Appendix M, Folsom Reservoir Flow and Temperature
Management

Attachment M.2   American River Water Temperature Analysis

M.2.1 Model Overview

This analysis enumerates the frequency at which mean monthly HEC-5Q simulated water temperatures exceed water temperature index values or occur outside index ranges for multiple fish species in the American River. Index values and ranges were obtained from the scientific literature and agency reports for each species and life stage at multiple locations within the river. Frequencies were calculated for the baseline and each alternative at one or more locations of life stage presence in the river by month of presence and water year type and the incremental change between the baseline and each alternative was then calculated.

M.2.2 Model Development

M.2.2.1 Methods

Water temperature was simulated in HEC-5Q for water years 1923 through 2021 for the Sacramento River. Outputs from HEC-5Q were used as inputs to the analysis.

Water temperature index values were compiled for the life stages present in the American River for the only listed fish species present, Central Valley steelhead (Table M.2-1). These index values were primarily taken from Appendix C and D of the Biological Assessment and are based on the scientific literature. Water temperature index values and ranges were compiled for the life stages present in the American River for following non-listed species: fall-run Chinook salmon, white sturgeon, Pacific lamprey, river lamprey, hardhead, Sacramento hitch, Sacramento splittail, American shad, and largemouth bass (Table M.2-2). These values and ranges were primarily taken from the 2017 Sites Reservoir Project Draft EIR/EIS (Sites Project Authority and Bureau of Reclamation 2017), Appendix 12D, Water Temperature Index Value Selection Rationale, with supplemental information taken from the scientific literature as necessary. Index values and index ranges used in this analysis typically characterize the suitable, optimal, acceptable, and observed temperature range needed for survival, growth, or presence.

The analysis calculates the frequency that modeled water temperatures under the baseline and each alternative would either exceed the temperature index value or occur outside the index range for a given species and life stage. The analysis uses a monthly time step, and the percent of months exceeding the index value or occurring outside the index range is computed over the entire 98-water year simulation period for each month and water year type. Frequencies of exceedance for each alternative are compared to baseline conditions, in keeping with guidance on the proper use of model outputs, to calculate the incremental effect of the alternative. To best characterize potential differences, the analysis evaluates frequencies by water year type for each month of life stage presence and within the reach of river where the life stage is present.

Table M.2-1. Water Temperature Index Values for Listed Fish Species in the American River.

Species	Life Stage	Months of Presence	Model Output Locations	Temperature Index Value/Range (°F)	Temperature Index References
Winter-run Chinook Salmon	Non-Natal Juvenile Rearing	Jan-Apr	Hazel Ave, Watt Ave	55.4-68	Optimum temperature without food limitation (Myrick and Cech 2002, Marine and Cech 2004)
Steelhead	Adult Migration and Holding	Jul-Apr	Hazel Ave, Watt Ave	41-66.2	Migration impairment (Keefer et al. 2009)
Steelhead	Adult Migration and Holding	Jul-Apr	Hazel Ave, Watt Ave	69.8	Lethal limit to adult migrants (Coutant 1970)
Steelhead	Adult Migration and Holding	Jul-Apr	Hazel Ave, Watt Ave	59.9	Pathogen virulence threshold (McCullough 1999)
Steelhead	Spawning	Dec-Mar	Hazel Ave, Watt Ave	45-55	Successful spawning range (Bell 1991, FERC 1993, Richter and Kolmes 2005)
Steelhead	Spawning	Dec-Mar	Hazel Ave, Watt Ave	59.9	Pathogen virulence threshold (McCullough 1999)
Steelhead	Kelt Emigration	Feb-Jun	Hazel Ave, Watt Ave	66.2	Migration impairment (Keefer et al. 2009)
Steelhead	Kelt Emigration	Feb-Jun	Hazel Ave, Watt Ave	69.8	Lethal to adult migrating steelhead (Coutant 1970)
Steelhead	Kelt Emigration	Feb-Jun	Hazel Ave, Watt Ave	59.9	Pathogen virulence threshold (McCullough 1999)
Steelhead	Egg Incubation and Fry Emergence	Dec-May	Hazel Ave, Watt Ave	42–52	Optimal incubation temperature (McCullough et al. 2001)
Steelhead	Egg Incubation and Fry Emergence	Dec-May	Hazel Ave, Watt Ave	59.9	Fry pathogen virulence threshold (McCullough 1999)
Steelhead	Juvenile Rearing	Year-round	Hazel Ave, Watt Ave	66.2	Upper limit of optimum temperatures for juvenile steelhead growth, assuming maximum ration levels (Myrick 1998; Myrick and Cech 2001
Steelhead	Juvenile Rearing and Outmigration	Year-round	Hazel Ave, Watt Ave	59.9	Pathogen virulence threshold (McCullough 1999)
Steelhead	Juvenile Outmigration	Jan-May	Hazel Ave, Watt Ave	55	Upper limit of successful smoltification (Zaugg & Wagner 1973; Wedemeyer et al. 1980; U.S. Environmental Protection Agency 2003)

Table M.2-2. Water Temperature Index Values and Index Ranges for Non-Listed Fish Species in the American River.

Species	Life Stage	Months of Presence	Model Output Locations	Temperature Index Value/Range (°F)	Temperature Index References
Fall-run Chinook salmon	Adult Migration	Jun-Dec	Hazel Ave, Watt Ave	37.9-68	Successful migration range (Reiser and Bjornn 1979, Goniea et al. 2006)
Fall-run Chinook salmon	Adult Migration	Jun-Dec	Hazel Ave, Watt Ave	59.9	Pathogen virulence threshold (McCullough 1999)
Fall-run Chinook salmon	Adult Holding and Spawning	Jun-Dec	Hazel Ave, Watt Ave	42.1-55	Spawning initiation range (McCullough 1999)
Fall-run Chinook salmon	Adult Holding and Spawning	Jun-Dec	Hazel Ave, Watt Ave	59.9	Pathogen virulence threshold (McCullough 1999)
Fall-run Chinook salmon	Egg Incubation and Fry Emergence	Oct-Mar	Hazel Ave, Watt Ave	42.8-56[1]	Slater 1963, USFWS 1999, Myrick and Cech 2004, Bratovich et al. 2012, Martin et al. 2017
Fall-run Chinook salmon	Egg Incubation and Fry Emergence	Oct-Mar	Hazel Ave, Watt Ave	59.9	Pathogen virulence threshold (McCullough 1999)
Fall-run Chinook salmon	Juvenile Rearing and Outmigration	Jan-May	Hazel Ave, Watt Ave	55.4-68	Optimum temperature for growth, smoltification, and predation vulnerability (Myrick and Cech 2002, Marine and Cech 2004)
Fall-run Chinook salmon	Juvenile Rearing and Outmigration	Jan-May	Hazel Ave, Watt Ave	75.2	UILT (Brett 1952, Brett et al. 1982, Myrick and Cech 2004)
Fall-run Chinook salmon	Juvenile Rearing and Outmigration	Jan-May	Hazel Ave, Watt Ave	59.9	Pathogen virulence threshold (McCullough 1999)
White Sturgeon	Non-Spawning Adults	Year-round	Hazel Ave, Watt Ave	77	Upper limit of suitable water temperatures for adult white sturgeon (Israel et al. 2011).
Pacific Lamprey	Spawning and Egg Incubation	Mar-Jul	Hazel Ave, Watt Ave	50-64	Observed range of high survival and low occurrence of embryonic developmental abnormalities (Meeuwig et al. 2003, 2005).

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[1] Exact endpoints fall somewhere between 53.6°F and 56°F, with recommended upper thermal optimum of 53.6°F to 55.9°F (Myrick and Cech 2004, Martin et al. 2017)

Species	Life Stage	Months of Presence	Model Output Locations	Temperature Index Value/Range (°F)	Temperature Index References
Pacific Lamprey	Ammocoete Rearing and Emigration	Year-round	Hazel Ave, Watt Ave	72	Upper limit for high survival and low occurrence of developmental abnormalities (Meeuwig et al. 2003, 2005).
Western River Lamprey	Spawning and Egg Incubation	Feb- Jul	Hazel Ave, Watt Ave	50-64	Observed range of high survival and low occurrence of embryonic developmental abnormalities (Meeuwig et al. 2003, 2005).
Western River Lamprey	Ammocoete Rearing and Emigration	Year-round	Hazel Ave, Watt Ave	72	Upper limit for high survival and low developmental abnormalities (Meeuwig et al. 2003, 2005)
Sacramento Splittail	Spawning	Feb- May	Hazel Ave, Watt Ave	45-75	Observed range of suitable water temperatures (DWR 2004)
Hardhead	Spawning	Apr-Jun	Hazel Ave, Watt Ave	59-64	Optimal range (Wang 1986)
Hardhead	Non-Spawning Adults	Year-round	Hazel Ave, Watt Ave	57.2-78.8	Commonly observed range (Thompson et al. 2012)
Striped Bass	Adults	Year-round	Hazel Ave, Watt Ave	77	Stress initiated at this temperature (Moyle 2002).
Striped Bass	Juvenile Rearing	Year-round	Hazel Ave, Watt Ave	61-71	Optimal range (Fay et al. 1983)
American Shad	Spawning and Larval Rearing	Apr-Jun	Hazel Ave, Watt Ave	62-75	Optimal range (Moyle 2002)
American Shad	Juvenile Rearing and Emigration	Jul-Nov	Hazel Ave, Watt Ave	63-77	Optimal range (Moyle 2002)
Threadfin Shad	Spawning	Apr- Aug	Hazel Ave, Watt Ave	63-77	Optimal range (Moyle 2002)
Threadfin Shad	Non-Spawning Adult	Year-round	Hazel Ave, Watt Ave	63-77	Optimal range (Moyle 2002)
Largemouth Bass	Spawning	Apr-Jun	Hazel Ave, Watt Ave	52.7-84.2	Observed range (Stuber et al. 1982)
Largemouth Bass	Non-Spawning Adult	Year-round	Hazel Ave, Watt Ave	77-86	Optimal range for growth (Moyle 2002)
Smallmouth Bass	Spawning	May-Jul	Hazel Ave, Watt Ave	55-70	Optimal range (Brown et al. 2009)
Smallmouth Bass	Non-Spawning Adult	Jun-Aug	Hazel Ave, Watt Ave	>66	Lower end of observed summer-time range (Moyle 2002)
Smallmouth Bass	Non-Spawning Adult	Year-round	Hazel Ave, Watt Ave	77-80	Optimal range for growth (Moyle 2002)
Spotted Bass	Spawning	Apr-Jun	Hazel Ave, Watt Ave	58.1-73.4	Observed range (Aasen and Henry 1981)
Spotted Bass	Non-Spawning Adult	Jun-Aug	Hazel Ave, Watt Ave	75-87	Preferred range (Moyle 2002)

M.2.2.2 Assumptions / Uncertainty

One limitation of the analysis is that, due to model limitations, a monthly mean time step was the smallest time step available for water temperature model outputs. As a result, the intra-month variation around the monthly mean cannot be evaluated, which introduces uncertainty in the results.

Another limitation of the analysis is that it treats all exceedances above the temperature criteria as equal because no magnitude of exceedance was calculated. A 0.1°C magnitude of exceedance could be very different to a steelhead than a 10°C magnitude of exceedance.

An assumption of this analysis is that all fish at and around the model output locations experience the same temperature as the model output. Small-scall differences in water temperature related to depth, shade, water movement, and a large number of other factors are common in streams (Poole et al. 2001), but this was not accounted for in the analysis. This introduced uncertainty in the results.

M.2.2.3 Code and Data Repository

Code and analysis outputs are available upon request.

M.2.3 Results

M.2.3.1 HEC 5Q Water Temperature Model Outputs

HEC 5Q water temperature model outputs for BA model scenarios are provided in this attachment to aid the reader in visually interpreting the results of the analysis. By drawing or imagining a horizontal line that intersects the y-axis at each water temperature value listed in Table M.2-1 and Table M.2-2, the reader can determine the frequency above or below the value by viewing the resulting probability of exceedance along the x-axis for each model scenario. Model outputs are presented by month for two locations in the American River: Hazel Avenue and Watt Avenue. Figure M.2-1 presents exceedance curves of modeled monthly water temperatures at Hazel Avenue for all months and water year types combined for each model scenario. Figure M.2-2 through Figure M.2-13 present exceedance curves of modeled monthly water temperatures at Hazel Avenue for all water year types combined by month.

Figure M.2-1. Exceedance plot of modeled water temperatures, American River at Hazel Avenue, year-round.

Figure M.2-2. Exceedance plot of modeled water temperatures, American River at Hazel Avenue, January.

Figure M.2-3. Exceedance plot of modeled water temperatures, American River at Hazel Avenue, February.

Figure M.2-4. Exceedance plot of modeled water temperatures, American River at Hazel Avenue, March.

Figure M.2-5. Exceedance plot of modeled water temperatures, American River at Hazel Avenue, April.

Figure M.2-6. Exceedance plot of modeled water temperatures, American River at Hazel Avenue, May.

Figure M.2-7. Exceedance plot of modeled water temperatures, American River at Hazel Avenue, June.

Figure M.2-8. Exceedance plot of modeled water temperatures, American River at Hazel Avenue, July.
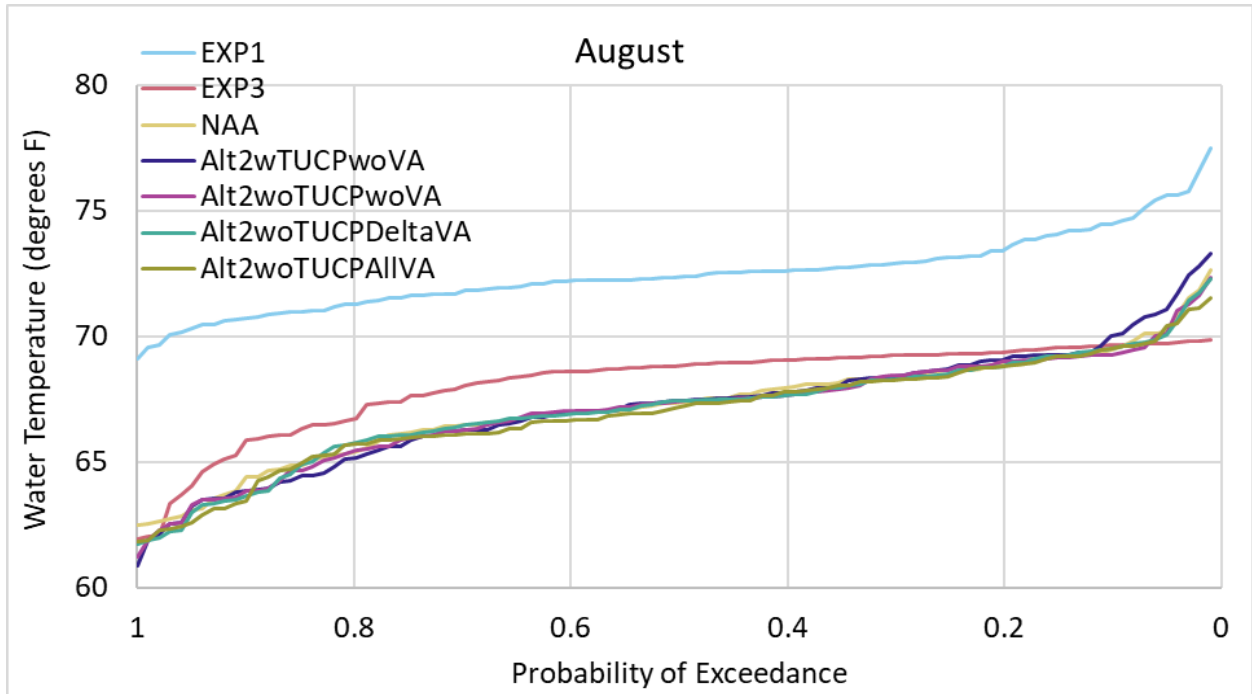
Figure M.2-9. Exceedance plot of modeled water temperatures, American River at Hazel Avenue, August.
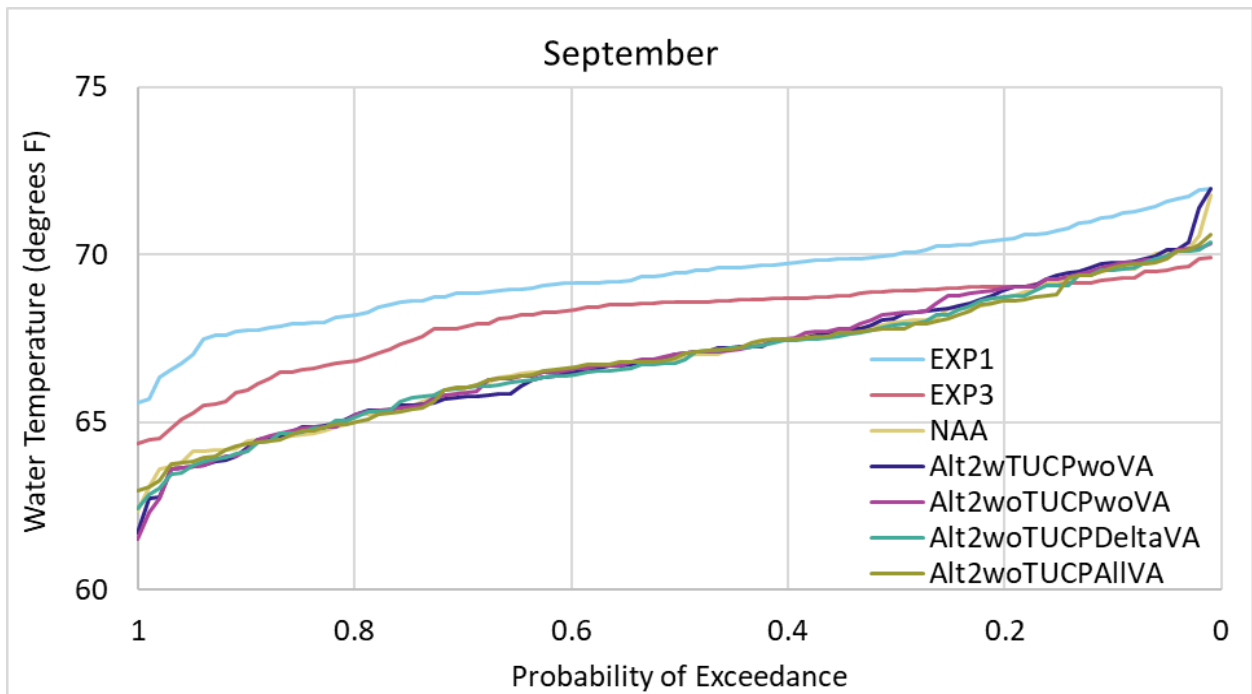
Figure M.2-10. Exceedance plot of modeled water temperatures, American River at Hazel Avenue, September.
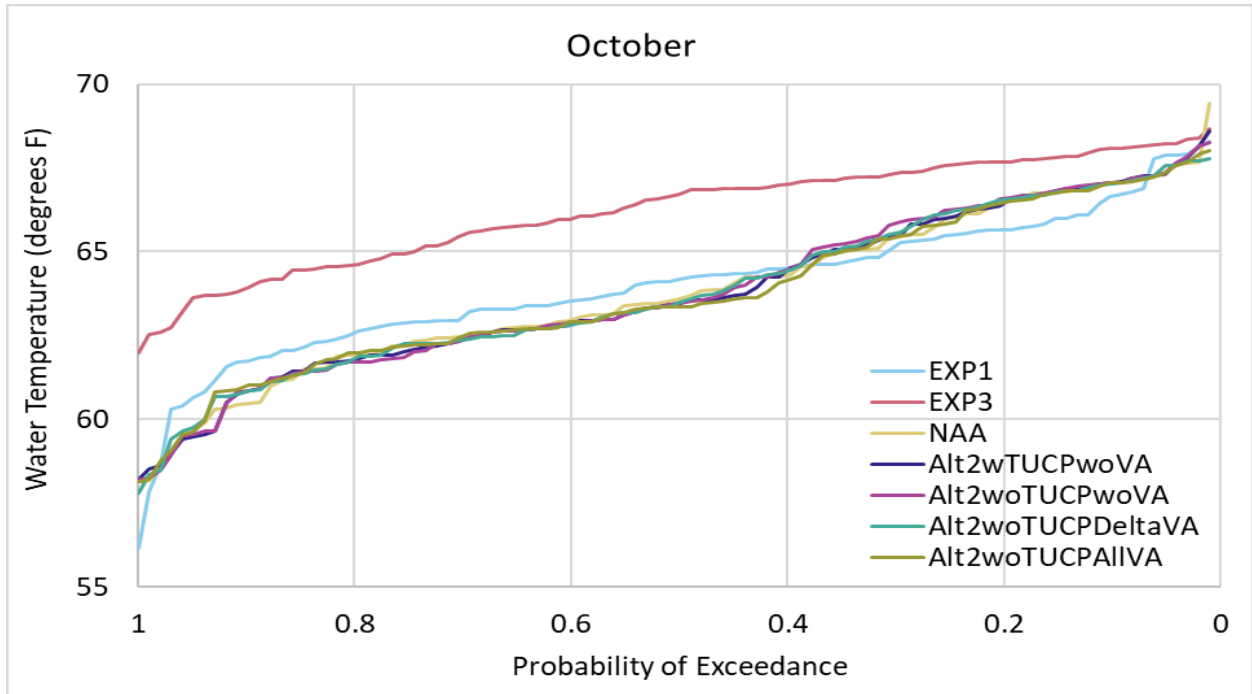
Figure M.2-11. Exceedance plot of modeled water temperatures, American River at Hazel Avenue, October.
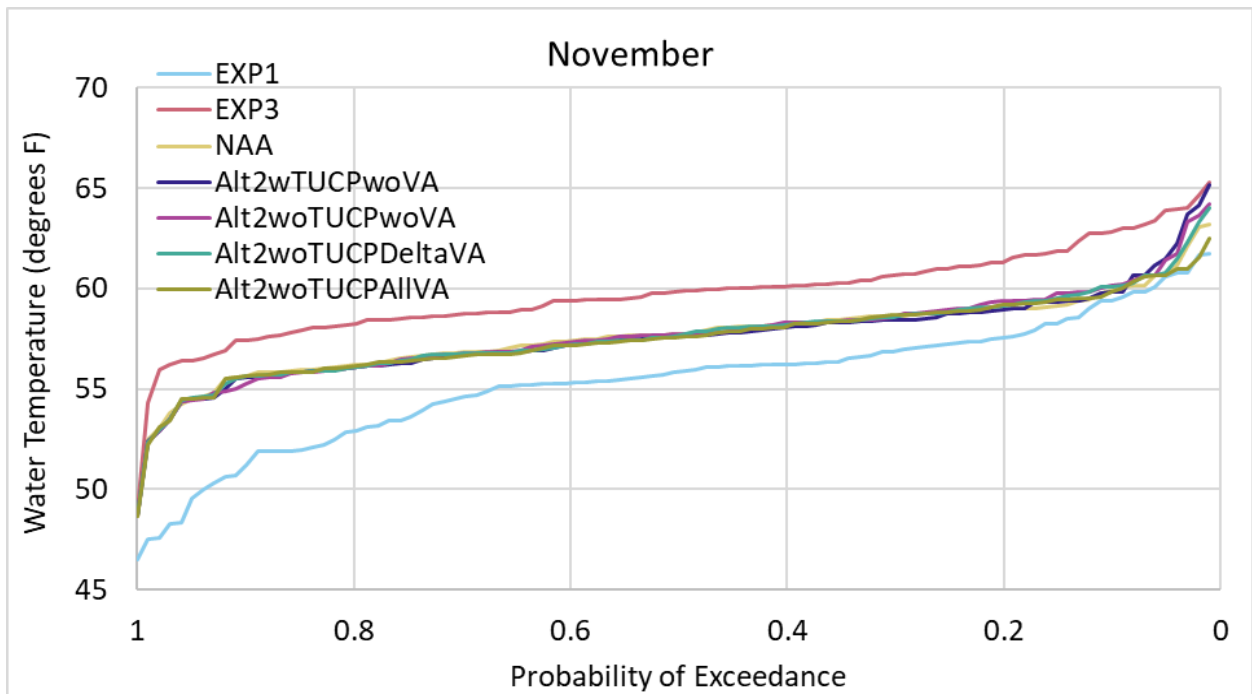
Figure M.2-12. Exceedance plot of modeled water temperatures, American River at Hazel Avenue, November.
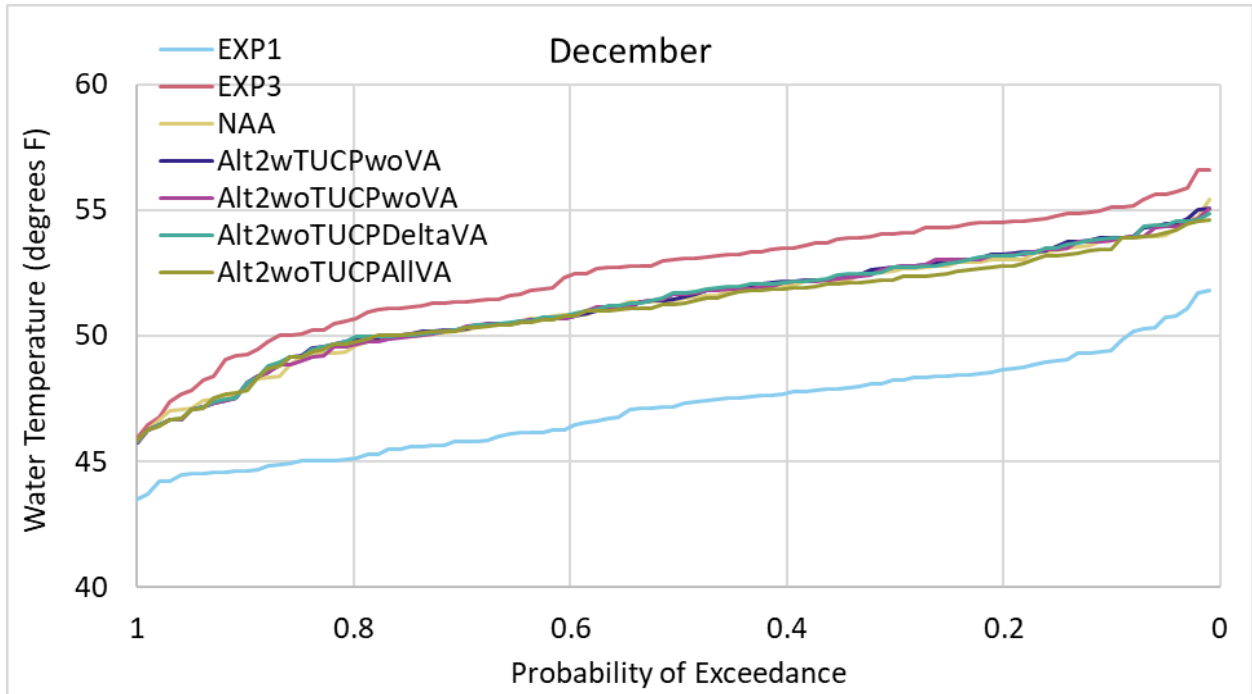
Figure M.2-13. Exceedance plot of modeled water temperatures, American River at Hazel Avenue, December.

