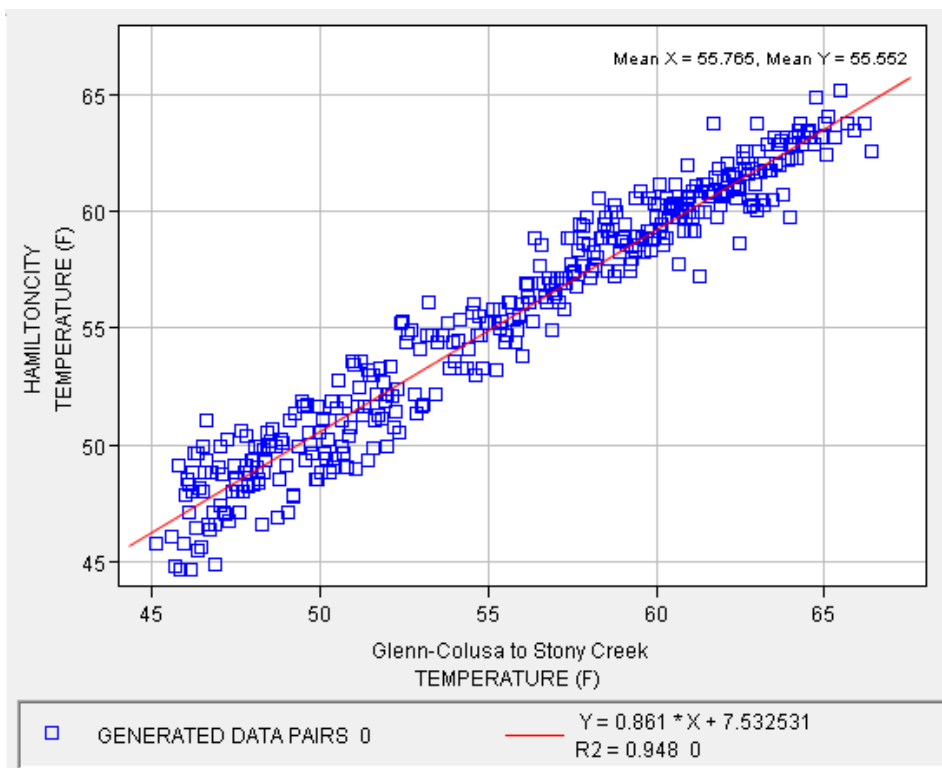
1 **Table 6B.C.14 Sacramento River below Woodson Bridge Computed and Observed**
 2 **Statistical Comparison**

Period	Values	Computed (°F)	Observed (°F)	Bias (°F)	RMS Differences (°F)	Mean Differences (°F)
Jan	279	47.71	48.54	-0.84	1.90	1.48
Feb	255	47.14	48.65	-1.51	1.96	1.62
Mar	249	50.06	51.08	-1.02	1.58	1.25
Apr	270	54.74	55.37	-0.63	1.52	1.21
May	279	57.27	57.31	-0.04	1.52	1.21
Jun	270	59.93	59.11	0.82	2.07	1.72
Jul	279	59.92	59.53	0.39	1.55	1.22
Aug	300	59.84	59.49	0.35	1.18	0.97
Sep	360	59.92	59.20	0.72	1.26	1.03
Oct	372	57.11	56.88	0.23	0.80	0.63
Nov	339	53.82	53.57	0.24	1.19	0.95
Dec	279	49.42	49.49	-0.06	1.13	0.90
Jan-Mar	783	48.27	49.38	-1.11	1.82	1.45
Apr-Jun	819	57.32	57.26	0.05	1.72	1.38
Jul-Sep	939	59.89	59.39	0.50	1.33	1.07
Oct-Dec	990	53.82	53.67	0.15	1.04	0.82
Average Year	3531	55.01	55.07	-0.06	1.48	1.15



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Figure 6B.C.35 Sacramento River at Hamilton City Observed (red) and Computed (blue) Temperature Time Series Resulting from the Trinity-Sacramento River Validation

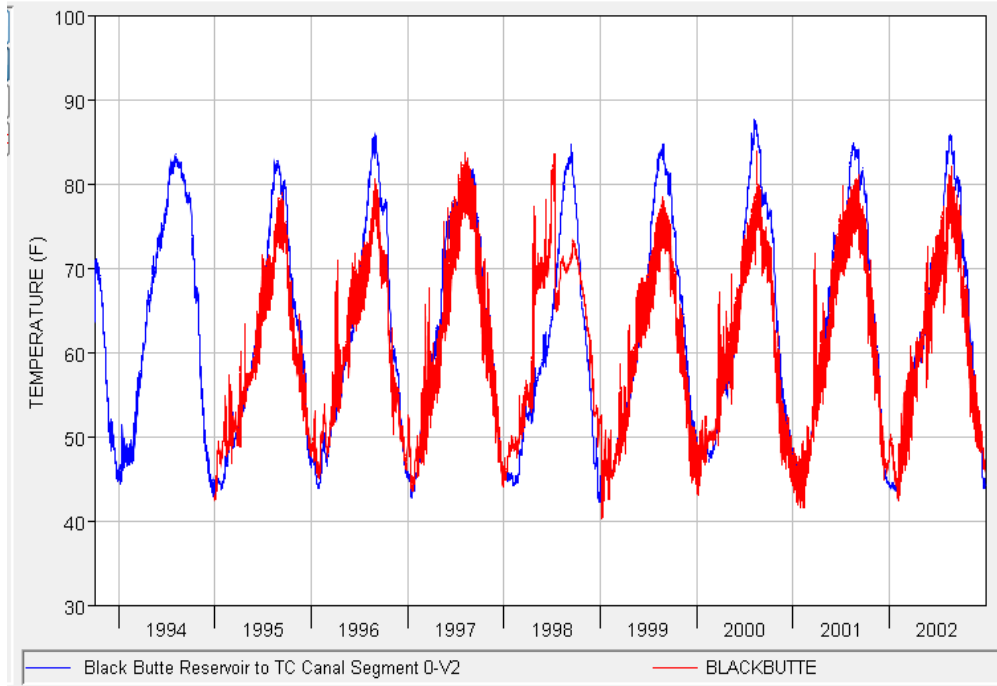


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Figure 6B.C.36 Sacramento River at Hamilton City Observed (Y-Axis) as Computed (X-axis) Temperature Data Pairs Resulting from the Trinity-Sacramento River Validation

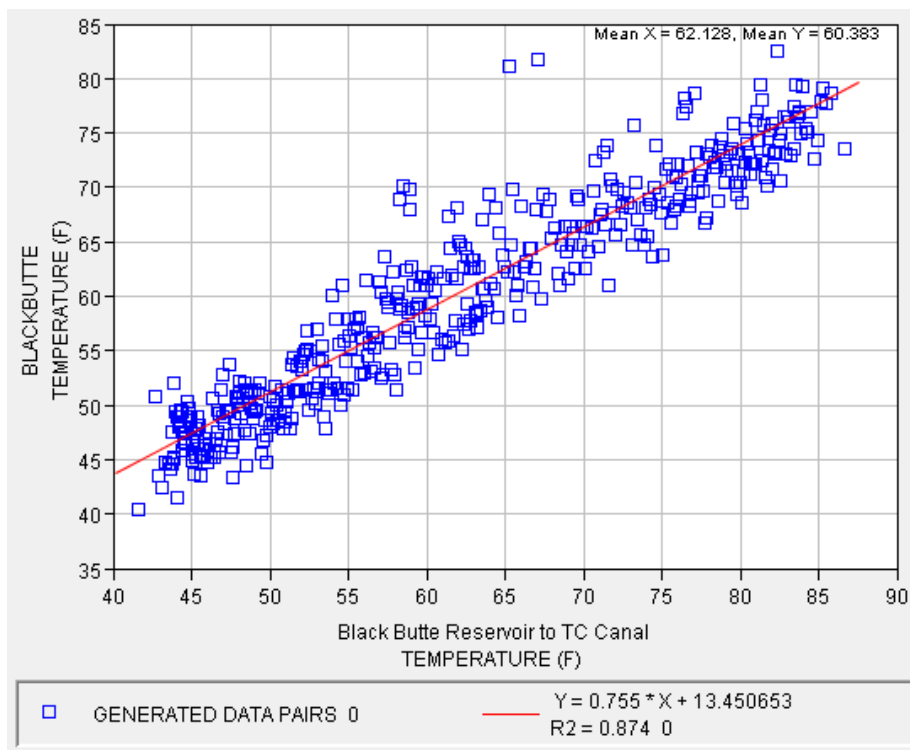
1 **Table 6B.C.15 Sacramento River at Hamilton City Computed and Observed**
 2 **Statistical Comparison**

Period	Values	Computed (°F)	Observed (°F)	Bias (°F)	RMS Differences (°F)	Mean Differences (°F)
Jan	279	47.71	48.54	-0.84	1.90	1.48
Feb	255	47.14	48.65	-1.51	1.96	1.62
Mar	249	50.06	51.08	-1.02	1.58	1.25
Apr	270	54.74	55.37	-0.63	1.52	1.21
May	279	57.27	57.31	-0.04	1.52	1.21
Jun	270	59.93	59.11	0.82	2.07	1.72
Jul	279	59.92	59.53	0.39	1.55	1.22
Aug	300	59.84	59.49	0.35	1.18	0.97
Sep	360	59.92	59.20	0.72	1.26	1.03
Oct	372	57.11	56.88	0.23	0.80	0.63
Nov	339	53.82	53.57	0.24	1.19	0.95
Dec	279	49.42	49.49	-0.06	1.13	0.90
Jan-Mar	783	48.27	49.38	-1.11	1.82	1.45
Apr-Jun	819	57.32	57.26	0.05	1.72	1.38
Jul-Sep	939	59.89	59.39	0.50	1.33	1.07
Oct-Dec	990	53.82	53.67	0.15	1.04	0.82
Average Year	3531	55.01	55.07	-0.06	1.48	1.15



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Figure 6B.C.37 Stony Creek below Black Butte Dam Observed (red) and Computed (blue) Temperature Time Series Resulting from the Trinity-Sacramento River Validation

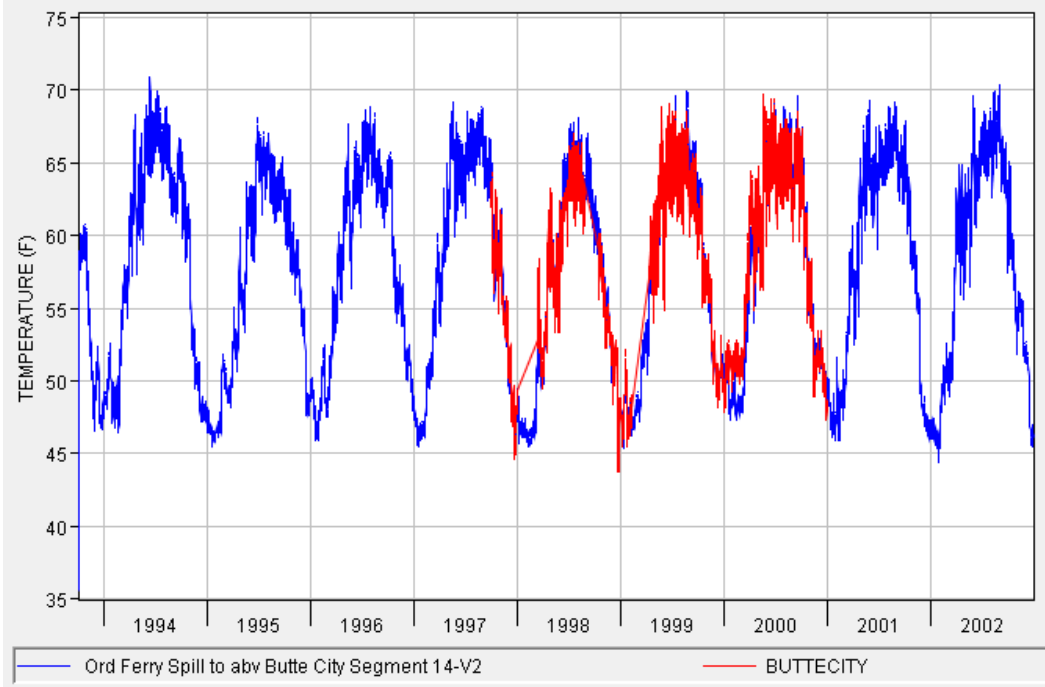


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Figure 6B.C.38 Stony Creek below Black Butte Dam Observed (Y-Axis) and Computed (X-axis) Temperature Data Pairs Resulting from the Trinity-Sacramento River Validation

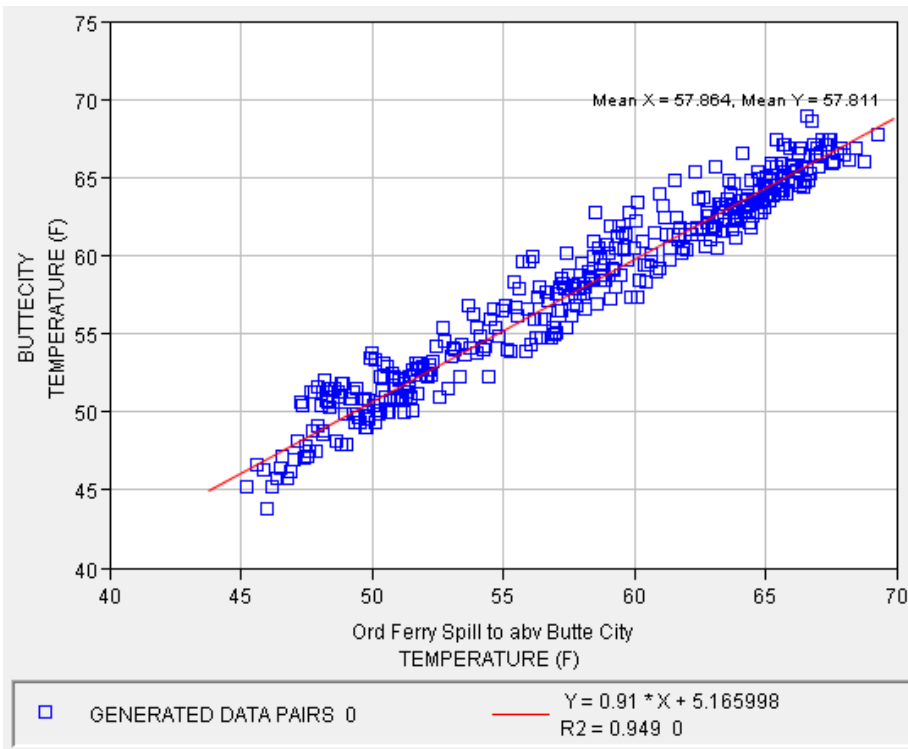
1 **Table 6B.C.16 Stony Creek below Black Butte Dam Computed and Observed**
 2 **Statistical Comparison**

Period	Values	Computed (°F)	Observed (°F)	Bias (°F)	RMS Differences (°F)	Mean Differences (°F)
Jan	279	47.71	48.54	-0.84	1.90	1.48
Feb	255	47.14	48.65	-1.51	1.96	1.62
Mar	249	50.06	51.08	-1.02	1.58	1.25
Apr	270	54.74	55.37	-0.63	1.52	1.21
May	279	57.27	57.31	-0.04	1.52	1.21
Jun	270	59.93	59.11	0.82	2.07	1.72
Jul	279	59.92	59.53	0.39	1.55	1.22
Aug	300	59.84	59.49	0.35	1.18	0.97
Sep	360	59.92	59.20	0.72	1.26	1.03
Oct	372	57.11	56.88	0.23	0.80	0.63
Nov	339	53.82	53.57	0.24	1.19	0.95
Dec	279	49.42	49.49	-0.06	1.13	0.90
Jan-Mar	783	48.27	49.38	-1.11	1.82	1.45
Apr-Jun	819	57.32	57.26	0.05	1.72	1.38
Jul-Sep	939	59.89	59.39	0.50	1.33	1.07
Oct-Dec	990	53.82	53.67	0.15	1.04	0.82
Average Year	3531	55.01	55.07	-0.06	1.48	1.15



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Figure 6B.C.39 Sacramento River at Butte City Observed (red) and Computed (blue) Temperature Time Series Resulting from the Trinity-Sacramento River Validation

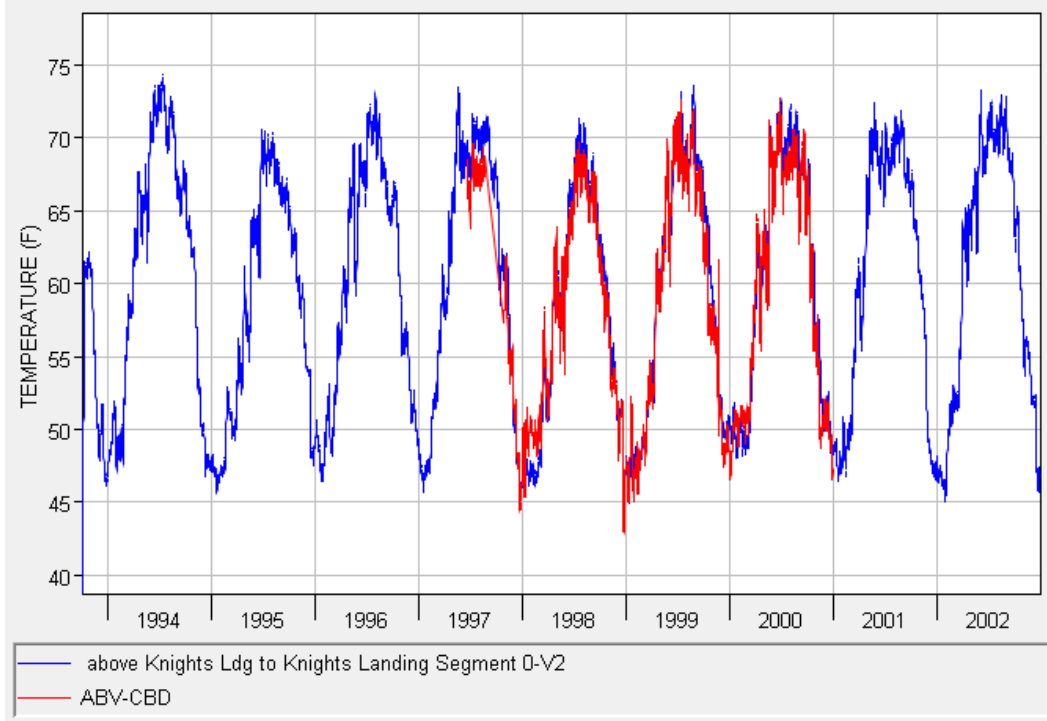


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Figure 6B.C.40 Sacramento River at Butte City Observed (Y-axis) and Computed (X-axis) Temperature Data Pairs Resulting from the Trinity-Sacramento River Validation

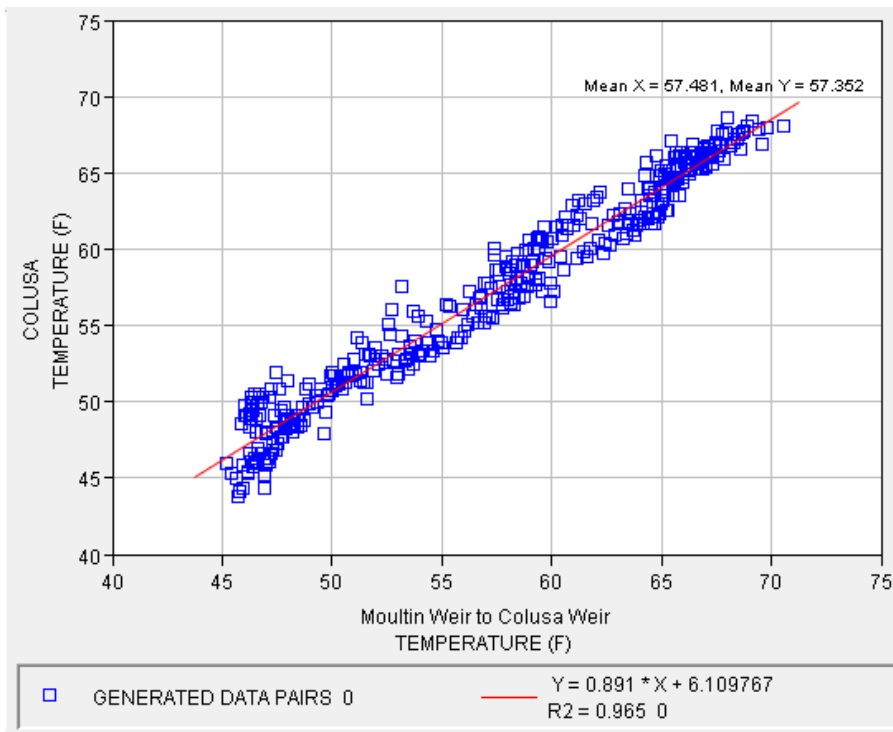
1 **Table 6B.C.17 Sacramento River at Butte City Computed and Observed Statistical**
 2 **Comparison**

Period	Values	Computed (°F)	Observed (°F)	Bias (°F)	RMS Differences (°F)	Mean Differences (°F)
Jan	279	47.71	48.54	-0.84	1.90	1.48
Feb	255	47.14	48.65	-1.51	1.96	1.62
Mar	249	50.06	51.08	-1.02	1.58	1.25
Apr	270	54.74	55.37	-0.63	1.52	1.21
May	279	57.27	57.31	-0.04	1.52	1.21
Jun	270	59.93	59.11	0.82	2.07	1.72
Jul	279	59.92	59.53	0.39	1.55	1.22
Aug	300	59.84	59.49	0.35	1.18	0.97
Sep	360	59.92	59.20	0.72	1.26	1.03
Oct	372	57.11	56.88	0.23	0.80	0.63
Nov	339	53.82	53.57	0.24	1.19	0.95
Dec	279	49.42	49.49	-0.06	1.13	0.90
Jan-Mar	783	48.27	49.38	-1.11	1.82	1.45
Apr-Jun	819	57.32	57.26	0.05	1.72	1.38
Jul-Sep	939	59.89	59.39	0.50	1.33	1.07
Oct-Dec	990	53.82	53.67	0.15	1.04	0.82
Average Year	3531	55.01	55.07	-0.06	1.48	1.15



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Figure 6B.C.41 Sacramento River above the Colusa Drain Observed (red) and Computed (blue) Temperature Time Series Resulting from the Trinity-Sacramento River Validation



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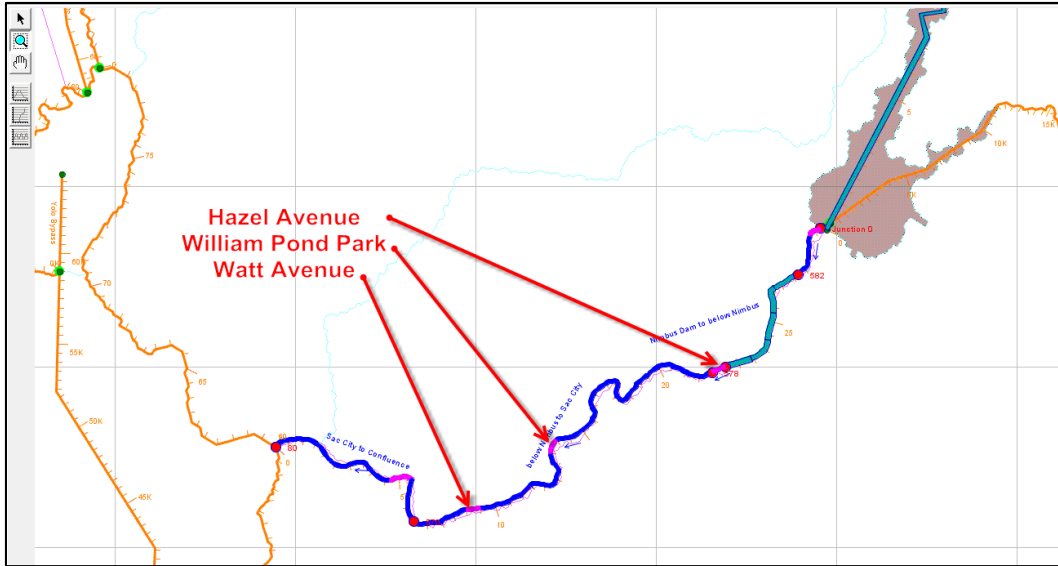
Figure 6B.C.42 Sacramento River above the Colusa Drain Observed (Y-Axis) and Computed (X-axis) Temperature Data Pairs Resulting from the Trinity-Sacramento River Validation

1 **Table 6B.C.18 Sacramento River above the Colusa Drain Computed and Observed**
 2 **Statistical Comparison**

Period	Values	Computed (°F)	Observed (°F)	Bias (°F)	RMS Differences (°F)	Mean Differences (°F)
Jan	279	48.27	48.70	-0.43	1.84	1.48
Feb	243	48.16	49.29	-1.13	1.72	1.41
Mar	273	51.55	52.63	-1.08	1.62	1.33
Apr	270	57.76	58.08	-0.32	1.12	0.89
May	279	62.57	62.12	0.45	1.39	1.03
Jun	303	67.25	66.42	0.83	1.49	1.27
Jul	372	69.51	67.90	1.61	1.84	1.63
Aug	342	69.61	68.08	1.53	1.80	1.54
Sep	270	67.27	65.88	1.38	1.93	1.47
Oct	288	62.42	60.14	2.28	2.93	2.39
Nov	360	55.52	54.39	1.13	2.03	1.61
Dec	372	49.60	48.96	0.64	1.30	1.05
Jan-Mar	795	49.36	50.23	-0.87	1.73	1.41
Apr-Jun	852	62.71	62.37	0.34	1.35	1.07
Jul-Sep	984	68.93	67.41	1.52	1.85	1.56
Oct-Dec	1020	55.31	54.03	1.28	2.12	1.62
Average Year	3651	59.41	58.76	0.66	1.80	1.43

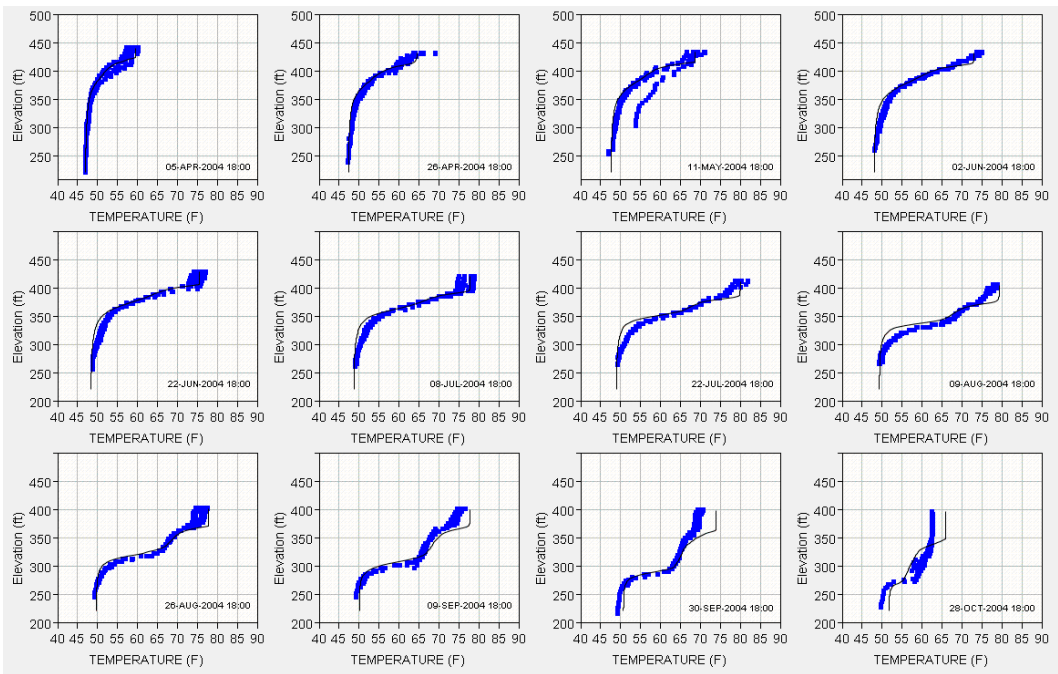
3 **6B.C.9 American River Model Validation**

4 Comparisons between observed temperature data and computed temperature
 5 results from the validation task for the American River are provided in this
 6 section. Figures 6B.C.43 through 6B.C.50 present geographic locations used in
 7 the HEC-5Q model and comparisons of observed and computed data at these
 8 locations. Observed results are from Reclamation, DWR, and USGS data. The
 9 results indicate overall good agreement between computed and observed data.



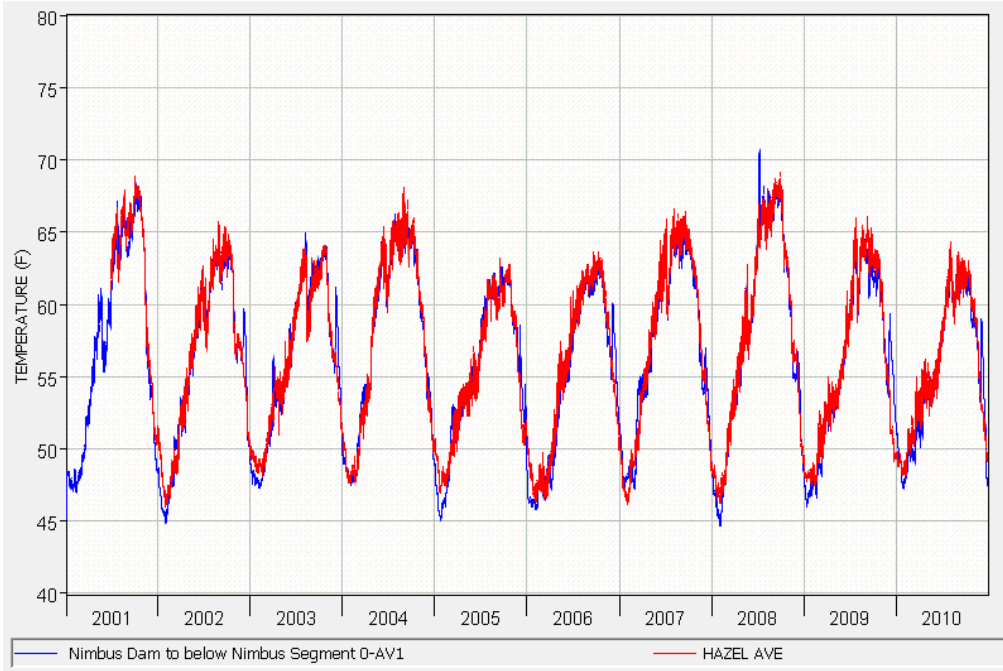
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2 **Figure 6B.C.43 Schematic of the American River HEC-5Q Model**



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4 **Figure 6B.C.44 Folsom Lake Observed (blue dots) and Computed (black line)**
 5 **Temperature Profiles Resulting from the American River Validation**

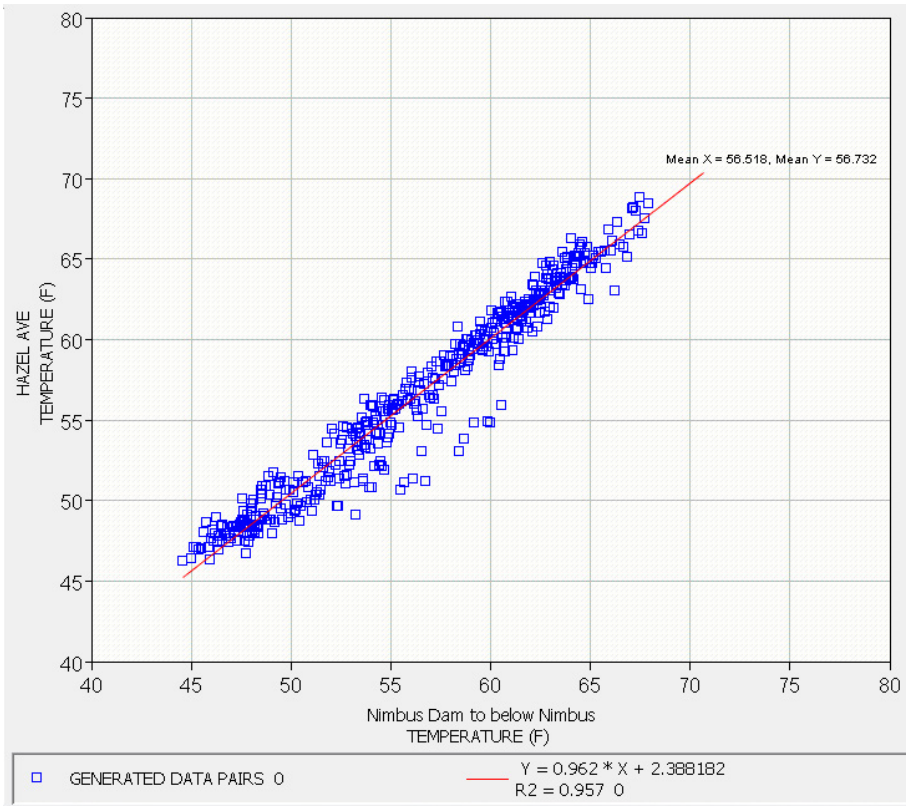


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Figure 6B.C.45 American River below Nimbus Dam Observed (red) and Computed (blue) Temperature Time Series Resulting from the American River Validation



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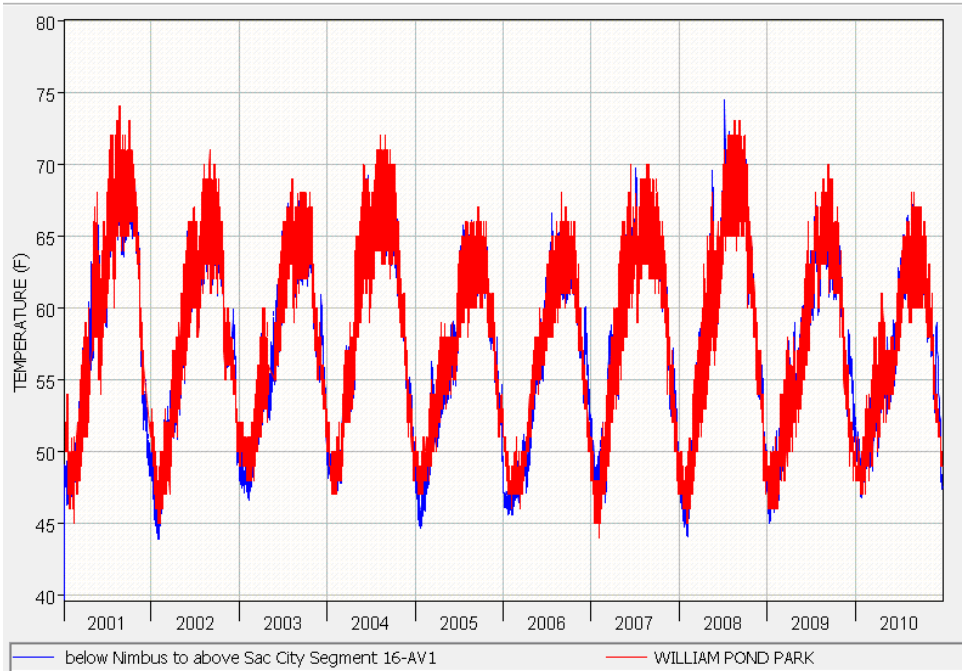
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Figure 6B.C.46 American River below Nimbus Dam Observed (Y-Axis) and Computed (X-axis) Temperature Data Pairs Resulting from the American River Validation

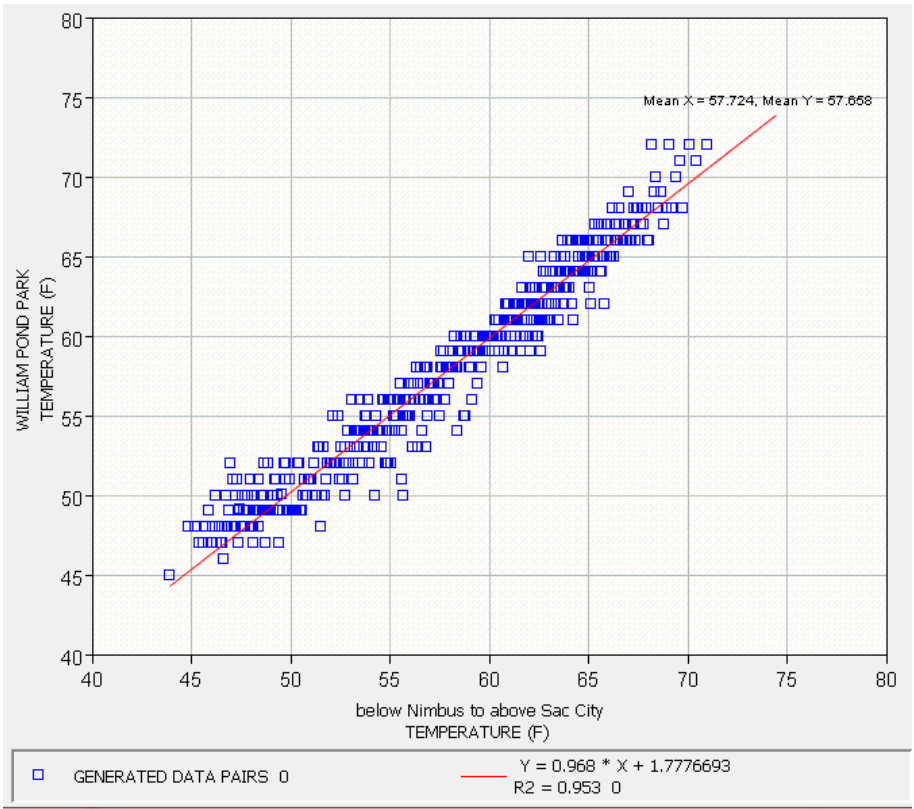
1 **Table 6B.C.19 American River below Nimbus Dam Computed and Observed**
 2 **Statistical Comparison**

Period	Values	Computed (°F)	Observed (°F)	Bias (°F)	RMS Differences (°F)	Mean Differences (°F)
Jan	1108	47.54	48.53	-1.00	1.40	1.14
Feb	1016	47.71	48.21	-0.49	0.83	0.68
Mar	1116	51.03	50.71	0.32	1.29	1.05
Apr	1064	53.07	53.57	-0.50	0.96	0.78
May	1093	55.83	56.12	-0.29	0.90	0.69
Jun	1075	58.56	58.67	-0.11	0.84	0.66
Jul	1199	61.91	61.88	0.04	0.93	0.72
Aug	1192	63.08	63.08	0.00	0.89	0.68
Sep	1164	63.26	63.68	-0.42	0.99	0.82
Oct	1240	62.82	63.26	-0.44	0.66	0.56
Nov	1200	57.69	58.27	-0.58	1.05	0.88
Dec	1236	53.28	52.39	0.89	2.00	1.56
Jan-Mar	3240	48.79	49.18	-0.39	1.20	0.97
Apr-Jun	3232	55.83	56.13	-0.30	0.90	0.71
Jul-Sep	3555	62.75	62.87	-0.12	0.94	0.74
Oct-Dec	3676	57.94	57.97	-0.04	1.36	1.00
Average Year	13703	56.53	56.73	-0.20	1.12	0.86



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2 **Figure 6B.C.47 American River at William Pond Park Observed (red) and Computed (blue)**
 3 **Temperature Time Series Resulting from the American River Validation**



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5 **Figure 6B.C.48 American River at William Pond Park Observed (Y-Axis) and**
 6 **Computed (X-axis) Temperature Data Pairs Resulting from the American River**
 7 **Validation**

1 **Table 6B.C.20 American River at William Pond Park Computed and Observed**
 2 **Statistical Comparison**

Period	Values	Computed (°F)	Observed (°F)	Bias (°F)	RMS Differences (°F)	Mean Differences (°F)
Jan	1198	47.78	48.68	-0.91	1.63	1.29
Feb	1121	48.51	48.75	-0.23	1.05	0.85
Mar	1219	52.35	51.80	0.54	1.39	1.12
Apr	1157	54.59	54.83	-0.24	1.16	0.92
May	1131	58.36	58.25	0.12	1.13	0.89
Jun	1196	60.62	60.27	0.34	1.07	0.84
Jul	1236	63.93	63.38	0.55	1.14	0.88
Aug	1232	65.15	64.94	0.22	1.09	0.86
Sep	1200	64.79	65.18	-0.39	1.17	0.93
Oct	1240	63.24	63.76	-0.52	0.98	0.78
Nov	1200	57.70	58.26	-0.56	1.13	0.90
Dec	1113	53.24	52.24	0.99	1.84	1.43
Jan-Mar	3538	49.58	49.78	-0.19	1.38	1.09
Apr-Jun	3484	57.88	57.81	0.08	1.12	0.88
Jul-Sep	3668	64.63	64.49	0.13	1.13	0.89
Oct-Dec	3553	58.24	58.30	-0.06	1.35	1.02
Average Year	14243	57.65	57.66	-0.01	1.25	0.97

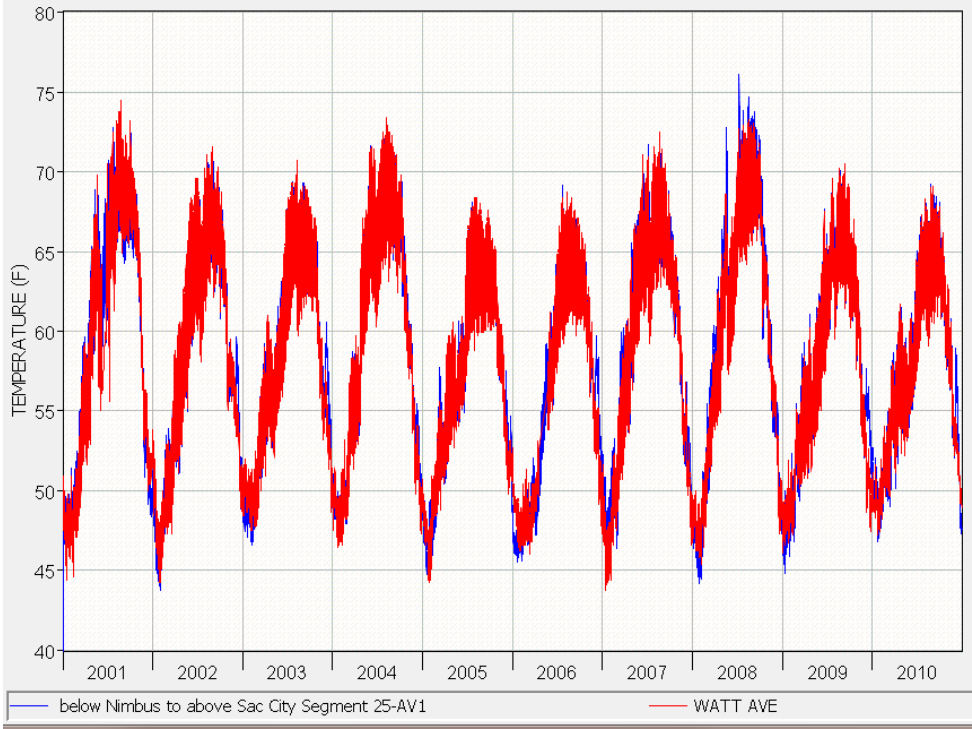


Figure 6B.C.49 American River at Watt Avenue Observed (red) and Computed (blue) Temperature Time Series Resulting from the American River Validation

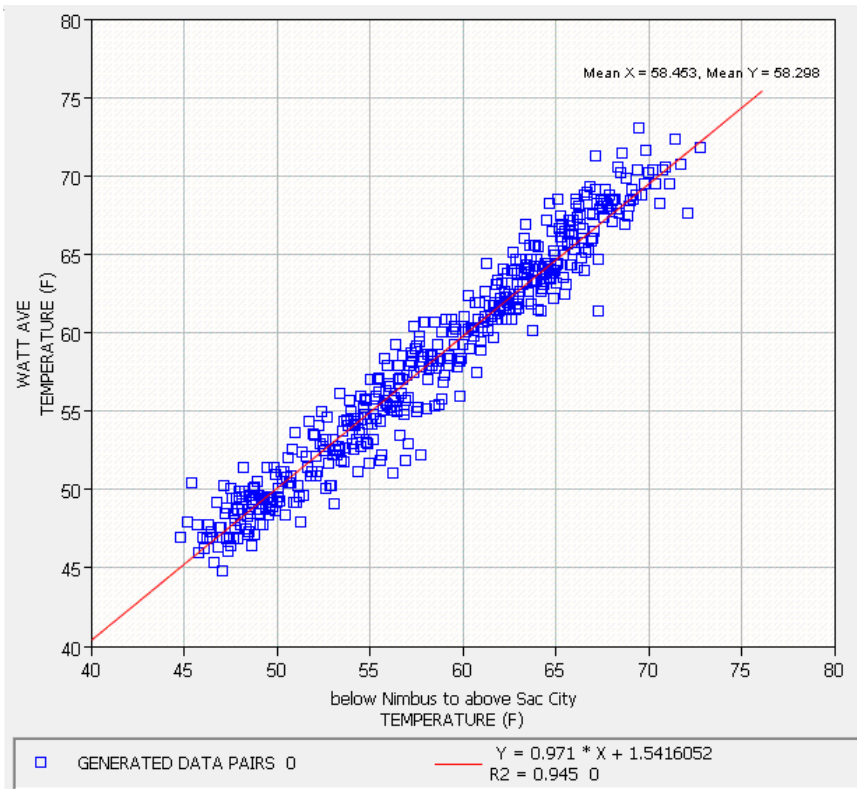


Figure 6B.C.50 American River at Watt Avenue Observed (Y-Axis) and Computed (X-axis) Temperature Data Pairs Resulting from the American River Validation

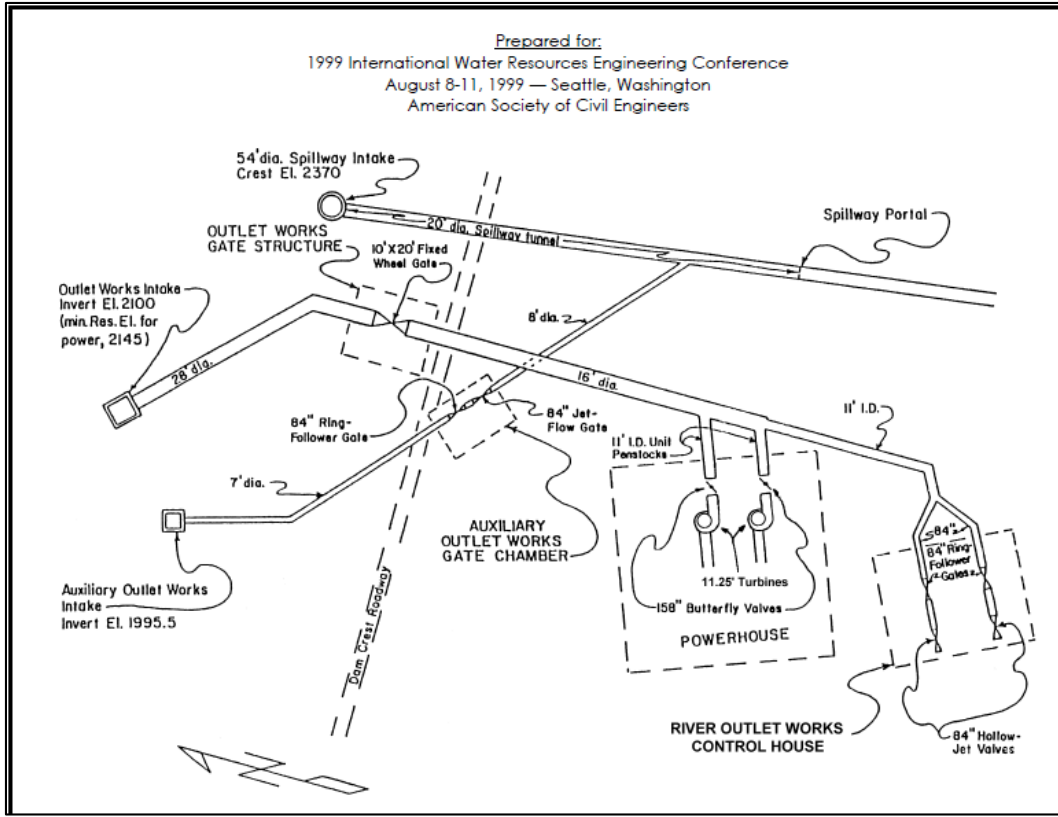
1 **Table 6B.C.21 American River at Watt Avenue Computed and Observed Statistical**
 2 **Comparison**

Period	Values	Computed (°F)	Observed (°F)	Bias (°F)	RMS Differences (°F)	Mean Differences (°F)
Jan	1223	47.91	48.48	-0.57	1.45	1.09
Feb	1128	49.14	49.11	0.02	1.02	0.83
Mar	1224	53.40	52.77	0.63	1.44	1.17
Apr	1153	55.98	55.99	0.00	1.26	1.02
May	1151	59.88	59.52	0.36	1.37	1.08
Jun	1200	62.20	61.43	0.77	1.89	1.35
Jul	1240	65.51	64.67	0.84	1.75	1.25
Aug	1236	66.64	66.42	0.22	1.40	1.16
Sep	1196	65.96	66.32	-0.36	1.38	1.14
Oct	1240	63.58	64.03	-0.46	1.01	0.84
Nov	1188	57.72	58.06	-0.35	1.05	0.83
Dec	1232	52.76	51.95	0.81	1.91	1.57
Jan-Mar	3575	50.18	50.15	0.02	1.33	1.04
Apr-Jun	3504	59.39	59.01	0.38	1.54	1.15
Jul-Sep	3672	66.04	65.80	0.24	1.52	1.18
Oct-Dec	3660	58.04	58.03	0.01	1.39	1.08
Average Year	14411	58.46	58.29	0.16	1.45	1.11

3 **6B.C.10 Trinity River Outlet Diagrams**

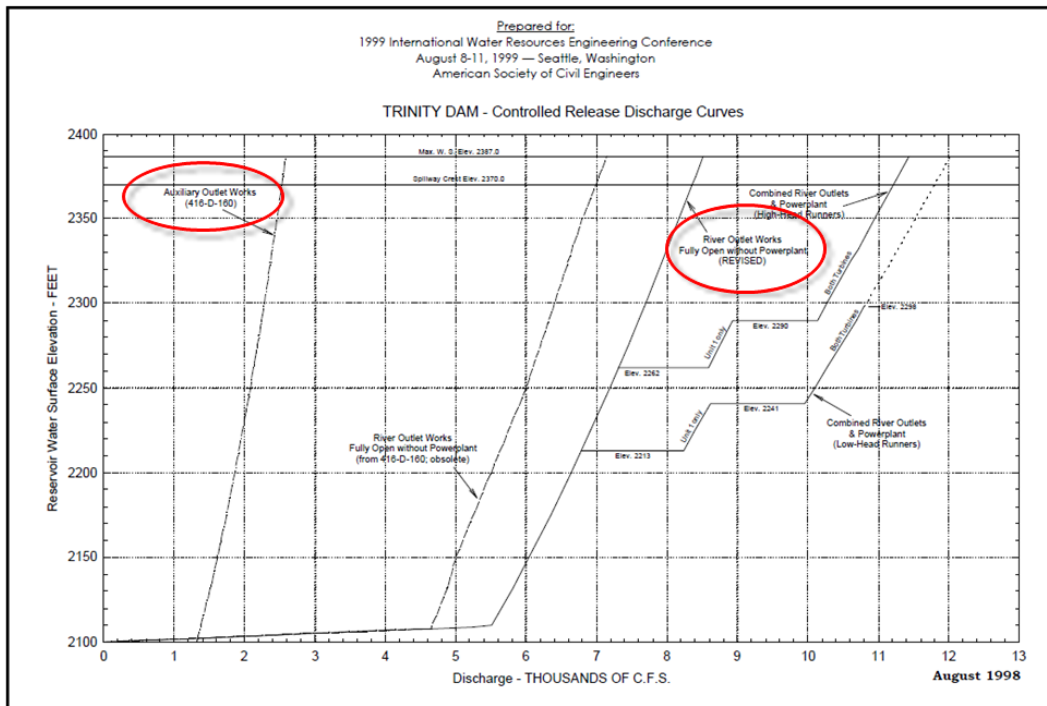
4 Diagrams that were used to simulate the Trinity Dam selective withdrawal
 5 procedure and the associated updates to the Trinity Dam outlets in the Trinity-
 6 Sacramento HEC-5Q model are presented in this section. Figure 6B.C.51 shows
 7 a schematic of the Trinity Dam outlets. Figure 6B.C.52 shows outlet capacity
 8 curves for the different Trinity Dam outlets. Figure 6B.C.53 shows the
 9 operational and flow vs. head (0 feet head at 1,900 feet lake elevation)
 10 characteristics of the Trinity Dam retrofitted turbine.