Figure M.2-14 presents exceedance curves of modeled monthly water temperatures for the American River at Watt Avene for all months combined for each model scenario. Figure M.2-15 through Figure M.2-26 present exceedance curves of modeled monthly water temperatures for the American River at Watt Avene for each month separately.
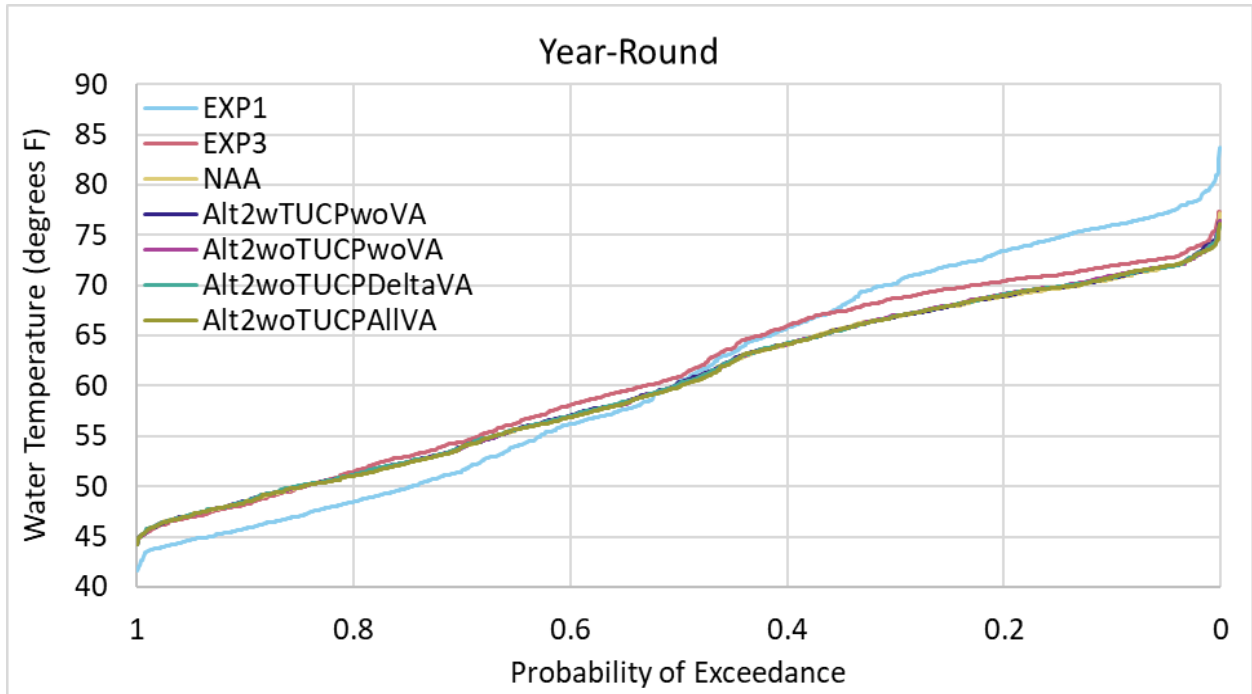
Figure M.2-14. Exceedance plot of modeled water temperatures, American River at Watt Avenue, year-round.
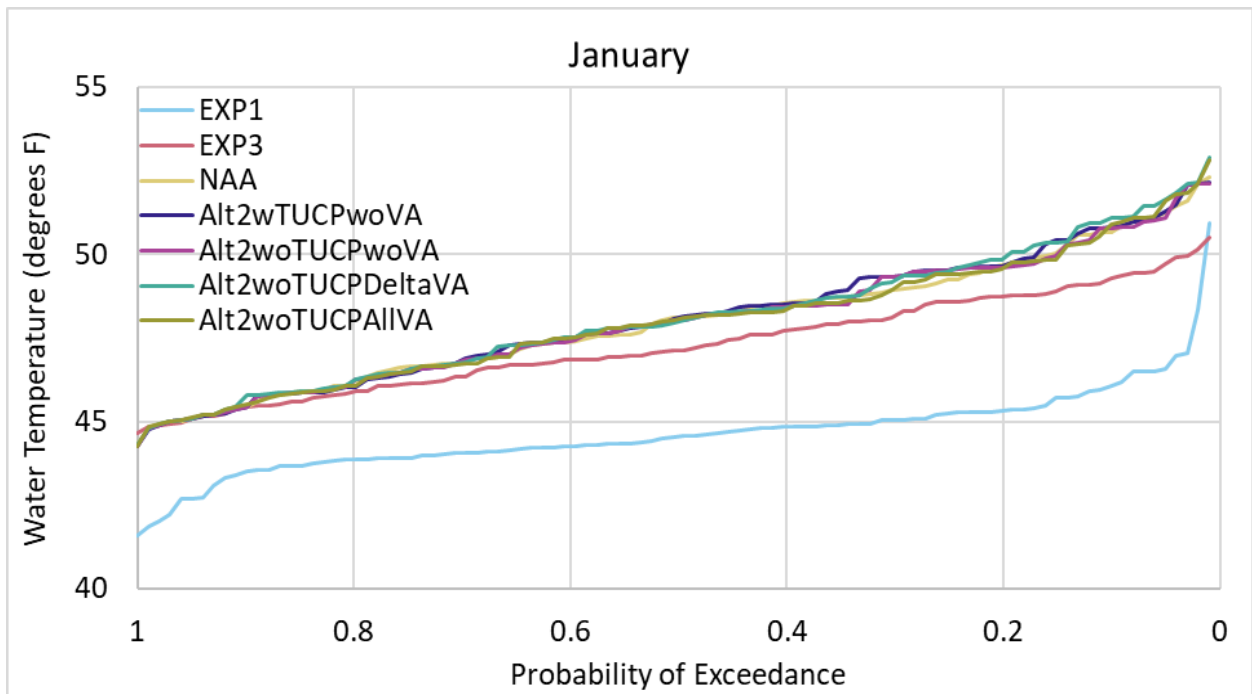
Figure M.2-15. Exceedance plot of modeled water temperatures, American River at Watt Avenue, January.
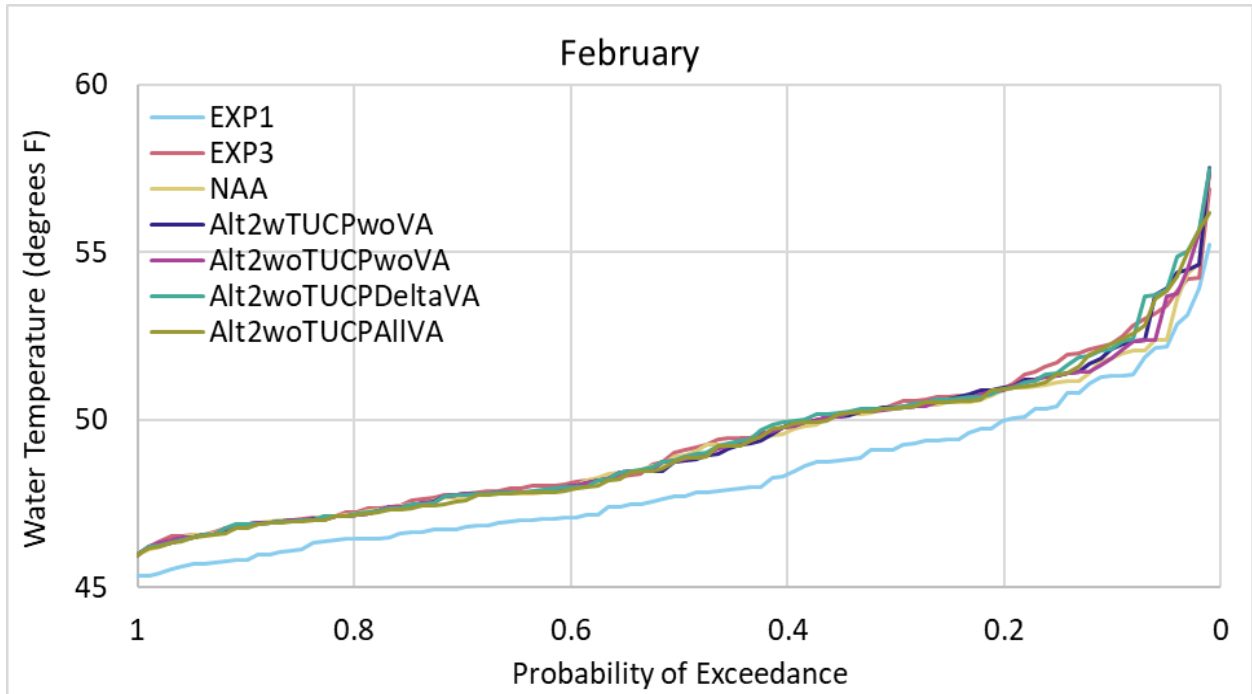
Figure M.2-16. Exceedance plot of modeled water temperatures, American River at Watt Avenue, February.
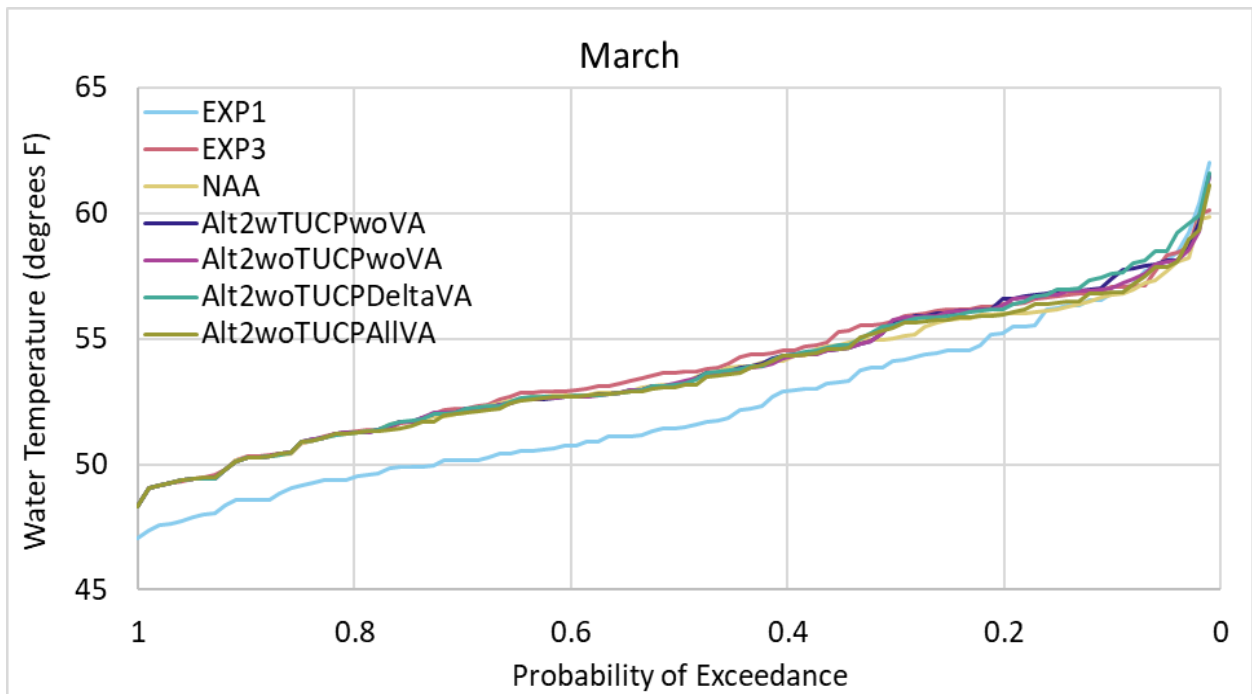
Figure M.2-17. Exceedance plot of modeled water temperatures, American River at Watt Avenue, March.
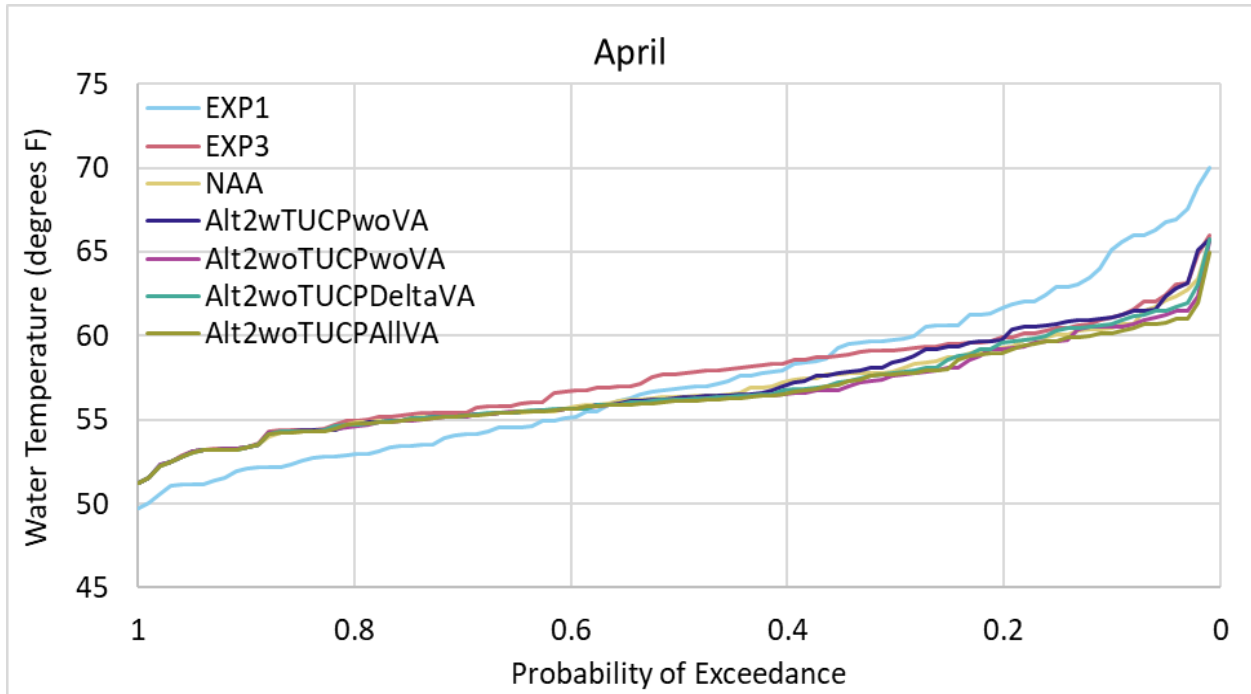
Figure M.2-18. Exceedance plot of modeled water temperatures, American River at Watt Avenue, April.
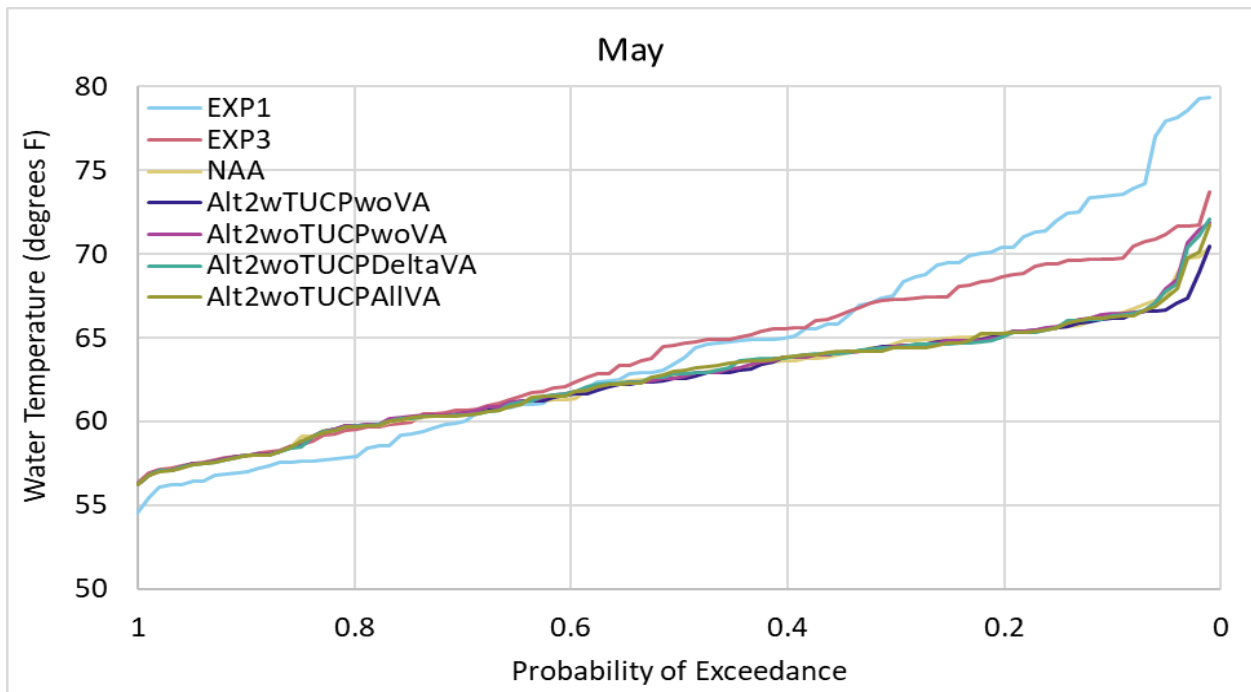
Figure M.2-19. Exceedance plot of modeled water temperatures, American River at Watt Avenue, May.
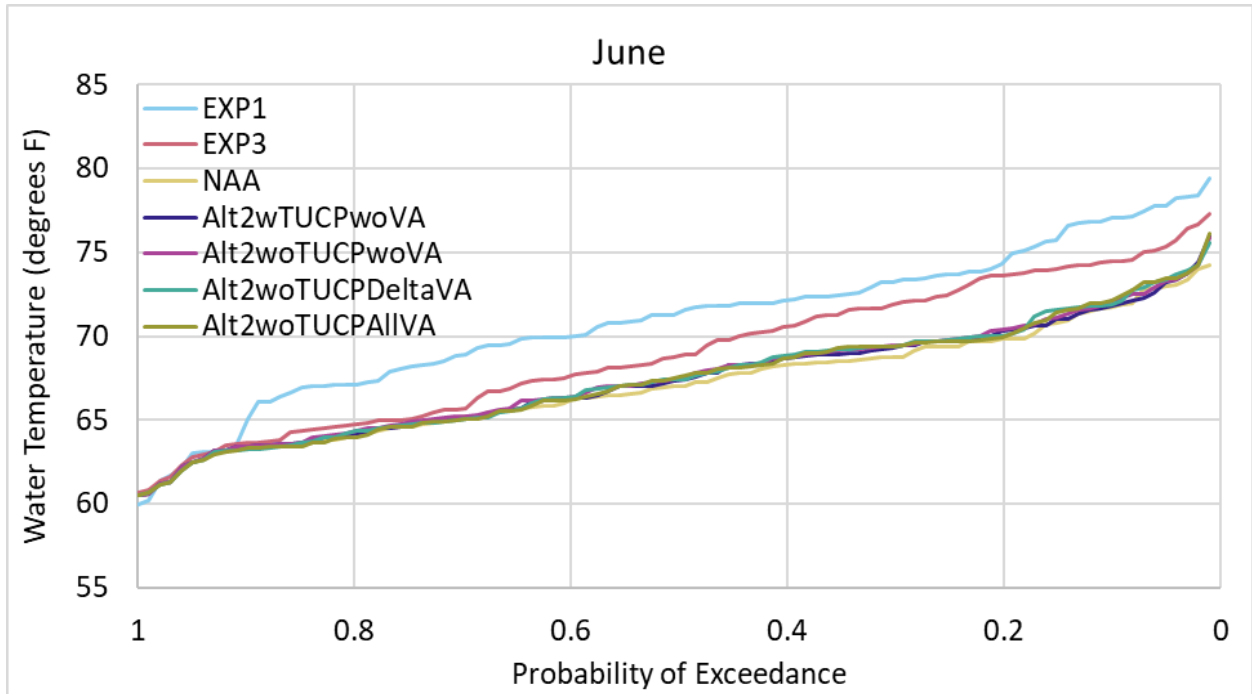
Figure M.2-20. Exceedance plot of modeled water temperatures, American River at Watt Avenue, June
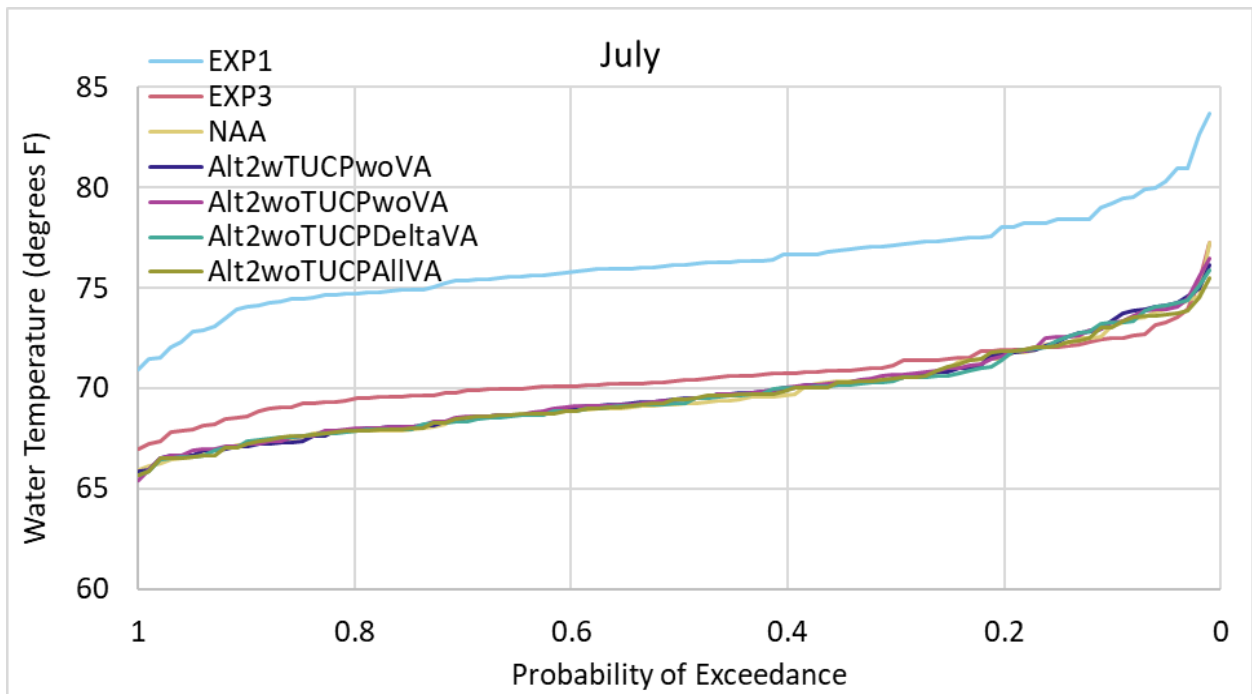
Figure M.2-21. Exceedance plot of modeled water temperatures, American River at Watt Avenue, July.
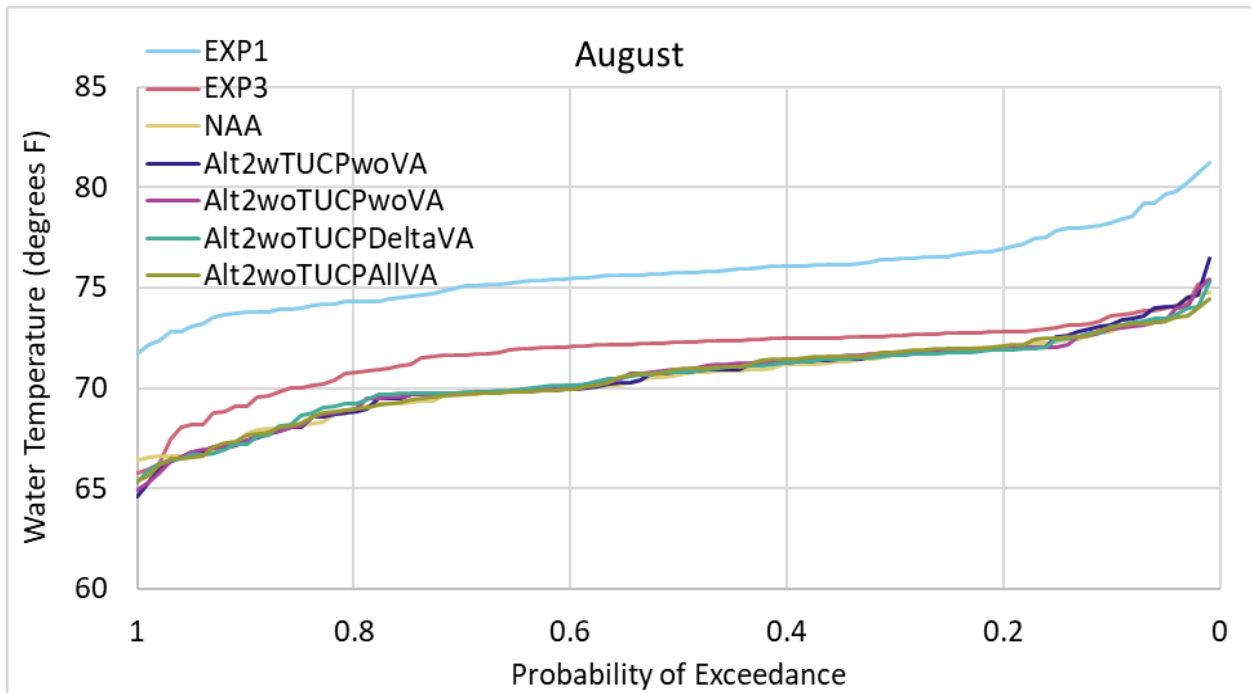
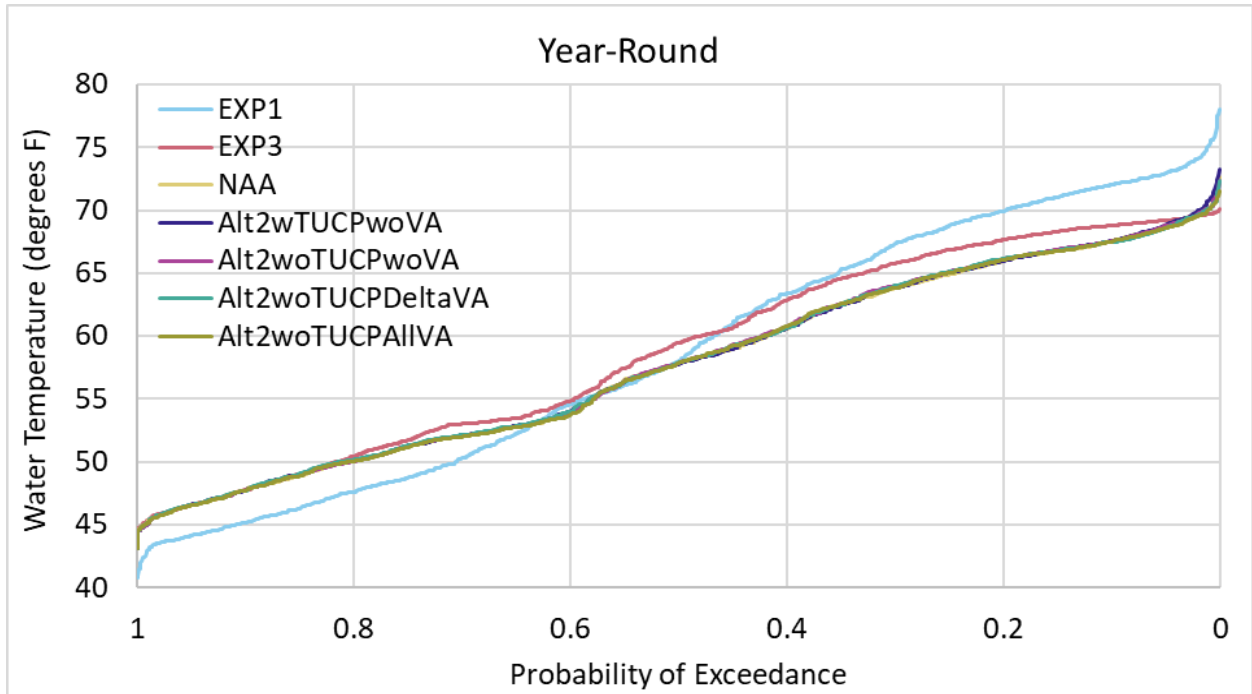Figure M.2-22. Exceedance plot of modeled water temperatures, American River at Watt Avenue, August.
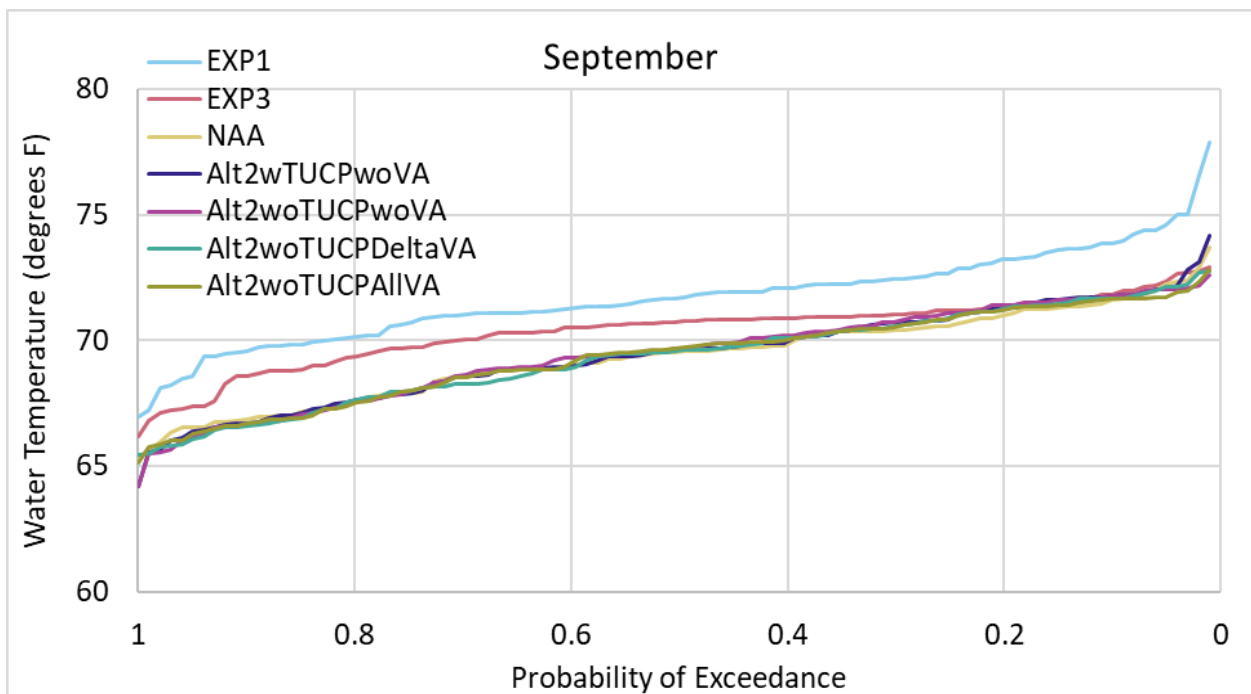
Figure M.2-23. Exceedance plot of modeled water temperatures, American River at Watt Avenue, September.
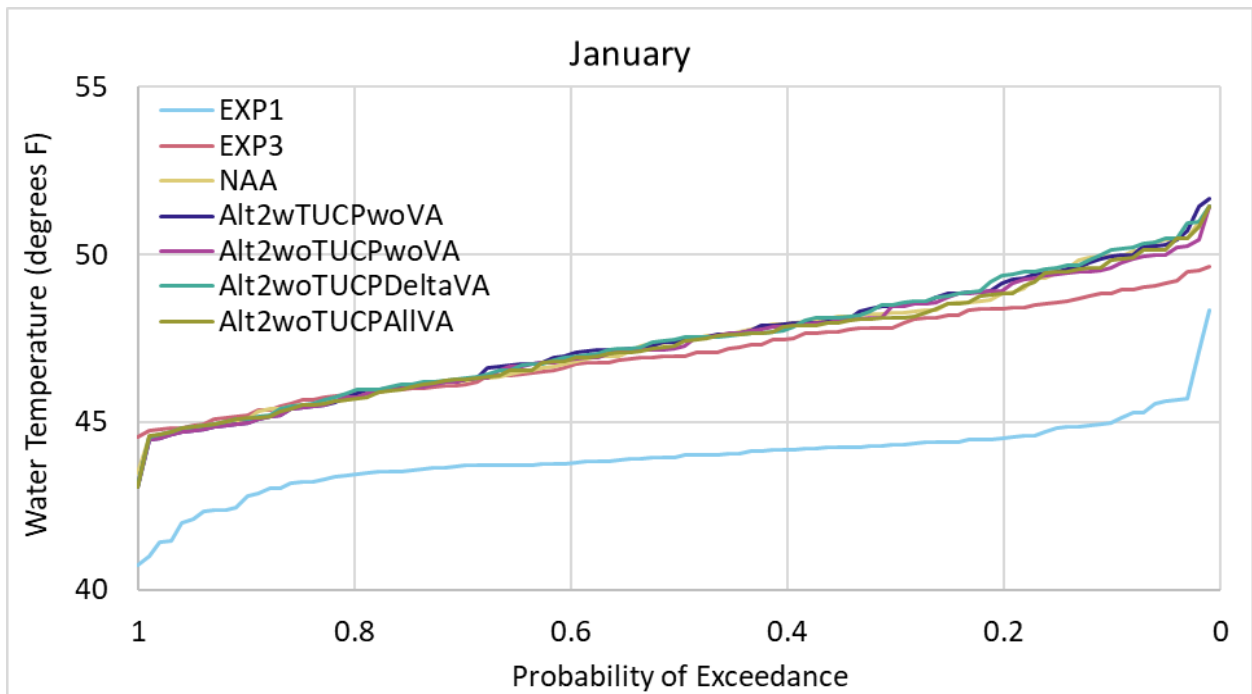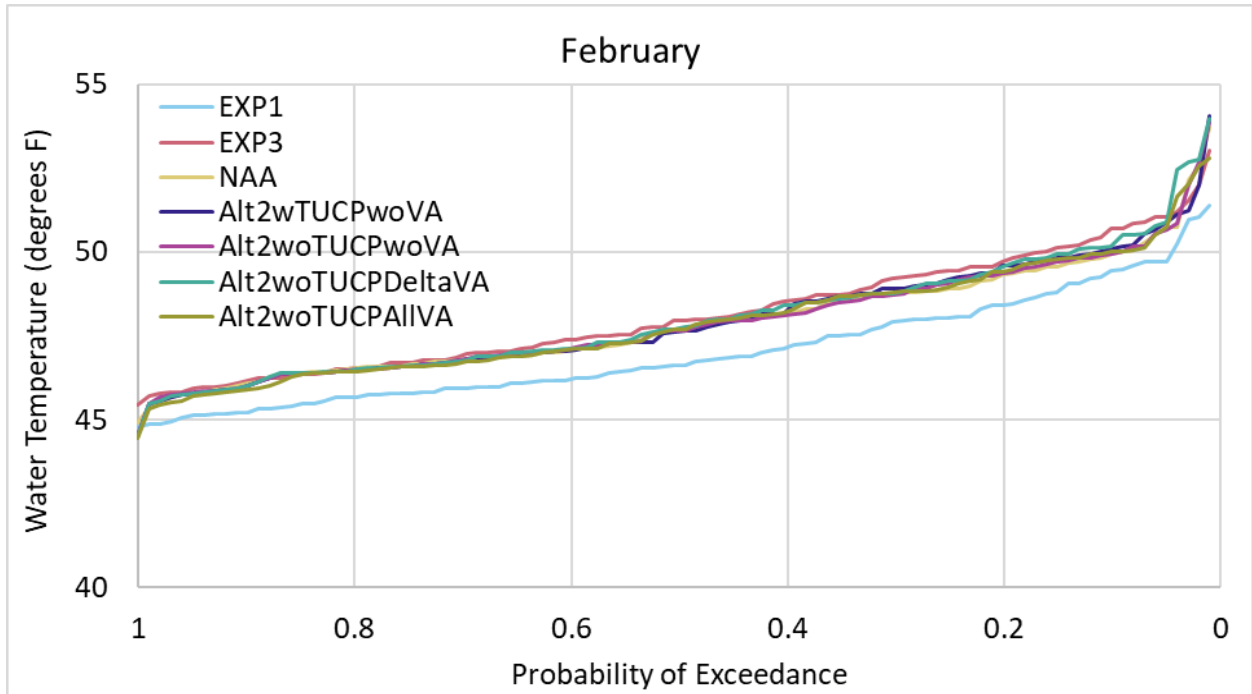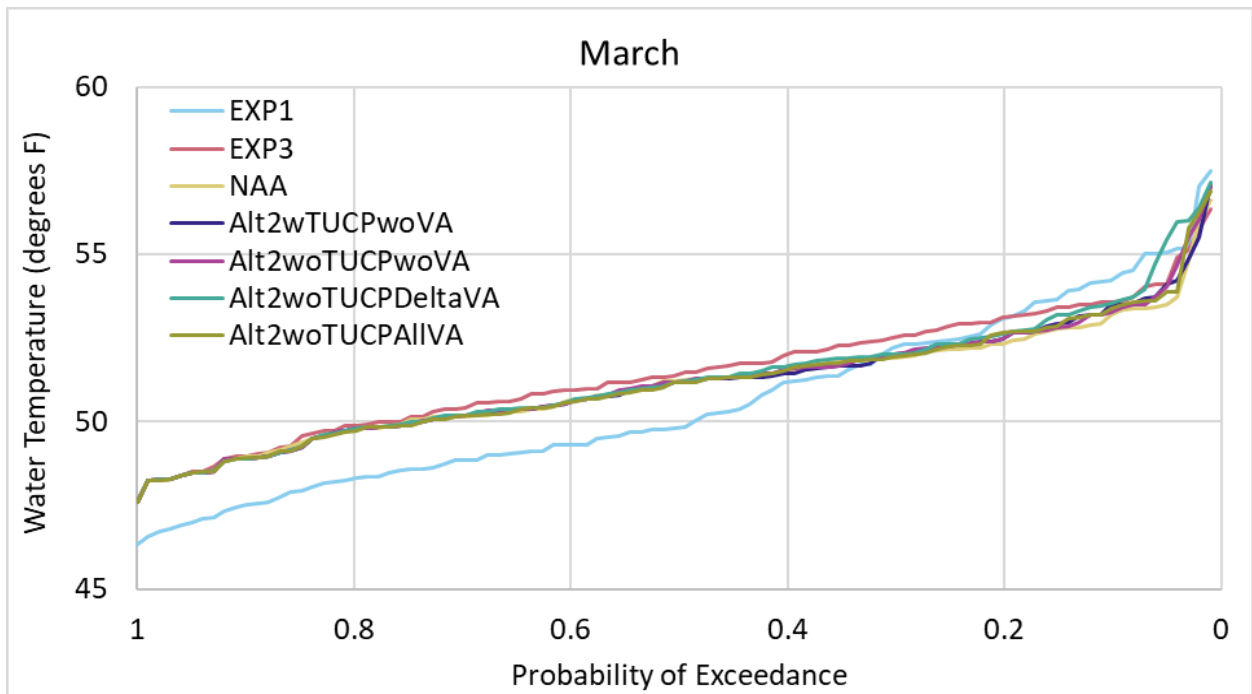
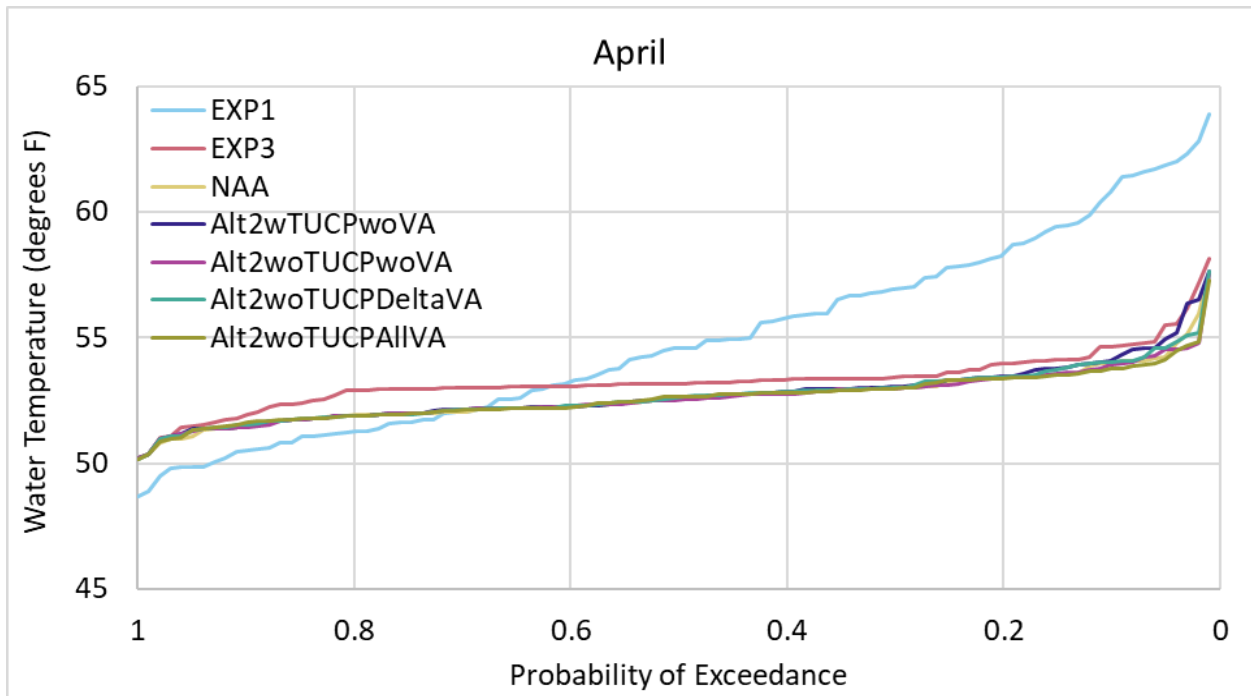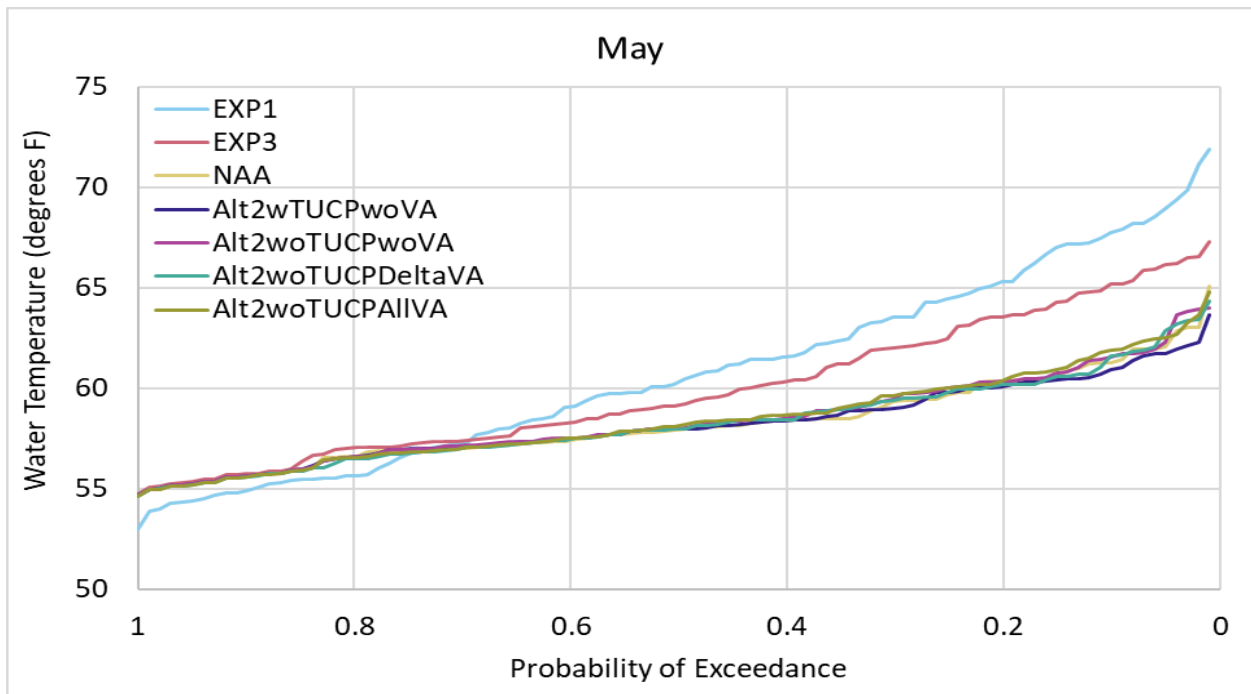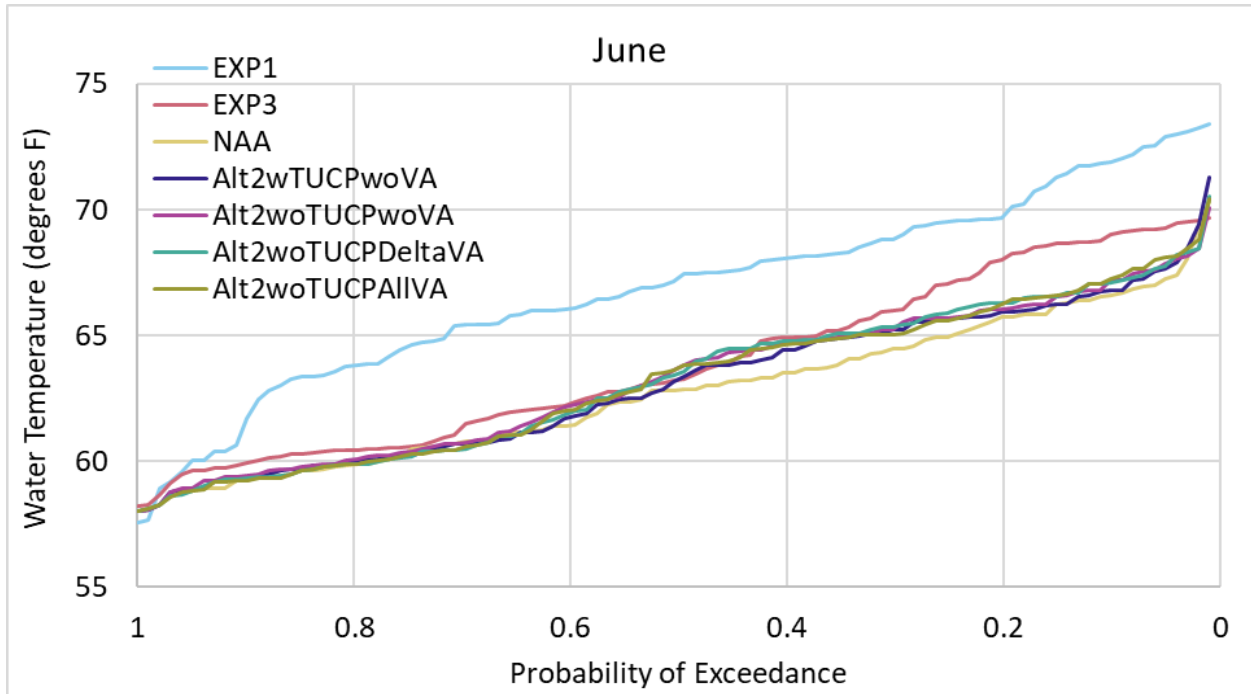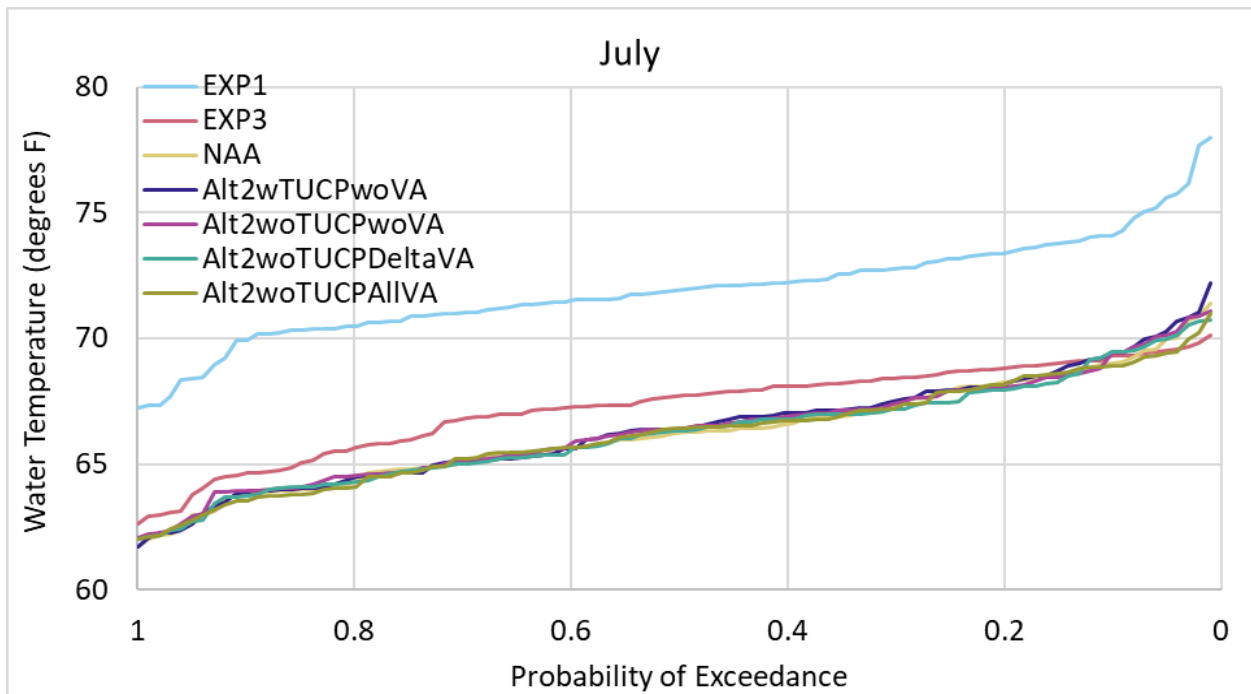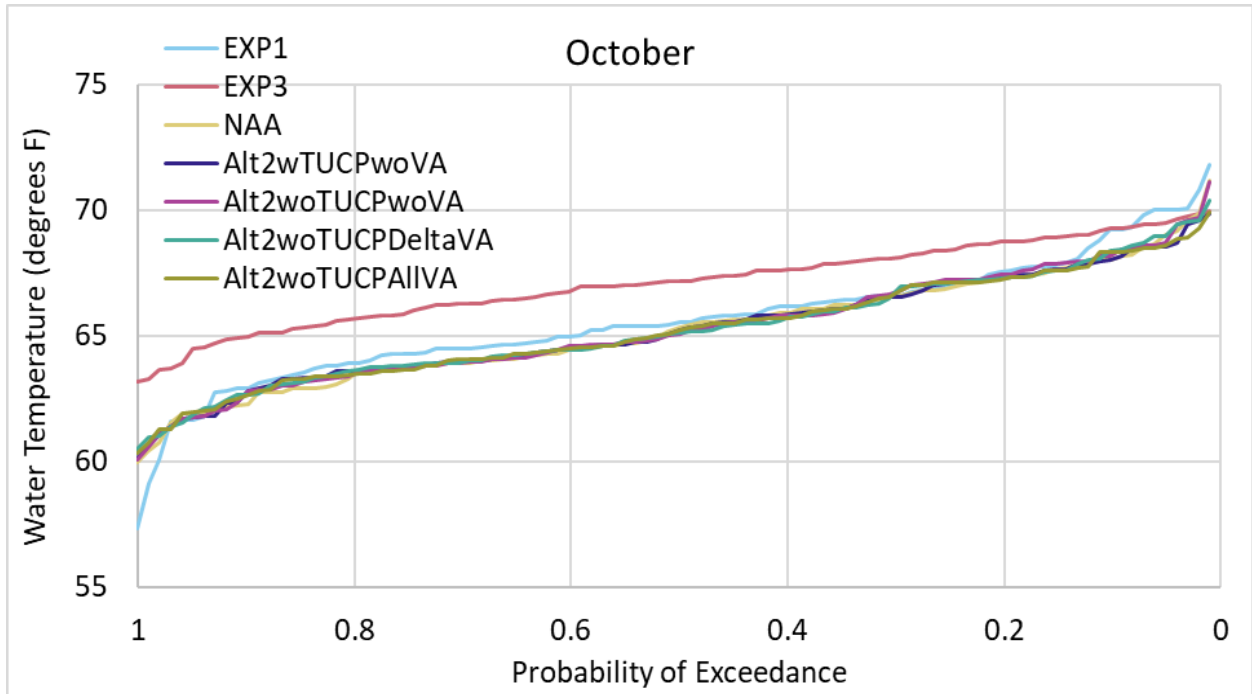Figure M.2-24. Exceedance plot of modeled water temperatures, American River at Watt Avenue, October.
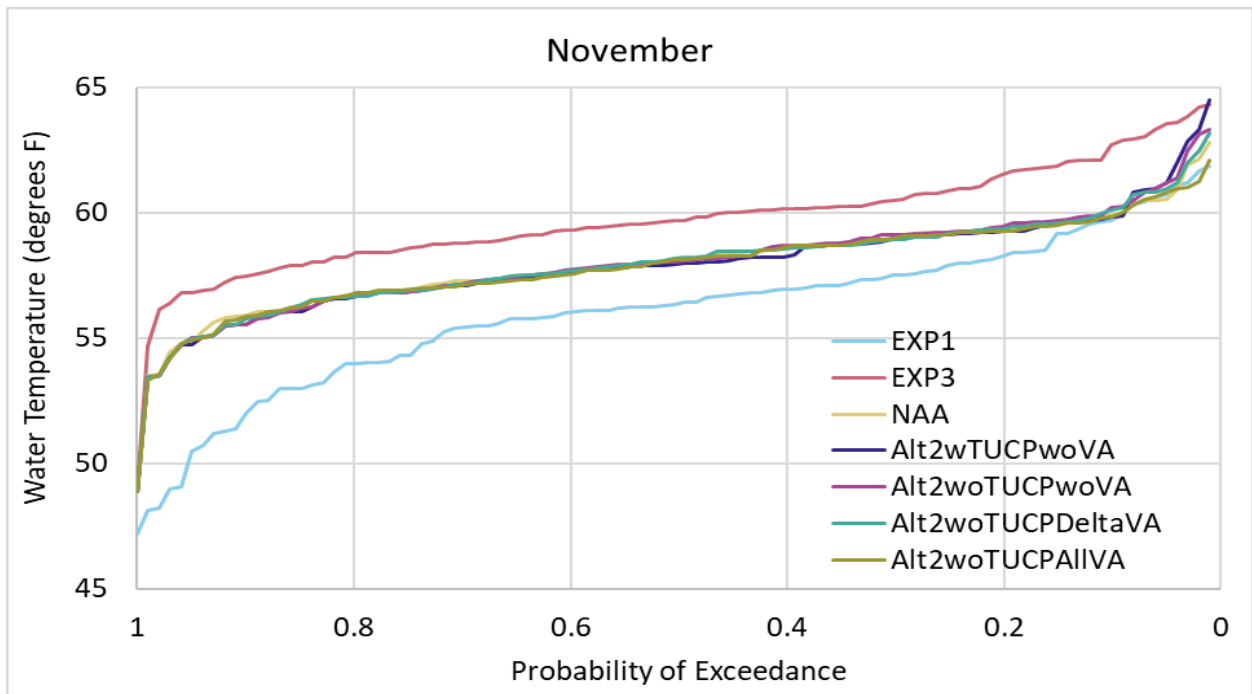
Figure M.2-25. Exceedance plot of modeled water temperatures, American River at Watt Avenue, November.
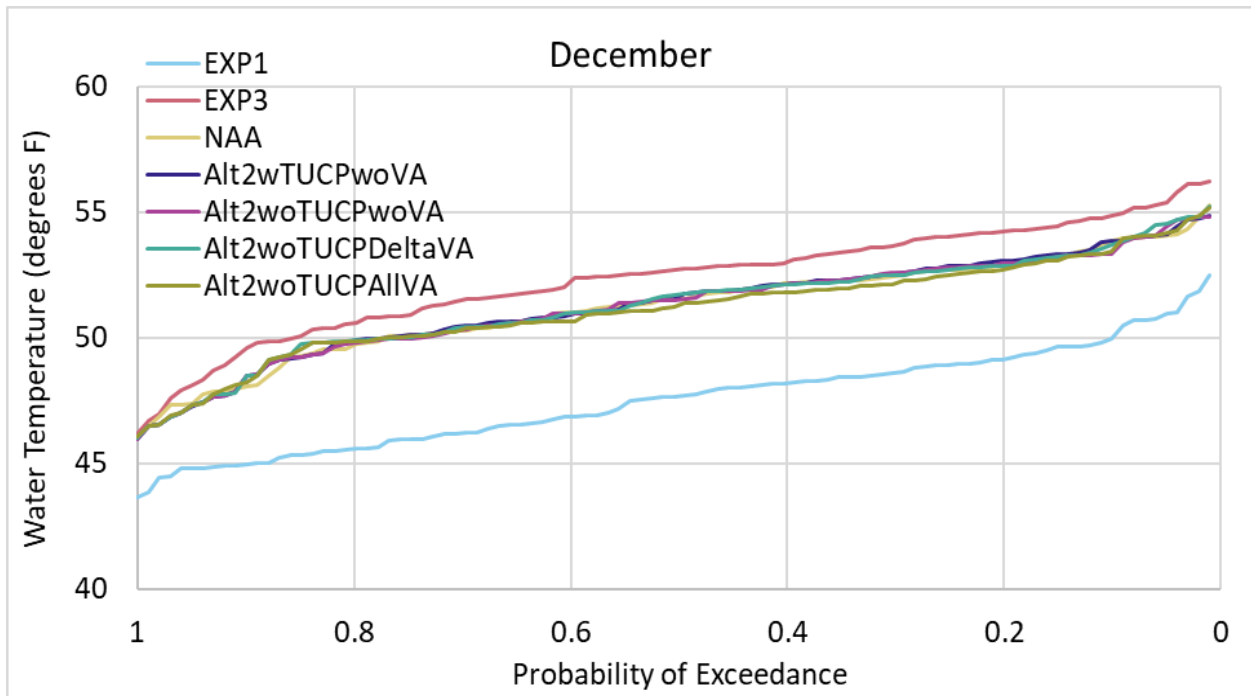
Figure M.2-26. Exceedance plot of modeled water temperatures, American River at Watt Avenue at Watt Avenue, December.

M.2.3.2 Winter-run Chinook Salmon

M.2.3.2.1 Non-Natal Juvenile Rearing

Water temperature-related effects on non-natal juvenile winter-run Chinook salmon rearing in the American River were evaluated by assessing the percent of months with water temperature outside the 55.4°F to 68.0°F optimal temperature range without food limitation (Myrick and Cech 2002, Marine and Cech 2004) at Hazel Avenue and Watt Avenue (Table M.2-1).

Results are presented in Table M.2-3 and Table M.2-4 for Hazel Avenue Bridge and Table M.2-5 and Table M.2-6 for Watt Avenue.

- At Hazel Avenue, the highest percent of months with water temperature outside the optimal range was 100% and occurred in nearly all months and water year types under the NAA and all alternatives (Table M.2-3 and Table M.2-4). Water temperatures were below the lower end of the optimal range in all cases. The lowest percent of months with water temperature exceeding the limit was 75.0% and occurred in April of critical water years under Alternative 1. Combining water year types, only March and April had <100% of months outside the optimal range. These results suggest that winter-run Chinook salmon would not likely occur as far upstream as Hazel Avenue under the NAA and all alternatives other than in critical water years in March and April.

- At Watt Avenue, the highest percent of months with water temperature outside the optimal range was 100% and occurred in January of all water year types, February of wet, above normal, below normal, and dry water years for the NAA and all alternatives, and March of wet and above normal water years under Alternative 3 (Table M.2-5 and Table M.2-6). Water temperatures were below the lower end of the optimal range in all cases. The lowest percent of months with water temperature exceeding the limit was 0% and occurred in April of critical water years under the NAA, all phases of Alternative 2, and Alternative 4. Combining water year types, the percent of months with water temperature outside the range varied from 97% to 100% in January and February to 33.3% to 36.4% in April.

Table M.2-3. Percent of months outside the 55.4°F to 68°F optimal water temperature range without food limitation for winter-run Chinook salmon non-natal rearing by water year type and month, and for all years combined, American River at Hazel Avenue, January through April (BA scenarios).

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
W	1	100.0	100.0	100.0	100.0	100.0	100.0	100.0
W	2	100.0	100.0	100.0	100.0	100.0	100.0	100.0
W	3	100.0	100.0	100.0	100.0	100.0	100.0	100.0
W	4	92.9	100.0	100.0	100.0	100.0	100.0	100.0
AN	1	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AN	2	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AN	3	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AN	4	76.9	100.0	100.0	100.0	100.0	100.0	100.0
BN	1	100.0	100.0	100.0	100.0	100.0	100.0	100.0
BN	2	100.0	100.0	100.0	100.0	100.0	100.0	100.0
BN	3	100.0	100.0	100.0	100.0	100.0	100.0	100.0
BN	4	61.1	100.0	100.0	100.0	100.0	100.0	100.0
D	1	100.0	100.0	100.0	100.0	100.0	100.0	100.0
D	2	100.0	100.0	100.0	100.0	100.0	100.0	100.0
D	3	100.0	100.0	100.0	100.0	100.0	100.0	100.0
D	4	33.3	95.8	100.0	100.0	100.0	100.0	100.0
C	1	100.0	100.0	100.0	100.0	100.0	100.0	100.0
C	2	100.0	100.0	100.0	100.0	100.0	100.0	100.0
C	3	87.5	87.5	87.5	87.5	81.3	68.8	81.3
C	4	12.5	75.0	87.5	81.3	93.8	93.8	93.8

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
All	1	100.0	100.0	100.0	100.0	100.0	100.0	100.0
All	2	100.0	100.0	100.0	100.0	100.0	100.0	100.0
All	3	98.0	98.0	98.0	98.0	97.0	94.9	97.0
All	4	57.6	94.9	98.0	97.0	99.0	99.0	99.0
W	All	98.2	100.0	100.0	100.0	100.0	100.0	100.0
AN	All	94.2	100.0	100.0	98.1	100.0	100.0	100.0
BN	All	90.3	100.0	100.0	97.2	100.0	100.0	100.0
D	All	83.3	99.0	100.0	94.8	100.0	100.0	100.0
C	All	75.0	90.6	93.8	89.1	92.2	93.8	90.6
All	All	88.9	98.2	99.0	96.2	98.7	99.0	98.5

Table M.2-4. Percent (difference in percent relative to NAA) of months outside the 55.4°F to 68°F optimal water temperature range without food limitation for winter-run Chinook salmon non-natal rearing by water year type and month, and for all years combined, American River at Hazel Avenue, January through April (EIS scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	4	100.0	92.3 (-7.7%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
BN	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	4	100.0	88.9 (-11.1%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	4	100.0	79.2 (-20.8%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	95.8 (-4.2%)
C	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	3	87.5	81.3 (-6.3%)	87.5 (0.0%)	93.8 (6.3%)	87.5 (0.0%)	81.3 (-6.3%)	87.5 (0.0%)	93.8 (6.3%)
C	4	87.5	75.0 (-12.5%)	93.8 (6.3%)	81.3 (-6.3%)	87.5 (0.0%)	93.8 (6.3%)	87.5 (0.0%)	81.3 (-6.3%)
All	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	3	98.0	97.0 (-1.0%)	98.0 (0.0%)	99.0 (1.0%)	98.0 (0.0%)	97.0 (-1.0%)	98.0 (0.0%)	99.0 (1.0%)
All	4	98.0	87.9 (-10.1%)	99.0 (1.0%)	97.0 (-1.0%)	98.0 (0.0%)	99.0 (1.0%)	98.0 (0.0%)	96.0 (-2.0%)
W	All	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	All	100.0	98.1 (-1.9%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	All	100.0	97.2 (-2.8%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	All	100.0	94.8 (-5.2%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	99.0 (-1.0%)
C	All	93.8	89.1 (-4.7%)	95.3 (1.6%)	93.8 (0.0%)	93.8 (0.0%)	93.8 (0.0%)	93.8 (0.0%)	93.8 (0.0%)
All	All	99.0	96.2 (-2.8%)	99.2 (0.3%)	99.0 (0.0%)	99.0 (0.0%)	99.0 (0.0%)	99.0 (0.0%)	98.7 (-0.3%)

Table M.2-5. Percent of months outside the 55.4°F to 68°F optimal water temperature range without food limitation for winter-run Chinook salmon non-natal rearing by water year type and month, and for all years combined, American River at Watt Avenue, January through April (BA scenarios).

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
W	1	100.0	100.0	100.0	100.0	100.0	100.0	100.0
W	2	100.0	100.0	100.0	100.0	100.0	100.0	100.0
W	3	100.0	96.4	96.4	96.4	96.4	96.4	96.4
W	4	78.6	71.4	75.0	75.0	75.0	75.0	75.0
AN	1	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AN	2	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AN	3	100.0	84.6	84.6	92.3	92.3	92.3	92.3
AN	4	53.8	23.1	38.5	30.8	30.8	38.5	38.5
BN	1	100.0	100.0	100.0	100.0	100.0	100.0	100.0
BN	2	100.0	100.0	100.0	100.0	100.0	100.0	100.0
BN	3	94.4	72.2	83.3	83.3	83.3	77.8	77.8
BN	4	44.4	22.2	22.2	22.2	22.2	22.2	27.8
D	1	100.0	100.0	100.0	100.0	100.0	100.0	100.0
D	2	100.0	100.0	100.0	100.0	100.0	100.0	100.0
D	3	75.0	54.2	66.7	54.2	54.2	54.2	58.3
D	4	12.5	8.3	16.7	16.7	16.7	12.5	12.5
C	1	100.0	100.0	100.0	100.0	100.0	100.0	100.0
C	2	100.0	93.8	93.8	93.8	87.5	87.5	87.5
C	3	25.0	12.5	18.8	12.5	12.5	12.5	12.5
C	4	18.8	0.0	0.0	0.0	0.0	0.0	0.0

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
All	1	100.0	100.0	100.0	100.0	100.0	100.0	100.0
All	2	100.0	99.0	99.0	99.0	98.0	98.0	98.0
All	3	80.8	66.7	72.7	69.7	69.7	68.7	69.7
All	4	43.4	29.3	34.3	33.3	33.3	33.3	34.3
W	All	94.6	92.0	92.9	92.9	92.9	92.9	92.9
AN	All	88.5	76.9	80.8	80.8	80.8	80.8	82.7
BN	All	84.7	73.6	76.4	69.4	76.4	76.4	75.0
D	All	71.9	65.6	70.8	67.7	67.7	67.7	66.7
C	All	60.9	51.6	53.1	54.7	51.6	50.0	50.0
All	All	81.1	73.7	76.5	74.7	75.5	75.3	75.0

Table M.2-6. Percent (difference in percent relative to NAA) of months outside the 55.4°F to 68°F optimal water temperature range without food limitation for winter-run Chinook salmon non-natal rearing by water year type and month, and for all years combined, American River at Watt Avenue, January through April (EIS scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	3	96.4	96.4 (0.0%)	96.4 (0.0%)	96.4 (0.0%)	96.4 (0.0%)	96.4 (0.0%)	100.0 (3.6%)	96.4 (0.0%)
W	4	75.0	75.0 (0.0%)	75.0 (0.0%)	75.0 (0.0%)	75.0 (0.0%)	75.0 (0.0%)	75.0 (0.0%)	75.0 (0.0%)
AN	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	3	84.6	76.9 (-7.7%)	92.3 (7.7%)	92.3 (7.7%)	92.3 (7.7%)	92.3 (7.7%)	100.0 (15.4%)	84.6 (0.0%)
AN	4	38.5	46.2 (7.7%)	38.5 (0.0%)	30.8 (-7.7%)	30.8 (-7.7%)	38.5 (0.0%)	23.1 (-15.4%)	30.8 (-7.7%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
BN	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	3	83.3	55.6 (-27.8%)	83.3 (0.0%)	83.3 (0.0%)	83.3 (0.0%)	83.3 (0.0%)	94.4 (11.1%)	77.8 (-5.6%)
BN	4	22.2	22.2 (0.0%)	22.2 (0.0%)	22.2 (0.0%)	22.2 (0.0%)	22.2 (0.0%)	38.9 (16.7%)	22.2 (0.0%)
D	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	3	66.7	45.8 (-20.8%)	54.2 (-12.5%)	54.2 (-12.5%)	58.3 (-8.3%)	62.5 (-4.2%)	66.7 (0.0%)	58.3 (-8.3%)
D	4	16.7	25.0 (8.3%)	16.7 (0.0%)	16.7 (0.0%)	20.8 (4.2%)	12.5 (-4.2%)	16.7 (0.0%)	25.0 (8.3%)
C	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	2	93.8	81.3 (-12.5%)	87.5 (-6.3%)	93.8 (0.0%)	87.5 (-6.3%)	87.5 (-6.3%)	93.8 (0.0%)	93.8 (0.0%)
C	3	18.8	18.8 (0.0%)	12.5 (-6.3%)	12.5 (-6.3%)	12.5 (-6.3%)	12.5 (-6.3%)	12.5 (-6.3%)	6.3 (-12.5%)
C	4	0.0	18.8 (18.8%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	6.3 (6.3%)	0.0 (0.0%)
All	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	2	99.0	97.0 (-2.0%)	98.0 (-1.0%)	99.0 (0.0%)	98.0 (-1.0%)	98.0 (-1.0%)	99.0 (0.0%)	99.0 (0.0%)
All	3	72.7	61.6 (-11.1%)	69.7 (-3.0%)	69.7 (-3.0%)	70.7 (-2.0%)	71.7 (-1.0%)	76.8 (4.0%)	67.7 (-5.1%)
All	4	34.3	40.4 (6.1%)	34.3 (0.0%)	33.3 (-1.0%)	34.3 (0.0%)	33.3 (-1.0%)	36.4 (2.0%)	35.4 (1.0%)
W	All	92.9	92.9 (0.0%)	92.9 (0.0%)	92.9 (0.0%)	92.9 (0.0%)	92.9 (0.0%)	93.8 (0.9%)	92.9 (0.0%)
AN	All	80.8	80.8 (0.0%)	82.7 (1.9%)	80.8 (0.0%)	80.8 (0.0%)	82.7 (1.9%)	80.8 (0.0%)	78.8 (-1.9%)
BN	All	76.4	69.4 (-6.9%)	76.4 (0.0%)	76.4 (0.0%)	76.4 (0.0%)	76.4 (0.0%)	83.3 (6.9%)	75.0 (-1.4%)
D	All	70.8	67.7 (-3.1%)	67.7 (-3.1%)	67.7 (-3.1%)	69.8 (-1.0%)	68.8 (-2.1%)	70.8 (0.0%)	70.8 (0.0%)
C	All	53.1	54.7 (1.6%)	50.0 (-3.1%)	51.6 (-1.6%)	50.0 (-3.1%)	50.0 (-3.1%)	53.1 (0.0%)	50.0 (-3.1%)
All	All	76.5	74.7 (-1.8%)	75.5 (-1.0%)	75.5 (-1.0%)	75.8 (-0.8%)	75.8 (-0.8%)	78.0 (1.5%)	75.5 (-1.0%)

M.2.3.3 Central Valley Steelhead

M.2.3.3.1 Adult Migration and Holding

Water temperature-related effects on steelhead adult migration and holding in the American River were evaluated by assessing: (1) the percent of months with water temperature outside the 41°F to 66.2°F range of minimal migration impairment (Keefer et al. 2009); (2) the percent of months with water temperature above the 69.8°F upper lethal limit to adult migrants (Coutant 1970); and (3) the percent of months with water temperature above the 59.9°F pathogen virulence threshold (McCullough 1999) at Hazel Avenue and Watt Avenue (Table M.2-1).

Results for the 41°F to 66.2°F range are presented in Table M.2-7 and Table M.2-8 for Hazel Avenue and Table M.2-9 and Table M.2-10 for Watt Avenue.

- At Hazel Avenue, the highest percent of months with water temperature outside the range was 87.5% and occurred in August of critical water years under the NAA and in September of critical water years under Alternative 2 without TUCP without VA (Table M.2-7 and Table M.2-8). The lowest percent of months with water temperature outside the range was 0% and occurred in November through April in all water year types under the NAA and all alternatives and in at least one water year type in October under the NAA, Alternative 2 without TUCP Delta VA, and Alternative 3. Combining water year types, the percent of months with water temperature outside the range was highest in August and September and was lowest during November through April under the NAA and all alternatives. Air temperatures drove this temporal pattern.

- At Watt Avenue, the highest percent of months with water temperature outside the range was 100% and occurred in July, August, and September of one or more water year types under the NAA and all alternatives (Table M.2-9 and Table M.2-10). The lowest percent of months with water temperature outside the range was 0% and occurred in November through April in all water year types under the NAA and all phases of Alternative 2, Alternative 3, and Alternative 4. Combining water year types, the percent of months with water temperature outside the range was highest in July and August and was lowest during November through April under the NAA and all alternatives. Air temperatures drove this temporal pattern.

Results for the 69.8°F upper limit of steelhead migration and holding are presented in Table M.2-11 and Table M.2-12 for Hazel Avenue and Table M.2-13 and Table M.2-14 Watt Avenue.

- At Hazel Avenue, the highest percent of months with water temperature above the 69.8°F upper limit was 37.5% and occurred in August of critical water years under Alternative 2 without TUCP without VA (Table M.2-11 and Table M.2-12). The lowest percent of months with water temperature above the 69.8°F upper limit was 0% and occurred in all water year types from October through April and in at least one water year type from July through September for the NAA and all alternatives except Alternative 2 Without TUCP Systemwide VAs and Alternative 4. Combining water year types, the highest percent of occurrences above the limit were during August and September, whereas there were no occurrences above the limit during October through April. Warmer air temperatures during August and September increased water temperatures above the limit.

- At Watt Avenue, the highest percent of months with water temperature above the 69.8°F upper limit was 100% and occurred in August of critical water years for Alternative 2 With TUCP Without VA, Alternative 2 Without TUCP Delta VA, Alternative 2 Without TUCP Systemwide VA, and Alternative 3 (Table M.2-13 and Table M.2-14). The lowest percent of months with water temperature above the limit was 0% and occurred in all water year types from November through March and most water year types in October and April for the NAA and all alternatives. Combining water year types, the highest percent of occurrences above the limit were during August and September, whereas there were no occurrences above the limit during November through March. Warmer air temperatures during August and September increased water temperatures above the limit.

Results for the 59.9°F pathogen virulence water temperature threshold are presented in Table M.2-15 and Table M.2-16 for Hazel Avenue and Table M.2-17 and Table M.2-18 for Watt Avenue.

- At Hazel Avenue, the highest percent of months with water temperature above the 59.9°F virulence threshold was 100% and occurred in July through September and in at least one water year type during October (Table M.2-15 and Table M.2-16). The lowest percent of months with water temperature above the 59.9°F virulence threshold was 0% and occurred in all water years from December through April (except dry water years during April under Alternative 1) and one or more water years during November for the NAA and all alternatives. Combining water years, the highest percent of months with water temperature above the virulence threshold occurred during July through September and the lowest percent of months with water temperature occurred during December through March under the NAA and all alternatives. Air temperatures caused these temporal water temperature patterns. Between ~35-45% of months has water temperatures above the virulence threshold in all water year types under the NAA and all alternatives.

- At Watt Avenue, the highest percent of months with water temperature above the 59.9°F virulence threshold was 100% and occurred in July through October in all water year types for the NAA and all alternatives (Table M.2-17 and Table M.2-18). The lowest percent of months with water temperature above the 59.9°F virulence threshold was 0% and occurred in all water years from December through February and one or more water years during November, March, and April (aside from Alternative 1) for the NAA and all alternatives. Combining water years, the highest percent of months with water temperature above the virulence threshold was during July through October and the lowest percent of months was during December through February under the NAA and all alternatives and during March under the NAA. Air temperatures drove these temporal patterns. Between ~30-55% of months had water temperatures above the virulence threshold in all water year types under the NAA and all alternatives.

Table M.2-7. Percent of months outside the 41°F to 66.2°F water temperature range for minimal adult steelhead migration impairment by water year type and month, and for all years combined, American River at Hazel Avenue, July through April (BA Scenarios).

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
W	7	100.0	46.4	39.3	42.9	42.9	39.3	39.3
W	8	100.0	78.6	78.6	82.1	82.1	82.1	78.6
W	9	92.9	85.7	78.6	82.1	82.1	78.6	82.1
W	10	0.0	39.3	39.3	46.4	46.4	46.4	46.4
W	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	7	100.0	76.9	53.8	61.5	61.5	61.5	53.8
AN	8	100.0	61.5	53.8	53.8	53.8	53.8	38.5
AN	9	100.0	76.9	53.8	46.2	53.8	46.2	61.5
AN	10	0.0	38.5	0.0	7.7	7.7	0.0	7.7
AN	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
BN	7	100.0	88.9	55.6	61.1	55.6	55.6	55.6
BN	8	100.0	88.9	66.7	61.1	61.1	66.7	66.7
BN	9	100.0	83.3	50.0	38.9	38.9	38.9	44.4
BN	10	0.0	50.0	16.7	5.6	5.6	5.6	11.1
BN	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	7	100.0	79.2	45.8	50.0	50.0	50.0	58.3
D	8	100.0	91.7	75.0	75.0	70.8	79.2	54.2
D	9	100.0	91.7	62.5	62.5	66.7	62.5	62.5
D	10	12.5	62.5	8.3	16.7	16.7	8.3	4.2
D	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	1	4.2	0.0	0.0	0.0	0.0	0.0	0.0
D	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	7	100.0	87.5	68.8	75.0	75.0	68.8	62.5
C	8	100.0	100.0	87.5	75.0	81.3	68.8	81.3
C	9	100.0	100.0	81.3	75.0	87.5	87.5	81.3

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
C	10	53.3	93.3	33.3	26.7	40.0	53.3	40.0
C	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	7	100.0	72.7	50.5	55.6	54.5	52.5	52.5
All	8	100.0	84.8	73.7	71.7	71.7	72.7	65.7
All	9	98.0	87.9	66.7	63.6	67.7	64.6	67.7
All	10	11.2	55.1	21.4	23.5	25.5	24.5	23.5
All	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	1	1.0	0.0	0.0	0.0	0.0	0.0	0.0
All	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	All	29.3	25.0	23.6	24.6	25.4	25.4	24.6
AN	All	29.5	25.0	15.9	15.9	16.7	17.4	15.9
BN	All	30.0	31.1	18.9	12.8	16.7	16.1	16.7
D	All	31.7	32.5	19.2	15.4	20.4	20.4	20.0
C	All	35.7	38.2	27.4	27.4	25.5	28.7	28.0
All	All	31.0	30.0	21.2	19.5	21.4	21.9	21.4

Table M.2-8. Percent (difference in percent relative to NAA) of months outside the 41°F to 66.2°F water temperature range for minimal adult steelhead migration impairment by water year type and month, and for all years combined, American River at Hazel Avenue, July through April (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	7	39.3	39.3 (0.0%)	42.9 (3.6%)	42.9 (3.6%)	39.3 (0.0%)	32.1 (-7.1%)	42.9 (3.6%)	46.4 (7.1%)
W	8	78.6	78.6 (0.0%)	82.1 (3.6%)	82.1 (3.6%)	82.1 (3.6%)	78.6 (0.0%)	71.4 (-7.1%)	82.1 (3.6%)
W	9	78.6	82.1 (3.6%)	82.1 (3.6%)	82.1 (3.6%)	78.6 (0.0%)	82.1 (3.6%)	71.4 (-7.1%)	78.6 (0.0%)
W	10	39.3	46.4 (7.1%)	46.4 (7.1%)	46.4 (7.1%)	46.4 (7.1%)	46.4 (7.1%)	39.3 (0.0%)	50.0 (10.7%)
W	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	7	53.8	30.8 (-23.1%)	53.8 (0.0%)	61.5 (7.7%)	61.5 (7.7%)	46.2 (-7.7%)	53.8 (0.0%)	61.5 (7.7%)
AN	8	53.8	61.5 (7.7%)	53.8 (0.0%)	53.8 (0.0%)	53.8 (0.0%)	38.5 (-15.4%)	46.2 (-7.7%)	53.8 (0.0%)
AN	9	53.8	61.5 (7.7%)	46.2 (-7.7%)	46.2 (-7.7%)	46.2 (-7.7%)	46.2 (-7.7%)	53.8 (0.0%)	53.8 (0.0%)
AN	10	0.0	7.7 (7.7%)	7.7 (7.7%)	7.7 (7.7%)	0.0 (0.0%)	7.7 (7.7%)	0.0 (0.0%)	7.7 (7.7%)
AN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
BN	7	55.6	27.8 (-27.8%)	61.1 (5.6%)	61.1 (5.6%)	61.1 (5.6%)	55.6 (0.0%)	55.6 (0.0%)	38.9 (-16.7%)
BN	8	66.7	44.4 (-22.2%)	61.1 (-5.6%)	66.7 (0.0%)	61.1 (-5.6%)	66.7 (0.0%)	66.7 (0.0%)	66.7 (0.0%)
BN	9	50.0	50.0 (0.0%)	44.4 (-5.6%)	38.9 (-11.1%)	38.9 (-11.1%)	72.2 (22.2%)	61.1 (11.1%)	38.9 (-11.1%)
BN	10	16.7	5.6 (-11.1%)	5.6 (-11.1%)	5.6 (-11.1%)	5.6 (-11.1%)	11.1 (-5.6%)	16.7 (0.0%)	11.1 (-5.6%)
BN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	7	45.8	37.5 (-8.3%)	50.0 (4.2%)	50.0 (4.2%)	50.0 (4.2%)	45.8 (0.0%)	41.7 (-4.2%)	41.7 (-4.2%)
D	8	75.0	79.2 (4.2%)	66.7 (-8.3%)	70.8 (-4.2%)	79.2 (4.2%)	70.8 (-4.2%)	66.7 (-8.3%)	75.0 (0.0%)
D	9	62.5	29.2 (-33.3%)	70.8 (8.3%)	62.5 (0.0%)	58.3 (-4.2%)	62.5 (0.0%)	66.7 (4.2%)	66.7 (4.2%)
D	10	8.3	8.3 (0.0%)	4.2 (-4.2%)	4.2 (-4.2%)	0.0 (-8.3%)	4.2 (-4.2%)	16.7 (8.3%)	12.5 (4.2%)
D	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	7	68.8	62.5 (-6.3%)	68.8 (0.0%)	81.3 (12.5%)	68.8 (0.0%)	68.8 (0.0%)	81.3 (12.5%)	62.5 (-6.3%)
C	8	87.5	81.3 (-6.3%)	75.0 (-12.5%)	68.8 (-18.8%)	62.5 (-25.0%)	81.3 (-6.3%)	81.3 (-6.3%)	68.8 (-18.8%)
C	9	81.3	75.0 (-6.3%)	87.5 (6.3%)	68.8 (-12.5%)	75.0 (-6.3%)	81.3 (0.0%)	81.3 (0.0%)	62.5 (-18.8%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
C	10	33.3	53.3 (20.0%)	40.0 (6.7%)	26.7 (-6.7%)	60.0 (26.7%)	53.3 (20.0%)	53.3 (20.0%)	46.7 (13.3%)
C	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	7	50.5	39.4 (-11.1%)	53.5 (3.0%)	56.6 (6.1%)	53.5 (3.0%)	47.5 (-3.0%)	52.5 (2.0%)	48.5 (-2.0%)
All	8	73.7	70.7 (-3.0%)	69.7 (-4.0%)	70.7 (-3.0%)	70.7 (-3.0%)	69.7 (-4.0%)	67.7 (-6.1%)	71.7 (-2.0%)
All	9	66.7	59.6 (-7.1%)	68.7 (2.0%)	62.6 (-4.0%)	61.6 (-5.1%)	70.7 (4.0%)	67.7 (1.0%)	62.6 (-4.0%)
All	10	21.4	25.5 (4.1%)	22.4 (1.0%)	20.4 (-1.0%)	23.5 (2.0%)	25.5 (4.1%)	26.5 (5.1%)	27.6 (6.1%)
All	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	All	23.6	24.6 (1.1%)	25.4 (1.8%)	25.4 (1.8%)	24.6 (1.1%)	23.9 (0.4%)	22.5 (-1.1%)	25.7 (2.1%)
AN	All	15.9	15.9 (0.0%)	15.9 (0.0%)	16.7 (0.8%)	15.9 (0.0%)	13.6 (-2.3%)	15.2 (-0.8%)	17.4 (1.5%)
BN	All	18.9	12.8 (-6.1%)	17.2 (-1.7%)	17.2 (-1.7%)	16.7 (-2.2%)	20.6 (1.7%)	20.0 (1.1%)	15.6 (-3.3%)
D	All	19.2	15.4 (-3.8%)	19.2 (0.0%)	18.8 (-0.4%)	18.8 (-0.4%)	18.3 (-0.8%)	19.2 (0.0%)	19.6 (0.4%)
C	All	27.4	27.4 (0.0%)	27.4 (0.0%)	24.8 (-2.5%)	26.8 (-0.6%)	28.7 (1.3%)	29.9 (2.5%)	24.2 (-3.2%)
All	All	21.2	19.5 (-1.7%)	21.4 (0.2%)	21.0 (-0.2%)	20.9 (-0.3%)	21.3 (0.1%)	21.4 (0.2%)	21.0 (-0.2%)

Table M.2-9. Percent of months outside the 41°F to 66.2°F water temperature range for minimal adult steelhead migration impairment by water year type and month, and for all years combined, American River at Watt Avenue, July through April (BA Scenarios).

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
W	7	100.0	100.0	96.4	96.4	96.4	96.4	96.4 (0.0%)
W	8	100.0	96.4	100.0	96.4	96.4	100.0	100.0 (0.0%)
W	9	100.0	100.0	89.3	85.7	85.7	85.7	92.9 (3.6%)
W	10	14.3	50.0	46.4	57.1	57.1	53.6	0.0 (-46.4%)
W	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (0.0%)
W	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (0.0%)
W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (0.0%)
W	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (0.0%)
W	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (0.0%)
W	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (0.0%)
AN	7	100.0	100.0	92.3	92.3	92.3	92.3	84.6 (-7.7%)
AN	8	100.0	92.3	100.0	100.0	100.0	100.0	92.3 (-7.7%)
AN	9	100.0	100.0	100.0	100.0	100.0	100.0	100.0 (0.0%)
AN	10	23.1	76.9	15.4	15.4	15.4	15.4	0.0 (-15.4%)
AN	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (0.0%)
AN	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (0.0%)
AN	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (0.0%)
AN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (0.0%)
AN	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (0.0%)
AN	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (0.0%)

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
BN	7	100.0	100.0	100.0	100.0	100.0	100.0	100.0 (0.0%)
BN	8	100.0	100.0	100.0	94.4	94.4	88.9	88.9 (-11.1%)
BN	9	100.0	100.0	100.0	100.0	94.4	94.4	61.1 (-38.9%)
BN	10	33.3	66.7	16.7	16.7	11.1	11.1	5.6 (-11.1%)
BN	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (0.0%)
BN	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (0.0%)
BN	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (0.0%)
BN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (0.0%)
BN	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (0.0%)
BN	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (0.0%)
D	7	100.0	100.0	100.0	100.0	100.0	100.0	87.5 (-12.5%)
D	8	100.0	100.0	100.0	95.8	95.8	100.0	91.7 (-8.3%)
D	9	100.0	100.0	100.0	95.8	95.8	91.7	83.3 (-16.7%)
D	10	41.7	83.3	29.2	16.7	16.7	12.5	4.2 (-25.0%)
D	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (0.0%)
D	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (0.0%)
D	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (0.0%)
D	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (0.0%)
D	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (0.0%)
D	4	4.2	0.0	0.0	0.0	0.0	0.0	0.0 (0.0%)
C	7	100.0	100.0	100.0	100.0	100.0	100.0	100.0 (0.0%)
C	8	100.0	100.0	100.0	100.0	100.0	100.0	93.8 (-6.3%)
C	9	100.0	100.0	100.0	100.0	100.0	100.0	100.0 (0.0%)

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
C	10	93.3	100.0	66.7	53.3	60.0	66.7	13.3 (-53.3%)
C	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (0.0%)
C	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (0.0%)
C	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (0.0%)
C	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (0.0%)
C	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (0.0%)
C	4	31.3	0.0	0.0	0.0	0.0	0.0	0.0 (0.0%)
All	7	100.0	100.0	98.0	98.0	98.0	98.0	93.9 (-4.0%)
All	8	100.0	98.0	100.0	97.0	97.0	98.0	93.9 (-6.1%)
All	9	100.0	100.0	97.0	94.9	93.9	92.9	86.9 (-10.1%)
All	10	37.8	72.4	35.7	33.7	33.7	32.7	4.1 (-31.6%)
All	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (0.0%)
All	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (0.0%)
All	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (0.0%)
All	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (0.0%)
All	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (0.0%)
All	4	6.1	0.0	0.0	0.0	0.0	0.0	0.0 (0.0%)
W	All	31.4	34.6	33.2	34.6	33.6	33.6	28.9 (-4.3%)
AN	All	31.8	36.4	30.3	31.1	30.3	30.3	27.3 (-3.0%)
BN	All	33.3	36.7	31.7	31.1	31.1	30.0	25.6 (-6.1%)
D	All	34.6	38.3	32.9	34.2	30.8	30.8	26.7 (-6.3%)
C	All	42.7	40.1	36.9	38.9	35.7	36.3	31.2 (-5.7%)
All	All	34.4	37.0	33.1	34.1	32.4	32.3	27.9 (-5.2%)

Table M.2-10. Percent (difference in percent relative to NAA) of months outside the 41°F to 66.2°F water temperature range for minimal adult steelhead migration impairment by water year type and month, and for all years combined, American River at Watt Avenue, July through April (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	7	96.4	96.4 (0.0%)	96.4 (0.0%)	96.4 (0.0%)	96.4 (0.0%)	96.4 (0.0%)	100.0 (3.6%)	96.4 (0.0%)
W	8	100.0	92.9 (-7.1%)	96.4 (-3.6%)	96.4 (-3.6%)	96.4 (-3.6%)	100.0 (0.0%)	89.3 (-10.7%)	92.9 (-7.1%)
W	9	89.3	100.0 (10.7%)	89.3 (0.0%)	89.3 (0.0%)	89.3 (0.0%)	89.3 (0.0%)	96.4 (7.1%)	89.3 (0.0%)
W	10	46.4	57.1 (10.7%)	57.1 (10.7%)	57.1 (10.7%)	53.6 (7.1%)	53.6 (7.1%)	57.1 (10.7%)	57.1 (10.7%)
W	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	7	92.3	92.3 (0.0%)	92.3 (0.0%)	92.3 (0.0%)	92.3 (0.0%)	92.3 (0.0%)	100.0 (7.7%)	100.0 (7.7%)
AN	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	92.3 (-7.7%)	92.3 (-7.7%)
AN	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	76.9 (-23.1%)
AN	10	15.4	15.4 (0.0%)	15.4 (0.0%)	15.4 (0.0%)	23.1 (7.7%)	7.7 (-7.7%)	15.4 (0.0%)	23.1 (7.7%)
AN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	4	0.0	7.7 (7.7%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
BN	7	100.0	94.4 (-5.6%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	94.4 (-5.6%)	100.0 (0.0%)
BN	8	100.0	94.4 (-5.6%)	94.4 (-5.6%)	94.4 (-5.6%)	94.4 (-5.6%)	94.4 (-5.6%)	100.0 (0.0%)	94.4 (-5.6%)
BN	9	100.0	94.4 (-5.6%)	94.4 (-5.6%)	94.4 (-5.6%)	100.0 (0.0%)	94.4 (-5.6%)	94.4 (-5.6%)	94.4 (-5.6%)
BN	10	16.7	22.2 (5.6%)	11.1 (-5.6%)	16.7 (0.0%)	11.1 (-5.6%)	16.7 (0.0%)	22.2 (5.6%)	11.1 (-5.6%)
BN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	4	0.0	5.6 (5.6%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	8	100.0	100.0 (0.0%)	100.0 (0.0%)	95.8 (-4.2%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	95.8 (-4.2%)
D	9	100.0	100.0 (0.0%)	95.8 (-4.2%)	95.8 (-4.2%)	87.5 (-12.5%)	95.8 (-4.2%)	87.5 (-12.5%)	95.8 (-4.2%)
D	10	29.2	29.2 (0.0%)	12.5 (-16.7%)	12.5 (-16.7%)	16.7 (-12.5%)	16.7 (-12.5%)	20.8 (-8.3%)	29.2 (0.0%)
D	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	4	0.0	12.5 (12.5%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
C	10	66.7	73.3 (6.7%)	73.3 (6.7%)	60.0 (-6.7%)	73.3 (6.7%)	73.3 (6.7%)	86.7 (20.0%)	60.0 (-6.7%)
C	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	4	0.0	12.5 (12.5%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	7	98.0	97.0 (-1.0%)	98.0 (0.0%)	98.0 (0.0%)	98.0 (0.0%)	98.0 (0.0%)	99.0 (1.0%)	99.0 (1.0%)
All	8	100.0	97.0 (-3.0%)	98.0 (-2.0%)	97.0 (-3.0%)	98.0 (-2.0%)	99.0 (-1.0%)	96.0 (-4.0%)	94.9 (-5.1%)
All	9	97.0	99.0 (2.0%)	94.9 (-2.0%)	94.9 (-2.0%)	93.9 (-3.0%)	94.9 (-2.0%)	94.9 (-2.0%)	91.9 (-5.1%)
All	10	35.7	40.8 (5.1%)	34.7 (-1.0%)	33.7 (-2.0%)	35.7 (0.0%)	34.7 (-1.0%)	40.8 (5.1%)	37.8 (2.0%)
All	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	4	0.0	7.1 (7.1%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	All	33.2	34.6 (1.4%)	33.9 (0.7%)	33.9 (0.7%)	33.6 (0.4%)	33.9 (0.7%)	34.3 (1.1%)	33.6 (0.4%)
AN	All	30.3	31.1 (0.8%)	30.3 (0.0%)	30.3 (0.0%)	31.1 (0.8%)	29.5 (-0.8%)	30.3 (0.0%)	28.8 (-1.5%)
BN	All	31.7	31.1 (-0.6%)	30.0 (-1.7%)	30.6 (-1.1%)	30.6 (-1.1%)	30.6 (-1.1%)	31.1 (-0.6%)	30.0 (-1.7%)
D	All	32.9	34.2 (1.3%)	30.8 (-2.1%)	30.4 (-2.5%)	30.4 (-2.5%)	31.3 (-1.7%)	30.8 (-2.1%)	32.1 (-0.8%)
C	All	36.9	38.9 (1.9%)	37.6 (0.6%)	36.3 (-0.6%)	37.6 (0.6%)	37.6 (0.6%)	38.9 (1.9%)	36.3 (-0.6%)
All	All	33.1	34.1 (1.0%)	32.6 (-0.5%)	32.4 (-0.7%)	32.6 (-0.5%)	32.7 (-0.4%)	33.1 (0.0%)	32.4 (-0.7%)

Table M.2-11. Percent of months above the 69.8°F lethal water temperature limit for adult steelhead migration by water year type and month, for all years combined, American River at Hazel Avenue, July through April (BA Scenarios).

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
W	7	75.0	0.0	0.0	0.0	0.0	0.0	0.0
W	8	96.4	3.6	0.0	0.0	0.0	0.0	0.0
W	9	10.7	0.0	7.1	14.3	14.3	14.3	14.3
W	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	7	92.3	0.0	0.0	0.0	0.0	0.0	0.0
AN	8	92.3	7.7	0.0	7.7	7.7	0.0	0.0
AN	9	7.7	7.7	0.0	7.7	7.7	7.7	0.0
AN	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	7	94.4	0.0	5.6	5.6	5.6	5.6	0.0

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
BN	8	94.4	0.0	5.6	11.1	11.1	11.1	16.7
BN	9	33.3	0.0	0.0	0.0	0.0	0.0	5.6
BN	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	7	100.0	8.3	4.2	8.3	8.3	8.3	4.2
D	8	100.0	0.0	8.3	4.2	4.2	4.2	4.2
D	9	50.0	4.2	4.2	4.2	4.2	4.2	0.0
D	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	7	100.0	0.0	18.8	25.0	18.8	18.8	12.5
C	8	100.0	0.0	31.3	37.5	12.5	18.8	12.5
C	9	93.8	0.0	18.8	12.5	6.3	0.0	0.0
C	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
C	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	7	90.9	2.0	5.1	7.1	6.1	6.1	3.0
All	8	97.0	2.0	8.1	10.1	6.1	6.1	6.1
All	9	37.4	2.0	6.1	8.1	7.1	6.1	5.1
All	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	All	18.2	0.4	0.7	2.1	1.4	1.4	1.4
AN	All	18.9	1.5	0.0	1.5	1.5	1.5	0.8
BN	All	22.2	0.0	1.1	0.6	1.7	1.7	1.7
D	All	25.0	1.3	1.7	0.8	1.7	1.7	1.7
C	All	29.9	0.0	7.0	2.5	7.6	3.8	3.8
All	All	22.5	0.6	1.9	1.5	2.5	1.9	1.8

Table M.2-12. Percent (difference in percent relative to NAA) of months above the 69.8°F lethal water temperature limit for adult steelhead migration by water year type and month, and for all years combined, American River at Hazel Avenue, July through April (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	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 (0.0%)	0.0 (0.0%)
W	8	0.0	3.6 (3.6%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	9	7.1	17.9 (10.7%)	14.3 (7.1%)	14.3 (7.1%)	10.7 (3.6%)	14.3 (7.1%)	7.1 (0.0%)	14.3 (7.1%)
W	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	8	0.0	0.0 (0.0%)	7.7 (7.7%)	7.7 (7.7%)	7.7 (7.7%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	9	0.0	15.4 (15.4%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	7.7 (7.7%)	7.7 (7.7%)	7.7 (7.7%)
AN	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
BN	7	5.6	0.0 (-5.6%)	5.6 (0.0%)	5.6 (0.0%)	5.6 (0.0%)	0.0 (-5.6%)	0.0 (-5.6%)	5.6 (0.0%)
BN	8	5.6	0.0 (-5.6%)	11.1 (5.6%)	16.7 (11.1%)	11.1 (5.6%)	11.1 (5.6%)	5.6 (0.0%)	16.7 (11.1%)
BN	9	0.0	5.6 (5.6%)	0.0 (0.0%)	5.6 (5.6%)	0.0 (0.0%)	5.6 (5.6%)	0.0 (0.0%)	5.6 (5.6%)
BN	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	7	4.2	4.2 (0.0%)	12.5 (8.3%)	12.5 (8.3%)	12.5 (8.3%)	0.0 (-4.2%)	0.0 (-4.2%)	0.0 (-4.2%)
D	8	8.3	4.2 (-4.2%)	8.3 (0.0%)	8.3 (0.0%)	4.2 (-4.2%)	0.0 (-8.3%)	4.2 (-4.2%)	0.0 (-8.3%)
D	9	4.2	0.0 (-4.2%)	4.2 (0.0%)	4.2 (0.0%)	4.2 (0.0%)	4.2 (0.0%)	12.5 (8.3%)	4.2 (0.0%)
D	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	7	18.8	6.3 (-12.5%)	12.5 (-6.3%)	6.3 (-12.5%)	12.5 (-6.3%)	12.5 (-6.3%)	6.3 (-12.5%)	6.3 (-12.5%)
C	8	31.3	18.8 (-12.5%)	18.8 (-12.5%)	37.5 (6.3%)	25.0 (-6.3%)	12.5 (-18.8%)	18.8 (-12.5%)	25.0 (-6.3%)
C	9	18.8	0.0 (-18.8%)	6.3 (-12.5%)	12.5 (-6.3%)	0.0 (-18.8%)	0.0 (-18.8%)	12.5 (-6.3%)	12.5 (-6.3%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
C	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	7	5.1	2.0 (-3.0%)	6.1 (1.0%)	5.1 (0.0%)	6.1 (1.0%)	2.0 (-3.0%)	1.0 (-4.0%)	2.0 (-3.0%)
All	8	8.1	5.1 (-3.0%)	8.1 (0.0%)	12.1 (4.0%)	8.1 (0.0%)	4.0 (-4.0%)	5.1 (-3.0%)	7.1 (-1.0%)
All	9	6.1	8.1 (2.0%)	6.1 (0.0%)	8.1 (2.0%)	4.0 (-2.0%)	7.1 (1.0%)	8.1 (2.0%)	9.1 (3.0%)
All	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	All	0.7	2.1 (1.4%)	1.4 (0.7%)	1.4 (0.7%)	1.1 (0.4%)	1.4 (0.7%)	0.7 (0.0%)	1.4 (0.7%)
AN	All	0.0	1.5 (1.5%)	0.8 (0.8%)	0.8 (0.8%)	0.8 (0.8%)	0.8 (0.8%)	0.8 (0.8%)	0.8 (0.8%)
BN	All	1.1	0.6 (-0.6%)	1.7 (0.6%)	2.8 (1.7%)	1.7 (0.6%)	1.7 (0.6%)	0.6 (-0.6%)	2.8 (1.7%)
D	All	1.7	0.8 (-0.8%)	2.5 (0.8%)	2.5 (0.8%)	2.1 (0.4%)	0.4 (-1.3%)	1.7 (0.0%)	0.4 (-1.3%)
C	All	7.0	2.5 (-4.5%)	3.8 (-3.2%)	5.7 (-1.3%)	3.8 (-3.2%)	2.5 (-4.5%)	3.8 (-3.2%)	4.5 (-2.5%)
All	All	1.9	1.5 (-0.4%)	2.0 (0.1%)	2.5 (0.6%)	1.8 (-0.1%)	1.3 (-0.6%)	1.4 (-0.5%)	1.8 (-0.1%)

Table M.2-13. Percent of months above the 69.8°F lethal water temperature limit for adult steelhead migration by water year type and month, and for all years combined, American River at Watt Avenue, July through April (BA Scenarios).

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
W	7	100.0	42.9	17.9	25.0	25.0	21.4	21.4
W	8	100.0	89.3	75.0	71.4	67.9	71.4	71.4
W	9	78.6	60.7	32.1	39.3	39.3	39.3	46.4
W	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	7	100.0	61.5	23.1	23.1	23.1	23.1	23.1
AN	8	100.0	61.5	46.2	53.8	46.2	46.2	30.8
AN	9	84.6	61.5	23.1	30.8	30.8	23.1	23.1
AN	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	7	100.0	72.2	33.3	33.3	33.3	38.9	38.9

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
BN	8	100.0	83.3	55.6	50.0	50.0	50.0	61.1
BN	9	83.3	66.7	16.7	27.8	27.8	27.8	33.3
BN	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	7	100.0	83.3	37.5	45.8	45.8	41.7	37.5
D	8	100.0	91.7	66.7	66.7	70.8	75.0	58.3
D	9	91.7	83.3	45.8	50.0	50.0	41.7	45.8
D	10	8.3	4.2	0.0	0.0	0.0	0.0	0.0
D	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	7	100.0	100.0	93.8	93.8	93.8	93.8	93.8
C	8	100.0	100.0	87.5	87.5	100.0	100.0	100.0
C	9	100.0	93.8	81.3	75.0	93.8	93.8	87.5
C	10	33.3	6.7	13.3	6.7	6.7	6.7	6.7

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
C	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	4	6.3	0.0	0.0	0.0	0.0	0.0	0.0
All	7	100.0	69.7	38.4	42.4	42.4	41.4	40.4
All	8	100.0	86.9	67.7	66.7	67.7	69.7	65.7
All	9	86.9	72.7	39.4	44.4	47.5	44.4	47.5
All	10	7.1	2.0	2.0	1.0	1.0	1.0	1.0
All	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	4	1.0	0.0	0.0	0.0	0.0	0.0	0.0
W	All	27.9	19.3	12.5	16.4	13.6	13.2	13.2
AN	All	28.0	18.2	9.1	11.4	10.6	9.8	9.1
BN	All	28.3	22.2	10.6	9.4	11.1	11.1	11.7
D	All	30.0	26.3	15.0	19.2	16.3	16.7	15.8
C	All	34.4	30.6	28.0	28.0	26.8	29.9	29.9
All	All	29.5	23.2	14.8	17.0	15.5	15.9	15.7

Table M.2-14. Percent (difference in percent relative to NAA) of months above the 69.8°F lethal water temperature limit for adult steelhead migration by water year type and month, and for all years combined, American River at Watt Avenue, July through April (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	7	17.9	32.1 (14.3%)	25.0 (7.1%)	25.0 (7.1%)	21.4 (3.6%)	21.4 (3.6%)	21.4 (3.6%)	32.1 (14.3%)
W	8	75.0	78.6 (3.6%)	75.0 (0.0%)	71.4 (-3.6%)	71.4 (-3.6%)	67.9 (-7.1%)	60.7 (-14.3%)	78.6 (3.6%)
W	9	32.1	50.0 (17.9%)	50.0 (17.9%)	46.4 (14.3%)	46.4 (14.3%)	46.4 (14.3%)	46.4 (14.3%)	46.4 (14.3%)
W	10	0.0	3.6 (3.6%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	7	23.1	23.1 (0.0%)	23.1 (0.0%)	23.1 (0.0%)	23.1 (0.0%)	23.1 (0.0%)	30.8 (7.7%)	23.1 (0.0%)
AN	8	46.2	53.8 (7.7%)	53.8 (7.7%)	53.8 (7.7%)	53.8 (7.7%)	30.8 (-15.4%)	23.1 (-23.1%)	30.8 (-15.4%)
AN	9	23.1	30.8 (7.7%)	23.1 (0.0%)	23.1 (0.0%)	15.4 (-7.7%)	23.1 (0.0%)	23.1 (0.0%)	38.5 (15.4%)
AN	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	4	0.0	7.7 (7.7%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
BN	7	33.3	22.2 (-11.1%)	33.3 (0.0%)	38.9 (5.6%)	27.8 (-5.6%)	38.9 (5.6%)	38.9 (5.6%)	33.3 (0.0%)
BN	8	55.6	33.3 (-22.2%)	55.6 (0.0%)	61.1 (5.6%)	55.6 (0.0%)	55.6 (0.0%)	55.6 (0.0%)	55.6 (0.0%)
BN	9	16.7	38.9 (22.2%)	22.2 (5.6%)	27.8 (11.1%)	22.2 (5.6%)	33.3 (16.7%)	38.9 (22.2%)	16.7 (0.0%)
BN	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	7	37.5	29.2 (-8.3%)	37.5 (0.0%)	37.5 (0.0%)	37.5 (0.0%)	33.3 (-4.2%)	50.0 (12.5%)	37.5 (0.0%)
D	8	66.7	75.0 (8.3%)	62.5 (-4.2%)	70.8 (4.2%)	70.8 (4.2%)	70.8 (4.2%)	62.5 (-4.2%)	58.3 (-8.3%)
D	9	45.8	79.2 (33.3%)	37.5 (-8.3%)	37.5 (-8.3%)	45.8 (0.0%)	45.8 (0.0%)	41.7 (-4.2%)	37.5 (-8.3%)
D	10	0.0	0.0 (0.0%)	4.2 (4.2%)	4.2 (4.2%)	0.0 (0.0%)	0.0 (0.0%)	4.2 (4.2%)	0.0 (0.0%)
D	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	4	0.0	8.3 (8.3%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	7	93.8	87.5 (-6.3%)	93.8 (0.0%)	93.8 (0.0%)	93.8 (0.0%)	93.8 (0.0%)	93.8 (0.0%)	93.8 (0.0%)
C	8	87.5	93.8 (6.3%)	100.0 (12.5%)	93.8 (6.3%)	100.0 (12.5%)	100.0 (12.5%)	100.0 (12.5%)	87.5 (0.0%)
C	9	81.3	87.5 (6.3%)	93.8 (12.5%)	75.0 (-6.3%)	93.8 (12.5%)	93.8 (12.5%)	81.3 (0.0%)	75.0 (-6.3%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
C	10	13.3	6.7 (-6.7%)	13.3 (0.0%)	6.7 (-6.7%)	6.7 (-6.7%)	6.7 (-6.7%)	6.7 (-6.7%)	13.3 (0.0%)
C	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	7	38.4	37.4 (-1.0%)	40.4 (2.0%)	41.4 (3.0%)	38.4 (0.0%)	39.4 (1.0%)	44.4 (6.1%)	42.4 (4.0%)
All	8	67.7	68.7 (1.0%)	69.7 (2.0%)	70.7 (3.0%)	70.7 (3.0%)	66.7 (-1.0%)	61.6 (-6.1%)	64.6 (-3.0%)
All	9	39.4	58.6 (19.2%)	45.5 (6.1%)	42.4 (3.0%)	45.5 (6.1%)	48.5 (9.1%)	46.5 (7.1%)	42.4 (3.0%)
All	10	2.0	2.0 (0.0%)	3.1 (1.0%)	2.0 (0.0%)	1.0 (-1.0%)	1.0 (-1.0%)	2.0 (0.0%)	2.0 (0.0%)
All	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	4	0.0	3.0 (3.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	All	12.5	16.4 (3.9%)	15.0 (2.5%)	14.3 (1.8%)	13.9 (1.4%)	13.6 (1.1%)	12.9 (0.4%)	15.7 (3.2%)
AN	All	9.1	11.4 (2.3%)	9.8 (0.8%)	9.8 (0.8%)	9.1 (0.0%)	7.6 (-1.5%)	7.6 (-1.5%)	9.1 (0.0%)
BN	All	10.6	9.4 (-1.1%)	11.1 (0.6%)	12.8 (2.2%)	10.6 (0.0%)	12.8 (2.2%)	13.3 (2.8%)	10.6 (0.0%)
D	All	15.0	19.2 (4.2%)	14.2 (-0.8%)	15.0 (0.0%)	15.4 (0.4%)	15.0 (0.0%)	15.8 (0.8%)	13.3 (-1.7%)
C	All	28.0	28.0 (0.0%)	30.6 (2.5%)	27.4 (-0.6%)	29.9 (1.9%)	29.9 (1.9%)	28.7 (0.6%)	27.4 (-0.6%)
All	All	14.8	17.0 (2.2%)	15.9 (1.1%)	15.7 (0.9%)	15.6 (0.8%)	15.6 (0.8%)	15.5 (0.7%)	15.2 (0.4%)

Table M.2-15. Percent of months above the 59.9°F pathogen virulence water temperature threshold for adult steelhead migration by water year type and month, and for all years combined, American River at Hazel Avenue, July through April (BA Scenarios).

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
W	7	100.0	100.0	100.0	100.0	100.0	100.0	100.0
W	8	100.0	100.0	100.0	100.0	100.0	100.0	100.0
W	9	100.0	100.0	100.0	100.0	100.0	100.0	100.0
W	10	96.4	100.0	96.4	96.4	96.4	100.0	100.0
W	11	0.0	35.7	3.6	7.1	7.1	3.6	7.1
W	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	7	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AN	8	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AN	9	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AN	10	100.0	100.0	84.6	84.6	84.6	84.6	84.6
AN	11	0.0	28.6	0.0	0.0	0.0	7.1	7.1
AN	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
BN	7	100.0	100.0	100.0	100.0	100.0	100.0	100.0
BN	8	100.0	100.0	100.0	100.0	100.0	100.0	100.0
BN	9	100.0	100.0	100.0	100.0	100.0	100.0	100.0
BN	10	94.4	100.0	83.3	77.8	77.8	83.3	83.3
BN	11	0.0	55.6	0.0	0.0	0.0	0.0	0.0
BN	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	7	100.0	100.0	100.0	100.0	100.0	100.0	100.0
D	8	100.0	100.0	100.0	100.0	100.0	100.0	100.0
D	9	100.0	100.0	100.0	100.0	100.0	100.0	100.0
D	10	95.8	100.0	95.8	95.8	95.8	95.8	95.8
D	11	4.2	54.2	4.2	4.2	4.2	8.3	4.2
D	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	4	8.3	0.0	0.0	0.0	0.0	0.0	0.0
C	7	100.0	100.0	100.0	100.0	100.0	100.0	100.0
C	8	100.0	100.0	100.0	100.0	100.0	100.0	100.0
C	9	100.0	100.0	100.0	100.0	100.0	100.0	100.0

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
C	10	100.0	100.0	100.0	100.0	100.0	100.0	100.0
C	11	33.3	80.0	46.7	33.3	53.3	46.7	33.3
C	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	4	56.3	0.0	0.0	0.0	0.0	0.0	0.0
All	7	100.0	100.0	100.0	100.0	100.0	100.0	100.0
All	8	100.0	100.0	100.0	100.0	100.0	100.0	100.0
All	9	100.0	100.0	100.0	100.0	100.0	100.0	100.0
All	10	96.9	100.0	92.9	91.8	91.8	93.9	93.9
All	11	6.1	49.5	9.1	8.1	11.1	11.1	9.1
All	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	4	11.1	0.0	0.0	0.0	0.0	0.0	0.0
W	All	39.6	43.6	40.0	39.6	40.4	40.4	40.4
AN	All	39.4	42.4	37.9	38.6	37.9	37.9	38.6
BN	All	39.4	45.6	38.3	39.4	37.8	37.8	38.3
D	All	40.8	45.4	40.0	40.8	40.0	40.0	40.4
C	All	49.0	47.8	44.6	45.9	43.3	45.2	44.6
All	All	41.4	44.9	40.1	40.7	39.9	40.2	40.4

Table M.2-16. Percent (difference in percent relative to NAA) of months above the 59.9°F pathogen virulence water temperature threshold for adult steelhead migration by water year type and month, and for all years combined, American River at Hazel Avenue, July through April (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	10	96.4	96.4 (0.0%)	100.0 (3.6%)	100.0 (3.6%)	100.0 (3.6%)	100.0 (3.6%)	100.0 (3.6%)	100.0 (3.6%)
W	11	3.6	0.0 (-3.6%)	7.1 (3.6%)	7.1 (3.6%)	3.6 (0.0%)	7.1 (3.6%)	3.6 (0.0%)	7.1 (3.6%)
W	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	10	84.6	92.3 (7.7%)	76.9 (-7.7%)	84.6 (0.0%)	76.9 (-7.7%)	84.6 (0.0%)	100.0 (15.4%)	92.3 (7.7%)
AN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	7.1 (7.1%)	7.1 (7.1%)	0.0 (0.0%)	0.0 (0.0%)
AN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
BN	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	10	83.3	94.4 (11.1%)	83.3 (0.0%)	83.3 (0.0%)	88.9 (5.6%)	83.3 (0.0%)	100.0 (16.7%)	88.9 (5.6%)
BN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	11.1 (11.1%)	0.0 (0.0%)
BN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	10	95.8	100.0 (4.2%)	95.8 (0.0%)	95.8 (0.0%)	95.8 (0.0%)	100.0 (4.2%)	100.0 (4.2%)	100.0 (4.2%)
D	11	4.2	4.2 (0.0%)	4.2 (0.0%)	4.2 (0.0%)	0.0 (-4.2%)	4.2 (0.0%)	8.3 (4.2%)	4.2 (0.0%)
D	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	4	0.0	4.2 (4.2%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
C	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	93.3 (-6.7%)
C	11	46.7	60.0 (13.3%)	53.3 (6.7%)	40.0 (-6.7%)	46.7 (0.0%)	46.7 (0.0%)	40.0 (-6.7%)	46.7 (0.0%)
C	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	10	92.9	96.9 (4.1%)	92.9 (0.0%)	93.9 (1.0%)	93.9 (1.0%)	94.9 (2.0%)	100.0 (7.1%)	95.9 (3.1%)
All	11	9.1	10.1 (1.0%)	11.1 (2.0%)	9.1 (0.0%)	9.1 (0.0%)	11.1 (2.0%)	11.1 (2.0%)	10.1 (1.0%)
All	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	4	0.0	1.0 (1.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	All	40.0	39.6 (-0.4%)	40.7 (0.7%)	40.7 (0.7%)	40.4 (0.4%)	40.7 (0.7%)	40.4 (0.4%)	40.7 (0.7%)
AN	All	37.9	38.6 (0.8%)	37.1 (-0.8%)	37.9 (0.0%)	37.9 (0.0%)	38.6 (0.8%)	39.4 (1.5%)	38.6 (0.8%)
BN	All	38.3	39.4 (1.1%)	38.3 (0.0%)	38.3 (0.0%)	38.9 (0.6%)	38.3 (0.0%)	41.1 (2.8%)	38.9 (0.6%)
D	All	40.0	40.8 (0.8%)	40.0 (0.0%)	40.0 (0.0%)	39.6 (-0.4%)	40.4 (0.4%)	40.8 (0.8%)	40.4 (0.4%)
C	All	44.6	45.9 (1.3%)	45.2 (0.6%)	43.9 (-0.6%)	44.6 (0.0%)	44.6 (0.0%)	43.9 (-0.6%)	43.9 (-0.6%)
All	All	40.1	40.7 (0.6%)	40.3 (0.2%)	40.2 (0.1%)	40.2 (0.1%)	40.5 (0.4%)	41.1 (0.9%)	40.5 (0.4%)

Table M.2-17. Percent of months above the 59.9°F pathogen virulence water temperature threshold for adult steelhead migration by water year type and month, and for all years combined, American River at Watt Avenue, July through April (BA Scenarios).

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
W	7	100.0	100.0	100.0	100.0	100.0	100.0	100.0
W	8	100.0	100.0	100.0	100.0	100.0	100.0	100.0
W	9	100.0	100.0	100.0	100.0	100.0	100.0	100.0
W	10	96.4	100.0	100.0	100.0	100.0	100.0	100.0
W	11	0.0	42.9	3.6	7.1	7.1	3.6	7.1
W	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	4	3.6	0.0	0.0	0.0	0.0	0.0	0.0
AN	7	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AN	8	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AN	9	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AN	10	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AN	11	0.0	21.4	0.0	0.0	0.0	7.1	7.1
AN	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	4	15.4	7.7	0.0	0.0	0.0	0.0	0.0

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
BN	7	100.0	100.0	100.0	100.0	100.0	100.0	100.0
BN	8	100.0	100.0	100.0	100.0	100.0	100.0	100.0
BN	9	100.0	100.0	100.0	100.0	100.0	100.0	100.0
BN	10	100.0	100.0	100.0	100.0	100.0	100.0	100.0
BN	11	11.1	55.6	0.0	0.0	0.0	0.0	0.0
BN	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	4	27.8	5.6	5.6	11.1	11.1	16.7	11.1
D	7	100.0	100.0	100.0	100.0	100.0	100.0	100.0
D	8	100.0	100.0	100.0	100.0	100.0	100.0	100.0
D	9	100.0	100.0	100.0	100.0	100.0	100.0	100.0
D	10	95.8	100.0	100.0	100.0	100.0	100.0	100.0
D	11	12.5	50.0	4.2	4.2	4.2	12.5	4.2
D	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	4	33.3	25.0	16.7	20.8	20.8	20.8	20.8
C	7	100.0	100.0	100.0	100.0	100.0	100.0	100.0
C	8	100.0	100.0	100.0	100.0	100.0	100.0	100.0
C	9	100.0	100.0	100.0	100.0	100.0	100.0	100.0

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
C	10	100.0	100.0	100.0	100.0	100.0	100.0	100.0
C	11	26.7	60.0	53.3	33.3	46.7	40.0	33.3
C	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	3	12.5	12.5	0.0	6.3	6.3	12.5	6.3
C	4	75.0	68.8	62.5	75.0	37.5	50.0	43.8
All	7	100.0	100.0	100.0	100.0	100.0	100.0	100.0
All	8	100.0	100.0	100.0	100.0	100.0	100.0	100.0
All	9	100.0	100.0	100.0	100.0	100.0	100.0	100.0
All	10	98.0	100.0	100.0	100.0	100.0	100.0	100.0
All	11	9.1	46.5	10.1	8.1	10.1	11.1	9.1
All	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	3	2.0	2.0	0.0	1.0	1.0	2.0	1.0
All	4	28.3	19.2	15.2	19.2	13.1	16.2	14.1
W	All	40.0	44.3	40.4	40.4	40.7	40.7	40.4
AN	All	40.9	42.4	39.4	41.7	39.4	39.4	40.2
BN	All	43.9	46.1	40.6	43.3	41.1	41.1	41.7
D	All	44.2	47.5	42.1	45.4	42.5	42.5	43.3
C	All	51.6	54.1	51.6	51.6	51.6	49.0	50.3
All	All	43.7	46.7	42.5	44.1	42.8	42.4	42.9

Table M.2-18. Percent (difference in percent relative to NAA) of months above the 59.9°F pathogen virulence water temperature threshold for adult steelhead migration by water year type and month, and for all years combined, American River at Watt Avenue, July through April (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	11	3.6	0.0 (-3.6%)	7.1 (3.6%)	7.1 (3.6%)	3.6 (0.0%)	3.6 (0.0%)	3.6 (0.0%)	7.1 (3.6%)
W	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	4	0.0	3.6 (3.6%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	7.1 (7.1%)	7.1 (7.1%)	0.0 (0.0%)	0.0 (0.0%)
AN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	3	0.0	7.7 (7.7%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	4	0.0	15.4 (15.4%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	7.7 (7.7%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
BN	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	11	0.0	5.6 (5.6%)	0.0 (0.0%)	5.6 (5.6%)	0.0 (0.0%)	0.0 (0.0%)	16.7 (16.7%)	0.0 (0.0%)
BN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	3	0.0	5.6 (5.6%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	4	5.6	22.2 (16.7%)	11.1 (5.6%)	11.1 (5.6%)	11.1 (5.6%)	11.1 (5.6%)	0.0 (-5.6%)	11.1 (5.6%)
D	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	11	4.2	8.3 (4.2%)	8.3 (4.2%)	8.3 (4.2%)	0.0 (-4.2%)	4.2 (0.0%)	12.5 (8.3%)	4.2 (0.0%)
D	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	3	0.0	16.7 (16.7%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	4	16.7	29.2 (12.5%)	20.8 (4.2%)	20.8 (4.2%)	20.8 (4.2%)	12.5 (-4.2%)	4.2 (-12.5%)	20.8 (4.2%)
C	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
C	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	11	53.3	60.0 (6.7%)	60.0 (6.7%)	40.0 (-13.3%)	46.7 (-6.7%)	40.0 (-13.3%)	40.0 (-13.3%)	46.7 (-6.7%)
C	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	3	0.0	18.8 (18.8%)	6.3 (6.3%)	6.3 (6.3%)	6.3 (6.3%)	6.3 (6.3%)	6.3 (6.3%)	6.3 (6.3%)
C	4	62.5	37.5 (-25.0%)	37.5 (-25.0%)	68.8 (6.3%)	50.0 (-12.5%)	25.0 (-37.5%)	43.8 (-18.8%)	81.3 (18.8%)
All	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	11	10.1	12.1 (2.0%)	13.1 (3.0%)	11.1 (1.0%)	9.1 (-1.0%)	9.1 (-1.0%)	13.1 (3.0%)	10.1 (0.0%)
All	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	3	0.0	9.1 (9.1%)	1.0 (1.0%)	1.0 (1.0%)	1.0 (1.0%)	1.0 (1.0%)	1.0 (1.0%)	1.0 (1.0%)
All	4	15.2	20.2 (5.1%)	13.1 (-2.0%)	18.2 (3.0%)	15.2 (0.0%)	9.1 (-6.1%)	8.1 (-7.1%)	21.2 (6.1%)
W	All	40.4	40.4 (0.0%)	40.7 (0.4%)	40.7 (0.4%)	40.4 (0.0%)	40.4 (0.0%)	40.4 (0.0%)	40.7 (0.4%)
AN	All	39.4	41.7 (2.3%)	39.4 (0.0%)	39.4 (0.0%)	40.2 (0.8%)	40.2 (0.8%)	39.4 (0.0%)	40.2 (0.8%)
BN	All	40.6	43.3 (2.8%)	41.1 (0.6%)	41.7 (1.1%)	41.1 (0.6%)	41.1 (0.6%)	41.7 (1.1%)	41.1 (0.6%)
D	All	42.1	45.4 (3.3%)	42.9 (0.8%)	42.9 (0.8%)	42.1 (0.0%)	41.7 (-0.4%)	41.7 (-0.4%)	42.5 (0.4%)
C	All	51.6	51.6 (0.0%)	50.3 (-1.3%)	51.6 (0.0%)	50.3 (-1.3%)	47.1 (-4.5%)	49.0 (-2.5%)	53.5 (1.9%)
All	All	42.5	44.1 (1.6%)	42.7 (0.2%)	43.0 (0.5%)	42.5 (0.0%)	41.9 (-0.6%)	42.2 (-0.3%)	43.2 (0.7%)

M.2.3.3.2   Spawning

Water temperature-related effects on steelhead spawning in the American River were evaluated by assessing: (1) the percent of months with water temperature outside the 45°F to 55°F range for successful spawning (Bell 1991, FERC 1993, Richter and Kolmes 2005); and (2) the percent of months with water temperature above the 59.9°F pathogen virulence threshold (McCullough 1999) at Hazel Avenue and Watt Avenue (Table M.2-1).

Results for the 45°F to 55°F range for successful spawning are presented in Table M.2-19 and Table M.2-20 for Hazel Avenue and in Table M.2-21 and Table M.2-22 for Watt Avenue.

- At Hazel Avenue, the highest percent of months with water temperature outside the range was 28.6% and occurred in January of wet water years under Alternative 2 With TUCP Without VA and Alternative 2 Without TUCP Without VA (Table M.2-19 and Table M.2-20). The lowest percent of months with water temperature outside the range was 0% and occurred in all months during one or more water year types for the NAA and all alternatives. Combining water years, the lowest percent of months with water temperature outside the range occurred during December and February and highest during January, depending on alternative. Air temperatures drove these temporal patterns.

- At Watt Avenue, the highest percent of months with water temperature outside the successful steelhead spawning range was 93.8% and occurred in March of critical water types under Alternative 4 (Table M.2-21 and Table M.2-22). The lowest percent of months with water temperature outside the range was 0% and occurred in December, January, and February during one or more water year types for the NAA and all alternatives. Combining water year types, the highest percent of months with water temperature outside the range occurred during March under the NAA and all alternatives. The lowest percent of months with water temperature outside the range occurred during December, January, or February depending on the alternative. Air temperatures drove these temporal patterns.

Results for the 59.9°F pathogen virulence water temperature limit for steelhead spawning are presented in Table M.2-23 and Table M.2-24 for Hazel Avenue and Table M.2-25 and Table M.2-26 for Watt Avenue.

- At Hazel Avenue, there were no exceedances above the 59.9 F limit any month or water year type (Table M.2-23 and Table M.2-24).

- At Watt Avenue, there were no exceedances above the 59.9°F virulence limit under the NAA. The highest percent of months with water temperature above the limit was 18.8% and occurred in March of critical water types under Alternative 1 (Table M.2-25 and Table M.2-26). The lowest percent of months with water temperature exceeding the virulence threshold was 0% and occurred in all months under the NAA and in the large majority of month and water year type combinations for all alternatives. The highest percentage of months exceeding the virulence threshold when combining water year types occurred in March under the NAA and all alternatives. The lowest percentage of months exceeding the threshold occurred during December, January and February for the NAA and all alternatives. Air temperatures drove these temporal patterns.

Table M.2-19. Percent of months outside the 45°F to 55°F water temperature range for successful steelhead spawning by water year type and month, and for all years combined, American River at Hazel Avenue, December through March (BA Scenarios).