Appendix 6B.C: Surface Water Temperature Modeling – HEC-5Q Model Update



1

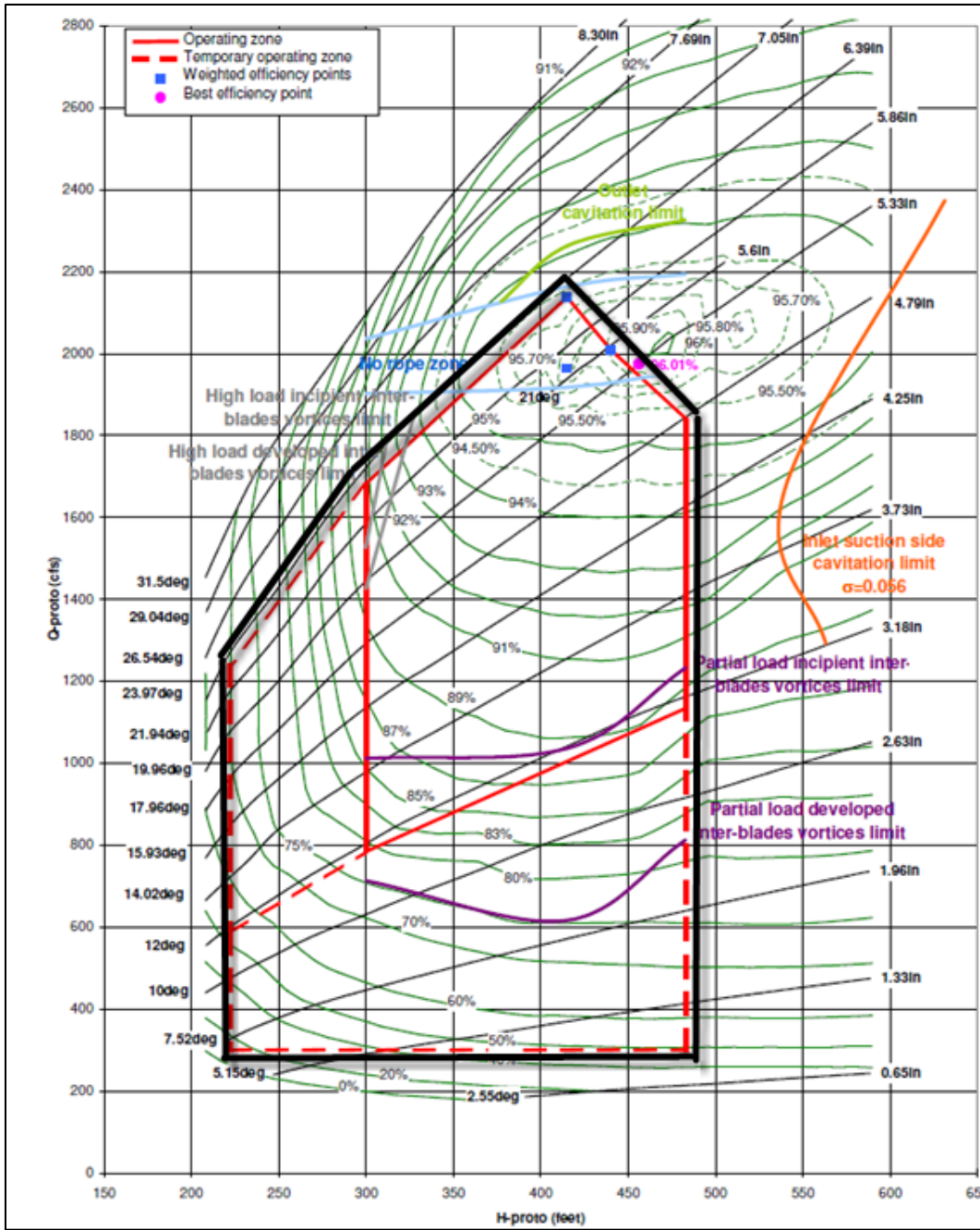
2 Figure 6B.C.51 Schematic of Trinity Dam Outlets (Wahl and Cohen 1999)



3

4 Figure 6B.C.52 Outlet Capacity Curves for Trinity Dam Outlets (Wahl and Cohen 1999)

5



1

2 **Figure 6B.C.53 Operational and Flow Compared to Total Head (with 0 feet head at**
 3 **1,900 feet lake elevation) Characteristics of the Trinity Dam Retrofitted Turbine**

1 **6B.C.11 Shasta Release Temperature Target**
 2 **Schedules Spreadsheet Development**

3 An approach to setting Shasta Dam release temperature target schedules in
 4 accordance with the 2009 NMFS BO, current management of the temperature
 5 target locations, and the spreadsheet tool
 6 SacR_Temp_Sel_Tool_rev05_FULL_FINAL_3-3-15.xlsm are presented in this
 7 section.

8 **6B.C.11.1 Background**

9 The SWRCB Water Rights Order 90-05 and NMFS BO include water
 10 temperature criteria in Sacramento River downstream of Shasta Dam. The NMFS
 11 BO Reasonable and Prudent Alternative (RPA) I.2.1 sets forth temperature
 12 compliance percentages for the summer season at specified locations on the
 13 Sacramento River (Table 6B.C.22) for not exceeding 56⁰F at the specified
 14 location. These compliance percentages do not apply during extended drought
 15 periods.

16 **Table 6B.C.22 Compliance Percentage for Not Exceeding 56⁰F at Select Locations**
 17 **on the Sacramento River in the NMFS BO**

Location	Compliance Percentage in NMFS BO (based on 10-year moving average)
Clear Creek	95 percent of Time
Balls Ferry	85 percent of Time
Jelly's Ferry	40 percent of Time
Bend Bridge	15 percent of Time

18 Shasta Lake releases are operated to not exceed 56⁰F at the compliance locations,
 19 to the extent possible. The Sacramento River Temperature Task Group (SRTTG)
 20 meets once a month from April to October to discuss temperature compliance
 21 actions, as described in Appendix 3A.

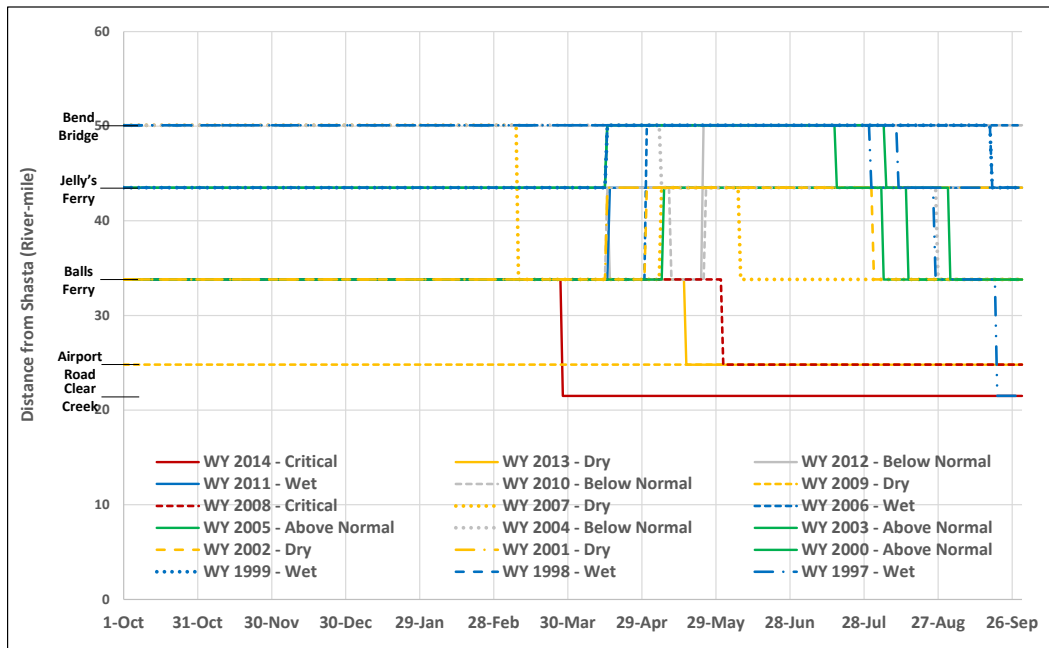
22 Historically, initial compliance locations have been correlated to End-of-April
 23 storage, as summarized in Table 6B.C.23.

24 **Table 6B.C.23 Compliance Location Based Upon End-of-April Storage**

Compliance Location	End-of-April Storage (TAF)
Clear Creek	<3600
Balls Ferry	3600 – 4000
Jelly's Ferry	4000 – 4400
Bend Bridge	>4400

25 Figure 6B.C.54 shows the temperature compliance from 1996 to 2014 based on
 26 monthly Sacramento River Temperature Reports (Reclamation 2015). Shasta

1 Dam releases were operated under SWRCB Water Rights Order 90-05 during this
 2 entire time period. Operations under the NMFS BO were initiated in 2009.



3
 4 **Figure 6B.C.54 Temperature Compliance Locations from 1996 through 2014**

5 As shown in Figure 6B.C.54, the compliance location often changed multiple
 6 times in a year as Shasta storage, meteorology, tributary, and fisheries conditions
 7 changed through the year. No specific procedure could be identified for when
 8 locations were changed. In some years, such as 2007, the location would start
 9 further downstream (Bend Bridge), then move upstream (Balls Ferry), then move
 10 downstream (Jelly’s Ferry), and then back upstream (Balls Ferry). In other years
 11 (e.g., 2004), the location would progressively move upstream.

12 Two general trends were identified. First, the compliance locations tended to be
 13 at Balls Ferry, Airport Road, and/or Clear Creek in dryer years (when Shasta Lake
 14 storage was low with less cold-water), and at Jelly’s Ferry and Bend Bridge in
 15 wetter years. Second, the compliance location tended to move closer to Shasta
 16 Dam later in the year (as the cold-water pool became more depleted and
 17 meteorological conditions became warmer). These two trends, combined with the
 18 general operations used by Reclamation to set the initial annual compliance
 19 location, were used to help develop the temperature scheduling logic described
 20 below.

21 **6B.C.11.2 Temperature Target Spreadsheet Development**

22 This section describes the development of the Sacramento River Temperature
 23 Targeting Spreadsheet SacR_Temp_Sel_Tool_rev05_FULL_FINAL_3-3-
 24 15.xlsm.

1 Shasta storage data from the CalSim II EIS No Action Alternative Q5 run dated
 2 January 27, 2015 was loaded into the spreadsheet. This storage data set the
 3 compliance location for each year of the CalSim II simulation period and the data
 4 remain unchanged throughout the temperature schedule development. April
 5 storage was chosen as the parameter from which to choose the compliance
 6 location because it was specified as the indicator of cold-water pool storage in the
 7 NMFS BO. April storage was divided into five tiers, each tier representing a
 8 different compliance location based on Reclamation’s rule-of-thumb approach for
 9 Shasta End-of-April storage shown in Table 6B.C.23. (Note that the storage tier
 10 for compliance with Jelly’s Ferry is at 4,425 TAF in this procedure instead of
 11 4,400 TAF.)

12 The four compliance locations (see Table 6B.C.22) were given an annual
 13 temperature schedule of monthly Shasta release temperature targets. These
 14 targets were developed using the following logic.

- 15 • **Step 1:** For each month individually, the difference between the modeled
 16 temperature at the compliance location and the modeled temperature below
 17 Shasta Dam was calculated for each year.
- 18 • **Step 2:** The difference value calculated in Step 1 that represented a specified
 19 exceedance for each month was then calculated for all compliance locations.
 20 This helped characterize the warming that occurred between Shasta release
 21 temperatures and each compliance location. For example, September at Bend
 22 Bridge was given a 5 percent exceedance. This exceedance says that only
 23 5 percent of years had a September temperature difference higher than this
 24 difference value (e.g. 11.2⁰F). In other words, warming that occurred
 25 between Shasta and Bend Bridge in September for the previous model run was
 26 11.2⁰F or lower for 95 percent of years.
- 27 • **Step 3:** The value calculated in Step 2 was then subtracted from 56⁰F and this
 28 became the Shasta release temperature target for that compliance location in
 29 that month. This step assumes that the Shasta release temperature target will
 30 meet 56⁰F or lower at the compliance location for the exceedance percentage
 31 number of years. For example, a Shasta release temperature target of 44.8⁰F
 32 in September will meet 56⁰F or lower at Bend Bridge for 95 percent of years.

33 The Sacramento River HEC-5Q model was run, using the January 13, 2015
 34 version delivered to Reclamation and the CalSim II data described in previously,
 35 and the temperature output was loaded into the spreadsheet. The compliance
 36 performance was checked by calculating the percentage of years, over the 81-year
 37 simulation period, each compliance location exceeded 56⁰F for each month and
 38 the difference between that percentage and the compliance percentage listed in
 39 Table 6B.C.22. Then, using an initial set of exceedance percentages (described in
 40 Step 2) and the latest Sacramento River HEC-5Q model code (March 3, 2015) to
 41 set the new temperature schedules, the Sacramento River HEC-5Q model was re-
 42 run and the temperature output reloaded in the spreadsheet. An iterative process
 43 was then performed where the exceedance percentages were adjusted, the
 44 Sacramento River HEC-5Q model was re-run and the temperature output was

1 reloaded, and the compliance performance was checked until the compliance
 2 performance was deemed satisfactory. The final exceedance percentages (June to
 3 December) are listed in Table 6B.C.24.

4 **Table 6B.C.24 Exceedance Percentages for June through December at the Four**
 5 **Temperature Compliance Locations**

	June	July	August	September	October	November	December
Clear Creek	75.00	50.00	15.00	5.00	25.00	40.00	50.00
Balls Ferry	75.00	50.00	15.00	5.00	25.00	40.00	50.00
Jelly's Ferry	75.00	50.00	15.00	5.00	25.00	40.00	50.00
Bend Bridge	75.00	50.00	15.00	5.00	25.00	40.00	50.00

6 January through May were not given exceedance percentages as temperature
 7 management during those months is generally not an issue. Instead, January,
 8 February, and March were given a constant temperature target of 60.8⁰F, which is
 9 the average temperature above the thermocline in Lake Shasta. Shasta Lake
 10 generally does not stratify during those months so the temperature at the top of the
 11 thermocline is assumed to be consistent through the entire depth of Shasta Lake
 12 (Rettig and Bortleson 1983). April and May were given a constant temperature of
 13 53.6⁰F, which is the average temperature below the thermocline in Shasta Lake.
 14 Stratification starts to occur in April and May and it is assumed that there is
 15 enough storage in Shasta Lake to conserve the cold-water pool. The final Shasta
 16 release temperature targets used in the spreadsheet for each compliance location
 17 are shown in Table 6B.C.25.

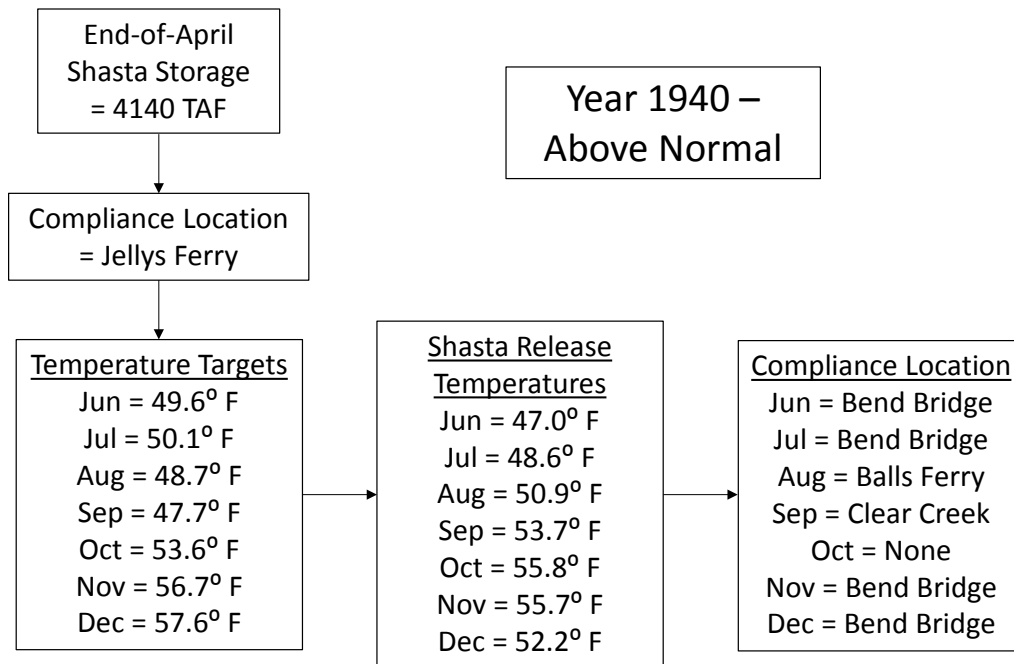
18 **Table 6B.C.25 Final Shasta Lake Release Temperature Targets Used in the**
 19 **Temperature Targeting Spreadsheet**

Location	Shasta Storage (TAF)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
None	<2000	60.8	60.8	60.8	53.6	53.6	52.6	52.6	51.8	50.8	54.6	56.0	56.2
Clear Creek	<3600	60.8	60.8	60.8	53.6	53.6	52.6	52.6	51.8	50.8	54.6	56.0	56.2
Balls Ferry	<4000	60.8	60.8	60.8	53.6	53.6	51.2	51.5	50.4	49.3	54.1	56.3	56.9
Jelly's Ferry	<4425	60.8	60.8	60.8	53.6	53.6	49.6	50.1	48.7	47.7	53.6	56.7	57.6
Bend Bridge	<9999	60.8	60.8	60.8	53.6	53.6	48.5	49.0	47.4	46.6	53.4	56.9	58.1

20 This modeling approach does not dynamically change the compliance location
 21 that in reality changes throughout the year based on the SRTTG
 22 recommendations. While the temperature release targets would not change using

1 for the year with this modeling logic, the logic recognizes that those temperature
 2 release targets will not be possible to meet in each year due to changes in Shasta
 3 Lake storage and meteorological conditions. If modeled Shasta Lake releases are
 4 lower than the temperature target, then it could be considered that the compliance
 5 location was moved downstream. In addition, if Shasta Lake releases are higher
 6 than the temperature target, then it could be considered that the compliance
 7 location was moved upstream.

8 As an example, the End-of-April Storage from the CalSim II run in Year 1940 is
 9 4,140 TAF. The compliance location is therefore set to be Jelly’s Ferry and the
 10 temperature schedule in Table 6B.C.25 is for Jelly’s Ferry. Using those
 11 temperature targets, the HEC-5Q model run produces Shasta Lake outflow
 12 temperatures that do not meet those temperature targets and thus result in
 13 temperatures that do not meet 56°F at Jelly’s Ferry, due to Shasta Lake storage
 14 and downstream meteorological conditions. For instance, in July the Shasta Lake
 15 outflow was 48.6°F, even though the release target was 50.1°F. This is because
 16 Shasta Lake storage was still relatively high to preserve more cold water in the
 17 reservoir pool and meteorological conditions were cooler than were typical for
 18 July. Thus the release temperature was cooler than the temperature target and as a
 19 result, 56°F was met at Bend Bridge. In September, Shasta Lake outflow was
 20 53.7°F, even though the temperature target was 47.7°F. This is because
 21 meteorological conditions were warmer than were typical for September. Thus
 22 the release temperature was warmer than the temperature target and as result,
 23 56°F could only be met at Clear Creek. A full illustration of modeled Year 1940
 24 and the compliance location changes based on Shasta release temperatures are
 25 presented on Figure 6B.C.55.



26

27 **Figure 6B.C.55 Changes in Compliance Location Based on Shasta Lake Release**
 28 **Temperatures for Year 1940**

- 1 While during all months the temperature target was set based on a compliance
- 2 location of Jelly’s Ferry, the actual compliance location changed. Thus the model
- 3 passively mimics the SRTTG changing the compliance location based on Shasta
- 4 Lake storage conditions and downstream meteorological conditions.
- 5 The chosen compliance location based on End-of-April storage and the actual
- 6 compliance location achieved over the 81-year simulation period are shown on
- 7 Figure 6B.C.56.

Appendix 6B.C: Surface Water Temperature Modeling – HEC-5Q Model Update

Year	WYT	Target	May	June	July	August	September	October	November	December
1922	AN	Jellys Ferry	Clear Creek	None	None	None	None	None	Bend Bridge	Bend Bridge
1923	BN	Clear Creek	Bend Bridge	Jellys Ferry	None	None	None	None	Bend Bridge	Bend Bridge
1924	C	Clear Creek	Clear Creek	None	Balls Ferry	None	None	None	Bend Bridge	Bend Bridge
1925	D	Balls Ferry	Bend Bridge	Bend Bridge	Bend Bridge	Jellys Ferry	Balls Ferry	Jellys Ferry	Bend Bridge	Bend Bridge
1926	D	Balls Ferry	Bend Bridge	Bend Bridge	Jellys Ferry	None	None	None	Bend Bridge	Bend Bridge
1927	W	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge	Jellys Ferry	Bend Bridge	Bend Bridge	Bend Bridge
1928	AN	Bend Bridge	Jellys Ferry	Bend Bridge	Bend Bridge	Jellys Ferry	Clear Creek	None	Bend Bridge	Bend Bridge
1929	C	Clear Creek	Bend Bridge	Jellys Ferry	Balls Ferry	None	None	None	Bend Bridge	Bend Bridge
1930	D	Clear Creek	Jellys Ferry	Jellys Ferry	Balls Ferry	None	None	None	Bend Bridge	Bend Bridge
1931	C	None	Jellys Ferry	Clear Creek	None	None	None	None	Bend Bridge	Bend Bridge
1932	D	None	Balls Ferry	Clear Creek	None	None	None	None	Bend Bridge	Bend Bridge
1933	C	None	Jellys Ferry	Clear Creek	None	None	None	None	Bend Bridge	Bend Bridge
1934	C	None	Jellys Ferry	Clear Creek	None	None	None	None	Bend Bridge	Bend Bridge
1935	BN	Clear Creek	Balls Ferry	Jellys Ferry	Balls Ferry	None	None	None	Bend Bridge	Bend Bridge
1936	BN	Balls Ferry	Bend Bridge	Bend Bridge	Bend Bridge	Balls Ferry	Clear Creek	Clear Creek	Bend Bridge	Bend Bridge
1937	BN	Balls Ferry	Balls Ferry	Jellys Ferry	Balls Ferry	Balls Ferry	None	Clear Creek	Bend Bridge	Bend Bridge
1938	W	Jellys Ferry	Bend Bridge	Balls Ferry	Balls Ferry	Jellys Ferry	Jellys Ferry	Balls Ferry	Bend Bridge	Bend Bridge
1939	D	Clear Creek	Bend Bridge	Bend Bridge	Jellys Ferry	None	None	None	Bend Bridge	Bend Bridge
1940	AN	Jellys Ferry	Jellys Ferry	Bend Bridge	Bend Bridge	Balls Ferry	Clear Creek	None	Bend Bridge	Bend Bridge
1941	W	Bend Bridge	Bend Bridge	Bend Bridge	Jellys Ferry	Jellys Ferry	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge
1942	W	Jellys Ferry	Bend Bridge	Jellys Ferry	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge
1943	W	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge	Balls Ferry	Bend Bridge	Bend Bridge
1944	D	Clear Creek	Jellys Ferry	Bend Bridge	Jellys Ferry	Clear Creek	None	None	Bend Bridge	Bend Bridge
1945	BN	Balls Ferry	Bend Bridge	Bend Bridge	Bend Bridge	Jellys Ferry	Balls Ferry	Bend Bridge	Bend Bridge	Bend Bridge
1946	BN	Jellys Ferry	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge	Jellys Ferry	Clear Creek	Bend Bridge	Bend Bridge
1947	D	Clear Creek	Bend Bridge	Bend Bridge	Jellys Ferry	None	None	None	Bend Bridge	Bend Bridge
1948	BN	Jellys Ferry	Jellys Ferry	Balls Ferry	Bend Bridge	Jellys Ferry	Balls Ferry	Bend Bridge	Bend Bridge	Bend Bridge
1949	D	Jellys Ferry	Bend Bridge	Bend Bridge	Bend Bridge	Jellys Ferry	Clear Creek	Bend Bridge	Bend Bridge	Bend Bridge
1950	BN	Balls Ferry	Jellys Ferry	Bend Bridge	Jellys Ferry	Balls Ferry	Clear Creek	Bend Bridge	Bend Bridge	Bend Bridge
1951	AN	Jellys Ferry	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge	Jellys Ferry	Bend Bridge	Bend Bridge	Bend Bridge
1952	W	Jellys Ferry	Bend Bridge	Jellys Ferry	Jellys Ferry	Jellys Ferry	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge
1953	W	Bend Bridge	Bend Bridge	Jellys Ferry	Bend Bridge	Jellys Ferry	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge
1954	AN	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge	Jellys Ferry	Jellys Ferry	Bend Bridge	Bend Bridge	Bend Bridge
1955	D	Balls Ferry	Balls Ferry	Bend Bridge	Bend Bridge	Clear Creek	None	Jellys Ferry	Bend Bridge	Bend Bridge
1956	W	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge
1957	AN	Bend Bridge	Bend Bridge	Jellys Ferry	Bend Bridge	Jellys Ferry	Balls Ferry	Jellys Ferry	Bend Bridge	Bend Bridge
1958	W	Jellys Ferry	Balls Ferry	Balls Ferry	Jellys Ferry	Jellys Ferry	Bend Bridge	Clear Creek	Bend Bridge	Bend Bridge
1959	BN	Jellys Ferry	Bend Bridge	Bend Bridge	Jellys Ferry	Clear Creek	None	None	Bend Bridge	Bend Bridge
1960	D	Jellys Ferry	Balls Ferry	Bend Bridge	Bend Bridge	Balls Ferry	None	None	Bend Bridge	Bend Bridge
1961	D	Jellys Ferry	Bend Bridge	Bend Bridge	Bend Bridge	Jellys Ferry	Clear Creek	Balls Ferry	Bend Bridge	Bend Bridge
1962	BN	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge	Jellys Ferry	Clear Creek	Jellys Ferry	Bend Bridge	Bend Bridge
1963	W	Jellys Ferry	Balls Ferry	Jellys Ferry	Bend Bridge	Balls Ferry	Jellys Ferry	Clear Creek	Bend Bridge	Bend Bridge
1964	D	Balls Ferry	Bend Bridge	Bend Bridge	Bend Bridge	Balls Ferry	None	Clear Creek	Bend Bridge	Bend Bridge
1965	W	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge	Jellys Ferry	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge
1966	BN	Jellys Ferry	Bend Bridge	Bend Bridge	Bend Bridge	Jellys Ferry	Balls Ferry	Clear Creek	Bend Bridge	Bend Bridge
1967	W	Bend Bridge	Bend Bridge	Balls Ferry	Jellys Ferry	Balls Ferry	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge
1968	BN	Jellys Ferry	Bend Bridge	Bend Bridge	Bend Bridge	Balls Ferry	Clear Creek	Balls Ferry	Bend Bridge	Bend Bridge
1969	W	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge	Jellys Ferry	Balls Ferry	Bend Bridge	Bend Bridge	Bend Bridge
1970	W	Jellys Ferry	Bend Bridge	Bend Bridge	Bend Bridge	Jellys Ferry	Balls Ferry	Balls Ferry	Bend Bridge	Bend Bridge
1971	W	Jellys Ferry	Bend Bridge	Jellys Ferry	Bend Bridge	Balls Ferry	Jellys Ferry	Bend Bridge	Bend Bridge	Bend Bridge
1972	BN	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge	Balls Ferry	None	Bend Bridge	Bend Bridge	Bend Bridge
1973	AN	Jellys Ferry	Balls Ferry	Bend Bridge	Bend Bridge	Jellys Ferry	Jellys Ferry	Bend Bridge	Bend Bridge	Bend Bridge
1974	W	Jellys Ferry	Jellys Ferry	Jellys Ferry	Jellys Ferry	Balls Ferry	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge
1975	W	Jellys Ferry	Jellys Ferry	Jellys Ferry	Jellys Ferry	Balls Ferry	Bend Bridge	Jellys Ferry	Bend Bridge	Bend Bridge
1976	C	Balls Ferry	Bend Bridge	Jellys Ferry	Balls Ferry	None	None	Balls Ferry	Bend Bridge	Bend Bridge
1977	C	None	Jellys Ferry	Clear Creek	None	None	None	None	Bend Bridge	Bend Bridge
1978	AN	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge	Jellys Ferry	Balls Ferry	Balls Ferry	Bend Bridge	Bend Bridge
1979	BN	Balls Ferry	Balls Ferry	Bend Bridge	Jellys Ferry	Clear Creek	None	Clear Creek	Bend Bridge	Bend Bridge
1980	AN	Jellys Ferry	Bend Bridge	Bend Bridge	Bend Bridge	Jellys Ferry	Balls Ferry	Bend Bridge	Bend Bridge	Bend Bridge
1981	D	Jellys Ferry	Bend Bridge	Bend Bridge	Jellys Ferry	Clear Creek	None	None	Bend Bridge	Bend Bridge
1982	W	Jellys Ferry	Balls Ferry	Jellys Ferry	Jellys Ferry	Balls Ferry	Balls Ferry	Bend Bridge	Bend Bridge	Bend Bridge
1983	W	Jellys Ferry	Jellys Ferry	Balls Ferry	Balls Ferry	Balls Ferry	Balls Ferry	Balls Ferry	Bend Bridge	Bend Bridge
1984	W	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge	Balls Ferry	Jellys Ferry	Clear Creek	Bend Bridge	Bend Bridge
1985	D	Balls Ferry	Bend Bridge	Bend Bridge	Jellys Ferry	Clear Creek	None	None	Bend Bridge	Bend Bridge
1986	W	Balls Ferry	Bend Bridge	Bend Bridge	Bend Bridge	Balls Ferry	Clear Creek	Clear Creek	Bend Bridge	Bend Bridge
1987	D	Clear Creek	Bend Bridge	Bend Bridge	Jellys Ferry	None	None	None	Bend Bridge	Bend Bridge
1988	C	Clear Creek	Bend Bridge	Bend Bridge	Balls Ferry	None	None	None	Bend Bridge	Bend Bridge
1989	D	Balls Ferry	Bend Bridge	Jellys Ferry	Jellys Ferry	None	None	None	Bend Bridge	Bend Bridge
1990	C	Clear Creek	Balls Ferry	Balls Ferry	Clear Creek	None	None	None	Bend Bridge	Bend Bridge
1991	C	Clear Creek	Jellys Ferry	Balls Ferry	None	None	None	None	Bend Bridge	Bend Bridge
1992	C	Clear Creek	Jellys Ferry	Clear Creek	None	None	None	None	Bend Bridge	Bend Bridge
1993	AN	Jellys Ferry	Jellys Ferry	Balls Ferry	Bend Bridge	Balls Ferry	Balls Ferry	Balls Ferry	Bend Bridge	Bend Bridge
1994	C	Clear Creek	Balls Ferry	Bend Bridge	Clear Creek	None	None	None	Bend Bridge	Bend Bridge
1995	W	Jellys Ferry	Bend Bridge	Balls Ferry	Balls Ferry	Balls Ferry	Balls Ferry	Jellys Ferry	Bend Bridge	Bend Bridge
1996	W	Jellys Ferry	Bend Bridge	Balls Ferry	Balls Ferry	Clear Creek	Clear Creek	None	Bend Bridge	Bend Bridge
1997	W	Balls Ferry	Bend Bridge	Bend Bridge	Bend Bridge	Clear Creek	None	Clear Creek	Bend Bridge	Bend Bridge
1998	W	Jellys Ferry	Bend Bridge	Balls Ferry	Balls Ferry	Balls Ferry	None	Clear Creek	Bend Bridge	Bend Bridge
1999	W	Bend Bridge	Bend Bridge	Jellys Ferry	Bend Bridge	Balls Ferry	Jellys Ferry	Balls Ferry	Bend Bridge	Bend Bridge
2000	AN	Bend Bridge	Balls Ferry	Bend Bridge	Bend Bridge	Balls Ferry	Clear Creek	None	Bend Bridge	Bend Bridge
2001	D	Balls Ferry	Bend Bridge	Bend Bridge	Balls Ferry	None	None	None	Bend Bridge	Bend Bridge
2002	D	Jellys Ferry	Bend Bridge	Bend Bridge	Bend Bridge	Balls Ferry	Clear Creek	Bend Bridge	Bend Bridge	Bend Bridge

1

2

3

Figure 6B.C.56 Simulated Compliance Location Target and Achievement for Each Year over the 81-Year CalSim II Period

1 **6B.C.11.3 Temperature Compliance Performance**

2 As shown in Table 6B.C.26, the compliance location achieved during each month
 3 for each year over the 81-year simulation period mimics the general trends
 4 described previously. During dry periods (e.g., 1985 to 1992), the compliance
 5 location generally starts out at the upstream locations Clear Creek and Balls
 6 Ferry. Over the course of each year, the compliance location moves progressively
 7 upstream.

8 Table 6B.C.26 shows the percentage of years the HEC-5Q model (using the
 9 CalSim II data described earlier and the temperature targets shown in
 10 Table 6B.C.25) met 56⁰F at each compliance location and the years short of
 11 meeting the compliance percentage.

12 **Table 6B.C.26 Compliance Performance of the Final Temperature Targets**

Location and Percentage of Years Required for Compliance	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	<u>Percentage of Years 56⁰F Was Met at Each Compliance Location (N=81 Years)</u>						
Clear Creek (95 percent of years)	98	89	72	57	62	91	100
Balls Ferry (85 percent of years)	90	86	62	42	47	93	100
Jelly's Ferry (40 percent of years)	75	69	33	26	33	91	98
Bend Bridge (15 percent of years)	54	47	7	14	26	95	98
	<u>Number of Years Short of Compliance</u>						
Clear Creek (95 percent of years)	-	5	19	31	27	3	-
Balls Ferry (85 percent of years)	-	-	19	35	31	-	-
Jelly's Ferry (40 percent of years)	-	-	5	11	5	-	-
Bend Bridge (15 percent of years)	-	-	6	1	-	-	-

1 **6B.C.12 Folsom Release Temperature Target**
2 **Schedules Spreadsheet Development**

3 An approach to setting Folsom Dam release temperature target schedules for
4 temperature management on the Lower American River based on NMFS BO and
5 is an accompanying document to the spreadsheet tool
6 AmerR_Temp_Sel_Tool_rev15_FULL_FINAL_3-16-15.xlsm is presented in this
7 section.

8 **6B.C.12.1 Background**

9 The NMFS BO RPA II.2 sets forth a temperature requirement for the Lower
10 American River at the Watt Avenue Bridge to not exceed 65⁰F from May 15 to
11 October 31.

12 In order to meet the NMFS BO temperature requirement, Reclamation manages
13 Folsom Dam release temperatures based on temperature schedules set forth in
14 Appendix 2-D of the NMFS BO. These schedules set monthly temperatures at
15 Watt Avenue for Folsom Dam to operate to from May to October (temperature
16 management season) based on forecasted Folsom storage and inflow. The initial
17 temperature schedule for each year is determined based on an operations plan
18 developed by Reclamation and approved by the American River Operations
19 Group (ARG). However, these schedules are based on forecasted conditions. As
20 conditions actually happen throughout the temperature management season, due
21 to changes in Folsom Lake storage and inflow, current meteorological conditions,
22 and/or the state of fisheries in the river, the Watt Avenue temperature target
23 schedule is adjusted based on recommendations from the ARG.

24 It was possible to model the initial annual temperature target schedule for Folsom
25 Lake to operate to for the year because storage and forecasted inflow are known
26 quantities in CalSim II. However, modeling the dynamic adjustment of the Watt
27 Avenue temperature target based on current storage and meteorological
28 conditions was not going to be possible. Thus logic was developed to create a
29 temperature target selection procedure that set a specific schedule for each year
30 that remained unchanged. This logic is described in the following section.

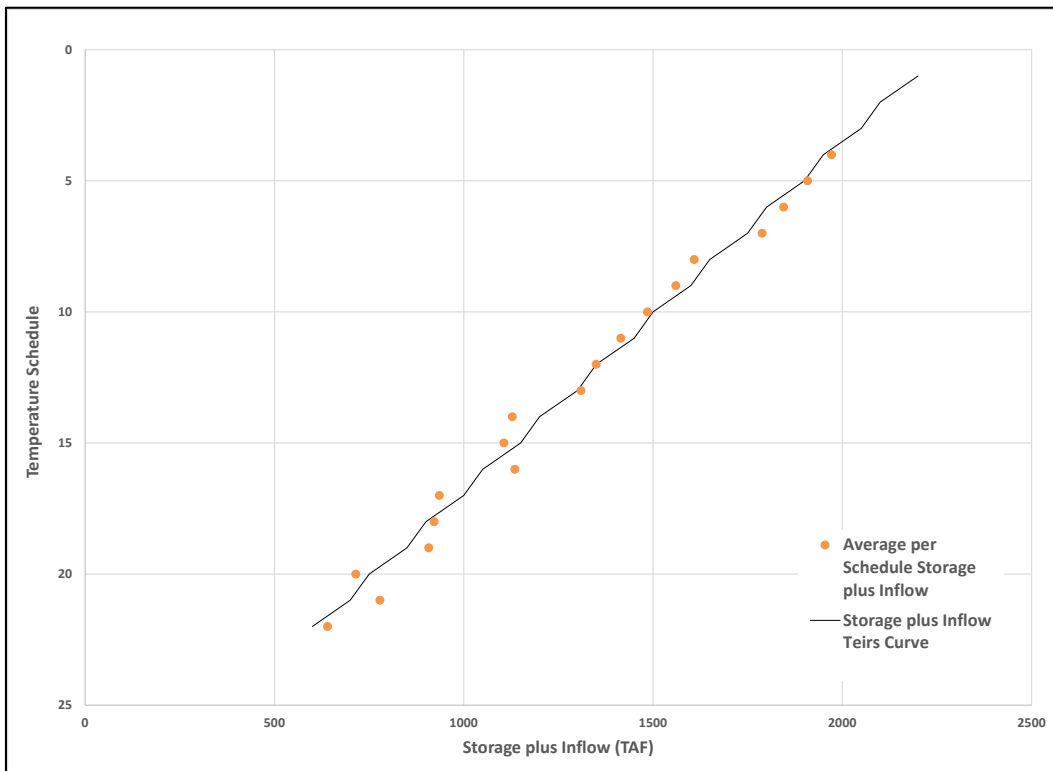
31 **6B.C.12.2 Temperature Target Spreadsheet Development**

32 The development of the Sacramento River Temperature Targeting Spreadsheet
33 AmerR_Temp_Sel_Tool_rev15_FULL_FINAL_3-16-15.xlsm is described in this
34 section.

35 Folsom storage and inflow data from the CalSim II EIS No Action Alternative Q5
36 run dated January 27, 2015 was loaded into the spreadsheet. This CalSim II data
37 remained unchanged throughout the temperature schedule development. May
38 Folsom Storage plus June to September average inflow to Folsom (storage plus
39 inflow) was calculated in the spreadsheet. This was a simplification of the
40 forecasting approach that is used to set the actual temperature targets, as it only
41 took into account June through September inflow.

1 Appendix 2-D of the NMFS BO lists 72 different temperature target schedules for
 2 May through October. Each schedule changed the temperature target for one
 3 month only. It was deemed unnecessary to incorporate all 72 schedules due to the
 4 simplified forecasting approach described above that only focused on June to
 5 September inflow. This reduced the 72 schedules to schedules that focused
 6 primarily on temperature management during June through September.
 7 Ultimately the 72 schedules were reduced to 22 schedules as these schedules were
 8 deemed to adequately represent the variance in temperature targets during June
 9 through September.

10 Then, using an initial set of storage plus inflow tiers assigned to each temperature
 11 schedule number, the schedule number for each year of the CalSim II period of
 12 record was calculated. Then the average storage plus inflow for each tier was
 13 calculated. For example, there were 8 years over the simulation period that had a
 14 schedule number of 11 and the average storage plus inflow was 1,415 TAF. The
 15 average storage plus inflow calculated for each tier was plotted versus the
 16 schedule number, as shown in Figure 6B.C.57.



17
 18 **Figure 6B.C.57 Temperature Schedule Number and Average Folsom Lake Storage**
 19 **plus June-September Inflow for each Schedule Number**

20 The schedule shown in the plot was used to calculate the final storage plus inflow
 21 tiers used in the spreadsheet.

22 Using the regression equation shown in Figure 6B.C.57, the final storage plus
 23 inflow tiers to be used for the spreadsheet were calculated (see Table 6B.C.27).