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
W	12	21.4	7.1	0.0	3.6	3.6	0.0	0.0
W	1	100.0	21.4	21.4	25.0	25.0	21.4	21.4
W	2	10.7	0.0	0.0	0.0	0.0	0.0	0.0
W	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	12	21.4	7.1	0.0	0.0	0.0	0.0	0.0
AN	1	100.0	7.7	7.7	7.7	7.7	7.7	7.7
AN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	12	11.1	11.1	0.0	0.0	0.0	0.0	0.0
BN	1	83.3	0.0	0.0	0.0	0.0	0.0	0.0
BN	2	5.6	0.0	0.0	0.0	0.0	0.0	0.0
BN	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	12	16.7	16.7	4.2	0.0	0.0	0.0	0.0
D	1	87.5	0.0	4.2	12.5	12.5	4.2	4.2
D	2	0.0	0.0	4.2	4.2	4.2	4.2	4.2
D	3	4.2	0.0	0.0	0.0	0.0	0.0	0.0
C	12	0.0	6.7	0.0	6.7	0.0	0.0	0.0
C	1	81.3	0.0	0.0	0.0	0.0	0.0	0.0
C	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	3	37.5	18.8	12.5	12.5	18.8	31.3	18.8

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
All	12	15.2	10.1	1.0	2.0	1.0	0.0	0.0
All	1	90.9	7.1	8.1	11.1	11.1	8.1	8.1
All	2	4.0	0.0	1.0	1.0	1.0	1.0	1.0
All	3	7.1	3.0	2.0	2.0	3.0	5.1	3.0
W	All	33.0	7.1	5.4	5.4	7.1	7.1	5.4
AN	All	30.2	3.8	1.9	1.9	1.9	1.9	1.9
BN	All	25.0	2.8	0.0	1.4	0.0	0.0	0.0
D	All	27.1	4.2	3.1	4.2	4.2	4.2	2.1
C	All	30.2	6.3	3.2	9.5	4.8	4.8	7.9
All	All	29.3	5.1	3.0	4.5	4.0	4.0	3.5

Table M.2-20. Percent (difference in percent relative to NAA) of months outside the 45°F to 55°F water temperature range for successful steelhead spawning by water year type and month, and for all years combined, American River at Hazel Avenue, December through March (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	12	0.0	0.0 (0.0%)	3.6 (3.6%)	3.6 (3.6%)	0.0 (0.0%)	0.0 (0.0%)	3.6 (3.6%)	0.0 (0.0%)
W	1	21.4	21.4 (0.0%)	28.6 (7.1%)	28.6 (7.1%)	21.4 (0.0%)	21.4 (0.0%)	21.4 (0.0%)	21.4 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	14.3 (14.3%)
AN	1	7.7	7.7 (0.0%)	7.7 (0.0%)	7.7 (0.0%)	7.7 (0.0%)	7.7 (0.0%)	7.7 (0.0%)	7.7 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
BN	12	0.0	5.6 (5.6%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	5.6 (5.6%)	0.0 (0.0%)
BN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	11.1 (11.1%)
BN	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 (0.0%)	0.0 (0.0%)
BN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	12	4.2	0.0 (-4.2%)	0.0 (-4.2%)	0.0 (-4.2%)	0.0 (-4.2%)	0.0 (-4.2%)	12.5 (8.3%)	0.0 (-4.2%)
D	1	4.2	12.5 (8.3%)	12.5 (8.3%)	12.5 (8.3%)	12.5 (8.3%)	4.2 (0.0%)	4.2 (0.0%)	8.3 (4.2%)
D	2	4.2	4.2 (0.0%)	4.2 (0.0%)	4.2 (0.0%)	4.2 (0.0%)	4.2 (0.0%)	0.0 (-4.2%)	0.0 (-4.2%)
D	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	12	0.0	20.0 (20.0%)	0.0 (0.0%)	6.7 (6.7%)	0.0 (0.0%)	6.7 (6.7%)	6.7 (6.7%)	13.3 (13.3%)
C	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	3	12.5	18.8 (6.3%)	18.8 (6.3%)	12.5 (0.0%)	12.5 (0.0%)	18.8 (6.3%)	12.5 (0.0%)	18.8 (6.3%)
All	12	1.0	4.0 (3.0%)	1.0 (0.0%)	2.0 (1.0%)	0.0 (-1.0%)	1.0 (0.0%)	6.1 (5.1%)	4.0 (3.0%)
All	1	8.1	10.1 (2.0%)	12.1 (4.0%)	12.1 (4.0%)	10.1 (2.0%)	8.1 (0.0%)	8.1 (0.0%)	11.1 (3.0%)
All	2	1.0	1.0 (0.0%)	1.0 (0.0%)	1.0 (0.0%)	1.0 (0.0%)	1.0 (0.0%)	0.0 (-1.0%)	0.0 (-1.0%)
All	3	2.0	3.0 (1.0%)	3.0 (1.0%)	2.0 (0.0%)	2.0 (0.0%)	3.0 (1.0%)	2.0 (0.0%)	3.0 (1.0%)
W	All	5.4	5.4 (0.0%)	8.0 (2.7%)	8.0 (2.7%)	5.4 (0.0%)	5.4 (0.0%)	6.3 (0.9%)	5.4 (0.0%)
AN	All	1.9	1.9 (0.0%)	1.9 (0.0%)	1.9 (0.0%)	1.9 (0.0%)	1.9 (0.0%)	1.9 (0.0%)	5.7 (3.8%)
BN	All	0.0	1.4 (1.4%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	1.4 (1.4%)	2.8 (2.8%)
D	All	3.1	4.2 (1.0%)	4.2 (1.0%)	4.2 (1.0%)	4.2 (1.0%)	2.1 (-1.0%)	4.2 (1.0%)	2.1 (-1.0%)
C	All	3.2	9.5 (6.3%)	4.8 (1.6%)	4.8 (1.6%)	3.2 (0.0%)	6.3 (3.2%)	4.8 (1.6%)	7.9 (4.8%)
All	All	3.0	4.5 (1.5%)	4.3 (1.3%)	4.3 (1.3%)	3.3 (0.3%)	3.3 (0.3%)	4.0 (1.0%)	4.5 (1.5%)

Table M.2-21. Percent of months outside the 45°F to 55°F water temperature range for successful steelhead spawning by water year type and month, and for all years combined, American River at Watt Avenue, December through March (BA Scenario).

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
W	12	14.3	7.1	0.0	0.0	0.0	0.0	0.0
W	1	89.3	14.3	3.6	7.1	3.6	3.6	3.6
W	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	3	0.0	3.6	3.6	3.6	3.6	3.6	3.6
AN	12	14.3	7.1	0.0	0.0	0.0	0.0	0.0
AN	1	53.8	7.7	7.7	7.7	7.7	7.7	7.7
AN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	3	0.0	15.4	15.4	15.4	15.4	15.4	15.4
BN	12	11.1	5.6	0.0	0.0	0.0	0.0	0.0
BN	1	66.7	0.0	0.0	0.0	0.0	0.0	0.0
BN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	3	5.6	33.3	16.7	16.7	16.7	22.2	22.2
D	12	12.5	12.5	4.2	0.0	0.0	0.0	0.0
D	1	70.8	0.0	4.2	4.2	4.2	4.2	4.2
D	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	3	33.3	45.8	37.5	45.8	45.8	45.8	45.8
C	12	0.0	6.7	0.0	0.0	0.0	6.7	6.7
C	1	43.8	0.0	0.0	0.0	0.0	0.0	0.0
C	2	6.3	6.3	6.3	6.3	12.5	18.8	12.5
C	3	75.0	93.8	87.5	87.5	87.5	93.8	93.8

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
All	12	11.1	8.1	1.0	0.0	0.0	1.0	1.0
All	1	68.7	5.1	3.0	4.0	3.0	3.0	3.0
All	2	1.0	1.0	1.0	1.0	2.0	3.0	2.0
All	3	21.2	35.4	29.3	31.3	31.3	33.3	33.3
W	All		25.9	6.3	1.8	2.7	2.7	1.8
AN	All		17.0	7.5	5.7	7.5	5.7	5.7
BN	All		20.8	9.7	4.2	11.1	4.2	4.2
D	All		29.2	14.6	11.5	15.6	12.5	12.5
C	All		31.7	27.0	23.8	30.2	23.8	25.4
All	All	All	25.5	12.4	8.6	12.4	9.1	9.1

Table M.2-22. Percent (difference in percent relative to NAA) of months outside the 45°F to 55°F water temperature range for successful steelhead spawning by water year type and month, and for all years combined, American River at Watt Avenue, December through March (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	3.6 (3.6%)	0.0 (0.0%)
W	1	3.6	7.1 (3.6%)	3.6 (0.0%)	7.1 (3.6%)	7.1 (3.6%)	7.1 (3.6%)	7.1 (3.6%)	7.1 (3.6%)
W	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 (0.0%)	0.0 (0.0%)
W	3	3.6	3.6 (0.0%)	3.6 (0.0%)	3.6 (0.0%)	3.6 (0.0%)	3.6 (0.0%)	3.6 (0.0%)	3.6 (0.0%)
AN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	7.1 (7.1%)
AN	1	7.7	7.7 (0.0%)	7.7 (0.0%)	7.7 (0.0%)	7.7 (0.0%)	7.7 (0.0%)	7.7 (0.0%)	7.7 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	3	15.4	23.1 (7.7%)	15.4 (0.0%)	15.4 (0.0%)	15.4 (0.0%)	15.4 (0.0%)	0.0 (-15.4%)	15.4 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
BN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	5.6 (5.6%)	0.0 (0.0%)
BN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	3	16.7	44.4 (27.8%)	16.7 (0.0%)	16.7 (0.0%)	16.7 (0.0%)	16.7 (0.0%)	11.1 (-5.6%)	27.8 (11.1%)
D	12	4.2	0.0 (-4.2%)	0.0 (-4.2%)	0.0 (-4.2%)	0.0 (-4.2%)	0.0 (-4.2%)	8.3 (4.2%)	0.0 (-4.2%)
D	1	4.2	4.2 (0.0%)	4.2 (0.0%)	4.2 (0.0%)	4.2 (0.0%)	4.2 (0.0%)	4.2 (0.0%)	4.2 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	3	37.5	58.3 (20.8%)	45.8 (8.3%)	45.8 (8.3%)	41.7 (4.2%)	45.8 (8.3%)	37.5 (0.0%)	41.7 (4.2%)
C	12	0.0	20.0 (20.0%)	6.7 (6.7%)	6.7 (6.7%)	13.3 (13.3%)	13.3 (13.3%)	13.3 (13.3%)	6.7 (6.7%)
C	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	2	6.3	18.8 (12.5%)	12.5 (6.3%)	12.5 (6.3%)	12.5 (6.3%)	12.5 (6.3%)	12.5 (6.3%)	6.3 (0.0%)
C	3	87.5	81.3 (-6.3%)	87.5 (0.0%)	87.5 (0.0%)	87.5 (0.0%)	87.5 (0.0%)	87.5 (0.0%)	93.8 (6.3%)
All	12	1.0	3.0 (2.0%)	1.0 (0.0%)	1.0 (0.0%)	2.0 (1.0%)	2.0 (1.0%)	6.1 (5.1%)	2.0 (1.0%)
All	1	3.0	4.0 (1.0%)	3.0 (0.0%)	4.0 (1.0%)	4.0 (1.0%)	4.0 (1.0%)	4.0 (1.0%)	4.0 (1.0%)
All	2	1.0	3.0 (2.0%)	2.0 (1.0%)	2.0 (1.0%)	2.0 (1.0%)	2.0 (1.0%)	2.0 (1.0%)	1.0 (0.0%)
All	3	29.3	39.4 (10.1%)	31.3 (2.0%)	31.3 (2.0%)	30.3 (1.0%)	31.3 (2.0%)	26.3 (-3.0%)	33.3 (4.0%)
W	All	1.8	2.7 (0.9%)	1.8 (0.0%)	2.7 (0.9%)	2.7 (0.9%)	2.7 (0.9%)	3.6 (1.8%)	2.7 (0.9%)
AN	All	5.7	7.5 (1.9%)	5.7 (0.0%)	5.7 (0.0%)	5.7 (0.0%)	5.7 (0.0%)	1.9 (-3.8%)	7.5 (1.9%)
BN	All	4.2	11.1 (6.9%)	4.2 (0.0%)	4.2 (0.0%)	4.2 (0.0%)	4.2 (0.0%)	4.2 (0.0%)	6.9 (2.8%)
D	All	11.5	15.6 (4.2%)	12.5 (1.0%)	12.5 (1.0%)	11.5 (0.0%)	12.5 (1.0%)	12.5 (1.0%)	11.5 (0.0%)
C	All	23.8	30.2 (6.3%)	27.0 (3.2%)	27.0 (3.2%)	28.6 (4.8%)	28.6 (4.8%)	28.6 (4.8%)	27.0 (3.2%)
All	All	8.6	12.4 (3.8%)	9.3 (0.8%)	9.6 (1.0%)	9.6 (1.0%)	9.8 (1.3%)	9.6 (1.0%)	10.1 (1.5%)

Table M.2-23. Percent of months above the 59.9°F pathogen virulence water temperature threshold for steelhead spawning by water year type and month, and for all years combined, American River at Hazel Avenue, December through March (BA Scenarios).

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
W	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
All	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	All	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	All	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	All	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	All	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	All	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	All	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table M.2-24. Percent (difference in percent relative to NAA) of months above the 59.9°F pathogen virulence water temperature threshold for steelhead spawning by water year type and month, and for all years combined, American River at Hazel Avenue, December through March (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
BN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)

Table M.2-25. Percent of months above the 59.9°F pathogen virulence water temperature threshold for steelhead spawning by water year type and month, and for all years combined, American River at Watt Avenue, December through March (BA Scenarios).

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
W	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	3	12.5	12.5	0.0	6.3	6.3	12.5	6.3

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
All	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	3	2.0	2.0	0.0	1.0	1.0	2.0	1.0
W	All	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	All	0.0	0.0	0.0	1.9	0.0	0.0	0.0
BN	All	0.0	0.0	0.0	1.4	0.0	0.0	0.0
D	All	0.0	0.0	0.0	4.2	0.0	0.0	0.0
C	All	3.2	3.2	0.0	4.8	1.6	1.6	3.2
All	All	0.5	0.5	0.0	2.3	0.3	0.3	0.5

Table M.2-26. Percent (difference in percent relative to NAA) of months above the 59.9°F pathogen virulence water temperature threshold for steelhead spawning by water year type and month, and for all years combined, American River at Watt Avenue, December through March (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	3	0.0	7.7 (7.7%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
BN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	3	0.0	5.6 (5.6%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	3	0.0	16.7 (16.7%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	3	0.0	18.8 (18.8%)	6.3 (6.3%)	6.3 (6.3%)	6.3 (6.3%)	6.3 (6.3%)	6.3 (6.3%)	6.3 (6.3%)
All	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	3	0.0	9.1 (9.1%)	1.0 (1.0%)	1.0 (1.0%)	1.0 (1.0%)	1.0 (1.0%)	1.0 (1.0%)	1.0 (1.0%)
W	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	All	0.0	1.9 (1.9%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	All	0.0	1.4 (1.4%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	All	0.0	4.2 (4.2%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	All	0.0	4.8 (4.8%)	1.6 (1.6%)	1.6 (1.6%)	1.6 (1.6%)	1.6 (1.6%)	1.6 (1.6%)	1.6 (1.6%)
All	All	0.0	2.3 (2.3%)	0.3 (0.3%)	0.3 (0.3%)	0.3 (0.3%)	0.3 (0.3%)	0.3 (0.3%)	0.3 (0.3%)

M.2.3.3.3   Kelt Emigration

Water temperature-related effects on steelhead kelt emigration in the American River were evaluated by assessing: (1) the percent of months with water temperature above the 66.2°F limit of migration impairment (Keefer et al. 2009); (2) the percent of months with water temperature above the 69.8°F lethal limit (Coutant 1970) and (3) the percent of months with water temperature above the 59.9°F pathogen virulence threshold (McCullough 1999) at Hazel Avenue and Watt Avenue (Table M.2-1).

Results for the 66.2°F migration impairment limit are presented in Table M.2-27 and Table M.2-28 for Hazel Avenue and Table M.2-29 and Table M.2-30 for Watt Avenue.

At Hazel Avenue, the highest percent of months with water temperature above the limit was 50% and occurred during June of critical water years under Alternative 2 with TUCP without VA (Table M.2-27 and Table M.2-28). The lowest percent of months with water temperature exceeding the limit was 0% and occurred during February through May in all water year types under the NAA and all alternatives. Combining water year types, the highest percentage of months exceeding the limit occurred in June for all alternatives because it was the only month in which exceedances occurred. An increase in air temperatures during June drove this pattern.

At Watt Avenue, the highest percent of months with water temperature above the migration impairment limit was 100% and occurred in June of critical water years under Alternative 2 with TUCP without VA (Table M.2-29 and Table M.2-30). The lowest percent of months with water temperature exceeding the limit was 0% and occurred in February and March of all water year types and in April of most water year types and May under wet and above normal water years under the NAA and all alternatives. Combining water year types, the highest percentage of months exceeding the limit occurred in June and the lowest occurred during February and March under the NAA and all alternatives. Air temperatures drove these temporal patterns.

Results are presented for the 69.8°F lethal water temperature limit for steelhead kelt emigration at Hazel Avenue in Table M.2-31 and Table M.2-32 and at Watt Avenue in Table M.2-33 and Table M.2-34.

At Hazel Avenue, water temperatures were predominantly under the 69.8°F lethal water temperature limit in all months and water year types under the NAA and all alternatives, except in June of critical years in which 6.3% of months exceeded the limit under the NAA, Alternative 1, and all four phases of Alternative 2 (Table M.2-31 and Table M.2-32).

At Watt Avenue, the highest percent of months with water temperature above the 69.8°F lethal water temperature limit was 75.0% and occurred in June of critical years under Alternative 2 Without TUCP Delta VA and Alternative 3 (Table M.2-33 and Table M.2-34). The lowest percent of months with water temperature exceeding the migration impairment limit was 0% and occurred in February through May of most water year types for all alternatives. Combining water year types, the highest percent of months with water temperature exceeding the limit occurred during June and the lowest percent occurred during February and March for the NAA and all alternatives. Air temperatures drove these temporal patterns.

Results for the 59.9°F pathogen virulence water temperature threshold for kelt emigration are presented in Table M.2-35 and Table M.2-36 for Hazel Avenue and Table M.2-37 and Table M.2-38 for Watt Avenue.

At Hazel Avenue, the highest percent of months with water temperature above the virulence threshold was 100% and occurred during June of above normal water years under Alternative 3, during June of dry water years under Alternative 4, and in June of critical water years under the Alternative 1, Alternative 2 with TUCP without VA, Alternative 2 without TUCP Delta VA, Alternative 2 without TUCP Systemwide VA, and Alternative 3 (Table M.2-35 and Table M.2-36). The lowest percent of months with water temperature exceeding the virulence threshold was 0% and occurred during February and March of all water years under the NAA and all alternatives, and during April and May of most water year types for the NAA and all alternatives. Combining water year types, the highest percentage of months exceeding the virulence threshold was during June and the lowest percentage of month was during February and March for the NAA and all alternatives. Air temperatures drove these temporal patterns.

- At Watt Avenue, the highest percent of months with water temperature above the virulence threshold was 100% and occurred during May of critical years under the NAA and all alternatives except Alternative 1 and in June for all water year types for the NAA and all alternatives (Table M.2-37 and Table M.2-38). The lowest percent of months with water temperature exceeding the virulence threshold was 0% and occurred in February of all water years under the NAA and all alternatives and in at least one water year type during March and April for the NAA and all alternatives except Alternative 1. Combining water year types, exceedance above the virulence threshold increased from 0% in February to 100% in June under the NAA and all alternatives. Air temperatures drove this temporal pattern.

Table M.2-1. Percent of months above the 66.2°F migration impairment water temperature limit for steelhead kelt emigration by water year type and month, and for all years combined, American River at Hazel Avenue, February through June (BA Scenarios).

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
W	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	6	25.0	7.1	7.1	3.6	3.6	7.1	7.1
AN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	6	69.2	7.7	23.1	23.1	23.1	23.1	15.4
BN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	5	11.1	5.6	0.0	0.0	0.0	0.0	0.0
BN	6	66.7	27.8	22.2	16.7	16.7	33.3	38.9
D	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	5	25.0	8.3	0.0	0.0	0.0	0.0	0.0
D	6	62.5	37.5	4.2	12.5	12.5	12.5	8.3

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
C	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	5	56.3	6.3	0.0	0.0	0.0	0.0	0.0
C	6	93.8	68.8	31.3	31.3	43.8	50.0	43.8
All	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	5	17.2	4.0	0.0	0.0	0.0	0.0	0.0
All	6	58.6	28.3	15.2	15.2	17.2	22.2	20.2
W	All	5.0	1.4	1.4	1.4	0.7	0.7	1.4
AN	All	13.8	1.5	4.6	3.1	4.6	4.6	4.6
BN	All	15.6	6.7	4.4	2.2	3.3	3.3	6.7
D	All	17.5	9.2	0.8	1.7	2.5	2.5	2.5
C	All	30.0	15.0	6.3	7.5	6.3	8.8	10.0
All	All	15.2	6.5	3.0	2.8	3.0	3.4	4.4

Table M.2-2. Percent (difference in percent relative to NAA) of months above the 66.2°F migration impairment water temperature limit for steelhead kelt emigration by water year type and month, and for all years combined, American River at Hazel Avenue, February through June (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	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 (0.0%)	0.0 (0.0%)
W	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	6	7.1	7.1 (0.0%)	3.6 (-3.6%)	3.6 (-3.6%)	3.6 (-3.6%)	7.1 (0.0%)	3.6 (-3.6%)	3.6 (-3.6%)
AN	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 (0.0%)	0.0 (0.0%)
AN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	6	23.1	15.4 (-7.7%)	23.1 (0.0%)	23.1 (0.0%)	23.1 (0.0%)	15.4 (-7.7%)	7.7 (-15.4%)	23.1 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	6	22.2	11.1 (-11.1%)	16.7 (-5.6%)	16.7 (-5.6%)	33.3 (11.1%)	38.9 (16.7%)	16.7 (-5.6%)	22.2 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	6	4.2	8.3 (4.2%)	4.2 (0.0%)	4.2 (0.0%)	8.3 (4.2%)	8.3 (4.2%)	0.0 (-4.2%)	12.5 (8.3%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
C	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 (0.0%)	0.0 (0.0%)
C	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	6	31.3	37.5 (6.3%)	50.0 (18.8%)	31.3 (0.0%)	43.8 (12.5%)	31.3 (0.0%)	37.5 (6.3%)	31.3 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	6	15.2	14.1 (-1.0%)	16.2 (1.0%)	13.1 (-2.0%)	19.2 (4.0%)	18.2 (3.0%)	11.1 (-4.0%)	16.2 (1.0%)
W	All	1.4	1.4 (0.0%)	0.7 (-0.7%)	0.7 (-0.7%)	0.7 (-0.7%)	1.4 (0.0%)	0.7 (-0.7%)	0.7 (-0.7%)
AN	All	4.6	3.1 (-1.5%)	4.6 (0.0%)	4.6 (0.0%)	4.6 (0.0%)	3.1 (-1.5%)	1.5 (-3.1%)	4.6 (0.0%)
BN	All	4.4	2.2 (-2.2%)	3.3 (-1.1%)	3.3 (-1.1%)	6.7 (2.2%)	7.8 (3.3%)	3.3 (-1.1%)	4.4 (0.0%)
D	All	0.8	1.7 (0.8%)	0.8 (0.0%)	0.8 (0.0%)	1.7 (0.8%)	1.7 (0.8%)	0.0 (-0.8%)	2.5 (1.7%)
C	All	6.3	7.5 (1.3%)	10.0 (3.8%)	6.3 (0.0%)	8.8 (2.5%)	6.3 (0.0%)	7.5 (1.3%)	6.3 (0.0%)
All	All	3.0	2.8 (-0.2%)	3.2 (0.2%)	2.6 (-0.4%)	3.8 (0.8%)	3.6 (0.6%)	2.2 (-0.8%)	3.2 (0.2%)

Table M.2-3. Percent of months above the 66.2°F migration impairment water temperature limit for steelhead kelt emigration by water year type and month, and for all years combined, American River at Watt Avenue, February through June (BA Scenarios).

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
W	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	5	10.7	7.1	0.0	0.0	0.0	0.0	0.0
W	6	67.9	28.6	17.9	17.9	17.9	17.9	14.3
AN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	5	30.8	15.4	0.0	0.0	0.0	0.0	0.0
AN	6	84.6	69.2	53.8	61.5	61.5	61.5	53.8
BN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	5	38.9	27.8	11.1	11.1	11.1	11.1	11.1
BN	6	88.9	83.3	77.8	77.8	77.8	77.8	77.8
D	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	4	4.2	0.0	0.0	0.0	0.0	0.0	0.0
D	5	29.2	50.0	4.2	0.0	0.0	0.0	4.2
D	6	100.0	87.5	75.0	79.2	79.2	79.2	79.2

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
C	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	4	31.3	0.0	0.0	0.0	0.0	0.0	0.0
C	5	81.3	87.5	50.0	37.5	56.3	50.0	43.8
C	6	100.0	93.8	93.8	93.8	100.0	100.0	93.8
All	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	4	6.1	0.0	0.0	0.0	0.0	0.0	0.0
All	5	34.3	35.4	11.1	8.1	11.1	10.1	10.1
All	6	86.9	68.7	59.6	61.6	62.6	62.6	59.6
W	All	15.7	7.1	3.6	5.0	3.6	3.6	3.6
AN	All	23.1	16.9	10.8	12.3	12.3	12.3	12.3
BN	All	25.6	22.2	17.8	15.6	17.8	17.8	17.8
D	All	26.7	27.5	15.8	20.8	15.8	15.8	15.8
C	All	42.5	36.3	28.8	35.0	26.3	31.3	30.0
All	All	25.5	20.8	14.1	16.6	13.9	14.7	14.5

Table M.2-4. Percent (difference in percent relative to NAA) of months above the 66.2°F migration impairment water temperature limit for steelhead kelt emigration by water year type and month, and for all years combined, American River at Watt Avenue, February through June (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	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 (0.0%)	0.0 (0.0%)
W	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	5	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	3.6 (3.6%)	0.0 (0.0%)
W	6	17.9	25.0 (7.1%)	17.9 (0.0%)	17.9 (0.0%)	17.9 (0.0%)	14.3 (-3.6%)	32.1 (14.3%)	21.4 (3.6%)
AN	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 (0.0%)	0.0 (0.0%)
AN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	4	0.0	7.7 (7.7%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	6	53.8	53.8 (0.0%)	61.5 (7.7%)	61.5 (7.7%)	61.5 (7.7%)	53.8 (0.0%)	84.6 (30.8%)	61.5 (7.7%)
BN	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 (0.0%)	0.0 (0.0%)
BN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	4	0.0	5.6 (5.6%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	5	11.1	5.6 (-5.6%)	11.1 (0.0%)	11.1 (0.0%)	11.1 (0.0%)	5.6 (-5.6%)	11.1 (0.0%)	5.6 (-5.6%)
BN	6	77.8	66.7 (-11.1%)	77.8 (0.0%)	77.8 (0.0%)	77.8 (0.0%)	77.8 (0.0%)	94.4 (16.7%)	72.2 (-5.6%)
D	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 (0.0%)	0.0 (0.0%)
D	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	4	0.0	12.5 (12.5%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	5	4.2	12.5 (8.3%)	0.0 (-4.2%)	0.0 (-4.2%)	4.2 (0.0%)	8.3 (4.2%)	20.8 (16.7%)	16.7 (12.5%)
D	6	75.0	79.2 (4.2%)	83.3 (8.3%)	83.3 (8.3%)	79.2 (4.2%)	79.2 (4.2%)	83.3 (8.3%)	87.5 (12.5%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
C	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 (0.0%)	0.0 (0.0%)
C	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	4	0.0	12.5 (12.5%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	5	50.0	75.0 (25.0%)	62.5 (12.5%)	50.0 (0.0%)	50.0 (0.0%)	43.8 (-6.3%)	43.8 (-6.3%)	62.5 (12.5%)
C	6	93.8	87.5 (-6.3%)	100.0 (6.3%)	87.5 (-6.3%)	93.8 (0.0%)	93.8 (0.0%)	93.8 (0.0%)	87.5 (-6.3%)
All	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 (0.0%)	0.0 (0.0%)
All	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	4	0.0	7.1 (7.1%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	5	11.1	16.2 (5.1%)	12.1 (1.0%)	10.1 (-1.0%)	11.1 (0.0%)	10.1 (-1.0%)	15.2 (4.0%)	15.2 (4.0%)
All	6	59.6	59.6 (0.0%)	63.6 (4.0%)	61.6 (2.0%)	61.6 (2.0%)	59.6 (0.0%)	72.7 (13.1%)	62.6 (3.0%)
W	All	3.6	5.0 (1.4%)	3.6 (0.0%)	3.6 (0.0%)	3.6 (0.0%)	2.9 (-0.7%)	7.1 (3.6%)	4.3 (0.7%)
AN	All	10.8	12.3 (1.5%)	12.3 (1.5%)	12.3 (1.5%)	12.3 (1.5%)	10.8 (0.0%)	16.9 (6.2%)	12.3 (1.5%)
BN	All	17.8	15.6 (-2.2%)	17.8 (0.0%)	17.8 (0.0%)	17.8 (0.0%)	16.7 (-1.1%)	21.1 (3.3%)	15.6 (-2.2%)
D	All	15.8	20.8 (5.0%)	16.7 (0.8%)	16.7 (0.8%)	16.7 (0.8%)	17.5 (1.7%)	20.8 (5.0%)	20.8 (5.0%)
C	All	28.8	35.0 (6.3%)	32.5 (3.8%)	27.5 (-1.3%)	28.8 (0.0%)	27.5 (-1.3%)	27.5 (-1.3%)	30.0 (1.3%)
All	All	14.1	16.6 (2.4%)	15.2 (1.0%)	14.3 (0.2%)	14.5 (0.4%)	13.9 (-0.2%)	17.6 (3.4%)	15.6 (1.4%)

Table M.2-5. Percent of months above the 69.8°F lethal water temperature limit for steelhead kelt emigration by water year type and month, and for all years combined, American River at Hazel Avenue, February through June (BA Scenarios).

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
W	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	6	15.4	0.0	0.0	0.0	0.0	0.0	0.0
BN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	6	5.6	0.0	0.0	0.0	0.0	0.0	0.0
D	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	5	4.2	0.0	0.0	0.0	0.0	0.0	0.0
D	6	29.2	0.0	0.0	0.0	0.0	0.0	0.0
C	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
C	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	5	12.5	0.0	0.0	0.0	0.0	0.0	0.0
C	6	56.3	0.0	6.3	6.3	6.3	6.3	6.3
All	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	5	3.0	0.0	0.0	0.0	0.0	0.0	0.0
All	6	19.2	0.0	1.0	1.0	1.0	1.0	1.0
W	All	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	All	3.1	0.0	0.0	0.0	0.0	0.0	0.0
BN	All	1.1	0.0	0.0	0.0	0.0	0.0	0.0
D	All	6.7	0.0	0.0	0.0	0.0	0.0	0.0
C	All	13.8	0.0	1.3	1.3	1.3	1.3	1.3
All	All	4.4	0.0	0.2	0.2	0.2	0.2	0.2

Table M.2-6. Percent (difference in percent relative to NAA) of months above the 69.8°F lethal water temperature limit for steelhead kelt emigration by water year type and month, and for all years combined, American River at Hazel Avenue, February through June (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	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 (0.0%)	0.0 (0.0%)
W	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
C	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 (0.0%)	0.0 (0.0%)
C	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	6	6.3	6.3 (0.0%)	6.3 (0.0%)	6.3 (0.0%)	6.3 (0.0%)	6.3 (0.0%)	0.0 (-6.3%)	0.0 (-6.3%)
All	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 (0.0%)	0.0 (0.0%)
All	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	6	1.0	1.0 (0.0%)	1.0 (0.0%)	1.0 (0.0%)	1.0 (0.0%)	1.0 (0.0%)	0.0 (-1.0%)	0.0 (-1.0%)
W	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	All	1.3	1.3 (0.0%)	1.3 (0.0%)	1.3 (0.0%)	1.3 (0.0%)	1.3 (0.0%)	0.0 (-1.3%)	0.0 (-1.3%)
All	All	0.2	0.2 (0.0%)	0.2 (0.0%)	0.2 (0.0%)	0.2 (0.0%)	0.2 (0.0%)	0.0 (-0.2%)	0.0 (-0.2%)

Table M.2-7. Percent of months above the 69.8°F lethal water temperature limit for steelhead kelt emigration by water year type and month, and for all years combined, American River at Watt Avenue, February through June (BA Scenarios).

WYT	Month	EXP1	EXP3	NAA	Alt2w TUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
W	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	5	3.6	0.0	0.0	0.0	0.0	0.0	0.0
W	6	25.0	7.1	0.0	0.0	0.0	0.0	0.0
AN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	5	7.7	0.0	0.0	0.0	0.0	0.0	0.0
AN	6	69.2	30.8	15.4	23.1	23.1	15.4	7.7
BN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	5	16.7	5.6	0.0	0.0	0.0	0.0	0.0
BN	6	83.3	44.4	16.7	16.7	16.7	16.7	22.2
D	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	5	29.2	16.7	0.0	0.0	0.0	0.0	0.0
D	6	75.0	66.7	20.8	33.3	33.3	33.3	25.0
C	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0

WYT	Month	EXP1	EXP3	NAA	Alt2w TUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
C	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	4	6.3	0.0	0.0	0.0	0.0	0.0	0.0
C	5	68.8	18.8	12.5	6.3	18.8	18.8	12.5
C	6	93.8	87.5	62.5	56.3	62.5	68.8	62.5
All	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	4	1.0	0.0	0.0	0.0	0.0	0.0	0.0
All	5	23.2	8.1	2.0	1.0	3.0	3.0	2.0
All	6	64.6	44.4	20.2	23.2	24.2	24.2	21.2
W	All	5.7	1.4	0.0	0.0	0.0	0.0	0.0
AN	All	15.4	6.2	3.1	1.5	4.6	4.6	3.1
BN	All	20.0	10.0	3.3	1.1	3.3	3.3	3.3
D	All	20.8	16.7	4.2	6.7	6.7	6.7	6.7
C	All	33.8	21.3	15.0	22.5	12.5	16.3	17.5
All	All	17.8	10.5	4.4	5.7	4.8	5.5	5.5

Table M.2-8. Percent (difference in percent relative to NAA) of months above the 69.8°F lethal water temperature limit for steelhead kelt emigration by water year type and month, and for all years combined, American River at Watt Avenue, February through June (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	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 (0.0%)	0.0 (0.0%)
W	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	6	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	7.1 (7.1%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	4	0.0	7.7 (7.7%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	6	15.4	0.0 (-15.4%)	15.4 (0.0%)	23.1 (7.7%)	15.4 (0.0%)	7.7 (-7.7%)	30.8 (15.4%)	23.1 (7.7%)
BN	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 (0.0%)	0.0 (0.0%)
BN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	5	0.0	5.6 (5.6%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	6	16.7	0.0 (-16.7%)	16.7 (0.0%)	16.7 (0.0%)	16.7 (0.0%)	22.2 (5.6%)	33.3 (16.7%)	16.7 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	4	0.0	8.3 (8.3%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	6	20.8	25.0 (4.2%)	29.2 (8.3%)	29.2 (8.3%)	29.2 (8.3%)	33.3 (12.5%)	33.3 (12.5%)	20.8 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
C	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 (0.0%)	0.0 (0.0%)
C	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	5	12.5	43.8 (31.3%)	12.5 (0.0%)	6.3 (-6.3%)	12.5 (0.0%)	18.8 (6.3%)	6.3 (-6.3%)	12.5 (0.0%)
C	6	62.5	68.8 (6.3%)	68.8 (6.3%)	62.5 (0.0%)	75.0 (12.5%)	62.5 (0.0%)	75.0 (12.5%)	68.8 (6.3%)
All	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 (0.0%)	0.0 (0.0%)
All	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	4	0.0	3.0 (3.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	5	2.0	8.1 (6.1%)	2.0 (0.0%)	1.0 (-1.0%)	2.0 (0.0%)	3.0 (1.0%)	1.0 (-1.0%)	2.0 (0.0%)
All	6	20.2	17.2 (-3.0%)	23.2 (3.0%)	23.2 (3.0%)	24.2 (4.0%)	23.2 (3.0%)	32.3 (12.1%)	22.2 (2.0%)
W	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	1.4 (1.4%)	0.0 (0.0%)
AN	All	3.1	1.5 (-1.5%)	3.1 (0.0%)	4.6 (1.5%)	3.1 (0.0%)	1.5 (-1.5%)	6.2 (3.1%)	4.6 (1.5%)
BN	All	3.3	1.1 (-2.2%)	3.3 (0.0%)	3.3 (0.0%)	3.3 (0.0%)	4.4 (1.1%)	6.7 (3.3%)	3.3 (0.0%)
D	All	4.2	6.7 (2.5%)	5.8 (1.7%)	5.8 (1.7%)	5.8 (1.7%)	6.7 (2.5%)	6.7 (2.5%)	4.2 (0.0%)
C	All	15.0	22.5 (7.5%)	16.3 (1.3%)	13.8 (-1.3%)	17.5 (2.5%)	16.3 (1.3%)	16.3 (1.3%)	16.3 (1.3%)
All	All	4.4	5.7 (1.2%)	5.1 (0.6%)	4.8 (0.4%)	5.3 (0.8%)	5.3 (0.8%)	6.7 (2.2%)	4.8 (0.4%)

Table M.2-9. Percent of months above the 59.9°F pathogen virulence water temperature threshold for steelhead kelt emigration by water year type and month, and for all years combined, American River at Hazel Avenue, February through June (BA Scenarios).

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
W	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	5	17.9	7.1	3.6	3.6	3.6	3.6	3.6
W	6	82.1	67.9	50.0	50.0	50.0	46.4	46.4
AN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	5	38.5	38.5	0.0	0.0	0.0	0.0	0.0
AN	6	100.0	100.0	84.6	84.6	84.6	84.6	84.6
BN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	5	72.2	44.4	33.3	33.3	33.3	27.8	27.8
BN	6	100.0	94.4	94.4	94.4	94.4	88.9	94.4
D	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	4	8.3	0.0	0.0	0.0	0.0	0.0	0.0
D	5	62.5	58.3	37.5	45.8	45.8	41.7	45.8
D	6	100.0	100.0	91.7	95.8	95.8	95.8	95.8

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
C	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	4	56.3	0.0	0.0	0.0	0.0	0.0	0.0
C	5	87.5	93.8	37.5	31.3	43.8	50.0	56.3
C	6	100.0	100.0	93.8	93.8	100.0	100.0	100.0
All	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	4	11.1	0.0	0.0	0.0	0.0	0.0	0.0
All	5	52.5	44.4	22.2	23.2	25.3	24.2	26.3
All	6	94.9	89.9	79.8	80.8	81.8	79.8	80.8
W	All	20.0	15.0	10.7	12.1	10.7	10.7	10.0
AN	All	27.7	27.7	16.9	15.4	16.9	16.9	16.9
BN	All	34.4	27.8	25.6	24.4	25.6	25.6	23.3
D	All	34.2	31.7	25.8	29.2	28.3	28.3	27.5
C	All	48.8	38.8	26.3	32.5	25.0	28.8	30.0
All	All	31.7	26.9	20.4	22.2	20.8	21.4	20.8

Table M.2-10. Percent (difference in percent relative to NAA) of months above the 59.9°F pathogen virulence water temperature threshold for steelhead kelt emigration by water year type and month, and for all years combined, American River at Hazel Avenue, February through June (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	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 (0.0%)	0.0 (0.0%)
W	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	5	3.6	0.0 (-3.6%)	3.6 (0.0%)	3.6 (0.0%)	3.6 (0.0%)	3.6 (0.0%)	7.1 (3.6%)	3.6 (0.0%)
W	6	50.0	60.7 (10.7%)	46.4 (-3.6%)	46.4 (-3.6%)	46.4 (-3.6%)	46.4 (-3.6%)	57.1 (7.1%)	57.1 (7.1%)
AN	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 (0.0%)	0.0 (0.0%)
AN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	5	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	30.8 (30.8%)	0.0 (0.0%)
AN	6	84.6	76.9 (-7.7%)	84.6 (0.0%)	84.6 (0.0%)	84.6 (0.0%)	84.6 (0.0%)	100.0 (15.4%)	76.9 (-7.7%)
BN	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 (0.0%)	0.0 (0.0%)
BN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	5	33.3	33.3 (0.0%)	33.3 (0.0%)	33.3 (0.0%)	27.8 (-5.6%)	27.8 (-5.6%)	22.2 (-11.1%)	27.8 (-5.6%)
BN	6	94.4	88.9 (-5.6%)	94.4 (0.0%)	94.4 (0.0%)	88.9 (-5.6%)	94.4 (0.0%)	94.4 (0.0%)	88.9 (-5.6%)
D	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 (0.0%)	0.0 (0.0%)
D	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	4	0.0	4.2 (4.2%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	5	37.5	50.0 (12.5%)	45.8 (8.3%)	41.7 (4.2%)	50.0 (12.5%)	50.0 (12.5%)	29.2 (-8.3%)	58.3 (20.8%)
D	6	91.7	91.7 (0.0%)	95.8 (4.2%)	95.8 (4.2%)	95.8 (4.2%)	95.8 (4.2%)	95.8 (4.2%)	100.0 (8.3%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
C	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 (0.0%)	0.0 (0.0%)
C	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	5	37.5	62.5 (25.0%)	50.0 (12.5%)	31.3 (-6.3%)	50.0 (12.5%)	50.0 (12.5%)	50.0 (12.5%)	37.5 (0.0%)
C	6	93.8	100.0 (6.3%)	100.0 (6.3%)	93.8 (0.0%)	100.0 (6.3%)	100.0 (6.3%)	100.0 (6.3%)	93.8 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	4	0.0	1.0 (1.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	5	22.2	28.3 (6.1%)	26.3 (4.0%)	22.2 (0.0%)	26.3 (4.0%)	26.3 (4.0%)	25.3 (3.0%)	26.3 (4.0%)
All	6	79.8	81.8 (2.0%)	80.8 (1.0%)	79.8 (0.0%)	79.8 (0.0%)	80.8 (1.0%)	85.9 (6.1%)	81.8 (2.0%)
W	All	10.7	12.1 (1.4%)	10.0 (-0.7%)	10.0 (-0.7%)	10.0 (-0.7%)	10.0 (-0.7%)	12.9 (2.1%)	12.1 (1.4%)
AN	All	16.9	15.4 (-1.5%)	16.9 (0.0%)	16.9 (0.0%)	16.9 (0.0%)	16.9 (0.0%)	26.2 (9.2%)	15.4 (-1.5%)
BN	All	25.6	24.4 (-1.1%)	25.6 (0.0%)	25.6 (0.0%)	23.3 (-2.2%)	24.4 (-1.1%)	23.3 (-2.2%)	23.3 (-2.2%)
D	All	25.8	29.2 (3.3%)	28.3 (2.5%)	27.5 (1.7%)	29.2 (3.3%)	29.2 (3.3%)	25.0 (-0.8%)	31.7 (5.8%)
C	All	26.3	32.5 (6.3%)	30.0 (3.8%)	25.0 (-1.3%)	30.0 (3.8%)	30.0 (3.8%)	30.0 (3.8%)	26.3 (0.0%)
All	All	20.4	22.2 (1.8%)	21.4 (1.0%)	20.4 (0.0%)	21.2 (0.8%)	21.4 (1.0%)	22.2 (1.8%)	21.6 (1.2%)

Table M.2-11. Percent of months above the 59.9°F pathogen virulence water temperature threshold for steelhead kelt emigration by water year type and month, and for all years combined, American River at Watt Avenue, February through June (BA Scenarios).

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
W	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	4	3.6	0.0	0.0	0.0	0.0	0.0	0.0
W	5	28.6	35.7	35.7	35.7	35.7	35.7	35.7
W	6	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	4	15.4	7.7	0.0	0.0	0.0	0.0	0.0
AN	5	76.9	84.6	92.3	92.3	92.3	92.3	92.3
AN	6	100.0	100.0	100.0	100.0	100.0	100.0	100.0
BN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	4	27.8	5.6	5.6	11.1	11.1	16.7	11.1
BN	5	77.8	83.3	83.3	83.3	83.3	83.3	83.3
BN	6	100.0	100.0	100.0	100.0	100.0	100.0	100.0
D	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	4	33.3	25.0	16.7	20.8	20.8	20.8	20.8
D	5	91.7	95.8	95.8	95.8	95.8	95.8	95.8
D	6	100.0	100.0	100.0	100.0	100.0	100.0	100.0

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
C	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	3	12.5	12.5	0.0	6.3	6.3	12.5	6.3
C	4	75.0	68.8	62.5	75.0	37.5	50.0	43.8
C	5	93.8	93.8	100.0	100.0	100.0	100.0	100.0
C	6	100.0	100.0	100.0	100.0	100.0	100.0	100.0
All	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	3	2.0	2.0	0.0	1.0	1.0	2.0	1.0
All	4	28.3	19.2	15.2	19.2	13.1	16.2	14.1
All	5	69.7	74.7	76.8	76.8	76.8	76.8	76.8
All	6	100.0	100.0	100.0	100.0	100.0	100.0	100.0
W	All	26.4	27.1	27.1	27.9	27.1	27.1	27.1
AN	All	38.5	38.5	38.5	41.5	38.5	38.5	38.5
BN	All	41.1	37.8	37.8	41.1	38.9	38.9	40.0
D	All	45.0	44.2	42.5	47.5	43.3	43.3	43.3
C	All	56.3	55.0	52.5	50.0	56.3	48.8	52.5
All	All	40.0	39.2	38.4	40.4	39.4	38.2	39.0

Table M.2-12. Percent (difference in percent relative to NAA) of months above the 59.9°F pathogen virulence water temperature threshold for steelhead kelt emigration by water year type and month, and for all years combined, American River at Watt Avenue, February through June (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	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 (0.0%)	0.0 (0.0%)
W	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	4	0.0	3.6 (3.6%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	5	35.7	35.7 (0.0%)	35.7 (0.0%)	35.7 (0.0%)	35.7 (0.0%)	35.7 (0.0%)	39.3 (3.6%)	35.7 (0.0%)
W	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	3	0.0	7.7 (7.7%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	4	0.0	15.4 (15.4%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	7.7 (7.7%)
AN	5	92.3	84.6 (-7.7%)	92.3 (0.0%)	92.3 (0.0%)	92.3 (0.0%)	92.3 (0.0%)	100.0 (7.7%)	92.3 (0.0%)
AN	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	3	0.0	5.6 (5.6%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	4	5.6	22.2 (16.7%)	11.1 (5.6%)	11.1 (5.6%)	11.1 (5.6%)	11.1 (5.6%)	0.0 (-5.6%)	11.1 (5.6%)
BN	5	83.3	77.8 (-5.6%)	83.3 (0.0%)	83.3 (0.0%)	83.3 (0.0%)	83.3 (0.0%)	88.9 (5.6%)	77.8 (-5.6%)
BN	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	3	0.0	16.7 (16.7%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	4	16.7	29.2 (12.5%)	20.8 (4.2%)	20.8 (4.2%)	20.8 (4.2%)	12.5 (-4.2%)	4.2 (-12.5%)	20.8 (4.2%)
D	5	95.8	91.7 (-4.2%)	95.8 (0.0%)	95.8 (0.0%)	91.7 (-4.2%)	95.8 (0.0%)	91.7 (-4.2%)	95.8 (0.0%)
D	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
C	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 (0.0%)	0.0 (0.0%)
C	3	0.0	18.8 (18.8%)	6.3 (6.3%)	6.3 (6.3%)	6.3 (6.3%)	6.3 (6.3%)	6.3 (6.3%)	6.3 (6.3%)
C	4	62.5	37.5 (-25.0%)	37.5 (-25.0%)	68.8 (6.3%)	50.0 (-12.5%)	25.0 (-37.5%)	43.8 (-18.8%)	81.3 (18.8%)
C	5	100.0	93.8 (-6.3%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	3	0.0	9.1 (9.1%)	1.0 (1.0%)	1.0 (1.0%)	1.0 (1.0%)	1.0 (1.0%)	1.0 (1.0%)	1.0 (1.0%)
All	4	15.2	20.2 (5.1%)	13.1 (-2.0%)	18.2 (3.0%)	15.2 (0.0%)	9.1 (-6.1%)	8.1 (-7.1%)	21.2 (6.1%)
All	5	76.8	72.7 (-4.0%)	76.8 (0.0%)	76.8 (0.0%)	75.8 (-1.0%)	76.8 (0.0%)	78.8 (2.0%)	75.8 (-1.0%)
All	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	All	27.1	27.9 (0.7%)	27.1 (0.0%)	27.1 (0.0%)	27.1 (0.0%)	27.1 (0.0%)	27.9 (0.7%)	27.1 (0.0%)
AN	All	38.5	41.5 (3.1%)	38.5 (0.0%)	38.5 (0.0%)	38.5 (0.0%)	38.5 (0.0%)	40.0 (1.5%)	40.0 (1.5%)
BN	All	37.8	41.1 (3.3%)	38.9 (1.1%)	38.9 (1.1%)	38.9 (1.1%)	38.9 (1.1%)	37.8 (0.0%)	37.8 (0.0%)
D	All	42.5	47.5 (5.0%)	43.3 (0.8%)	43.3 (0.8%)	42.5 (0.0%)	41.7 (-0.8%)	39.2 (-3.3%)	43.3 (0.8%)
C	All	52.5	50.0 (-2.5%)	48.8 (-3.8%)	55.0 (2.5%)	51.3 (-1.3%)	46.3 (-6.3%)	50.0 (-2.5%)	57.5 (5.0%)
All	All	38.4	40.4 (2.0%)	38.2 (-0.2%)	39.2 (0.8%)	38.4 (0.0%)	37.4 (-1.0%)	37.6 (-0.8%)	39.6 (1.2%)

M.2.3.3.4   Egg Incubation and Fry Emergence

Water temperature-related effects on steelhead egg incubation and fry emergence in the American River were evaluated by assessing: (1) the percent of months with water temperature outside the 45°F to 52°F range for optimal egg incubation (McCullough et al. 2001); and (2) the percent of months with water temperature above the 59.9°F pathogen virulence threshold (McCullough 1999) at Hazel Avenue and Watt Avenue (Table M.2-1).

Results for the 45°F to 52°F optimal egg incubation range are presented in Table M.2-13 and Table M.2-14 for Hazel Avenue and in Table M.2-15 and Table M.2-16 for Watt Avenue.

- At Hazel Avenue, the highest percent of months with water temperature outside the range was 100% and occurred in May of all water year types for the NAA and all alternatives and in April of at least one water year type under the NAA, all phases of Alternative 2 and Alternative 4 (Table M.2-13 and Table M.2-14). The lowest percent of months with water temperature outside the range was 0% and occurred in January and February in at least water year type under the NAA and all alternatives except for January under Alternative 4. Combining water year types, the highest percent of months with water temperature outside the range occurred during May and the lowest occurred during February for the NAA and all alternatives. Air temperatures drove this temporal pattern.

- At Watt Avenue, the highest percent of months with water temperature outside the range was 100% and occurred during May of all water year types under the NAA and all alternatives and during April of at least one water year type under Alternative 1, Alternative 2 With TUCP Without VA, Alternative 3, and Alternative 4 (Table M.2-15 and Table M.2-16). The lowest percent of months with water temperature outside the range was 0% and occurred during February of wet, above normal, and below normal water year types under the NAA and all alternatives. Combining water year types, the highest percent of months with water temperature outside the range was May and the lowest was January for the NAA and all alternatives. Air temperatures drove this temporal pattern.