1 **Table 6B.C.27 Final Watt Avenue Temperature Target Schedules (Yellow**
 2 **highlighted cells indicate a change from the previous schedule)**

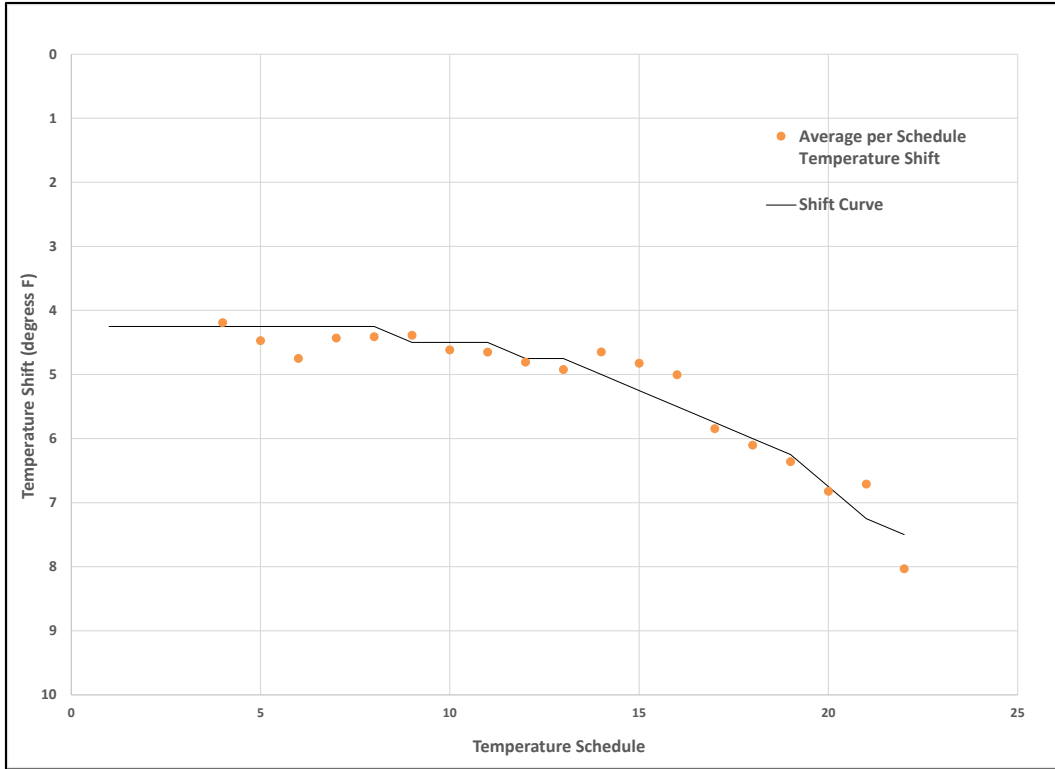
Schedule	Storage plus June-Sept. Inflow	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	0	56	56	56	63	61	61	62	62	61	57	56	56
2	600	56	56	56	63	62	62	62	62	62	58	56	56
3	700	56	56	56	63	62	62	63	63	62	59	57	56
4	750	56	56	56	63	63	63	63	63	63	60	57	56
5	850	56	56	56	63	63	63	64	64	63	60	58	56
6	900	56	56	56	63	64	64	64	64	64	60	58	56
7	1000	56	56	56	63	64	64	65	65	64	60	58	56
8	1050	56	56	56	63	65	65	65	65	65	60	58	56
9	1150	56	56	56	63	65	65	66	66	65	65	59	56
10	1200	56	56	56	63	66	66	66	66	66	65	59	56
11	1300	56	56	56	63	66	66	67	67	66	65	59	56
12	1350	56	56	56	63	67	67	67	67	67	65	59	56
13	1450	56	56	56	63	67	67	68	68	67	65	59	56
14	1500	56	56	56	63	68	68	68	68	68	65	59	56
15	1600	56	56	56	63	68	68	69	69	68	68	59	56
16	1650	56	56	56	63	69	69	69	69	69	68	59	56
17	1750	56	56	56	63	69	69	70	70	69	69	60	56
18	1800	56	56	56	63	70	70	70	70	70	69	60	56
19	1900	56	56	56	63	70	70	71	71	70	70	61	56
20	1950	56	56	56	63	71	71	71	71	71	70	61	56
21	2050	56	56	56	63	71	71	72	72	71	71	62	56
22	2100	56	56	56	63	72	72	72	72	72	71	62	56

3 January, February, March and December were given temperature targets of 56⁰F
 4 for all temperature schedules as a default. During these months, temperature
 5 management is generally not an issue. April was given a temperature target of
 6 63⁰F to conserve cold water in the reservoir pool at the start of the temperature
 7 management season.

8 Establishing the temperature target schedule sets the temperature targets at Watt
 9 Avenue. However, Folsom Dam can only actually operate to release
 10 temperatures, with the goal that those release temperatures will ultimately meet
 11 the Watt Avenue temperature target after ambient warming occurs. To calculate
 12 the Folsom release temperatures, the following logic was developed.

- 13 • **Step 1:** The American River HEC-5Q Model was run using the January 13,
 14 2015 version delivered to Reclamation, the CalSim II data described
 15 previously, and an initial Watt Avenue and Folsom Dam temperature target
 16 schedules. The temperature output from that HEC-5Q model run was loaded
 17 into the spreadsheet.

- 1 • **Step 2:** For each month individually, the difference (shift) between the
2 modeled temperature at Watt Avenue and the modeled temperature below
3 Folsom Dam was calculated for each year.
- 4 • **Step 3:** The annual shift calculated in Step 2 that represented a specified
5 exceedance for each month was then calculated. This helped characterize the
6 warming that occurred between Folsom release temperatures and Watt
7 Avenue. For example, September was given a 50 percent exceedance. This
8 exceedance says that 50 percent years had a September temperature shift
9 higher than this shift value (e.g., 0.6⁰F). Therefore, warming that occurred
10 between Folsom Dam and Watt Avenue in September for the previous model
11 run was 0.6⁰F or lower for 95 percent of years.
- 12 • **Step 4:** The exceedance shift value calculated in step iii was then divided by
13 the average annual June to September shift value. This calculated a shift
14 factor that was used in the final temperature shift calculations.
- 15 • **Step 5:** The average June to September shift value for each schedule number
16 was then calculated. For example, schedule number 11 was the schedule for
17 eight years over the simulation period and the average June to September shift
18 was 4.6⁰F.
- 19 • **Step 6:** The average June to September shift value calculated in Step v was
20 plotted versus its temperature schedule number, as shown in Figure 6B.C.58.
- 21 • **Step 7:** Average June to September shifts for each schedule number were then
22 calculated using the regression equation in Figure 6B.C.58.
- 23 • **Step 8:** The shift values calculated in step vii were then multiplied by the shift
24 factor calculated in step vii and was subtracted from the temperature target
25 value in Table 6B.C.27. This created the Folsom Dam release temperature
26 target schedules.
- 27 • **Step 9:** An iterative process where the Folsom Dam temperature target
28 schedules developed using the initial temperature target schedules described
29 in step 1 were then used in the next HEC5Q model run and then reloaded into
30 the spreadsheet. The process was repeated until the Folsom Dam release
31 temperature target schedules were deemed acceptable based on modeled
32 temperature results. The final Folsom Dam release temperature target
33 schedules are shown in Table 6B.C.28.



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Figure 6B.C.58 Average Temperature Shift between Modeled Folsom Lake Release Temperatures and Watt Avenue Temperatures for each Schedule Number after Multiple Iterations

The shift curve shown in the plot was used to calculate the final temperature shifts used in the spreadsheet.

Table 6B.C.28 Final Folsom Dam Lake Release Temperature Targets in the Spreadsheet (Yellow highlighted cells indicate a change from the previous schedule)

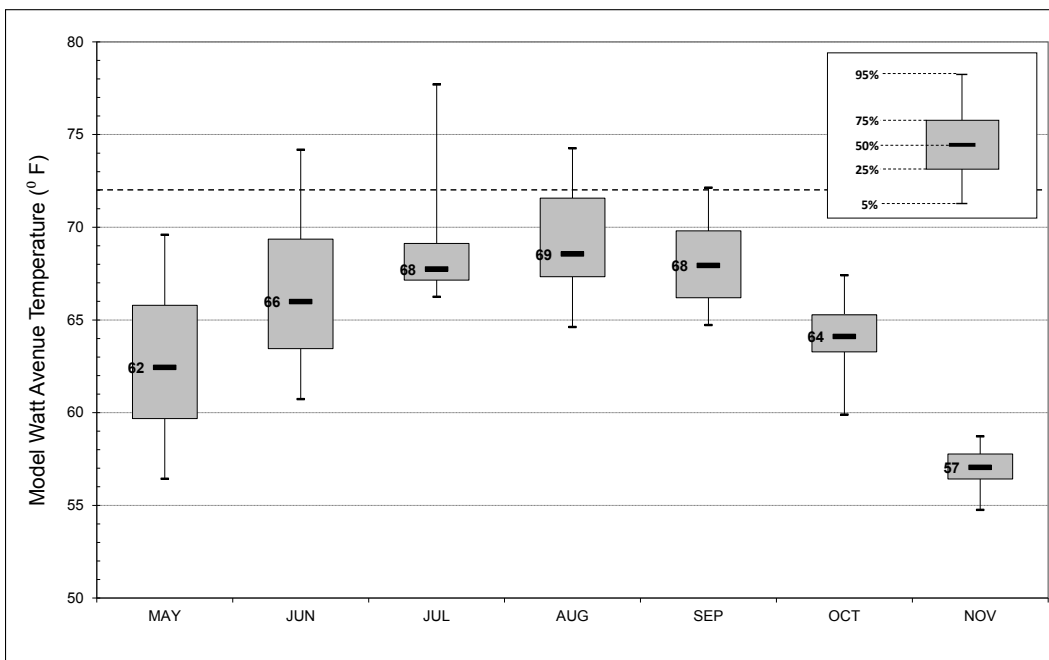
Schedule	Storage plus Jun-Sep Inflow	Jan	Feb	Mar	Apr	Shift Factors							
						0.7	0.8	0.8	1.2	0.6	0.4	0.2	0
						May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	0	52	52	52	59	66.8	66.0	66.0	63.0	67.5	68.0	60.5	56
2	600	52	52	52	59	66.8	66.0	66.0	63.0	67.5	68.0	60.5	56
3	700	52	52	52	59	65.9	65.2	66.2	63.3	66.7	68.1	60.6	56
4	750	52	52	52	59	66.3	65.6	65.6	62.9	67.0	67.3	59.7	56
5	850	52	52	52	59	65.6	65.0	66.0	63.5	66.3	67.5	59.8	56
6	900	52	52	52	59	65.8	65.2	65.2	62.8	66.4	66.6	58.8	56
7	1000	52	52	52	59	65.0	64.4	65.4	63.1	65.6	66.7	58.9	56
8	1050	52	52	52	59	65.2	64.6	64.6	62.4	65.7	65.8	57.9	56
9	1150	52	52	52	59	64.3	63.8	64.8	62.7	64.9	65.9	58.0	56
10	1200	52	52	52	59	64.5	64.0	64.0	62.0	65.0	63.0	58.0	56
11	1300	52	52	52	59	63.7	63.2	64.2	62.3	64.2	63.1	58.1	56
12	1350	52	52	52	59	63.7	63.2	63.2	61.3	64.2	63.1	58.1	56

Schedule	Storage plus Jun-Sep Inflow	Jan	Feb	Mar	Apr	Shift Factors							
						0.7	0.8	0.8	1.2	0.6	0.4	0.2	0
						May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
13	1450	52	52	52	59	62.9	62.4	63.4	61.6	63.3	63.2	58.1	56
14	1500	52	52	52	59	62.9	62.4	62.4	60.6	63.3	63.2	58.1	56
15	1600	52	52	52	59	61.9	61.4	62.4	60.6	62.3	63.2	58.1	56
16	1650	52	52	52	59	62.0	61.6	61.6	59.9	62.5	58.3	57.2	56
17	1750	52	52	52	59	61.0	60.6	61.6	59.9	61.5	58.3	57.2	56
18	1800	52	52	52	59	61.0	60.6	60.6	58.9	61.5	58.3	57.2	56
19	1900	52	52	52	59	60.0	59.6	60.6	58.9	60.5	58.3	57.2	56
20	1950	52	52	52	59	60.0	59.6	59.6	57.9	60.5	58.3	56.2	56
21	2050	52	52	52	59	59.0	58.6	59.6	57.9	59.5	57.3	56.2	56
22	2100	52	52	52	59	59.0	58.6	58.6	56.9	59.5	56.3	55.2	56

1 January through April were not given shift factors and instead were given a
 2 constant 4⁰F shift as a default for the same reason described for those months for
 3 the Watt Avenue temperature target schedules.

4 **6B.C.12.3 Temperature Performance**

5 Figure 6B.C.59 shows box and whisker plots of modeled temperatures at Watt
 6 Avenue in the completed spreadsheet.



7
 8 **Figure 6B.C.59 Modeled Watt Avenue temperatures in Final Spreadsheet**

9 The figure shows the expected pattern where temperatures are higher in the
 10 summer but the Watt Avenue target temperature for each month were met in
 11 majority of the years. The maximum temperature target (72⁰F) was not exceeded

1 in approximately 75 percent of years for all months. The years where the
2 temperatures exceeded the maximum 72⁰F target were during dry periods, when
3 meeting the Watt Avenue temperature targets are not possible to meet due to low
4 storage in Folsom Lake.

5 **6B.C.13 References**

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7 *Water Quality Modeling with HEC-5Q: Model Calibration and*
8 *Validation.*
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- 14 Rettig, S. and G. Bortleson. 1983. *Limnological Study of Shasta Lake, Shasta*
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23 Engineers, August 8-11, 1999.

1 **Appendix 6C**

2 **Methylmercury Model Documentation**

3 This appendix provides information about the methods, modeling tools, and
 4 assumptions used for the Coordinated Long-term Operation of the Central Valley
 5 Project (CVP) and State Water Project (SWP) Environmental Impact Statement
 6 (EIS) analysis. It also provides information pertaining to the development of the
 7 analytical tools and the use of input data as well as model result processing and
 8 interpretation methods used for the impacts analysis and descriptions.

9 This appendix is organized into three main sections that are briefly described
 10 below:

- 11 • **Section 6C.1: Modeling Methodology.** The methylmercury impacts
 12 analysis used CalSim II, the Delta Simulation Model II (DSM2), and the
 13 Central Valley Regional Water Quality Control Board (Central Valley
 14 RWQCB) Total Maximum Daily Load (TMDL) model (RWQCB Model) to
 15 assess and quantify effects of the alternatives on the long-term operations of
 16 the CVP and SWP and on the environment. This section provides information
 17 about the overall analytical framework and how some of the model input
 18 information obtained from other models was processed through the use of
 19 analytical tools.
- 20 • **Section 6C.2: Modeling Simulations and Assumptions.** This section
 21 provides a brief description of the assumptions for the RWQCB Model
 22 simulations of the No Action Alternative, Second Basis of Comparison, and
 23 Alternatives 1 through 5.
- 24 • **Section 6C.3: Modeling Results.** This section provides a description of the
 25 model simulation output formats used in the analysis and interpretation of
 26 modeling results for the alternatives impacts assessment.

27 **6C.1 Modeling Methodology**

28 This section summarizes the methylmercury modeling methodology used for the
 29 No Action Alternative, Second Basis of Comparison, and Alternatives 1
 30 through 5. It describes the overall analytical framework and contains descriptions
 31 of the key analytical and numerical tools and approaches used in the quantitative
 32 evaluation of the alternatives. The alternatives include several major components
 33 that will have significant effects on SWP and CVP operations and minor effects
 34 on the water quality of the system.

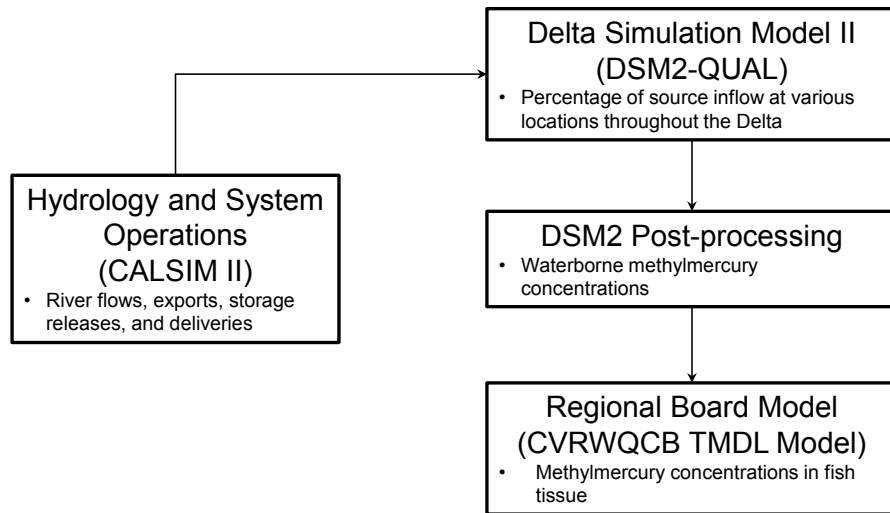
35 **6C.1.1 Overview of the Modeling Approach and Objectives**

36 Modeling of physical and biological methylmercury processes in the Delta is
 37 necessary to evaluate changes related to the implementation of alternatives that
 38 could affect the health of humans and wildlife consuming fish in the Delta. It has
 39 been recognized that fish tissue concentrations are the best indicator of mercury

1 contamination in the Delta as described in the RWQCB Model (Central Valley
 2 RWQCB 2011). The RWQCB Model, an empirical tissue concentration model,
 3 was based on the concentration averages of fish mercury and water concentrations
 4 of methylmercury over broad areas of the Delta (Wood 2010). The RWQCB
 5 Model is used to estimate fish tissue mercury concentrations from concentrations
 6 of dissolved methylmercury in water.

7 CalSim II, DSM2 (water), and the RWQCB Model (fish tissue) were used in
 8 sequence to estimate the effects of CVP and SWP operations on water and fish
 9 tissue quality in the Delta. CalSim II simulates flow in the waterways, and DSM2
 10 simulates one-dimensional hydrodynamics in the Delta, as discussed in Chapter 5,
 11 Surface Water Resources and Water Supplies. One of the three DSM2 modules,
 12 QUAL, simulates one-dimensional source tracking in the Delta. Results from
 13 DSM2 proportioned by source area were multiplied by average source
 14 concentrations and added to determine annual average aqueous methylmercury
 15 concentrations in the Delta for all year types and dry years for specific model
 16 nodes. The RWQCB Model is based on a power curve that uses the DSM2 output
 17 to simulate aqueous methylmercury concentrations to estimate total mercury
 18 concentrations in the fish fillets of standard 350-mm-long Largemouth Bass.

19 Figure 6C.1 shows the modeling tools applied in the methylmercury impacts
 20 assessment and the relationship between these tools. Each model included in
 21 Figure 6C.1 provides information to the next “downstream” model in order to
 22 provide various results to support the impacts analysis.



23

24 **Figure 6C.1. Relationships among the Different Predictive Modeling Tools**

25 **6C.1.1.1 Modeling Objectives**

26 Impacts on methylmercury resources in the Delta SWP and CVP Service Areas
 27 were evaluated for each alternative as part of the EIS development. Modeling
 28 objectives included the evaluation of the following:

- 29
- Percent changes in fish tissue mercury concentrations
 - Exceedances of human and fish and wildlife thresholds
- 30

1 **6C.1.2 Key Components of the Methylmercury Modeling**

2 A calibrated regional flow model was used to provide a regional framework to be
 3 used for modeling of waterborne methylmercury concentrations. An additional
 4 model was used to translate waterborne methylmercury concentrations to total
 5 mercury concentrations in fish tissue.

6 **6C.1.2.1 DSM2 Postprocessing**

7 Dissolved methylmercury data were available for six inflow locations to the Delta
 8 (Table 6C.1):

- 9 • Sacramento River at Freeport (mainstem flow to Delta)
- 10 • San Joaquin River at Vernalis (mainstem flow to Delta)
- 11 • Mokelumne and Calaveras rivers (for Eastside tributaries)
- 12 • Various Delta locations (for Delta agriculture)
- 13 • Suisun Bay (for San Francisco Bay)

14 **Table 6C.1. Modeled Methylmercury Concentrations in Water**

Location	Period*	Period Average Concentration (ng/L)			
		No Action Alternative	Alternative 1	Alternative 3	Alternative 5
Delta Interior					
San Joaquin River at Stockton	All	0.16	0.16	0.16	0.16
	Drought	0.16	0.16	0.17	0.16
Turner Cut	All	0.15	0.15	0.15	0.15
	Drought	0.14	0.14	0.14	0.14
San Joaquin River at San Andreas Landing	All	0.12	0.11	0.11	0.12
	Drought	0.11	0.11	0.11	0.11
San Joaquin River at Jersey Point	All	0.11	0.11	0.11	0.11
	Drought	0.11	0.10	0.10	0.11
Victoria Canal	All	0.14	0.14	0.14	0.14
	Drought	0.14	0.13	0.14	0.14
Western Delta					
Sacramento River at Emmaton	All	0.10	0.10	0.10	0.10
	Drought	0.10	0.10	0.10	0.10
San Joaquin River at Antioch	All	0.10	0.10	0.10	0.10
	Drought	0.09	0.09	0.09	0.10

Location	Period*	Period Average Concentration (ng/L)			
		No Action Alternative	Alternative 1	Alternative 3	Alternative 5
Montezuma Slough at Hunter Cut/ Beldon's Landing	All	0.08	0.08	0.08	0.08
	Drought	0.07	0.07	0.07	0.07
Major Diversions (Pumping Stations)					
North Bay Aqueduct at Barker Slough Pumping Plant	All	0.11	0.11	0.11	0.11
	Drought	0.11	0.11	0.11	0.11
Contra Costa Pumping Plant #1	All	0.13	0.13	0.13	0.13
	Drought	0.12	0.12	0.12	0.13
Banks Pumping Plant	All	0.14	0.13	0.13	0.14
	Drought	0.13	0.13	0.13	0.13
Jones Pumping Plant	All	0.14	0.14	0.14	0.14
	Drought	0.14	0.13	0.14	0.14

- 1 Notes:
- 2 ng/L = nanogram per liter
- 3 * "All" water years 1922-2003 represent the 82-year period modeled using DSM2;
- 4 "drought" represents a 5-consecutive-year (water years 1987-1991) drought period
- 5 consisting of dry and critical water year types (as defined by the Sacramento Valley
- 6 40-30-30 water year hydrologic classification index).
- 7 Model results for Alternatives 1, 4, and Second Basis of Comparison are the same,
- 8 therefore model results for Second Basis of Comparison and Alternative 4 are not
- 9 presented separately.
- 10 Model results for Alternative 2 and No Action Alternative are the same, therefore model
- 11 results for Alternative 2 are not presented separately.

- 12 For DSM2 output locations, the geometric mean methylmercury concentrations
- 13 from the inflow locations were combined with the modeled daily average percent
- 14 inflow for each DSM2 output location to estimate waterborne methylmercury
- 15 concentrations at those locations. The annual average mix of water from the
- 16 six inflow sources (Table 6C.1) was calculated from daily percent inflows
- 17 provided by the DSM2-QUAL model output. The daily waterborne
- 18 methylmercury concentrations at DSM2 locations were calculated using the
- 19 following equation:
- 20
$$C_{water\ quarterly} = [(I_1 * C_1) + (I_2 * C_2) + (I_3 * C_3) + (I_4 * C_4) + (I_5 * C_5) + (I_6 * C_6)] / 100$$

1 Where:

- 2 • $C_{water\ daily}$ = daily average methylmercury concentration in water
3 (micrograms/liter [$\mu\text{g/L}$]) at a DSM2 output location
- 4 • I_{1-6} = modeled daily inflow from each of the six sources of water to the Delta
5 for each DSM2 output location (percentage)
- 6 • C_{1-6} = methylmercury concentration in water ($\mu\text{g/L}$) from each of the six
7 inflow sources to the Delta (1-6)

8 The annual average waterborne methylmercury concentrations for the DSM2
9 output locations are shown in Table 6C.1.

10 **6C.1.2.2 Regional Board Fish Tissue Model**

11 The RWQCB Model predicts methylmercury concentration in 350-millimeter
12 normalized Largemouth Bass fillet tissue from methylmercury in water. The
13 Central Valley RWQCB developed an empirical power curve model based on
14 measured Largemouth Bass fillet concentrations as averaged over large areas of
15 the Delta compared to average methylmercury concentrations in water for those
16 same areas and time periods (Central Valley RWQCB 2011):

17 *Fish mercury (milligrams/kilogram, wet weight) = 20.365 × (methylmercury in*
18 *water, ng/L)^{1.6374}*
19 *(with $r^2=0.910$, and P less than 0.05)*

20 The goal of the RWQCB Model was to establish the linkage between the
21 0.24 milligram per kilogram (mg/kg) tissue mercury TMDL target to a waterborne
22 goal of 0.066 ng methylmercury/L. The RWQCB Model results are presented
23 with the recognition of the imprecision of predicting fish tissue concentrations
24 from estimates of methylmercury concentrations for specific Delta locations, but
25 with the knowledge that Largemouth Bass are probably the best indicator of fish
26 tissue contamination (see Section 6C.1.2.3). Results provide an estimated mean
27 tissue concentration as would be expected by location and alternative. The model
28 provides a Delta-specific, empirical estimate of the relationship between
29 waterborne methylmercury and bioaccumulated fish tissue mercury.

30 The overall construction and calibration of the RWQCB Model were unchanged
31 for this EIS analysis.

32 **6C.1.2.3 Model Development**

33 The RWQCB Model is based on unfiltered aqueous methylmercury data from
34 March to October 2000 and Largemouth Bass fillet concentration data from
35 September/October 2000. Largemouth Bass samples were chosen close in time
36 and space to water collections. The paired samples, averaged over broad Delta
37 areas, provided the framework for the nonlinear empirical model. Data were
38 grouped by subareas of the Delta such as Sacramento River, Mokelumne River,
39 Central Delta, San Joaquin River, and West Delta.

1 Largemouth Bass are excellent indicators of mercury contamination because they
2 have a relatively high level of mercury compared to other species, are piscivorous,
3 are abundantly distributed throughout the Delta, are popular gamefish, and have
4 high site fidelity. Largemouth Bass are therefore representative of spatial patterns
5 of tissue mercury concentrations throughout the aquatic food web, including
6 exposure to humans.

7 The RWQCB Model was used to convert DSM2 estimated waterborne
8 methylmercury concentrations to fish tissue mercury concentrations. The toxicity
9 benchmark used to assess impacts of alternatives was the Central Valley RWQCB
10 TMDL tissue concentration goal of 0.24 mg/kg wet weight (ww) of mercury for
11 normalized 350-mm total length Largemouth Bass tissue (Central Valley
12 RWQCB 2011).

13 **6C.2 Modeling Simulations and Assumptions**

14 This section describes the assumptions for the RWQCB Model simulations of the
15 No Action Alternative, Second Basis of Comparison, and Alternatives 1
16 through 5. Model results for Alternatives 1, 4, and Second Basis of Comparison
17 are the same, therefore model results for Second Basis of Comparison and 4 are
18 not presented separately. Model results for Alternative 2 and No Action
19 Alternative are the same, therefore model results for Alternative 2 are not
20 presented separately. A description of DSM2 model assumptions is presented in
21 Appendix 5A.

22 **6C.2.1 Location Assumptions**

23 The Central Valley RWQCB developed a nonlinear model based on Largemouth
24 Bass as grouped in large regions of the Delta (rather than specific locations)
25 compared to average methylmercury concentrations in water for those same,
26 general regions (Central Valley RWQCB 2011). As such, the model provides a
27 Delta-specific, general, long-term average relationship between co-located
28 waterborne methylmercury concentrations and total mercury concentrations in
29 Largemouth Bass fillets.

30 **6C.2.2 Normalization and Tissue Type Assumptions**

31 As discussed above, Largemouth Bass are excellent indicators of long-term
32 average mercury exposure, risk, and the spatial pattern for both ecological and
33 human health effects. A fish tissue mercury dataset was available for Largemouth
34 Bass from locations across the Delta. However, the Largemouth Bass tissue
35 mercury concentrations were presented as edible fillet concentrations for fish
36 normalized to 350 mm in total length (SFEI 2010). It is important to standardize
37 concentrations to the same length fish for establishment of the model and for
38 model predictions because of the well-established positive relationship between
39 fish length and age and tissue mercury concentrations (e.g., Alpers et al. 2008).
40 This same normalization technique was used by the Regional Board for their
41 model (Central Valley RWQCB 2011). The 350-mm size fish is an appropriate

1 size representative of human health consumption and risk. The standardized size
2 allows the best comparison among locations and alternatives. The fillet
3 concentrations predicted by the model are expected to be slightly different from
4 whole-body fish concentrations as consumed by wildlife, but comparisons among
5 locations and alternatives and to the Regional Board benchmark will allow an
6 evaluation of relative impacts to fish and wildlife as well as most accurately
7 estimating impacts to human consumers.

8 **6C.2.3 Model Application Methodology**

9 To evaluate differences between the No Action Alternative, Second Basis of
10 Comparison, and other alternatives for impact assessment, modeled
11 methylmercury concentrations were compared directly (for percent change) and to
12 the 0.24-mg/kg wet weight tissue threshold benchmark.

13 Results of comparisons to these benchmarks are expressed as exceedance
14 quotients (EQs) in some of the tables and figures. Annual average methylmercury
15 concentrations in water did not exceed the unfiltered aqueous methylmercury goal
16 (0.06 µg/L) or the California Toxic Rule criterion for the consumption of water at
17 the organism (0.050 µg/L) and of the organism only (0.051 µg/L), so no EQs
18 were calculated for waterborne concentrations.

19 **6C.2.3.1 No Action Alternative and Second Basis of Comparison** 20 **Model Runs**

21 The overall purpose of the models is to provide a set of conditions for the No
22 Action Alternative and the Second Basis of Comparison to be used for
23 comparison with the forecasts of the alternatives to determine whether the
24 implementation of the alternatives is likely to result in substantial impacts to
25 methylmercury, thereby affecting biological resources. Modeling for the No
26 Action Alternative and the Second Basis of Comparison was completed for five
27 Delta interior locations, three western Delta locations, and four locations near
28 major water diversions. DSM2 postprocessing output provided estimates of the
29 waterborne methylmercury concentration at each of those 12 locations
30 (Table 6C.1). The RWQCB Model was then used to estimate methylmercury
31 tissue concentrations in 350-mm Largemouth Bass. The modeled tissue
32 methylmercury concentrations and the EQs (based on comparisons to
33 thresholds) both served as a basis for comparison of other alternatives to
34 identify potential impacts.

35 **6C.2.3.2 Alternatives 1 through 5 Model Runs**

36 For model simulations of Alternatives 1 through 5, the same procedure as
37 described for the No Action Alternative and the Second Basis of Comparison was
38 used with similar assumptions.

39 **6C.3 Modeling Results**

40 The postprocessing tool that presents the results from the RWQCB Model is an
41 Excel-based spreadsheet tool. The general preprocessing and input files

1 development are described in the modeling data assumptions sections above.
2 This section focuses on data analysis and results interpretation for the impacts
3 descriptions.

4 **6C.3.1 Postprocessing and Results Analysis: Delta-wide Model**

5 Output data resulting from the RWQCB Model simulations for each alternative
6 were processed to provide a tabular depiction of potential impacts to
7 methylmercury resources (Tables 6C.2 – 6C.4). As discussed previously, outputs
8 from the RWQCB Model used in this analysis are annual average fish tissue
9 mercury concentrations for all year types and separately presented for the subset
10 of dry years.

11 All annual average concentrations exceed the TMDL target goal of 0.24 mg/kg
12 tissue mercury at all locations modeled in the Delta for all years both as measured
13 and modeled. Results are shown in Tables 6C.2 – 6C.4 and Figures 6C.2
14 and 6C.3. Table 6C.1 presents the period-average waterborne methylmercury
15 concentrations by location and water year type as used to model fish tissue
16 concentrations (Tables 6C.2 – 6C.4).

17 The differences in fish tissue mercury concentrations over long-term average
18 conditions were reduced or similar (5 percent or less) under Alternatives 1
19 through 5 as compared to the No Action Alternative, and under the No Action
20 Alternative and Alternatives 1 through 4 as compared to the Second Basis of
21 Comparison, as shown in Tables 6C.2 – 6C.4. Fish tissue mercury
22 concentrations over long-term average conditions are greater than 5 percent under
23 Alternative 5 as compared to the Second Basis of Comparison in the Suisun
24 Marsh (Montezuma Slough at Hunter Cut/Beldon's Landing), and near Delta
25 water intakes (San Joaquin River at Antioch, Contra Costa Pumping Plant
26 Number 1, Banks Pumping Plant, and Jones Pumping Plant).

27 Model results for Alternatives 1, 4, and Second Basis of Comparison are the
28 same, therefore model results for Alternative 4 are not presented separately.
29 Model results for Alternative 2 and No Action Alternative are the same, therefore
30 model results for Alternative 2 are not presented separately.

31 **6C.3.2 Model Limitations and Applicability**

32 Although it is impossible to predict future hydrology, land use, and water use with
33 certainty, the RWQCB Model and DSM2 were used to forecast impacts on fish
34 that could result from implementation of the alternatives. Mathematical models
35 like DSM2 can only approximate processes of physical systems. Models are
36 inherently inexact because the mathematical description of the physical system is
37 imperfect and the understanding of interrelated physical processes is incomplete.
38 However, the RWQCB Model is a powerful tool that, when used carefully, can
39 provide useful insight into processes of the physical system. Methylmercury
40 concentrations for inflow sources to the Delta (e.g., agriculture in the Delta, Yolo
41 Bypass, Eastside Tributaries) also caused uncertainty in the modeling because of
42 limited data. For the Sacramento River and the San Joaquin River, about 90 data
43 points (Chapter 6, Table 6.58; Table 6D.1) were used to estimate the mean

1 methylmercury concentrations for these inflow sources, whereas the mean
2 methylmercury concentrations for other inflow sources to the Delta had many
3 fewer data points, ranging from 14 to no data points (concentrations for the
4 Eastside Tributaries were assumed).

5 **6C.4 References**

- 6 Alpers, C. N., C. Eagles-Smith, C. Foe, S. Klasing, M. C. Marvin-DiPasquale,
7 D. G. Slotton, and L. Windham-Meyers. 2008. *Sacramento–San Joaquin*
8 *Delta Regional Ecosystem Restoration Implementation Plan, Ecosystem*
9 *Conceptual Model*. Mercury. January 24.
- 10 Central Valley RWQCB (Central Valley Regional Water Quality Control Board).
11 2011. *Sacramento–San Joaquin Delta Estuary TMDL for Methylmercury*.
12 *Final EPA Approval of Basin Plan Amendment*. Oct. 20.
- 13 SFEI (San Francisco Estuary Institute). 2010. Regional Data Center. Site accessed
14 April 13,2010. <http://www.sfei.org/data>
- 15 Wood, M., C. Foe, J. Cooke, and L. Stephen. 2010. *Sacramento–San Joaquin*
16 *Delta Estuary TMDL for Methylmercury, Final Staff Report*. April.
17 Prepared for California Regional Water Quality Control Board: Central
18 Valley Region, Rancho Cordova, CA.

1 **Table 6C.2. Summary Table for Methylmercury Concentrations in 350-mm Largemouth Bass Fillets for No Action**
 2 **Alternative, Second Basis of Comparison, and Alternative 1**

Location	Period ^a	Estimated Concentrations of Methylmercury (mg/kg ww) No Action Alternative	Estimated Concentrations of Methylmercury (mg/kg ww) Second Basis of Comparison and Alternative 1	% Change In Methylmercury Concentrations ^b Alternative 1 compared to No Action Alternative	% Change In Methylmercury Concentrations ^b No Action Alternative compared to Second Basis of Comparison	Exceedance Quotients ^c No Action Alternative	Exceedance Quotients ^c Second Basis of Comparison and Alternative 1
Delta Interior							
San Joaquin River at Stockton	All	1.00	0.99	0	0	4.2	4.1
	Drought	1.06	1.06	0	0	4.4	4.4
Turner Cut	All	0.89	0.87	-3	3	3.7	3.6
	Drought	0.84	0.81	-4	4	3.5	3.4
San Joaquin River at San Andreas Landing	All	0.59	0.58	-3	3	2.5	2.4
	Drought	0.54	0.53	-3	3	2.3	2.2
San Joaquin River at Jersey Point	All	0.57	0.54	-4	5	2.4	2.3
	Drought	0.52	0.50	-4	4	2.2	2.1
Victoria Canal	All	0.85	0.82	-4	4	3.6	3.4
	Drought	0.82	0.76	-6	7	3.4	3.2
Western Delta							
Sacramento River at Emmaton	All	0.50	0.49	-2	2	2.1	2.0
	Drought	0.48	0.47	-2	2	2.0	2.0
San Joaquin River at Antioch	All	0.50	0.47	-6	7	2.1	2.0
	Drought	0.43	0.41	-5	5	1.8	1.7

Location	Period ^a	Estimated Concentrations of Methylmercury (mg/kg ww) No Action Alternative	Estimated Concentrations of Methylmercury (mg/kg ww) Second Basis of Comparison and Alternative 1	% Change In Methylmercury Concentrations ^b Alternative 1 compared to No Action Alternative	% Change In Methylmercury Concentrations ^b No Action Alternative compared to Second Basis of Comparison	Exceedance Quotients ^c No Action Alternative	Exceedance Quotients ^c Second Basis of Comparison and Alternative 1
Montezuma Slough at Hunter Cut/Beldon's Landing	All	0.35	0.32	-6	7	1.4	1.4
	Drought	0.28	0.26	-5	5	1.1	1.1
Major Diversions (Pumping Stations)							
North Bay Aqueduct at Barker Slough Pumping Plant	All	0.56	0.56	-1	1	2.4	2.3
	Drought	0.59	0.57	-2	2	2.4	2.4
Contra Costa Pumping Plant #1	All	0.73	0.68	-6	6	3.0	2.8
	Drought	0.67	0.62	-7	8	2.8	2.6
Banks Pumping Plant	All	0.79	0.75	-5	5	3.3	3.1
	Drought	0.75	0.69	-7	8	3.1	2.9
Jones Pumping Plant	All	0.83	0.79	-4	4	3.5	3.3
	Drought	0.82	0.77	-6	7	3.4	3.2

- 1 Notes:
- 2 mg/kg = milligram per kilogram
- 3 ww = wet weight
- 4 a. "All": water years (1922-2003) represent the 82-year period modeled using DSM2. "Drought" Represents a 5-consecutive-year (water years 1987-1991) drought
- 5 period consisting of dry and critical water year types (as defined by the Sacramento Valley 40-30-30 water year hydrologic classification index).
- 6 b. % change indicates a negative change (increased concentrations) relative to No Action Alternative or Second Basis of Comparison when values are positive
- 7 and a positive change (lowered concentrations) relative to No Action Alternative or Second Basis of Comparison when values are negative.
- 8 c. Concentrations greater than 0.24 mg/kg ww mercury exceed the TMDL guidance concentration.

1 **Table 6C.3 Summary Table for Methylmercury Concentrations in 350-mm Largemouth Bass Fillets for Alternative 3**

Location	Period ^a	Estimated Concentrations of Methylmercury (mg/kg, ww) Alternative 3	% Change In Methylmercury Concentrations ^b No Action Alternative	% Change In Methylmercury Concentrations ^b Second Basis of Comparison	Exceedance Quotients ^c Alternative 3
Delta Interior					
San Joaquin River at Stockton	All	1.00	1	1	4.2
	Drought	1.07	1	1	4.5
Turner Cut	All	0.88	-2	1	3.7
	Drought	0.82	-3	1	3.4
San Joaquin River at San Andreas Landing	All	0.58	-3	0	2.4
	Drought	0.53	-2	1	2.2
San Joaquin River at Jersey Point	All	0.55	-4	1	2.3
	Drought	0.51	-2	2	2.1
Victoria Canal	All	0.83	-2	2	3.5
	Drought	0.79	-3	3	3.3
Western Delta					
Sacramento River at Emmaton	All	0.49	-2	0	2.0
	Drought	0.47	-1	0	2.0
San Joaquin River at Antioch	All	0.48	-6	1	2.0
	Drought	0.42	-3	2	1.7
Montezuma Slough at Hunter Cut/Beldon's Landing	All	0.33	-6	1	1.4
	Drought	0.27	-3	2	1.1

Location	Period ^a	Estimated Concentrations of Methylmercury (mg/kg, ww) Alternative 3	% Change In Methylmercury Concentrations ^b No Action Alternative	% Change In Methylmercury Concentrations ^b Second Basis of Comparison	Exceedance Quotients ^c Alternative 3
Major Diversions (Pumping Stations)					
North Bay Aqueduct at Barker Slough Pumping Plant	All	0.56	-1	0	2.3
	Drought	0.58	-1	2	2.4
Contra Costa Pumping Plant #1	All	0.69	-5	1	2.9
	Drought	0.64	-4	4	2.7
Banks Pumping Plant	All	0.77	-3	2	3.2
	Drought	0.72	-4	4	3.0
Jones Pumping Plant	All	0.81	-3	2	3.4
	Drought	0.80	-3	4	3.3

Notes:

mg/kg = milligram per kilogram

ww = wet weight

a. "All": water years (1922-2003) represent the 82-year period modeled using DSM2. "Drought" Represents a 5-consecutive-year (water years 1987-1991) drought period consisting of dry and critical water year types (as defined by the Sacramento Valley 40-30-30 water year hydrologic classification index).

b. % change indicates a negative change (increased concentrations) relative to No Action Alternative or Second Basis of Comparison when values are positive and a positive change (lowered concentrations) relative to No Action Alternative or Second Basis of Comparison when values are negative.

c. Concentrations greater than 0.24 mg/kg ww mercury exceed the TMDL guidance concentration.

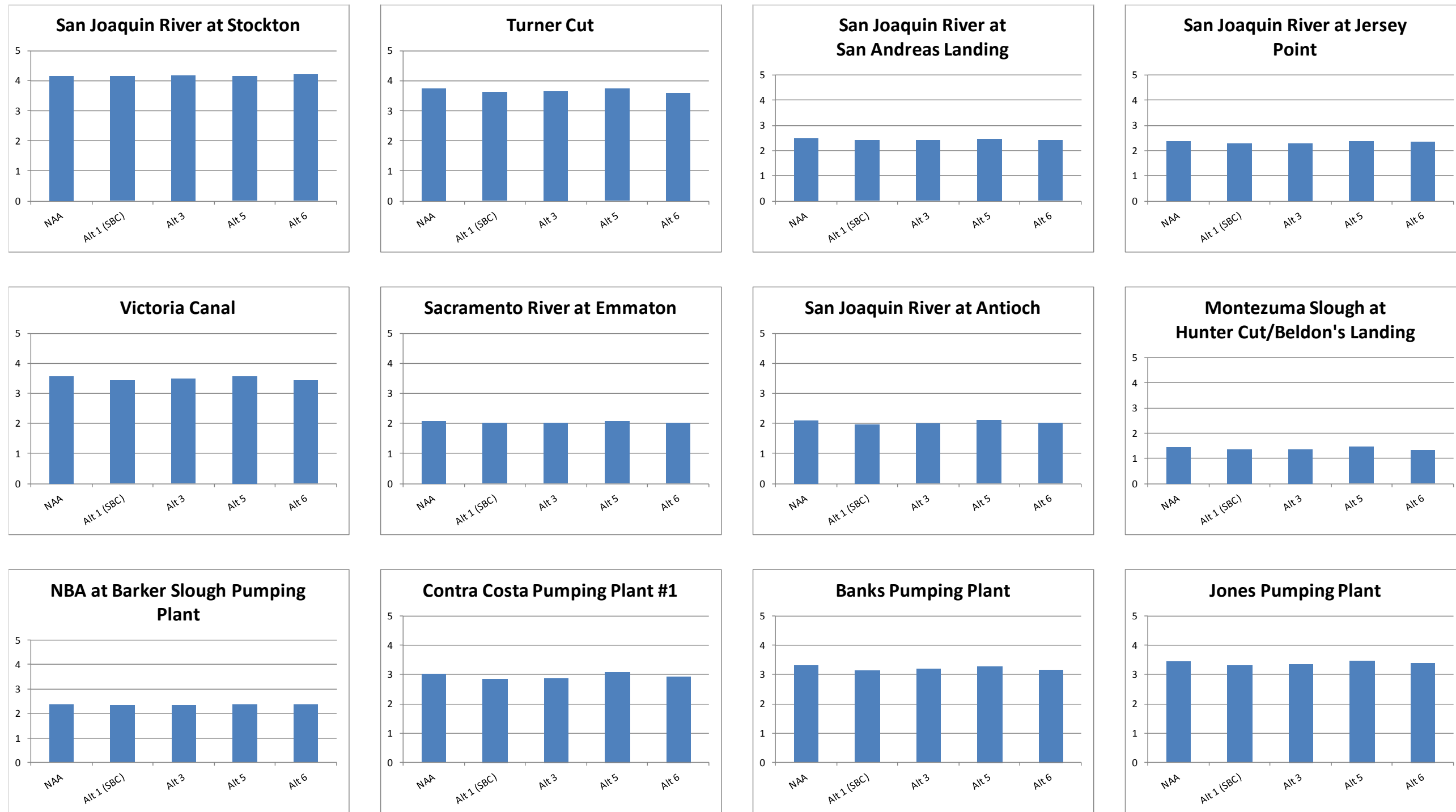
1 **Table 6C.4. Summary Table for Methylmercury Concentrations in 350-mm Largemouth Bass Fillets for No Action**
 2 **Alternative, Second Basis of Comparison, and Alternative 5**

Location	Period ^a	Estimated Concentrations of Methylmercury (mg/kg, ww) Alternative 5	% Change In Methylmercury Concentrations ^b No Action Alternative	% Change In Methylmercury Concentrations ^b Second Basis of Comparison	Exceedance Quotients ^c Alternative 5
Delta Interior					
San Joaquin River at Stockton	All	1.00	0	0	4.1
	Drought	1.05	0	0	4.4
Turner Cut	All	0.89	0	3	3.7
	Drought	0.85	1	4	3.5
San Joaquin River at San Andreas Landing	All	0.60	1	4	2.5
	Drought	0.55	2	4	2.3
San Joaquin River at Jersey Point	All	0.57	1	5	2.4
	Drought	0.53	2	5	2.2
Victoria Canal	All	0.85	0	4	3.6
	Drought	0.82	0	7	3.4
Western Delta					
Sacramento River at Emmaton	All	0.50	0	3	2.1
	Drought	0.49	1	3	2.0
San Joaquin River at Antioch	All	0.51	1	7	2.1
	Drought	0.44	2	7	1.8
Montezuma Slough at Hunter Cut/Beldon's Landing	All	0.35	1	7	1.5
	Drought	0.28	1	7	1.2

Location	Period ^a	Estimated Concentrations of Methylmercury (mg/kg, ww) Alternative 5	% Change In Methylmercury Concentrations ^b No Action Alternative	% Change In Methylmercury Concentrations ^b Second Basis of Comparison	Exceedance Quotients ^c Alternative 5
Major Diversions (Pumping Stations)					
North Bay Aqueduct at Barker Slough Pumping Plant	All	0.56	0	1	2.4
	Drought	0.58	0	2	2.4
Contra Costa Pumping Plant #1	All	0.74	2	8	3.1
	Drought	0.70	5	13	2.9
Banks Pumping Plant	All	0.79	0	5	3.3
	Drought	0.74	-1	7	3.1
Jones Pumping Plant	All	0.83	0	5	3.5

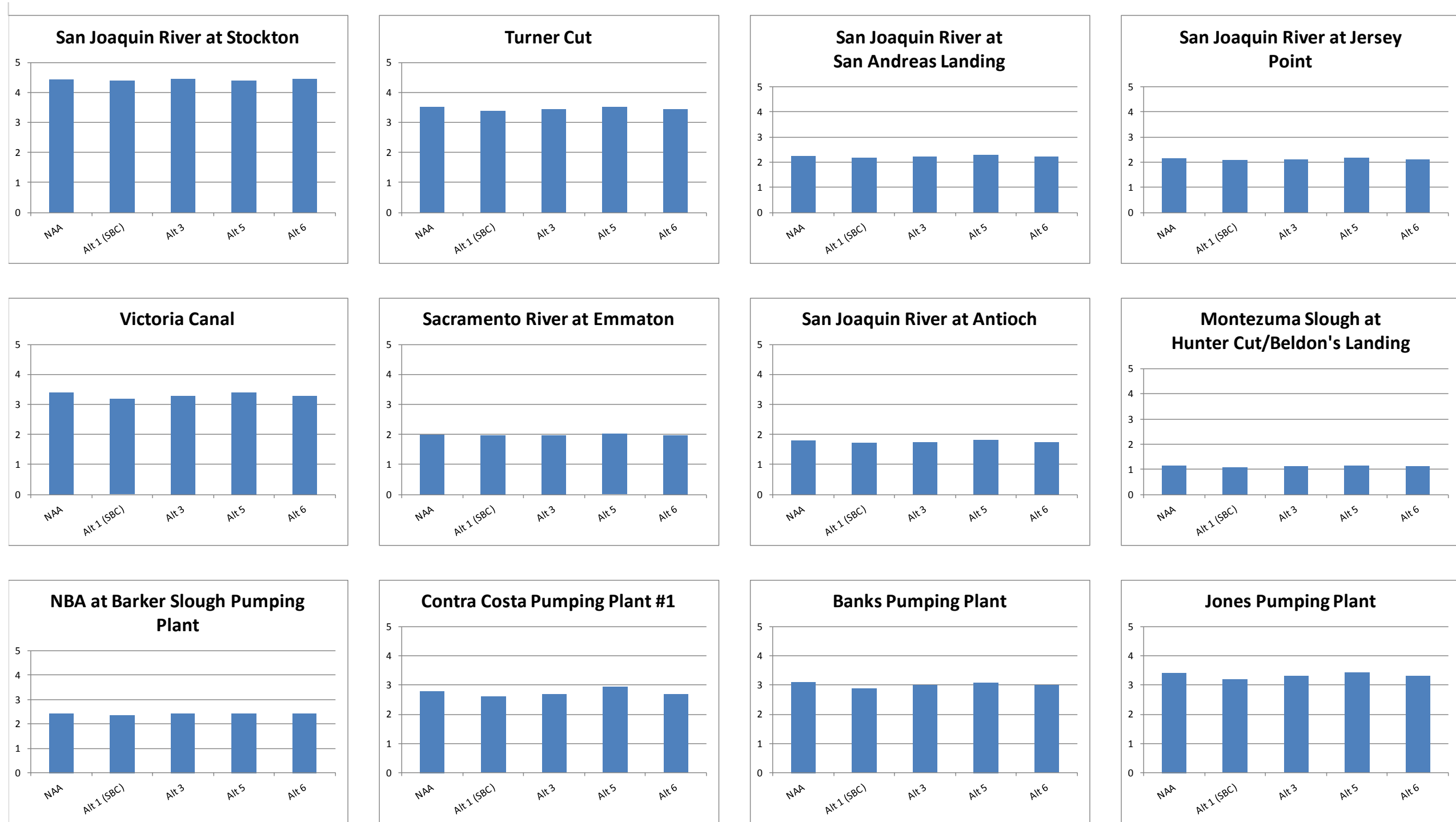
- 1 Notes:
- 2 mg/kg = milligram per kilogram
- 3 ww = wet weight
- 4 a. "All": water years (1922-2003) represent the 82-year period modeled using DSM2. "Drought" Represents a 5-consecutive-year (water years
- 5 1987-1991) drought period consisting of dry and critical water year types (as defined by the Sacramento Valley 40-30-30 water year hydrologic
- 6 classification index).
- 7 b. % change indicates a negative change (increased concentrations) relative to No Action Alternative or Second Basis of Comparison when
- 8 values are positive and a positive change (lowered concentrations) relative to No Action Alternative or Second Basis of Comparison when values
- 9 are negative. Changes of 10% or more are shaded.
- 10 c. Concentrations greater than 0.24 mg/kg ww mercury exceed the TMDL guidance concentration.

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1

2 Figure 6C.2 Level of Concern Exceedance Quotients for Mercury Concentrations in 350-mm Largemouth Bass Fillets for All Years



1

2 **Figure 6C.3. Level of Concern Exceedance Quotients for Mercury Concentrations in 350-mm Largemouth Bass Fillets for Drought Years**

1 Appendix 6D

2 Selenium Model Documentation

3 This appendix provides information about the methods, modeling tools, and
4 assumptions used for the Coordinated Long Term Operation of the Central Valley
5 Project (CVP) and State Water Project (SWP) Environmental Impact Statement
6 (EIS) analysis. This appendix also provides information pertaining to the
7 development of the analytical tools and the use of input data as well as model
8 result processing and interpretation methods used for the impacts analysis and
9 descriptions.

10 This appendix is organized into three main sections:

- 11 • Section 6D.1: Modeling Methodology
 - 12 – The selenium impacts analysis uses CalSim II, the Delta Simulation
 - 13 Model II (DSM2), and Delta-specific selenium bioaccumulation modeling
 - 14 to assess and quantify effects of the alternatives on the long-term
 - 15 operation and the environment. This section provides information about
 - 16 the development and calibration of a Delta-wide bioaccumulation model
 - 17 for selenium in fish, use of outputs from that model to estimate
 - 18 bioaccumulation in bird eggs and fish fillets, and modeling of selenium
 - 19 bioaccumulation in sturgeon living in the western Delta using inputs from
 - 20 other models.
- 21 • Section 6D.2: Modeling Simulations and Assumptions
 - 22 – This section provides a brief description of the assumptions for the
 - 23 selenium model simulations of the No Action Alternative, Second Basis of
 - 24 Comparison, and Alternatives 1 through 5.
- 25 • Section 6D.3: Modeling Results
 - 26 – This section provides a description of the model simulation output formats
 - 27 used in the analysis and interpretation of modeling results for the
 - 28 alternatives impacts assessment.

29 6D.1 Modeling Methodology

30 This section summarizes the selenium modeling methodology used for the No
31 Action Alternative, Second Basis of Comparison, and Alternatives 1 through 5. It
32 describes the overall analytical framework and development and use of
33 bioaccumulation models. This section also contains descriptions of the key
34 analytical and numerical tools and approaches used in the quantitative evaluation
35 of the alternatives. The project alternatives include changes to CVP and SWP
36 operation that would cause subsequent effects on the water quality of the system
37 relative to selenium. Those changes in waterborne selenium concentrations

1 would propagate to changes in selenium concentrations in fish and bird eggs
2 throughout the Delta.

3 **6D.1.1 Overview of the Modeling Approach and Objectives**

4 Modeling of flows, hydrodynamics, and selenium bioaccumulation in the Delta is
5 necessary to support the selenium impact analysis of alternatives. Impact analysis
6 focuses on evaluation of changes to selenium concentrations in tissues that affect
7 the health of fish as well as wildlife and humans consuming fish in the Delta.

8 CalSim II, DSM2, and bioaccumulation modeling were used in sequence to
9 estimate the effects of CVP and SWP operations on water quality relative to
10 selenium in the Delta. CalSim II, which simulates flow in California's
11 waterways, and DSM2, which simulates one-dimensional hydrodynamics in
12 California's Delta, are discussed in detail in Appendix 5A. One of the three
13 DSM2 modules, QUAL, simulates one-dimensional source tracking in the Delta.
14 Results from DSM2 were multiplied by source concentrations (shown in
15 Table 6D.1) to determine annual average waterborne selenium concentrations in
16 the Delta for all year types and drought years.

17 Operations-related changes in waterborne selenium concentrations in the Delta
18 may result in increased selenium bioaccumulation or toxicity (or both) to aquatic
19 and semi-aquatic receptors using the Delta. Historical fish tissue data from 2000,
20 2005, and 2007 (Foe 2010a) and measured (for Sacramento River below Knights
21 Landing and for San Joaquin River at Vernalis) or DSM2-modeled (other
22 locations) waterborne selenium concentrations for selected locations in 2000,
23 2005, and 2007 were used to model water-to-tissue relationships. This modeling
24 generally followed procedures described by Presser and Luoma (2010a, 2010b).
25 Implementation of the Grassland Bypass Project (GBP) has led to a 60 percent
26 decrease in selenium loads from the Grassland Drainage Area compared to pre-
27 project conditions (San Francisco Bay Regional Water Quality Control Board
28 2008). These changes are reflected in data for the San Joaquin River at Vernalis,
29 where water quality is monitored frequently because the river is a primary source
30 of selenium to the Delta. Vernalis water data for 2 years (1999-2000, 2004-2005,
31 and 2006-2007) were used for each year when fish data were available because of
32 the GBP-related changes and because the lag time for selenium bioaccumulation
33 in the piscivorous Largemouth Bass (*Micropterus salmoides*, the species for
34 which the Delta-wide bioaccumulation model was calibrated) may be more than
35 1 year (Beckon 2014).

36 Output from the DSM2-QUAL model (expressed as percentage of inflow from
37 different sources) was used in combination with the available measured
38 waterborne selenium concentrations (Table 6D.1) to model concentrations of
39 selenium at locations throughout the Delta. These modeled waterborne selenium
40 concentrations were used in the relationship model to estimate bioaccumulation of
41 selenium in whole-body fish and in bird eggs. Selenium concentrations in fish
42 fillets were then estimated from those in whole-body fish. The following sections
43 provide detailed information about the modeling approach for selenium.

1 **Table 6D.1 Selenium Concentrations in Water at Inflow Sources to the Delta**

Delta Sources	Representative Inflow Site	GM Se Concentration in Water (µg/L) ^a	Years	Source
Delta Agriculture	Mildred Island, Center	0.11	2000	Lucas and Stewart 2007
East Delta Tributaries	Mokelumne, Calaveras, and Cosumnes Rivers	0.10 ^b	None	None
Martinez/Suisun Bay	San Joaquin River near Mallard Island	0.10	02/2000–08/2008	SFEI 2014
Sacramento River	Sacramento River at Freeport	0.09	11/2007–07/2014	USGS 2014
San Joaquin River	San Joaquin River at Vernalis (Airport Way)	0.45 ^c	11/2007-08/2014	USGS 2014
San Joaquin River	San Joaquin River at Vernalis (Airport Way)	0.83 ^d	1999-2000	SWAMP 2009
		0.85	2004-2005	SWAMP 2009
		0.58	2006-2007	SWAMP 2009
Yolo Bypass	Sacramento River below Knights Landing	0.23 ^e	2004, 2007, 2008	DWR 2009

2

Notes:

3

a. Selenium concentrations are in dissolved fraction unless otherwise noted.

4

b. Dissolved selenium concentration is assumed to be 0.1 µg/L due to lack of available data and lack of sources that would be expected to result in concentrations greater than 0.1 µg/L.

5

c. Data used to represent conditions for comparison of alternatives.

6

d. Not specified whether total or dissolved selenium; data for 1999-2000 used for bioaccumulation by bass in 2000; data for 2004-2005 for bass in 2005; and data for 2006-2007 for bass in 2007.

7

e. Total selenium concentration in water.

8

9

µg/L = microgram(s) per liter

10

GM = geometric mean

11

Se = selenium

12

13 In addition to the Delta-wide modeling for fish and birds (calibrated with data for
14 Largemouth Bass), selenium uptake and food-chain transfer information from the
15 ecosystem-scale selenium model for the San Francisco Bay-Delta Regional
16 Ecosystem Restoration Implementation Plan (Presser and Luoma 2013) informed
17 the selenium bioaccumulation model for the western Delta. The Largemouth Bass
18 has lower selenium bioaccumulation rates than those observed for sturgeon
19 (Green Sturgeon [*Acipenser medirostris*] and White Sturgeon,
20 [*A. transmontanus*]) and is not an appropriate model species that would be
21 protective of sturgeon. Sturgeon differ by feeding, in part, on Overbite Clams
22 (*Corbula [Potamocorbula] amurensis*) in Suisun Bay and may do so in the
23 western portion of the Delta under future conditions. Therefore, DSM2-modeled
24 waterborne selenium concentrations from three western-most locations in the
25 Delta (Sacramento River at Emmaton, San Joaquin River at Antioch, and

1 Montezuma Slough at Hunter Cut/Beldon's Landing) were used to model
2 selenium bioaccumulation for sturgeon at those three locations to supplement the
3 modeling done for Largemouth Bass.

4 The results from this suite of physical and biological models are used to inform
5 the understanding of effects of each alternative considered in this EIS on
6 selenium. Modeling objectives included evaluation of the following:

- 7 • Percent changes in waterborne selenium concentrations under the alternatives
8 as compared to the No Action Alternative and the Second Basis of
9 Comparison
- 10 • Exceedances of fish, wildlife, or human thresholds for selenium effects

11 **6D.1.2 Key Components of the Selenium Modeling**

12 To fulfill the objectives of the selenium modeling effort, DSM2 output data were
13 used in combination with source water concentrations to estimate waterborne
14 selenium concentrations at representative locations throughout the Delta
15 (Tables 6D.2 through 6D.4, located at end of this appendix). Waterborne
16 selenium concentrations were then used to estimate tissue selenium
17 concentrations in Largemouth Bass (as a representative higher trophic-level fish)
18 throughout the Delta and in sturgeon in the western Delta. Estimation of
19 concentrations in Largemouth Bass throughout the Delta included the
20 development and calibration of a bioaccumulation model using measured
21 concentrations in bass (Foe 2010a). In contrast, modeling for sturgeon in the
22 western Delta relied on literature-based model parameters (Presser and Luoma
23 2013), because data were not available to further calibrate the model.

24 **6D.1.2.1 DSM2 Post-processing**

25 Dissolved or total selenium data were available for six inflow locations to the
26 Delta (Table 6D.1):

- 27 • Sacramento River below Knights Landing (just upstream of Yolo Bypass,
28 representing the Bypass source)
- 29 • Sacramento River at Freeport (mainstem flow to Delta)
- 30 • San Joaquin River at Vernalis (Airport Way) (mainstem flow to Delta)
- 31 • Mokelumne, Calaveras, and Cosumnes Rivers (for East Delta tributaries)
- 32 • Mildred Island, Center (for Delta Agriculture)
- 33 • San Joaquin River near Mallard Island (for Martinez/Suisun Bay)

34 Both dissolved and total selenium data were considered suitable for purposes of
35 the modeling conducted for the Delta, because they typically do not differ greatly.
36 Statements related to waterborne selenium concentrations in this appendix would
37 be applicable to either dissolved or total concentrations.

1 Whole-body Largemouth Bass data for selenium were available from the
2 following DSM2 output locations:

- 3 • Big Break
- 4 • Cache Slough Ryer
- 5 • Franks Tract
- 6 • Middle River Bullfrog
- 7 • Old River Near Paradise Cut
- 8 • Sacramento River Mile (RM) 44
- 9 • San Joaquin River Potato Slough

10 Largemouth Bass data also were available from the Veterans Bridge on the
11 Sacramento River and from Vernalis on the San Joaquin River, but DSM2 data
12 were not available for those locations; therefore, historical data for selenium
13 concentrations in water collected nearby (Table 6D.1) were used to represent
14 quarterly averages. The geometric mean of total selenium concentrations in water
15 collected from the Sacramento River below Knights Landing in 2004, 2007, and
16 2008 (DWR 2009) were used to represent quarterly averages of selenium
17 concentrations in water for Veterans Bridge in all years. The geometric means of
18 selenium concentrations (total or dissolved was not specified) in water collected
19 from 1999–2000, 2004-2005, and 2006-2007 (SWAMP 2009) were used to
20 represent quarterly averages for selenium concentrations in water at Vernalis
21 during 2000, 2005, and 2007, respectively.

22 For DSM2 output locations, the geometric mean selenium concentrations from the
23 inflow locations were combined with the modeled quarterly average percent
24 inflow for each DSM2 output location to estimate waterborne selenium
25 concentrations at those locations. The quarterly average mix of water from the six
26 inflow sources (Table 6D.1) was calculated from daily percent inflows provided
27 by the DSM2 model output for the DSM2 output locations for which fish data
28 were available. The quarterly waterborne selenium concentrations at DSM2
29 locations were calculated using Equation 1:

$$30 \quad C_{water\ quarterly} = ([I_1 * C_1] + [I_2 * C_2] + [I_3 * C_3] + [I_4 * C_4] + [I_5 * C_5] + [I_6 * C_6]) / 100$$

31 Where:

- 32 • $C_{water\ quarterly}$ = quarterly average selenium concentration in water
33 (micrograms/liter [$\mu\text{g/L}$]) at a DSM2 output location
- 34 • I_{1-6} = modeled quarterly inflow from each of the six sources of water to the
35 Delta for each DSM2 output location (percentage)
- 36 • C_{1-6} = selenium concentration in water ($\mu\text{g/L}$) from each of the six inflow
37 sources to the Delta (1-6)

1 Example Calculation: Modeled Selenium Concentration at Franks Tract Year
 2 2000, First Quarter:

3 (43.94 [% inflow from Sacramento River water source at Franks Tract]
 4 × 0.09 µg/L [selenium concentration at Sacramento River at Freeport]) +
 5 (11.56 [% inflow from East Delta Tributaries water source at Franks Tract]
 6 × 0.10 µg/L [selenium concentration at Mokelumne, Calaveras, and
 7 Cosumnes Rivers]) + (15.79 [% inflow from San Joaquin River water source
 8 at Franks Tract] × 0.83 µg/L [selenium concentration at San Joaquin River at
 9 Vernalis]) + (0.02 [% inflow from Martinez/Suisun Bay water source at
 10 Franks Tract] × 0.10 µg/L [selenium concentration at San Joaquin River near
 11 Mallard Island]) + (0.32 [% inflow from Yolo Bypass water source at Franks
 12 Tract] × 0.23 µg/L [selenium concentration at Sacramento River below
 13 Knights Landing]) + (5.06 [% inflow from Delta Agriculture water source at
 14 Franks Tract] × 0.11 µg/L [selenium concentration at Mildred Island,
 15 Center])/100 = 0.19 µg/L

16 The quarterly and average annual waterborne selenium concentrations for the
 17 DSM2 output locations are shown in Table 6D.2 (Year 2000), Table 6D.3
 18 (Year 2005), and Table 6D.4 (Year 2007).

19 **6D.1.2.2 Delta-wide Selenium Model Development**

20 Selenium concentrations in whole-body fish and in bird eggs were calculated
 21 using ecosystem-scale models developed by Presser and Luoma (2010a, 2010b,
 22 2013). The models were based on biogeochemical and physiological factors from
 23 laboratory and field studies; loading rates, chemical speciation, and
 24 transformation to particulate material; bioavailability; bioaccumulation in
 25 invertebrates; and trophic transfer to predators. Important components of the
 26 methodology included (1) empirically determined environmental partitioning
 27 factors between water and particulate material that quantify the effects of
 28 dissolved speciation and phase transformation; (2) concentrations of selenium in
 29 living and non-living particulates at the base of the food web that determine
 30 selenium bioavailability to invertebrates; and (3) selenium biodynamic food web
 31 transfer factors that quantify the physiological potential for bioaccumulation from
 32 particulate matter to consumer organisms and from prey to their predators.

33 **6D.1.2.2.1 Selenium Concentration in Particulates**

34 Phase transformation reactions from dissolved to particulate selenium are the
 35 primary form by which selenium enters the food web. Presser and Luoma (2010a,
 36 2010b, 2013) used field observations to quantify the relationship between
 37 particulate material and dissolved selenium as indicated in Equation 2.

$$C_{particulate} = K_d * C_{water column}$$

39 Where:

- 40 • $C_{particulate}$ = selenium concentration in particulate material
 41 (micrograms/kilogram, dry weight [µg/kg dw])
- 42 • K_d = particulate/water ratio
- 43 • $C_{water column}$ = selenium concentration in water column (µg/L)

1 The K_d (also called an “enrichment factor”) describes the particulate/water ratio at
 2 the moment the sample was taken and should not be interpreted as an equilibrium
 3 constant (as it sometimes is mistaken to be). It can vary widely among hydrologic
 4 environments and potentially among seasons (Presser and Luoma 2010a, 2010b,
 5 2013; Young et al. 2010). In addition, other factors such as selenium speciation,
 6 water residence time, and particle type affect K_d . Selenium typically enters a
 7 stream primarily as selenate. If the stream flows into a wetland and the water is
 8 retained there with sufficient residence time, recycling of selenium may occur.
 9 This results in generation of particulate selenium and conversion to more
 10 bioaccumulative selenite and organo-selenium from the less-bioaccumulative
 11 dissolved selenate. Residence time of water containing selenium is usually the
 12 most influential factor on the conditions in the receiving aquatic environment.
 13 Short water residence times (such as in streams and rivers) limit partitioning of
 14 selenium into particulate material. Conversely, longer residence times (such as in
 15 sloughs, lakes, and estuaries) allow greater uptake by plants, algae, and
 16 microorganisms. Furthermore, environments in downstream portions of a
 17 watershed can receive cumulative contributions of upstream recycling in a
 18 hydrologic system. Because of its high variability, K_d is a large source of
 19 uncertainty in any selenium model where extrapolations from selenium
 20 concentrations in the water column to those in aquatic organism tissues, or from
 21 tissue to waterborne concentrations, are necessary.

22 In developing the Delta-wide bioaccumulation model for bass, the particulate
 23 selenium concentration initially was estimated using Equation 2 and a default K_d
 24 of 1,000 (Presser and Luoma 2010a). Because the K_d is typically much more
 25 variable than other steps in the bioaccumulation model, the K_d was then adjusted
 26 to calibrate the model so that the modeled concentrations for fish approximated
 27 the measured concentrations in bass for normal and wet years (2000 and 2005)
 28 and for drought years (2007), as described in more detail in Section 6D.1.2.3.

29 **6D.1.2.2.2 Selenium Concentrations in Invertebrates**

30 Trophic transfer factors (TTFs) for transfer of selenium from particulates to prey
 31 and to predators were developed using data from laboratory experiments and field
 32 studies (Presser and Luoma 2010a, 2010b, 2013). TTFs are species-specific, but
 33 the range of TTFs for freshwater invertebrates was found to be similar to TTFs for
 34 marine invertebrates determined in laboratory experiments.

35 TTFs for estimating selenium concentrations in invertebrates were calculated
 36 using Equation 3:

$$37 \quad TTF_{invertebrate} = (C_{invertebrate}) / (C_{particulate})$$

38 Where:

- 39 • $TTF_{invertebrate}$ = trophic transfer factor from particulate material to invertebrate
- 40 • $C_{invertebrate}$ = concentration of selenium in invertebrate ($\mu\text{g/g dw}$)
- 41 • $C_{particulate}$ = concentration of selenium in particulate material ($\mu\text{g/g dw}$)

1 An average aquatic insect TTF was calculated from TTFs for aquatic insect
 2 species with similar bioaccumulative potential, including Mayfly (*Baetidae*;
 3 *Heptageniidae*; *Ephemerellidae*), Caddisfly (*Rhyacophilidae*; *Hydropsychidae*),
 4 Crane Fly (*Tipulidae*), Stonefly (*Perlodidae*/*Perlidae*; *Chloroperlidae*),
 5 Damselfly (*Coenagrionidae*), Corixid (*Cenocorixa* sp.), and Chironomid
 6 (*Chironomus* sp.) aquatic life stages. Species-specific TTFs ranged from 2.1 to
 7 3.2; the average TTF of 2.8 was used in the Delta-wide model.

8 **6D.1.2.2.3 Selenium Concentrations in Whole-body Fish**

9 The mechanistic equation for modeling of selenium bioaccumulation in fish tissue
 10 is similar to that for invertebrates if whole-body concentrations are the endpoint
 11 (Presser and Luoma 2010a, 2010b, 2013), as shown in Equation 4:

$$12 \quad TTF_{fish} = C_{fish} / C_{invertebrate}$$

13 where:

$$14 \quad C_{invertebrate} = C_{particulate} * TTF_{invertebrate}$$

15 therefore:

$$16 \quad C_{fish} = C_{particulate} * TTF_{invertebrate} * TTF_{fish}$$

17 Where:

- 18 • C_{fish} = concentration of selenium in fish ($\mu\text{g/g dw}$)
- 19 • $C_{particulate}$ = concentration of selenium in particulate material ($\mu\text{g/g dw}$)
- 20 • $C_{invertebrate}$ = concentration of selenium in invertebrate ($\mu\text{g/g dw}$)
- 21 • $TTF_{invertebrate}$ = trophic transfer factor from particulate material to invertebrate
- 22 • TTF_{fish} = trophic transfer factor from invertebrate to fish

23 Modeling selenium bioaccumulation into a particular fish species considers
 24 organism physiology and its preferred foods. However, variability in fish tissue
 25 selenium concentrations for present modeling purposes is driven more by dietary
 26 choices and their respective levels of bioaccumulation (that is, $TTF_{invertebrate}$)
 27 than by differences in fish physiology or the dietary transfer to the fish (TTF_{fish}).
 28 A diet of mixed prey (including invertebrates or other fish) can be modeled as
 29 shown in Equation 5:

$$30 \quad C_{fish} = TTF_{fish} * ([C_1 * F_1] + [C_2 * F_2] + [C_3 * F_3])$$

31 Where:

- 32 • C_{fish} = concentration of selenium in fish ($\mu\text{g/g dw}$)
- 33 • TTF_{fish} = trophic transfer factor for fish species
- 34 • C_{1-3} = concentration of selenium in invertebrate or fish prey items 1, 2, and 3
 35 ($\mu\text{g/g dw}$)
- 36 • F_{1-3} = fraction of diet composed of prey items 1, 2, and 3

37 Modeling of selenium concentrations in longer food webs with higher trophic
 38 levels (for example, predator fish such as bass consuming forage fish) can be
 39 completed by incorporating additional TTFs, as shown in Equation 6:

$$C_{predatorfish} = C_{particulate} * TTF_{invertebrate} * TTF_{foragefish} * TTF_{predatorfish}$$

2 Where:

- 3 • $C_{predatorfish}$ = concentration of selenium in fish ($\mu\text{g/g dw}$)
- 4 • $C_{particulate}$ = concentration of selenium in particulate material ($\mu\text{g/g dw}$)
- 5 • $TTF_{invertebrate}$ = trophic transfer factor from particulate material to invertebrate
- 6 • $TTF_{foragefish}$ = trophic transfer factor for invertebrates to foraging fish species
- 7 • $TTF_{predatorfish}$ = trophic transfer factor for forage fish to predator species

8 The fish TTFs reported in Presser and Luoma (2010a) ranged from 0.5 to 1.6, so
9 the average fish TTF of 1.1 was used for all trophic levels of fish in the Delta-
10 wide model.

11 Modeled selenium concentrations in whole-body fish were used to estimate
12 selenium concentrations in fish fillets, as described in Section 6D.1.2.2.5.

13 **6D.1.2.2.4 Selenium Concentrations in Bird Eggs**

14 Selenium concentrations in bird tissues can be estimated, but the transfer of
15 selenium into bird eggs is more meaningful for evaluating reproductive endpoints
16 (Presser and Luoma 2010a; Ohlendorf and Heinz 2011). Examples of models for
17 selenium transfer to bird eggs are as shown in Equations 7 and 8:

$$18 \quad C_{birdegg} = C_{particulate} * TTF_{invertebrate} * TTF_{birdegg}$$

19 (this equation is based on birds, such as shorebirds, eating invertebrates)

20 or:

$$21 \quad C_{birdegg} = C_{particulate} * TTF_{invertebrate} * TTF_{fish} * TTF_{birdegg}$$

22 (this equation is based on birds, such as herons or terns, feeding on small fish)

23 Where:

- 24 • $C_{birdegg}$ = concentration of selenium in bird egg ($\mu\text{g/g dw}$)
- 25 • $C_{particulate}$ = concentration of selenium in particulate material ($\mu\text{g/g dw}$)
- 26 • $TTF_{invertebrate}$ = trophic transfer factor from particulate material to invertebrate
- 27 • TTF_{fish} = trophic transfer factor from invertebrate to fish
- 28 • $TTF_{birdegg}$ = trophic transfer factor from invertebrate or fish (depending on
29 diet) to bird egg

30 Presser and Luoma (2010b, 2013) reviewed the available data for selenium
31 bioaccumulation from diet to bird eggs and concluded that the mean $TTF_{birdegg} =$
32 2.6 was most appropriate for modeling. This TTF was based on laboratory
33 studies in which Mallards (*Anas platyrhynchos*) were fed selenium-fortified diets
34 to evaluate reproductive effects. Mallards are considered a sensitive species to
35 selenium based on reproductive endpoints. In their previous evaluation of those
36 data, Presser and Luoma (2010a) concluded that a $TTF_{birdegg} = 1.8$ was
37 appropriate. The form of selenium included in the Mallard diet
38 (selenomethionine) has been used as a surrogate in many laboratory studies to
39 represent exposure of fish and birds under field conditions. Other laboratory
40 studies were conducted with Black-crowned Night-herons (*Nycticorax*

1 *nycticorax* by Smith et al (1988), for Eastern Screech-owls (*Otus asio*) by
 2 Wiemeyer and Hoffman (1996), and for American Kestrels (*Falco sparverius*) by
 3 Santolo et al. (1999). In each of these studies, the experimental groups also
 4 received supplemental selenium in the form of selenomethionine. Transfer
 5 factors for the selenium-supplemented birds varied from approximately 1.0 to 2.2,
 6 with a mean of 1.5.

7 In field studies conducted at Kesterson Reservoir and the Volta Wildlife Area
 8 reference site, extensive sampling of food-chain biota and bird eggs was
 9 conducted from 1983 through 1985, and birds were collected to determine
 10 qualitatively the kinds of aquatic organisms they had eaten (Saiki and Lowe 1987;
 11 Hothem and Ohlendorf 1989; Schuler et al. 1990; Ohlendorf and Hothem 1995).
 12 Based on the kinds of food items found in each of the sampled species and the
 13 mean selenium concentrations in those kinds of organisms, a mean selenium
 14 concentration was estimated for each species at each site during each nesting
 15 season. In contrast to the findings with selenomethionine-supplemented diets in
 16 the laboratory, TTFs from diet to eggs were almost always less than 2.0. At the
 17 Volta Wildlife Area, where diet and egg selenium concentrations were
 18 representative of “background” conditions, transfer factors ranged from 0.63 to
 19 2.0, with a mean of 1.35. At Kesterson, the transfer factors ranged from less than
 20 0.2 to 0.48.

21 Because selenomethionine in the Mallard diet is probably more readily transferred
 22 to eggs than are the selenium forms in field-collected food-chain biota, the
 23 $TTF_{bird\text{egg}} = 1.8$ value from Presser and Luoma (2010a) was used in the
 24 bioaccumulation model.

25 **6D.1.2.2.5 Selenium Concentrations in Fish Fillets**

26 Selenium concentrations in whole-body fish from the bioaccumulation model
 27 were converted to selenium concentrations in skinless fish fillets for evaluation of
 28 potential human health effects. The regression equation provided in Saiki et al.
 29 (1991) for Largemouth Bass from the San Joaquin River system was considered
 30 to be the most representative of fish in the Delta and was used for the conversion
 31 of these selenium concentrations as shown in Equation 9:

$$32 \quad SF = (-0.388) + (1.322 * WB)$$

33 Where:

- 34 • SF = selenium concentration in skinless fish fillet ($\mu\text{g/g dw}$)
- 35 • WB = selenium concentration in whole-body fish ($\mu\text{g/g dw}$)

36 For the impact assessment in this EIS, fish fillet data were compared to the
 37 Advisory Tissue Level (2.5 micrograms per gram [$\mu\text{g/g}$] in wet weight (ww)
 38 (OEHHA 2008); therefore, wet-weight concentrations were estimated from dry-
 39 weight concentrations using the equation provided by Saiki et al. (1991) as shown
 40 in Equation 10:

$$41 \quad WW = DW * (100 - Moist)/100$$

1 Where:

- 2 • WW = selenium concentration in wet weight ($\mu\text{g/g ww}$)
- 3 • DW = selenium concentration in dry weight ($\mu\text{g/g dw}$)
- 4 • $Moist$ = mean moisture content of the species

5 Because moisture content in fish varies among species, sample handling, and
6 locations, the mean moisture content of 70 percent used by Foe (2010b) was used
7 as an assumed approximation for fish in the Delta. The final equation used to
8 estimate selenium concentration in skinless fish fillets (wet weight) from selenium
9 concentration in whole-body fish (dry weight) is as shown in Equation 11:

$$10 \quad SF = ([-0.388] + [1.322 * WB]) * 0.3$$

11 Where:

- 12 • SF = selenium concentrations in skinless fish fillet ($\mu\text{g/g ww}$)
- 13 • WB = selenium concentration in whole-body fish ($\mu\text{g/g dw}$)

14 **6D.1.2.3 Delta-wide Selenium Model Calibration**

15 Several models were evaluated and refined to estimate selenium uptake in fish
16 and in bird eggs from waters in the Delta. Input parameters to the model (K_d s
17 and the number of trophic levels) were varied among the models as refinements were
18 made. Data for Largemouth Bass collected in the Delta from areas near DSM2
19 output locations were used to calculate the geometric mean selenium
20 concentration in whole-body fish (Foe 2010a). The ratio of the estimated
21 (modeled) selenium concentration in fish to measured selenium in whole-body
22 bass was used to evaluate each fish model and to focus refinements of the model.
23 These Delta-wide models are presented in the following subsections.

24 Characteristics of water flow in the Delta affect selenium bioaccumulation and the
25 model refinements, because longer residence time for the water can be expected
26 to increase bioaccumulation by increasing K_d . Foe (2010a) reported the water
27 year type for 2000 as “above normal” for both the Sacramento River and San
28 Joaquin River watersheds. It came after “wet” water years and was followed by
29 “dry” water years. Year 2005 was wetter than 2000, was reported as “above
30 normal” for the Sacramento River watershed and “wet” for the San Joaquin River
31 watershed. Year 2005 occurred between periods of wet water years. Water Year
32 2007 was reported as “dry” (Sacramento River watershed) and “critically dry”
33 (San Joaquin River watershed). It came after wet water years and was followed
34 by critically dry water years.

35 There was no difference in bass selenium concentrations in the Sacramento River
36 at Rio Vista in comparison to the San Joaquin River at Vernalis in 2000, 2005,
37 and 2007 (Foe 2010a). The lack of a difference in bioaccumulated selenium
38 between the two river systems was unexpected because the San Joaquin River is
39 considered a significant source of selenium to the Delta. There were differences
40 among years, however, that were related to hydrology and water flow through the
41 Delta. Year 2005 selenium concentrations in bass were comparatively lower than
42 those estimated for Year 2000. As expected in a wet water year, the water
43 residence time was shorter, resulting in less selenium recycling, lower K_d values,

1 and lower concentrations of selenium entering the food web. The dry water year
 2 (2007) resulted in a longer water residence time, higher K_d values, greater
 3 selenium recycling, and higher concentrations of bioavailable selenium entering
 4 the food web. These differences among years were considered when refining the
 5 selenium bioaccumulation model.

6 **6D.1.2.3.1 Bioaccumulation in Whole-body Fish**

7 Models estimating whole-body selenium concentrations in fish were refined by
 8 modifying dietary composition and input parameters to closely represent
 9 measured conditions in the Delta. Each model is described in this section.

10 Model 1 was a basic representative of uptake by a forage fish, while Model 2
 11 calculated sequential bioaccumulation in a more complex food web that included
 12 predatory fish eating forage fish, as shown below:

13 Model 1: Trophic level 3 (TL-3) fish eating invertebrates (Equation 12):

$$14 \quad C_{fish} = C_{particulate} * TTF_{invertebrate} * TTF_{fish}$$

15 Model 2: Trophic level 4 (TL-4) fish eating TL-3 fish (Equation 13):

$$16 \quad C_{predatorfish} = C_{particulate} * TTF_{invertebrate} * TTF_{foragefish} * TTF_{predatorfish}$$

17 Where:

- 18 • C_{fish} = concentration of selenium in fish ($\mu\text{g/g dw}$)
- 19 • $C_{particulate}$ = concentration of selenium in particulate material ($\mu\text{g/g dw}$)
- 20 • $TTF_{invertebrate}$ = Trophic transfer factor from particulate material to invertebrate
- 21 • TTF_{fish} = Trophic transfer factor from invertebrate to forage fish or forage fish
 22 to predator fish

23 Equation 12 is the same as Equation 4 and Equation 13 is the same as Equation 6
 24 that were described previously for the generalized model. In both Models 1 and
 25 2, the particulate selenium concentration was estimated using Equation 2 and a
 26 default K_d of 1,000. The average TTFs for invertebrates (2.8) and fish (1.1) were
 27 used in each model. The outputs of estimated selenium concentrations and the
 28 ratios of predicted-to-observed bass selenium concentrations for Models 1 and 2
 29 are presented in Table 6D.5 and Figure 6D.1 (all figures are provided at the end of
 30 this appendix).

31 Models 1 and 2 tended to substantially underestimate the whole-body selenium
 32 concentrations in fish compared to bass data reported in Foe (2010a). This was
 33 partly because Model 1 was estimating selenium concentration in a forage fish
 34 (TL-3), whereas bass are a predatory fish with expected higher dietary exposure.
 35 Consequently, Model 1 was not further developed as the selenium
 36 bioaccumulation model to represent fish in the Delta.

37 Model 2 is representative of predatory fish, but Model 2 was very similar to
 38 Model 1 in distribution of data and in underestimating bass data, even though an
 39 additional trophic-level transfer was included in the model. As noted in Section
 40 6D.1.2.2.1 and described in much greater detail by Presser and Luoma (2010a,
 41 2010b, 2013), the K_d values for uptake from water are far more variable than the

1 TTFs for invertebrates or fish. Models 1 and 2 also apparently reflect the
2 tendency of selenium (as an essential nutrient) to be more bioaccumulative when
3 waterborne concentrations are low (as described by Stewart et al. [2010]), which
4 they were for the DSM2-modeled concentrations (that is, 0.09 to 0.85 $\mu\text{g/L}$).
5 Available K_d values from various sampling efforts in the Delta provided by
6 Presser and Luoma (2010b) were reviewed for potential applicability in the
7 modeling effort. Those values varied on the basis of locations within the Delta
8 and Suisun Bay and also by water year and flow characteristics (often greater than
9 5,000 and sometimes exceeding 10,000). However, efforts to incorporate various
10 selected K_d values (for example, 2,000 or 3,000) into the model uniformly for
11 different DSM2 locations failed to produce ratios of modeled-to-measured fish
12 selenium concentrations that approximated 1 (they either over- or underestimated
13 fish selenium concentrations because of variability in site conditions).

14 The available bass data and the assumed TTFs for invertebrates (2.8) and fish
15 (1.1) were used to back-calculate a location and sample-specific K_d . It is
16 recognized that some of the variability in bioaccumulation may be associated with
17 the TTFs, but there were no reasonable assumptions for selection of alternative
18 values to plug into the model.

19 When TTFs were held constant, back-calculation of K_d values revealed a
20 concentration-related influence on the values. For waterborne selenium
21 concentrations in the range of 0.09 to 0.13 $\mu\text{g/L}$ ($N = 50$), the median was 5,575;
22 when waterborne selenium concentrations were in the range of 0.14 to 0.40 $\mu\text{g/L}$
23 ($N = 19$), the median K_d was 2,431; for waterborne selenium concentrations in the
24 range of 0.41 to 0.85 $\mu\text{g/L}$ ($N = 19$), the median K_d was 748. These observations
25 are consistent with an inverse relationship between waterborne selenium
26 concentrations and bioaccumulation in aquatic organisms (Stewart et al. 2010).

27 Figure 6D.2 shows the log-log regression relation of K_d to waterborne selenium
28 concentration when all years are included and the TTFs are held constant, while
29 Figure 6D.3 shows the relationship for normal/wet years (2000 and 2005) and
30 Figure 6D.4 shows the regression for dry years (2007), when the K_d s were
31 generally higher.

32 Model 3 is based on Model 2 (with TTFs as described previously) but includes the
33 K_d estimated from the log-log regression relation for all years (Figure 6D.2). This
34 produced a median ratio of predicted-to-observed whole-body selenium in bass
35 that slightly exceeded 1 (Figure 6D.1); details are provided in Table 6D.6.
36 Because of the noticeable differences between 2007 (the dry year) and the other
37 2 years, the next step in modeling was to evaluate 2007 separately from 2000
38 and 2005.

39 Model 4 was developed using the log-log relationship between K_d and water
40 selenium concentrations for 2000 and 2005 (Figure 6D.3). Model 5 was
41 developed using log-log relationship between K_d and water selenium
42 concentrations for 2007 (Figure 6D.4 and Table 6D.7). These two models
43 produced ratios of predicted-to-observed whole-body selenium in bass
44 approximating 1, as shown in Figure 6D.1.

1 As expected in a large, complex, and diverse ecological habitat such as the Delta,
2 variations in the data distribution and in the outputs of the models are not
3 surprising. However, it should be noted that the estimated K_d values for Model 3
4 (674-6,060; Table 6D.6), Model 4 (651-4,997; Table 6D.7), and Model 5
5 (1,206-8,064; Table 6D.7) are consistent with those summarized by Presser and
6 Luoma (2010b) for the Delta.

7 Figures 6D.5 and 6D.6 illustrate the distribution of data for selenium
8 concentrations in Largemouth Bass (Foe 2010a) relative to the measured or
9 DSM2-modeled waterborne selenium concentrations (Tables 6D.1 through 6D.4)
10 and Models 3, 4, and 5 to complement the boxplots shown in Figure 6D.1. There
11 is notably more variability in selenium concentrations in bass between 0.09 and
12 0.13 $\mu\text{g/L}$ than at higher waterborne selenium concentrations (as shown in both
13 Figures 6D.5 and 6D.6); most of the higher values are from 2007 and most of the
14 lower ones are from 2005.

15 Figure 6D.5 shows the available data for 2000, 2005, and 2007 plotted with the
16 Model 3 prediction of selenium concentrations. As noted previously in text and in
17 Figure 6D.1, the model slightly over-predicts the median concentrations in fish on
18 the basis of waterborne selenium concentrations. This effect is reflected in
19 Figure 6D.1 by the outliers above the 90th percentile bar (that is, the higher over-
20 predictions for fish, which are those from 2000 and 2005). However, overall, the
21 model is within 1 $\mu\text{g/g}$ for all values less than the prediction, and within
22 approximately 1.2 $\mu\text{g/g}$ for the values greater than the prediction (Figure 6D.5).

23 Because of the notable differences between data for 2007 compared to combined
24 2000 and 2005 data, Model 4 was developed for 2000 and 2005 and Model 5 was
25 developed for 2007. Figure 6D.6 shows those model predictions compared to the
26 data. These two models improved the predictions; although the figure shows
27 more differences between data and the models at the lower waterborne
28 concentrations (that is, less than 0.30 $\mu\text{g/L}$) than at higher ones, the divergence is
29 generally less than 0.5 $\mu\text{g/g}$ at the higher waterborne concentrations. The outliers
30 for Model 4 are mostly above the 90th percentile (that is, over-predicting
31 concentrations in fish), rather than below, as shown in Figure 6D.1. For Model 5,
32 the predictions are “tighter” with just a few outliers above or below the
33 90th percentile.

34 Evaluation of water-year effects on selenium concentration in bass concluded that
35 Model 4 was relatively predictive of selenium concentration in whole-body bass
36 during normal to wet water years. Model 5 was considered predictive for dry
37 water years (such as 2007). Model 3 incorporates the varying bioaccumulation
38 when all years are considered (that is, 2000, 2005, and 2007). Although Model 3
39 tends to slightly overestimate selenium bioaccumulation (Table 6D.6 and
40 Figure 6D.1), it was used for estimating selenium concentrations in whole-body
41 fish in the impact assessment for “All” years, and Model 5 was used for
42 “Drought” years.

1 **6D.1.2.3.2 Selenium Bioaccumulation in Bird Eggs**

2 The K_d , invertebrate TTF, and fish TTFs developed for use in fish
3 bioaccumulation Models 4 and 5 were also used to estimate selenium uptake into
4 bird eggs using the following two bird egg models (Table 6D.8):

5 Bird Egg: Uptake from invertebrates (Equation 14):

$$6 \quad C_{birdegg} = C_{particulate} * TTF_{invertebrate} * TTF_{birdegg}$$

7 where:

$$8 \quad C_{particulate} = K_d * C_{water}$$

9 Bird Egg: Uptake from fish (Equation 15):

$$10 \quad C_{birdegg} = C_{particulate} * TTF_{invertebrate} * TTF_{fish} * TTF_{fish} * TTF_{birdegg}$$

11 where:

$$12 \quad C_{particulate} = K_d * C_{water}$$

13 Where:

- 14 • $C_{birdegg}$ = concentration of selenium in bird egg ($\mu\text{g/g dw}$)
- 15 • $C_{particulate}$ = concentration of selenium in particulate material ($\mu\text{g/g dw}$)
- 16 • C_{water} = selenium concentration in water column ($\mu\text{g/L}$)
- 17 • K_d = particulate/water ratio
- 18 • $TTF_{invertebrate}$ = trophic transfer factor from particulate material to invertebrate
- 19 • TTF_{fish} = trophic transfer factor from invertebrate or fish to fish
- 20 • $TTF_{birdegg}$ = trophic transfer factor from invertebrate or fish (depending on
21 diet) to bird egg

22 Equation 14 is the same as Equation 7, but Equation 15 differs from Equation 8 in
23 that it assumes birds are eating larger predatory fish such as bass.