Results for the 59.9°F pathogen virulence water temperature threshold at Hazel Avenue are presented in Table M.2-17 and Table M.2-18 and at Watt Avenue in Table M.2-19 and Table M.2-20.

- At Hazel Avenue, the highest percent of months with water temperature above the virulence threshold was 62.5% and occurred in May of critical water years under Alternative 1. The lowest percent of months with water temperature exceeding the virulence threshold was 0% and occurred in December through April of nearly all water year types under the NAA and all alternatives and during May of above normal water years under the NAA and all alternatives. Combining water year types, the lowest percent of months with water temperature exceeding the virulence threshold occurred during December through March and the highest percent of months with water temperature exceeding the virulence threshold occurred during May for the NAA and all alternatives. Air temperatures drove this temporal pattern.

- At Watt Avenue, the highest percent of months with water temperature above the virulence threshold was 100% and occurred during May of critical water years under the NAA and all alternatives except Alternative 1 (Table M.2-19 and Table M.2-20). The lowest percent of months with water temperature exceeding the virulence threshold was 0% and occurred during December through February of all water year types for the NAA and all alternatives, during March and April of at least one water year type under most alternatives. Combining water year types, the lowest percent of months with water temperature exceeding the virulence threshold was during December, January, and February and the highest percent of months with water temperature exceeding the virulence threshold was during May for the NAA and all alternatives. Air temperatures drove this temporal pattern.

Table M.2-13. Percent of months outside the 45°F to 52°F optimal egg incubation water temperature range steelhead by water year type and month, and for all years combined, American River at Hazel Avenue, December through May (BA Scenarios).

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
W	12	21.4	50.0	46.4	39.3	39.3	46.4	42.9
W	1	100.0	21.4	21.4	25.0	25.0	21.4	21.4
W	2	10.7	0.0	0.0	0.0	0.0	0.0	0.0
W	3	3.6	7.1	3.6	3.6	3.6	3.6	3.6
W	4	32.1	60.7	35.7	35.7	35.7	35.7	35.7
W	5	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AN	12	21.4	64.3	42.9	35.7	35.7	35.7	35.7
AN	1	100.0	7.7	7.7	7.7	7.7	7.7	7.7
AN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	3	7.7	15.4	15.4	7.7	7.7	7.7	7.7
AN	4	76.9	100.0	76.9	69.2	69.2	69.2	76.9
AN	5	100.0	100.0	100.0	100.0	100.0	100.0	100.0
BN	12	11.1	44.4	33.3	38.9	38.9	27.8	22.2
BN	1	83.3	0.0	0.0	0.0	0.0	0.0	0.0
BN	2	5.6	0.0	0.0	0.0	0.0	0.0	0.0
BN	3	22.2	38.9	16.7	16.7	16.7	22.2	22.2
BN	4	72.2	100.0	100.0	100.0	100.0	100.0	100.0
BN	5	100.0	100.0	100.0	100.0	100.0	100.0	100.0
D	12	16.7	70.8	41.7	45.8	45.8	58.3	37.5
D	1	87.5	0.0	4.2	12.5	12.5	4.2	4.2

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
D	2	0.0	0.0	4.2	4.2	4.2	4.2	4.2
D	3	45.8	58.3	37.5	50.0	50.0	41.7	41.7
D	4	91.7	100.0	75.0	79.2	79.2	83.3	79.2
D	5	100.0	100.0	100.0	100.0	100.0	100.0	100.0
C	12	0.0	80.0	40.0	53.3	40.0	40.0	40.0
C	1	81.3	0.0	0.0	0.0	0.0	0.0	0.0
C	2	0.0	12.5	18.8	6.3	12.5	25.0	18.8
C	3	87.5	87.5	75.0	81.3	81.3	81.3	75.0
C	4	100.0	100.0	93.8	100.0	100.0	93.8	93.8
C	5	100.0	100.0	100.0	100.0	100.0	100.0	100.0
All	12	15.2	60.6	41.4	42.4	40.4	43.4	36.4
All	1	90.9	7.1	8.1	11.1	11.1	8.1	8.1
All	2	4.0	2.0	4.0	2.0	3.0	5.1	4.0
All	3	31.3	39.4	27.3	30.3	30.3	29.3	28.3
All	4	70.7	88.9	71.7	72.7	72.7	72.7	72.7
All	5	100.0	100.0	100.0	100.0	100.0	100.0	100.0
W	All	44.6	39.9	34.5	33.3	33.9	33.9	34.5
AN	All	50.6	48.1	40.5	41.8	36.7	36.7	36.7
BN	All	49.1	47.2	41.7	43.5	42.6	42.6	41.7
D	All	56.9	54.9	43.8	44.4	48.6	48.6	48.6
C	All	62.1	63.2	54.7	58.9	56.8	55.8	56.8
All	All	52.0	49.7	42.1	43.1	43.1	42.9	43.1

Table M.2-14. Percent (difference in percent relative to NAA) of months outside the 45°F to 52°F optimal egg incubation water temperature range steelhead by water year type and month, and for all years combined, American River at Hazel Avenue, December through May (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	12	46.4	35.7 (-10.7%)	39.3 (-7.1%)	42.9 (-3.6%)	46.4 (0.0%)	46.4 (0.0%)	42.9 (-3.6%)	39.3 (-7.1%)
W	1	21.4	21.4 (0.0%)	28.6 (7.1%)	28.6 (7.1%)	21.4 (0.0%)	21.4 (0.0%)	21.4 (0.0%)	21.4 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	3	3.6	3.6 (0.0%)	3.6 (0.0%)	3.6 (0.0%)	3.6 (0.0%)	3.6 (0.0%)	0.0 (-3.6%)	3.6 (0.0%)
W	4	35.7	39.3 (3.6%)	35.7 (0.0%)	35.7 (0.0%)	35.7 (0.0%)	35.7 (0.0%)	50.0 (14.3%)	35.7 (0.0%)
W	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	12	42.9	42.9 (0.0%)	28.6 (-14.3%)	35.7 (-7.1%)	35.7 (-7.1%)	42.9 (0.0%)	28.6 (-14.3%)	42.9 (0.0%)
AN	1	7.7	7.7 (0.0%)	7.7 (0.0%)	7.7 (0.0%)	7.7 (0.0%)	7.7 (0.0%)	7.7 (0.0%)	7.7 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	3	15.4	23.1 (7.7%)	7.7 (-7.7%)	7.7 (-7.7%)	7.7 (-7.7%)	7.7 (-7.7%)	7.7 (-7.7%)	15.4 (0.0%)
AN	4	76.9	76.9 (0.0%)	69.2 (-7.7%)	69.2 (-7.7%)	69.2 (-7.7%)	69.2 (-7.7%)	92.3 (15.4%)	69.2 (-7.7%)
AN	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	12	33.3	33.3 (0.0%)	38.9 (5.6%)	38.9 (5.6%)	22.2 (-11.1%)	16.7 (-16.7%)	33.3 (0.0%)	27.8 (-5.6%)
BN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	11.1 (11.1%)
BN	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 (0.0%)	0.0 (0.0%)
BN	3	16.7	33.3 (16.7%)	16.7 (0.0%)	16.7 (0.0%)	22.2 (5.6%)	16.7 (0.0%)	16.7 (0.0%)	22.2 (5.6%)
BN	4	100.0	94.4 (-5.6%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	88.9 (-11.1%)	83.3 (-16.7%)
BN	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	12	41.7	29.2 (-12.5%)	33.3 (-8.3%)	33.3 (-8.3%)	37.5 (-4.2%)	33.3 (-8.3%)	50.0 (8.3%)	41.7 (0.0%)
D	1	4.2	12.5 (8.3%)	12.5 (8.3%)	12.5 (8.3%)	12.5 (8.3%)	4.2 (0.0%)	4.2 (0.0%)	8.3 (4.2%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
D	2	4.2	4.2 (0.0%)	4.2 (0.0%)	4.2 (0.0%)	4.2 (0.0%)	4.2 (0.0%)	0.0 (-4.2%)	0.0 (-4.2%)
D	3	37.5	37.5 (0.0%)	45.8 (8.3%)	45.8 (8.3%)	37.5 (0.0%)	41.7 (4.2%)	45.8 (8.3%)	37.5 (0.0%)
D	4	75.0	83.3 (8.3%)	79.2 (4.2%)	79.2 (4.2%)	75.0 (0.0%)	83.3 (8.3%)	95.8 (20.8%)	79.2 (4.2%)
D	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	12	40.0	46.7 (6.7%)	46.7 (6.7%)	46.7 (6.7%)	60.0 (20.0%)	60.0 (20.0%)	53.3 (13.3%)	60.0 (20.0%)
C	1	0.0	6.3 (6.3%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	6.3 (6.3%)	0.0 (0.0%)
C	2	18.8	18.8 (0.0%)	18.8 (0.0%)	18.8 (0.0%)	18.8 (0.0%)	18.8 (0.0%)	18.8 (0.0%)	12.5 (-6.3%)
C	3	75.0	87.5 (12.5%)	75.0 (0.0%)	81.3 (6.3%)	81.3 (6.3%)	75.0 (0.0%)	81.3 (6.3%)	75.0 (0.0%)
C	4	93.8	93.8 (0.0%)	100.0 (6.3%)	100.0 (6.3%)	87.5 (-6.3%)	87.5 (-6.3%)	93.8 (0.0%)	100.0 (6.3%)
C	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	12	41.4	36.4 (-5.1%)	37.4 (-4.0%)	39.4 (-2.0%)	40.4 (-1.0%)	39.4 (-2.0%)	42.4 (1.0%)	41.4 (0.0%)
All	1	8.1	11.1 (3.0%)	12.1 (4.0%)	12.1 (4.0%)	10.1 (2.0%)	8.1 (0.0%)	9.1 (1.0%)	11.1 (3.0%)
All	2	4.0	4.0 (0.0%)	4.0 (0.0%)	4.0 (0.0%)	4.0 (0.0%)	4.0 (0.0%)	3.0 (-1.0%)	2.0 (-2.0%)
All	3	27.3	33.3 (6.1%)	28.3 (1.0%)	29.3 (2.0%)	28.3 (1.0%)	27.3 (0.0%)	28.3 (1.0%)	28.3 (1.0%)
All	4	71.7	73.7 (2.0%)	72.7 (1.0%)	72.7 (1.0%)	69.7 (-2.0%)	71.7 (0.0%)	80.8 (9.1%)	69.7 (-2.0%)
All	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	All	34.5	33.3 (-1.2%)	34.5 (0.0%)	35.1 (0.6%)	34.5 (0.0%)	34.5 (0.0%)	35.7 (1.2%)	33.3 (-1.2%)
AN	All	40.5	41.8 (1.3%)	35.4 (-5.1%)	36.7 (-3.8%)	36.7 (-3.8%)	38.0 (-2.5%)	39.2 (-1.3%)	39.2 (-1.3%)
BN	All	41.7	43.5 (1.9%)	42.6 (0.9%)	42.6 (0.9%)	40.7 (-0.9%)	38.9 (-2.8%)	39.8 (-1.9%)	40.7 (-0.9%)
D	All	43.8	44.4 (0.7%)	45.8 (2.1%)	45.8 (2.1%)	44.4 (0.7%)	44.4 (0.7%)	49.3 (5.6%)	44.4 (0.7%)
C	All	54.7	58.9 (4.2%)	56.8 (2.1%)	57.9 (3.2%)	57.9 (3.2%)	56.8 (2.1%)	58.9 (4.2%)	57.9 (3.2%)
All	All	42.1	43.1 (1.0%)	42.4 (0.3%)	42.9 (0.8%)	42.1 (0.0%)	41.8 (-0.3%)	43.9 (1.9%)	42.1 (0.0%)

Table M.2-15. Percent of months outside the 45°F to 52°F optimal egg incubation water temperature range steelhead by water year type and month, and for all years combined, American River at Watt Avenue, December through May (BA Scenarios).

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
W	12	14.3	50.0	42.9	39.3	39.3	42.9	42.9
W	1	89.3	14.3	3.6	7.1	3.6	3.6	3.6
W	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	3	10.7	32.1	32.1	32.1	32.1	32.1	32.1
W	4	67.9	92.9	92.9	92.9	92.9	92.9	92.9
W	5	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AN	12	14.3	64.3	42.9	35.7	35.7	35.7	35.7
AN	1	53.8	7.7	7.7	7.7	7.7	7.7	7.7
AN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	3	23.1	46.2	46.2	46.2	46.2	46.2	46.2
AN	4	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AN	5	100.0	100.0	100.0	100.0	100.0	100.0	100.0
BN	12	11.1	44.4	33.3	38.9	38.9	27.8	16.7
BN	1	66.7	0.0	5.6	5.6	5.6	5.6	5.6
BN	2	5.6	5.6	0.0	0.0	0.0	0.0	0.0
BN	3	44.4	100.0	94.4	94.4	100.0	100.0	94.4
BN	4	94.4	100.0	100.0	100.0	100.0	100.0	100.0
BN	5	100.0	100.0	100.0	100.0	100.0	100.0	100.0
D	12	16.7	70.8	41.7	45.8	45.8	54.2	33.3
D	1	70.8	0.0	4.2	8.3	8.3	8.3	4.2

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
D	2	0.0	16.7	4.2	4.2	4.2	4.2	4.2
D	3	62.5	95.8	91.7	95.8	95.8	91.7	87.5
D	4	100.0	100.0	100.0	100.0	100.0	100.0	100.0
D	5	100.0	100.0	100.0	100.0	100.0	100.0	100.0
C	12	0.0	80.0	53.3	53.3	46.7	46.7	33.3
C	1	43.8	0.0	6.3	6.3	6.3	6.3	6.3
C	2	31.3	50.0	43.8	56.3	50.0	62.5	62.5
C	3	93.8	100.0	100.0	100.0	100.0	100.0	100.0
C	4	100.0	100.0	100.0	100.0	100.0	100.0	100.0
C	5	100.0	100.0	100.0	100.0	100.0	100.0	100.0
All	12	12.1	60.6	42.4	42.4	41.4	42.4	33.3
All	1	68.7	5.1	5.1	7.1	6.1	6.1	5.1
All	2	6.1	13.1	8.1	10.1	9.1	11.1	11.1
All	3	44.4	72.7	70.7	71.7	72.7	71.7	69.7
All	4	89.9	98.0	98.0	98.0	98.0	98.0	98.0
All	5	100.0	100.0	100.0	100.0	100.0	100.0	100.0
W	All	47.0	48.2	45.2	44.6	45.2	44.6	45.2
AN	All	48.1	53.2	49.4	49.4	48.1	48.1	48.1
BN	All	53.7	58.3	55.6	54.6	56.5	57.4	55.6
D	All	58.3	63.9	56.9	55.6	59.0	59.0	59.7
C	All	62.1	71.6	67.4	69.5	69.5	67.4	69.5
All	All	53.5	58.2	54.0	53.7	54.9	54.5	54.9

Table M.2-16. Percent (difference in percent relative to NAA) of months outside the 45°F to 52°F optimal egg incubation water temperature range steelhead by water year type and month, and for all years combined, American River at Watt Avenue, December through May (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	12	42.9	35.7 (-7.1%)	39.3 (-3.6%)	42.9 (0.0%)	42.9 (0.0%)	42.9 (0.0%)	35.7 (-7.1%)	39.3 (-3.6%)
W	1	3.6	7.1 (3.6%)	3.6 (0.0%)	7.1 (3.6%)	7.1 (3.6%)	7.1 (3.6%)	7.1 (3.6%)	7.1 (3.6%)
W	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 (0.0%)	0.0 (0.0%)
W	3	32.1	32.1 (0.0%)	32.1 (0.0%)	32.1 (0.0%)	32.1 (0.0%)	32.1 (0.0%)	28.6 (-3.6%)	32.1 (0.0%)
W	4	92.9	92.9 (0.0%)	92.9 (0.0%)	92.9 (0.0%)	92.9 (0.0%)	92.9 (0.0%)	92.9 (0.0%)	92.9 (0.0%)
W	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	12	42.9	42.9 (0.0%)	28.6 (-14.3%)	35.7 (-7.1%)	35.7 (-7.1%)	42.9 (0.0%)	28.6 (-14.3%)	42.9 (0.0%)
AN	1	7.7	7.7 (0.0%)	7.7 (0.0%)	7.7 (0.0%)	7.7 (0.0%)	7.7 (0.0%)	7.7 (0.0%)	7.7 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	3	46.2	46.2 (0.0%)	46.2 (0.0%)	46.2 (0.0%)	46.2 (0.0%)	46.2 (0.0%)	46.2 (0.0%)	46.2 (0.0%)
AN	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	12	33.3	27.8 (-5.6%)	38.9 (5.6%)	38.9 (5.6%)	33.3 (0.0%)	22.2 (-11.1%)	38.9 (5.6%)	27.8 (-5.6%)
BN	1	5.6	0.0 (-5.6%)	5.6 (0.0%)	5.6 (0.0%)	5.6 (0.0%)	5.6 (0.0%)	5.6 (0.0%)	5.6 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	3	94.4	100.0 (5.6%)	100.0 (5.6%)	94.4 (0.0%)	94.4 (0.0%)	94.4 (0.0%)	100.0 (5.6%)	100.0 (5.6%)
BN	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	12	41.7	33.3 (-8.3%)	33.3 (-8.3%)	37.5 (-4.2%)	37.5 (-4.2%)	33.3 (-8.3%)	45.8 (4.2%)	41.7 (0.0%)
D	1	4.2	4.2 (0.0%)	4.2 (0.0%)	4.2 (0.0%)	8.3 (4.2%)	8.3 (4.2%)	4.2 (0.0%)	8.3 (4.2%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
D	2	4.2	8.3 (4.2%)	4.2 (0.0%)	4.2 (0.0%)	4.2 (0.0%)	4.2 (0.0%)	12.5 (8.3%)	8.3 (4.2%)
D	3	91.7	87.5 (-4.2%)	91.7 (0.0%)	87.5 (-4.2%)	83.3 (-8.3%)	91.7 (0.0%)	91.7 (0.0%)	95.8 (4.2%)
D	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	12	53.3	53.3 (0.0%)	40.0 (-13.3%)	60.0 (6.7%)	46.7 (-6.7%)	53.3 (0.0%)	53.3 (0.0%)	60.0 (6.7%)
C	1	6.3	12.5 (6.3%)	6.3 (0.0%)	6.3 (0.0%)	6.3 (0.0%)	6.3 (0.0%)	12.5 (6.3%)	12.5 (6.3%)
C	2	43.8	50.0 (6.3%)	50.0 (6.3%)	56.3 (12.5%)	43.8 (0.0%)	50.0 (6.3%)	56.3 (12.5%)	43.8 (0.0%)
C	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	12	42.4	37.4 (-5.1%)	36.4 (-6.1%)	42.4 (0.0%)	39.4 (-3.0%)	38.4 (-4.0%)	40.4 (-2.0%)	41.4 (-1.0%)
All	1	5.1	6.1 (1.0%)	5.1 (0.0%)	6.1 (1.0%)	7.1 (2.0%)	7.1 (2.0%)	7.1 (2.0%)	8.1 (3.0%)
All	2	8.1	10.1 (2.0%)	9.1 (1.0%)	10.1 (2.0%)	8.1 (0.0%)	9.1 (1.0%)	12.1 (4.0%)	9.1 (1.0%)
All	3	70.7	70.7 (0.0%)	71.7 (1.0%)	69.7 (-1.0%)	68.7 (-2.0%)	70.7 (0.0%)	70.7 (0.0%)	72.7 (2.0%)
All	4	98.0	98.0 (0.0%)	98.0 (0.0%)	98.0 (0.0%)	98.0 (0.0%)	98.0 (0.0%)	98.0 (0.0%)	98.0 (0.0%)
All	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	All	45.2	44.6 (-0.6%)	44.6 (-0.6%)	45.8 (0.6%)	45.8 (0.6%)	45.8 (0.6%)	44.0 (-1.2%)	45.2 (0.0%)
AN	All	49.4	49.4 (0.0%)	46.8 (-2.5%)	48.1 (-1.3%)	48.1 (-1.3%)	49.4 (0.0%)	46.8 (-2.5%)	49.4 (0.0%)
BN	All	55.6	54.6 (-0.9%)	57.4 (1.9%)	56.5 (0.9%)	55.6 (0.0%)	53.7 (-1.9%)	57.4 (1.9%)	55.6 (0.0%)
D	All	56.9	55.6 (-1.4%)	55.6 (-1.4%)	55.6 (-1.4%)	55.6 (-1.4%)	56.3 (-0.7%)	59.0 (2.1%)	59.0 (2.1%)
C	All	67.4	69.5 (2.1%)	66.3 (-1.1%)	70.5 (3.2%)	66.3 (-1.1%)	68.4 (1.1%)	70.5 (3.2%)	69.5 (2.1%)
All	All	54.0	53.7 (-0.3%)	53.4 (-0.7%)	54.4 (0.3%)	53.5 (-0.5%)	53.9 (-0.2%)	54.7 (0.7%)	54.9 (0.8%)

Table M.2-17. Percent of months above the 59.9°F pathogen virulence water temperature threshold for steelhead fry by water year type and month, and for all years combined, American River at Hazel Avenue, December through May (BA Scenarios).

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
W	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	5	17.9	7.1	3.6	3.6	3.6	3.6	3.6
AN	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	5	38.5	38.5	0.0	0.0	0.0	0.0	0.0
BN	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	5	72.2	44.4	33.3	33.3	33.3	27.8	27.8
D	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
D	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	4	8.3	0.0	0.0	0.0	0.0	0.0	0.0
D	5	62.5	58.3	37.5	45.8	45.8	41.7	45.8
C	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	4	56.3	0.0	0.0	0.0	0.0	0.0	0.0
C	5	87.5	93.8	37.5	31.3	43.8	50.0	56.3
All	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	4	11.1	0.0	0.0	0.0	0.0	0.0	0.0
All	5	52.5	44.4	22.2	23.2	25.3	24.2	26.3
W	All	3.0	1.2	0.6	0.0	0.6	0.6	0.6
AN	All	6.3	6.3	0.0	0.0	0.0	0.0	0.0
BN	All	12.0	7.4	5.6	5.6	5.6	5.6	4.6
D	All	11.8	9.7	6.3	9.0	7.6	7.6	6.9
C	All	24.2	15.8	6.3	10.5	5.3	7.4	8.4
All	All	10.6	7.4	3.7	4.9	3.9	4.2	4.0

Table M.2-18. Percent (difference in percent relative to NAA) of months above the 59.9°F pathogen virulence water temperature threshold for steelhead fry by water year type and month, and for all years combined, American River at Hazel Avenue, December through May (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	5	3.6	0.0 (-3.6%)	3.6 (0.0%)	3.6 (0.0%)	3.6 (0.0%)	3.6 (0.0%)	7.1 (3.6%)	3.6 (0.0%)
AN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	5	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	30.8 (30.8%)	0.0 (0.0%)
BN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	5	33.3	33.3 (0.0%)	33.3 (0.0%)	33.3 (0.0%)	27.8 (-5.6%)	27.8 (-5.6%)	22.2 (-11.1%)	27.8 (-5.6%)
D	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
D	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 (0.0%)	0.0 (0.0%)
D	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	4	0.0	4.2 (4.2%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	5	37.5	50.0 (12.5%)	45.8 (8.3%)	41.7 (4.2%)	50.0 (12.5%)	50.0 (12.5%)	29.2 (-8.3%)	58.3 (20.8%)
C	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	5	37.5	62.5 (25.0%)	50.0 (12.5%)	31.3 (-6.3%)	50.0 (12.5%)	50.0 (12.5%)	50.0 (12.5%)	37.5 (0.0%)
All	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	4	0.0	1.0 (1.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	5	22.2	28.3 (6.1%)	26.3 (4.0%)	22.2 (0.0%)	26.3 (4.0%)	26.3 (4.0%)	25.3 (3.0%)	26.3 (4.0%)
W	All	0.6	0.0 (-0.6%)	0.6 (0.0%)	0.6 (0.0%)	0.6 (0.0%)	0.6 (0.0%)	1.2 (0.6%)	0.6 (0.0%)
AN	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	5.1 (5.1%)	0.0 (0.0%)
BN	All	5.6	5.6 (0.0%)	5.6 (0.0%)	5.6 (0.0%)	4.6 (-0.9%)	4.6 (-0.9%)	3.7 (-1.9%)	4.6 (-0.9%)
D	All	6.3	9.0 (2.8%)	7.6 (1.4%)	6.9 (0.7%)	8.3 (2.1%)	8.3 (2.1%)	4.9 (-1.4%)	9.7 (3.5%)
C	All	6.3	10.5 (4.2%)	8.4 (2.1%)	5.3 (-1.1%)	8.4 (2.1%)	8.4 (2.1%)	8.4 (2.1%)	6.3 (0.0%)
All	All	3.7	4.9 (1.2%)	4.4 (0.7%)	3.7 (0.0%)	4.4 (0.7%)	4.4 (0.7%)	4.2 (0.5%)	4.4 (0.7%)

Table M.2-19. Percent of months above the 59.9°F pathogen virulence water temperature threshold for steelhead fry by water year type and month, and for all years combined, American River at Watt Avenue, December through May (BA Scenarios).

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
W	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	4	3.6	0.0	0.0	0.0	0.0	0.0	0.0
W	5	28.6	35.7	35.7	35.7	35.7	35.7	35.7
AN	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	4	15.4	7.7	0.0	0.0	0.0	0.0	0.0
AN	5	76.9	84.6	92.3	92.3	92.3	92.3	92.3
BN	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	4	27.8	5.6	5.6	11.1	11.1	16.7	11.1
BN	5	77.8	83.3	83.3	83.3	83.3	83.3	83.3
D	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
D	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	4	33.3	25.0	16.7	20.8	20.8	20.8	20.8
D	5	91.7	95.8	95.8	95.8	95.8	95.8	95.8
C	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	3	12.5	12.5	0.0	6.3	6.3	12.5	6.3
C	4	75.0	68.8	62.5	75.0	37.5	50.0	43.8
C	5	93.8	93.8	100.0	100.0	100.0	100.0	100.0
All	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	3	2.0	2.0	0.0	1.0	1.0	2.0	1.0
All	4	28.3	19.2	15.2	19.2	13.1	16.2	14.1
All	5	69.7	74.7	76.8	76.8	76.8	76.8	76.8
W	All	5.4	6.0	6.0	6.5	6.0	6.0	6.0
AN	All	15.2	15.2	15.2	17.7	15.2	15.2	15.2
BN	All	17.6	14.8	14.8	17.6	15.7	15.7	16.7
D	All	20.8	20.1	18.8	22.9	19.4	19.4	19.4
C	All	30.5	29.5	27.4	25.3	30.5	24.2	27.4
All	All	16.7	16.0	15.3	17.0	16.2	15.2	15.8

Table M.2-20. Percent (difference in percent relative to NAA) of months above the 59.9°F pathogen virulence water temperature threshold for steelhead fry by water year type and month, and for all years combined, American River at Watt Avenue, December through May (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	4	0.0	3.6 (3.6%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	5	35.7	35.7 (0.0%)	35.7 (0.0%)	35.7 (0.0%)	35.7 (0.0%)	35.7 (0.0%)	39.3 (3.6%)	35.7 (0.0%)
AN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	3	0.0	7.7 (7.7%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	4	0.0	15.4 (15.4%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	7.7 (7.7%)
AN	5	92.3	84.6 (-7.7%)	92.3 (0.0%)	92.3 (0.0%)	92.3 (0.0%)	92.3 (0.0%)	100.0 (7.7%)	92.3 (0.0%)
BN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	3	0.0	5.6 (5.6%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	4	5.6	22.2 (16.7%)	11.1 (5.6%)	11.1 (5.6%)	11.1 (5.6%)	11.1 (5.6%)	0.0 (-5.6%)	11.1 (5.6%)
BN	5	83.3	77.8 (-5.6%)	83.3 (0.0%)	83.3 (0.0%)	83.3 (0.0%)	83.3 (0.0%)	88.9 (5.6%)	77.8 (-5.6%)
D	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
D	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 (0.0%)	0.0 (0.0%)
D	3	0.0	16.7 (16.7%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	4	16.7	29.2 (12.5%)	20.8 (4.2%)	20.8 (4.2%)	20.8 (4.2%)	12.5 (-4.2%)	4.2 (-12.5%)	20.8 (4.2%)
D	5	95.8	91.7 (-4.2%)	95.8 (0.0%)	95.8 (0.0%)	91.7 (-4.2%)	95.8 (0.0%)	91.7 (-4.2%)	95.8 (0.0%)
C	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	3	0.0	18.8 (18.8%)	6.3 (6.3%)	6.3 (6.3%)	6.3 (6.3%)	6.3 (6.3%)	6.3 (6.3%)	6.3 (6.3%)
C	4	62.5	37.5 (-25.0%)	37.5 (-25.0%)	68.8 (6.3%)	50.0 (-12.5%)	25.0 (-37.5%)	43.8 (-18.8%)	81.3 (18.8%)
C	5	100.0	93.8 (-6.3%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	3	0.0	9.1 (9.1%)	1.0 (1.0%)	1.0 (1.0%)	1.0 (1.0%)	1.0 (1.0%)	1.0 (1.0%)	1.0 (1.0%)
All	4	15.2	20.2 (5.1%)	13.1 (-2.0%)	18.2 (3.0%)	15.2 (0.0%)	9.1 (-6.1%)	8.1 (-7.1%)	21.2 (6.1%)
All	5	76.8	72.7 (-4.0%)	76.8 (0.0%)	76.8 (0.0%)	75.8 (-1.0%)	76.8 (0.0%)	78.8 (2.0%)	75.8 (-1.0%)
W	All	6.0	6.5 (0.6%)	6.0 (0.0%)	6.0 (0.0%)	6.0 (0.0%)	6.0 (0.0%)	6.5 (0.6%)	6.0 (0.0%)
AN	All	15.2	17.7 (2.5%)	15.2 (0.0%)	15.2 (0.0%)	15.2 (0.0%)	15.2 (0.0%)	16.5 (1.3%)	16.5 (1.3%)
BN	All	14.8	17.6 (2.8%)	15.7 (0.9%)	15.7 (0.9%)	15.7 (0.9%)	15.7 (0.9%)	14.8 (0.0%)	14.8 (0.0%)
D	All	18.8	22.9 (4.2%)	19.4 (0.7%)	19.4 (0.7%)	18.8 (0.0%)	18.1 (-0.7%)	16.0 (-2.8%)	19.4 (0.7%)
C	All	27.4	25.3 (-2.1%)	24.2 (-3.2%)	29.5 (2.1%)	26.3 (-1.1%)	22.1 (-5.3%)	25.3 (-2.1%)	31.6 (4.2%)
All	All	15.3	17.0 (1.7%)	15.2 (-0.2%)	16.0 (0.7%)	15.3 (0.0%)	14.5 (-0.8%)	14.6 (-0.7%)	16.3 (1.0%)

M.2.3.3.5 Juvenile Rearing and Outmigration

Water temperature-related effects on juvenile steelhead rearing and outmigration in the American River were evaluated by assessing: (1) the percent of months with water temperature above the 66.2°F upper limit of optimum temperatures for juvenile steelhead growth, assuming maximum ration levels (Myrick 1998; Myrick and Cech 2001); (2) the percent of months with water temperature above the 59.9°F pathogen virulence threshold (McCullough 1999); (3) the percent of months with water temperatures above the 55°F limit of successful smoltification at Hazel Avenue and Watt Avenue (Table M.2-1).

Results for the 66.2°F upper limit of optimum water temperatures for juvenile steelhead growth, assuming maximum ration levels in Table M.2-21 and Table M.2-22 for Hazel Avenue and Table M.2-23 and Table M.2-24 for Watt Avenue.

- At Hazel Avenue, the highest percent of months with water temperature above the limit was 87.5% and occurred during August of critical water years under the NAA and during September of critical water years under Alternative 2 with TUCP without VA (Table M.2-21 and Table M.2-22). The lowest percent of months with water temperature exceeding the limit was 0% and occurred during November through May for all water year types and in October during at least one water year type under the NAA, Alternative 2 without TUCP Delta VA, and Alternative 3. Combining water year types, the lowest percent of months with water temperature exceeding the upper limit (0%) occurred during November through May under the NAA and all alternatives. The highest percent of months with water temperature exceeding the upper limit occurred during August or September, depending on alternative. Air temperatures drove this temporal pattern.

- At Watt Avenue, the highest percent of months with water temperature above the limit was 100% and occurred in July, August, and September of at least one water year type under the NAA and all alternatives and in June of critical water years under Alternative 2 with TUCP without VA (Table M.2-23 and Table M.2-24). The lowest percent of months with water temperature exceeding the limit was 0% and occurred in November through May in at least one water year type under the NAA and all alternatives. Combining water year types for the NAA and all alternatives, the lowest percent of months with water temperature exceeding the upper limit (0%) occurred in November through April (except in April for Alternative 1) and the highest percent of months with water temperature exceeding the upper limit occurred in July, August or September, depending on alternative. Air temperatures drove this temporal pattern.

Results for the 59.9°F pathogen virulence threshold for juvenile steelhead rearing and outmigration are presented in Table M.2-25 and Table M.2-26 for Hazel Avenue and Table M.2-27 and Table M.2-28 for Watt Avenue.

- At Hazel Avenue, the highest percent of months with water temperature above the virulence threshold was 100% and occurred during June through October of at least one water year type under the NAA and most alternatives and during June of critical years under Alternative 1, Alternative 2 without TUCP without VA, Alternative 2 without TUCP Delta VA, Alternative 2 without TUCP Systemwide VA, and Alternative 3 except June under the NAA and Alternative 2 Without TUCP Without VA (Table M.2-25 and

Table M.2-26). The lowest percent of months with water temperature exceeding the virulence threshold was 0% and occurred in November through April of at least one water year type under the NAA and most alternatives. Combining water year types, exceedances above the virulence threshold were at or near 0% between December and March for the NAA and all alternatives. Combining all water year types, exceedance of the virulence threshold peaked in July through September at 100% for the NAA and all alternatives. Air temperatures drove this temporal pattern.

- At Watt Avenue, the highest percent of months with water temperature above the 59.9°F pathogen virulence water temperature threshold for juvenile steelhead rearing and outmigration was 100% and occurred during June through October of each water year type under the NAA and all alternatives (Table M.2-27 and Table M.2-28) and during May of at least one water year type under the NAA and all alternatives but Alternative 1. The lowest percent of months with water temperature exceeding the limit was 0% and occurred during December through February of all water year types under the NAA and all alternatives, and during November through April at least one water year type under the NAA and all alternatives except in April under Alternative 1, in which there were exceedances above the threshold in all water year types. Combining water year types, the percent of months with water temperature exceeding the virulence threshold was lowest (0%) between December and February and highest during June through October for the NAA and all alternatives. Air temperatures drove this temporal pattern.

Results for the 55°F successful steelhead smoltification limit are presented in Table M.2-29 and Table M.2-30 for Hazel Avenue and Table M.2-31 and Table M.2-32 for Watt Avenue.

- At Hazel Avenue, the highest percent of months with water temperature above the limit was 100% and occurred during May of above normal, below normal, dry, and critical water years under the NAA and all alternatives (Table M.2-29 and Table M.2-30). The lowest percent of months with water temperature exceeding the limit was 0% and occurred in January through April in at least one water year type under the NAA and all alternatives. Combining water year types, the percent of months with water temperature exceeding the limit was lowest (0%) during January and February and highest (97% to 99%) during May for the NAA and all alternatives. Air temperatures drove this temporal pattern.

- At Watt Avenue, the highest percent of months with water temperature above the successful steelhead smoltification limit was 100% and occurred in May for all water year types and all alternatives (Table M.2-31 and Table M.2-32). The lowest percent of months with water temperature exceeding the limit was 0% and occurred in January and February of at least one water year type under the NAA and all alternatives. Combining water year types, the percent of months with water temperature exceeding above the limit were lowest (0%) during January and highest during May (100%) for the NAA and all alternatives. Air temperatures drove this temporal pattern.

Table M.2-21. Percent of months above the 66.2°F upper optimal limit for rearing steelhead juveniles by water year type and month, and for all years combined, American River at Hazel Avenue, Year-round (BA Scenarios).

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	6	25.0	7.1	7.1	3.6	3.6	7.1	7.1
W	7	100.0	46.4	39.3	42.9	42.9	39.3	39.3
W	8	100.0	78.6	78.6	82.1	82.1	82.1	78.6
W	9	92.9	85.7	78.6	82.1	82.1	78.6	82.1
W	10	0.0	39.3	39.3	46.4	46.4	46.4	46.4
W	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	6	69.2	7.7	23.1	23.1	23.1	23.1	15.4
AN	7	100.0	76.9	53.8	61.5	61.5	61.5	53.8
AN	8	100.0	61.5	53.8	53.8	53.8	53.8	38.5
AN	9	100.0	76.9	53.8	46.2	53.8	46.2	61.5
AN	10	0.0	38.5	0.0	7.7	7.7	0.0	7.7
AN	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
AN	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	5	11.1	5.6	0.0	0.0	0.0	0.0	0.0
BN	6	66.7	27.8	22.2	16.7	16.7	33.3	38.9
BN	7	100.0	88.9	55.6	61.1	55.6	55.6	55.6
BN	8	100.0	88.9	66.7	61.1	61.1	66.7	66.7
BN	9	100.0	83.3	50.0	38.9	38.9	38.9	44.4
BN	10	0.0	50.0	16.7	5.6	5.6	5.6	11.1
BN	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	5	25.0	8.3	0.0	0.0	0.0	0.0	0.0
D	6	62.5	37.5	4.2	12.5	12.5	12.5	8.3
D	7	100.0	79.2	45.8	50.0	50.0	50.0	58.3
D	8	100.0	91.7	75.0	75.0	70.8	79.2	54.2
D	9	100.0	91.7	62.5	62.5	66.7	62.5	62.5
D	10	12.5	62.5	8.3	16.7	16.7	8.3	4.2
D	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
C	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	5	56.3	6.3	0.0	0.0	0.0	0.0	0.0
C	6	93.8	68.8	31.3	31.3	43.8	50.0	43.8
C	7	100.0	87.5	68.8	75.0	75.0	68.8	62.5
C	8	100.0	100.0	87.5	75.0	81.3	68.8	81.3
C	9	100.0	100.0	81.3	75.0	87.5	87.5	81.3
C	10	53.3	93.3	33.3	26.7	40.0	53.3	40.0
C	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	5	17.2	4.0	0.0	0.0	0.0	0.0	0.0
All	6	58.6	28.3	15.2	15.2	17.2	22.2	20.2
All	7	100.0	72.7	50.5	55.6	54.5	52.5	52.5
All	8	100.0	84.8	73.7	71.7	71.7	72.7	65.7
All	9	98.0	87.9	66.7	63.6	67.7	64.6	67.7
All	10	11.2	55.1	21.4	23.5	25.5	24.5	23.5
All	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	All	26.5	21.4	20.2	21.1	21.4	21.4	21.1
AN	All	30.4	21.5	15.2	14.6	15.8	16.5	15.2
BN	All	31.5	28.7	17.6	11.6	15.3	14.8	16.7

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
D	All	33.3	30.9	16.3	13.5	18.1	18.1	17.7
C	All	42.3	38.1	25.4	25.9	23.8	27.5	27.5
All	All	32.1	27.7	19.0	17.4	19.1	19.7	19.7

Table M.2-22. Percent (difference in percent relative to NAA) of months above the 66.2°F upper limit of optimum temperatures for juvenile steelhead growth, assuming maximum ration levels by water year type and month, and for all years combined, American River at Hazel Avenue, Year-round (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	6	7.1	7.1 (0.0%)	3.6 (-3.6%)	3.6 (-3.6%)	3.6 (-3.6%)	7.1 (0.0%)	3.6 (-3.6%)	3.6 (-3.6%)
W	7	39.3	39.3 (0.0%)	42.9 (3.6%)	42.9 (3.6%)	39.3 (0.0%)	32.1 (-7.1%)	42.9 (3.6%)	46.4 (7.1%)
W	8	78.6	78.6 (0.0%)	82.1 (3.6%)	82.1 (3.6%)	82.1 (3.6%)	78.6 (0.0%)	71.4 (-7.1%)	82.1 (3.6%)
W	9	78.6	82.1 (3.6%)	82.1 (3.6%)	82.1 (3.6%)	78.6 (0.0%)	82.1 (3.6%)	71.4 (-7.1%)	78.6 (0.0%)
W	10	39.3	46.4 (7.1%)	46.4 (7.1%)	46.4 (7.1%)	46.4 (7.1%)	46.4 (7.1%)	39.3 (0.0%)	50.0 (10.7%)
W	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
AN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	6	23.1	15.4 (-7.7%)	23.1 (0.0%)	23.1 (0.0%)	23.1 (0.0%)	15.4 (-7.7%)	7.7 (-15.4%)	23.1 (0.0%)
AN	7	53.8	30.8 (-23.1%)	53.8 (0.0%)	61.5 (7.7%)	61.5 (7.7%)	46.2 (-7.7%)	53.8 (0.0%)	61.5 (7.7%)
AN	8	53.8	61.5 (7.7%)	53.8 (0.0%)	53.8 (0.0%)	53.8 (0.0%)	38.5 (-15.4%)	46.2 (-7.7%)	53.8 (0.0%)
AN	9	53.8	61.5 (7.7%)	46.2 (-7.7%)	46.2 (-7.7%)	46.2 (-7.7%)	46.2 (-7.7%)	53.8 (0.0%)	53.8 (0.0%)
AN	10	0.0	7.7 (7.7%)	7.7 (7.7%)	7.7 (7.7%)	0.0 (0.0%)	7.7 (7.7%)	0.0 (0.0%)	7.7 (7.7%)
AN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	6	22.2	11.1 (-11.1%)	16.7 (-5.6%)	16.7 (-5.6%)	33.3 (11.1%)	38.9 (16.7%)	16.7 (-5.6%)	22.2 (0.0%)
BN	7	55.6	27.8 (-27.8%)	61.1 (5.6%)	61.1 (5.6%)	61.1 (5.6%)	55.6 (0.0%)	55.6 (0.0%)	38.9 (-16.7%)
BN	8	66.7	44.4 (-22.2%)	61.1 (-5.6%)	66.7 (0.0%)	61.1 (-5.6%)	66.7 (0.0%)	66.7 (0.0%)	66.7 (0.0%)
BN	9	50.0	50.0 (0.0%)	44.4 (-5.6%)	38.9 (-11.1%)	38.9 (-11.1%)	72.2 (22.2%)	61.1 (11.1%)	38.9 (-11.1%)
BN	10	16.7	5.6 (-11.1%)	5.6 (-11.1%)	5.6 (-11.1%)	5.6 (-11.1%)	11.1 (-5.6%)	16.7 (0.0%)	11.1 (-5.6%)
BN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
D	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	6	4.2	8.3 (4.2%)	4.2 (0.0%)	4.2 (0.0%)	8.3 (4.2%)	8.3 (4.2%)	0.0 (-4.2%)	12.5 (8.3%)
D	7	45.8	37.5 (-8.3%)	50.0 (4.2%)	50.0 (4.2%)	50.0 (4.2%)	45.8 (0.0%)	41.7 (-4.2%)	41.7 (-4.2%)
D	8	75.0	79.2 (4.2%)	66.7 (-8.3%)	70.8 (-4.2%)	79.2 (4.2%)	70.8 (-4.2%)	66.7 (-8.3%)	75.0 (0.0%)
D	9	62.5	29.2 (-33.3%)	70.8 (8.3%)	62.5 (0.0%)	58.3 (-4.2%)	62.5 (0.0%)	66.7 (4.2%)	66.7 (4.2%)
D	10	8.3	8.3 (0.0%)	4.2 (-4.2%)	4.2 (-4.2%)	0.0 (-8.3%)	4.2 (-4.2%)	16.7 (8.3%)	12.5 (4.2%)
D	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	6	31.3	37.5 (6.3%)	50.0 (18.8%)	31.3 (0.0%)	43.8 (12.5%)	31.3 (0.0%)	37.5 (6.3%)	31.3 (0.0%)
C	7	68.8	62.5 (-6.3%)	68.8 (0.0%)	81.3 (12.5%)	68.8 (0.0%)	68.8 (0.0%)	81.3 (12.5%)	62.5 (-6.3%)
C	8	87.5	81.3 (-6.3%)	75.0 (-12.5%)	68.8 (-18.8%)	62.5 (-25.0%)	81.3 (-6.3%)	81.3 (-6.3%)	68.8 (-18.8%)
C	9	81.3	75.0 (-6.3%)	87.5 (6.3%)	68.8 (-12.5%)	75.0 (-6.3%)	81.3 (0.0%)	81.3 (0.0%)	62.5 (-18.8%)
C	10	33.3	53.3 (20.0%)	40.0 (6.7%)	26.7 (-6.7%)	60.0 (26.7%)	53.3 (20.0%)	53.3 (20.0%)	46.7 (13.3%)
C	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
All	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 (0.0%)	0.0 (0.0%)
All	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	6	15.2	14.1 (-1.0%)	16.2 (1.0%)	13.1 (-2.0%)	19.2 (4.0%)	18.2 (3.0%)	11.1 (-4.0%)	16.2 (1.0%)
All	7	50.5	39.4 (-11.1%)	53.5 (3.0%)	56.6 (6.1%)	53.5 (3.0%)	47.5 (-3.0%)	52.5 (2.0%)	48.5 (-2.0%)
All	8	73.7	70.7 (-3.0%)	69.7 (-4.0%)	70.7 (-3.0%)	70.7 (-3.0%)	69.7 (-4.0%)	67.7 (-6.1%)	71.7 (-2.0%)
All	9	66.7	59.6 (-7.1%)	68.7 (2.0%)	62.6 (-4.0%)	61.6 (-5.1%)	70.7 (4.0%)	67.7 (1.0%)	62.6 (-4.0%)
All	10	21.4	25.5 (4.1%)	22.4 (1.0%)	20.4 (-1.0%)	23.5 (2.0%)	25.5 (4.1%)	26.5 (5.1%)	27.6 (6.1%)
All	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	All	20.2	21.1 (0.9%)	21.4 (1.2%)	21.4 (1.2%)	20.8 (0.6%)	20.5 (0.3%)	19.0 (-1.2%)	21.7 (1.5%)
AN	All	15.2	14.6 (-0.6%)	15.2 (0.0%)	15.8 (0.6%)	15.2 (0.0%)	12.7 (-2.5%)	13.3 (-1.9%)	16.5 (1.3%)
BN	All	17.6	11.6 (-6.0%)	15.7 (-1.9%)	15.7 (-1.9%)	16.7 (-0.9%)	20.4 (2.8%)	18.1 (0.5%)	14.8 (-2.8%)
D	All	16.3	13.5 (-2.8%)	16.3 (0.0%)	16.0 (-0.3%)	16.3 (0.0%)	16.0 (-0.3%)	16.0 (-0.3%)	17.4 (1.0%)
C	All	25.4	25.9 (0.5%)	27.0 (1.6%)	23.3 (-2.1%)	25.9 (0.5%)	26.5 (1.1%)	28.0 (2.6%)	22.8 (-2.6%)
All	All	19.0	17.4 (-1.5%)	19.2 (0.3%)	18.6 (-0.3%)	19.0 (0.1%)	19.3 (0.3%)	18.8 (-0.2%)	18.9 (-0.1%)

Table M.2-23. Percent of months above the 66.2°F upper optimal growth limit for rearing steelhead juveniles by water year type and month, and for all years combined, American River at Watt Avenue, Year-round (BA Scenarios).