24 **6D.1.2.4 Western Delta Sturgeon Model**

25 Presser and Luoma (2013) determined K_d values for San Francisco Bay (including
26 Carquinez Strait – Suisun Bay) during “low flow” conditions (5,986) and
27 “average” conditions (3,317). These values were used to model selenium
28 concentrations in particulates in bioaccumulation modeling for sturgeon under
29 “Drought” and “All” year conditions at the three locations in the western Delta.
30 (By comparison, calibration of the Delta-wide model for two western-most
31 location from which bass had been collected [Big Break] resulted in an average
32 $K_d = 3,736$ for 2000/2005 [Model 4, normal/wet years] and average $K_d =$
33 $7,166$ for 2007 [Model 5, dry year].)

34 Sturgeon in the western Delta, Carquinez Strait, and Suisun Bay typically prey on
35 a mix of clams including *Corbula amurensis*, which is known to be an efficient
36 bioaccumulator of selenium (Stewart et al. 2010) and crustaceans. Presser and
37 Luoma (2013) assumed a sturgeon diet of 50 percent clams and 50 percent
38 amphipods and other crustaceans in their model. Based on this diet, the authors
39 reported a TTF of 9.2 (identified as TTF_{prey} in Table 1 of Presser and Luoma
40 [2013]). This TTF was used to calculate concentrations in sturgeon invertebrate

1 prey for the Sacramento River at Emmaton, San Joaquin River at Antioch, and
2 Montezuma Slough at Hunter Cut/Beldon's Landing locations under the No
3 Action Alternative, Second Basis of Comparison, and Alternatives 1 through 5.
4 A TTF of 1.3 from diet to fish (identified as $TTF_{predator}$) was reported for sturgeon
5 in Presser and Luoma (2013) and was used to calculate concentrations of
6 selenium in sturgeon for the three western Delta locations.
7 Modeling for sturgeon at the three western Delta locations did not require
8 refinement because it relied on recent data provided by Presser and Luoma
9 [2013]) and because data to refine the model were not available.

10 **6D.2 Modeling Simulations and Assumptions**

11 As described in Section 6D.1, selenium modeling was performed for evaluation of
12 the alternatives. This section describes the assumptions for the selenium model
13 simulations of the No Action Alternative, Second Basis of Comparison, and other
14 alternatives. A description of DSM2 model assumptions is in Appendix 5A.

15 The following model simulations were used as the basis of evaluating the impacts
16 of Alternatives 1 through 5 as compared to the No Action Alternative, and the No
17 Action Alternative and Alternatives 1 through 5 as compared to the Second Basis
18 of Comparison:

- 19 • No Action Alternative
- 20 • Second Basis of Comparison

21 The following selenium model simulations of other alternatives were performed:

- 22 • Alternative 1 – for selenium simulation purposes, considered the same as
23 Second Basis of Comparison
- 24 • Alternative 2 – for selenium simulation purposes, considered the same as No
25 Action Alternative
- 26 • Alternative 3
- 27 • Alternative 4 – for selenium simulation purposes, considered the same as
28 Second Basis of Comparison.
- 29 • Alternative 5

30 The general selenium modeling assumptions described in the following
31 subsection pertain to all the model runs.

32 **6D.2.1 Delta-wide Assumptions**

33 The calibrated Delta-wide selenium bioaccumulation models (Models 3, 4, and 5)
34 are considered representative of conditions in the Delta under current and likely
35 future conditions, because they incorporate realistic concentrations of waterborne
36 selenium and they predict selenium concentrations in predatory fish that
37 approximate measured concentrations in Largemouth Bass. The calibrated

1 models take into account the variable nature of selenium bioaccumulation in
2 relation to waterborne concentrations, which is reflected in the generally inverse
3 relationship between the K_d and waterborne selenium concentration.

4 Models are not available to quantitatively estimate the level of changes in
5 selenium bioaccumulation as related to residence time, but the effects of residence
6 time are incorporated in the bioaccumulation modeling for selenium that was
7 based on higher K_d values for drought years in comparison to wet, normal, or all
8 years. If increases in fish tissue or bird egg selenium were to occur, the increases
9 would likely be of concern only where fish tissues or bird eggs are already
10 elevated in selenium to near or above thresholds of concern. That is, where biota
11 concentrations are currently low and not approaching thresholds of concern
12 (which is the case throughout the Delta, except for sturgeon in the western Delta),
13 changes in residence time alone would not be expected to cause them to then
14 approach or exceed thresholds of concern. In consideration of this factor,
15 although the Delta as a whole is a Clean Water Act (CWA) Section 303(d)-listed
16 waterbody for selenium (SWRCB 2011), and although monitoring data of fish
17 tissue or bird eggs in the Delta are sparse, the most likely areas in which biota
18 tissue selenium concentrations would be high enough that additional
19 bioaccumulation due to increased residence time from restoration areas would be
20 a concern are the western Delta and Suisun Bay (discussed below for sturgeon),
21 and the south Delta in areas that receive San Joaquin River water.

22 The South Delta receives elevated selenium loads from the San Joaquin River. In
23 contrast to Suisun Bay and possibly the western Delta in the future, the south
24 Delta lacks the Overbite Clam (*Corbula [Potamocorbula] amurensis*), which is
25 considered a key driver of selenium bioaccumulation in Suisun Bay because of its
26 high bioaccumulation of selenium and its role in the benthic food web that
27 includes long-lived sturgeon. The south Delta does have *Corbicula fluminea*,
28 another bivalve that bioaccumulates selenium, but it is not as invasive as the
29 Overbite Clam and thus likely makes up a smaller fraction of sturgeon diet. Also,
30 nonpoint sources of selenium in the San Joaquin Valley that contribute selenium
31 to the Delta will be controlled through a Total Maximum Daily Load (TMDL)
32 developed by the Central Valley Regional Water Quality Control Board (Central
33 ValleyRWQCB) for the lower San Joaquin River, established limits for the
34 Grassland Bypass Project, and Basin Plan objectives (Central Valley RWQCB
35 2001, 2010; SWRCB 2010a, 2010b) that are expected to result in decreasing
36 discharges of selenium from the San Joaquin River to the Delta. Further, if
37 selenium levels in the San Joaquin River are not sufficiently reduced by these
38 efforts, it is expected that the SWRCB and Central Valley RWQCB would initiate
39 additional TMDLs to further control nonpoint sources of selenium.

40 **6D.2.2 Western Delta Sturgeon Assumptions**

41 Modeling for selenium bioaccumulation by sturgeon in the western Delta is
42 considered to be based on the most appropriate uptake factors available, which
43 were published recently by Presser and Luoma (2013) specifically for sturgeon in
44 northern San Francisco Bay estuary. The disparity between larger estimated
45 changes for sturgeon and smaller changes for other biota (that is, whole-body fish,

1 bird eggs, and fish fillets) is attributable largely to differences in modeling
2 approaches, as described previously. The model for most biota was calibrated to
3 encompass the varying concentration-dependent uptake from waterborne
4 selenium concentrations (expressed as the K_d , which is the ratio of selenium
5 concentrations in particulates [as the lowest level of the food chain] relative to the
6 waterborne concentration) that was exhibited in data for Largemouth Bass in
7 2000, 2005, and 2007 at various locations across the Delta. In contrast, the
8 modeling for sturgeon could not be similarly calibrated at the three western Delta
9 locations and used literature-derived uptake factors and TTFs for the estuary from
10 Presser and Luoma (2013). There was a significant negative log-log relationship
11 of K_d to waterborne selenium concentration that reflected the greater
12 bioaccumulation rates for bass at low waterborne selenium than at higher
13 concentrations. There was no difference in bass selenium concentrations in the
14 Sacramento River at Rio Vista compared to the San Joaquin River at Vernalis in
15 2000, 2005, and 2007 (Foe 2010a), despite a nearly 10-fold difference in
16 waterborne selenium concentrations. It is unknown whether this might also occur
17 in the sturgeon food web. Thus, there is more confidence in the site-specific
18 modeling based on the Delta-wide model that was calibrated for bass data than in
19 the estimates for sturgeon based on “fixed” K_d values for all years and for drought
20 years without regard to waterborne selenium concentration at the three locations
21 in different time periods.

22 The western Delta and Suisun Bay receive elevated selenium loads from North
23 San Francisco Bay (including San Pablo Bay, Carquinez Strait, and Suisun Bay)
24 and from the San Joaquin River. Point sources of selenium in North San
25 Francisco Bay (that is, refineries) that contribute selenium to Suisun Bay are
26 expected to be reduced through a TMDL under development by the San Francisco
27 Bay Regional Water Quality Control Board (San Francisco Bay RWQCB 2012)
28 that is expected to result in decreasing discharges of selenium. Nonpoint sources
29 of selenium in the San Joaquin Valley that contribute selenium to the San Joaquin
30 River, and thus the Delta and Suisun Bay, will be controlled through a TMDL
31 developed by the Central Valley RWQCB (2001) for the lower San Joaquin
32 River, established limits for the GBP, and Basin Plan objectives (Central Valley
33 RWQCB 2010; SWRCB 2010a, 2010b) that are expected to result in decreasing
34 discharges of selenium from the San Joaquin River to the Delta. If selenium
35 levels are not sufficiently reduced via these efforts, it is expected that the SWRCB
36 and the San Francisco Bay and Central Valley regional Water Quality Control
37 Boards would initiate additional actions to further control sources of selenium.

38 **6D.2.3 Model Application Methodology**

39 To evaluate differences in the impact assessment, modeled whole-body fish, bird
40 egg or fish fillet data were compared directly (for percent change) and to the
41 following threshold effect benchmarks:

- 42 • Whole-body fish for the Delta-wide model were compared to the Level of
43 Concern (4 milligrams per kilogram [mg/kg] dw; Beckon et al. 2008) and the
44 Toxicity Level (8.1 mg/kg dw; USEPA 2014) for fish tissue.

- 1 • Modeled bird egg selenium concentrations were compared to Level of
2 Concern (6 mg/kg dw) and Toxicity Level (10 mg/kg dw) values from Beckon
3 et al. (2008).
 - 4 • Fish fillet data were compared to the Advisory Tissue Level (2.5 µg/g ww) for
5 human consumption of fish (OEHHA 2008).
 - 6 • Whole-body selenium concentrations in sturgeon were compared to Low
7 Effect (5 mg/kg dw) and High Effect (8 mg/kg dw) guidelines from Presser
8 and Luoma (2013).
- 9 Results of comparisons to these benchmarks are expressed as Exceedance
10 Quotients (EQs) in some of the tables and figures. Annual average selenium
11 concentrations in water did not exceed the 5.0 µg/L(4-day average) or 20 µg/L
12 (1-hour average) criterion, so no EQs were calculated.

13 **6D.2.3.1 No Action Alternative and Second Basis of Comparison Models**

14 The purpose of the No Action Alternative and the Second Basis of Comparison
15 for comparison with the forecasts of the alternative models was to determine
16 whether the implementation of the proposed alternatives is likely to result in
17 substantial impacts to selenium, thereby affecting biological resources. The No
18 Action Alternative and the Second Basis of Comparison models were completed
19 for five Delta interior, three western Delta, and four major Delta diversion
20 locations. DSM2 post-processing output provided estimates of the waterborne
21 selenium concentration at each of those 12 locations (Table 6D.9). The Delta-
22 specific selenium bioaccumulation model that was calibrated using Largemouth
23 Bass data from the Delta was then used to estimate selenium concentrations in
24 whole-body fish and then in bird eggs and fish fillets. Selenium concentrations in
25 sturgeon inhabiting the western Delta (represented by three locations) were
26 estimated using recently published literature parameters. Modeled selenium
27 concentrations in whole-body fish (predatory fish throughout the Delta or
28 sturgeon in the western Delta), bird egg or fish fillet data were compared to the
29 threshold effect benchmarks listed previously. The modeled tissue selenium
30 concentrations themselves and the EQs (based on comparisons to thresholds) both
31 served as a basis for comparison of other alternatives to identify potential impacts.

32 **6D.2.3.2 Alternative Models**

33 For each of the alternative model simulations, the same procedure as described for
34 the No Action Alternative and the Second Basis of Comparison models was used,
35 with similar assumptions, to estimate waterborne selenium concentrations and
36 selenium concentrations in fish and bird eggs. Each alternative model simulation
37 for each type of biota (whole-body fish [either using the Delta-wide model for
38 bass or the western Delta sturgeon model], bird eggs, or fish fillets) was compared
39 to both the No Action Alternative and the Second Basis of Comparison to
40 determine potentially significant impacts.

1 **6D.3 Modeling Results**

2 The post-processing tool is Excel-based. The general pre-processing and input
3 files development are described in the modeling data assumptions sections above.
4 This section focuses on data analysis and results interpretation for the impact
5 assessment.

6 **6D.3.1 Post-processing and Results Analysis: Delta-wide Model**

7 Output data resulting from the model simulations for each alternative are
8 processed to provide a tabular depiction of potential impacts to fish and wildlife
9 (Tables 6D.13 through 6D.15). As discussed previously, outputs from the post-
10 processing model used in this analysis are annual average selenium fish tissue
11 concentrations for all year types and separately presented for the subset of drought
12 years.

13 The variation in concentrations between the No Action Alternative, Second Basis
14 of Comparison, and Alternatives 1 through 5 was less than 5 percent
15 (Tables 6D.13 through 6D.15). Annual average concentrations do not exceed the
16 selenium thresholds at all locations modeled in the Delta for all years and drought
17 years both as measured and as modeled. Results are shown in Tables 6D.9
18 through 6D.15 and Figures 6D.7 through 6D.10. Table 6D.9 presents the period-
19 average waterborne selenium concentrations by location and water year type that
20 were used to model fish tissue (whole-body and fillet) and bird egg concentrations
21 (Tables 6D.10 through 6D.12).

22 All estimated selenium concentrations in water and biota (whole-body fish, bird
23 eggs, and fish fillets) were below the benchmarks used for evaluation (presented
24 in Section 6D.2.4). The highest estimated selenium concentrations were for
25 Alternative 1 in the San Joaquin River at San Andreas Landing and Sacramento
26 River at Emmaton, and Alternative 3 in the North Bay Aqueduct at Barker Slough
27 in drought years (Tables 6D.10 through 6D.12). Changes in estimated selenium
28 concentrations for Alternatives 3 and 5 compared to the No Action Alternative
29 and Alternative 1 were less than 4 percent (Tables 6D.14 and 6D.15).

30 **6D.3.2 Post-processing and Results Analysis: Western Delta** 31 **Sturgeon Model**

32 Output data resulting from the sturgeon model simulations for each alternative at
33 the three western Delta locations were processed to provide a tabular depiction of
34 potential impacts to sturgeon. Table 6D.16 presents the period-average
35 waterborne selenium concentrations by location and water year type that were
36 used to model fish tissue concentrations (Table 6D.17). As discussed previously,
37 outputs from the post-processing model used in this analysis are annual average
38 selenium concentrations in whole-body sturgeon for all year types and separately
39 presented for the subset of drought years.

40 The expected variations in whole-body sturgeon selenium concentrations between
41 the No Action Alternative, the Second Basis of Comparison, and Alternatives 1
42 through 5 were less than 1 mg/kg dw (Table 6D.17). The highest estimated

1 selenium concentrations were for drought years at all three locations with little
2 difference among alternatives. Annual average sturgeon concentrations slightly
3 exceeded the low selenium thresholds for all locations and alternatives for
4 drought years, but not for all years. Results of comparisons to the thresholds are
5 shown in Table 6D.18 and Figure 6D.11. Estimated selenium concentrations did
6 not exceed high thresholds.

7 Changes in estimated selenium concentrations compared to the No Action
8 Alternative and Second Basis of Comparison are less than 5 percent for all years
9 and for drought years (Table 6D.19). The largest predicted changes were a small
10 decrease under Alternative 3 relative to the No Action Alternative for the San
11 Joaquin River at Antioch in all years and a small increase predicted for
12 Alternative 5 relative to Second Basis of Comparison at that location in all years.
13 Both of these predicted changes were less than 5 percent. However, as noted
14 previously, even the expected changes for the San Joaquin River at Antioch for
15 Alternatives 3 and 5 as compared to the No Action Alternative or the Second
16 Basis of Comparison were less than 1 mg/kg dw. It is not likely that such small
17 changes in whole-body selenium concentrations would be detectable under field
18 conditions.

19 **6D.3.3 Model Limitations and Applicability**

20 Although it is impossible to predict future hydrology, land use, and water use with
21 certainty, the selenium model and DSM2 were used to forecast impacts to fish and
22 wildlife that could result from implementation of the alternatives. The selenium
23 model for sturgeon has greater uncertainty than the selenium model for bass
24 because the sturgeon model was not as finely calibrated for varying K_d relative to
25 waterborne selenium concentrations throughout the Delta, as discussed in Section
26 6D.2.2. Mathematical models like DSM2 can only approximate processes of
27 physical systems. Models are inherently inexact because the mathematical
28 description of the physical system is imperfect and the understanding of
29 interrelated physical processes is incomplete. However, the selenium models are
30 powerful tools that, when used carefully, can provide useful insight into processes
31 of the physical system. Selenium concentrations for inflow sources to the Delta
32 (for example, agriculture in the Delta, Yolo Bypass, Eastside Tributaries) also
33 caused uncertainty in the modeling because of limited data. For the Sacramento
34 River and the San Joaquin River, approximately 90 data points (Chapter 6,
35 Table 6.58; Table 6D.1) were used to estimate the mean selenium concentrations
36 for these inflow sources, whereas the mean selenium concentrations for other
37 inflow sources to the Delta had many fewer (0 to 14) data points (concentrations
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1 Table 6D.2 Calculation of Quarterly Average Selenium Concentrations for DSM2 Output Locations Based on Percentage of Flow at Each Location from Different Sources: Year 2000

DSM2 Output Water Location	Inflow Source → Inflow Location → Selenium (µg/L) →	First Quarter Inflow Percentage						Second Quarter Inflow Percentage						Third Quarter Inflow Percentage						Fourth Quarter Inflow Percentage						Estimated Waterborne Selenium Concentrations (µg/L)				
		Delta Ag.	East Delta Tributaries	Sac. R.	San Joaq. R.	Martinez/Suisun Bay	Yolo Bypass	Delta Ag.	East Delta Tributaries	Sac. R.	San Joaq. R.	Martinez/Suisun Bay	Yolo Bypass	Delta Ag.	East Delta Tributaries	Sac. R.	San Joaq. R.	Martinez/Suisun Bay	Yolo Bypass	Delta Ag.	East Delta Tributaries	Sac. R.	San Joaq. R.	Martinez/Suisun Bay	Yolo Bypass	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Annual
		Mildred Island, Center	Mokelumne Calaveras Cosumnes Rivers	Freeport	Vernalis	San Joaq. R. near Mallard Island	Sac. R. below Knights Landing	Mildred Island, Center	Mokelumne Calaveras Cosumnes Rivers	Freeport	Vernalis	San Joaq. R. near Mallard Island	Sac. R. below Knights Landing	Mildred Island, Center	Mokelumne Calaveras Cosumnes Rivers	Freeport	Vernalis	San Joaq. R. near Mallard Island	Sac. R. below Knights Landing	Mildred Island, Center	Mokelumne Calaveras Cosumnes Rivers	Freeport	Vernalis	San Joaq. R. near Mallard Island	Sac. R. below Knights Landing					
Big Break	BIGBRK_MID	2.94	6.88	53.15	6.59	0.18	5.70	2.95	6.37	73.59	13.55	0.27	3.12	3.13	0.45	85.63	0.44	4.15	6.12	2.13	0.20	84.85	0.02	8.76	3.96	0.13	0.20	0.10	0.10	0.13
Cache Slough	CACHS_LEN	1.46	0	53.38	0	0	31.91	1.24	1.5E-05	85.07	2.5E-05	0	13.25	1.66	4.7E-07	85.95	4.3E-07	5.9E-07	12.23	1.32	2.8E-06	89.83	1.1E-07	2.3E-05	8.67	0.12	0.11	0.11	0.10	0.11
Cache Slough	CACHSR_MID	2.88	0	54.86	0	0	20.48	3.36	9.8E-07	79.75	1.9E-06	0	16.25	1.90	9.3E-08	84.53	1.8E-07	9.2E-12	13.38	1.81	1.0E-07	89.45	6.2E-10	3.0E-06	8.54	0.10	0.11	0.11	0.10	0.11
Ryer																														
Cosumnes R.	COSR_LEN	8.1E-06	98.82	0	0	0	0	0	100.00	0	0	0	0	0	100.00	0	0	0	0	0	100.00	0	0	0	0	0.10	0.10	0.10	0.10	0.10
Franks Tract	FRANKST_MID	5.06	11.56	43.94	15.79	0.02	0.32	4.17	9.42	61.16	23.89	0.01	1.22	4.04	0.57	90.34	0.41	0.80	3.78	2.76	0.62	91.38	0.12	2.42	2.64	0.19	0.27	0.10	0.10	0.16
Little Holland Tract	LHOLND_LO	72.35	0	5.06	0	0	6.50	23.38	8.2E-07	63.10	1.6E-06	0	13.03	18.48	2.2E-07	68.67	4.2E-07	7.2E-13	12.68	19.63	2.6E-09	72.79	0	0	7.42	0.10	0.11	0.11	0.10	0.11
Middle R Bullfrog	MIDRBULFRG_LEN	10.54	13.07	18.37	32.20	1.9E-03	3.2E-03	5.49	9.19	14.96	70.17	4.2E-04	0.10	7.81	6.43	69.63	14.94	0.12	1.02	4.86	6.31	59.79	27.84	1	0.68	0.31	0.61	0.20	0.30	0.36
Mildred Island	MILDDRISL_MID	7.47	14.31	22.79	30.23	2.4E-03	1.8E-03	4.77	10.05	18.48	66.48	6.7E-04	0.13	6.57	4.57	83.28	4.14	0.15	1.25	4.50	6.63	71.28	16.13	0.61	0.82	0.29	0.58	0.12	0.21	0.30
Mok. R. below Cosum.	MOKBCOS_LEN	2.07	96.19	0	0	0	0	1.65	98.35	0	0	0	0	7.23	92.77	4.7E-09	0	0	0	2.47	97.53	0	0	0	0	0.10	0.10	0.10	0.10	0.10
Mok. R. downstream Cosum.	MOKDCOS_MID	2.07	96.43	0	0	0	0	1.68	98.32	0	0	0	0	7.08	92.92	0	0	0	0	2.34	97.66	0	0	0	0	0.10	0.10	0.10	0.10	0.10
Old R near Paradise Cut	OLDRNPARADSEC_MID	6.24	0	0	87.26	0	0	14.40	1.67	5.21	78.66	1.2E-05	0.04	10.56	3.9E-05	1.3E-04	89.44	8.8E-28	3.0E-07	2.50	1.1E-04	3.5E-04	97.50	2.8E-20	1.7E-07	0.73	0.68	0.75	0.81	0.74
Paradise Cut	PARADSECUT_LEN	4.69	0	0	91.37	0	0	2.62	0.06	0.15	97.16	1.5E-07	1.1E-03	3.43	0	0	96.57	0	0	0.96	0	0	99.04	0	0	0.76	0.81	0.81	0.82	0.80
Port of Stockton	PORTOSTOCK_LO	1.67	0	0	18.85	0	0	2.22	0	0	60.73	0	0	3.09	0	0	81.32	0	0	2.70	0	0	89.89	0	0	0.16	0.51	0.68	0.75	0.52
Sac. R. at Isleton	SACRISLTON_LO	0.33	0	95.77	0	0	0	0.31	0.00	99.60	0	0	5.5E-05	0.44	0	99.55	0	0	1.3E-05	0.28	0	99.72	0	0	1.1E-03	0.09	0.09	0.09	0.09	0.09
Sac River RM 44	SACR44_LO	0.14	0	97.93	0	0	0	0.11	0	99.81	0	0	0	0.13	0	99.86	0	0	0	0.05	0	99.94	0	0	0	0.09	0.09	0.09	0.09	0.09
Sandmound Sl.	SANDMND_MID	6.36	10.51	43.82	12.90	0.03	0.57	5.22	8.81	63.78	20.40	0.03	1.63	5.24	0.61	87.78	0.49	1.22	4.59	3.31	0.43	89.58	0.06	3.44	3.11	0.17	0.25	0.10	0.10	0.15
Sherman Island	SHERMNLND_LO	1.64	3.45	52.71	3.93	0.60	12.10	2.48	4.95	76.80	10.96	0.96	3.67	2.60	0.40	81.69	0.46	8.21	6.56	1.77	0.11	77.64	0.01	16.46	3.94	0.11	0.18	0.10	0.10	0.12
SJR Bowman	SJRBOWMN_MID	1.40	0	0	94.03	0	0	1.52	0	0	98.48	0	0	3.00	0	0	97.00	0	0	0.33	0	0	99.67	0	0	0.78	0.82	0.81	0.83	0.81
SJR N Hwy4	SJRNHWY4_MID	3.49	0	0	89.96	0	0	1.87	0	0	98.13	0	0	3.91	0	0	96.09	0	0	0.72	0	0	99.28	0	0	0.75	0.82	0.80	0.82	0.80
SJR Naval st	SJRNAVLSL_LO	8.89	12.70	0.00	65.44	0	0	2.69	6.26	0	90.94	0	0	5.98	10.89	0	83.00	0	0	2.02	3.10	0.00	94.84	0	0	0.57	0.76	0.71	0.79	0.71
SJR Potato Slough	SJRPOTSL_MID	3.15	12.62	55.38	12.40	0.01	0.06	3.05	10.32	65.93	19.73	0.01	0.86	2.63	0.35	93.54	0.20	0.45	2.79	2.06	0.80	93.46	0.06	1.47	2.11	0.17	0.24	0.10	0.09	0.15
SJR Turner	SJRTURNR_MID	8.81	9.28	2.55	56.31	5.3E-05	1.0E-05	3.33	5.77	0.41	90.39	6.3E-06	2.4E-03	8.69	13.75	17.87	59.41	0.01	0.16	3.23	4.83	7.34	84.49	0.03	0.05	0.49	0.76	0.53	0.72	0.62
SJR/Pt.	ASRANTFSH_MID	1.92	4.35	55.13	4.50	0.44	10.23	2.45	4.72	77.70	10.28	0.76	3.91	2.64	0.35	83.38	0.38	6.66	6.52	1.82	0.12	80.54	0.01	13.33	4.11	0.12	0.17	0.10	0.10	0.12
Antioch/fish pier																														
Suisun Bay	SUISNB_LEN	0.81	1.22	45.93	1.24	16.49	15.94	0.92	1.66	49.51	3.61	41.10	2.95	0.80	0.23	27.56	0.40	68.55	2.42	0.60	0.03	28.62	0.01	69.16	1.54	0.11	0.13	0.10	0.10	0.11
Sycamore Slough	SYCAMOR_MID	6.50	50.69	15.18	0	0	0	5.89	76.86	16.89	2.8E-07	0	0	5.04	14.29	80.66	1.2E-31	0	0	4.23	31.10	64.66	0	0	0.07	0.10	0.09	0.09	0.09	
White Slough	WHITESL_LO	22.32	11.88	17.97	25.51	1.7E-08	6.0E-11	16.54	12.10	16.87	54.46	3.7E-09	6.1E-05	9.89	7.76	82.34	3.8E-03	3.0E-05	5.3E-04	11.19	12.92	75.64	0.24	4.2E-04	6.4E-04	0.26	0.50	0.09	0.10	0.24
White Slough DS Disappointment Sl.	WHTSLDISPONT_LEN	14.83	22.63	29.02	22.45	5.4E-08	0	12.45	13.97	21.21	52.32	2.2E-09	2.3E-04	8.74	7.78	83.47	2.4E-03	4.0E-05	5.6E-04	5.28	14.84	79.82	0.05	5.0E-04	7.3E-04	0.25	0.48	0.09	0.09	0.23

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1 Table 6D.3 Calculation of Quarterly Average Selenium Concentrations for DSM2 Output Locations Based on Percentage of Flow at Each Location from Different Sources: Year 2005

DSM2 Output Water Location	Inflow Source → Inflow Location → Selenium (µg/L) →	First Quarter Inflow Percentage						Second Quarter Inflow Percentage						Third Quarter Inflow Percentage						Fourth Quarter Inflow Percentage						Estimated Waterborne Selenium Concentrations (µg/L)					
		Delta Ag.	East Delta Tributaries	Sac. R.	San Joaq. R.	Martinez/Suisun Bay	Yolo Bypass	Delta Ag.	East Delta Tributaries	Sac. R.	San Joaq. R.	Martinez/Suisun Bay	Yolo Bypass	Delta Ag.	East Delta Tributaries	Sac. R.	San Joaq. R.	Martinez/Suisun Bay	Yolo Bypass	Delta Ag.	East Delta Tributaries	Sac. R.	San Joaq. R.	Martinez/Suisun Bay	Yolo Bypass	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Annual	
		Mildred Island, Center	Mokelumne Calaveras Cosumnes Rivers	Freeport	Vernalis	San Joaq. R. near Mallard Island	Sac. R. below Knights Landing	Mildred Island, Center	Mokelumne Calaveras Cosumnes Rivers	Freeport	Vernalis	San Joaq. R. near Mallard Island	Sac. R. below Knights Landing	Mildred Island, Center	Mokelumne Calaveras Cosumnes Rivers	Freeport	Vernalis	San Joaq. R. near Mallard Island	Sac. R. below Knights Landing	Mildred Island, Center	Mokelumne Calaveras Cosumnes Rivers	Freeport	Vernalis	San Joaq. R. near Mallard Island	Sac. R. below Knights Landing						
Big Break	BIGBRK_MID	5.87	7.57	83.73	2.41	0.24	0.18	2.90	17.21	52.77	26.69	1.6E-03	0.43	3.31	2.21	88.77	1.70	3.98	0.03	2.39	0.24	90.17	0.01	6.48	0.70	0.11	0.30	0.10	0.09	0.15	
Cache Slough	CACHS_LEN	4.89	2.2E-07	93.64	8.E-07	3.8E-07	1.47	1.48	7.1E-07	94.13	8.0E-07	1.1E-08	4.38	1.94	1.7E-05	98.02	1.0E-05	1.6E-06	0.05	2.30	1.2E-05	92.72	4.6E-07	0.00	4.98	0.09	0.10	0.09	0.10	0.09	
Cache Slough	CACHSR_MID	8.13	3.0E-07	91.14	1.2E-06	1.3E-06	0.73	3.74	2.5E-08	91.89	1.0E-07	2.9E-08	4.38	2.15	5.6E-07	97.77	2.6E-07	4.5E-09	0.08	2.66	8.8E-07	96.37	1.9E-08	7.6E-06	0.97	0.09	0.10	0.09	0.09	0.09	
Ryer																															
Cosumnes R.	COSR_LEN	0	100.00	0	0	0	0	0.00	100.00	0.00	0	0	0	0	100	0	0	0	0	1.2E-04	100.00	0	0	0	0	0.10	0.10	0.10	0.10	0.10	
Franks Tract	FRANKST_MID	8.65	11.65	72.50	7.E+00	0.19	0.05	4.63	16.63	26.97	51.74	1.1E-04	0.03	4.27	3.20	89.93	1.81	0.77	0.02	3.17	0.81	94.16	0.06	1.74	0.05	0.15	0.49	0.11	0.09	0.21	
Little Holland Tract	LHOLND_LO	97.11	3.2E-09	2.88	9.E-09	3.9E-09	0.01	44.12	6.5E-09	53.25	2E-08	1.2E-08	2.63	18.61	5.6E-07	81.24	0.00	0.00	0.16	46.22	6.1E-08	53.77	2.8E-06	2.6E-09	0.01	0.11	0.10	0.09	0.10	0.10	
Middle R Bullfrog	MIDRBULFRG_LEN	13.67	9.76	28.26	48.24	0.08	0.01	5.55	5.64	2.70	86.11	7.1E-05	8.4E-04	7.43	12.50	53.07	26.88	0.12	3.1E-03	5.54	8.75	65.65	19.67	0.39	1.1E-03	0.46	0.75	0.30	0.24	0.44	
Mildred Island	MILDRISL_MID	12.36	11.39	32.28	43.87	8.4E-02	0.01	4.81	6.98	2.78	85.43	3.6E-05	6.7E-04	6.73	12.68	65.46	14.98	0.15	3.9E-03	4.81	7.16	77.85	9.71	0.47	1.8E-03	0.43	0.74	0.21	0.17	0.38	
Mok. R. below Cosum.	MOKBCOS_LEN	2.18	97.82	0	0.00	0	0	0.53	99.47	0	0	0	0	3.05	96.95	0	0	0	0	3.00	97.00	0	0	0	0	0.10	0.10	0.10	0.10	0.10	
Mok. R. downstream Cosum.	MOKDCOS_MID	2.22	97.78	0	0.00	0	0	0.53	99.47	0	0	0	0	3.05	96.95	0	0	0	0	2.93	97.07	0	0	0	0	0.10	0.10	0.10	0.10	0.10	
Old R near Paradise Cut	OLDRNPARADSEC_MID	8.95	4.7E-05	1.5E-03	91.05	1.4E-05	1.4E-06	1.43	1.7E-07	1.6E-05	98.57	1.7E-08	3.5E-10	6.64	0	5.E-09	93.36	0	0	14.49	0.24	3.16	82.09	0.02	8.1E-05	0.78	0.84	0.80	0.72	0.79	
Paradise Cut	PARADSECUT_LEN	10.28	1.6E-07	6.8E-07	89.72	1.6E-11	1.7E-08	0.82	0	0	99.18	0	0	2.39	0	0	97.61	0	0	1.08	0	0	98.92	0	0	0.77	0.84	0.83	0.84	0.82	
Port of Stockton	PORTOSTOCK_LO	4.70	0	0	95.30	0	0	2.83	0	0	97.16	0	0	2.20	0	0	97.80	0	0	2.20	0	0	97.79	0	0	0.82	0.83	0.83	0.83	0.83	
Sac. R. at Isleton	SACRISLTON_LO	0.55	0	99.45	0.00	0	0	0.18	0	99.82	0.00	0	0	0.45	0	99.55	0.00	0	0	0.41	0	99.59	0	0	8.2E-08	0.09	0.09	0.09	0.09	0.09	
Sac River RM 44	SACR44_LO	0.21	0	99.79	0.00	0	0	0.07	0	99.93	0.00	0	0	0.14	0	99.86	0.00	0	0	0.17	0	99.83	0	0	0	0.09	0.09	0.09	0.09	0.09	
Sandmound Sl.	SANDMND_MID	10.51	10.17	74.35	4.65	0.25	0.07	5.35	18.03	32.15	44.41	1.5E-04	0.06	5.61	3.13	87.97	2.10	1.17	0.02	3.93	0.55	92.97	0.03	2.45	0.07	0.13	0.43	0.11	0.09	0.19	
Sherman Island	SHERMNILND_LO	4.89	5.04	87.74	1.52	0.56	0.23	2.43	14.17	61.17	21.31	0.03	0.89	2.76	1.84	86.03	1.72	7.62	0.04	1.95	0.11	84.69	0.01	11.76	1.48	0.10	0.26	0.10	0.09	0.14	
SJR Bowman	SJRBOWMN_MID	1.10	0	0.00	98.90	0	0	0.45	0	99.55	0	0	0	2.06	0	97.94	0	0	0.80	0	99.20	0	0	0	0.84	0.85	0.83	0.84	0.84		
SJR N Hwy4	SJRNHWY4_MID	1.89	0	0.00	98.11	0	0	0.59	0	99.41	0	0	0	2.64	0	97.36	0	0	1.94	0.00	98.06	0	0	0	0.84	0.85	0.83	0.84	0.84		
SJR Naval st	SJRNAVLSL_LO	4.70	5.45	0.00	89.85	0	0	1.06	5.10	0	93.84	0	0	4.11	9.43	0	86.46	0	4.97	12.46	0	82.57	0	0	0.77	0.80	0.75	0.72	0.76		
SJR Potato Slough	SJRPOTSL_MID	6.24	16.03	71.18	6.45	0.07	0.03	2.65	23.15	38.61	35.59	1.1E-05	0.01	2.75	2.58	93.40	0.83	0.42	0.01	2.16	1.30	95.35	0.02	1.04	0.13	0.14	0.36	0.10	0.09	0.17	
SJR Turner	SJRTURNR_MID	6.75	4.55	1.37	87.31	0.01	0	1.49	3.20	0.00	95.31	0	0	6.05	11.77	4.90	77.27	0.01	8.4E-05	5.55	16.96	10.99	66.44	0.06	7.4E-05	0.76	0.81	0.68	0.60	0.71	
SJR/Pt.	ASRANTFSH_MID	4.87	5.29	87.53	1.67	0.37	0.27	2.37	13.56	62.61	20.61	0.02	0.84	2.82	1.68	87.76	1.46	6.24	0.03	2.05	0.14	86.70	0.01	9.68	1.42	0.10	0.25	0.10	0.09	0.14	
Antioch/fish pier																															
Suisun Bay	SUISNB_LEN	2.63	1.36	66.87	0.33	28.58	0.23	1.35	6.21	59.91	8.33	22.38	1.82	0.83	0.82	31.47	1.16	65.65	0.07	0.68	0.05	32.01	0.03	66.56	0.68	0.10	0.16	0.11	0.10	0.11	
Sycamore Slough	SYCAMOR_MID	14.41	68.02	17.57	8.8E-17	0	3.5E-29	3.66	95.02	1.31	1.E-18	0	3.9E-33	4.79	40.41	54.81	2.9E-20	0	1.1E-32	5.24	32.04	62.72	2.6E-18	7.7E-14	1.0E-30	0.10	0.10	0.09	0.09	0.10	
White Slough	WHITESL_LO	47.62	12.39	33.06	6.93	8.2E-04	2.7E-06	15.95	8.06	2.95	73.04	1.4E-05	1.5E-07	10.03	26.20	63.17	0.61	3.0E-05	8.1E-08	9.32	12.33	78.34	0.01	4.6E-04	4.6E-08	0.15	0.65	0.10	0.09	0.25	
White Slough DS Disappointment Sl.	WHTSLDISPONT_LEN	20.77	29.09	44.03	6.11	2.4E-04	3.6E-06	14.40	8.89	3.00	73.72	7.9E-06	0	9.10	26.19	64.27	0.45	3.1E-05	0	6.26	14.39	79.35	1.9E-03	6.8E-04	0	0.14	0.65	0.10	0.09	0.25	

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1 Table 6D.4 Calculation of Quarterly Average Selenium Concentrations for DSM2 Output Locations Based on Percentage of Flow at Each Location from Different Sources: Year 2007

DSM2 Output Water Location	Inflow Source →	First Quarter Inflow Percentage						Second Quarter Inflow Percentage						Third Quarter Inflow Percentage						Fourth Quarter Inflow Percentage						Estimated Waterborne Selenium Concentrations (µg/L)				
		Delta Ag.	East Delta Tributaries	Sac. R.	San Joaq. R.	Martinez/ Suisun Bay	Yolo Bypass	Delta Ag.	East Delta Tributaries	Sac. R.	San Joaq. R.	Martinez/ Suisun Bay	Yolo Bypass	Delta Ag.	East Delta Tributaries	Sac. R.	San Joaq. R.	Martinez/ Suisun Bay	Yolo Bypass	Delta Ag.	East Delta Tributaries	Sac. R.	San Joaq. R.	Martinez/ Suisun Bay	Yolo Bypass	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Annual
		Mildred Island, Center	Mokelumne Calaveras Cosumnes Rivers	Freeport	Vernalis	San Joaq. R. near Mallard Island	Sac. R. below Knights Landing	Mildred Island, Center	Mokelumne Calaveras Cosumnes Rivers	Freeport	Vernalis	San Joaq. R. near Mallard Island	Sac. R. below Knights Landing	Mildred Island, Center	Mokelumne Calaveras Cosumnes Rivers	Freeport	Vernalis	San Joaq. R. near Mallard Island	Sac. R. below Knights Landing	Mildred Island, Center	Mokelumne Calaveras Cosumnes Rivers	Freeport	Vernalis	San Joaq. R. near Mallard Island	Sac. R. below Knights Landing					
	Selenium (µg/L) →	0.11	0.10	0.09	0.58	0.10	0.23	0.11	0.10	0.09	0.58	0.10	0.23	0.11	0.10	0.09	0.58	0.10	0.23	0.11	0.10	0.09	0.58	0.10	0.23					
	Location ID																													
Big Break	BIGBRK_LEN	2.66	1.75	93.01	0.07	2.30	0.21	4.40	3.10	84.13	4.24	1.24	2.89	3.58	0.32	81.60	0.79	9.45	4.27	2.60	0.11	84.06	0.04	8.53	4.65	0.09	0.12	0.10	0.10	0.10
Cache Slough	CACHS_LEN	1.86	1.4E-05	97.14	2.2E-07	2.8E-05	1.01	1.99	5.1E-04	88.84	8.8E-04	1.6E-05	9.17	1.92	9.1E-06	89.20	1.9E-05	1.6E-06	8.88	1.64	1.9E-05	91.73	8.5E-06	5.1E-04	6.62	0.09	0.10	0.10	0.10	0.10
Cache Slough	CACHSR_LEN	2.85	1.8E-06	96.46	4.7E-08	1.5E-05	0.68	2.66	1.2E-04	88.76	1.8E-04	1.4E-06	8.58	2.16	1.5E-05	88.35	3.1E-05	3.1E-07	9.49	1.96	4.5E-06	90.83	2.8E-06	1.9E-04	7.21	0.09	0.10	0.10	0.10	0.10
Ryer																														
Cosumnes R.	COSR_LEN	0.00	100.00	0	0	0	0.00	0.01	99.99	0	0	0	0	0.09	99.91	0	0	0	0	0	100.00	0	0	0	0.00	0.10	0.10	0.10	0.10	0.10
Franks Tract	FRANKST_LEN	3.85	4.08	90.69	0.32	0.94	0.11	6.16	5.35	77.86	9.10	0.16	1.38	4.86	0.34	88.03	0.84	2.96	2.98	3.19	0.32	91.15	0.17	2.23	2.95	0.09	0.14	0.10	0.10	0.11
Little Holland Tract	LHOLND_LEN	29.80	0.00	69.38	1.2E-07	5.3E-05	0.81	22.80	8.0E-05	71.18	1.1E-04	5.2E-06	6.02	18.52	2.4E-05	73.18	0.00	4.9E-07	8.30	21.64	5.2E-07	71.72	1.4E-06	4.9E-05	6.64	0.10	0.10	0.11	0.10	0.10
Middle R Bullfrog	MIDRBULFRG_LEN	8.32	10.69	59.08	21.39	0.48	0.04	9.69	10.67	38.75	40.64	0.03	0.22	8.41	3.92	81.16	4.51	0.87	1.14	5.81	4.90	72.42	15.36	0.57	0.94	0.20	0.29	0.12	0.17	0.19
Mildred Island	MILDDRISL_LEN	7.42	11.13	68.24	12.63	0.54	0.04	8.53	10.39	42.57	38.23	0.03	0.25	6.49	1.12	88.25	1.83	1.00	1.30	4.91	4.55	80.81	7.99	0.66	1.08	0.15	0.28	0.10	0.13	0.17
Mok. R. below Cosum.	MOKBCOS_LEN	1.46	98.54	0	0	0	0	6.32	93.68	6.5E-04	0	0	0	15.09	84.81	0.10	6.2E-35	0	0	2.30	97.70	0	0	0	0	0.10	0.10	0.10	0.10	0.10
Mok. R. downstream Cosum.	MOKDCOS_LEN	1.46	98.54	0	0	0	0	6.42	93.58	0	0	0	0	15.19	84.81	3.2E-04	0	0	0	2.27	97.73	0	0	0	0	0.10	0.10	0.10	0.10	0.10
Old R near Paradise Cut	OLDRNPARADSEC_LEN	3.95	5E-12	3E-06	96.05	1.7E-16	2.5E-17	15.73	1.81	12.66	69.68	0.02	0.10	10.18	1.9E-05	1.6E-04	89.82	6.9E-08	6.5E-07	2.31	9.2E-04	0.01	97.68	0	9.7E-05	0.56	0.43	0.53	0.57	0.52
Paradise Cut	PARADSECUT_LEN	1.91	0	0	98.09	0	0	4.98	0.11	0.61	94.29	6.7E-04	3.7E-03	7.14	0	0	92.86	0	0	1.24	4.1E-03	0.05	98.71	4.1E-04	4.5E-04	0.57	0.55	0.55	0.57	0.56
Port of Stockton	PORTOSTOCK_LEN	1.48	0	0	98.52	0	0	2.29	0	0	97.71	0	0	6.32	0.04	0	93.64	0	0	7.16	0.05	0	92.78	0	0	0.57	0.57	0.55	0.55	0.56
Sac. R. at Isleton	SACRISLTON_LEN	0.45	0	99.55	0	0	2.1E-06	0.63	8.8E-05	99.36	5.7E-08	0	0.01	0.49	0	99.51	0	0	2.9E-04	0.39	1.0E-08	99.61	0	6.7E-07	0.01	0.09	0.09	0.09	0.09	0.09
Sac River RM 44	SACR44_LEN	0.20	0	99.80	0	0	0	0.30	0	99.70	0	0	0	0.15	0	99.85	0	0	0	0.11	0	99.89	0	0	0	0.09	0.09	0.09	0.09	0.09
Sandmound Sl.	SANDMND_LEN	4.47	3.23	90.83	0.17	1.17	0.13	7.20	4.64	79.23	6.98	0.23	1.71	6.15	0.39	84.96	0.98	4.06	3.46	3.79	0.22	89.26	0.10	3.11	3.51	0.09	0.13	0.10	0.10	0.10
Sherman Island	SHERMNLND_LEN	2.14	0.95	92.16	0.04	4.49	0.23	3.69	2.31	83.94	2.94	4.01	3.11	2.99	0.32	77.36	0.77	14.22	4.34	2.22	0.06	75.89	0.03	17.11	4.68	0.09	0.11	0.10	0.10	0.10
SJR Bowman	SJRBOWMN_LEN	0.88	0	0	99.12	0	0	3.52	0	0	96.48	0	0	8.49	2.5E-04	0	91.51	0	0	0.91	0	99.09	0	0	0.58	0.56	0.54	0.58	0.56	
SJR N Hwy4	SJRNHWY4_LEN	1.82	2.8E-08	0	98.18	0	0	4.35	1.4E-07	0	95.65	0	0	12.54	0.08	4.0E-26	87.39	0	0	1.89	1.3E-04	0	98.11	0	0	0.57	0.56	0.52	0.57	0.56
SJR Naval st	SJRNAVLS_LEN	4.83	6.83	0	88.35	0	0	5.86	11.12	1.3E-06	83.02	0	0	12.06	40.15	3.4E-03	47.78	6.2E-07	6.3E-06	4.73	6.37	2.5E-04	88.90	5.4E-09	7.0E-09	0.52	0.50	0.33	0.53	0.47
SJR Potato Slough	SJRPOTSL_LEN	2.91	5.22	91.00	0.15	0.61	0.10	4.89	5.67	79.70	8.49	0.10	1.16	3.16	0.19	91.86	0.46	1.88	2.44	2.37	0.33	93.43	0.10	1.44	2.33	0.09	0.13	0.10	0.09	0.10
SJR Turner	SJRTURNR_LEN	7.22	10.11	10.82	71.76	0.08	0.01	7.49	11.95	7.23	73.31	2.9E-03	0.02	11.09	11.29	65.50	11.02	0.46	0.63	6.16	6.57	36.18	50.55	0.19	0.35	0.44	0.45	0.15	0.34	0.35
SJR/Pt.	ASRANTFSH_LEN	2.17	1.01	92.90	0.04	3.62	0.26	3.74	2.30	84.37	3.04	3.24	3.31	3.00	0.27	79.62	0.65	12.05	3.40	2.27	0.07	78.73	0.03	14.08	4.82	0.09	0.11	0.10	0.10	0.10
Antioch/fish pier																														
Suisun Bay	SUISNB_LEN	0.87	0.23	46.77	0.01	51.97	0.14	0.94	0.51	31.58	0.43	65.55	0.98	0.84	0.16	21.30	0.36	76.08	1.25	0.59	0.02	21.39	0.01	76.63	1.36	0.10	0.10	0.10	0.10	0.10
Sycamore Slough	SYCAMOR_LEN	10.20	72.58	17.22	5.1E-10	9.7E-14	4.3E-29	13.62	50.90	35.47	0.01	4.0E-09	1.1E-07	5.33	3.90	90.77	1.9E-16	3.8E-25	1.1E-22	3.69	20.36	75.95	6.0E-19	1.1E-37	2.4E-31	0.10	0.10	0.09	0.09	0.10
White Slough	WHITESL_LEN	20.35	16.73	61.67	1.25	4.8E-03	2.4E-04	33.31	13.41	23.49	29.78	3.9E-04	3.2E-03	15.53	1.33	83.05	0.09	1.2E-03	2.0E-03	9.35	8.62	81.98	0.04	3.7E-04	7.1E-04	0.10	0.24	0.09	0.09	0.13
White Slough DS Disappointment Sl.	WHTSLDISPONT_LEN	10.09	24.12	65.07	0.71	4.1E-03	1.9E-04	17.00	13.60	32.29	37.10	1.4E-03	0.01	7.70	1.46	90.83	1.5E-03	1.3E-03	2.2E-03	5.21	9.69	85.06	0.03	9.7E-04	2.1E-03	0.10	0.28	0.09	0.09	0.14