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	5	10.7	7.1	0.0	0.0	0.0	0.0	0.0
W	6	67.9	28.6	17.9	17.9	17.9	17.9	14.3
W	7	100.0	100.0	96.4	96.4	96.4	96.4	96.4
W	8	100.0	96.4	100.0	96.4	96.4	100.0	100.0
W	9	100.0	100.0	89.3	85.7	85.7	85.7	85.7
W	10	14.3	50.0	46.4	57.1	57.1	53.6	53.6
W	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	5	30.8	15.4	0.0	0.0	0.0	0.0	0.0
AN	6	84.6	69.2	53.8	61.5	61.5	61.5	53.8
AN	7	100.0	100.0	92.3	92.3	92.3	92.3	92.3
AN	8	100.0	92.3	100.0	100.0	100.0	100.0	100.0
AN	9	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AN	10	23.1	76.9	15.4	15.4	15.4	15.4	7.7
AN	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
AN	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	5	38.9	27.8	11.1	11.1	11.1	11.1	11.1
BN	6	88.9	83.3	77.8	77.8	77.8	77.8	77.8
BN	7	100.0	100.0	100.0	100.0	100.0	100.0	100.0
BN	8	100.0	100.0	100.0	94.4	94.4	88.9	94.4
BN	9	100.0	100.0	100.0	100.0	94.4	94.4	100.0
BN	10	33.3	66.7	16.7	16.7	11.1	11.1	11.1
BN	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	4	4.2	0.0	0.0	0.0	0.0	0.0	0.0
D	5	29.2	50.0	4.2	0.0	0.0	0.0	4.2
D	6	100.0	87.5	75.0	79.2	79.2	79.2	79.2
D	7	100.0	100.0	100.0	100.0	100.0	100.0	100.0
D	8	100.0	100.0	100.0	95.8	95.8	100.0	91.7
D	9	100.0	100.0	100.0	95.8	95.8	91.7	95.8
D	10	41.7	83.3	29.2	16.7	16.7	12.5	12.5
D	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
C	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	4	31.3	0.0	0.0	0.0	0.0	0.0	0.0
C	5	81.3	87.5	50.0	37.5	56.3	50.0	43.8
C	6	100.0	93.8	93.8	93.8	100.0	100.0	93.8
C	7	100.0	100.0	100.0	100.0	100.0	100.0	100.0
C	8	100.0	100.0	100.0	100.0	100.0	100.0	100.0
C	9	100.0	100.0	100.0	100.0	100.0	100.0	100.0
C	10	93.3	100.0	66.7	53.3	60.0	66.7	73.3
C	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	4	6.1	0.0	0.0	0.0	0.0	0.0	0.0
All	5	34.3	35.4	11.1	8.1	11.1	10.1	10.1
All	6	86.9	68.7	59.6	61.6	62.6	62.6	59.6
All	7	100.0	100.0	98.0	98.0	98.0	98.0	98.0
All	8	100.0	98.0	100.0	97.0	97.0	98.0	97.0
All	9	100.0	100.0	97.0	94.9	93.9	92.9	94.9
All	10	37.8	72.4	35.7	33.7	33.7	32.7	32.7
All	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	All	32.7	31.8	29.2	31.0	29.5	29.5	29.5
AN	All	36.1	37.3	29.7	30.4	30.4	30.4	30.4
BN	All	38.4	39.8	33.8	31.9	33.3	32.4	31.9

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
D	All	39.6	43.4	34.0	36.1	32.3	32.3	31.9
C	All	50.8	48.7	42.9	46.0	40.7	43.4	43.4
All	All	38.8	39.5	33.4	34.7	32.8	33.0	32.9

Table M.2-24. Percent (difference in percent relative to NAA) of months above the 66.2°F upper limit of optimum temperatures for juvenile steelhead growth, assuming maximum ration levels by water year type and month, and for all years combined, American River at Watt Avenue, Year-round (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	5	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	3.6 (3.6%)	0.0 (0.0%)
W	6	17.9	25.0 (7.1%)	17.9 (0.0%)	17.9 (0.0%)	17.9 (0.0%)	14.3 (-3.6%)	32.1 (14.3%)	21.4 (3.6%)
W	7	96.4	96.4 (0.0%)	96.4 (0.0%)	96.4 (0.0%)	96.4 (0.0%)	96.4 (0.0%)	100.0 (3.6%)	96.4 (0.0%)
W	8	100.0	92.9 (-7.1%)	96.4 (-3.6%)	96.4 (-3.6%)	96.4 (-3.6%)	100.0 (0.0%)	89.3 (-10.7%)	92.9 (-7.1%)
W	9	89.3	100.0 (10.7%)	89.3 (0.0%)	89.3 (0.0%)	89.3 (0.0%)	89.3 (0.0%)	96.4 (7.1%)	89.3 (0.0%)
W	10	46.4	57.1 (10.7%)	57.1 (10.7%)	57.1 (10.7%)	53.6 (7.1%)	53.6 (7.1%)	57.1 (10.7%)	57.1 (10.7%)
W	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
AN	4	0.0	7.7 (7.7%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	6	53.8	53.8 (0.0%)	61.5 (7.7%)	61.5 (7.7%)	61.5 (7.7%)	53.8 (0.0%)	84.6 (30.8%)	61.5 (7.7%)
AN	7	92.3	92.3 (0.0%)	92.3 (0.0%)	92.3 (0.0%)	92.3 (0.0%)	92.3 (0.0%)	100.0 (7.7%)	100.0 (7.7%)
AN	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	92.3 (-7.7%)	92.3 (-7.7%)
AN	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	76.9 (-23.1%)
AN	10	15.4	15.4 (0.0%)	15.4 (0.0%)	15.4 (0.0%)	23.1 (7.7%)	7.7 (-7.7%)	15.4 (0.0%)	23.1 (7.7%)
AN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	4	0.0	5.6 (5.6%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	5	11.1	5.6 (-5.6%)	11.1 (0.0%)	11.1 (0.0%)	11.1 (0.0%)	5.6 (-5.6%)	11.1 (0.0%)	5.6 (-5.6%)
BN	6	77.8	66.7 (-11.1%)	77.8 (0.0%)	77.8 (0.0%)	77.8 (0.0%)	77.8 (0.0%)	94.4 (16.7%)	72.2 (-5.6%)
BN	7	100.0	94.4 (-5.6%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	94.4 (-5.6%)	100.0 (0.0%)
BN	8	100.0	94.4 (-5.6%)	94.4 (-5.6%)	94.4 (-5.6%)	94.4 (-5.6%)	94.4 (-5.6%)	100.0 (0.0%)	94.4 (-5.6%)
BN	9	100.0	94.4 (-5.6%)	94.4 (-5.6%)	94.4 (-5.6%)	100.0 (0.0%)	94.4 (-5.6%)	94.4 (-5.6%)	94.4 (-5.6%)
BN	10	16.7	22.2 (5.6%)	11.1 (-5.6%)	16.7 (0.0%)	11.1 (-5.6%)	16.7 (0.0%)	22.2 (5.6%)	11.1 (-5.6%)
BN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
D	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	4	0.0	12.5 (12.5%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	5	4.2	12.5 (8.3%)	0.0 (-4.2%)	0.0 (-4.2%)	4.2 (0.0%)	8.3 (4.2%)	20.8 (16.7%)	16.7 (12.5%)
D	6	75.0	79.2 (4.2%)	83.3 (8.3%)	83.3 (8.3%)	79.2 (4.2%)	79.2 (4.2%)	83.3 (8.3%)	87.5 (12.5%)
D	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	8	100.0	100.0 (0.0%)	100.0 (0.0%)	95.8 (-4.2%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	95.8 (-4.2%)
D	9	100.0	100.0 (0.0%)	95.8 (-4.2%)	95.8 (-4.2%)	87.5 (-12.5%)	95.8 (-4.2%)	87.5 (-12.5%)	95.8 (-4.2%)
D	10	29.2	29.2 (0.0%)	12.5 (-16.7%)	12.5 (-16.7%)	16.7 (-12.5%)	16.7 (-12.5%)	20.8 (-8.3%)	29.2 (0.0%)
D	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	4	0.0	12.5 (12.5%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	5	50.0	75.0 (25.0%)	62.5 (12.5%)	50.0 (0.0%)	50.0 (0.0%)	43.8 (-6.3%)	43.8 (-6.3%)	62.5 (12.5%)
C	6	93.8	87.5 (-6.3%)	100.0 (6.3%)	87.5 (-6.3%)	93.8 (0.0%)	93.8 (0.0%)	93.8 (0.0%)	87.5 (-6.3%)
C	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	10	66.7	73.3 (6.7%)	73.3 (6.7%)	60.0 (-6.7%)	73.3 (6.7%)	73.3 (6.7%)	86.7 (20.0%)	60.0 (-6.7%)
C	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
All	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 (0.0%)	0.0 (0.0%)
All	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	4	0.0	7.1 (7.1%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	5	11.1	16.2 (5.1%)	12.1 (1.0%)	10.1 (-1.0%)	11.1 (0.0%)	10.1 (-1.0%)	15.2 (4.0%)	15.2 (4.0%)
All	6	59.6	59.6 (0.0%)	63.6 (4.0%)	61.6 (2.0%)	61.6 (2.0%)	59.6 (0.0%)	72.7 (13.1%)	62.6 (3.0%)
All	7	98.0	97.0 (-1.0%)	98.0 (0.0%)	98.0 (0.0%)	98.0 (0.0%)	98.0 (0.0%)	99.0 (1.0%)	99.0 (1.0%)
All	8	100.0	97.0 (-3.0%)	98.0 (-2.0%)	97.0 (-3.0%)	98.0 (-2.0%)	99.0 (-1.0%)	96.0 (-4.0%)	94.9 (-5.1%)
All	9	97.0	99.0 (2.0%)	94.9 (-2.0%)	94.9 (-2.0%)	93.9 (-3.0%)	94.9 (-2.0%)	94.9 (-2.0%)	91.9 (-5.1%)
All	10	35.7	40.8 (5.1%)	34.7 (-1.0%)	33.7 (-2.0%)	35.7 (0.0%)	34.7 (-1.0%)	40.8 (5.1%)	37.8 (2.0%)
All	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	All	29.2	31.0 (1.8%)	29.8 (0.6%)	29.8 (0.6%)	29.5 (0.3%)	29.5 (0.3%)	31.5 (2.4%)	29.8 (0.6%)
AN	All	29.7	30.4 (0.6%)	30.4 (0.6%)	30.4 (0.6%)	31.0 (1.3%)	29.1 (-0.6%)	32.3 (2.5%)	29.1 (-0.6%)
BN	All	33.8	31.9 (-1.9%)	32.4 (-1.4%)	32.9 (-0.9%)	32.9 (-0.9%)	32.4 (-1.4%)	34.7 (0.9%)	31.5 (-2.3%)
D	All	34.0	36.1 (2.1%)	32.6 (-1.4%)	32.3 (-1.7%)	32.3 (-1.7%)	33.3 (-0.7%)	34.4 (0.3%)	35.4 (1.4%)
C	All	42.9	46.0 (3.2%)	45.0 (2.1%)	41.8 (-1.1%)	43.4 (0.5%)	42.9 (0.0%)	43.9 (1.1%)	42.9 (0.0%)
All	All	33.4	34.7 (1.3%)	33.4 (0.0%)	32.9 (-0.5%)	33.2 (-0.3%)	33.0 (-0.4%)	34.9 (1.4%)	33.4 (0.0%)

Table M.2-25. Percent of months above the 59.9°F pathogen virulence water temperature threshold for juvenile steelhead rearing and outmigration by water year type and month, and for all years combined, American River at Hazel Avenue, Year-round (BA Scenarios).

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	5	17.9	7.1	3.6	3.6	3.6	3.6	3.6
W	6	82.1	67.9	50.0	50.0	50.0	46.4	46.4
W	7	100.0	100.0	100.0	100.0	100.0	100.0	100.0
W	8	100.0	100.0	100.0	100.0	100.0	100.0	100.0
W	9	100.0	100.0	100.0	100.0	100.0	100.0	100.0
W	10	96.4	100.0	96.4	96.4	96.4	100.0	100.0
W	11	0.0	35.7	3.6	7.1	7.1	3.6	7.1
W	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	5	38.5	38.5	0.0	0.0	0.0	0.0	0.0
AN	6	100.0	100.0	84.6	84.6	84.6	84.6	84.6
AN	7	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AN	8	100.0	100.0	100.0	100.0	100.0	100.0	100.0

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
AN	9	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AN	10	100.0	100.0	84.6	84.6	84.6	84.6	84.6
AN	11	0.0	28.6	0.0	0.0	0.0	7.1	7.1
AN	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	5	72.2	44.4	33.3	33.3	33.3	27.8	27.8
BN	6	100.0	94.4	94.4	94.4	94.4	88.9	94.4
BN	7	100.0	100.0	100.0	100.0	100.0	100.0	100.0
BN	8	100.0	100.0	100.0	100.0	100.0	100.0	100.0
BN	9	100.0	100.0	100.0	100.0	100.0	100.0	100.0
BN	10	94.4	100.0	83.3	77.8	77.8	83.3	83.3
BN	11	0.0	55.6	0.0	0.0	0.0	0.0	0.0
BN	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	4	8.3	0.0	0.0	0.0	0.0	0.0	0.0
D	5	62.5	58.3	37.5	45.8	45.8	41.7	45.8
D	6	100.0	100.0	91.7	95.8	95.8	95.8	95.8
D	7	100.0	100.0	100.0	100.0	100.0	100.0	100.0

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
D	8	100.0	100.0	100.0	100.0	100.0	100.0	100.0
D	9	100.0	100.0	100.0	100.0	100.0	100.0	100.0
D	10	95.8	100.0	95.8	95.8	95.8	95.8	95.8
D	11	4.2	54.2	4.2	4.2	4.2	8.3	4.2
D	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	4	56.3	0.0	0.0	0.0	0.0	0.0	0.0
C	5	87.5	93.8	37.5	31.3	43.8	50.0	56.3
C	6	100.0	100.0	93.8	93.8	100.0	100.0	100.0
C	7	100.0	100.0	100.0	100.0	100.0	100.0	100.0
C	8	100.0	100.0	100.0	100.0	100.0	100.0	100.0
C	9	100.0	100.0	100.0	100.0	100.0	100.0	100.0
C	10	100.0	100.0	100.0	100.0	100.0	100.0	100.0
C	11	33.3	80.0	46.7	33.3	53.3	46.7	33.3
C	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	4	11.1	0.0	0.0	0.0	0.0	0.0	0.0
All	5	52.5	44.4	22.2	23.2	25.3	24.2	26.3
All	6	94.9	89.9	79.8	80.8	81.8	79.8	80.8

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
All	7	100.0	100.0	100.0	100.0	100.0	100.0	100.0
All	8	100.0	100.0	100.0	100.0	100.0	100.0	100.0
All	9	100.0	100.0	100.0	100.0	100.0	100.0	100.0
All	10	96.9	100.0	92.9	91.8	91.8	93.9	93.9
All	11	6.1	49.5	9.1	8.1	11.1	11.1	9.1
All	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	All	41.4	42.6	37.8	38.1	38.1	38.1	37.8
AN	All	44.3	46.8	38.6	38.6	38.6	38.6	39.2
BN	All	47.2	49.5	42.6	43.1	42.1	42.1	41.7
D	All	47.6	51.0	44.1	45.8	45.1	45.1	45.1
C	All	56.6	56.1	48.1	51.9	46.6	49.7	49.7
All	All	46.8	48.6	42.0	43.1	42.0	42.5	42.4

Table M.2-26. Percent (difference in percent relative to NAA) of months above the 59.9°F pathogen virulence water temperature threshold for juvenile steelhead rearing and outmigration by water year type and month, and for all years combined, American River at Hazel Avenue, Year-round (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	5	3.6	0.0 (-3.6%)	3.6 (0.0%)	3.6 (0.0%)	3.6 (0.0%)	3.6 (0.0%)	7.1 (3.6%)	3.6 (0.0%)
W	6	50.0	60.7 (10.7%)	46.4 (-3.6%)	46.4 (-3.6%)	46.4 (-3.6%)	46.4 (-3.6%)	57.1 (7.1%)	57.1 (7.1%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	10	96.4	96.4 (0.0%)	100.0 (3.6%)	100.0 (3.6%)	100.0 (3.6%)	100.0 (3.6%)	100.0 (3.6%)	100.0 (3.6%)
W	11	3.6	0.0 (-3.6%)	7.1 (3.6%)	7.1 (3.6%)	3.6 (0.0%)	7.1 (3.6%)	3.6 (0.0%)	7.1 (3.6%)
W	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	5	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	30.8 (30.8%)	0.0 (0.0%)
AN	6	84.6	76.9 (-7.7%)	84.6 (0.0%)	84.6 (0.0%)	84.6 (0.0%)	84.6 (0.0%)	100.0 (15.4%)	76.9 (-7.7%)
AN	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	10	84.6	92.3 (7.7%)	76.9 (-7.7%)	84.6 (0.0%)	76.9 (-7.7%)	84.6 (0.0%)	100.0 (15.4%)	92.3 (7.7%)
AN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	7.1 (7.1%)	7.1 (7.1%)	0.0 (0.0%)	0.0 (0.0%)
AN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	5	33.3	33.3 (0.0%)	33.3 (0.0%)	33.3 (0.0%)	27.8 (-5.6%)	27.8 (-5.6%)	22.2 (-11.1%)	27.8 (-5.6%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
BN	6	94.4	88.9 (-5.6%)	94.4 (0.0%)	94.4 (0.0%)	88.9 (-5.6%)	94.4 (0.0%)	94.4 (0.0%)	88.9 (-5.6%)
BN	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	10	83.3	94.4 (11.1%)	83.3 (0.0%)	83.3 (0.0%)	88.9 (5.6%)	83.3 (0.0%)	100.0 (16.7%)	88.9 (5.6%)
BN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	11.1 (11.1%)	0.0 (0.0%)
BN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	4	0.0	4.2 (4.2%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	5	37.5	50.0 (12.5%)	45.8 (8.3%)	41.7 (4.2%)	50.0 (12.5%)	50.0 (12.5%)	29.2 (-8.3%)	58.3 (20.8%)
D	6	91.7	91.7 (0.0%)	95.8 (4.2%)	95.8 (4.2%)	95.8 (4.2%)	95.8 (4.2%)	95.8 (4.2%)	100.0 (8.3%)
D	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	10	95.8	100.0 (4.2%)	95.8 (0.0%)	95.8 (0.0%)	95.8 (0.0%)	100.0 (4.2%)	100.0 (4.2%)	100.0 (4.2%)
D	11	4.2	4.2 (0.0%)	4.2 (0.0%)	4.2 (0.0%)	0.0 (-4.2%)	4.2 (0.0%)	8.3 (4.2%)	4.2 (0.0%)
D	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
C	5	37.5	62.5 (25.0%)	50.0 (12.5%)	31.3 (-6.3%)	50.0 (12.5%)	50.0 (12.5%)	50.0 (12.5%)	37.5 (0.0%)
C	6	93.8	100.0 (6.3%)	100.0 (6.3%)	93.8 (0.0%)	100.0 (6.3%)	100.0 (6.3%)	100.0 (6.3%)	93.8 (0.0%)
C	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	93.3 (-6.7%)
C	11	46.7	60.0 (13.3%)	53.3 (6.7%)	40.0 (-6.7%)	46.7 (0.0%)	46.7 (0.0%)	40.0 (-6.7%)	46.7 (0.0%)
C	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	4	0.0	1.0 (1.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	5	22.2	28.3 (6.1%)	26.3 (4.0%)	22.2 (0.0%)	26.3 (4.0%)	26.3 (4.0%)	25.3 (3.0%)	26.3 (4.0%)
All	6	79.8	81.8 (2.0%)	80.8 (1.0%)	79.8 (0.0%)	79.8 (0.0%)	80.8 (1.0%)	85.9 (6.1%)	81.8 (2.0%)
All	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	10	92.9	96.9 (4.1%)	92.9 (0.0%)	93.9 (1.0%)	93.9 (1.0%)	94.9 (2.0%)	100.0 (7.1%)	95.9 (3.1%)
All	11	9.1	10.1 (1.0%)	11.1 (2.0%)	9.1 (0.0%)	9.1 (0.0%)	11.1 (2.0%)	11.1 (2.0%)	10.1 (1.0%)
All	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	All	37.8	38.1 (0.3%)	38.1 (0.3%)	38.1 (0.3%)	37.8 (0.0%)	38.1 (0.3%)	39.0 (1.2%)	39.0 (1.2%)
AN	All	38.6	38.6 (0.0%)	38.0 (-0.6%)	38.6 (0.0%)	38.6 (0.0%)	39.2 (0.6%)	43.7 (5.1%)	38.6 (0.0%)
BN	All	42.6	43.1 (0.5%)	42.6 (0.0%)	42.6 (0.0%)	42.1 (-0.5%)	42.1 (-0.5%)	44.0 (1.4%)	42.1 (-0.5%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
D	All	44.1	45.8 (1.7%)	45.1 (1.0%)	44.8 (0.7%)	45.1 (1.0%)	45.8 (1.7%)	44.4 (0.3%)	46.9 (2.8%)
C	All	48.1	51.9 (3.7%)	50.3 (2.1%)	47.1 (-1.1%)	49.7 (1.6%)	49.7 (1.6%)	49.2 (1.1%)	47.6 (-0.5%)
All	All	42.0	43.1 (1.2%)	42.5 (0.6%)	42.0 (0.1%)	42.4 (0.4%)	42.7 (0.8%)	43.5 (1.5%)	42.8 (0.8%)

Table M.2-27. Percent of months above the 59.9°F pathogen virulence water temperature threshold for juvenile steelhead rearing and outmigration by water year type and month, and for all years combined, American River at Watt Avenue, Year-round (BA Scenarios).

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	4	3.6	0.0	0.0	0.0	0.0	0.0	0.0
W	5	28.6	35.7	35.7	35.7	35.7	35.7	35.7
W	6	100.0	100.0	100.0	100.0	100.0	100.0	100.0
W	7	100.0	100.0	100.0	100.0	100.0	100.0	100.0
W	8	100.0	100.0	100.0	100.0	100.0	100.0	100.0
W	9	100.0	100.0	100.0	100.0	100.0	100.0	100.0
W	10	96.4	100.0	100.0	100.0	100.0	100.0	100.0
W	11	0.0	42.9	3.6	7.1	7.1	3.6	7.1
W	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
AN	4	15.4	7.7	0.0	0.0	0.0	0.0	0.0
AN	5	76.9	84.6	92.3	92.3	92.3	92.3	92.3
AN	6	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AN	7	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AN	8	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AN	9	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AN	10	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AN	11	0.0	21.4	0.0	0.0	0.0	7.1	7.1
AN	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	4	27.8	5.6	5.6	11.1	11.1	16.7	11.1
BN	5	77.8	83.3	83.3	83.3	83.3	83.3	83.3
BN	6	100.0	100.0	100.0	100.0	100.0	100.0	100.0
BN	7	100.0	100.0	100.0	100.0	100.0	100.0	100.0
BN	8	100.0	100.0	100.0	100.0	100.0	100.0	100.0
BN	9	100.0	100.0	100.0	100.0	100.0	100.0	100.0
BN	10	100.0	100.0	100.0	100.0	100.0	100.0	100.0
BN	11	11.1	55.6	0.0	0.0	0.0	0.0	0.0
BN	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
D	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	4	33.3	25.0	16.7	20.8	20.8	20.8	20.8
D	5	91.7	95.8	95.8	95.8	95.8	95.8	95.8
D	6	100.0	100.0	100.0	100.0	100.0	100.0	100.0
D	7	100.0	100.0	100.0	100.0	100.0	100.0	100.0
D	8	100.0	100.0	100.0	100.0	100.0	100.0	100.0
D	9	100.0	100.0	100.0	100.0	100.0	100.0	100.0
D	10	95.8	100.0	100.0	100.0	100.0	100.0	100.0
D	11	12.5	50.0	4.2	4.2	4.2	12.5	4.2
D	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	3	12.5	12.5	0.0	6.3	6.3	12.5	6.3
C	4	75.0	68.8	62.5	75.0	37.5	50.0	43.8
C	5	93.8	93.8	100.0	100.0	100.0	100.0	100.0
C	6	100.0	100.0	100.0	100.0	100.0	100.0	100.0
C	7	100.0	100.0	100.0	100.0	100.0	100.0	100.0
C	8	100.0	100.0	100.0	100.0	100.0	100.0	100.0
C	9	100.0	100.0	100.0	100.0	100.0	100.0	100.0
C	10	100.0	100.0	100.0	100.0	100.0	100.0	100.0
C	11	26.7	60.0	53.3	33.3	46.7	40.0	33.3
C	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
All	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	3	2.0	2.0	0.0	1.0	1.0	2.0	1.0
All	4	28.3	19.2	15.2	19.2	13.1	16.2	14.1
All	5	69.7	74.7	76.8	76.8	76.8	76.8	76.8
All	6	100.0	100.0	100.0	100.0	100.0	100.0	100.0
All	7	100.0	100.0	100.0	100.0	100.0	100.0	100.0
All	8	100.0	100.0	100.0	100.0	100.0	100.0	100.0
All	9	100.0	100.0	100.0	100.0	100.0	100.0	100.0
All	10	98.0	100.0	100.0	100.0	100.0	100.0	100.0
All	11	9.1	46.5	10.1	8.1	10.1	11.1	9.1
All	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	All	44.0	48.2	44.9	44.9	45.2	45.2	44.9
AN	All	48.7	50.6	48.7	50.0	48.7	48.7	49.4
BN	All	51.4	53.7	49.1	50.9	49.5	49.5	50.0
D	All	52.8	55.9	51.4	53.8	51.7	51.7	52.4
C	All	59.3	61.4	59.8	59.3	59.8	57.7	58.7
All	All	50.5	53.5	50.1	51.1	50.4	50.0	50.5

Table M.2-28. Percent (difference in percent relative to NAA) of months above the 59.9°F pathogen virulence water temperature threshold for juvenile steelhead rearing and outmigration by water year type and month, and for all years combined, American River at Watt Avenue, Year-round (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	4	0.0	3.6 (3.6%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	5	35.7	35.7 (0.0%)	35.7 (0.0%)	35.7 (0.0%)	35.7 (0.0%)	35.7 (0.0%)	39.3 (3.6%)	35.7 (0.0%)
W	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	11	3.6	0.0 (-3.6%)	7.1 (3.6%)	7.1 (3.6%)	3.6 (0.0%)	3.6 (0.0%)	3.6 (0.0%)	7.1 (3.6%)
W	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	3	0.0	7.7 (7.7%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	4	0.0	15.4 (15.4%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	7.7 (7.7%)
AN	5	92.3	84.6 (-7.7%)	92.3 (0.0%)	92.3 (0.0%)	92.3 (0.0%)	92.3 (0.0%)	100.0 (7.7%)	92.3 (0.0%)
AN	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
AN	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	7.1 (7.1%)	7.1 (7.1%)	0.0 (0.0%)	0.0 (0.0%)
AN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	3	0.0	5.6 (5.6%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	4	5.6	22.2 (16.7%)	11.1 (5.6%)	11.1 (5.6%)	11.1 (5.6%)	11.1 (5.6%)	0.0 (-5.6%)	11.1 (5.6%)
BN	5	83.3	77.8 (-5.6%)	83.3 (0.0%)	83.3 (0.0%)	83.3 (0.0%)	83.3 (0.0%)	88.9 (5.6%)	77.8 (-5.6%)
BN	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	11	0.0	5.6 (5.6%)	0.0 (0.0%)	5.6 (5.6%)	0.0 (0.0%)	0.0 (0.0%)	16.7 (16.7%)	0.0 (0.0%)
BN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	3	0.0	16.7 (16.7%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	4	16.7	29.2 (12.5%)	20.8 (4.2%)	20.8 (4.2%)	20.8 (4.2%)	12.5 (-4.2%)	4.2 (-12.5%)	20.8 (4.2%)
D	5	95.8	91.7 (-4.2%)	95.8 (0.0%)	95.8 (0.0%)	91.7 (-4.2%)	95.8 (0.0%)	91.7 (-4.2%)	95.8 (0.0%)
D	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
D	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	11	4.2	8.3 (4.2%)	8.3 (4.2%)	8.3 (4.2%)	0.0 (-4.2%)	4.2 (0.0%)	12.5 (8.3%)	4.2 (0.0%)
D	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	3	0.0	18.8 (18.8%)	6.3 (6.3%)	6.3 (6.3%)	6.3 (6.3%)	6.3 (6.3%)	6.3 (6.3%)	6.3 (6.3%)
C	4	62.5	37.5 (-25.0%)	37.5 (-25.0%)	68.8 (6.3%)	50.0 (-12.5%)	25.0 (-37.5%)	43.8 (-18.8%)	81.3 (18.8%)
C	5	100.0	93.8 (-6.3%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	11	53.3	60.0 (6.7%)	60.0 (6.7%)	40.0 (-13.3%)	46.7 (-6.7%)	40.0 (-13.3%)	40.0 (-13.3%)	46.7 (-6.7%)
C	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	3	0.0	9.1 (9.1%)	1.0 (1.0%)	1.0 (1.0%)	1.0 (1.0%)	1.0 (1.0%)	1.0 (1.0%)	1.0 (1.0%)
All	4	15.2	20.2 (5.1%)	13.1 (-2.0%)	18.2 (3.0%)	15.2 (0.0%)	9.1 (-6.1%)	8.1 (-7.1%)	21.2 (6.1%)
All	5	76.8	72.7 (-4.0%)	76.8 (0.0%)	76.8 (0.0%)	75.8 (-1.0%)	76.8 (0.0%)	78.8 (2.0%)	75.8 (-1.0%)
All	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
All	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	11	10.1	12.1 (2.0%)	13.1 (3.0%)	11.1 (1.0%)	9.1 (-1.0%)	9.1 (-1.0%)	13.1 (3.0%)	10.1 (0.0%)
All	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	All	44.9	44.9 (0.0%)	45.2 (0.3%)	45.2 (0.3%)	44.9 (0.0%)	44.9 (0.0%)	45.2 (0.3%)	45.2 (0.3%)
AN	All	48.7	50.0 (1.3%)	48.7 (0.0%)	48.7 (0.0%)	49.4 (0.6%)	49.4 (0.6%)	49.4 (0.6%)	49.4 (0.6%)
BN	All	49.1	50.9 (1.9%)	49.5 (0.5%)	50.0 (0.9%)	49.5 (0.5%)	49.5 (0.5%)	50.5 (1.4%)	49.1 (0.0%)
D	All	51.4	53.8 (2.4%)	52.1 (0.7%)	52.1 (0.7%)	51.0 (-0.3%)	51.0 (-0.3%)	50.7 (-0.7%)	51.7 (0.3%)
C	All	59.8	59.3 (-0.5%)	58.7 (-1.1%)	59.8 (0.0%)	58.7 (-1.1%)	56.1 (-3.7%)	57.7 (-2.1%)	61.4 (1.6%)
All	All	50.1	51.1 (1.0%)	50.3 (0.2%)	50.5 (0.4%)	50.0 (-0.1%)	49.6 (-0.5%)	50.0 (-0.1%)	50.6 (0.5%)

Table M.2-29. Percent of months above the 55°F successful smoltification water temperature limit for steelhead by water year type and month, and for all years combined, American River at Hazel Avenue, January through May (BA Scenarios).

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	4	7.1	0.0	0.0	0.0	0.0	0.0	0.0
W	5	64.3	96.4	89.3	92.9	92.9	92.9	89.3
AN	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
AN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	4	23.1	0.0	0.0	0.0	0.0	0.0	0.0
AN	5	100.0	100.0	100.0	100.0	100.0	100.0	100.0
BN	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	4	38.9	0.0	0.0	0.0	0.0	0.0	0.0
BN	5	94.4	100.0	100.0	100.0	100.0	100.0	100.0
D	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	3	4.2	0.0	0.0	0.0	0.0	0.0	0.0
D	4	66.7	4.2	0.0	0.0	0.0	0.0	0.0
D	5	100.0	100.0	100.0	100.0	100.0	100.0	100.0
C	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	3	37.5	18.8	12.5	12.5	18.8	31.3	18.8
C	4	87.5	25.0	18.8	25.0	6.3	18.8	6.3
C	5	100.0	100.0	100.0	100.0	100.0	100.0	100.0
All	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	3	7.1	3.0	2.0	2.0	3.0	5.1	3.0
All	4	42.4	5.1	3.0	4.0	1.0	3.0	1.0

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
All	5	88.9	99.0	97.0	98.0	98.0	98.0	97.0
W	All	14.3	19.3	17.9	17.9	18.6	18.6	18.6
AN	All	24.6	20.0	20.0	21.5	20.0	20.0	20.0
BN	All	26.7	20.0	20.0	22.2	20.0	20.0	20.0
D	All	34.2	20.8	20.0	24.2	20.0	20.0	20.0
C	All	45.0	28.8	26.3	28.8	27.5	25.0	30.0
All	All	27.7	21.4	20.4	22.4	20.8	20.4	21.2

Table M.2-30. Percent (difference in percent relative to NAA) of months above the 55°F successful smoltification water temperature limit for steelhead by water year type and month, and for all years combined, American River at Hazel Avenue, January through May (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	5	89.3	89.3 (0.0%)	89.3 (0.0%)	92.9 (3.6%)	89.3 (0.0%)	89.3 (0.0%)	96.4 (7.1%)	96.4 (7.1%)
AN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	4	0.0	7.7 (7.7%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
BN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	4	0.0	11.1 (11.1%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	4	0.0	20.8 (20.8%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	4.2 (4.2%)
D	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	3	12.5	18.8 (6.3%)	18.8 (6.3%)	12.5 (0.0%)	12.5 (0.0%)	18.8 (6.3%)	12.5 (0.0%)	18.8 (6.3%)
C	4	18.8	25.0 (6.3%)	6.3 (-12.5%)	25.0 (6.3%)	12.5 (-6.3%)	6.3 (-12.5%)	12.5 (-6.3%)	25.0 (6.3%)
C	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	3	2.0	3.0 (1.0%)	3.0 (1.0%)	2.0 (0.0%)	2.0 (0.0%)	3.0 (1.0%)	2.0 (0.0%)	3.0 (1.0%)
All	4	3.0	12.1 (9.1%)	1.0 (-2.0%)	4.0 (1.0%)	2.0 (-1.0%)	1.0 (-2.0%)	2.0 (-1.0%)	5.1 (2.0%)
All	5	97.0	97.0 (0.0%)	97.0 (0.0%)	98.0 (1.0%)	97.0 (0.0%)	97.0 (0.0%)	99.0 (2.0%)	99.0 (2.0%)
W	All	17.9	17.9 (0.0%)	17.9 (0.0%)	18.6 (0.7%)	17.9 (0.0%)	17.9 (0.0%)	19.3 (1.4%)	19.3 (1.4%)
AN	All	20.0	21.5 (1.5%)	20.0 (0.0%)	20.0 (0.0%)	20.0 (0.0%)	20.0 (0.0%)	20.0 (0.0%)	20.0 (0.0%)
BN	All	20.0	22.2 (2.2%)	20.0 (0.0%)	20.0 (0.0%)	20.0 (0.0%)	20.0 (0.0%)	20.0 (0.0%)	20.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
D	All	20.0	24.2 (4.2%)	20.0 (0.0%)	20.0 (0.0%)	20.0 (0.0%)	20.0 (0.0%)	20.0 (0.0%)	20.8 (0.8%)
C	All	26.3	28.8 (2.5%)	25.0 (-1.3%)	27.5 (1.3%)	25.0 (-1.3%)	25.0 (-1.3%)	25.0 (-1.3%)	28.8 (2.5%)
All	All	20.4	22.4 (2.0%)	20.2 (-0.2%)	20.8 (0.4%)	20.2 (-0.2%)	20.2 (-0.2%)	20.6 (0.2%)	21.4 (1.0%)

Table M.2-31. Percent of months above the 55°F successful smoltification water temperature limit for steelhead by water year type and month, and for all years combined, American River at Watt Avenue, January through May (BA Scenarios).

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	3	0.0	3.6	3.6	3.6	3.6	3.6	3.6
W	4	21.4	35.7	28.6	28.6	28.6	28.6	28.6
W	5	96.4	100.0	100.0	100.0	100.0	100.0	100.0
AN	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AN	3	0.0	15.4	15.4	15.4	15.4	15.4	15.4
AN	4	53.8	84.6	84.6	84.6	84.6	84.6	84.6
AN	5	100.0	100.0	100.0	100.0	100.0	100.0	100.0
BN	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BN	3	5.6	33.3	16.7	16.7	16.7	22.2	22.2
BN	4	55.6	94.4	94.4	94.4	94.4	94.4	94.4
BN	5	100.0	100.0	100.0	100.0	100.0	100.0	100.0

WYT	Month	EXP1	EXP3	NAA	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA
D	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D	3	33.3	45.8	37.5	45.8	45.8	45.8	45.8
D	4	87.5	100.0	91.7	91.7	87.5	91.7	87.5
D	5	100.0	100.0	100.0	100.0	100.0	100.0	100.0
C	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	2	6.3	6.3	6.3	6.3	12.5	18.8	12.5
C	3	75.0	93.8	87.5	87.5	87.5	93.8	93.8
C	4	100.0	100.0	100.0	100.0	100.0	100.0	100.0
C	5	100.0	100.0	100.0	100.0	100.0	100.0	100.0
All	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All	2	1.0	1.0	1.0	1.0	2.0	3.0	2.0
All	3	21.2	35.4	29.3	31.3	31.3	33.3	33.3
All	4	60.6	78.8	74.7	74.7	73.7	74.7	73.7
All	5	99.0	100.0	100.0	100.0	100.0	100.0	100.0
W	All	23.6	27.9	26.4	26.4	26.4	26.4	26.4
AN	All	30.8	40.0	40.0	41.5	40.0	40.0	40.0
BN	All	32.2	45.6	42.2	47.8	42.2	42.2	43.3
D	All	44.2	49.2	45.8	49.2	47.5	46.7	47.5
C	All	56.3	60.0	58.8	60.0	58.8	60.0	62.5
All	All	36.4	43.0	41.0	43.2	41.4	41.4	42.2

Table M.2-32. Percent (difference in percent relative to NAA) of months above the 55°F successful smoltification water temperature limit for steelhead by water year type and month, and for all years combined, American River at Watt Avenue, January through May (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	3	3.6	3.6 (0.0%)	3.6 (0.0%)	3.6 (0.0%)	3.6 (0.0%)	3.6 (0.0%)	3.6 (0.0%)	3.6 (0.0%)
W	4	28.6	28.6 (0.0%)	28.6 (0.0%)	28.6 (0.0%)	28.6 (0.0%)	28.6 (0.0%)	28.6 (0.0%)	28.6 (0.0%)
W	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	3	15.4	23.1 (7.7%)	15.4 (0.0%)	15.4 (0.0%)	15.4 (0.0%)	15.4 (0.0%)	0.0 (-15.4%)	15.4 (0.0%)
AN	4	84.6	84.6 (0.0%)	84.6 (0.0%)	84.6 (0.0%)	84.6 (0.0%)	84.6 (0.0%)	84.6 (0.0%)	84.6 (0.0%)
AN	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	3	16.7	44.4 (27.8%)	16.7 (0.0%)	16.7 (0.0%)	16.7 (0.0%)	16.7 (0.0%)	11.1 (-5.6%)	27.8 (11.1%)
BN	4	94.4	94.4 (0.0%)	94.4 (0.0%)	94.4 (0.0%)	94.4 (0.0%)	94.4 (0.0%)	94.4 (0.0%)	94.4 (0.0%)
BN	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	3	37.5	58.3 (20.8%)	45.8 (8.3%)	45.8 (8.3%)	41.7 (4.2%)	45.8 (8.3%)	37.5 (0.0%)	41.7 (4.2%)
D	4	91.7	87.5 (-4.2%)	83.3 (-8.3%)	87.5 (-4.2%)	79.2 (-12.5%)	91.7 (0.0%)	91.7 (0.0%)	79.2 (-12.5%)
D	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
C	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	2	6.3	18.8 (12.5%)	12.5 (6.3%)	12.5 (6.3%)	12.5 (6.3%)	12.5 (6.3%)	12.5 (6.3%)	6.3 (0.0%)
C	3	87.5	81.3 (-6.3%)	87.5 (0.0%)	87.5 (0.0%)	87.5 (0.0%)	87.5 (0.0%)	87.5 (0.0%)	93.8 (6.3%)
C	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	93.8 (-6.3%)	100.0 (0.0%)
C	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	2	1.0	3.0 (2.0%)	2.0 (1.0%)	2.0 (1.0%)	2.0 (1.0%)	2.0 (1.0%)	2.0 (1.0%)	1.0 (0.0%)
All	3	29.3	39.4 (10.1%)	31.3 (2.0%)	31.3 (2.0%)	30.3 (1.0%)	31.3 (2.0%)	26.3 (-3.0%)	33.3 (4.0%)
All	4	74.7	73.7 (-1.0%)	72.7 (-2.0%)	73.7 (-1.0%)	71.7 (-3.0%)	74.7 (0.0%)	73.7 (-1.0%)	71.7 (-3.0%)
All	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	All	26.4	26.4 (0.0%)	26.4 (0.0%)	26.4 (0.0%)	26.4 (0.0%)	26.4 (0.0%)	26.4 (0.0%)	26.4 (0.0%)
AN	All	40.0	41.5 (1.5%)	40.0 (0.0%)	40.0 (0.0%)	40.0 (0.0%)	40.0 (0.0%)	36.9 (-3.1%)	40.0 (0.0%)
BN	All	42.2	47.8 (5.6%)	42.2 (0.0%)	42.2 (0.0%)	42.2 (0.0%)	42.2 (0.0%)	41.1 (-1.1%)	44.4 (2.2%)
D	All	45.8	49.2 (3.3%)	45.8 (0.0%)	46.7 (0.8%)	44.2 (-1.7%)	47.5 (1.7%)	45.8 (0.0%)	44.2 (-1.7%)
C	All	58.8	60.0 (1.3%)	60.0 (1.3%)	60.0 (1.3%)	60.0 (1.3%)	60.0 (1.3%)	58.8 (0.0%)	60.0 (1.3%)
All	All	41.0	43.2 (2.2%)	41.2 (0.2%)	41.4 (0.4%)	40.8 (-0.2%)	41.6 (0.6%)	40.4 (-0.6%)	41.2 (0.2%)

M.2.3.4 Fall-run Chinook Salmon

M.2.3.4.1 *Adult Migration*

Water temperature-related effects on fall-run Chinook salmon adult migration in the American River were evaluated by assessing: (1) the percent of months with water temperature outside the 37.9°F to 68°F successful migration range (Reiser and Bjornn 1979, Goniea et al. 2006); and (2) the percent of months with water temperature above the 59.9°F pathogen virulence threshold (McCullough 1999) at Hazel Avenue and Watt Avenue (Table M.2-2).

Results evaluating the 37.9°F to 68°F successful migration range are presented in Table M.2-59 for Hazel Avenue and Table M.2-60 for Watt Avenue.

- At Hazel Avenue, the highest percent of months with water temperature outside the range was 57.1%, which occurred in wet water years during August under Alternative 4 and September under Alternative 1 (Table M.2-59). The lowest percent of months with water temperature outside the range was 0% and occurred in at least one water year type during October through December under the NAA and all alternatives, and during July of above normal water years and September of critical water years under Alternative 1. Combining water year types, the highest percent of months with water temperature outside the range occurred during August (except Alternative 1) and the lowest percent of months with water temperature occurred during November and December. Air temperatures drive these temporal patters,

- At Watt Avenue, the highest percent of months with water temperature outside the successful migration range was 100.0% and occurred during at least one month between July and September in Critical water years under the NAA and all alternatives (Table M.2-60). The lowest percent of months with water temperature outside the range was 0.0% and occurred during November and December under the NAA and all alternatives, and during October during above normal and below normal water years for some alternatives. Combining water year types, the highest percent of months with water temperature outside the range occurred during August and the lowest percent of months with water temperature outside the range occurred during November and December under the NAA and all alternatives.

Results for the 59.9°F pathogen virulence water temperature threshold for adult fall-run Chinook salmon migration are presented in Table M.2-61 for Hazel Avenue and Table M.2-62 Watt Avenue.

- At Hazel Avenue, the highest percent of months with water temperature above the temperature threshold was 100% and occurred in at least one water year type during June through October under all alternatives except the NAA and Alternative 2 Without TUCP Without VA (during June only) (Table M.2-61). The lowest percent of months with water temperature above the threshold was 0% and occurred during November of at least one water year type and during December of all water year types under the NAA and all alternatives. Combining water year types, the highest percentage of months above the temperature threshold occurred during July, August and September and the lowest percentage of months occurred during December under the NAA and all alternatives. Air temperatures drove these temporal patterns.

- At Watt Avenue, the highest percent of months with water temperature above the virulence threshold was 100% and occurred during June through October for all water year types under the NAA and all alternatives (Table M.2-62). The lowest percent of months with water temperature below the threshold was 0% and occurred during November of at least one water year type and during December of all water year types under the NAA and all alternatives. Combining water year types, the percent of months with water temperature exceeding the threshold was highest during June through October, and lowest during December for the NAA and all alternatives. Air temperatures drove these temporal patterns.

Table M.2-59. Percent (difference in percent relative to NAA) of months outside the 37.9°F to 68°F water temperature range for successful migration of adult fall-run Chinook salmon by water year type and month, and for all years combined, American River at Hazel Avenue, June - December (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	6	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	3.6 (3.6%)	0.0 (0.0%)
W	7	7.1	10.7 (3.6%)	10.7 (3.6%)	14.3 (7.1%)	7.1 (0.0%)	7.1 (0.0%)	3.6 (-3.6%)	14.3 (7.1%)
W	8	42.9	53.6 (10.7%)	50.0 (7.1%)	50.0 (7.1%)	53.6 (10.7%)	50.0 (7.1%)	46.4 (3.6%)	57.1 (14.3%)
W	9	35.7	57.1 (21.4%)	50.0 (14.3%)	50.0 (14.3%)	42.9 (7.1%)	42.9 (7.1%)	42.9 (7.1%)	46.4 (10.7%)
W	10	0.0	7.1 (7.1%)	3.6 (3.6%)	3.6 (3.6%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	7	23.1	0.0 (-23.1%)	23.1 (0.0%)	23.1 (0.0%)	23.1 (0.0%)	23.1 (0.0%)	7.7 (-15.4%)	23.1 (0.0%)
AN	8	23.1	23.1 (0.0%)	15.4 (-7.7%)	23.1 (0.0%)	23.1 (0.0%)	7.7 (-15.4%)	15.4 (-7.7%)	23.1 (0.0%)
AN	9	23.1	23.1 (0.0%)	23.1 (0.0%)	23.1 (0.0%)	23.1 (0.0%)	23.1 (0.0%)	30.8 (7.7%)	38.5 (15.4%)
AN	10	0.0	7.7 (7.7%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	7.7 (7.7%)
AN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	6	5.6	0.0 (-5.6%)	5.6 (0.0%)	5.6 (0.0%)	11.1 (5.6%)	11.1 (5.6%)	0.0 (-5.6%)	16.7 (11.1%)
BN	7	27.8	11.1 (-16.7%)	27.8 (0.0%)	33.3 (5.6%)	16.7 (-11.1%)	16.7 (-11.1%)	27.8 (0.0%)	22.2 (-5.6%)
BN	8	33.3	16.7 (-16.7%)	33.3 (0.0%)	38.9 (5.6%)	27.8 (-5.6%)	33.3 (0.0%)	22.2 (-11.1%)	33.3 (0.0%)
BN	9	11.1	22.2 (11.1%)	11.1 (0.0%)	11.1 (0.0%)	5.6 (-5.6%)	16.7 (5.6%)	38.9 (27.8%)	11.1 (0.0%)
BN	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
D	7	25.0	16.7 (-8.3%)	29.2 (4.2%)	29.2 (4.2%)	25.0 (0.0%)	16.7 (-8.3%)	12.5 (-12.5%)	20.8 (-4.2%)
D	8	33.3	25.0 (-8.3%)	25.0 (-8.3%)	29.2 (-4.2%)	25.0 (-8.3%)	25.0 (-8.3%)	33.3 (0.0%)	16.7 (-16.7%)
D	9	33.3	8.3 (-25.0%)	8.3 (-25.0%)	20.8 (-12.5%)	16.7 (-16.7%)	25.0 (-8.3%)	25.0 (-8.3%)	25.0 (-8.3%)
D	10	0.0	4.2 (4.2%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	4.2 (4.2%)	0.0 (0.0%)
D	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	6	12.5	25.0 (12.5%)	12.5 (0.0%)	12.5 (0.0%)	12.5 (0.0%)	18.8 (6.3%)	6.3 (-6.3%)	18.8 (6.3%)
C	7	50.0	6.3 (-43.8%)	37.5 (-12.5%)	31.3 (-18.8%)	43.8 (-6.3%)	37.5 (-12.5%)	25.0 (-25.0%)	37.5 (-12.5%)
C	8	56.3	31.3 (-25.0%)	43.8 (-12.5%)	43.8 (-12.5%)	25.0 (-31.3%)	18.8 (-37.5%)	43.8 (-12.5%)	43.8 (-12.5%)
C	9	37.5	0.0 (-37.5%)	56.3 (18.8%)	37.5 (0.0%)	37.5 (0.0%)	31.3 (-6.3%)	25.0 (-12.5%)	25.0 (-12.5%)
C	10	6.7	20.0 (13.3%)	6.7 (0.0%)	6.7 (0.0%)	0.0 (-6.7%)	0.0 (-6.7%)	0.0 (-6.7%)	0.0 (-6.7%)
C	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	6	3.0	4.0 (1.0%)	3.0 (0.0%)	3.0 (0.0%)	4.0 (1.0%)	5.1 (2.0%)	2.0 (-1.0%)	6.1 (3.0%)
All	7	24.2	10.1 (-14.1%)	24.2 (0.0%)	25.3 (1.0%)	21.2 (-3.0%)	18.2 (-6.1%)	14.1 (-10.1%)	22.2 (-2.0%)
All	8	38.4	32.3 (-6.1%)	35.4 (-3.0%)	38.4 (0.0%)	33.3 (-5.1%)	30.3 (-8.1%)	34.3 (-4.0%)	36.4 (-2.0%)
All	9	29.3	25.3 (-4.0%)	30.3 (1.0%)	30.3 (1.0%)	26.3 (-3.0%)	29.3 (0.0%)	33.3 (4.0%)	30.3 (1.0%)
All	10	1.0	7.1 (6.1%)	2.0 (1.0%)	2.0 (1.0%)	0.0 (-1.0%)	0.0 (-1.0%)	1.0 (0.0%)	1.0 (0.0%)
All	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	All	12.2	21.4 (9.2%)	19.0 (6.8%)	19.6 (7.4%)	17.3 (5.0%)	16.7 (4.4%)	15.5 (3.2%)	19.6 (7.4%)
AN	All	9.7	8.8 (-0.9%)	10.0 (0.3%)	11.3 (1.6%)	11.3 (1.6%)	8.8 (-0.9%)	8.8 (-0.9%)	15.0 (5.3%)
BN	All	11.1	8.3 (-2.8%)	12.0 (0.9%)	13.9 (2.8%)	8.3 (-2.8%)	11.1 (0.0%)	14.8 (3.7%)	11.1 (0.0%)
D	All	13.1	9.0 (-4.1%)	10.4 (-2.7%)	13.2 (0.1%)	11.1 (-2.0%)	11.1 (-2.0%)	12.5 (-0.6%)	10.4 (-2.7%)
C	All	23.9	9.7 (-14.2%)	24.7 (0.9%)	20.4 (-3.4%)	18.3 (-5.6%)	15.1 (-8.8%)	16.1 (-7.7%)	18.3 (-5.6%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
All	All	13.7	11.3 (-2.5%)	13.6 (-0.1%)	14.2 (0.4%)	12.1 (-1.6%)	11.8 (-1.9%)	12.1 (-1.6%)	13.7 (0.0%)

Table M.2-60. Percent (difference in percent relative to NAA) of months outside the 37.9°F to 68°F water temperature range for successful migration of adult fall-run Chinook salmon by water year type and month, and for all years combined, American River at Watt Avenue, June - December.

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	6	7.1	10.7 (3.6%)	10.7 (3.6%)	10.7 (3.6%)	7.1 (0.0%)	10.7 (3.6%)	17.9 (10.7%)	7.1 (0.0%)
W	7	57.1	67.9 (10.7%)	67.9 (10.7%)	67.9 (10.7%)	64.3 (7.1%)	57.1 (0.0%)	64.3 (7.1%)	78.6 (21.4%)
W	8	85.7	82.1 (-3.6%)	85.7 (0.0%)	85.7 (0.0%)	85.7 (0.0%)	85.7 (0.0%)	78.6 (-7.1%)	82.1 (-3.6%)
W	9	78.6	89.3 (10.7%)	82.1 (3.6%)	82.1 (3.6%)	78.6 (0.0%)	82.1 (3.6%)	71.4 (-7.1%)	82.1 (3.6%)
W	10	7.1	17.9 (10.7%)	10.7 (3.6%)	10.7 (3.6%)	14.3 (7.1%)	10.7 (3.6%)	10.7 (3.6%)	14.3 (7.1%)
W	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	6	30.8	30.8 (0.0%)	30.8 (0.0%)	30.8 (0.0%)	30.8 (0.0%)	30.8 (0.0%)	69.2 (38.5%)	30.8 (0.0%)
AN	7	69.2	61.5 (-7.7%)	69.2 (0.0%)	76.9 (7.7%)	76.9 (7.7%)	76.9 (7.7%)	92.3 (23.1%)	69.2 (0.0%)
AN	8	76.9	84.6 (7.7%)	92.3 (15.4%)	92.3 (15.4%)	84.6 (7.7%)	84.6 (7.7%)	84.6 (7.7%)	76.9 (0.0%)
AN	9	53.8	69.2 (15.4%)	46.2 (-7.7%)	46.2 (-7.7%)	46.2 (-7.7%)	53.8 (0.0%)	69.2 (15.4%)	53.8 (0.0%)
AN	10	0.0	7.7 (7.7%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	7.7 (7.7%)
AN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	6	55.6	33.3 (-22.2%)	55.6 (0.0%)	55.6 (0.0%)	50.0 (-5.6%)	50.0 (-5.6%)	72.2 (16.7%)	44.4 (-11.1%)
BN	7	72.2	50.0 (-22.2%)	77.8 (5.6%)	77.8 (5.6%)	72.2 (0.0%)	72.2 (0.0%)	94.4 (22.2%)	66.7 (-5.6%)
BN	8	77.8	72.2 (-5.6%)	83.3 (5.6%)	88.9 (11.1%)	83.3 (5.6%)	77.8 (0.0%)	77.8 (0.0%)	83.3 (5.6%)
BN	9	61.1	72.2 (11.1%)	55.6 (-5.6%)	61.1 (0.0%)	55.6 (-5.6%)	72.2 (11.1%)	61.1 (0.0%)	50.0 (-11.1%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
BN	10	5.6	5.6 (0.0%)	0.0 (-5.6%)	0.0 (-5.6%)	0.0 (-5.6%)	5.6 (0.0%)	5.6 (0.0%)	5.6 (0.0%)
BN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	6	54.2	50.0 (-4.2%)	62.5 (8.3%)	66.7 (12.5%)	58.3 (4.2%)	58.3 (4.2%)	75.0 (20.8%)	58.3 (4.2%)
D	7	79.2	62.5 (-16.7%)	83.3 (4.2%)	79.2 (0.0%)	79.2 (0.0%)	79.2 (0.0%)	87.5 (8.3%)	70.8 (-8.3%)
D	8	91.7	91.7 (0.0%)	87.5 (-4.2%)	87.5 (-4.2%)	87.5 (-4.2%)	87.5 (-4.2%)	91.7 (0.0%)	87.5 (-4.2%)
D	9	70.8	95.8 (25.0%)	83.3 (12.5%)	79.2 (8.3%)	79.2 (8.3%)	79.2 (8.3%)	75.0 (4.2%)	75.0 (4.2%)
D	10	8.3	8.3 (0.0%)	8.3 (0.0%)	8.3 (0.0%)	8.3 (0.0%)	4.2 (-4.2%)	12.5 (4.2%)	12.5 (4.2%)
D	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	6	81.3	75.0 (-6.3%)	87.5 (6.3%)	81.3 (0.0%)	93.8 (12.5%)	93.8 (12.5%)	87.5 (6.3%)	75.0 (-6.3%)
C	7	93.8	100.0 (6.3%)	100.0 (6.3%)	93.8 (0.0%)	100.0 (6.3%)	100.0 (6.3%)	100.0 (6.3%)	93.8 (0.0%)
C	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	9	93.8	100.0 (6.3%)	100.0 (6.3%)	100.0 (6.3%)	93.8 (0.0%)	93.8 (0.0%)	100.0 (6.3%)	100.0 (6.3%)
C	10	40.0	53.3 (13.3%)	46.7 (6.7%)	33.3 (-6.7%)	60.0 (20.0%)	60.0 (20.0%)	46.7 (6.7%)	53.3 (13.3%)
C	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	6	42.4	37.4 (-5.1%)	46.5 (4.0%)	46.5 (4.0%)	44.4 (2.0%)	45.5 (3.0%)	59.6 (17.2%)	40.4 (-2.0%)
All	7	72.7	67.7 (-5.1%)	78.8 (6.1%)	77.8 (5.1%)	76.8 (4.0%)	74.7 (2.0%)	84.8 (12.1%)	75.8 (3.0%)
All	8	86.9	85.9 (-1.0%)	88.9 (2.0%)	89.9 (3.0%)	87.9 (1.0%)	86.9 (0.0%)	85.9 (-1.0%)	85.9 (-1.0%)
All	9	72.7	86.9 (14.1%)	75.8 (3.0%)	75.8 (3.0%)	72.7 (0.0%)	77.8 (5.1%)	74.7 (2.0%)	73.7 (1.0%)
All	10	11.2	17.3 (6.1%)	12.2 (1.0%)	10.2 (-1.0%)	15.3 (4.1%)	14.3 (3.1%)	14.3 (3.1%)	17.3 (6.1%)
All	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	All	33.7	42.9 (9.2%)	41.1 (7.4%)	41.1 (7.4%)	40.5 (6.8%)	39.3 (5.6%)	37.5 (3.8%)	42.9 (9.2%)
AN	All	32.3	36.3 (4.0%)	33.8 (1.5%)	35.0 (2.7%)	33.8 (1.5%)	35.0 (2.7%)	40.0 (7.7%)	33.8 (1.5%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
BN	All	38.9	33.3 (-5.6%)	36.1 (-2.8%)	38.0 (-0.9%)	35.2 (-3.7%)	38.0 (-0.9%)	39.8 (0.9%)	34.3 (-4.6%)
D	All	43.5	43.1 (-0.4%)	43.8 (0.3%)	42.4 (-1.1%)	42.4 (-1.1%)	41.7 (-1.8%)	44.4 (1.0%)	41.0 (-2.5%)
C	All	59.6	60.2 (0.6%)	59.1 (-0.5%)	55.9 (-3.7%)	60.2 (0.6%)	60.2 (0.6%)	59.1 (-0.5%)	59.1 (-0.5%)
All	All	40.9	42.2 (1.3%)	43.2 (2.3%)	42.9 (2.0%)	42.5 (1.6%)	42.8 (1.9%)	45.7 (4.8%)	41.9 (1.0%)

Table M.2-61. Percent (difference in percent relative to NAA) of months above the 59.9°F pathogen virulence water temperature threshold for adult fall-run Chinook salmon migration by water year type and month, and for all years combined, American River at Hazel Avenue, June - December (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	6	50.0	60.7 (10.7%)	46.4 (-3.6%)	46.4 (-3.6%)	46.4 (-3.6%)	46.4 (-3.6%)	57.1 (7.1%)	57.1 (7.1%)
W	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	10	96.4	96.4 (0.0%)	100.0 (3.6%)	100.0 (3.6%)	100.0 (3.6%)	100.0 (3.6%)	100.0 (3.6%)	100.0 (3.6%)
W	11	3.6	0.0 (-3.6%)	7.1 (3.6%)	7.1 (3.6%)	3.6 (0.0%)	7.1 (3.6%)	3.6 (0.0%)	7.1 (3.6%)
W	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	6	84.6	76.9 (-7.7%)	84.6 (0.0%)	84.6 (0.0%)	84.6 (0.0%)	84.6 (0.0%)	100.0 (15.4%)	76.9 (-7.7%)
AN	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	10	84.6	92.3 (7.7%)	76.9 (-7.7%)	84.6 (0.0%)	76.9 (-7.7%)	84.6 (0.0%)	100.0 (15.4%)	92.3 (7.7%)
AN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	7.1 (7.1%)	7.1 (7.1%)	0.0 (0.0%)	0.0 (0.0%)
AN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	6	94.4	88.9 (-5.6%)	94.4 (0.0%)	94.4 (0.0%)	88.9 (-5.6%)	94.4 (0.0%)	94.4 (0.0%)	88.9 (-5.6%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
BN	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	10	83.3	94.4 (11.1%)	83.3 (0.0%)	83.3 (0.0%)	88.9 (5.6%)	83.3 (0.0%)	100.0 (16.7%)	88.9 (5.6%)
BN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	11.1 (11.1%)	0.0 (0.0%)
BN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	6	91.7	91.7 (0.0%)	95.8 (4.2%)	95.8 (4.2%)	95.8 (4.2%)	95.8 (4.2%)	95.8 (4.2%)	100.0 (8.3%)
D	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	10	95.8	100.0 (4.2%)	95.8 (0.0%)	95.8 (0.0%)	95.8 (0.0%)	100.0 (4.2%)	100.0 (4.2%)	100.0 (4.2%)
D	11	4.2	4.2 (0.0%)	4.2 (0.0%)	4.2 (0.0%)	0.0 (-4.2%)	4.2 (0.0%)	8.3 (4.2%)	4.2 (0.0%)
D	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	6	93.8	100.0 (6.3%)	100.0 (6.3%)	93.8 (0.0%)	100.0 (6.3%)	100.0 (6.3%)	100.0 (6.3%)	93.8 (0.0%)
C	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	93.3 (-6.7%)
C	11	46.7	60.0 (13.3%)	53.3 (6.7%)	40.0 (-6.7%)	46.7 (0.0%)	46.7 (0.0%)	40.0 (-6.7%)	46.7 (0.0%)
C	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	6	79.8	81.8 (2.0%)	80.8 (1.0%)	79.8 (0.0%)	79.8 (0.0%)	80.8 (1.0%)	85.9 (6.1%)	81.8 (2.0%)
All	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	10	92.9	96.9 (4.1%)	92.9 (0.0%)	93.9 (1.0%)	93.9 (1.0%)	94.9 (2.0%)	100.0 (7.1%)	95.9 (3.1%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
All	11	9.1	10.1 (1.0%)	11.1 (2.0%)	9.1 (0.0%)	9.1 (0.0%)	11.1 (2.0%)	11.1 (2.0%)	10.1 (1.0%)
All	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	All	64.3	65.3 (1.0%)	64.8 (0.5%)	64.8 (0.5%)	64.3 (0.0%)	64.8 (0.5%)	65.8 (1.5%)	66.3 (2.0%)
AN	All	65.6	65.6 (0.0%)	64.5 (-1.1%)	65.6 (0.0%)	65.6 (0.0%)	66.7 (1.1%)	69.9 (4.3%)	65.6 (0.0%)
BN	All	68.3	69.0 (0.8%)	68.3 (0.0%)	68.3 (0.0%)	68.3 (0.0%)	68.3 (0.0%)	72.2 (4.0%)	68.3 (0.0%)
D	All	70.2	70.8 (0.6%)	70.8 (0.6%)	70.8 (0.6%)	70.2 (0.0%)	71.4 (1.2%)	72.0 (1.8%)	72.0 (1.8%)
C	All	78.0	80.7 (2.8%)	79.8 (1.8%)	77.1 (-0.9%)	78.9 (0.9%)	78.9 (0.9%)	78.0 (0.0%)	77.1 (-0.9%)
All	All	68.8	69.8 (1.0%)	69.2 (0.4%)	68.9 (0.1%)	68.9 (0.1%)	69.5 (0.7%)	71.0 (2.2%)	69.7 (0.9%)

Table M.2-62. Percent (difference in percent relative to NAA) of months above the 59.9°F pathogen virulence water temperature threshold for adult fall-run Chinook salmon migration by water year type and month, and for all years combined, American River at Watt Avenue, June – December (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	11	3.6	0.0 (-3.6%)	7.1 (3.6%)	7.1 (3.6%)	3.6 (0.0%)	3.6 (0.0%)	3.6 (0.0%)	7.1 (3.6%)
W	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
AN	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	7.1 (7.1%)	7.1 (7.1%)	0.0 (0.0%)	0.0 (0.0%)
AN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	11	0.0	5.6 (5.6%)	0.0 (0.0%)	5.6 (5.6%)	0.0 (0.0%)	0.0 (0.0%)	16.7 (16.7%)	0.0 (0.0%)
BN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	11	4.2	8.3 (4.2%)	8.3 (4.2%)	8.3 (4.2%)	0.0 (-4.2%)	4.2 (0.0%)	12.5 (8.3%)	4.2 (0.0%)
D	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	11	53.3	60.0 (6.7%)	60.0 (6.7%)	40.0 (-13.3%)	46.7 (-6.7%)	40.0 (-13.3%)	40.0 (-13.3%)	46.7 (-6.7%)
C	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
All	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	11	10.1	12.1 (2.0%)	13.1 (3.0%)	11.1 (1.0%)	9.1 (-1.0%)	9.1 (-1.0%)	13.1 (3.0%)	10.1 (0.0%)
All	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	All	71.9	71.4 (-0.5%)	72.4 (0.5%)	72.4 (0.5%)	71.9 (0.0%)	71.9 (0.0%)	71.9 (0.0%)	72.4 (0.5%)
AN	All	69.9	69.9 (0.0%)	69.9 (0.0%)	69.9 (0.0%)	71.0 (1.1%)	71.0 (1.1%)	69.9 (0.0%)	69.9 (0.0%)
BN	All	71.4	72.2 (0.8%)	71.4 (0.0%)	72.2 (0.8%)	71.4 (0.0%)	71.4 (0.0%)	73.8 (2.4%)	71.4 (0.0%)
D	All	72.0	72.6 (0.6%)	72.6 (0.6%)	72.6 (0.6%)	71.4 (-0.6%)	72.0 (0.0%)	73.2 (1.2%)	72.0 (0.0%)
C	All	79.8	80.7 (0.9%)	80.7 (0.9%)	78.0 (-1.8%)	78.9 (-0.9%)	78.0 (-1.8%)	78.0 (-1.8%)	78.9 (-0.9%)
All	All	72.8	73.1 (0.3%)	73.3 (0.4%)	73.0 (0.1%)	72.7 (-0.1%)	72.7 (-0.1%)	73.3 (0.4%)	72.8 (0.0%)

M.2.3.4.2   Adult Holding and Spawning

Water temperature-related effects on fall-run Chinook salmon adult holding and spawning in the American River were evaluated by assessing: (1) the percent of months with water temperature outside the 42.1°F to 55°F range for spawning initiation (McCullough 1999); and (2) the percent of months with water temperature above the 59.9°F adult spawning pathogen virulence threshold (McCullough 1999) at Hazel Avenue and Watt Avenue (Table M.2-2).

Results evaluating the 42.1°F to 55°F range for spawning initiation are presented in Table M.2-63 for Hazel Avenue and Table M.2-64 for Watt Avenue.

- At Hazel Avenue, the highest percent of months with water temperature outside the range was 100% and occurred during June through October of all water year types under the NAA and all alternatives and during November of at least one water year type under the NAA, all phases of Alternative 2, and Alternative 3 (Table M.2-63). The lowest percentage of months outside the range was 0% and occurred during December of at least one water year type under the NAA and all alternatives. Combining water type years, the highest percent of months with water temperature outside the range occurred during June through October for the NAA and all alternatives, and the lowest percent of months with water temperature occurred during December for the NAA and all alternatives. Air temperatures drove these temporal patterns.

- At Watt Avenue, the highest percentage of months outside the spawning initiation range was 100.0% and occurred during June through October of all water year types and during November of at least one water year type under the NAA and all alternatives (Table M.2-64). The lowest percentage of months outside the range was 0% and occurred during December of at least one water year types under the NAA and all alternatives. Combining water year types, the highest percentage of months outside the range occurred during June through October under the NAA and all alternatives, and the lowest percentage occurred during December under the NAA and all alternatives.

Results evaluating the 59.9°F pathogen virulence threshold for adult holding and spawning fall-run Chinook salmon are presented in Table M.2-65 for the American River at Hazel Avenue and Table M.2-66 at Watt Avenue.

- At Hazel Avenue the highest percent of months with water temperature above the threshold was 100% and occurred during July through September for all water year types under the NAA and all alternatives, during June of at least one water year type under Alternative 1, Alternative 2 Without TUCP Systemwide VA, and Alternative 3, and during October of at least one water year type under the NA and all alternatives (Table M.2-65). The lowest percent of months with water temperature above the threshold was 0% and occurred during November of at least one water year type and during December of all water year types under the NAA and all project alternatives. Combining water year types, the highest percentage of months outside the range occurred during July through September and the lowest percentage occurred during December under the NAA and all project alternatives.

- At Watt Avenue the highest percent of months with water temperature above the threshold was 100% and occurred during June through October of all water year types under the NAA and all alternatives (Table M.2-66). The lowest percent of months with water temperature above the threshold was 0% and occurred during November of at least one water year type and during December of all water year types s under the NAA and all alternatives. Combining water year types, the highest percentage of months outside the range occurred during June through October and the lowest percentage occurred during December under the NAA and all project alternatives.

Table M.2-63. Percent (difference in percent relative to NAA) of months outside the 42.1°F to 55°F water temperature range for spawning initiation of fall-run Chinook salmon by water year type and month, and for all years combined, American River at Hazel Avenue, June - December.

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	11	96.4	92.9 (-3.6%)	96.4 (0.0%)	96.4 (0.0%)	96.4 (0.0%)	96.4 (0.0%)	96.4 (0.0%)	96.4 (0.0%)
W	12	0.0	0.0 (0.0%)	3.6 (3.6%)	3.6 (3.6%)	0.0 (0.0%)	0.0 (0.0%)	3.6 (3.6%)	0.0 (0.0%)
AN	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	11	78.6	64.3 (-14.3%)	78.6 (0.0%)	78.6 (0.0%)	78.6 (0.0%)	78.6 (0.0%)	78.6 (0.0%)	78.6 (0.0%)
AN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	14.3 (14.3%)
BN	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	11	94.4	83.3 (-11.1%)	88.9 (-5.6%)	88.9 (-5.6%)	94.4 (0.0%)	94.4 (0.0%)	100.0 (5.6%)	88.9 (-5.6%)
BN	12	0.0	5.6 (5.6%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	5.6 (5.6%)	0.0 (0.0%)
D	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
D	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	11	87.5	70.8 (-16.7%)	87.5 (0.0%)	91.7 (4.2%)	83.3 (-4.2%)	87.5 (0.0%)	91.7 (4.2%)	83.3 (-4.2%)
D	12	4.2	0.0 (-4.2%)	0.0 (-4.2%)	0.0 (-4.2%)	0.0 (-4.2%)	0.0 (-4.2%)	12.5 (8.3%)	0.0 (-4.2%)
C	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	11	100.0	93.3 (-6.7%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	93.3 (-6.7%)
C	12	0.0	20.0 (20.0%)	0.0 (0.0%)	6.7 (6.7%)	0.0 (0.0%)	6.7 (6.7%)	6.7 (6.7%)	13.3 (13.3%)
All	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	11	91.9	81.8 (-10.1%)	90.9 (-1.0%)	91.9 (0.0%)	90.9 (-1.0%)	91.9 (0.0%)	93.9 (2.0%)	88.9 (-3.0%)
All	12	1.0	4.0 (3.0%)	1.0 (0.0%)	2.0 (1.0%)	0.0 (-1.0%)	1.0 (0.0%)	6.1 (5.1%)	4.0 (3.0%)
W	All	85.2	84.7 (-0.5%)	85.7 (0.5%)	85.7 (0.5%)	85.2 (0.0%)	85.2 (0.0%)	85.7 (0.5%)	85.2 (0.0%)
AN	All	81.7	79.6 (-2.2%)	81.7 (0.0%)	81.7 (0.0%)	81.7 (0.0%)	81.7 (0.0%)	81.7 (0.0%)	83.9 (2.2%)
BN	All	84.9	84.1 (-0.8%)	84.1 (-0.8%)	84.1 (-0.8%)	84.9 (0.0%)	84.9 (0.0%)	86.5 (1.6%)	84.1 (-0.8%)
D	All	84.5	81.5 (-3.0%)	83.9 (-0.6%)	84.5 (0.0%)	83.3 (-1.2%)	83.9 (-0.6%)	86.3 (1.8%)	83.3 (-1.2%)
C	All	86.2	88.1 (1.8%)	86.2 (0.0%)	87.2 (0.9%)	86.2 (0.0%)	87.2 (0.9%)	87.2 (0.9%)	87.2 (0.9%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
All	All	84.7	83.7 (-1.0%)	84.5 (-0.1%)	84.8 (0.1%)	84.4 (-0.3%)	84.7 (0.0%)	85.7 (1.0%)	84.7 (0.0%)

Table M.2-64. Percent (difference in percent relative to NAA) of months outside the 42.1°F to 55°F water temperature range for spawning initiation of fall-run Chinook salmon by water year type and month, and for all years combined, American River at Watt Avenue, June – December (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	11	96.4	96.4 (0.0%)	96.4 (0.0%)	96.4 (0.0%)	96.4 (0.0%)	96.4 (0.0%)	96.4 (0.0%)	96.4 (0.0%)
W	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	3.6 (3.6%)	0.0 (0.0%)
AN	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	11	78.6	92.9 (14.3%)	78.6 (0.0%)	78.6 (0.0%)	78.6 (0.0%)	85.7 (7.1%)	78.6 (0.0%)	85.7 (7.1%)
AN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	7.1 (7.1%)
BN	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
BN	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	11	94.4	94.4 (0.0%)	88.9 (-5.6%)	88.9 (-5.6%)	94.4 (0.0%)	94.4 (0.0%)	100.0 (5.6%)	94.4 (0.0%)
BN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	5.6 (5.6%)	0.0 (0.0%)
D	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	11	95.8	83.3 (-12.5%)	91.7 (-4.2%)	91.7 (-4.2%)	95.8 (0.0%)	95.8 (0.0%)	95.8 (0.0%)	91.7 (-4.2%)
D	12	4.2	0.0 (-4.2%)	0.0 (-4.2%)	0.0 (-4.2%)	0.0 (-4.2%)	0.0 (-4.2%)	8.3 (4.2%)	0.0 (-4.2%)
C	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	93.3 (-6.7%)
C	12	0.0	20.0 (20.0%)	6.7 (6.7%)	6.7 (6.7%)	13.3 (13.3%)	13.3 (13.3%)	13.3 (13.3%)	6.7 (6.7%)
All	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	11	93.9	92.9 (-1.0%)	91.9 (-2.0%)	91.9 (-2.0%)	93.9 (0.0%)	94.9 (1.0%)	94.9 (1.0%)	92.9 (-1.0%)
All	12	1.0	3.0 (2.0%)	1.0 (0.0%)	1.0 (0.0%)	2.0 (1.0%)	2.0 (1.0%)	6.1 (5.1%)	2.0 (1.0%)
W	All	85.2	85.2 (0.0%)	85.2 (0.0%)	85.2 (0.0%)	85.2 (0.0%)	85.2 (0.0%)	85.7 (0.5%)	85.2 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
AN	All	81.7	83.9 (2.2%)	81.7 (0.0%)	81.7 (0.0%)	81.7 (0.0%)	82.8 (1.1%)	81.7 (0.0%)	83.9 (2.2%)
BN	All	84.9	84.9 (0.0%)	84.1 (-0.8%)	84.1 (-0.8%)	84.9 (0.0%)	84.9 (0.0%)	86.5 (1.6%)	84.9 (0.0%)
D	All	85.7	83.3 (-2.4%)	84.5 (-1.2%)	84.5 (-1.2%)	85.1 (-0.6%)	85.1 (-0.6%)	86.3 (0.6%)	84.5 (-1.2%)
C	All	86.2	89.0 (2.8%)	87.2 (0.9%)	87.2 (0.9%)	88.1 (1.8%)	88.1 (1.8%)	88.1 (1.8%)	86.2 (0.0%)
All	All	85.0	85.1 (0.1%)	84.7 (-0.3%)	84.7 (-0.3%)	85.1 (0.1%)	85.3 (0.3%)	85.8 (0.9%)	85.0 (0.0%)

Table M.2-65. Percent (difference in percent relative to NAA) of months above the 59.9°F pathogen virulence water temperature threshold for adult holding and spawning fall-run Chinook salmon by water year type and month, and for all years combined, American River at Hazel Avenue, June - December (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	6	50.0	60.7 (10.7%)	46.4 (-3.6%)	46.4 (-3.6%)	46.4 (-3.6%)	46.4 (-3.6%)	57.1 (7.1%)	57.1 (7.1%)
W	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	10	96.4	96.4 (0.0%)	100.0 (3.6%)	100.0 (3.6%)	100.0 (3.6%)	100.0 (3.6%)	100.0 (3.6%)	100.0 (3.6%)
W	11	3.6	0.0 (-3.6%)	7.1 (3.6%)	7.1 (3.6%)	3.6 (0.0%)	7.1 (3.6%)	3.6 (0.0%)	7.1 (3.6%)
W	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	6	84.6	76.9 (-7.7%)	84.6 (0.0%)	84.6 (0.0%)	84.6 (0.0%)	84.6 (0.0%)	100.0 (15.4%)	76.9 (-7.7%)
AN	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	10	84.6	92.3 (7.7%)	76.9 (-7.7%)	84.6 (0.0%)	76.9 (-7.7%)	84.6 (0.0%)	100.0 (15.4%)	92.3 (7.7%)
AN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	7.1 (7.1%)	7.1 (7.1%)	0.0 (0.0%)	0.0 (0.0%)
AN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
BN	6	94.4	88.9 (-5.6%)	94.4 (0.0%)	94.4 (0.0%)	88.9 (-5.6%)	94.4 (0.0%)	94.4 (0.0%)	88.9 (-5.6%)
BN	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	10	83.3	94.4 (11.1%)	83.3 (0.0%)	83.3 (0.0%)	88.9 (5.6%)	83.3 (0.0%)	100.0 (16.7%)	88.9 (5.6%)
BN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	11.1 (11.1%)	0.0 (0.0%)
BN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	6	91.7	91.7 (0.0%)	95.8 (4.2%)	95.8 (4.2%)	95.8 (4.2%)	95.8 (4.2%)	95.8 (4.2%)	100.0 (8.3%)
D	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	10	95.8	100.0 (4.2%)	95.8 (0.0%)	95.8 (0.0%)	95.8 (0.0%)	100.0 (4.2%)	100.0 (4.2%)	100.0 (4.2%)
D	11	4.2	4.2 (0.0%)	4.2 (0.0%)	4.2 (0.0%)	0.0 (-4.2%)	4.2 (0.0%)	8.3 (4.2%)	4.2 (0.0%)
D	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	6	93.8	100.0 (6.3%)	100.0 (6.3%)	93.8 (0.0%)	100.0 (6.3%)	100.0 (6.3%)	100.0 (6.3%)	93.8 (0.0%)
C	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	93.3 (-6.7%)
C	11	46.7	60.0 (13.3%)	53.3 (6.7%)	40.0 (-6.7%)	46.7 (0.0%)	46.7 (0.0%)	40.0 (-6.7%)	46.7 (0.0%)
C	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	6	79.8	81.8 (2.0%)	80.8 (1.0%)	79.8 (0.0%)	79.8 (0.0%)	80.8 (1.0%)	85.9 (6.1%)	81.8 (2.0%)
All	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
All	10	92.9	96.9 (4.1%)	92.9 (0.0%)	93.9 (1.0%)	93.9 (1.0%)	94.9 (2.0%)	100.0 (7.1%)	95.9 (3.1%)
All	11	9.1	10.1 (1.0%)	11.1 (2.0%)	9.1 (0.0%)	9.1 (0.0%)	11.1 (2.0%)	11.1 (2.0%)	10.1 (1.0%)
All	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	All	64.3	65.3 (1.0%)	64.8 (0.5%)	64.8 (0.5%)	64.3 (0.0%)	64.8 (0.5%)	65.8 (1.5%)	66.3 (2.0%)
AN	All	65.6	65.6 (0.0%)	64.5 (-1.1%)	65.6 (0.0%)	65.6 (0.0%)	66.7 (1.1%)	69.9 (4.3%)	65.6 (0.0%)
BN	All	68.3	69.0 (0.8%)	68.3 (0.0%)	68.3 (0.0%)	68.3 (0.0%)	68.3 (0.0%)	72.2 (4.0%)	68.3 (0.0%)
D	All	70.2	70.8 (0.6%)	70.8 (0.6%)	70.8 (0.6%)	70.2 (0.0%)	71.4 (1.2%)	72.0 (1.8%)	72.0 (1.8%)
C	All	78.0	80.7 (2.8%)	79.8 (1.8%)	77.1 (-0.9%)	78.9 (0.9%)	78.9 (0.9%)	78.0 (0.0%)	77.1 (-0.9%)
All	All	68.8	69.8 (1.0%)	69.2 (0.4%)	68.9 (0.1%)	68.9 (0.1%)	69.5 (0.7%)	71.0 (2.2%)	69.7 (0.9%)

Table M.2-66. Percent (difference in percent relative to NAA) of months above the 59.9°F pathogen virulence water temperature threshold for adult holding and spawning fall-run Chinook salmon by water year type and month, and for all years combined, American River at Watt Avenue, June - December (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	11	3.6	0.0 (-3.6%)	7.1 (3.6%)	7.1 (3.6%)	3.6 (0.0%)	3.6 (0.0%)	3.6 (0.0%)	7.1 (3.6%)
W	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
AN	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	7.1 (7.1%)	7.1 (7.1%)	0.0 (0.0%)	0.0 (0.0%)
AN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	11	0.0	5.6 (5.6%)	0.0 (0.0%)	5.6 (5.6%)	0.0 (0.0%)	0.0 (0.0%)	16.7 (16.7%)	0.0 (0.0%)
BN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	11	4.2	8.3 (4.2%)	8.3 (4.2%)	8.3 (4.2%)	0.0 (-4.2%)	4.2 (0.0%)	12.5 (8.3%)	4.2 (0.0%)
D	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	11	53.3	60.0 (6.7%)	60.0 (6.7%)	40.0 (-13.3%)	46.7 (-6.7%)	40.0 (-13.3%)	40.0 (-13.3%)	46.7 (-6.7%)
C	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
All	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	11	10.1	12.1 (2.0%)	13.1 (3.0%)	11.1 (1.0%)	9.1 (-1.0%)	9.1 (-1.0%)	13.1 (3.0%)	10.1 (0.0%)
All	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	All	71.9	71.4 (-0.5%)	72.4 (0.5%)	72.4 (0.5%)	71.9 (0.0%)	71.9 (0.0%)	71.9 (0.0%)	72.4 (0.5%)
AN	All	69.9	69.9 (0.0%)	69.9 (0.0%)	69.9 (0.0%)	71.0 (1.1%)	71.0 (1.1%)	69.9 (0.0%)	69.9 (0.0%)
BN	All	71.4	72.2 (0.8%)	71.4 (0.0%)	72.2 (0.8%)	71.4 (0.0%)	71.4 (0.0%)	73.8 (2.4%)	71.4 (0.0%)
D	All	72.0	72.6 (0.6%)	72.6 (0.6%)	72.6 (0.6%)	71.4 (-0.6%)	72.0 (0.0%)	73.2 (1.2%)	72.0 (0.0%)
C	All	79.8	80.7 (0.9%)	80.7 (0.9%)	78.0 (-1.8%)	78.9 (-0.9%)	78.0 (-1.8%)	78.0 (-1.8%)	78.9 (-0.9%)
All	All	72.8	73.1 (0.3%)	73.3 (0.4%)	73.0 (0.1%)	72.7 (-0.1%)	72.7 (-0.1%)	73.3 (0.4%)	72.8 (0.0%)

M.2.3.4.3   Egg Incubation and Fry Emergence

Water temperature-related effects on fall-run Chinook salmon egg incubation and fry emergence in the American River were evaluated by assessing (1) the percent of months with water temperature outside the 42.8°F to 56°F range for egg incubation and fry emergence (Slater 1963, USFWS 1999, Myrick and Cech 2004, Bratovich et al. 2012, Martin et al. 2017); and (2) the percent of months with water temperature above the 59°F pathogen virulence threshold for fall-run Chinook salmon fry (McCullough 1999) at Hazel Avenue and Watt Avenue (Table M.2-2).

Results evaluating the 42.8°F to 56°F water temperature range for fall-run Chinook salmon egg incubation and fry emergence are presented in Table M.2-67 for Hazel Avenue and Table M.2-68 for Watt Avenue.

- At Hazel Avenue, the highest percent of months with water temperature above the limit was 100% and occurred during October of all water year types under the NAA and all alternatives (Table M.2-67). The lowest percent of months with water temperature outside of the range was 0% and occurred during December through March of most or all water year types under the NAA and all alternatives depending on alternative. Combining water year types, the highest percentage of months outside the range occurred during October and the lowest percent of months with water temperature occurred during January and February under the NAA and all alternatives.

- At Watt Avenue, the highest percent of months with water temperature above the limit was 100% and occurred during October of all water year types under the NAA and all alternatives and during November of critical water years under Alternative 3 (Table M.2-68). The lowest percent of months with water temperature outside of the range was 0% and occurred during December through February of most water year types under the NAA and all alternatives, March of wet and above normal water years under Alternative 3, and March of wet years under Alternative 4. Combining water year types, the highest percentage of months outside the range occurred during October and the lowest percent of months with water temperature occurred during January under the NAA and all alternatives.

Results for the 59.9°F pathogen virulence water temperature threshold for fall-run Chinook salmon egg incubation and fry emergence are presented in Table M.2-69 for Hazel Avenue and Table M.2-70 for Watt Avenue.

- At Hazel avenue, the highest percent of months with water temperature above the threshold was 100% and occurred during October of at least one water year type under the NAA and all alternatives (Table M.2-69). The lowest percent of months with water temperature exceeding the temperature threshold was 0% and occurred during November of at least one water year type and during December through March of all water year types under the NAA and all alternatives. Combining water year types, the highest percent of months with water temperature above the threshold occurred during October under the NAA and all alternatives. The lowest percent of months with water temperature above the threshold occurred during December through March under the NAA and all alternatives.

- At Watt Avenue, the highest percent of months with water temperature above the pathogen virulence threshold was 100% in October for all water year types for the NAA and all alternatives (Table M.2-70). The lowest percent of months with water temperature outside of the range was 0% and occurred during November through March of at least one water year type under the NAA and all alternatives. Combining water year types, the highest percentage of months above the threshold occurred during October for the NAA and all alternatives. The lowest percentage of months above the threshold occurred during December through February under the NAA and all alternatives.

Table M.2-67. Percent (difference in percent relative to NAA) of months outside the 42.8°F to 56°F water temperature range for fall-run Chinook salmon egg incubation and fry emergence by water year type and month, and for all years combined, American River at Hazel Avenue, October - March (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	11	85.7	89.3 (3.6%)	85.7 (0.0%)	85.7 (0.0%)	85.7 (0.0%)	85.7 (0.0%)	92.9 (7.1%)	89.3 (3.6%)
W	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	3.6 (3.6%)	0.0 (0.0%)
W	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	11	78.6	64.3 (-14.3%)	71.4 (-7.1%)	71.4 (-7.1%)	71.4 (-7.1%)	71.4 (-7.1%)	78.6 (0.0%)	78.6 (0.0%)
AN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	11	77.8	66.7 (-11.1%)	77.8 (0.0%)	72.2 (-5.6%)	72.2 (-5.6%)	72.2 (-5.6%)	94.4 (16.7%)	83.3 (5.6%)
BN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	11	75.0	58.3 (-16.7%)	66.7 (-8.3%)	62.5 (-12.5%)	70.8 (-4.2%)	79.2 (4.2%)	75.0 (0.0%)	70.8 (-4.2%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
D	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	8.3 (8.3%)	0.0 (0.0%)
D	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	11	93.3	80.0 (-13.3%)	86.7 (-6.7%)	86.7 (-6.7%)	86.7 (-6.7%)	93.3 (0.0%)	93.3 (0.0%)	93.3 (0.0%)
C	12	0.0	13.3 (13.3%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	3	12.5	6.3 (-6.3%)	6.3 (-6.3%)	6.3 (-6.3%)	12.5 (0.0%)	12.5 (0.0%)	12.5 (0.0%)	0.0 (-12.5%)
All	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	11	81.8	72.7 (-9.1%)	77.8 (-4.0%)	75.8 (-6.1%)	77.8 (-4.0%)	80.8 (-1.0%)	86.9 (5.1%)	82.8 (1.0%)
All	12	0.0	2.0 (2.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	3.0 (3.0%)	0.0 (0.0%)
All	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	3	2.0	1.0 (-1.0%)	1.0 (-1.0%)	1.0 (-1.0%)	2.0 (0.0%)	2.0 (0.0%)	2.0 (0.0%)	0.0 (-2.0%)
W	All	31.0	31.5 (0.6%)	31.0 (0.0%)	31.0 (0.0%)	31.0 (0.0%)	31.0 (0.0%)	32.7 (1.8%)	31.5 (0.6%)
AN	All	30.0	27.5 (-2.5%)	28.8 (-1.3%)	28.8 (-1.3%)	28.8 (-1.3%)	28.8 (-1.3%)	30.0 (0.0%)	30.0 (0.0%)
BN	All	29.6	27.8 (-1.9%)	29.6 (0.0%)	28.7 (-0.9%)	28.7 (-0.9%)	28.7 (-0.9%)	32.4 (2.8%)	30.6 (0.9%)
D	All	29.2	26.4 (-2.8%)	27.8 (-1.4%)	27.1 (-2.1%)	28.5 (-0.7%)	29.9 (0.7%)	30.6 (1.4%)	28.5 (-0.7%)
C	All	33.3	32.3 (-1.1%)	31.2 (-2.2%)	31.2 (-2.2%)	32.3 (-1.1%)	33.3 (0.0%)	33.3 (0.0%)	31.2 (-2.2%)
All	All	30.5	29.2 (-1.3%)	29.7 (-0.8%)	29.3 (-1.2%)	29.8 (-0.7%)	30.4 (-0.2%)	31.9 (1.3%)	30.4 (-0.2%)

Table M.2-68. Percent (difference in percent relative to NAA) of months outside the 42.8°F to 56°F water temperature range for fall-run Chinook salmon egg incubation and fry emergence by water year type and month, and for all years combined, American River at Watt Avenue, October - March (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	11	92.9	92.9 (0.0%)	92.9 (0.0%)	89.3 (-3.6%)	89.3 (-3.6%)	89.3 (-3.6%)	96.4 (3.6%)	92.9 (0.0%)
W	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	3.6 (3.6%)	0.0 (0.0%)
W	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	3	3.6	3.6 (0.0%)	3.6 (0.0%)	3.6 (0.0%)	3.6 (0.0%)	3.6 (0.0%)	0.0 (-3.6%)	0.0 (-3.6%)
AN	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	11	78.6	78.6 (0.0%)	78.6 (0.0%)	78.6 (0.0%)	78.6 (0.0%)	78.6 (0.0%)	78.6 (0.0%)	78.6 (0.0%)
AN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	3	7.7	23.1 (15.4%)	7.7 (0.0%)	7.7 (0.0%)	7.7 (0.0%)	7.7 (0.0%)	0.0 (-7.7%)	7.7 (0.0%)
BN	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	11	94.4	72.2 (-22.2%)	83.3 (-11.1%)	83.3 (-11.1%)	83.3 (-11.1%)	83.3 (-11.1%)	100.0 (5.6%)	88.9 (-5.6%)
BN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	3	5.6	33.3 (27.8%)	11.1 (5.6%)	11.1 (5.6%)	11.1 (5.6%)	11.1 (5.6%)	0.0 (-5.6%)	11.1 (5.6%)
D	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	11	83.3	75.0 (-8.3%)	83.3 (0.0%)	83.3 (0.0%)	79.2 (-4.2%)	79.2 (-4.2%)	83.3 (0.0%)	79.2 (-4.2%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
D	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	4.2 (4.2%)	0.0 (0.0%)
D	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	3	20.8	54.2 (33.3%)	37.5 (16.7%)	37.5 (16.7%)	33.3 (12.5%)	16.7 (-4.2%)	20.8 (0.0%)	33.3 (12.5%)
C	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	11	93.3	86.7 (-6.7%)	86.7 (-6.7%)	86.7 (-6.7%)	86.7 (-6.7%)	93.3 (0.0%)	100.0 (6.7%)	93.3 (0.0%)
C	12	0.0	6.7 (6.7%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	6.7 (6.7%)
C	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	2	6.3	18.8 (12.5%)	6.3 (0.0%)	6.3 (0.0%)	6.3 (0.0%)	6.3 (0.0%)	6.3 (0.0%)	6.3 (0.0%)
C	3	75.0	75.0 (0.0%)	75.0 (0.0%)	81.3 (6.3%)	68.8 (-6.3%)	68.8 (-6.3%)	56.3 (-18.8%)	87.5 (12.5%)
All	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	11	88.9	81.8 (-7.1%)	85.9 (-3.0%)	84.8 (-4.0%)	83.8 (-5.1%)	84.8 (-4.0%)	91.9 (3.0%)	86.9 (-2.0%)
All	12	0.0	1.0 (1.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	2.0 (2.0%)	1.0 (1.0%)
All	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	2	1.0	3.0 (2.0%)	1.0 (0.0%)	1.0 (0.0%)	1.0 (0.0%)	1.0 (0.0%)	1.0 (0.0%)	1.0 (0.0%)
All	3	20.2	35.4 (15.2%)	25.3 (5.1%)	26.3 (6.1%)	23.2 (3.0%)	19.2 (-1.0%)	14.1 (-6.1%)	25.3 (5.1%)
W	All	32.7	32.7 (0.0%)	32.7 (0.0%)	32.1 (-0.6%)	32.1 (-0.6%)	32.1 (-0.6%)	33.3 (0.6%)	32.1 (-0.6%)
AN	All	31.3	33.8 (2.5%)	31.3 (0.0%)	31.3 (0.0%)	31.3 (0.0%)	31.3 (0.0%)	30.0 (-1.3%)	31.3 (0.0%)
BN	All	33.3	34.3 (0.9%)	32.4 (-0.9%)	32.4 (-0.9%)	32.4 (-0.9%)	32.4 (-0.9%)	33.3 (0.0%)	33.3 (0.0%)
D	All	34.0	38.2 (4.2%)	36.8 (2.8%)	36.8 (2.8%)	35.4 (1.4%)	32.6 (-1.4%)	34.7 (0.7%)	35.4 (1.4%)
C	All	45.2	47.3 (2.2%)	44.1 (-1.1%)	45.2 (0.0%)	43.0 (-2.2%)	44.1 (-1.1%)	43.0 (-2.2%)	48.4 (3.2%)
All	All	34.9	36.8 (1.9%)	35.2 (0.3%)	35.2 (0.3%)	34.6 (-0.3%)	34.1 (-0.8%)	34.7 (-0.2%)	35.6 (0.7%)

Table M.2-69. Percent (difference in percent relative to NAA) of months above the 59.9°F pathogen virulence water temperature threshold for fall-run Chinook salmon egg incubation and fry emergence by water year type and month, and for all years combined, American River at Hazel Avenue, October - March (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	10	96.4	96.4 (0.0%)	100.0 (3.6%)	100.0 (3.6%)	100.0 (3.6%)	100.0 (3.6%)	100.0 (3.6%)	100.0 (3.6%)
W	11	3.6	0.0 (-3.6%)	7.1 (3.6%)	7.1 (3.6%)	3.6 (0.0%)	7.1 (3.6%)	3.6 (0.0%)	7.1 (3.6%)
W	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	10	84.6	92.3 (7.7%)	76.9 (-7.7%)	84.6 (0.0%)	76.9 (-7.7%)	84.6 (0.0%)	100.0 (15.4%)	92.3 (7.7%)
AN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	7.1 (7.1%)	7.1 (7.1%)	0.0 (0.0%)	0.0 (0.0%)
AN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	10	83.3	94.4 (11.1%)	83.3 (0.0%)	83.3 (0.0%)	88.9 (5.6%)	83.3 (0.0%)	100.0 (16.7%)	88.9 (5.6%)
BN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	11.1 (11.1%)	0.0 (0.0%)
BN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	10	95.8	100.0 (4.2%)	95.8 (0.0%)	95.8 (0.0%)	95.8 (0.0%)	100.0 (4.2%)	100.0 (4.2%)	100.0 (4.2%)
D	11	4.2	4.2 (0.0%)	4.2 (0.0%)	4.2 (0.0%)	0.0 (-4.2%)	4.2 (0.0%)	8.3 (4.2%)	4.2 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
D	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	93.3 (-6.7%)
C	11	46.7	60.0 (13.3%)	53.3 (6.7%)	40.0 (-6.7%)	46.7 (0.0%)	46.7 (0.0%)	40.0 (-6.7%)	46.7 (0.0%)
C	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	10	92.9	96.9 (4.1%)	92.9 (0.0%)	93.9 (1.0%)	93.9 (1.0%)	94.9 (2.0%)	100.0 (7.1%)	95.9 (3.1%)
All	11	9.1	10.1 (1.0%)	11.1 (2.0%)	9.1 (0.0%)	9.1 (0.0%)	11.1 (2.0%)	11.1 (2.0%)	10.1 (1.0%)
All	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	All	16.7	16.1 (-0.6%)	17.9 (1.2%)	17.9 (1.2%)	17.3 (0.6%)	17.9 (1.2%)	17.3 (0.6%)	17.9 (1.2%)
AN	All	13.8	15.0 (1.3%)	12.5 (-1.3%)	13.8 (0.0%)	13.8 (0.0%)	15.0 (1.3%)	16.3 (2.5%)	15.0 (1.3%)
BN	All	13.9	15.7 (1.9%)	13.9 (0.0%)	13.9 (0.0%)	14.8 (0.9%)	13.9 (0.0%)	18.5 (4.6%)	14.8 (0.9%)
D	All	16.7	17.4 (0.7%)	16.7 (0.0%)	16.7 (0.0%)	16.0 (-0.7%)	17.4 (0.7%)	18.1 (1.4%)	17.4 (0.7%)
C	All	23.7	25.8 (2.2%)	24.7 (1.1%)	22.6 (-1.1%)	23.7 (0.0%)	23.7 (0.0%)	22.6 (-1.1%)	22.6 (-1.1%)
All	All	16.9	17.7 (0.8%)	17.2 (0.3%)	17.0 (0.2%)	17.0 (0.2%)	17.5 (0.7%)	18.4 (1.5%)	17.5 (0.7%)

Table M.2-70. Percent (difference in percent relative to NAA) of months above the 59.9°F pathogen virulence water temperature threshold for fall-run Chinook salmon egg incubation and fry emergence by water year type and month, and for all years combined, American River at Watt Avenue, October - March (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	11	3.6	0.0 (-3.6%)	7.1 (3.6%)	7.1 (3.6%)	3.6 (0.0%)	3.6 (0.0%)	3.6 (0.0%)	7.1 (3.6%)
W	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	7.1 (7.1%)	7.1 (7.1%)	0.0 (0.0%)	0.0 (0.0%)
AN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	3	0.0	7.7 (7.7%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	11	0.0	5.6 (5.6%)	0.0 (0.0%)	5.6 (5.6%)	0.0 (0.0%)	0.0 (0.0%)	16.7 (16.7%)	0.0 (0.0%)
BN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	3	0.0	5.6 (5.6%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	11	4.2	8.3 (4.2%)	8.3 (4.2%)	8.3 (4.2%)	0.0 (-4.2%)	4.2 (0.0%)	12.5 (8.3%)	4.2 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
D	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	3	0.0	16.7 (16.7%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	11	53.3	60.0 (6.7%)	60.0 (6.7%)	40.0 (-13.3%)	46.7 (-6.7%)	40.0 (-13.3%)	40.0 (-13.3%)	46.7 (-6.7%)
C	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	3	0.0	18.8 (18.8%)	6.3 (6.3%)	6.3 (6.3%)	6.3 (6.3%)	6.3 (6.3%)	6.3 (6.3%)	6.3 (6.3%)
All	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	11	10.1	12.1 (2.0%)	13.1 (3.0%)	11.1 (1.0%)	9.1 (-1.0%)	9.1 (-1.0%)	13.1 (3.0%)	10.1 (0.0%)
All	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	3	0.0	9.1 (9.1%)	1.0 (1.0%)	1.0 (1.0%)	1.0 (1.0%)	1.0 (1.0%)	1.0 (1.0%)	1.0 (1.0%)
W	All	17.3	16.7 (-0.6%)	17.9 (0.6%)	17.9 (0.6%)	17.3 (0.0%)	17.3 (0.0%)	17.3 (0.0%)	17.9 (0.6%)
AN	All	16.3	16.3 (0.0%)	16.3 (0.0%)	16.3 (0.0%)	17.5 (1.3%)	17.5 (1.3%)	16.3 (0.0%)	16.3 (0.0%)
BN	All	16.7	17.6 (0.9%)	16.7 (0.0%)	17.6 (0.9%)	16.7 (0.0%)	16.7 (0.0%)	19.4 (2.8%)	16.7 (0.0%)
D	All	17.4	18.1 (0.7%)	18.1 (0.7%)	18.1 (0.7%)	16.7 (-0.7%)	17.4 (0.0%)	18.8 (1.4%)	17.4 (0.0%)
C	All	24.7	25.8 (1.1%)	25.8 (1.1%)	22.6 (-2.2%)	23.7 (-1.1%)	22.6 (-2.2%)	22.6 (-2.2%)	23.7 (-1.1%)
All	All	18.2	20.1 (1.9%)	18.9 (0.7%)	18.5 (0.3%)	18.2 (0.0%)	18.2 (0.0%)	18.9 (0.7%)	18.4 (0.2%)

M.2.3.4.4   Juvenile Rearing and Outmigration

Water temperature-related effects on fall-run Chinook salmon juvenile rearing and outmigration in the American River were evaluated by assessing: (1) the percent of months with water temperature outside the 55.4°F to 68°F optimum temperature for juvenile growth, smoltification, and predation vulnerability (Myrick and Cech 2002, Marine and Cech 2004); (2) the percent of months with water temperature above the 75.2°F upper incipient lethal temperature (UILT) for juveniles (Brett 1952, Brett et al. 1982, Myrick and Cech 2004); and (3) the percent of months with water temperature above the 59.9°F pathogen virulence threshold (McCullough 1999) for juvenile outmigration at Hazel Avenue and Watt Avenue (Table M.2-2).

Results evaluating the 55.4°F to 68°F optimum temperature for juvenile growth, smoltification, and predation vulnerability are presented in Table M.2-71 for Hazel Avenue and Table M.2-72 for Watt Avenue.

- At Hazel Avenue, the highest percent of months with water temperature outside the optimum temperature range was 100% and occurred during January and February of all water year types and during March and April of at least one water year type under the NAA and all alternatives (Table M.2-71). The lowest percent of months with water temperature outside the range was 0%, which occurred during May of above normal, below normal, dry, and critical dry water years under the NAA and all alternatives. Combining water year types, the highest percent of months with water temperature outside the range occurred during January and February and the lowest percent occurred during May under the NAA and all alternatives.

- At Watt Avenue, the highest percent of months with water temperature outside the optimum temperature range was 100%, and occurred during January in all water year types and during February in all water year types, except critical, under the NAA and all alternatives. (Table M.2-72). The lowest percent of months with water temperature outside the range was 0%, which occurred during May in at least one water year type under the NAA and all alternatives and during April of critical water years under the NAA and all phases of Alternative 2. Combining water year types, the highest percent of months with water temperature outside the range was 100% in January under the NAA and all alternatives. The lowest percent occurred in May under the NAA and all alternatives.

Results above the 75.2°F UILT for fall-run Chinook salmon juvenile rearing are presented in Table M.2-73 for Hazel Avenue and Table M.2-74 for Watt Avenue.

- At Hazel Avenue, all months, under all water year types, including a combination of all water year types were 0% for the NAA and all alternatives (Table M.2-73).

- At Watt Avenue, all months, under all water year types, including a combination of all water year types were 0% for the NAA and all alternatives (Table M.2-74).

Results for the 59.9°F pathogen virulence water temperature threshold for fall-run Chinook salmon juvenile rearing an outmigration are presented in Table M.2-75 for Hazel Avenue and Table M.2-76 for Watt Avenue.

- At Hazel Avenue, the highest percent of months with water temperature above the threshold was 62.5%, which occurred during May of critical water years under Alternative 1 (Table M.2-75). The lowest percent of months with water temperature exceeding the temperature limit was 0%, which occurred during January through April generally across all water year types under the NAA and all alternatives, during May of wet water years under Alternative 1, and during May of above normal water years under the NAA and all alternatives except Alternative 3. Combing water year types, the highest percent of months with water temperature above the threshold occurred during May and the lowest percent occurred during January through March under the NAA and all alternatives.

- At Watt Avenue, the highest percent of months with water temperature above the threshold was 100% and occurred during May of above normal water years under Alternative 3 and during May of critical water years under the NAA and all alternatives except Alternative 1 (Table M.2-76). The lowest percent of months with water temperature exceeding the temperature limit was 0% and occurred in January and February of all water year types and in March and April of at least one water year type under the NAA and all alternatives. Combining water year types, the highest percent of months with water temperature above the threshold occurred during May for the NAA and all alternatives and the lowest percent of months with water temperature above the threshold occurred during January and February for the NAA and all alternatives.