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1 **Table 6D.5 Selenium Bioaccumulation from Water (µg/L) to Particulates and Fish (µg/g, dw) Using Models 1 and 2**

DSM2 Delta Water Location	Year 2000									Year 2005						Year 2007								
	Concentration					Whole-body Bass ^a	Fish-to-Bass Ratio		Concentration					Whole-body Bass ^a	Fish-to-Bass Ratio		Concentration					Whole-body Bass ^a	Fish-to-Bass Ratio	
	DSM2 Water	Particulate from Water	Invert. from Particulate	Model 1 Fish	Model 2 Fish		Model 1	Model 2	DSM2 Water	Particulate from Water	Invert. from Particulate	Model 1 Fish	Model 2 Fish		Model 1	Model 2	DSM2 Water	Particulate from Water	Invert. from Particulate	Model 1 Fish	Model 2 Fish		Model 1	Model 2
	First Quarter									First Quarter						First Quarter								
Sacramento River RM 44	0.09	0.09	0.25	0.27	0.30	2.6	0.10	0.11	0.09	0.09	0.25	0.28	0.31	1.5	0.19	0.21	0.09	0.09	0.25	0.28	0.31	1.8	0.15	0.17
Cache Slough Rye ^b	0.10	0.10	0.28	0.31	0.34	1.5	0.21	0.23	0.09	0.09	0.26	0.29	0.31	1.7	0.17	0.18	0.09	0.09	0.26	0.28	0.31	2.5	0.11	0.12
San Joaquin River Potato Slough	0.17	0.17	0.47	0.52	0.57	1.4	0.38	0.42	0.14	0.14	0.40	0.44	0.48	1.3	0.33	0.37	0.09	0.09	0.26	0.28	0.31	2.5	0.11	0.13
Franks Tract	0.19	0.19	0.53	0.58	0.64	1.6	0.35	0.39	0.15	0.15	0.41	0.45	0.49	1.1	0.39	0.43	0.09	0.09	0.26	0.29	0.32	3.0	0.10	0.11
Big Break	0.13	0.13	0.35	0.39	0.43	1.6	0.25	0.28	0.11	0.11	0.31	0.34	0.37	1.0	0.33	0.37	0.09	0.09	0.26	0.28	0.31	2.8	0.10	0.11
Middle River Bullfrog	0.31	0.31	0.86	0.95	1.05	NA	NA	NA	0.46	0.46	1.29	1.42	1.56	1.9	0.7	0.8	0.20	0.20	0.55	0.61	0.67	2.1	0.3	0.3
Old River near Paradise Cut ^c	0.73	0.73	2.05	2.25	2.48	NA	NA	NA	0.78	0.78	2.19	2.41	2.66	2.4	1.0	1.1	0.56	0.56	1.57	1.73	1.90	NA	NA	NA
Knights Landing ^d	0.23	0.23	0.64	0.71	0.78	NA	NA	NA	0.23	0.23	0.64	0.71	0.78	2.2	0.3	0.4	0.23	0.23	0.64	0.71	0.78	NA	NA	NA
Vernalis ^e	0.83	0.83	2.32	2.56	2.81	1.7	1.50	1.65	0.85	0.85	2.38	2.62	2.88	1.9	1.38	1.52	0.58	0.58	1.62	1.79	1.97	2.4	0.74	0.82
	Second Quarter									Second Quarter						Second Quarter								
Sacramento River RM 44	0.09	0.09	0.25	0.28	0.30	2.6	0.11	0.12	0.09	0.09	0.25	0.28	0.30	1.5	0.19	0.21	0.09	0.09	0.25	0.28	0.31	1.8	0.15	0.17
Cache Slough Rye ^b	0.11	0.11	0.32	0.35	0.38	1.5	0.23	0.26	0.10	0.10	0.27	0.30	0.33	1.7	0.17	0.19	0.10	0.10	0.29	0.32	0.35	2.5	0.12	0.14
San Joaquin River Potato Slough	0.24	0.24	0.67	0.74	0.81	1.4	0.54	0.60	0.36	0.36	1.02	1.12	1.23	1.3	0.86	0.94	0.13	0.13	0.38	0.42	0.46	2.5	0.17	0.18
Franks Tract	0.27	0.27	0.76	0.83	0.92	1.6	0.51	0.56	0.49	0.49	1.36	1.50	1.65	1.1	1.31	1.44	0.14	0.14	0.39	0.43	0.47	3.0	0.14	0.16
Big Break	0.20	0.20	0.55	0.60	0.66	1.6	0.39	0.43	0.30	0.30	0.83	0.91	1.00	1.0	0.89	0.98	0.12	0.12	0.33	0.36	0.39	2.8	0.13	0.14
Middle River Bullfrog	0.61	0.61	1.71	1.88	2.07	NA	NA	NA	0.75	0.75	2.09	2.30	2.53	1.9	1.2	1.3	0.29	0.29	0.82	0.90	0.99	2.1	0.4	0.5
Old River near Paradise Cut ^c	0.68	0.68	1.89	2.08	2.29	NA	NA	NA	0.84	0.84	2.35	2.59	2.84	2.4	1.1	1.2	0.43	0.43	1.22	1.34	1.47	NA	NA	NA
Knights Landing ^d	0.23	0.23	0.64	0.71	0.78	NA	NA	NA	0.23	0.23	0.64	0.71	0.78	2.2	0.3	0.4	0.23	0.23	0.64	0.71	0.78	NA	NA	NA
Vernalis ^e	0.83	0.83	2.32	2.56	2.81	1.7	1.50	1.65	0.85	0.85	2.38	2.62	2.88	1.9	1.38	1.52	0.58	0.58	1.62	1.79	1.97	2.4	0.74	0.82
	Third Quarter									Third Quarter						Third Quarter								
Sacramento River RM 44	0.09	0.09	0.25	0.28	0.30	2.6	0.11	0.12	0.09	0.09	0.25	0.28	0.31	1.5	0.19	0.21	0.09	0.09	0.25	0.28	0.31	1.8	0.15	0.17
Cache Slough Rye ^b	0.11	0.11	0.31	0.34	0.37	1.5	0.22	0.25	0.09	0.09	0.25	0.28	0.31	1.7	0.16	0.18	0.10	0.10	0.29	0.32	0.35	2.5	0.13	0.14
San Joaquin River Potato Slough	0.10	0.10	0.27	0.30	0.32	1.4	0.22	0.24	0.10	0.10	0.27	0.30	0.33	1.3	0.23	0.25	0.10	0.10	0.27	0.30	0.33	2.5	0.12	0.13
Franks Tract	0.10	0.10	0.28	0.31	0.34	1.6	0.19	0.20	0.11	0.11	0.29	0.32	0.36	1.1	0.28	0.31	0.10	0.10	0.28	0.31	0.34	3.0	0.10	0.11
Big Break	0.10	0.10	0.29	0.32	0.35	1.6	0.20	0.22	0.10	0.10	0.29	0.32	0.35	1.0	0.31	0.35	0.10	0.10	0.28	0.31	0.34	2.8	0.11	0.12
Middle River Bullfrog	0.20	0.20	0.57	0.63	0.69	NA	NA	NA	0.30	0.30	0.83	0.91	1.01	1.9	0.5	0.5	0.12	0.12	0.32	0.36	0.39	2.1	0.2	0.2
Old River near Paradise Cut ^c	0.75	0.75	2.11	2.32	2.55	NA	NA	NA	0.80	0.80	2.24	2.47	2.71	2.4	1.0	1.1	0.53	0.53	1.49	1.64	1.80	NA	NA	NA
Knights Landing ^d	0.23	0.23	0.64	0.71	0.78	NA	NA	NA	0.23	0.23	0.64	0.71	0.78	2.2	0.3	0.4	0.23	0.23	0.64	0.71	0.78	NA	NA	NA
Vernalis ^e	0.83	0.83	2.32	2.56	2.81	1.7	1.50	1.65	0.85	0.85	2.38	2.62	2.88	1.9	1.38	1.52	0.58	0.58	1.62	1.79	1.97	2.4	0.74	0.82

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DSM2 Delta Water Location	Year 2000									Year 2005						Year 2007								
	Concentration					Whole-body Bass ^a	Fish-to-Bass Ratio		Concentration					Whole-body Bass ^a	Fish-to-Bass Ratio		Concentration					Whole-body Bass ^a	Fish-to-Bass Ratio	
	DSM2 Water	Particulate from Water	Invert. from Particulate	Model 1 Fish	Model 2 Fish		Model 1	Model 2	DSM2 Water	Particulate from Water	Invert. from Particulate	Model 1 Fish	Model 2 Fish		Model 1	Model 2	DSM2 Water	Particulate from Water	Invert. from Particulate	Model 1 Fish	Model 2 Fish		Model 1	Model 2
	Fourth Quarter									Fourth Quarter						Fourth Quarter								
Sacramento River RM 44	0.09	0.09	0.25	0.28	0.30	2.6	0.11	0.12	0.09	0.09	0.25	0.28	0.31	1.5	0.19	0.21	0.09	0.09	0.25	0.28	0.30	1.8	0.15	0.17
Cache Slough Ryer ^b	0.10	0.10	0.29	0.31	0.35	1.5	0.21	0.23	0.09	0.09	0.26	0.28	0.31	1.7	0.16	0.18	0.10	0.10	0.28	0.31	0.34	2.5	0.12	0.13
San Joaquin River Potato Slough	0.09	0.09	0.26	0.29	0.32	1.4	0.21	0.23	0.09	0.09	0.25	0.28	0.31	1.3	0.21	0.24	0.09	0.09	0.26	0.29	0.32	2.5	0.12	0.13
Franks Tract	0.10	0.10	0.27	0.29	0.32	1.6	0.18	0.20	0.09	0.09	0.26	0.28	0.31	1.1	0.25	0.27	0.10	0.10	0.27	0.30	0.32	3.0	0.10	0.11
Big Break	0.10	0.10	0.27	0.30	0.33	1.6	0.19	0.21	0.09	0.09	0.26	0.28	0.31	1.0	0.28	0.31	0.10	0.10	0.27	0.30	0.33	2.8	0.11	0.12
Middle River Bullfrog	0.30	0.30	0.84	0.92	1.01	NA	NA	NA	0.24	0.24	0.68	0.74	0.82	1.9	0.4	0.4	0.17	0.17	0.47	0.52	0.57	2.1	0.2	0.3
Old River near Paradise Cut ^c	0.81	0.81	2.27	2.50	2.75	NA	NA	NA	0.72	0.72	2.01	2.21	2.43	2.4	0.9	1.0	0.57	0.57	1.59	1.75	1.93	NA	NA	NA
Knights Landing ^d	0.23	0.23	0.64	0.71	0.78	NA	NA	NA	0.23	0.23	0.64	0.71	0.78	2.2	0.3	0.4	0.23	0.23	0.64	0.71	0.78	NA	NA	NA
Vernalis ^e	0.83	0.83	2.32	2.56	2.81	1.7	1.50	1.65	0.85	0.85	2.38	2.62	2.88	1.9	1.38	1.52	0.58	0.58	1.62	1.79	1.97	2.4	0.74	0.82

Notes:
 Equations from Presser and Luoma (2010a, 2010b) were used to calculate selenium concentrations for fish. Models 1 and 2 used the default (1.00) and the average selenium trophic transfer factors to aquatic insects (2.8) and fish (1.1 for all trophic levels).
 Model 1 = TL-3 Fish Eating Invertebrates
 Model 2 = TL-4 Fish Eating TL-3 Fish
 Invert. = invertebrate
 K_d = particulate concentration/water concentration ratio
 µg/g, dw = micrograms per gram, dry weight
 NA = not available; bass not collected here
 RM = river mile
 TL = trophic level
 a. Geometric mean calculated from whole-body largemouth bass data presented in Foe (2010a).
 b. Fish data collected at Rio Vista (Foe 2010a) were used to calculate geometric mean whole-body largemouth bass and ratios.
 c. Fish data collected at Old River near Tracy (Foe 2010a) were used to calculate geometric mean whole-body largemouth bass and ratios.
 d. Geometric mean of total selenium concentrations in water collected from years 2004, 2007, and 2008 (DWR Website 2009) was used to estimate selenium concentrations in particulates and biota (DSM2 data were not available). Fish data collected from Sacramento River at Veterans Bridge (Foe 2010a) were used to calculate mean whole-body largemouth bass and ratios.
 e. Geometric mean of selenium concentrations (total or dissolved was not specified) in water collected from years 1999–2000 (SWAMP Website 2009) was used to estimate Year 2000 selenium concentrations in particulates and biota (DSM2 data were not available); years 2004-2005 were used for Year 2005 estimates; and years 2007 were used for Year 2007 estimates.

1 **Table 6D.6 Selenium Bioaccumulation from Water (µg/L) to Particulates and Fish (µg/g, dw) Using Model 2 with Estimated K_d from All Years Regression for Model 3**

DSM2 Delta Water Location	Year 2000							Year 2005						Year 2007							
	Concentration				K _d	Whole-body Bass ^a	Fish-to-Bass Ratio Model 3	Concentration				K _d	Whole-body Bass ^a	Fish-to-Bass Ratio Model 3	Concentration				K _d	Whole-body Bass ^a	Fish-to-Bass Ratio Model 3
	DSM2 Water	Particulate from Water	Invert. from Particulate	Model 3 Fish				DSM2 Water	Particulate from Water	Invert. from Particulate	Model 3 Fish				DSM2 Water	Particulate from Water	Invert. from Particulate	Model 3 Fish			
	First Quarter							First Quarter						First Quarter							
Sacramento River RM 44	0.09	0.54	1.50	1.81	6060	2.6	0.69	0.09	0.54	1.50	1.81	5945	1.5	1.25	0.09	0.54	1.50	1.81	5946	1.8	0.98
Cache Slough Ryer ^b	0.10	0.54	1.50	1.82	5389	1.5	1.22	0.09	0.54	1.50	1.82	5783	1.7	1.05	0.09	0.54	1.50	1.81	5852	2.5	0.71
San Joaquin River Potato Slough	0.17	0.55	1.53	1.85	3229	1.4	1.36	0.14	0.54	1.52	1.84	3824	1.3	1.41	0.09	0.54	1.50	1.81	5819	2.5	0.73
Franks Tract	0.19	0.55	1.53	1.85	2904	1.6	1.13	0.15	0.54	1.52	1.84	3724	1.1	1.61	0.09	0.54	1.50	1.82	5762	3.0	0.61
Big Break	0.13	0.54	1.51	1.83	4295	1.6	1.18	0.11	0.54	1.51	1.82	4873	1.0	1.79	0.09	0.54	1.50	1.81	5850	2.8	0.64
Middle River Bullfrog	0.31	0.56	1.56	1.88	1801	NA	NA	0.46	0.56	1.57	1.90	1221	1.9	1.0	0.20	0.55	1.53	1.86	2773	2.1	0.87
Old River near Paradise Cut ^c	0.73	0.57	1.60	1.93	780	NA	NA	0.78	0.57	1.60	1.94	729	2.4	0.8	0.56	0.57	1.58	1.92	1007	NA	NA
Knights Landing ^d	0.23	0.55	1.54	1.87	2394	NA	NA	0.23	0.55	1.54	1.87	2394	2.2	0.8	0.23	0.55	1.54	1.87	2394	NA	NA
Vernalis ^e	0.83	0.57	1.60	1.94	689	1.7	1.14	0.85	0.57	1.60	1.94	674	1.9	1.02	0.58	0.57	1.59	1.92	976	2.4	0.80
	Second Quarter							Second Quarter						Second Quarter							
Sacramento River RM 44	0.09	0.54	1.50	1.81	5952	2.6	0.69	0.09	0.54	1.50	1.81	5947	1.5	1.25	0.09	0.54	1.50	1.81	5944	1.8	0.98
Cache Slough Ryer ^b	0.11	0.54	1.51	1.83	4777	1.5	1.22	0.10	0.54	1.50	1.82	5538	1.7	1.05	0.10	0.54	1.50	1.82	5241	2.5	0.72
San Joaquin River Potato Slough	0.24	0.55	1.54	1.87	2309	1.4	1.38	0.36	0.56	1.56	1.89	1537	1.3	1.45	0.13	0.54	1.52	1.84	4020	2.5	0.74
Franks Tract	0.27	0.55	1.55	1.87	2048	1.6	1.14	0.49	0.56	1.58	1.91	1159	1.1	1.67	0.14	0.54	1.52	1.84	3921	3.0	0.61
Big Break	0.20	0.55	1.53	1.86	2800	1.6	1.20	0.30	0.55	1.55	1.88	1876	1.0	1.84	0.12	0.54	1.51	1.83	4645	2.8	0.64
Middle River Bullfrog	0.61	0.57	1.59	1.92	928	NA	NA	0.75	0.57	1.60	1.93	764	1.9	1.0	0.29	0.55	1.55	1.88	1896	2.1	0.9
Old River near Paradise Cut ^c	0.68	0.57	1.59	1.93	842	NA	NA	0.84	0.57	1.60	1.94	682	2.4	0.8	0.43	0.56	1.57	1.90	1291	NA	NA
Knights Landing ^d	0.23	0.55	1.54	1.87	2394	NA	NA	0.23	0.55	1.54	1.87	2394	2.2	0.8	0.23	0.55	1.54	1.87	2394	NA	NA
Vernalis ^e	0.83	0.57	1.60	1.94	689	1.7	1.14	0.85	0.57	1.60	1.94	674	1.9	1.02	0.58	0.57	1.59	1.92	976	2.4	0.80
	Third Quarter							Third Quarter						Third Quarter							
Sacramento River RM 44	0.09	0.54	1.50	1.81	5947	2.6	0.69	0.09	0.54	1.50	1.81	5946	1.5	1.25	0.09	0.54	1.50	1.81	5946	1.8	0.98
Cache Slough Ryer ^b	0.11	0.54	1.51	1.82	4942	1.5	1.22	0.09	0.54	1.50	1.81	5914	1.7	1.05	0.10	0.54	1.51	1.82	5184	2.5	0.72
San Joaquin River Potato Slough	0.10	0.54	1.50	1.82	5592	1.4	1.34	0.10	0.54	1.50	1.82	5523	1.3	1.39	0.10	0.54	1.50	1.82	5557	2.5	0.73
Franks Tract	0.10	0.54	1.50	1.82	5412	1.6	1.10	0.11	0.54	1.51	1.82	5121	1.1	1.59	0.10	0.54	1.50	1.82	5393	3.0	0.61
Big Break	0.10	0.54	1.50	1.82	5227	1.6	1.17	0.10	0.54	1.51	1.82	5159	1.0	1.79	0.10	0.54	1.50	1.82	5291	2.8	0.64
Middle River Bullfrog	0.20	0.55	1.54	1.86	2688	NA	NA	0.30	0.55	1.55	1.88	1868	1.9	1.0	0.12	0.54	1.51	1.83	4656	2.1	0.86
Old River near Paradise Cut ^c	0.75	0.57	1.60	1.93	757	NA	NA	0.80	0.57	1.60	1.94	714	2.4	0.8	0.53	0.56	1.58	1.91	1061	NA	NA
Knights Landing ^d	0.23	0.55	1.54	1.87	2394	NA	NA	0.23	0.55	1.54	1.87	2394	2.2	0.8	0.23	0.55	1.54	1.87	2394	NA	NA
Vernalis ^e	0.83	0.57	1.60	1.94	689	1.7	1.14	0.85	0.57	1.60	1.94	674	1.9	1.02	0.58	0.57	1.59	1.92	976	2.4	0.80

2

DSM2 Delta Water Location	Year 2000							Year 2005						Year 2007							
	Concentration				K _d	Whole-body Bass ^a	Fish-to-Bass Ratio	Concentration				K _d	Whole-body Bass ^a	Fish-to-Bass Ratio	Concentration				K _d	Whole-body Bass ^a	Fish-to-Bass Ratio
	DSM2 Water	Particulate from Water	Invert. from Particulate	Model 3 Fish				DSM2 Water	Particulate from Water	Invert. from Particulate	Model 3 Fish				DSM2 Water	Particulate from Water	Invert. from Particulate	Model 3 Fish			
	Fourth Quarter							Fourth Quarter						Fourth Quarter							
Sacramento River RM 44	0.09	0.54	1.50	1.81	5948	2.6	0.69	0.09	0.54	1.50	1.81	5946	1.5	1.25	0.09	0.54	1.50	1.81	5947	1.8	0.98
Cache Slough Ryer ^b	0.10	0.54	1.50	1.82	5261	1.5	1.22	0.09	0.54	1.50	1.81	5830	1.7	1.05	0.10	0.54	1.50	1.82	5345	2.5	0.71
San Joaquin River Potato Slough	0.09	0.54	1.50	1.82	5704	1.4	1.34	0.09	0.54	1.50	1.81	5885	1.3	1.39	0.09	0.54	1.50	1.82	5678	2.5	0.73
Franks Tract	0.10	0.54	1.50	1.82	5621	1.6	1.10	0.09	0.54	1.50	1.81	5859	1.1	1.59	0.10	0.54	1.50	1.82	5596	3.0	0.61
Big Break	0.10	0.54	1.50	1.82	5534	1.6	1.17	0.09	0.54	1.50	1.82	5809	1.0	1.78	0.10	0.54	1.50	1.82	5470	2.8	0.64
Middle River Bullfrog	0.30	0.55	1.55	1.88	1859	NA	NA	0.24	0.55	1.54	1.87	2283	1.9	1.0	0.17	0.55	1.53	1.85	3241	2.1	0.87
Old River near Paradise Cut ^c	0.81	0.57	1.60	1.94	704	NA	NA	0.72	0.57	1.60	1.93	795	2.4	0.8	0.57	0.57	1.58	1.92	994	NA	NA
Knights Landing ^d	0.23	0.55	1.54	1.87	2394	NA	NA	0.23	0.55	1.54	1.87	2394	2.2	0.8	0.23	0.55	1.54	1.87	2394	NA	NA
Vernalis ^e	0.83	0.57	1.60	1.94	689	1.7	1.14	0.85	0.57	1.60	1.94	674	1.9	1.02	0.58	0.57	1.59	1.92	976	2.4	0.80

Notes:
 Equations from Presser and Luoma (2010a, 2010b) were used to calculate selenium concentrations for fish. Model 3 uses average selenium trophic transfer factors to aquatic insects (2.8) and fish (1.1 for all trophic levels).
 Model 3 = Model 2 (TL-4 Fish Eating TL-3 Fish) with K estimated using all years regression (log K = 2.76-0.97(logDSM2))
 Invert. = invertebrate
 K_d = particulate concentration/water concentration ratio
 µg/g, dw = micrograms per gram, dry weight
 NA = not available; bass not collected here
 RM = river mile
 TL = trophic level
 a. Geometric mean calculated from whole-body largemouth bass data presented in Foe (2010a).
 b. Fish data collected at Rio Vista (Foe 2010a) were used to calculate geometric mean whole-body largemouth bass and ratios.
 c. Fish data collected at Old River near Tracy (Foe 2010a) were used to calculate geometric mean whole-body largemouth bass and ratios.
 d. Geometric mean of total selenium concentrations in water collected from years 2004, 2007, and 2008 (DWR Website 2009) was used to estimate selenium concentrations in particulates and biota (DSM2 data were not available). Fish data collected from Sacramento River at Veterans Bridge (Foe 2010a) were used to calculate geometric mean whole-body largemouth bass and ratios.
 e. Geometric mean of selenium concentrations (total or dissolved was not specified) in water collected from years 1990-2000 (SWAMP Website 2009) was used to estimate Year 2000 selenium concentrations in particulates and biota (DSM2 data were not available). Years 2004-2005 were used for Year 2005 estimates; and years 2007 were used for Year 2007 estimates.

1 **Table 6D.7 Selenium Bioaccumulation from Water (µg/L) to Particulates and Fish (µg/g, dw) Using Model 2 with Estimated K_d from Normal/Wet Years Regression for Model 4 and Dry Years Regression for Model 5**

DSM2 Delta Water Location	Year 2000							Year 2005						Year 2007							
	Concentration				K _d	Whole-body Bass ^a	Fish-to-Bass Ratio	Concentration				K _d	Whole-body Bass ^a	Fish-to-Bass Ratio	Concentration				K _d	Whole-body Bass ^a	Fish-to-Bass Ratio
	DSM2 Water	Particulate from Water	Invert. from Particulate	Model 4 Fish				DSM2 Water	Particulate from Water	Invert. from Particulate	Model 4 Fish				DSM2 Water	Particulate from Water	Invert. from Particulate	Model 5 Fish			
	First Quarter							First Quarter						First Quarter							
Sacramento River RM 44	0.09	0.44	1.24	1.49	4997	2.6	0.57	0.09	0.44	1.24	1.50	4909	1.5	1.03	0.09	0.73	2.03	2.46	8063	1.8	1.33
Cache Slough Ryer ^b	0.10	0.45	1.25	1.51	4481	1.5	1.01	0.09	0.44	1.24	1.50	4784	1.7	0.87	0.09	0.73	2.03	2.46	7929	2.5	0.97
San Joaquin River Potato Slough	0.17	0.47	1.32	1.59	2786	1.4	1.17	0.14	0.46	1.30	1.57	3260	1.3	1.20	0.09	0.73	2.03	2.46	7883	2.5	0.99
Franks Tract	0.19	0.48	1.33	1.61	2525	1.6	0.98	0.15	0.46	1.30	1.57	3181	1.1	1.37	0.09	0.73	2.03	2.46	7802	3.0	0.82
Big Break	0.13	0.46	1.28	1.55	3630	1.6	1.00	0.11	0.45	1.26	1.53	4082	1.0	1.50	0.09	0.73	2.03	2.46	7926	2.8	0.87
Middle River Bullfrog	0.31	0.50	1.40	1.69	1621	NA	NA	0.46	0.52	1.46	1.76	1130	1.9	0.9	0.20	0.71	2.00	2.42	3616	2.1	1.14
Old River near Paradise Cut ^c	0.73	0.55	1.53	1.85	745	NA	NA	0.78	0.55	1.54	1.86	700	2.4	0.8	0.56	0.70	1.96	2.37	1247	NA	NA
Knights Landing ^d	0.23	0.49	1.36	1.64	2111	NA	NA	0.23	0.49	1.36	1.64	2111	2.2	0.7	0.23	0.71	1.99	2.41	3098	NA	NA
Vernalis ^e	0.83	0.55	1.55	1.87	665	1.7	1.10	0.85	0.55	1.55	1.87	651	1.9	0.99	0.58	0.70	1.96	2.37	1206	2.4	0.99
	Second Quarter							Second Quarter						Second Quarter							
Sacramento River RM 44	0.09	0.44	1.24	1.50	4914	2.6	0.57	0.09	0.44	1.24	1.50	4910	1.5	1.03	0.09	0.73	2.03	2.46	8061	1.8	1.33
Cache Slough Ryer ^b	0.11	0.45	1.27	1.53	4007	1.5	1.03	0.10	0.45	1.25	1.51	4596	1.7	0.87	0.10	0.72	2.03	2.45	7061	2.5	0.96
San Joaquin River Potato Slough	0.24	0.49	1.36	1.65	2041	1.4	1.22	0.36	0.51	1.42	1.72	1399	1.3	1.32	0.13	0.72	2.02	2.44	5343	2.5	0.98
Franks Tract	0.27	0.49	1.38	1.67	1826	1.6	1.02	0.49	0.52	1.46	1.77	1077	1.1	1.55	0.14	0.72	2.02	2.44	5204	3.0	0.82
Big Break	0.20	0.48	1.34	1.62	2441	1.6	1.04	0.30	0.50	1.39	1.69	1683	1.0	1.65	0.12	0.72	2.02	2.45	6220	2.8	0.86
Middle River Bullfrog	0.61	0.54	1.50	1.81	876	NA	NA	0.75	0.55	1.53	1.85	732	1.9	1.0	0.29	0.71	1.99	2.40	2424	2.1	1.1
Old River near Paradise Cut ^c	0.68	0.54	1.51	1.83	801	NA	NA	0.84	0.55	1.55	1.87	658	2.4	0.8	0.43	0.70	1.97	2.38	1617	NA	NA
Knights Landing ^d	0.23	0.49	1.36	1.64	2111	NA	NA	0.23	0.49	1.36	1.64	2111	2.2	0.7	0.23	0.71	1.99	2.41	3098	NA	NA
Vernalis ^e	0.83	0.55	1.55	1.87	665	1.7	1.10	0.85	0.55	1.55	1.87	651	1.9	0.99	0.58	0.70	1.96	2.37	1206	2.4	0.99
	Third Quarter							Third Quarter						Third Quarter							
Sacramento River RM 44	0.09	0.44	1.24	1.50	4910	2.6	0.57	0.09	0.44	1.24	1.50	4910	1.5	1.03	0.09	0.73	2.03	2.46	8064	1.8	1.33
Cache Slough Ryer ^b	0.11	0.45	1.26	1.53	4135	1.5	1.02	0.09	0.44	1.24	1.50	4885	1.7	0.87	0.10	0.72	2.03	2.45	6980	2.5	0.96
San Joaquin River Potato Slough	0.10	0.44	1.25	1.51	4637	1.4	1.11	0.10	0.45	1.25	1.51	4584	1.3	1.15	0.10	0.72	2.03	2.46	7510	2.5	0.99
Franks Tract	0.10	0.45	1.25	1.51	4499	1.6	0.92	0.11	0.45	1.26	1.52	4274	1.1	1.33	0.10	0.72	2.03	2.45	7276	3.0	0.82
Big Break	0.10	0.45	1.25	1.52	4356	1.6	0.98	0.10	0.45	1.26	1.52	4304	1.0	1.49	0.10	0.72	2.03	2.45	7131	2.8	0.87
Middle River Bullfrog	0.20	0.48	1.34	1.63	2350	NA	NA	0.30	0.50	1.39	1.69	1677	1.9	0.9	0.12	0.72	2.02	2.45	6235	2.1	1.15
Old River near Paradise Cut ^c	0.75	0.55	1.53	1.85	725	NA	NA	0.80	0.55	1.54	1.86	687	2.4	0.8	0.53	0.70	1.96	2.37	1317	NA	NA
Knights Landing ^d	0.23	0.49	1.36	1.64	2111	NA	NA	0.23	0.49	1.36	1.64	2111	2.2	0.7	0.23	0.71	1.99	2.41	3098	NA	NA
Vernalis ^e	0.83	0.55	1.55	1.87	665	1.7	1.10	0.85	0.55	1.55	1.87	651	1.9	0.99	0.58	0.70	1.96	2.37	1206	2.4	0.99

2

DSM2 Delta Water Location	Year 2000							Year 2005						Year 2007							
	Concentration				K _d	Whole-body Bass ^a	Fish-to-Bass Ratio	Concentration				K _d	Whole-body Bass ^a	Fish-to-Bass Ratio	Concentration				K _d	Whole-body Bass ^a	Fish-to-Bass Ratio
	DSM2 Water	Particulate from Water	Invert. from Particulate	Model 4 Fish			Model 4	DSM2 Water	Particulate from Water	Invert. from Particulate	Model 4 Fish			Model 4	DSM2 Water	Particulate from Water	Invert. from Particulate	Model 5 Fish			Model 5
	Fourth Quarter							Fourth Quarter						Fourth Quarter							
Sacramento River RM 44	0.09	0.44	1.24	1.50	4911	2.6	0.57	0.09	0.44	1.24	1.50	4909	1.5	1.03	0.09	0.73	2.03	2.46	8064	1.8	1.33
Cache Slough Ryer ^b	0.10	0.45	1.25	1.52	4383	1.5	1.02	0.09	0.44	1.24	1.50	4820	1.7	0.87	0.10	0.72	2.03	2.45	7209	2.5	0.96
San Joaquin River Potato Slough	0.09	0.44	1.24	1.50	4723	1.4	1.11	0.09	0.44	1.24	1.50	4862	1.3	1.15	0.09	0.73	2.03	2.46	7682	2.5	0.99
Franks Tract	0.10	0.44	1.24	1.51	4660	1.6	0.91	0.09	0.44	1.24	1.50	4843	1.1	1.31	0.10	0.73	2.03	2.46	7564	3.0	0.82
Big Break	0.10	0.45	1.25	1.51	4593	1.6	0.97	0.09	0.44	1.24	1.50	4804	1.0	1.47	0.10	0.72	2.03	2.46	7386	2.8	0.87
Middle River Bullfrog	0.30	0.50	1.40	1.69	1669	NA	NA	0.24	0.49	1.37	1.65	2020	1.9	0.9	0.17	0.72	2.01	2.43	4260	2.1	1.14
Old River near Paradise Cut ^c	0.81	0.55	1.54	1.87	678	NA	NA	0.72	0.54	1.52	1.84	759	2.4	0.8	0.57	0.70	1.96	2.37	1229	NA	NA
Knights Landing ^d	0.23	0.49	1.36	1.64	2111	NA	NA	0.23	0.49	1.36	1.64	2111	2.2	0.7	0.23	0.71	1.99	2.41	3098	NA	NA
Vernalis ^e	0.83	0.55	1.55	1.87	665	1.7	1.10	0.85	0.55	1.55	1.87	651	1.9	0.99	0.58	0.70	1.96	2.37	1206	2.4	0.99

Notes:
 Equations from Presser and Luoma (2010a, 2010b) were used to calculate selenium concentrations for fish. Models 4 and 5 used the average selenium trophic transfer factors to aquatic insects (2.8) and fish (1.1 for all trophic levels).
 Model 4 = Model 2 (TL-4 Fish Eating TL-3 Fish) with K estimated using normal/wet years regression (log K= 2.75-0.90(logDSM2))
 Model 5 = Model 2 (TL-4 Fish Eating TL-3 Fish) with K estimated using dry years (2007) regression (log K= 2.84-1.02(logDSM2))
 Invert. = invertebrate
 K_d = particulate concentration/water concentration ratio
 µg/g, dw = micrograms per gram, dry weight
 NA = not available; bass not collected here
 RM = river mile
 TL = trophic level
 a. Geometric mean calculated from whole-body largemouth bass data presented in Foe (2010a).
 b. Fish data collected at Rio Vista (Foe 2010a) were used to calculate geometric mean whole-body largemouth bass and ratios.
 c. Fish data collected at Old River near Tracy (Foe 2010a) were used to calculate geometric mean whole-body largemouth bass and ratios.
 d. Geometric mean of total selenium concentrations in water collected from years 2004, 2007, and 2008 (DWR Website 2009) was used to estimate selenium concentrations in particulates and biota (DSM2 data were not available). Fish data collected from Sacramento River at Veterans Bridge (Foe 2010a) were used to calculate geometric mean whole-body largemouth bass and ratios.
 e. Geometric mean of selenium concentrations (total or dissolved was not specified) in water collected from years 1990-2000 (SWAMP Website 2009) was used to estimate Year 2000 selenium concentrations in particulates and biota (DSM2 data were not available). Years 2004-2005 were used for Year 2005 estimates; and years 2007 were used for Year 2007 estimates.

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Table 6D.8 Selenium Bioaccumulation from Water (µg/L) to Particulates, Whole-body Fish (µg/g, dw), and Bird Eggs (µg/g, dw) Using Model 2 with Estimated K_d from Normal/Wet Years Regression for Model 4 and Dry Years Regression for Model 5

DSM2 Delta Water Location	Year 2000									Year 2005									Year 2007								
	Concentration				K _d	Whole-body Bass ^a	Fish-to-Bass Ratio Model 4	Bird Eggs		Concentration				K _d	Whole-body Bass ^a	Fish-to-Bass Ratio Model 4	Bird Eggs		Concentration				K _d	Whole-body Bass ^a	Fish-to-Bass Ratio Model 5	Bird Eggs	
	DSM2 Water	Particulate from Water	Invert. from Particulate	Model 4 Fish				From Invert.	From Fish	DSM2 Water	Particulate from Water	Invert. from Particulate	Model 4 Fish				From Invert.	From Fish	DSM2 Water	Particulate from Water	Invert. from Particulate	Model 5 Fish				From Invert.	From Fish
	First Quarter									First Quarter									First Quarter								
Sacramento River RM 44	0.09	0.44	1.24	1.49	4997	2.6	0.57	2.22	2.69	0.09	0.44	1.24	1.50	4909	1.5	1.03	2.23	2.70	0.09	0.73	2.03	2.46	8063	1.8	1.33	3.66	4.43
Cache Slough Ryer ^b	0.10	0.45	1.25	1.51	4481	1.5	1.01	2.25	2.72	0.09	0.44	1.24	1.50	4784	1.7	0.87	2.23	2.70	0.09	0.73	2.03	2.46	7929	2.5	0.97	3.66	4.43
San Joaquin River Potato Slough	0.17	0.47	1.32	1.59	2786	1.4	1.17	2.37	2.87	0.14	0.46	1.30	1.57	3260	1.3	1.20	2.33	2.82	0.09	0.73	2.03	2.46	7883	2.5	0.99	3.66	4.43
Franks Tract	0.19	0.48	1.33	1.61	2525	1.6	0.98	2.40	2.90	0.15	0.46	1.30	1.57	3181	1.1	1.37	2.34	2.83	0.09	0.73	2.03	2.46	7802	3.0	0.82	3.66	4.42
Big Break	0.13	0.46	1.28	1.55	3630	1.6	1.00	2.30	2.79	0.11	0.45	1.26	1.53	4082	1.0	1.50	2.27	2.75	0.09	0.73	2.03	2.46	7926	2.8	0.87	3.66	4.43
Middle River Bullfrog	0.31	0.50	1.40	1.69	1621	NA	NA	2.52	3.05	0.46	0.52	1.46	1.76	1130	1.9	0.9	2.62	3.17	0.20	0.71	2.00	2.42	3616	2.1	1.14	3.60	4.36
Old River near Paradise Cut ^c	0.73	0.55	1.53	1.85	745	NA	NA	2.75	3.32	0.78	0.55	1.54	1.86	700	2.4	0.8	2.77	3.35	0.56	0.70	1.96	2.37	1247	NA	NA	3.53	4.27
Knights Landing ^d	0.23	0.49	1.36	1.64	2111	NA	NA	2.45	2.96	0.23	0.49	1.36	1.64	2111	2.2	0.7	2.45	2.96	0.23	0.71	1.99	2.41	3098	NA	NA	3.59	4.34
Vernalis ^e	0.83	0.55	1.55	1.87	665	1.7	1.10	2.78	3.37	0.85	0.55	1.55	1.87	651	1.9	0.99	2.79	3.37	0.58	0.70	1.96	2.37	1206	2.4	0.99	3.53	4.27
	Second Quarter									Second Quarter									Second Quarter								
Sacramento River RM 44	0.09	0.44	1.24	1.50	4914	2.6	0.57	2.23	2.70	0.09	0.44	1.24	1.50	4910	1.5	1.03	2.23	2.70	0.09	0.73	2.03	2.46	8061	1.8	1.33	3.66	4.43
Cache Slough Ryer ^b	0.11	0.45	1.27	1.53	4007	1.5	1.03	2.28	2.76	0.10	0.45	1.25	1.51	4596	1.7	0.87	2.24	2.72	0.10	0.72	2.03	2.45	7061	2.5	0.96	3.65	4.42
San Joaquin River Potato Slough	0.24	0.49	1.36	1.65	2041	1.4	1.22	2.46	2.97	0.36	0.51	1.42	1.72	1399	1.3	1.32	2.56	3.10	0.13	0.72	2.02	2.44	5343	2.5	0.98	3.63	4.39
Franks Tract	0.27	0.49	1.38	1.67	1826	1.6	1.02	2.49	3.01	0.49	0.52	1.46	1.77	1077	1.1	1.55	2.64	3.19	0.14	0.72	2.02	2.44	5204	3.0	0.82	3.63	4.39
Big Break	0.20	0.48	1.34	1.62	2441	1.6	1.04	2.41	2.91	0.30	0.50	1.39	1.69	1683	1.0	1.65	2.51	3.04	0.12	0.72	2.02	2.45	6220	2.8	0.86	3.64	4.40
Middle River Bullfrog	0.61	0.54	1.50	1.81	876	NA	NA	2.70	3.26	0.75	0.55	1.53	1.85	732	1.9	1.0	2.75	3.33	0.29	0.71	1.99	2.40	2424	2.1	1.1	3.57	4.32
Old River near Paradise Cut ^c	0.68	0.54	1.51	1.83	801	NA	NA	2.73	3.30	0.84	0.55	1.55	1.87	658	2.4	0.8	2.79	3.37	0.43	0.70	1.97	2.38	1617	NA	NA	3.55	4.29
Knights Landing ^d	0.23	0.49	1.36	1.64	2111	NA	NA	2.45	2.96	0.23	0.49	1.36	1.64	2111	2.2	0.7	2.45	2.96	0.23	0.71	1.99	2.41	3098	NA	NA	3.59	4.34
Vernalis ^e	0.83	0.55	1.55	1.87	665	1.7	1.10	2.78	3.37	0.85	0.55	1.55	1.87	651	1.9	0.99	2.79	3.37	0.58	0.70	1.96	2.37	1206	2.4	0.99	3.53	4.27
	Third Quarter									Third Quarter									Third Quarter								
Sacramento River RM 44	0.09	0.44	1.24	1.50	4910	2.6	0.57	2.23	2.70	0.09	0.44	1.24	1.50	4910	1.5	1.03	2.23	2.70	0.09	0.73	2.03	2.46	8064	1.8	1.33	3.66	4.43
Cache Slough Ryer ^b	0.11	0.45	1.26	1.53	4135	1.5	1.02	2.27	2.75	0.09	0.44	1.24	1.50	4885	1.7	0.87	2.23	2.70	0.10	0.72	2.03	2.45	6980	2.5	0.96	3.65	4.41
San Joaquin River Potato Slough	0.10	0.44	1.25	1.51	4637	1.4	1.11	2.24	2.71	0.10	0.45	1.25	1.51	4584	1.3	1.15	2.24	2.72	0.10	0.72	2.03	2.46	7510	2.5	0.99	3.65	4.42
Franks Tract	0.10	0.45	1.25	1.51	4499	1.6	0.92	2.25	2.72	0.11	0.45	1.26	1.52	4274	1.1	1.33	2.26	2.74	0.10	0.72	2.03	2.45	7276	3.0	0.82	3.65	4.42
Big Break	0.10	0.45	1.25	1.52	4356	1.6	0.98	2.26	2.73	0.10	0.45	1.26	1.52	4304	1.0	1.49	2.26	2.74	0.10	0.72	2.03	2.45	7131	2.8	0.87	3.65	4.42
Middle River Bullfrog	0.20	0.48	1.34	1.63	2350	NA	NA	2.42	2.93	0.30	0.50	1.39	1.69	1677	1.9	0.9	2.51	3.04	0.12	0.72	2.02	2.45	6235	2.1	1.15	3.64	4.40
Old River near Paradise Cut ^c	0.75	0.55	1.53	1.85	725	NA	NA	2.76	3.33	0.80	0.55	1.54	1.86	687	2.4	0.8	2.77	3.35	0.53	0.70	1.96	2.37	1317	NA	NA	3.53	4.27
Knights Landing ^d	0.23	0.49	1.36	1.64	2111	NA	NA	2.45	2.96	0.23	0.49	1.36	1.64	2111	2.2	0.7	2.45	2.96	0.23	0.71	1.99	2.41	3098	NA	NA	3.59	4.34
Vernalis ^e	0.83	0.55	1.55	1.87	665	1.7	1.10	2.78	3.37	0.85	0.55	1.55	1.87	651	1.9	0.99	2.79	3.37	0.58	0.70	1.96	2.37	1206	2.4	0.99	3.53	4.27

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DSM2 Delta Water Location	Year 2000									Year 2005									Year 2007								
	Concentration				K _d	Whole-body Bass ^a	Fish-to-Bass Ratio Model 4	Bird Eggs		Concentration				K _d	Whole-body Bass ^a	Fish-to-Bass Ratio Model 4	Bird Eggs		Concentration				K _d	Whole-body Bass ^a	Fish-to-Bass Ratio Model 5	Bird Eggs	
	DSM2 Water	Particulate from Water	Invert. from Particulate	Model 4 Fish				From Invert.	From Fish	DSM2 Water	Particulate from Water	Invert. from Particulate	Model 4 Fish				From Invert.	From Fish	DSM2 Water	Particulate from Water	Invert. from Particulate	Model 5 Fish				From Invert.	From Fish
	Fourth Quarter									Fourth Quarter									Fourth Quarter								
Sacramento River RM 44	0.09	0.44	1.24	1.50	4911	2.6	0.57	2.23	2.70	0.09	0.44	1.24	1.50	4909	1.5	1.03	2.23	2.70	0.09	0.73	2.03	2.46	8064	1.8	1.33	3.66	4.43
Cache Slough Ryer ^b	0.10	0.45	1.25	1.52	4383	1.5	1.02	2.26	2.73	0.09	0.44	1.24	1.50	4820	1.7	0.87	2.23	2.70	0.10	0.72	2.03	2.45	7209	2.5	0.96	3.65	4.42
San Joaquin River Potato Slough	0.09	0.44	1.24	1.50	4723	1.4	1.11	2.24	2.71	0.09	0.44	1.24	1.50	4862	1.3	1.15	2.23	2.70	0.09	0.73	2.03	2.46	7682	2.5	0.99	3.66	4.42
Franks Tract	0.10	0.44	1.24	1.51	4660	1.6	0.91	2.24	2.71	0.09	0.44	1.24	1.50	4843	1.1	1.31	2.23	2.70	0.10	0.73	2.03	2.46	7564	3.0	0.82	3.65	4.42
Big Break	0.10	0.45	1.25	1.51	4593	1.6	0.97	2.24	2.72	0.09	0.44	1.24	1.50	4804	1.0	1.47	2.23	2.70	0.10	0.72	2.03	2.46	7386	2.8	0.87	3.65	4.42
Middle River Bullfrog	0.30	0.50	1.40	1.69	1669	NA	NA	2.51	3.04	0.24	0.49	1.37	1.65	2020	1.9	0.9	2.46	2.98	0.17	0.72	2.01	2.43	4260	2.1	1.14	3.61	4.37
Old River near Paradise Cut ^c	0.81	0.55	1.54	1.87	678	NA	NA	2.78	3.36	0.72	0.54	1.52	1.84	759	2.4	0.8	2.74	3.32	0.57	0.70	1.96	2.37	1229	NA	NA	3.53	4.27
Knights Landing ^d	0.23	0.49	1.36	1.64	2111	NA	NA	2.45	2.96	0.23	0.49	1.36	1.64	2111	2.2	0.7	2.45	2.96	0.23	0.71	1.99	2.41	3098	NA	NA	3.59	4.34
Vernalis ^e	0.83	0.55	1.55	1.87	665	1.7	1.10	2.78	3.37	0.85	0.55	1.55	1.87	651	1.9	0.99	2.79	3.37	0.58	0.70	1.96	2.37	1206	2.4	0.99	3.53	4.27

Notes:
 Equations from Presser and Luoma (2010a, 2010b) were used to calculate selenium concentrations for fish. Models 4 and 5 used the average selenium trophic transfer factors to aquatic insects (2.8), fish (1.1 for all trophic levels) and bird eggs (1.8).
 Model 4 = Model 2 (TL-4 Fish Eating TL-3 Fish) with K estimated using normal/wet years regression (log K= 2.75-0.90(logDSM2))
 Model 5 = Model 2 (TL-4 Fish Eating TL-3 Fish) with K estimated using dry years (2007) regression (log K= 2.84-1.02(logDSM2))
 Invert. = invertebrate
 K_d = particulate concentration/water concentration ratio
 µg/g, dw = micrograms per gram, dry weight
 NA = not available; bass not collected here
 RM = river mile
 TL = trophic level
 a. Geometric mean calculated from whole-body largemouth bass data presented in Foe (2010a).
 b. Fish data collected at Rio Vista (Foe 2010a) were used to calculate geometric mean whole-body largemouth bass and ratios.
 c. Fish data collected at Old River near Tracy (Foe 2010a) were used to calculate geometric mean whole-body largemouth bass and ratios.
 d. Geometric mean of total selenium concentrations in water collected from years 2004, 2007, and 2008 (DWR Website 2009) was used to estimate selenium concentrations in particulates and biota (DSM2 data were not available). Fish data collected from Sacramento River at Veterans Bridge (Foe 2010a) were used to calculate geometric mean whole-body largemouth bass and ratios.
 e. Geometric mean of selenium concentrations (total or dissolved was not specified) in water collected from years 1990-2000 (SWAMP Website 2009) was used to estimate Year 2000 selenium concentrations in particulates and biota (DSM2 data were not available). Years 2004-2005 were used for Year 2005 estimates; and years 2006-2007 were used for Year 2007 estimates.

1 **Table 6D.9 Modeled Annual Average Selenium Concentrations in Water for No Action Alternative and Alternatives 1 (Second Basis of Comparison), 3, and 5**

Location	Period *	Period Average Concentration (µg/L) No Action Alternative	Period Average Concentration (µg/L) Second Basis of Comparison	Period Average Concentration (µg/L) Alternative 3	Period Average Concentration (µg/L) Alternative 5
Delta Interior					
San Joaquin River at Stockton	ALL	0.42	0.42	0.42	0.42
	DROUGHT	0.40	0.40	0.39	0.39
Turner Cut	ALL	0.28	0.27	0.27	0.29
	DROUGHT	0.22	0.21	0.21	0.24
San Joaquin River at San Andreas Landing	ALL	0.11	0.10	0.10	0.11
	DROUGHT	0.10	0.09	0.09	0.10
San Joaquin River at Jersey Point	ALL	0.12	0.11	0.11	0.12
	DROUGHT	0.10	0.10	0.10	0.10
Victoria Canal	ALL	0.23	0.22	0.21	0.24
	DROUGHT	0.17	0.16	0.16	0.21
Western Delta					
Sacramento River at Emmaton	ALL	0.10	0.10	0.10	0.11
	DROUGHT	0.10	0.10	0.10	0.10
San Joaquin River at Antioch	ALL	0.11	0.11	0.11	0.12
	DROUGHT	0.10	0.10	0.10	0.10
Montezuma Slough at Hunter Cut/Beldon's Landing	ALL	0.11	0.11	0.11	0.11
	DROUGHT	0.10	0.10	0.10	0.10
Major Diversions (Pumping Stations)					
North Bay Aqueduct at Barker Slough Pumping Plant	ALL	0.11	0.11	0.11	0.11
	DROUGHT	0.10	0.10	0.10	0.10
Contra Costa Pumping Plant #1	ALL	0.14	0.13	0.13	0.15
	DROUGHT	0.11	0.10	0.10	0.13
Banks Pumping Plant	ALL	0.21	0.19	0.19	0.22
	DROUGHT	0.16	0.14	0.15	0.18
Jones Pumping Plant	ALL	0.28	0.25	0.27	0.29
	DROUGHT	0.26	0.21	0.24	0.26

2 Notes:
 3 * All: Water years 1922-2003 represent the 82-year period modeled using DSM2. Drought: Represents a 5 consecutive year (water years 1987-1991) drought period consisting of dry and critical water year types (as defined by the Sacramento
 4 Valley 40-30-30 water year hydrologic classification index)
 5 µg/L = microgram per liter

1 Table 6D.10 Summary Table for Annual Average Selenium Concentrations in Biota for No Action Alternative and Second Basis of Comparison

Location	Period ^a	Estimated Concentrations of Selenium (mg/kg, dw ^b)							
		Whole-body Fish NAA	Whole-body Fish Alt. 1 (SBC)	Bird Eggs (Invertebrate Diet) NAA	Bird Eggs (Invertebrate Diet) Alt. 1 (SBC)	Bird Eggs (Fish Diet) NAA	Bird Eggs (Fish Diet) Alt. 1 (SBC)	Fish Fillets (ww) NAA	Fish Fillets (ww) Alt. 1 (SBC)
Delta Interior									
San Joaquin River at Stockton	ALL	1.90	1.90	2.83	2.83	3.42	3.42	0.64	0.64
	DROUGHT	2.39	2.39	3.55	3.55	4.30	4.30	0.83	0.83
Turner Cut	ALL	1.88	1.87	2.79	2.79	3.38	3.37	0.63	0.63
	DROUGHT	2.42	2.42	3.59	3.60	4.35	4.35	0.84	0.84
San Joaquin River at San Andreas Landing	ALL	1.82	1.82	2.71	2.71	3.28	3.28	0.61	0.61
	DROUGHT	2.46	2.46	3.65	3.66	4.42	4.42	0.86	0.86
San Joaquin River at Jersey Point	ALL	1.83	1.83	2.72	2.72	3.29	3.29	0.61	0.61
	DROUGHT	2.46	2.46	3.65	3.65	4.42	4.42	0.86	0.86
Victoria Canal	ALL	1.87	1.86	2.78	2.77	3.36	3.35	0.62	0.62
	DROUGHT	2.43	2.43	3.61	3.62	4.37	4.38	0.85	0.85
Western Delta									
Sacramento River at Emmaton	ALL	1.82	1.82	2.71	2.71	3.28	3.28	0.61	0.61
	DROUGHT	2.46	2.46	3.65	3.65	4.42	4.42	0.86	0.86
San Joaquin River at Antioch	ALL	1.83	1.83	2.72	2.72	3.29	3.29	0.61	0.61
	DROUGHT	2.46	2.46	3.65	3.65	4.42	4.42	0.86	0.86
Montezuma Slough at Hunter Cut/Beldon's Landing	ALL	1.82	1.82	2.71	2.71	3.28	3.28	0.61	0.61
	DROUGHT	2.45	2.45	3.65	3.65	4.42	4.42	0.86	0.86
Major Diversions (Pumping Stations)									
North Bay Aqueduct at Barker Slough Pumping Plant	ALL	1.82	1.82	2.71	2.71	3.28	3.28	0.61	0.61
	DROUGHT	2.45	2.45	3.65	3.65	4.42	4.42	0.86	0.86
Contra Costa Pumping Plant #1	ALL	1.84	1.83	2.74	2.73	3.31	3.30	0.61	0.61
	DROUGHT	2.45	2.45	3.64	3.65	4.41	4.42	0.85	0.86
Banks Pumping Plant	ALL	1.86	1.86	2.77	2.76	3.35	3.34	0.62	0.62
	DROUGHT	2.43	2.44	3.62	3.63	4.38	4.39	0.85	0.85

Location	Period ^a	Estimated Concentrations of Selenium (mg/kg, dw ^b)							
		Whole-body Fish NAA	Whole-body Fish Alt. 1 (SBC)	Bird Eggs (Invertebrate Diet) NAA	Bird Eggs (Invertebrate Diet) Alt. 1 (SBC)	Bird Eggs (Fish Diet) NAA	Bird Eggs (Fish Diet) Alt. 1 (SBC)	Fish Fillets (ww) NAA	Fish Fillets (ww) Alt. 1 (SBC)
Jones Pumping Plant	ALL	1.88	1.87	2.79	2.78	3.38	3.37	0.63	0.63
	DROUGHT	2.41	2.42	3.58	3.60	4.33	4.35	0.84	0.84

- 1 Notes:
- 2 a. All: Water years 1922-2003 represent the 82-year period modeled using DSM2. Drought: Represents a 5 consecutive year (water years 1987-1991) drought period consisting of dry and critical water year types (as defined by the Sacramento
- 3 Valley 40-30-30 water year hydrologic classification index)
- 4 b. Dry weight, except as noted for fish fillets
- 5 Alt. = alternative
- 6 dw = dry weight
- 7 mg/kg = milligram per kilogram
- 8 NAA = No Action Alternative
- 9 SBC = Second Basis of Comparison
- 10 "Alt. 1 (SBC)" is the same as Second Basis of Comparison. This nomenclature was used in this appendix to be consistent with the model run output for the model run that represents both Second Basis of Comparison and Alternative 1.
- 11 Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 4 results are not presented separately. Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2
- 12 results are not presented separately.
- 13 ww = wet weight

1 Table 6D.11 Summary Table for Annual Average Selenium Concentrations in Biota for No Action Alternative, Second Basis of Comparison, and Alternative 3

Location	Period ^a	Estimated Concentrations of Selenium (mg/kg, dw ^b)											
		Whole-body Fish NAA	Whole-body Fish Alt. 1 (SBC)	Whole-body Fish Alt. 3	Bird Eggs (Invertebrate Diet) NAA	Bird Eggs (Invertebrate Diet) Alt. 1 (SBC)	Bird Eggs (Invertebrate Diet) Alt. 3	Bird Eggs (Fish Diet) NAA	Bird Eggs (Fish Diet) Alt. 1 (SBC)	Bird Eggs (Fish Diet) Alt. 3	Fish Fillets (ww) NAA	Fish Fillets (ww) Alt. 1 (SBC)	Fish Fillets (ww) Alt. 3
Delta Interior													
San Joaquin River at Stockton	ALL	1.90	1.90	1.90	2.83	2.83	2.83	3.42	3.42	3.42	0.64	0.64	0.64
	DROUGHT	2.39	2.39	2.39	3.55	3.55	3.55	4.30	4.30	4.30	0.83	0.83	0.83
Turner Cut	ALL	1.88	1.87	1.87	2.79	2.79	2.79	3.38	3.37	3.37	0.63	0.63	0.63
	DROUGHT	2.42	2.42	2.42	3.59	3.60	3.60	4.35	4.35	4.35	0.84	0.84	0.84
San Joaquin River at San Andreas Landing	ALL	1.82	1.82	1.82	2.71	2.71	2.71	3.28	3.28	3.28	0.61	0.61	0.61
	DROUGHT	2.46	2.46	2.46	3.65	3.66	3.66	4.42	4.42	4.42	0.86	0.86	0.86
San Joaquin River at Jersey Point	ALL	1.83	1.83	1.82	2.72	2.72	2.77	3.29	3.29	3.35	0.61	0.61	0.62
	DROUGHT	2.46	2.46	2.46	3.65	3.65	3.62	4.42	4.42	4.38	0.86	0.86	0.85
Victoria Canal	ALL	1.87	1.86	1.86	2.78	2.77	2.77	3.36	3.35	3.35	0.62	0.62	0.62
	DROUGHT	2.43	2.43	2.43	3.61	3.62	3.62	4.37	4.38	4.38	0.85	0.85	0.85
Western Delta													
Sacramento River at Emmaton	ALL	1.82	1.82	1.82	2.71	2.71	2.71	3.28	3.28	3.28	0.61	0.61	0.61
	DROUGHT	2.46	2.46	2.46	3.65	3.65	3.65	4.42	4.42	4.42	0.86	0.86	0.86
San Joaquin River at Antioch	ALL	1.83	1.83	1.82	2.72	2.72	2.71	3.29	3.29	3.28	0.61	0.61	0.61
	DROUGHT	2.46	2.46	2.46	3.65	3.65	3.65	4.42	4.42	4.42	0.86	0.86	0.86
Montezuma Slough at Hunter Cut/Beldon's Landing	ALL	1.82	1.82	1.82	2.71	2.71	2.71	3.28	3.28	3.28	0.61	0.61	0.61
	DROUGHT	2.45	2.45	2.46	3.65	3.65	3.65	4.42	4.42	4.42	0.86	0.86	0.86
Major Diversions (Pumping Stations)													
North Bay Aqueduct at Barker Slough Pumping Plant	ALL	1.82	1.82	1.82	2.71	2.71	2.71	3.28	3.28	3.28	0.61	0.61	0.61
	DROUGHT	2.45	2.45	2.45	3.65	3.65	3.65	4.42	4.42	4.42	0.86	0.86	0.86
Contra Costa Pumping Plant #1	ALL	1.84	1.83	1.83	2.74	2.73	2.72	3.31	3.30	3.30	0.61	0.61	0.61
	DROUGHT	2.45	2.45	2.45	3.64	3.65	3.65	4.41	4.42	4.41	0.85	0.86	0.86

Location	Period ^a	Estimated Concentrations of Selenium (mg/kg, dw ^b)											
		Whole-body Fish NAA	Whole-body Fish Alt. 1 (SBC)	Whole-body Fish Alt. 3	Bird Eggs (Invertebrate Diet) NAA	Bird Eggs (Invertebrate Diet) Alt. 1 (SBC)	Bird Eggs (Invertebrate Diet) Alt. 3	Bird Eggs (Fish Diet) NAA	Bird Eggs (Fish Diet) Alt. 1 (SBC)	Bird Eggs (Fish Diet) Alt. 3	Fish Fillets (ww) NAA	Fish Fillets (ww) Alt. 1 (SBC)	Fish Fillets (ww) Alt. 3
Banks Pumping Plant	ALL	1.86	1.86	1.86	2.77	2.76	2.76	3.35	3.34	3.34	0.62	0.62	0.62
	DROUGHT	2.43	2.44	2.44	3.62	3.63	3.62	4.38	4.39	4.39	0.85	0.85	0.85
Jones Pumping Plant	ALL	1.88	1.87	1.87	2.79	2.78	2.79	3.38	3.37	3.37	0.63	0.63	0.63
	DROUGHT	2.41	2.42	2.41	3.58	3.60	3.59	4.33	4.35	4.34	0.84	0.84	0.84

- 1 Notes:
- 2 a. All: Water years 1922-2003 represent the 82-year period modeled using DSM2. Drought: Represents a 5 consecutive year (water years 1987-1991) drought period consisting of dry and critical water year types (as defined by the Sacramento
- 3 Valley 40-30-30 water year hydrologic classification index)
- 4 b. Dry weight, except as noted for fish fillets
- 5 Alt. = alternative
- 6 dw = dry weight
- 7 mg/kg = milligram per kilogram
- 8 NAA = No Action Alternative
- 9 SBC = Second Basis of Comparison
- 10 "Alt. 1 (SBC)" is the same as Second Basis of Comparison. This nomenclature was used in this appendix to be consistent with the model run output for the model run that represents both Second Basis of Comparison and Alternative 1.
- 11 ww = wet weight

1 Table 6D.12 Summary Table for Annual Average Selenium Concentrations in Biota for No Action Alternative, Second Basis of Comparison, and Alternative 5

Location	Period ^a	Estimated Concentrations of Selenium (mg/kg, dw ^b)											
		Whole-body Fish NAA	Whole-body Fish Alt. 1 (SBC)	Whole-body Fish Alt. 5	Bird Eggs (Invertebrate Diet) NAA	Bird Eggs (Invertebrate Diet) Alt. 1 (SBC)	Bird Eggs (Invertebrate Diet) Alt. 5	Bird Eggs (Fish Diet) NAA	Bird Eggs (Fish Diet) Alt. 1 (SBC)	Bird Eggs (Fish Diet) Alt. 5	Fish Fillets (ww) NAA	Fish Fillets (ww) Alt. 1 (SBC)	Fish Fillets (ww) Alt. 5
Delta Interior													
San Joaquin River at Stockton	ALL	1.90	1.90	1.90	2.83	2.83	2.83	3.42	3.42	3.42	0.64	0.64	0.64
	DROUGHT	2.39	2.39	2.39	3.55	3.55	3.55	4.30	4.30	4.30	0.83	0.83	0.83
Turner Cut	ALL	1.88	1.87	1.88	2.79	2.79	2.79	3.38	3.37	3.38	0.63	0.63	0.63
	DROUGHT	2.42	2.42	2.41	3.59	3.60	3.59	4.35	4.35	4.34	0.84	0.84	0.84
San Joaquin River at San Andreas Landing	ALL	1.82	1.82	1.82	2.71	2.71	2.71	3.28	3.28	3.28	0.61	0.61	0.61
	DROUGHT	2.46	2.46	2.45	3.65	3.66	3.65	4.42	4.42	4.42	0.86	0.86	0.86
San Joaquin River at Jersey Point	ALL	1.83	1.83	1.83	2.72	2.72	2.78	3.29	3.29	3.36	0.61	0.61	0.62
	DROUGHT	2.46	2.46	2.45	3.65	3.65	3.60	4.42	4.42	4.35	0.86	0.86	0.84
Victoria Canal	ALL	1.87	1.86	1.87	2.78	2.77	2.78	3.36	3.35	3.36	0.62	0.62	0.62
	DROUGHT	2.43	2.43	2.42	3.61	3.62	3.60	4.37	4.38	4.35	0.85	0.85	0.84
Western Delta													
Sacramento River at Emmaton	ALL	1.82	1.82	1.82	2.71	2.71	2.71	3.28	3.28	3.28	0.61	0.61	0.61
	DROUGHT	2.46	2.46	2.45	3.65	3.65	3.65	4.42	4.42	4.42	0.86	0.86	0.86
San Joaquin River at Antioch	ALL	1.83	1.83	1.83	2.72	2.72	2.72	3.29	3.29	3.29	0.61	0.61	0.61
	DROUGHT	2.46	2.46	2.45	3.65	3.65	3.65	4.42	4.42	4.42	0.86	0.86	0.86
Montezuma Slough at Hunter Cut/Beldon's Landing	ALL	1.82	1.82	1.82	2.71	2.71	2.71	3.28	3.28	3.28	0.61	0.61	0.61
	DROUGHT	2.45	2.45	2.45	3.65	3.65	3.65	4.42	4.42	4.42	0.86	0.86	0.86
Major Diversions (Pumping Stations)													
North Bay Aqueduct at Barker Slough Pumping Plant	ALL	1.82	1.82	1.82	2.71	2.71	2.71	3.28	3.28	3.28	0.61	0.61	0.61
	DROUGHT	2.45	2.45	2.45	3.65	3.65	3.65	4.42	4.42	4.42	0.86	0.86	0.86
Contra Costa Pumping Plant #1	ALL	1.84	1.83	1.84	2.74	2.73	2.74	3.31	3.30	3.32	0.61	0.61	0.61
	DROUGHT	2.45	2.45	2.44	3.64	3.65	3.63	4.41	4.42	4.39	0.85	0.86	0.85
Banks Pumping Plant	ALL	1.86	1.86	1.86	2.77	2.76	2.77	3.35	3.34	3.35	0.62	0.62	0.62
	DROUGHT	2.43	2.44	2.43	3.62	3.63	3.61	4.38	4.39	4.37	0.85	0.85	0.85

Location	Period ^a	Estimated Concentrations of Selenium (mg/kg, dw ^b)											
		Whole-body Fish NAA	Whole-body Fish Alt. 1 (SBC)	Whole-body Fish Alt. 5	Bird Eggs (Invertebrate Diet) NAA	Bird Eggs (Invertebrate Diet) Alt. 1 (SBC)	Bird Eggs (Invertebrate Diet) Alt. 5	Bird Eggs (Fish Diet) NAA	Bird Eggs (Fish Diet) Alt. 1 (SBC)	Bird Eggs (Fish Diet) Alt. 5	Fish Fillets (ww) NAA	Fish Fillets (ww) Alt. 1 (SBC)	Fish Fillets (ww) Alt. 5
Jones Pumping Plant	ALL	1.88	1.87	1.88	2.79	2.78	2.79	3.38	3.37	3.38	0.63	0.63	0.63
	DROUGHT	2.41	2.42	2.41	3.58	3.60	3.58	4.33	4.35	4.33	0.84	0.84	0.84

- 1 Notes:
- 2 a. All: Water years 1922-2003 represent the 82-year period modeled using DSM2. Drought: Represents a 5 consecutive year (water years 1987-1991) drought period consisting of dry and critical water year types (as defined by the Sacramento
- 3 Valley 40-30-30 water year hydrologic classification index)
- 4 b. Dry weight, except as noted for fish fillets
- 5 Alt. = alternative
- 6 dw = dry weight
- 7 mg/kg = milligram per kilogram
- 8 NAA = No Action Alternative
- 9 SBC = Second Basis of Comparison
- 10 "Alt. 1 (SBC)" is the same as Second Basis of Comparison. This nomenclature was used in this appendix to be consistent with the model run output for the model run that represents both Second Basis of Comparison and Alternative 1.
- 11 ww = wet weight

1 Table 6D.13 Summary Table for Selenium Concentrations in Biota, and Comparisons for No Action Alternative and Second Basis of Comparison to Benchmarks

Location	Period ^a	Estimated Concentrations of Selenium (mg/kg, dw ^b)								Exceedance Quotients ^c													
		Whole-body Fish		Bird Eggs (Invertebrate Diet)		Bird Eggs (Fish Diet)		Fish Fillets (ww)		Whole-body Fish				Bird Eggs (Invertebrate Diet)				Bird Eggs (Fish Diet)				Fish Fillets (ww)	
		Level of Concern ^d	Toxicity Level ^e	Level of Concern ^f	Toxicity Level ^g	Level of Concern ^f	Toxicity Level ^g	Level of Concern ^f	Toxicity Level ^g	Level of Concern ^f	Toxicity Level ^g	Level of Concern ^f	Toxicity Level ^g	Level of Concern ^f	Toxicity Level ^g	Level of Concern ^f	Toxicity Level ^g	Level of Concern ^f	Toxicity Level ^g	Level of Concern ^f	Toxicity Level ^g	Advisory Tissue Level ^h	
NAA	Alt. 1 (SBC)	NAA	Alt. 1 (SBC)	NAA	Alt. 1 (SBC)	NAA	Alt. 1 (SBC)	NAA	Alt. 1 (SBC)	NAA	Alt. 1 (SBC)	NAA	Alt. 1 (SBC)	NAA	Alt. 1 (SBC)	NAA	Alt. 1 (SBC)	NAA	Alt. 1 (SBC)	NAA	Alt. 1 (SBC)	NAA	Alt. 1 (SBC)
Delta Interior																							
San Joaquin River at Stockton	ALL	1.90	1.90	2.83	2.83	3.42	3.42	0.64	0.64	0.47	0.47	0.23	0.23	0.47	0.47	0.28	0.28	0.57	0.57	0.34	0.34	0.25	0.25
	DROUGHT	2.39	2.39	3.55	3.55	4.30	4.30	0.83	0.83	0.60	0.60	0.29	0.29	0.59	0.59	0.36	0.36	0.72	0.72	0.43	0.43	0.33	0.33
Turner Cut	ALL	1.88	1.87	2.79	2.79	3.38	3.37	0.63	0.63	0.47	0.47	0.23	0.23	0.47	0.46	0.28	0.28	0.56	0.56	0.34	0.34	0.25	0.25
	DROUGHT	2.42	2.42	3.59	3.60	4.35	4.35	0.84	0.84	0.60	0.60	0.30	0.30	0.60	0.60	0.36	0.36	0.72	0.73	0.43	0.44	0.34	0.34
San Joaquin River at San Andreas Landing	ALL	1.82	1.82	2.71	2.71	3.28	3.28	0.61	0.61	0.46	0.46	0.23	0.22	0.45	0.45	0.27	0.27	0.55	0.55	0.33	0.33	0.24	0.24
	DROUGHT	2.46	2.46	3.65	3.66	4.42	4.42	0.86	0.86	0.61	0.61	0.30	0.30	0.61	0.61	0.37	0.37	0.74	0.74	0.44	0.44	0.34	0.34
San Joaquin River at Jersey Point	ALL	1.83	1.83	2.72	2.72	3.29	3.29	0.61	0.61	0.46	0.46	0.23	0.23	0.45	0.45	0.27	0.27	0.55	0.55	0.33	0.33	0.24	0.24
	DROUGHT	2.46	2.46	3.65	3.65	4.42	4.42	0.86	0.86	0.61	0.61	0.30	0.30	0.61	0.61	0.37	0.37	0.74	0.74	0.44	0.44	0.34	0.34
Victoria Canal	ALL	1.87	1.86	2.78	2.77	3.36	3.35	0.62	0.62	0.47	0.47	0.23	0.23	0.46	0.46	0.28	0.28	0.56	0.56	0.34	0.34	0.25	0.25
	DROUGHT	2.43	2.43	3.61	3.62	4.37	4.38	0.85	0.85	0.61	0.61	0.30	0.30	0.60	0.60	0.36	0.36	0.73	0.73	0.44	0.44	0.34	0.34
Western Delta																							
Sacramento River at Emmaton	ALL	1.82	1.82	2.71	2.71	3.28	3.28	0.61	0.61	0.46	0.46	0.22	0.22	0.45	0.45	0.27	0.27	0.55	0.55	0.33	0.33	0.24	0.24
	DROUGHT	2.46	2.46	3.65	3.65	4.42	4.42	0.86	0.86	0.61	0.61	0.30	0.30	0.61	0.61	0.37	0.37	0.74	0.74	0.44	0.44	0.34	0.34
San Joaquin River at Antioch	ALL	1.83	1.83	2.72	2.72	3.29	3.29	0.61	0.61	0.46	0.46	0.23	0.23	0.45	0.45	0.27	0.27	0.55	0.55	0.33	0.33	0.24	0.24
	DROUGHT	2.46	2.46	3.65	3.65	4.42	4.42	0.86	0.86	0.61	0.61	0.30	0.30	0.61	0.61	0.37	0.37	0.74	0.74	0.44	0.44	0.34	0.34
Montezuma Slough at Hunter Cut/Beldon's Landing	ALL	1.82	1.82	2.71	2.71	3.28	3.28	0.61	0.61	0.46	0.46	0.23	0.23	0.45	0.45	0.27	0.27	0.55	0.55	0.33	0.33	0.24	0.24
	DROUGHT	2.45	2.45	3.65	3.65	4.42	4.42	0.86	0.86	0.61	0.61	0.30	0.30	0.61	0.61	0.37	0.37	0.74	0.74	0.44	0.44	0.34	0.34
Major Diversions (Pumping Stations)																							
North Bay Aqueduct at Barker Slough Pumping Plant	ALL	1.82	1.82	2.71	2.71	3.28	3.28	0.61	0.61	0.46	0.46	0.23	0.23	0.45	0.45	0.27	0.27	0.55	0.55	0.33	0.33	0.24	0.24
	DROUGHT	2.45	2.45	3.65	3.65	4.42	4.42	0.86	0.86	0.61	0.61	0.30	0.30	0.61	0.61	0.37	0.37	0.74	0.74	0.44	0.44	0.34	0.34
Contra Costa Pumping Plant #1	ALL	1.84	1.83	2.74	2.73	3.31	3.30	0.61	0.61	0.46	0.46	0.23	0.23	0.46	0.45	0.27	0.27	0.55	0.55	0.33	0.33	0.25	0.24
	DROUGHT	2.45	2.45	3.64	3.65	4.41	4.42	0.85	0.86	0.61	0.61	0.30	0.30	0.61	0.61	0.36	0.36	0.73	0.74	0.44	0.44	0.34	0.34
Banks Pumping Plant	ALL	1.86	1.86	2.77	2.76	3.35	3.34	0.62	0.62	0.47	0.46	0.23	0.23	0.46	0.46	0.28	0.28	0.56	0.56	0.33	0.33	0.25	0.25
	DROUGHT	2.43	2.44	3.62	3.63	4.38	4.39	0.85	0.85	0.61	0.61	0.30	0.30	0.60	0.60	0.36	0.36	0.73	0.73	0.44	0.44	0.34	0.34
Jones Pumping Plant	ALL	1.88	1.87	2.79	2.78	3.38	3.37	0.63	0.63	0.47	0.47	0.23	0.23	0.47	0.46	0.28	0.28	0.56	0.56	0.34	0.34	0.25	0.25
	DROUGHT	2.41	2.42	3.58	3.60	4.33	4.35	0.84	0.84	0.60	0.60	0.30	0.30	0.60	0.60	0.36	0.36	0.72	0.73	0.43	0.44	0.34	0.34

2

- 1 Notes:
2 a. All: Water years 1922-2003 represent the 82-year period modeled using DSM2. Drought: Represents a 5 consecutive year (water years 1987-1991) drought period consisting of dry and critical water year types (as defined by the Sacramento
3 Valley 40-30-30 water year hydrologic classification index).
4 b. Dry weight, except as noted for fish fillets.
5 c. Exceedance Quotient = tissue concentration/benchmark
6 d. Level of Concern for fish tissue (lower end of range) = 4 mg/kg dw (Beckon et al. 2008)
7 e. Toxicity Level for fish tissue = 8.1 mg/kg dw (USEPA 2014)
8 f. Level of Concern for bird eggs (lower end of range) = 6 mg/kg dw (Beckon et al. 2008)
9 g. Toxicity Level for bird eggs = 10 mg/kg dw (Beckon et al. 2008)
10 h. Advisory Tissue Level = 2.5 mg/kg ww (OEHHA 2008)
- 11 Alt. = Alternative
12 dw = dry weight
13 mg/kg = milligram per kilogram
14 NAA = No Action Alternative
15 SBC = Second Basis of Comparison
16 "Alt. 1 (SBC)" is the same as Second Basis of Comparison. This nomenclature was used in this appendix to be consistent with the model run output for the model run that represents both Second Basis of Comparison and Alternative 1.
17 Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 4 results are not presented separately. Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2
18 results are not presented separately.
19 ww = wet weight

1 **Table 6D.14 Summary Table for Selenium Concentrations in Biota, and Comparisons for Alternative 3 to No Action Alternative and Second Basis of Comparison Conditions and Benchmarks**

Location	Period ^a	Estimated Concentrations of Selenium (mg/kg, dw ^b)				% Change In Selenium Concentrations Compared to NAA and Alternative 1 (Second Basis of Comparison) ^c								Exceedance Quotients ^d								
		Whole-body Fish	Bird Eggs (Invert. Diet)	Bird Eggs (Fish Diet)	Fish Fillets (ww)	Whole-body Fish		Bird Eggs (Invert. Diet)		Bird Eggs (Fish Diet)		Fish Fillets (ww)		Whole-body Fish		Bird Eggs (Invert. Diet)		Bird Eggs (Fish Diet)		Fish Fillets (ww)		
		Alt. 3	Alt. 3	Alt. 3	Alt. 3	NAA	Alt. 1 (SBC)	NAA	Alt. 1 (SBC)	NAA	Alt. 1 (SBC)	NAA	Alt. 1 (SBC)	LOC ^e	TL ^f	LOC ^g	TL ^h	LOC ^g	TL ^h	ATL ⁱ		
Delta Interior																						
San Joaquin River at Stockton	ALL	1.90	2.83	3.42	0.64	0	0	0	0	0	0	0	0	0	0	0.47	0.23	0.47	0.28	0.57	0.34	0.25
	DROUGHT	2.39	3.55	4.30	0.83	0	0	0	0	0	0	0	0	0	0	0.60	0.29	0.59	0.36	0.72	0.43	0.33
Turner Cut	ALL	1.87	2.79	3.37	0.63	0	0	0	0	0	0	0	0	0	0	0.47	0.23	0.46	0.28	0.56	0.34	0.25
	DROUGHT	2.42	3.60	4.35	0.84	0	0	0	0	0	0	0	0	0	0	0.60	0.30	0.60	0.36	0.73	0.44	0.34
San Joaquin River at San Andreas Landing	ALL	1.82	2.71	3.28	0.61	0	0	0	0	0	0	0	0	0	0	0.46	0.22	0.45	0.27	0.55	0.33	0.24
	DROUGHT	2.46	3.66	4.42	0.86	0	0	0	0	0	0	0	0	0	0	0.61	0.30	0.61	0.37	0.74	0.44	0.34
San Joaquin River at Jersey Point	ALL	1.82	2.77	3.35	0.62	0	0	2	2	2	2	2	2	2	2	0.46	0.23	0.46	0.28	0.56	0.34	0.25
	DROUGHT	2.46	3.62	4.38	0.85	0	0	-1	-1	-1	-1	-1	-1	-1	-1	0.61	0.30	0.60	0.36	0.73	0.44	0.34
Victoria Canal	ALL	1.86	2.77	3.35	0.62	0	0	0	0	0	0	0	0	0	0	0.47	0.23	0.46	0.28	0.56	0.34	0.25
	DROUGHT	2.43	3.62	4.38	0.85	0	0	0	0	0	0	0	0	0	0	0.61	0.30	0.60	0.36	0.73	0.44	0.34
Western Delta																						
Sacramento River at Emmaton	ALL	1.82	2.71	3.28	0.61	0	0	0	0	0	0	0	0	0	0	0.46	0.22	0.45	0.27	0.55	0.33	0.24
	DROUGHT	2.46	3.65	4.42	0.86	0	0	0	0	0	0	0	0	0	0	0.61	0.30	0.61	0.37	0.74	0.44	0.34
San Joaquin River at Antioch	ALL	1.82	2.71	3.28	0.61	0	0	0	0	0	0	0	0	0	0	0.46	0.23	0.45	0.27	0.55	0.33	0.24
	DROUGHT	2.46	3.65	4.42	0.86	0	0	0	0	0	0	0	0	0	0	0.61	0.30	0.61	0.37	0.74	0.44	0.34
Montezuma Slough at Hunter Cut/Beldon's Landing	ALL	1.82	2.71	3.28	0.61	0	0	0	0	0	0	0	0	0	0	0.46	0.23	0.45	0.27	0.55	0.33	0.24
	DROUGHT	2.46	3.65	4.42	0.86	0	0	0	0	0	0	0	0	0	0	0.61	0.30	0.61	0.37	0.74	0.44	0.34
Major Diversions (Pumping Stations)																						
North Bay Aqueduct at Barker Slough Pumping Plant	ALL	1.82	2.71	3.28	0.61	0	0	0	0	0	0	0	0	0	0	0.46	0.23	0.45	0.27	0.55	0.33	0.24
	DROUGHT	2.45	3.65	4.42	0.86	0	0	0	0	0	0	0	0	0	0	0.61	0.30	0.61	0.37	0.74	0.44	0.34
Contra Costa Pumping Plant #1	ALL	1.83	2.72	3.30	0.61	0	0	0	0	0	0	0	0	0	0	0.46	0.23	0.45	0.27	0.55	0.33	0.24
	DROUGHT	2.45	3.65	4.41	0.86	0	0	0	0	0	0	0	0	0	0	0.61	0.30	0.61	0.36	0.74	0.44	0.34
Banks Pumping Plant	ALL	1.86	2.76	3.34	0.62	0	0	0	0	0	0	0	0	0	0	0.46	0.23	0.46	0.28	0.56	0.33	0.25
	DROUGHT	2.44	3.62	4.39	0.85	0	0	0	0	0	0	0	0	0	0	0.61	0.30	0.60	0.36	0.73	0.44	0.34
Jones Pumping Plant	ALL	1.87	2.79	3.37	0.63	0	0	0	0	0	0	0	0	0	0	0.47	0.23	0.46	0.28	0.56	0.34	0.25
	DROUGHT	2.41	3.59	4.34	0.84	0	0	0	0	0	0	0	0	0	0	0.60	0.30	0.60	0.36	0.72	0.43	0.34

2 Notes:
3 a. All: Water years 1922-2003 represent the 82-year period modeled using DSM2. Drought: Represents a 5 consecutive year (water years 1987-1991) drought period consisting of dry and critical water year types (as defined by the Sacramento
4 Valley 40-30-30 water year hydrologic classification index).
5 b. Dry weight, except as noted for fish fillets.
6 c. % change indicates a negative change (increased concentrations) relative to the No Action Alternative and Second Basis of Comparison when values are positive and a positive change (lowered concentrations) relative to the No Action
7 Alternative and Second Basis of Comparison when values are negative.
8 d. Exceedance Quotient = tissue concentration/benchmark
9 e. Level of Concern for fish tissue (lower end of range) = 4 mg/kg dw (Beckon et al. 2008)
10 f. Toxicity Level for fish tissue = 8.1 mg/kg dw (USEPA 2014)
11 g. Level of Concern for bird eggs (lower end of range) = 6 mg/kg dw (Beckon et al. 2008)
12 h. Toxicity Level for bird eggs = 10 mg/kg dw (Beckon et al. 2008)
13 i. Advisory Tissue Level = 2.5 mg/kg ww (OEHHA 2008)
14

- 1 Notes (continued):
- 2 Alt. = alternative
- 3 dw = dry weight
- 4 Invert. = invertebrate
- 5 mg/kg = milligram per kilogram
- 6 NAA = No Action Alternative
- 7 SBC = Second Basis of Comparison
- 8 "Alt. 1 (SBC)" is the same as Second Basis of Comparison. This nomenclature was used in this appendix to be consistent with the model run output for the model run that represents both Second Basis of Comparison and Alternative 1.
- 9 ww = wet weight

1 **Table 6D.15 Summary Table for Selenium Concentrations in Biota, and Comparisons for Alternative 5 to No Action Alternative and Second Basis of Comparison Conditions and Benchmarks**

Location	Period ^a	Estimated Concentrations of Selenium (mg/kg, dw ^b)				% Change In Selenium Concentrations Compared to NAA and Alternative 1 (Second Basis of Comparison) ^c								Exceedance Quotients ^d							
		Whole-body Fish	Bird Eggs (Invert. Diet)	Bird Eggs (Fish Diet)	Fish Fillets (ww)	Whole-body Fish		Bird Eggs (Invert. Diet)		Bird Eggs (Fish Diet)		Fish Fillets (ww)		Whole-body Fish		Bird Eggs (Invert. Diet)		Bird Eggs (Fish Diet)		Fish Fillets (ww)	
		Alt. 5	Alt. 5	Alt. 5	Alt. 5	NAA	Alt. 1 (SBC)	NAA	Alt. 1 (SBC)	NAA	Alt. 1 (SBC)	NAA	Alt. 1 (SBC)	LOC ^e	TL ^f	LOC ^g	TL ^h	LOC ^g	TL ^h	ATL ⁱ	
Delta Interior																					
San Joaquin River at Stockton	ALL	1.90	2.83	3.42	0.64	0	0	0	0	0	0	0	0	0	0.47	0.23	0.47	0.28	0.57	0.34	0.25
	DROUGHT	2.39	3.55	4.30	0.83	0	0	0	0	0	0	0	0	0	0.60	0.29	0.59	0.36	0.72	0.43	0.33
Turner Cut	ALL	1.88	2.79	3.38	0.63	0	0	0	0	0	0	0	0	0	0.47	0.23	0.47	0.28	0.56	0.34	0.25
	DROUGHT	2.41	3.59	4.34	0.84	0	0	0	0	0	0	0	0	0	0.60	0.30	0.60	0.36	0.72	0.43	0.34
San Joaquin River at San Andreas Landing	ALL	1.82	2.71	3.28	0.61	0	0	0	0	0	0	0	0	0	0.46	0.23	0.45	0.27	0.55	0.33	0.24
	DROUGHT	2.45	3.65	4.42	0.86	0	0	0	0	0	0	0	0	0	0.61	0.30	0.61	0.37	0.74	0.44	0.34
San Joaquin River at Jersey Point	ALL	1.83	2.78	3.36	0.62	0	0	2	2	2	2	3	3	0.46	0.23	0.46	0.28	0.56	0.34	0.25	
	DROUGHT	2.45	3.60	4.35	0.84	0	0	-1	-2	-1	-2	-2	-2	0.61	0.30	0.60	0.36	0.73	0.44	0.34	
Victoria Canal	ALL	1.87	2.78	3.36	0.62	0	0	0	0	0	0	0	0	0.47	0.23	0.46	0.28	0.56	0.34	0.25	
	DROUGHT	2.42	3.60	4.35	0.84	0	0	0	0	0	0	0	-1	0.60	0.30	0.60	0.36	0.73	0.44	0.34	
Western Delta																					
Sacramento River at Emmaton	ALL	1.82	2.71	3.28	0.61	0	0	0	0	0	0	0	0	0	0.46	0.23	0.45	0.27	0.55	0.33	0.24
	DROUGHT	2.45	3.65	4.42	0.86	0	0	0	0	0	0	0	0	0	0.61	0.30	0.61	0.37	0.74	0.44	0.34
San Joaquin River at Antioch	ALL	1.83	2.72	3.29	0.61	0	0	0	0	0	0	0	0	0	0.46	0.23	0.45	0.27	0.55	0.33	0.24
	DROUGHT	2.45	3.65	4.42	0.86	0	0	0	0	0	0	0	0	0	0.61	0.30	0.61	0.37	0.74	0.44	0.34
Montezuma Slough at Hunter Cut/Beldon's Landing	ALL	1.82	2.71	3.28	0.61	0	0	0	0	0	0	0	0	0	0.46	0.23	0.45	0.27	0.55	0.33	0.24
	DROUGHT	2.45	3.65	4.42	0.86	0	0	0	0	0	0	0	0	0	0.61	0.30	0.61	0.37	0.74	0.44	0.34
Major Diversions (Pumping Stations)																					
North Bay Aqueduct at Barker Slough Pumping Plant	ALL	1.82	2.71	3.28	0.61	0	0	0	0	0	0	0	0	0	0.46	0.23	0.45	0.27	0.55	0.33	0.24
	DROUGHT	2.45	3.65	4.42	0.86	0	0	0	0	0	0	0	0	0	0.61	0.30	0.61	0.37	0.74	0.44	0.34
Contra Costa Pumping Plant #1	ALL	1.84	2.74	3.32	0.61	0	1	0	1	0	1	0	1	0.46	0.23	0.46	0.27	0.55	0.33	0.25	
	DROUGHT	2.44	3.63	4.39	0.85	0	-1	0	-1	0	-1	0	-1	0.61	0.30	0.61	0.36	0.73	0.44	0.34	
Banks Pumping Plant	ALL	1.86	2.77	3.35	0.62	0	0	0	0	0	0	0	0	0.47	0.23	0.46	0.28	0.56	0.34	0.25	
	DROUGHT	2.43	3.61	4.37	0.85	0	0	0	0	0	0	0	-1	0.61	0.30	0.60	0.36	0.73	0.44	0.34	
Jones Pumping Plant	ALL	1.88	2.79	3.38	0.63	0	0	0	0	0	0	0	0	0.47	0.23	0.47	0.28	0.56	0.34	0.25	
	DROUGHT	2.41	3.58	4.33	0.84	0	0	0	0	0	0	0	-1	0.60	0.30	0.60	0.36	0.72	0.43	0.34	

2
3
4 Notes:
5 a. All: Water years 1922-2003 represent the 82-year period modeled using DSM2. Drought: Represents a 5 consecutive year (water years 1987-1991) drought period consisting of dry and critical water year types (as defined by the Sacramento
6 Valley 40-30-30 water year hydrologic classification index).
7 b. Dry weight, except as noted for fish fillets.
8 c. % change indicates a negative change (increased concentrations) relative to the No Action Alternative and Second Basis of Comparison when values are positive and a positive change (lowered concentrations) relative to the No Action
9 Alternative and Second Basis of Comparison when values are negative.
10 d. Exceedance Quotient = tissue concentration/benchmark
11 e. Level of Concern for fish tissue (lower end of range) = 4 mg/kg dw (Beckon et al. 2008)
12 f. Toxicity Level for fish tissue = 8.1 mg/kg dw (USEPA 2014)
13 g. Level of Concern for bird eggs (lower end of range) = 6 mg/kg dw (Beckon et al. 2008)
14 h. Toxicity Level for bird eggs = 10 mg/kg dw (Beckon et al. 2008)
i. Advisory Tissue Level = 2.5 mg/kg ww (OEHHA 2008)

- 1 Notes (continued):
- 2 Alt. = alternative
- 3 dw = dry weight
- 4 Invert. = invertebrate
- 5 mg/kg = milligram per kilogram
- 6 NAA = No Action Alternative
- 7 SBC = Second Basis of Comparison
- 8 "Alt. 1 (SBC)" is the same as Second Basis of Comparison. This nomenclature was used in this appendix to be consistent with the model run output for the model run that represents both Second Basis of Comparison and Alternative 1.
- 9 ww = wet weight

1 **Table 6D.16 Modeled Selenium Concentrations in Water for No Action Alternative and Alternatives 1 (Second Basis of Comparison),**
 2 **3, and 5**

Location	Period *	Period Average Concentration (µg/L) No Action Alternative	Period Average Concentration (µg/L) Alternative 1 (SBC)	Period Average Concentration (µg/L) Alternative 3	Period Average Concentration (µg/L) Alternative 5
Sacramento River at Emmaton	ALL	0.10	0.10	0.10	0.11
	DROUGHT	0.10	0.10	0.10	0.10
San Joaquin River at Antioch	ALL	0.11	0.11	0.11	0.12
	DROUGHT	0.10	0.10	0.10	0.10
Montezuma Slough at Hunter Cut/Beldon's Landing	ALL	0.11	0.11	0.11	0.11
	DROUGHT	0.10	0.10	0.10	0.10

3 Notes:

4 * All: Water years 1922-2003 represent the 82-year period modeled using DSM2. Drought: Represents a 5-consecutive-year (Water Years
 5 1987-1991) drought period consisting of dry and critical water-year types (as defined by the Sacramento Valley 40-30-30 water year hydrologic
 6 classification index).

7 "Alt. 1 (SBC)" is the same as Second Basis of Comparison. This nomenclature was used in this appendix to be consistent with the model run
 8 output for the model run that represents both Second Basis of Comparison and Alternative 1.

9 Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 4 results are not presented separately.
 10 Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented separately.

11 µg/L = microgram per liter

12 SBC = Second Basis of Comparison

1 **Table 6D.17 Summary of Annual Average Selenium Concentrations in Whole-body Sturgeon**

Location	Period *	Estimated Concentrations of Selenium in Whole-body Sturgeon (mg/kg, dw) No Action Alternative	Estimated Concentrations of Selenium in Whole-body Sturgeon (mg/kg, dw) Alternative 1 (SBC)	Estimated Concentrations of Selenium in Whole-body Sturgeon (mg/kg, dw) Alternative 3	Estimated Concentrations of Selenium in Whole-body Sturgeon (mg/kg, dw) Alternative 5
Sacramento River at Emmaton	ALL	4.16	4.11	4.08	4.20
	DROUGHT	6.96	6.92	6.91	7.09
San Joaquin River at Antioch	ALL	4.56	4.40	4.34	4.61
	DROUGHT	7.06	6.99	6.97	7.23
Montezuma Slough at Hunter Cut/Beldon's Landing	ALL	4.33	4.27	4.24	4.35
	DROUGHT	7.10	7.07	7.06	7.16

- 2 Notes:
- 3 * All: Water years 1922-2003 represent the 82-year period modeled using DSM2. Drought: Represents a 5-consecutive-year (Water Years
- 4 1987-1991) drought period consisting of dry and critical water-year types (as defined by the Sacramento Valley 40-30-30 water year hydrologic
- 5 classification index).
- 6 "Alt. 1 (SBC)" is the same as Second Basis of Comparison. This nomenclature was used in this appendix to be consistent with the model run
- 7 output for the model run that represents both Second Basis of Comparison and Alternative 1.
- 8 Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 4 results are not presented separately.
- 9 Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented separately.
- 10 dw = dry weight
- 11 mg/kg = milligram per kilogram
- 12 SBC = Second Basis of Comparison

1 **Table 6D.18 Comparison of Annual Average Selenium Concentrations in Whole-body Sturgeon to Toxicity Thresholds^a**

Location	Period ^b	No Action Alternative Low	No Action Alternative High	Second Basis of Comparison Low	Second Basis of Comparison High	Alternative 3 Low	Alternative 3 High	Alternative 5 Low	Alternative 5 High
Sacramento River at Emmaton	ALL	0.83	0.52	0.8	0.51	0.8	0.51	0.8	0.52
	DROUGHT	1.4	0.87	1.4	0.86	1.4	0.86	1.4	0.9
San Joaquin River at Antioch	ALL	0.9	0.57	0.9	0.55	0.9	0.54	0.9	0.6
	DROUGHT	1.4	0.88	1.4	0.87	1.4	0.87	1.4	0.9
Montezuma Slough at Hunter Cut/ Beldon's Landing	ALL	0.87	0.54	0.85	0.53	0.85	0.53	0.9	0.54
	DROUGHT	1.4	0.89	1.4	0.88	1.4	0.88	1.4	0.9

2 Notes:

3 a. Toxicity thresholds are those reported in Presser and Luoma (2013): Low = 5 mg/kg, dw and High = 8 mg/kg, dw

4 b. All: Water years 1922-2003 represent the 82-year period modeled using DSM2. Drought: Represents a 5-consecutive-year (Water Years 1987-
5 1991) drought period consisting of dry and critical water-year types (as defined by the Sacramento Valley 40-30-30 water year hydrologic
6 classification index).7 Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented
8 separately. Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented separately.

9 dw = dry weight

10 mg/kg = milligram per kilogram

11 SBC = Second Basis of Comparison

1 **Table 6D.19 Percent Change in Selenium Concentrations Relative to No Action Alternative and Second Basis of Comparison**

Location	Period *	Alternative 3 NAA	Alternative 3 Alt1 (SBC)	Alternative 5 NAA	Alternative 5 Alt 1 (SBC)
Sacramento River at Emmaton	ALL	-2.0	-0.7	0.9	2.2
	DROUGHT	-0.8	-0.1	1.8	2.5
San Joaquin River at Antioch	ALL	-4.7	-1.3	1.2	4.8
	DROUGHT	-1.2	-0.2	2.5	3.5
Montezuma Slough at Hunter Cut/Beldon's Landing	ALL	-2.2	-0.7	0.5	2.1
	DROUGHT	-0.5	-0.1	0.8	1.2

2 Notes:

3 * All: Water years 1922-2003 represent the 82-year period modeled using DSM2. Drought: Represents a 5-consecutive-year (Water Years 1987-
4 1991) drought period consisting of dry and critical water-year types (as defined by the Sacramento Valley 40-30-30 water year hydrologic
5 classification index).

6 "Alt. 1 (SBC)" is the same as Second Basis of Comparison. This nomenclature was used in this appendix to be consistent with the model run
7 output for the model run that represents both Second Basis of Comparison and Alternative 1.

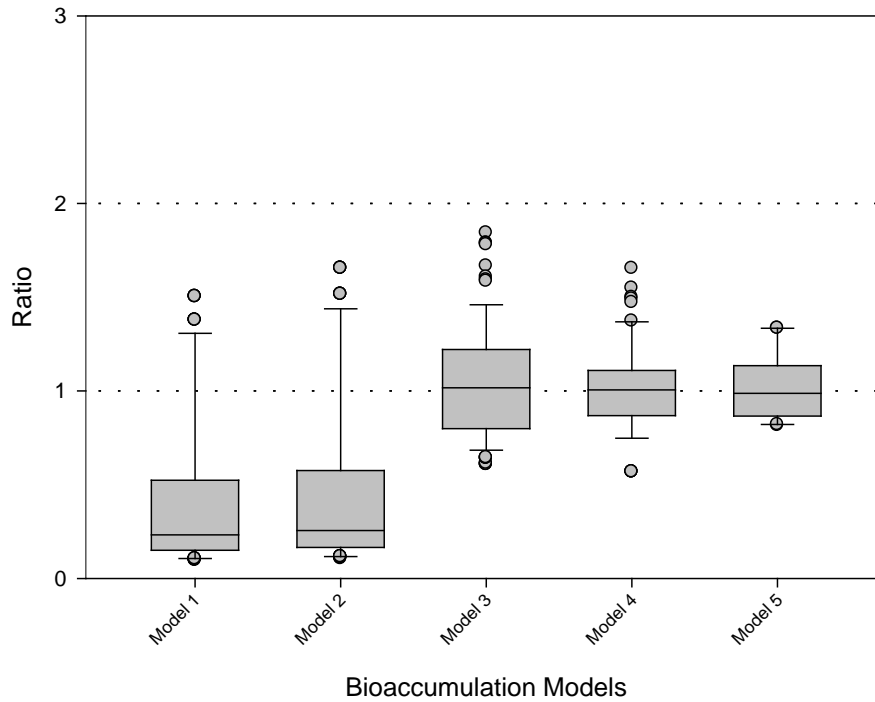
8 Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 4 results are not presented separately.

9 Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented separately.

10 dw = dry weight

11 mg/kg = milligram per kilogram

12 SBC = Second Basis of Comparison



For Models 1 and 2, default values ($K_d = 1000$, $TTF_{invertebrate} = 2.8$, $TTF_{fish} = 1.1$) were used in calculations as follows:

Model 1=Trophic level 3 (TL-3) fish eating invertebrates

Model 2= TL-4 fish eating TL-3 fish

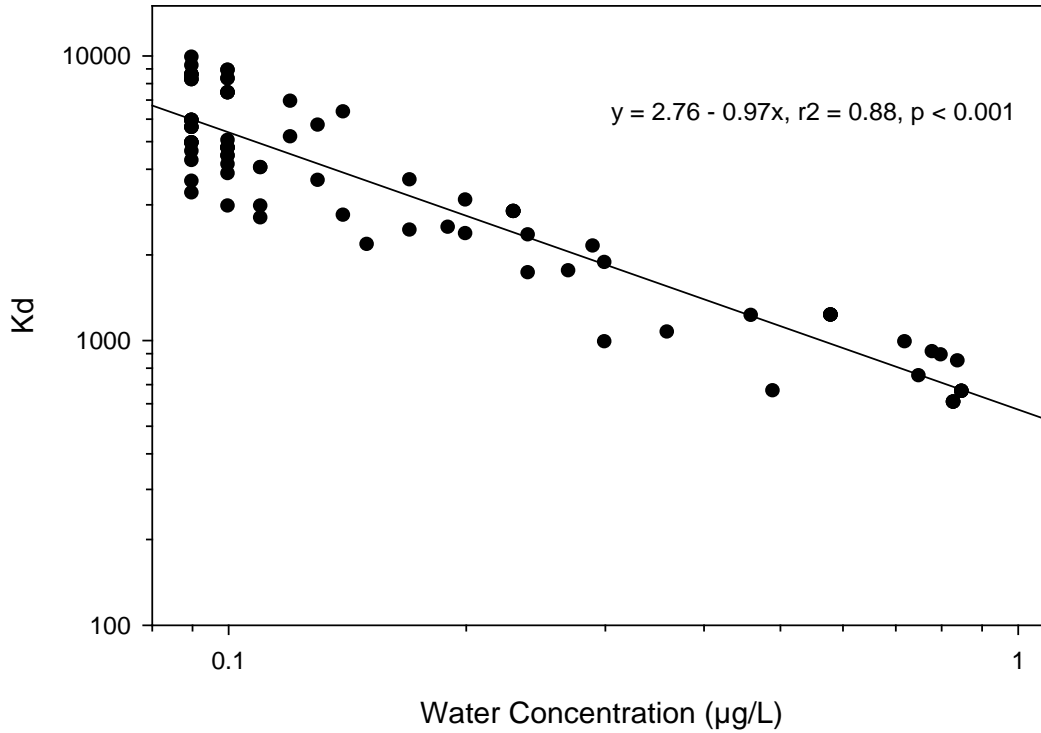
Model 3=Model 2 with K_d estimated using all years regression ($\log K_d = 2.76-0.97(\log DSM2)$)

Model 4=Model 2 with K_d estimated using normal/wet years (2000/2005) regression ($\log K_d = 2.75-0.90(\log DSM2)$)

Model 5=Model 2 with K_d estimated using dry years (2007) regression ($\log K_d = 2.84-1.02(\log DSM2)$)

1

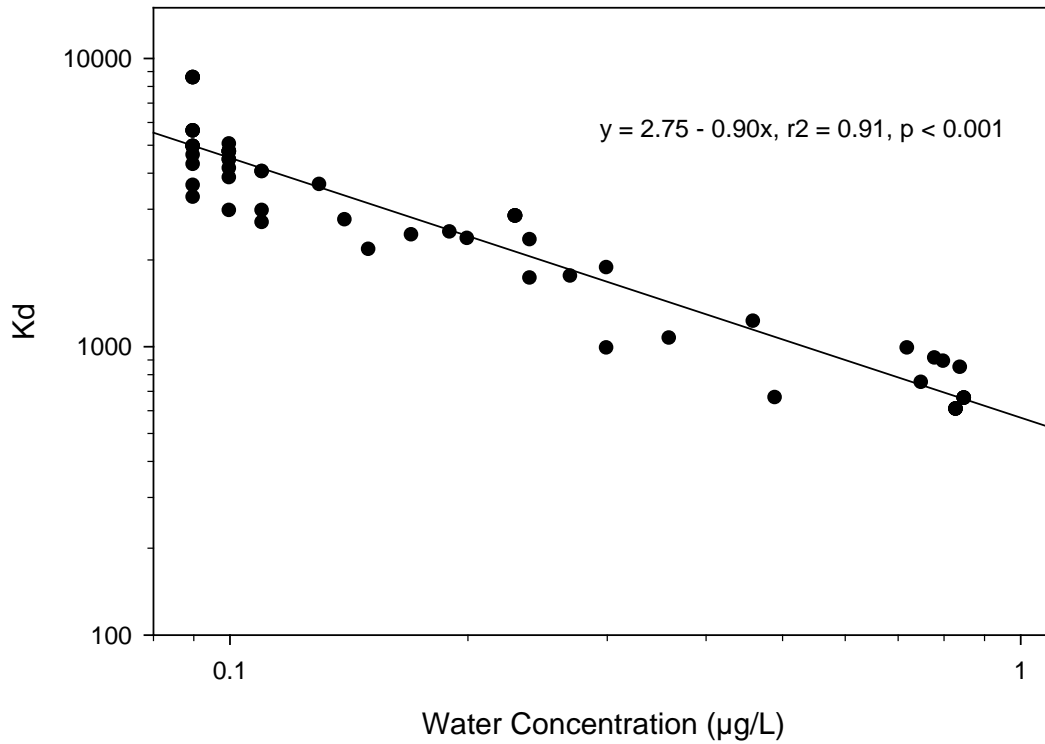
2 **Figure 6D.1 Ratios of Predicted Selenium Concentrations in Fish Models 1 through**
 3 **5 to Observed Selenium Concentrations in Largemouth Bass**



1

2 **Figure 6D.2 Log-log Regression Relation of Estimated K_d to Waterborne Selenium**
3 **Concentration for Model 3 in All Years (Based on Years 2000, 2005, and 2007)**

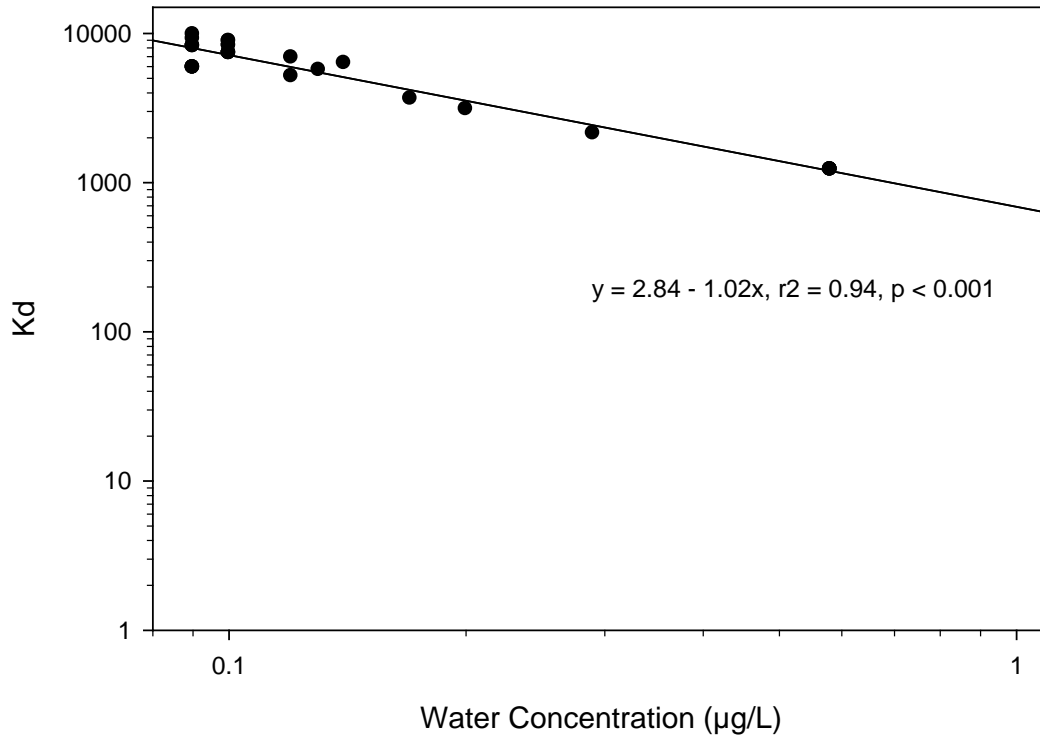
4 To predict the K_d (y) from water concentrations using the regression equation, take the
5 log of the water concentration (x), multiply it by the slope (-0.97), which gives a positive
6 number for $x < 1$ (i.e., waterborne selenium concentrations less than 1 $\mu\text{g/L}$); then add this
7 number to the intercept (2.76) and take the antilog.



1

2 **Figure 6D.3 Log-log Regression Relation of Estimated K_d to Waterborne Selenium**
 3 **Concentration for Model 4 in Normal/Wet Years (Based on Years 2000 and 2005)**

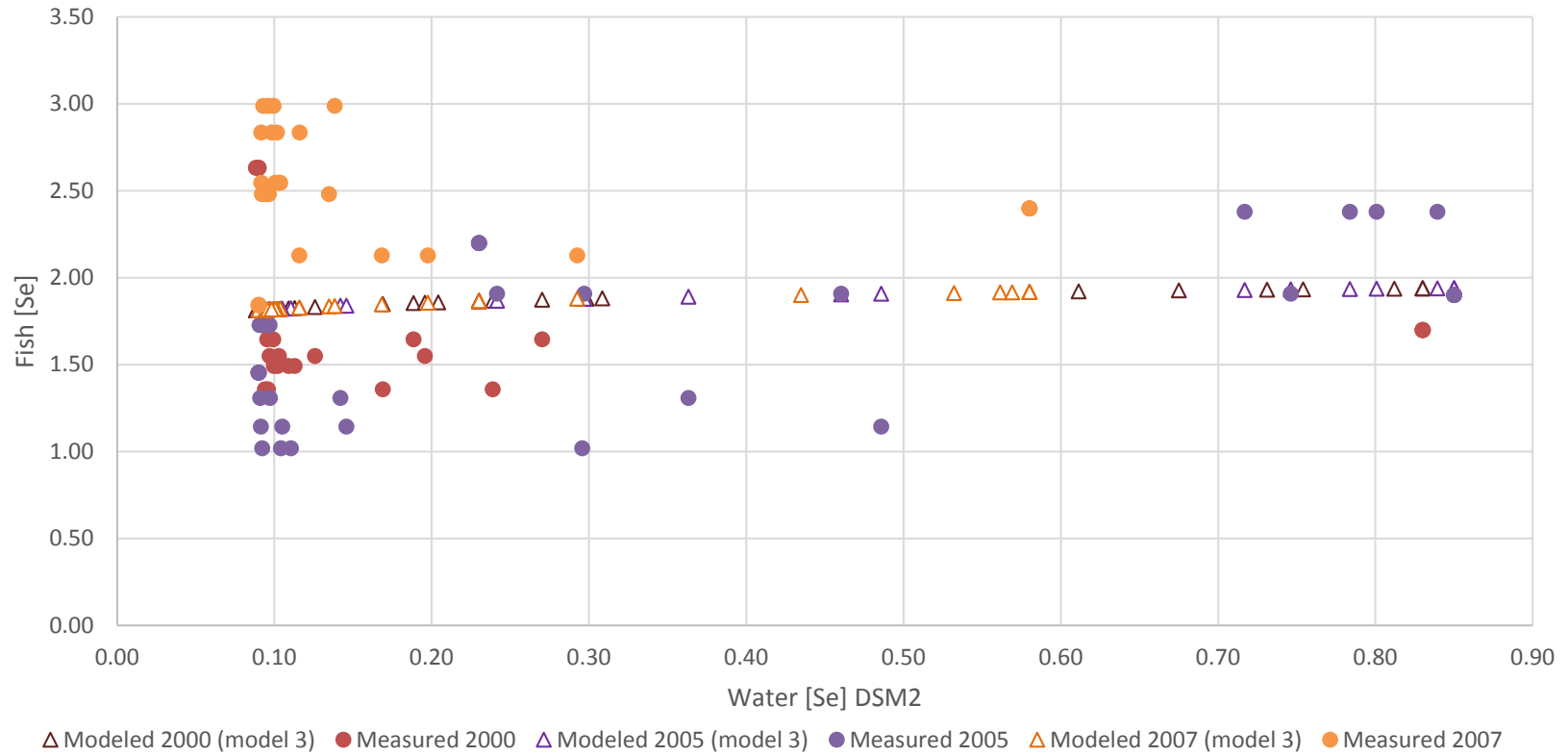
4 To predict the K_d (y) from water concentrations using the regression equation, take the
 5 log of the water concentration (x), multiply it by the slope (-0.90), which gives a positive
 6 number for $x < 1$ (i.e., waterborne selenium concentrations less than 1 $\mu\text{g/L}$); then add this
 7 number to the intercept (2.75) and take the antilog.



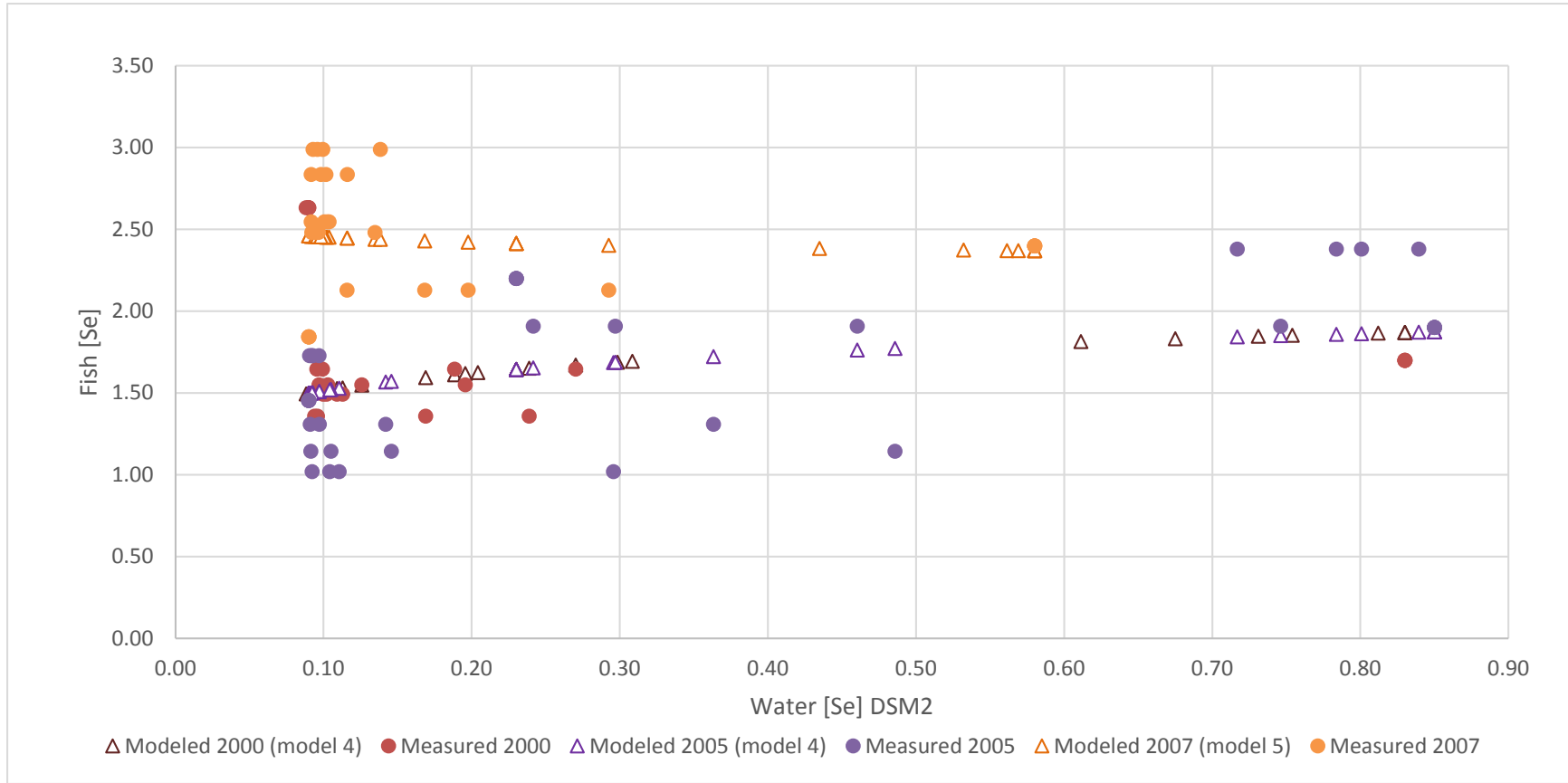
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2 **Figure 6D.4 Log-log Regression Relation of Estimated K_d to Waterborne Selenium**
3 **Concentration for Model 5 in Dry Years (Based on Year 2007)**

4 To predict the K_d (y) from water concentrations using the regression equation, take the
5 log of the water concentration (x), multiply it by the slope (-1.02), which gives a positive
6 number for x < 1 (i.e., waterborne selenium concentrations less than 1 µg/L); then add this
7 number to the intercept (2.84) and take the antilog.

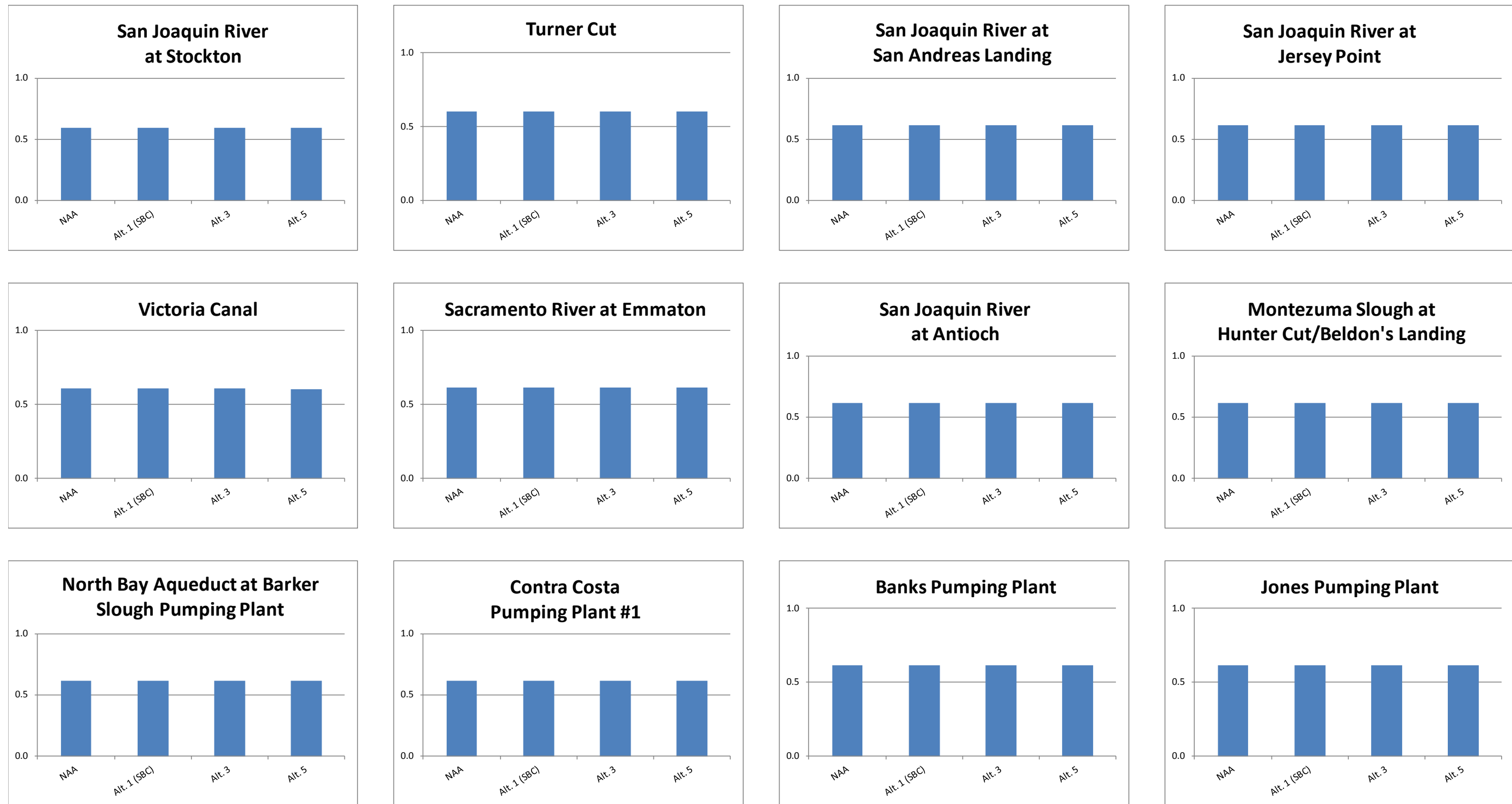


Appendix 6D: Selenium Model Documentation



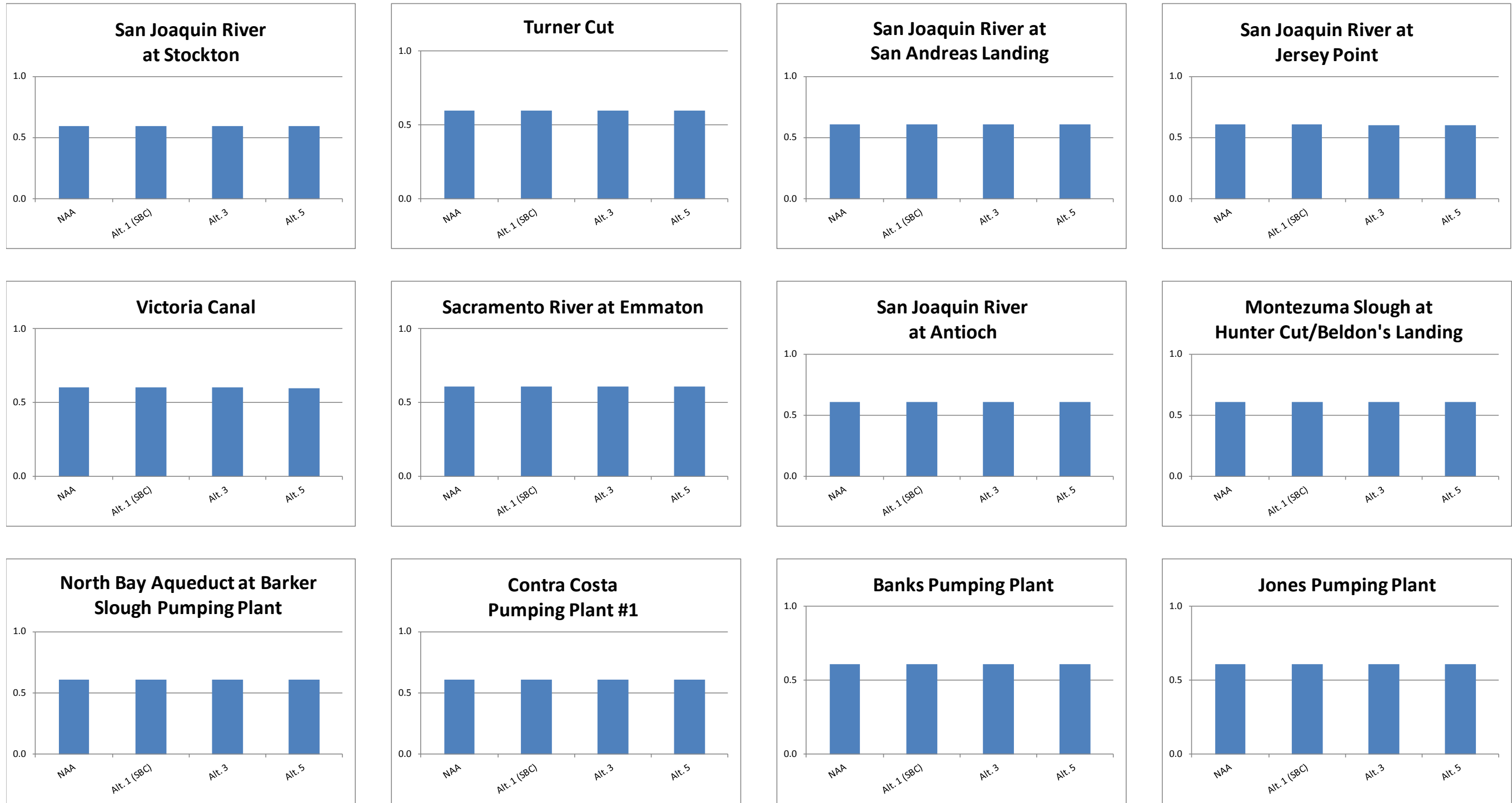
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Figure 6D.6 Distribution of Data for Selenium Concentrations in Largemouth Bass Relative to Waterborne Selenium for Model 4 and Model 5



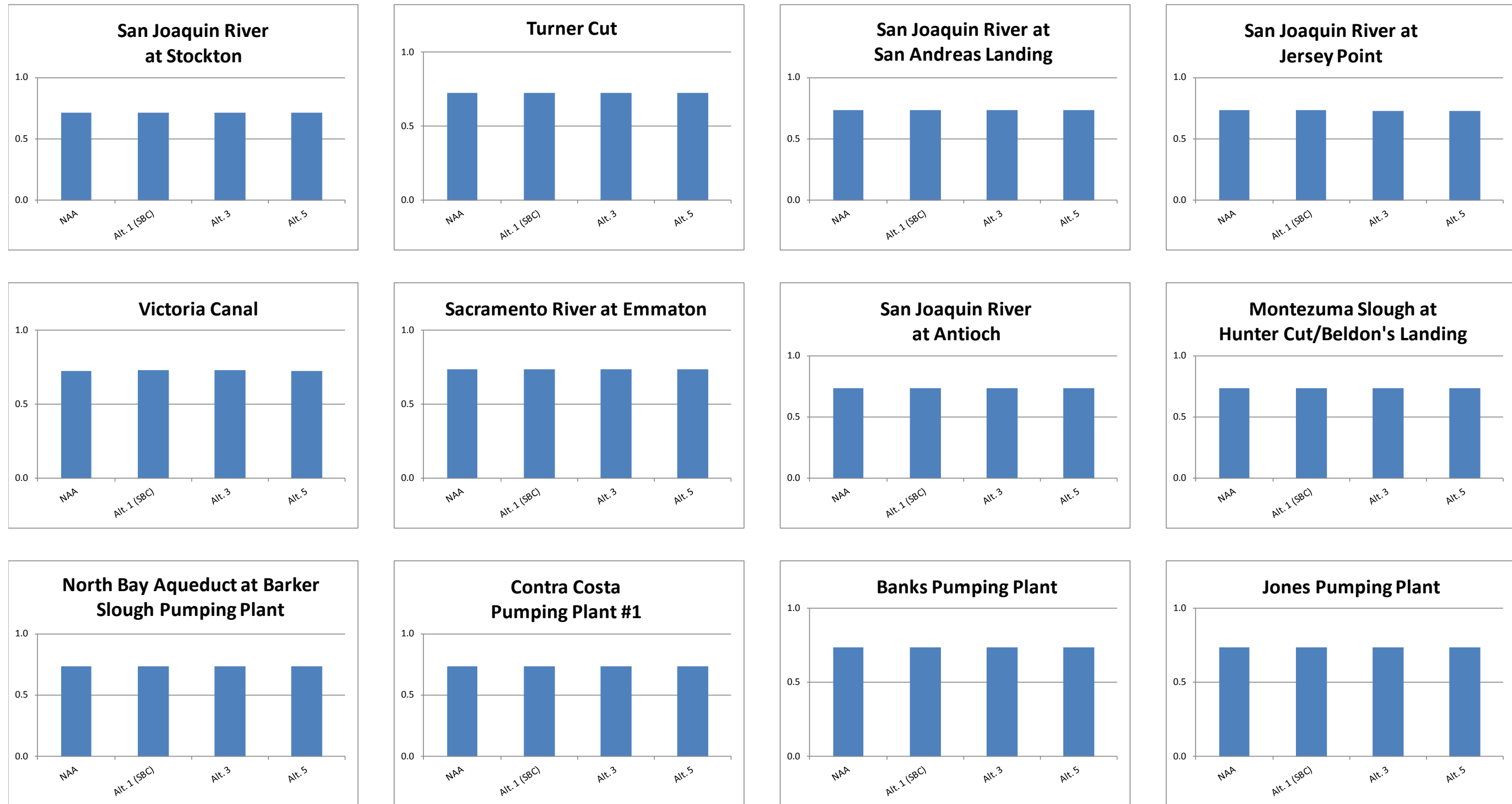
1
2 **Figure 6D.7 Level of Concern Exceedance Quotients for Selenium Concentrations in Whole-Body Fish for Drought Years**

3 "Alt. 1 (SBC)" is the same as Second Basis of Comparison. This nomenclature was used in this appendix to be consistent with the model run output for the model run that represents both Second Basis of Comparison and Alternative 1.
4 Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 4 results are not presented separately. Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2
5 results are not presented separately.



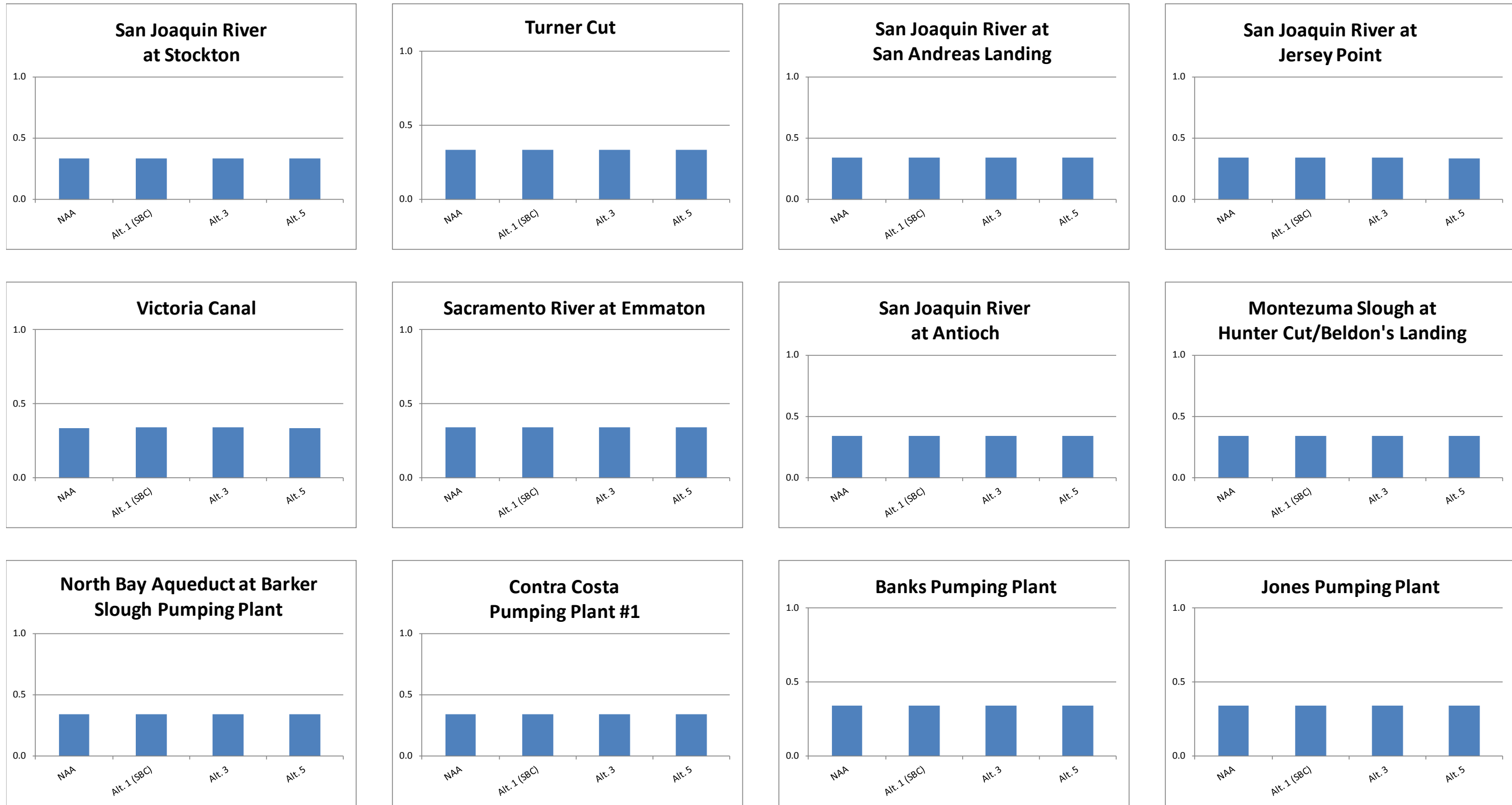
1
2 **Figure 6D.8 Level of Concern Exceedance Quotients for Selenium Concentrations in Bird Eggs (Invertebrate Diet) for Drought Years**

3 "Alt. 1 (SBC)" is the same as Second Basis of Comparison. This nomenclature was used in this appendix to be consistent with the model run output for the model run that represents both Second Basis of Comparison and Alternative 1.
4 Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 4 results are not presented separately. Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2
5 results are not presented separately.



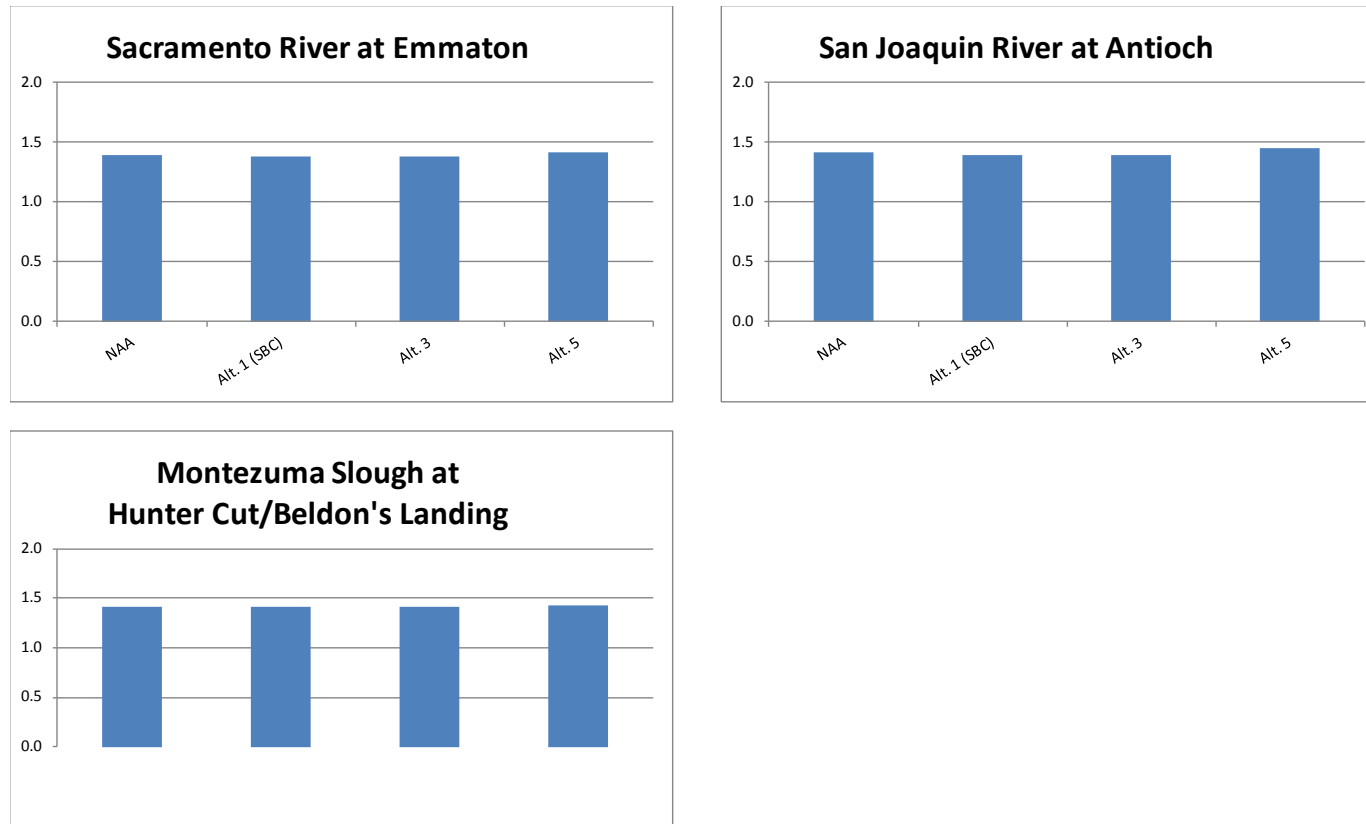
1
2 **Figure 6D.9 Level of Concern Exceedance Quotients for Selenium Concentrations in Bird Eggs (Fish Diet) for Drought Years**

3 "Alt. 1 (SBC)" is the same as Second Basis of Comparison. This nomenclature was used in this appendix to be consistent with the model run output for the model run that represents both Second Basis of Comparison and Alternative 1.
4 Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 4 results are not presented separately. Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2
5 results are not presented separately.



1
2 **Figure 6D.10 Level of Concern Exceedance Quotients for Selenium Concentrations in Fish Fillets (wet weight) for Drought Years**

3 "Alt. 1 (SBC)" is the same as Second Basis of Comparison. This nomenclature was used in this appendix to be consistent with the model run output for the model run that represents both Second Basis of Comparison and Alternative 1.
4 Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 4 results are not presented separately. Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2
5 results are not presented separately.



1
 2 **Figure 6D.11 Low Toxicity Threshold Exceedance Quotients for Selenium Concentrations in Whole-body Sturgeon for Drought Years**
 3 “Alt. 1 (SBC)” is the same as Second Basis of Comparison. This nomenclature was used in this appendix to be consistent with the model run
 4 output for the model run that represents both Second Basis of Comparison and Alternative 1.
 5 Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 4 results are not presented separately.
 6 Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented separately.

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