Table M.2-71. Percent (difference in percent relative to NAA) of months outside the 55.4°F to 68°F optimal water temperature range for juvenile fall-run Chinook salmon growth, smoltification, and predation vulnerability by water year type and month, and for all years combined, American River at Hazel Avenue, January - May (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	5	28.6	28.6 (0.0%)	28.6 (0.0%)	25.0 (-3.6%)	28.6 (0.0%)	28.6 (0.0%)	28.6 (0.0%)	25.0 (-3.6%)
AN	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	4	100.0	92.3 (-7.7%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
BN	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	4	100.0	88.9 (-11.1%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
D	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	4	100.0	79.2 (-20.8%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	95.8 (-4.2%)
D	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 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
C	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	3	87.5	81.3 (-6.3%)	87.5 (0.0%)	93.8 (6.3%)	87.5 (0.0%)	81.3 (-6.3%)	87.5 (0.0%)	93.8 (6.3%)
C	4	87.5	75.0 (-12.5%)	93.8 (6.3%)	81.3 (-6.3%)	87.5 (0.0%)	93.8 (6.3%)	87.5 (0.0%)	81.3 (-6.3%)
C	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 (0.0%)	0.0 (0.0%)
All	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	3	98.0	97.0 (-1.0%)	98.0 (0.0%)	99.0 (1.0%)	98.0 (0.0%)	97.0 (-1.0%)	98.0 (0.0%)	99.0 (1.0%)
All	4	98.0	87.9 (-10.1%)	99.0 (1.0%)	97.0 (-1.0%)	98.0 (0.0%)	99.0 (1.0%)	98.0 (0.0%)	96.0 (-2.0%)
All	5	8.1	8.1 (0.0%)	8.1 (0.0%)	7.1 (-1.0%)	8.1 (0.0%)	8.1 (0.0%)	8.1 (0.0%)	7.1 (-1.0%)
W	All	85.7	85.7 (0.0%)	85.7 (0.0%)	85.0 (-0.7%)	85.7 (0.0%)	85.7 (0.0%)	85.7 (0.0%)	85.0 (-0.7%)
AN	All	80.0	78.5 (-1.5%)	80.0 (0.0%)	80.0 (0.0%)	80.0 (0.0%)	80.0 (0.0%)	80.0 (0.0%)	80.0 (0.0%)
BN	All	80.0	77.8 (-2.2%)	80.0 (0.0%)	80.0 (0.0%)	80.0 (0.0%)	80.0 (0.0%)	80.0 (0.0%)	80.0 (0.0%)
D	All	80.0	75.8 (-4.2%)	80.0 (0.0%)	80.0 (0.0%)	80.0 (0.0%)	80.0 (0.0%)	80.0 (0.0%)	79.2 (-0.8%)
C	All	75.0	71.3 (-3.8%)	76.3 (1.3%)	75.0 (0.0%)	75.0 (0.0%)	75.0 (0.0%)	75.0 (0.0%)	75.0 (0.0%)
All	All	80.8	78.6 (-2.2%)	81.0 (0.2%)	80.6 (-0.2%)	80.8 (0.0%)	80.8 (0.0%)	80.8 (0.0%)	80.4 (-0.4%)

Table M.2-72. Percent (difference in percent relative to NAA) of months outside the 55.4°F to 68°F optimal water temperature range for juvenile fall-run Chinook salmon growth, smoltification, and predation vulnerability by water year type and month, and for all years combined, American River at Watt Avenue, January - May (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	3	96.4	96.4 (0.0%)	96.4 (0.0%)	96.4 (0.0%)	96.4 (0.0%)	96.4 (0.0%)	100.0 (3.6%)	96.4 (0.0%)
W	4	75.0	75.0 (0.0%)	75.0 (0.0%)	75.0 (0.0%)	75.0 (0.0%)	75.0 (0.0%)	75.0 (0.0%)	75.0 (0.0%)
W	5	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	3.6 (3.6%)	0.0 (0.0%)
AN	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	3	84.6	76.9 (-7.7%)	92.3 (7.7%)	92.3 (7.7%)	92.3 (7.7%)	92.3 (7.7%)	100.0 (15.4%)	84.6 (0.0%)
AN	4	38.5	46.2 (7.7%)	38.5 (0.0%)	30.8 (-7.7%)	30.8 (-7.7%)	38.5 (0.0%)	23.1 (-15.4%)	30.8 (-7.7%)
AN	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 (0.0%)	0.0 (0.0%)
BN	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	3	83.3	55.6 (-27.8%)	83.3 (0.0%)	83.3 (0.0%)	83.3 (0.0%)	83.3 (0.0%)	94.4 (11.1%)	77.8 (-5.6%)
BN	4	22.2	22.2 (0.0%)	22.2 (0.0%)	22.2 (0.0%)	22.2 (0.0%)	22.2 (0.0%)	38.9 (16.7%)	22.2 (0.0%)
BN	5	0.0	5.6 (5.6%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	3	66.7	45.8 (-20.8%)	54.2 (-12.5%)	54.2 (-12.5%)	58.3 (-8.3%)	62.5 (-4.2%)	66.7 (0.0%)	58.3 (-8.3%)
D	4	16.7	25.0 (8.3%)	16.7 (0.0%)	16.7 (0.0%)	20.8 (4.2%)	12.5 (-4.2%)	16.7 (0.0%)	25.0 (8.3%)
D	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 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
C	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	2	93.8	81.3 (-12.5%)	87.5 (-6.3%)	93.8 (0.0%)	87.5 (-6.3%)	87.5 (-6.3%)	93.8 (0.0%)	93.8 (0.0%)
C	3	18.8	18.8 (0.0%)	12.5 (-6.3%)	12.5 (-6.3%)	12.5 (-6.3%)	12.5 (-6.3%)	12.5 (-6.3%)	6.3 (-12.5%)
C	4	0.0	18.8 (18.8%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	6.3 (6.3%)	0.0 (0.0%)
C	5	25.0	62.5 (37.5%)	25.0 (0.0%)	12.5 (-12.5%)	25.0 (0.0%)	18.8 (-6.3%)	25.0 (0.0%)	31.3 (6.3%)
All	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	2	99.0	97.0 (-2.0%)	98.0 (-1.0%)	99.0 (0.0%)	98.0 (-1.0%)	98.0 (-1.0%)	99.0 (0.0%)	99.0 (0.0%)
All	3	72.7	61.6 (-11.1%)	69.7 (-3.0%)	69.7 (-3.0%)	70.7 (-2.0%)	71.7 (-1.0%)	76.8 (4.0%)	67.7 (-5.1%)
All	4	34.3	40.4 (6.1%)	34.3 (0.0%)	33.3 (-1.0%)	34.3 (0.0%)	33.3 (-1.0%)	36.4 (2.0%)	35.4 (1.0%)
All	5	4.0	11.1 (7.1%)	4.0 (0.0%)	2.0 (-2.0%)	4.0 (0.0%)	3.0 (-1.0%)	5.1 (1.0%)	5.1 (1.0%)
W	All	74.3	74.3 (0.0%)	74.3 (0.0%)	74.3 (0.0%)	74.3 (0.0%)	74.3 (0.0%)	75.7 (1.4%)	74.3 (0.0%)
AN	All	64.6	64.6 (0.0%)	66.2 (1.5%)	64.6 (0.0%)	64.6 (0.0%)	66.2 (1.5%)	64.6 (0.0%)	63.1 (-1.5%)
BN	All	61.1	56.7 (-4.4%)	61.1 (0.0%)	61.1 (0.0%)	61.1 (0.0%)	61.1 (0.0%)	66.7 (5.6%)	60.0 (-1.1%)
D	All	56.7	54.2 (-2.5%)	54.2 (-2.5%)	54.2 (-2.5%)	55.8 (-0.8%)	55.0 (-1.7%)	56.7 (0.0%)	56.7 (0.0%)
C	All	47.5	56.3 (8.8%)	45.0 (-2.5%)	43.8 (-3.8%)	45.0 (-2.5%)	43.8 (-3.8%)	47.5 (0.0%)	46.3 (-1.3%)
All	All	62.0	62.0 (0.0%)	61.2 (-0.8%)	60.8 (-1.2%)	61.4 (-0.6%)	61.2 (-0.8%)	63.4 (1.4%)	61.4 (-0.6%)

Table M.2-73. Percent (difference in percent relative to NAA) of months above the 75.2°F upper incipient lethal temperature for juvenile fall-run Chinook salmon rearing and outmigration by water year type and month, and for all years combined, American River at Hazel Avenue, January - May (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
AN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
BN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
D	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
C	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
W	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)

Table M.2-74. Percent (difference in percent relative to NAA) of months above the 75.2°F upper incipient lethal temperature for juvenile fall-run Chinook salmon rearing and outmigration by water year type and month, and for all years combined, American River at Watt Avenue, January - May (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
AN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
BN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
D	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
C	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
All	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
W	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)

Table M.2-75. Percent (difference in percent relative to NAA) of months above the 59.9°F pathogen virulence water temperature threshold for fall-run Chinook salmon juvenile outmigration by water year type and month, and for all years combined, American River at Hazel Avenue, January - May (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	5	3.6	0.0 (-3.6%)	3.6 (0.0%)	3.6 (0.0%)	3.6 (0.0%)	3.6 (0.0%)	7.1 (3.6%)	3.6 (0.0%)
AN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	5	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	30.8 (30.8%)	0.0 (0.0%)
BN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	5	33.3	33.3 (0.0%)	33.3 (0.0%)	33.3 (0.0%)	27.8 (-5.6%)	27.8 (-5.6%)	22.2 (-11.1%)	27.8 (-5.6%)
D	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	4	0.0	4.2 (4.2%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	5	37.5	50.0 (12.5%)	45.8 (8.3%)	41.7 (4.2%)	50.0 (12.5%)	50.0 (12.5%)	29.2 (-8.3%)	58.3 (20.8%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
C	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	5	37.5	62.5 (25.0%)	50.0 (12.5%)	31.3 (-6.3%)	50.0 (12.5%)	50.0 (12.5%)	50.0 (12.5%)	37.5 (0.0%)
All	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	4	0.0	1.0 (1.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	5	22.2	28.3 (6.1%)	26.3 (4.0%)	22.2 (0.0%)	26.3 (4.0%)	26.3 (4.0%)	25.3 (3.0%)	26.3 (4.0%)
W	All	0.7	0.0 (-0.7%)	0.7 (0.0%)	0.7 (0.0%)	0.7 (0.0%)	0.7 (0.0%)	1.4 (0.7%)	0.7 (0.0%)
AN	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	6.2 (6.2%)	0.0 (0.0%)
BN	All	6.7	6.7 (0.0%)	6.7 (0.0%)	6.7 (0.0%)	5.6 (-1.1%)	5.6 (-1.1%)	4.4 (-2.2%)	5.6 (-1.1%)
D	All	7.5	10.8 (3.3%)	9.2 (1.7%)	8.3 (0.8%)	10.0 (2.5%)	10.0 (2.5%)	5.8 (-1.7%)	11.7 (4.2%)
C	All	7.5	12.5 (5.0%)	10.0 (2.5%)	6.3 (-1.3%)	10.0 (2.5%)	10.0 (2.5%)	10.0 (2.5%)	7.5 (0.0%)
All	All	4.4	5.9 (1.4%)	5.3 (0.8%)	4.4 (0.0%)	5.3 (0.8%)	5.3 (0.8%)	5.1 (0.6%)	5.3 (0.8%)

Table M.2-76. Percent (difference in percent relative to NAA) of months above the 59.9°F pathogen virulence water temperature threshold for fall-run Chinook salmon juvenile outmigration by water year type and month, and for all years combined, American River at Watt Avenue, January - May (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	4	0.0	3.6 (3.6%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	5	35.7	35.7 (0.0%)	35.7 (0.0%)	35.7 (0.0%)	35.7 (0.0%)	35.7 (0.0%)	39.3 (3.6%)	35.7 (0.0%)
AN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	3	0.0	7.7 (7.7%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	4	0.0	15.4 (15.4%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	7.7 (7.7%)
AN	5	92.3	84.6 (-7.7%)	92.3 (0.0%)	92.3 (0.0%)	92.3 (0.0%)	92.3 (0.0%)	100.0 (7.7%)	92.3 (0.0%)
BN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	3	0.0	5.6 (5.6%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	4	5.6	22.2 (16.7%)	11.1 (5.6%)	11.1 (5.6%)	11.1 (5.6%)	11.1 (5.6%)	0.0 (-5.6%)	11.1 (5.6%)
BN	5	83.3	77.8 (-5.6%)	83.3 (0.0%)	83.3 (0.0%)	83.3 (0.0%)	83.3 (0.0%)	88.9 (5.6%)	77.8 (-5.6%)
D	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	3	0.0	16.7 (16.7%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	4	16.7	29.2 (12.5%)	20.8 (4.2%)	20.8 (4.2%)	20.8 (4.2%)	12.5 (-4.2%)	4.2 (-12.5%)	20.8 (4.2%)
D	5	95.8	91.7 (-4.2%)	95.8 (0.0%)	95.8 (0.0%)	91.7 (-4.2%)	95.8 (0.0%)	91.7 (-4.2%)	95.8 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
C	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	3	0.0	18.8 (18.8%)	6.3 (6.3%)	6.3 (6.3%)	6.3 (6.3%)	6.3 (6.3%)	6.3 (6.3%)	6.3 (6.3%)
C	4	62.5	37.5 (-25.0%)	37.5 (-25.0%)	68.8 (6.3%)	50.0 (-12.5%)	25.0 (-37.5%)	43.8 (-18.8%)	81.3 (18.8%)
C	5	100.0	93.8 (-6.3%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	3	0.0	9.1 (9.1%)	1.0 (1.0%)	1.0 (1.0%)	1.0 (1.0%)	1.0 (1.0%)	1.0 (1.0%)	1.0 (1.0%)
All	4	15.2	20.2 (5.1%)	13.1 (-2.0%)	18.2 (3.0%)	15.2 (0.0%)	9.1 (-6.1%)	8.1 (-7.1%)	21.2 (6.1%)
All	5	76.8	72.7 (-4.0%)	76.8 (0.0%)	76.8 (0.0%)	75.8 (-1.0%)	76.8 (0.0%)	78.8 (2.0%)	75.8 (-1.0%)
W	All	7.1	7.9 (0.7%)	7.1 (0.0%)	7.1 (0.0%)	7.1 (0.0%)	7.1 (0.0%)	7.9 (0.7%)	7.1 (0.0%)
AN	All	18.5	21.5 (3.1%)	18.5 (0.0%)	18.5 (0.0%)	18.5 (0.0%)	18.5 (0.0%)	20.0 (1.5%)	20.0 (1.5%)
BN	All	17.8	21.1 (3.3%)	18.9 (1.1%)	18.9 (1.1%)	18.9 (1.1%)	18.9 (1.1%)	17.8 (0.0%)	17.8 (0.0%)
D	All	22.5	27.5 (5.0%)	23.3 (0.8%)	23.3 (0.8%)	22.5 (0.0%)	21.7 (-0.8%)	19.2 (-3.3%)	23.3 (0.8%)
C	All	32.5	30.0 (-2.5%)	28.8 (-3.8%)	35.0 (2.5%)	31.3 (-1.3%)	26.3 (-6.3%)	30.0 (-2.5%)	37.5 (5.0%)
All	All	18.4	20.4 (2.0%)	18.2 (-0.2%)	19.2 (0.8%)	18.4 (0.0%)	17.4 (-1.0%)	17.6 (-0.8%)	19.6 (1.2%)

M.2.3.5 White Sturgeon

M.2.3.5.1   *Non-spawning Adults*

Water temperature related effects on white sturgeon non-spawning adults in the American River were evaluated by assessing the percent of months with water temperature above the 77°F upper limit of suitable water temperatures for adult white sturgeon (Israel et al. 2011) (Table M.2-2).

Results above the 77°F upper limit of suitable water temperatures for adult white sturgeon are presented in Table M.2-77 for Hazel Avenue and Table M.2-78 for Watt Avenue.

- At Hazel Avenue, water temperatures for all months and water year types under the NAA and all alternatives were below the upper limit (Table M.2-77).

- At Watt Avenue, the highest percent of months above the upper limit was 6.3% and occurred during July of critical water years under the NAA and all alternatives except Alternative 2 Without TUCP Without VA and Alternative 4 (Table M.2-78). Water temperatures for all other months and water year types were lower than the upper limit for the NAA and alternatives.

Table M.2-77. Percent (difference in percent relative to NAA) of months above the 77°F upper limit of suitable water temperature for adult white sturgeon by water year type and month, and for all years combined, American River at Hazel Avenue, Year-round (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
AN	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
D	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
All	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)

Table M.2-78. Percent (difference in percent relative to NAA) of months above the 77°F upper limit of suitable water temperature for adult white sturgeon by water year type and month, and for all years combined, American River at Watt Avenue, Year-round (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
BN	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	7	6.3	6.3 (0.0%)	6.3 (0.0%)	0.0 (-6.3%)	6.3 (0.0%)	6.3 (0.0%)	6.3 (0.0%)	0.0 (-6.3%)
C	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 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
C	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	7	1.0	1.0 (0.0%)	1.0 (0.0%)	0.0 (-1.0%)	1.0 (0.0%)	1.0 (0.0%)	1.0 (0.0%)	0.0 (-1.0%)
All	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 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	All	0.5	0.5 (0.0%)	0.5 (0.0%)	0.0 (-0.5%)	0.5 (0.0%)	0.5 (0.0%)	0.5 (0.0%)	0.0 (-0.5%)
All	All	0.1	0.1 (0.0%)	0.1 (0.0%)	0.0 (-0.1%)	0.1 (0.0%)	0.1 (0.0%)	0.1 (0.0%)	0.0 (-0.1%)

M.2.3.6 Pacific Lamprey

M.2.3.6.1 *Spawning and Egg Incubation*

Water temperature related effects on Pacific lamprey spawning and egg incubation in the American River were evaluated by assessing the percent of months with water temperature outside the 50°F - 64°F observed range for high survival and low occurrences of embryonic developmental abnormalities (Meeuwig et al. 2003, 2005) at Hazel Avenue and Watt Avenue.

Results are presented in Table M.2-79 for Hazel Avenue and Table M.2-80 for Watt Avenue.

- At Hazel Avenue, the highest percent of months outside the range was 100% and occurred during July of above normal water years under Alternative 3, during July of below normal water years under Alternative 2 With TUCP Without VA and Alternative 2 Without TUCP Without VA, during July of dry water years under Alternative 2 With TUCP Without VA, and during July of critical water years Alternative 1, all phases of Alternative 2 except Alternative 2 Without TUCP Without VA, and Alternative 3 (Table M.2-79). The lowest percent of months outside the range was 0% and occurred during March through May of at least one water year type under the NAA and all alternatives. Combining water year types, the highest percent of months outside the range occurred during July and the lowest percent occurred during April and May under the NAA and all alternatives.

- At Watt Avenue, the highest percent of months outside the range was 100% and occurred in July during all water year types for the NAA and all alternatives, June of above normal water years under Alternative 3, and June of critical water years under Alternative 2 With TUCP Without VA, Alternative 2 Without TUCP Delta VA, Alternative 2 Without TUCP Systemwide VA, and Alternative 3 (Table M.2-80). The lowest percent of months outside the range was 0% and occurred during March and April of at least one water year type under the NAA and all alternatives. Combining water year types, the highest percent of months outside the range occurred during July and the lowest percent occurred during March and April for the NAA and all alternatives.

Table M.2-79. Percent (difference in percent relative to NAA) of months outside the 50°F - 64°F observed water temperature range for high survival and low occurrences of embryonic developmental abnormalities of Pacific lamprey by water year type and month, and for all years combined, American River at Hazel Avenue, March - July (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	3	67.9	64.3 (-3.6%)	67.9 (0.0%)	67.9 (0.0%)	67.9 (0.0%)	67.9 (0.0%)	71.4 (3.6%)	64.3 (-3.6%)
W	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	5	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	3.6 (3.6%)	0.0 (0.0%)
W	6	7.1	17.9 (10.7%)	10.7 (3.6%)	10.7 (3.6%)	7.1 (0.0%)	10.7 (3.6%)	10.7 (3.6%)	7.1 (0.0%)
W	7	64.3	64.3 (0.0%)	67.9 (3.6%)	71.4 (7.1%)	64.3 (0.0%)	60.7 (-3.6%)	71.4 (7.1%)	75.0 (10.7%)
AN	3	38.5	38.5 (0.0%)	38.5 (0.0%)	38.5 (0.0%)	38.5 (0.0%)	38.5 (0.0%)	38.5 (0.0%)	38.5 (0.0%)
AN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	6	46.2	46.2 (0.0%)	53.8 (7.7%)	53.8 (7.7%)	46.2 (0.0%)	53.8 (7.7%)	30.8 (-15.4%)	53.8 (7.7%)
AN	7	92.3	76.9 (-15.4%)	92.3 (0.0%)	92.3 (0.0%)	84.6 (-7.7%)	84.6 (-7.7%)	100.0 (7.7%)	84.6 (-7.7%)
BN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	5.6 (5.6%)	0.0 (0.0%)	5.6 (5.6%)
BN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	6	50.0	44.4 (-5.6%)	44.4 (-5.6%)	50.0 (0.0%)	44.4 (-5.6%)	55.6 (5.6%)	38.9 (-11.1%)	50.0 (0.0%)
BN	7	83.3	61.1 (-22.2%)	100.0 (16.7%)	100.0 (16.7%)	88.9 (5.6%)	94.4 (11.1%)	88.9 (5.6%)	83.3 (0.0%)
D	3	4.2	8.3 (4.2%)	12.5 (8.3%)	12.5 (8.3%)	16.7 (12.5%)	4.2 (0.0%)	4.2 (0.0%)	4.2 (0.0%)
D	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	6	37.5	54.2 (16.7%)	62.5 (25.0%)	66.7 (29.2%)	62.5 (25.0%)	66.7 (29.2%)	41.7 (4.2%)	54.2 (16.7%)
D	7	95.8	83.3 (-12.5%)	100.0 (4.2%)	95.8 (0.0%)	91.7 (-4.2%)	87.5 (-8.3%)	91.7 (-4.2%)	91.7 (-4.2%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
C	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	5	6.3	12.5 (6.3%)	0.0 (-6.3%)	0.0 (-6.3%)	0.0 (-6.3%)	12.5 (6.3%)	6.3 (0.0%)	0.0 (-6.3%)
C	6	50.0	62.5 (12.5%)	68.8 (18.8%)	50.0 (0.0%)	68.8 (18.8%)	68.8 (18.8%)	68.8 (18.8%)	62.5 (12.5%)
C	7	93.8	100.0 (6.3%)	100.0 (6.3%)	93.8 (0.0%)	100.0 (6.3%)	100.0 (6.3%)	100.0 (6.3%)	93.8 (0.0%)
All	3	25.3	25.3 (0.0%)	27.3 (2.0%)	27.3 (2.0%)	28.3 (3.0%)	26.3 (1.0%)	26.3 (1.0%)	25.3 (0.0%)
All	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	5	1.0	2.0 (1.0%)	0.0 (-1.0%)	0.0 (-1.0%)	0.0 (-1.0%)	2.0 (1.0%)	2.0 (1.0%)	0.0 (-1.0%)
All	6	34.3	42.4 (8.1%)	44.4 (10.1%)	43.4 (9.1%)	42.4 (8.1%)	47.5 (13.1%)	35.4 (1.0%)	41.4 (7.1%)
All	7	83.8	75.8 (-8.1%)	89.9 (6.1%)	88.9 (5.1%)	83.8 (0.0%)	82.8 (-1.0%)	87.9 (4.0%)	84.8 (1.0%)
W	All	27.9	29.3 (1.4%)	29.3 (1.4%)	30.0 (2.1%)	27.9 (0.0%)	27.9 (0.0%)	31.4 (3.6%)	29.3 (1.4%)
AN	All	35.4	32.3 (-3.1%)	36.9 (1.5%)	36.9 (1.5%)	33.8 (-1.5%)	35.4 (0.0%)	33.8 (-1.5%)	35.4 (0.0%)
BN	All	26.7	21.1 (-5.6%)	28.9 (2.2%)	30.0 (3.3%)	26.7 (0.0%)	31.1 (4.4%)	25.6 (-1.1%)	27.8 (1.1%)
D	All	27.5	29.2 (1.7%)	35.0 (7.5%)	35.0 (7.5%)	34.2 (6.7%)	31.7 (4.2%)	27.5 (0.0%)	30.0 (2.5%)
C	All	30.0	35.0 (5.0%)	33.8 (3.8%)	28.8 (-1.3%)	33.8 (3.8%)	36.3 (6.3%)	35.0 (5.0%)	31.3 (1.3%)
All	All	28.9	29.1 (0.2%)	32.3 (3.4%)	31.9 (3.0%)	30.9 (2.0%)	31.7 (2.8%)	30.3 (1.4%)	30.3 (1.4%)

Table M.2-80. Percent (difference in percent relative to NAA) of months outside the 50°F - 64°F observed water temperature range for high survival and low occurrences of embryonic developmental abnormalities of Pacific lamprey by water year type and month, and for all years combined, American River at Watt Avenue, March - July (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	3	32.1	32.1 (0.0%)	32.1 (0.0%)	32.1 (0.0%)	32.1 (0.0%)	32.1 (0.0%)	32.1 (0.0%)	32.1 (0.0%)
W	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	5	10.7	7.1 (-3.6%)	10.7 (0.0%)	10.7 (0.0%)	10.7 (0.0%)	10.7 (0.0%)	14.3 (3.6%)	10.7 (0.0%)
W	6	53.6	57.1 (3.6%)	53.6 (0.0%)	53.6 (0.0%)	53.6 (0.0%)	50.0 (-3.6%)	60.7 (7.1%)	57.1 (3.6%)
W	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	4	0.0	7.7 (7.7%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	5	23.1	30.8 (7.7%)	23.1 (0.0%)	23.1 (0.0%)	23.1 (0.0%)	23.1 (0.0%)	46.2 (23.1%)	23.1 (0.0%)
AN	6	76.9	76.9 (0.0%)	76.9 (0.0%)	76.9 (0.0%)	76.9 (0.0%)	69.2 (-7.7%)	100.0 (23.1%)	76.9 (0.0%)
AN	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	4	0.0	11.1 (11.1%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	5	27.8	33.3 (5.6%)	27.8 (0.0%)	27.8 (0.0%)	27.8 (0.0%)	38.9 (11.1%)	33.3 (5.6%)	22.2 (-5.6%)
BN	6	88.9	88.9 (0.0%)	88.9 (0.0%)	88.9 (0.0%)	88.9 (0.0%)	88.9 (0.0%)	94.4 (5.6%)	88.9 (0.0%)
BN	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	4	0.0	20.8 (20.8%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	4.2 (4.2%)
D	5	37.5	45.8 (8.3%)	50.0 (12.5%)	45.8 (8.3%)	45.8 (8.3%)	45.8 (8.3%)	41.7 (4.2%)	54.2 (16.7%)
D	6	95.8	95.8 (0.0%)	95.8 (0.0%)	95.8 (0.0%)	91.7 (-4.2%)	100.0 (4.2%)	91.7 (-4.2%)	100.0 (4.2%)
D	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
C	3	0.0	6.3 (6.3%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	4	6.3	25.0 (18.8%)	6.3 (0.0%)	12.5 (6.3%)	6.3 (0.0%)	6.3 (0.0%)	6.3 (0.0%)	12.5 (6.3%)
C	5	87.5	87.5 (0.0%)	87.5 (0.0%)	87.5 (0.0%)	75.0 (-12.5%)	75.0 (-12.5%)	87.5 (0.0%)	75.0 (-12.5%)
C	6	93.8	93.8 (0.0%)	100.0 (6.3%)	93.8 (0.0%)	100.0 (6.3%)	100.0 (6.3%)	100.0 (6.3%)	93.8 (0.0%)
C	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	3	9.1	10.1 (1.0%)	9.1 (0.0%)	9.1 (0.0%)	9.1 (0.0%)	9.1 (0.0%)	9.1 (0.0%)	9.1 (0.0%)
All	4	1.0	12.1 (11.1%)	1.0 (0.0%)	2.0 (1.0%)	1.0 (0.0%)	1.0 (0.0%)	1.0 (0.0%)	3.0 (2.0%)
All	5	34.3	37.4 (3.0%)	37.4 (3.0%)	36.4 (2.0%)	34.3 (0.0%)	36.4 (2.0%)	40.4 (6.1%)	35.4 (1.0%)
All	6	79.8	80.8 (1.0%)	80.8 (1.0%)	79.8 (0.0%)	79.8 (0.0%)	79.8 (0.0%)	85.9 (6.1%)	81.8 (2.0%)
All	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	All	39.3	39.3 (0.0%)	39.3 (0.0%)	39.3 (0.0%)	39.3 (0.0%)	38.6 (-0.7%)	41.4 (2.1%)	40.0 (0.7%)
AN	All	40.0	43.1 (3.1%)	40.0 (0.0%)	40.0 (0.0%)	40.0 (0.0%)	38.5 (-1.5%)	49.2 (9.2%)	40.0 (0.0%)
BN	All	43.3	46.7 (3.3%)	43.3 (0.0%)	43.3 (0.0%)	43.3 (0.0%)	45.6 (2.2%)	45.6 (2.2%)	42.2 (-1.1%)
D	All	46.7	52.5 (5.8%)	49.2 (2.5%)	48.3 (1.7%)	47.5 (0.8%)	49.2 (2.5%)	46.7 (0.0%)	51.7 (5.0%)
C	All	57.5	62.5 (5.0%)	58.8 (1.3%)	58.8 (1.3%)	56.3 (-1.3%)	56.3 (-1.3%)	58.8 (1.3%)	56.3 (-1.3%)
All	All	44.8	48.1 (3.2%)	45.7 (0.8%)	45.5 (0.6%)	44.8 (0.0%)	45.3 (0.4%)	47.3 (2.4%)	45.9 (1.0%)

M.2.3.6.2 Ammoecoete Rearing and Emigration

Water temperature related effects on Pacific lamprey ammocoete rearing and emigration in the American River were evaluated by assessing the percent of months with water temperature above the 72°F upper limit for high survival and low occurrence of developmental abnormalities (Meeuwig et al. 2003, 2005) at Hazel Avenue and Watt Avenue (Table M.2-2).

Results for are presented in Table M.2-81 for Hazel Avenue and Table M.2-82 for Watt Avenue.

- At Hazel Avenue, the percent of months exceeding the upper limit was 0% in all months and water year types other than limited exceedances (6.3% to 25%) July through September of critical water years depending on alternative (Table M.2-81). Combining water year types, the highest percent exceedance above the upper limit was during August, and the lower percent exceedance above the upper limit was during October through June under the NAA and all alternatives.

- At Watt Avenue, the highest percent of months above the upper limit for high survival and low occurrences of embryonic developmental abnormalities was 75% and occurred in July under critical water year types under the NAA, Alternative 2 Without TUCP Delta VA, Alternative 2 Without TUCP Systemwide VA, and Alternative 3 (Table M.2-82). The lowest percent of months outside the range was 0% and occurred in all months of at least one water year type under the NAA and all alternatives. Combining water year types, the highest percent of months above the upper limit occurred during August and the lowest occurred during October through May under the NAA and all alternatives. Air temperatures drove these temporal patterns.

Table M.2-81. Percent (difference in percent relative to NAA) of months above the 72°F upper limit for high survival and low occurrences of embryonic developmental abnormalities of Pacific lamprey by water year type and month, and for all years combined, American River at Hazel Avenue, year-round (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
AN	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
D	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	6.3 (6.3%)
C	8	6.3	0.0 (-6.3%)	6.3 (0.0%)	25.0 (18.8%)	0.0 (-6.3%)	0.0 (-6.3%)	0.0 (-6.3%)	12.5 (6.3%)
C	9	0.0	0.0 (0.0%)	0.0 (0.0%)	6.3 (6.3%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	1.0 (1.0%)
All	8	1.0	0.0 (-1.0%)	1.0 (0.0%)	4.0 (3.0%)	0.0 (-1.0%)	0.0 (-1.0%)	0.0 (-1.0%)	2.0 (1.0%)
All	9	0.0	0.0 (0.0%)	0.0 (0.0%)	1.0 (1.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
All	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	All	0.5	0.0 (-0.5%)	0.5 (0.0%)	2.6 (2.1%)	0.0 (-0.5%)	0.0 (-0.5%)	0.0 (-0.5%)	1.6 (1.1%)
All	All	0.1	0.0 (-0.1%)	0.1 (0.0%)	0.4 (0.3%)	0.0 (-0.1%)	0.0 (-0.1%)	0.0 (-0.1%)	0.3 (0.2%)

Table M.2-82. Percent (difference in percent relative to NAA) of months above the 72°F upper limit for high survival and low occurrences of embryonic developmental abnormalities of Pacific lamprey by water year type and month, and for all years combined, American River at Watt Avenue, year-round (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	0.0 (0.0%)
W	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	6	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	3.6 (3.6%)	0.0 (0.0%)
W	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 (0.0%)	3.6 (-7.1%)
W	8	10.7	25.0 (14.3%)	7.1 (-3.6%)	3.6 (-7.1%)	7.1 (-3.6%)	3.6 (-7.1%)	10.7 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	0.0 (0.0%)
W	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	6	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	7.7 (7.7%)	0.0 (0.0%)
AN	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 (0.0%)	15.4 (7.7%)
AN	8	7.7	7.7 (0.0%)	7.7 (0.0%)	7.7 (0.0%)	7.7 (0.0%)	7.7 (0.0%)	0.0 (-7.7%)	7.7 (7.7%)
AN	9	0.0	7.7 (7.7%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	7.7 (7.7%)	7.7 (7.7%)	0.0 (0.0%)
AN	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	11.1 (5.6%)
BN	6	5.6	0.0 (-5.6%)	11.1 (5.6%)	11.1 (5.6%)	11.1 (5.6%)	11.1 (5.6%)	16.7 (11.1%)	5.6 (0.0%)
BN	7	5.6	0.0 (-5.6%)	5.6 (0.0%)	5.6 (0.0%)	5.6 (0.0%)	0.0 (-5.6%)	11.1 (5.6%)	27.8 (16.7%)
BN	8	11.1	5.6 (-5.6%)	11.1 (0.0%)	16.7 (5.6%)	11.1 (0.0%)	16.7 (5.6%)	5.6 (-5.6%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	0.0 (0.0%)
BN	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	8.3 (4.2%)
D	6	4.2	12.5 (8.3%)	12.5 (8.3%)	8.3 (4.2%)	12.5 (8.3%)	4.2 (0.0%)	25.0 (20.8%)	4.2 (-8.3%)
D	7	12.5	4.2 (-8.3%)	16.7 (4.2%)	16.7 (4.2%)	16.7 (4.2%)	12.5 (0.0%)	8.3 (-4.2%)	4.2 (-20.8%)
D	8	25.0	16.7 (-8.3%)	16.7 (-8.3%)	20.8 (-4.2%)	16.7 (-8.3%)	12.5 (-12.5%)	16.7 (-8.3%)	0.0 (-4.2%)
D	9	4.2	8.3 (4.2%)	4.2 (0.0%)	4.2 (0.0%)	4.2 (0.0%)	4.2 (0.0%)	16.7 (12.5%)	0.0 (0.0%)
D	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	5	0.0	12.5 (12.5%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	37.5 (6.3%)
C	6	31.3	25.0 (-6.3%)	43.8 (12.5%)	31.3 (0.0%)	37.5 (6.3%)	37.5 (6.3%)	50.0 (18.8%)	56.3 (-18.8%)
C	7	75.0	31.3 (-43.8%)	68.8 (-6.3%)	62.5 (-12.5%)	75.0 (0.0%)	75.0 (0.0%)	75.0 (0.0%)	62.5 (0.0%)
C	8	62.5	56.3 (-6.3%)	62.5 (0.0%)	62.5 (0.0%)	62.5 (0.0%)	56.3 (-6.3%)	68.8 (6.3%)	31.3 (6.3%)
C	9	25.0	31.3 (6.3%)	25.0 (0.0%)	25.0 (0.0%)	6.3 (-18.8%)	12.5 (-12.5%)	18.8 (-6.3%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	0.0 (0.0%)
C	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	5	0.0	2.0 (2.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	10.1 (3.0%)
All	6	7.1	7.1 (0.0%)	12.1 (5.1%)	9.1 (2.0%)	11.1 (4.0%)	9.1 (2.0%)	19.2 (12.1%)	11.1 (-5.1%)
All	7	16.2	6.1 (-10.1%)	16.2 (0.0%)	15.2 (-1.0%)	17.2 (1.0%)	15.2 (-1.0%)	16.2 (0.0%)	19.2 (-3.0%)
All	8	22.2	22.2 (0.0%)	19.2 (-3.0%)	20.2 (-2.0%)	19.2 (-3.0%)	17.2 (-5.1%)	19.2 (-3.0%)	6.1 (1.0%)
All	9	5.1	8.1 (3.0%)	5.1 (0.0%)	5.1 (0.0%)	2.0 (-3.0%)	4.0 (-1.0%)	8.1 (3.0%)	0.0 (0.0%)
All	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.3 (-0.6%)
W	All	0.9	2.1 (1.2%)	0.6 (-0.3%)	0.3 (-0.6%)	0.6 (-0.3%)	0.3 (-0.6%)	1.2 (0.3%)	1.9 (1.2%)
AN	All	0.6	1.2 (0.6%)	0.6 (0.0%)	0.6 (0.0%)	0.6 (0.0%)	1.2 (0.6%)	1.2 (0.6%)	3.7 (1.9%)
BN	All	1.9	0.5 (-1.4%)	2.3 (0.5%)	2.8 (0.9%)	2.3 (0.5%)	2.3 (0.5%)	2.8 (0.9%)	1.4 (-2.4%)
D	All	3.8	3.5 (-0.3%)	4.2 (0.3%)	4.2 (0.3%)	4.2 (0.3%)	2.8 (-1.0%)	5.6 (1.7%)	15.9 (-0.5%)
C	All	16.4	13.2 (-3.2%)	16.9 (0.5%)	15.3 (-1.1%)	15.3 (-1.1%)	15.3 (-1.1%)	18.0 (1.6%)	3.9 (-0.3%)
All	All	4.2	3.8 (-0.4%)	4.4 (0.2%)	4.1 (-0.1%)	4.1 (-0.1%)	3.8 (-0.4%)	5.2 (1.0%)	0.0 (0.0%)

M.2.3.7 Western River Lamprey

M.2.3.7.1   Spawning and Egg Incubation

Water temperature related effects on western river lamprey spawning and egg incubation in the American River were evaluated by assessing the percent of months with water temperature outside the 50°F - 64°F observed range for high survival and low occurrences of embryonic developmental abnormalities (Meeuwig et al. 2003, 2005) at Hazel Avenue and Watt Avenue (Table M.2-2).

Results for the 50°F - 64°F observed range of high survival and low occurrences of embryonic developmental abnormalities in western river lamprey are presented in Table M.2-83 for Hazel Avenue and Table M.2-84 for Watt Avenue.

- At Hazel Avenue, the highest percent of months outside the range was 100% and occurred during February of at least one water year type under the NAA and all alternatives and during July of at least one water year type under Alternative 1, all four phases of Alternative 2, and Alternative (Table M.2-83). The lowest percent of months outside the range was 0% and occurred during March through May under at least one water year type under the NAA and all alternatives. Combining water year types, the highest percent of months outside the range occurred in February and the lowest percent of months occurred during April under the NAA and all alternatives. Air temperatures drove these temporal patterns.

- At Watt Avenue, the highest percent of months outside the range was 100% and occurred during February of wet years under the NAA and all alternatives, during June of at least one water year type under all alternatives except the NAA, Alternative 1, and Alternative 2 Without TUCP Without VA, and during July of all water year types under the NAA and all alternatives (Table M.2-84). The lowest percent of months outside the range was 0% and occurred during March and April of most water year types under the NAA and all alternatives. Combining water year types, the highest percent of months outside the range occurred during July and the lowest percent of month occurred during April under the NAA and all alternatives.

Table M.2-83. Percent (difference in percent relative to NAA) of months outside the 50°F - 64°F water temperature range observed for high survival and low occurrences of embryonic developmental abnormalities of western river lamprey spawning and egg incubation by water year type and month, and for all years combined, American River at Hazel Avenue, February - July (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	3	67.9	64.3 (-3.6%)	67.9 (0.0%)	67.9 (0.0%)	67.9 (0.0%)	67.9 (0.0%)	71.4 (3.6%)	64.3 (-3.6%)
W	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	5	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	3.6 (3.6%)	0.0 (0.0%)
W	6	7.1	17.9 (10.7%)	10.7 (3.6%)	10.7 (3.6%)	7.1 (0.0%)	10.7 (3.6%)	10.7 (3.6%)	7.1 (0.0%)
W	7	64.3	64.3 (0.0%)	67.9 (3.6%)	71.4 (7.1%)	64.3 (0.0%)	60.7 (-3.6%)	71.4 (7.1%)	75.0 (10.7%)
AN	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	3	38.5	38.5 (0.0%)	38.5 (0.0%)	38.5 (0.0%)	38.5 (0.0%)	38.5 (0.0%)	38.5 (0.0%)	38.5 (0.0%)
AN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	6	46.2	46.2 (0.0%)	53.8 (7.7%)	53.8 (7.7%)	46.2 (0.0%)	53.8 (7.7%)	30.8 (-15.4%)	53.8 (7.7%)
AN	7	92.3	76.9 (-15.4%)	92.3 (0.0%)	92.3 (0.0%)	84.6 (-7.7%)	84.6 (-7.7%)	100.0 (7.7%)	84.6 (-7.7%)
BN	2	100.0	94.4 (-5.6%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	5.6 (5.6%)	0.0 (0.0%)	5.6 (5.6%)
BN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	6	50.0	44.4 (-5.6%)	44.4 (-5.6%)	50.0 (0.0%)	44.4 (-5.6%)	55.6 (5.6%)	38.9 (-11.1%)	50.0 (0.0%)
BN	7	83.3	61.1 (-22.2%)	100.0 (16.7%)	100.0 (16.7%)	88.9 (5.6%)	94.4 (11.1%)	88.9 (5.6%)	83.3 (0.0%)
D	2	95.8	87.5 (-8.3%)	95.8 (0.0%)	95.8 (0.0%)	95.8 (0.0%)	95.8 (0.0%)	87.5 (-8.3%)	87.5 (-8.3%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
D	3	4.2	8.3 (4.2%)	12.5 (8.3%)	12.5 (8.3%)	16.7 (12.5%)	4.2 (0.0%)	4.2 (0.0%)	4.2 (0.0%)
D	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	6	37.5	54.2 (16.7%)	62.5 (25.0%)	66.7 (29.2%)	62.5 (25.0%)	66.7 (29.2%)	41.7 (4.2%)	54.2 (16.7%)
D	7	95.8	83.3 (-12.5%)	100.0 (4.2%)	95.8 (0.0%)	91.7 (-4.2%)	87.5 (-8.3%)	91.7 (-4.2%)	91.7 (-4.2%)
C	2	50.0	56.3 (6.3%)	62.5 (12.5%)	50.0 (0.0%)	62.5 (12.5%)	50.0 (0.0%)	43.8 (-6.3%)	56.3 (6.3%)
C	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	5	6.3	12.5 (6.3%)	0.0 (-6.3%)	0.0 (-6.3%)	0.0 (-6.3%)	12.5 (6.3%)	6.3 (0.0%)	0.0 (-6.3%)
C	6	50.0	62.5 (12.5%)	68.8 (18.8%)	50.0 (0.0%)	68.8 (18.8%)	68.8 (18.8%)	68.8 (18.8%)	62.5 (12.5%)
C	7	93.8	100.0 (6.3%)	100.0 (6.3%)	93.8 (0.0%)	100.0 (6.3%)	100.0 (6.3%)	100.0 (6.3%)	93.8 (0.0%)
All	2	90.9	88.9 (-2.0%)	92.9 (2.0%)	90.9 (0.0%)	92.9 (2.0%)	90.9 (0.0%)	87.9 (-3.0%)	89.9 (-1.0%)
All	3	25.3	25.3 (0.0%)	27.3 (2.0%)	27.3 (2.0%)	28.3 (3.0%)	26.3 (1.0%)	26.3 (1.0%)	25.3 (0.0%)
All	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	5	1.0	2.0 (1.0%)	0.0 (-1.0%)	0.0 (-1.0%)	0.0 (-1.0%)	2.0 (1.0%)	2.0 (1.0%)	0.0 (-1.0%)
All	6	34.3	42.4 (8.1%)	44.4 (10.1%)	43.4 (9.1%)	42.4 (8.1%)	47.5 (13.1%)	35.4 (1.0%)	41.4 (7.1%)
All	7	83.8	75.8 (-8.1%)	89.9 (6.1%)	88.9 (5.1%)	83.8 (0.0%)	82.8 (-1.0%)	87.9 (4.0%)	84.8 (1.0%)
W	All	45.8	47.0 (1.2%)	46.4 (0.6%)	46.4 (0.6%)	45.8 (0.0%)	46.4 (0.6%)	47.6 (1.8%)	45.2 (-0.6%)
AN	All	47.4	47.4 (0.0%)	48.7 (1.3%)	48.7 (1.3%)	47.4 (0.0%)	48.7 (1.3%)	44.9 (-2.6%)	48.7 (1.3%)
BN	All	41.7	39.8 (-1.9%)	40.7 (-0.9%)	41.7 (0.0%)	40.7 (-0.9%)	43.5 (1.9%)	39.8 (-1.9%)	42.6 (0.9%)
D	All	39.6	41.7 (2.1%)	45.1 (5.6%)	45.8 (6.3%)	45.8 (6.3%)	44.4 (4.9%)	38.9 (-0.7%)	41.0 (1.4%)
C	All	34.4	38.5 (4.2%)	38.5 (4.2%)	33.3 (-1.0%)	38.5 (4.2%)	38.5 (4.2%)	36.5 (2.1%)	36.5 (2.1%)
All	All	39.2	39.1 (-0.2%)	42.4 (3.2%)	41.8 (2.5%)	41.2 (2.0%)	41.6 (2.4%)	39.9 (0.7%)	40.2 (1.0%)

Table M.2-84. Percent (difference in percent relative to NAA) of months outside the 50°F - 64°F water temperature range observed for high survival and low occurrences of embryonic developmental abnormalities of western river lamprey spawning and egg incubation by water year type and month, and for all years combined, American River at Watt Avenue, February - July (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	3	32.1	32.1 (0.0%)	32.1 (0.0%)	32.1 (0.0%)	32.1 (0.0%)	32.1 (0.0%)	32.1 (0.0%)	32.1 (0.0%)
W	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	5	10.7	7.1 (-3.6%)	10.7 (0.0%)	10.7 (0.0%)	10.7 (0.0%)	10.7 (0.0%)	14.3 (3.6%)	10.7 (0.0%)
W	6	53.6	57.1 (3.6%)	53.6 (0.0%)	53.6 (0.0%)	53.6 (0.0%)	50.0 (-3.6%)	60.7 (7.1%)	57.1 (3.6%)
W	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	2	61.5	69.2 (7.7%)	61.5 (0.0%)	61.5 (0.0%)	61.5 (0.0%)	69.2 (7.7%)	69.2 (7.7%)	69.2 (7.7%)
AN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	4	0.0	7.7 (7.7%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	5	23.1	30.8 (7.7%)	23.1 (0.0%)	23.1 (0.0%)	23.1 (0.0%)	23.1 (0.0%)	46.2 (23.1%)	23.1 (0.0%)
AN	6	76.9	76.9 (0.0%)	76.9 (0.0%)	76.9 (0.0%)	76.9 (0.0%)	69.2 (-7.7%)	100.0 (23.1%)	76.9 (0.0%)
AN	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	2	77.8	72.2 (-5.6%)	72.2 (-5.6%)	72.2 (-5.6%)	77.8 (0.0%)	77.8 (0.0%)	66.7 (-11.1%)	66.7 (-11.1%)
BN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	4	0.0	11.1 (11.1%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	5	27.8	33.3 (5.6%)	27.8 (0.0%)	27.8 (0.0%)	27.8 (0.0%)	38.9 (11.1%)	33.3 (5.6%)	22.2 (-5.6%)
BN	6	88.9	88.9 (0.0%)	88.9 (0.0%)	88.9 (0.0%)	88.9 (0.0%)	88.9 (0.0%)	94.4 (5.6%)	88.9 (0.0%)
BN	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	2	33.3	62.5 (29.2%)	33.3 (0.0%)	33.3 (0.0%)	33.3 (0.0%)	37.5 (4.2%)	54.2 (20.8%)	41.7 (8.3%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
D	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	4	0.0	20.8 (20.8%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	4.2 (4.2%)
D	5	37.5	45.8 (8.3%)	50.0 (12.5%)	45.8 (8.3%)	45.8 (8.3%)	45.8 (8.3%)	41.7 (4.2%)	54.2 (16.7%)
D	6	95.8	95.8 (0.0%)	95.8 (0.0%)	95.8 (0.0%)	91.7 (-4.2%)	100.0 (4.2%)	91.7 (-4.2%)	100.0 (4.2%)
D	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	2	31.3	12.5 (-18.8%)	25.0 (-6.3%)	25.0 (-6.3%)	31.3 (0.0%)	31.3 (0.0%)	25.0 (-6.3%)	18.8 (-12.5%)
C	3	0.0	6.3 (6.3%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	4	6.3	25.0 (18.8%)	6.3 (0.0%)	12.5 (6.3%)	6.3 (0.0%)	6.3 (0.0%)	6.3 (0.0%)	12.5 (6.3%)
C	5	87.5	87.5 (0.0%)	87.5 (0.0%)	87.5 (0.0%)	75.0 (-12.5%)	75.0 (-12.5%)	87.5 (0.0%)	75.0 (-12.5%)
C	6	93.8	93.8 (0.0%)	100.0 (6.3%)	93.8 (0.0%)	100.0 (6.3%)	100.0 (6.3%)	100.0 (6.3%)	93.8 (0.0%)
C	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	2	63.6	67.7 (4.0%)	61.6 (-2.0%)	61.6 (-2.0%)	63.6 (0.0%)	65.7 (2.0%)	66.7 (3.0%)	62.6 (-1.0%)
All	3	9.1	10.1 (1.0%)	9.1 (0.0%)	9.1 (0.0%)	9.1 (0.0%)	9.1 (0.0%)	9.1 (0.0%)	9.1 (0.0%)
All	4	1.0	12.1 (11.1%)	1.0 (0.0%)	2.0 (1.0%)	1.0 (0.0%)	1.0 (0.0%)	1.0 (0.0%)	3.0 (2.0%)
All	5	34.3	37.4 (3.0%)	37.4 (3.0%)	36.4 (2.0%)	34.3 (0.0%)	36.4 (2.0%)	40.4 (6.1%)	35.4 (1.0%)
All	6	79.8	80.8 (1.0%)	80.8 (1.0%)	79.8 (0.0%)	79.8 (0.0%)	79.8 (0.0%)	85.9 (6.1%)	81.8 (2.0%)
All	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	All	49.4	49.4 (0.0%)	49.4 (0.0%)	49.4 (0.0%)	49.4 (0.0%)	48.8 (-0.6%)	51.2 (1.8%)	50.0 (0.6%)
AN	All	43.6	47.4 (3.8%)	43.6 (0.0%)	43.6 (0.0%)	43.6 (0.0%)	43.6 (0.0%)	52.6 (9.0%)	44.9 (1.3%)
BN	All	49.1	50.9 (1.9%)	48.1 (-0.9%)	48.1 (-0.9%)	49.1 (0.0%)	50.9 (1.9%)	49.1 (0.0%)	46.3 (-2.8%)
D	All	44.4	54.2 (9.7%)	46.5 (2.1%)	45.8 (1.4%)	45.1 (0.7%)	47.2 (2.8%)	47.9 (3.5%)	50.0 (5.6%)
C	All	53.1	54.2 (1.0%)	53.1 (0.0%)	53.1 (0.0%)	52.1 (-1.0%)	52.1 (-1.0%)	53.1 (0.0%)	50.0 (-3.1%)
All	All	48.0	51.3 (3.4%)	48.3 (0.3%)	48.1 (0.2%)	48.0 (0.0%)	48.7 (0.7%)	50.5 (2.5%)	48.7 (0.7%)

M.2.3.7.2   Ammoecoete Rearing and Emigration

Water temperature related effects on western river lamprey ammocoete rearing and emigration in the American River were evaluated by assessing the percent of months with water temperature was above the 72°F upper limit for high survival and low occurrence of developmental abnormalities (Meeuwig et al. 2003, 2005) at Hazel Avenue and Watt Avenue (Table M.2-2).

- At Hazel Ave, the percent of months exceeding the upper limit was 0% in all months and water year types other than few exceptions during July, August, and September of critical water years (Table M.2-85). During July of critical water years, the percent of months exceeding the upper limit was 6.3% under Alternative 4. During August of critical water years, the percent of months exceeding the upper limit was 6.3% under the NAA and Alternative 2 With TUCP Without VA, , 12.5% under Alternative 4, and 25% under Alternative 2 Without TUCP Without VA. During September of critical water years, the percent of months exceeding the upper limit was 6.3% under Alternative 2 Without TUCP Without VA. Combining water year types, the highest percent exceedance above the upper limit was during August under the NAA and all alternatives. The lowest percent exceedance above the upper limit was during October through June under the NAA and all alternatives..

- At Watt Avenue, the highest percent of months above the upper limit for high survival and low occurrences of embryonic developmental abnormalities was 75% and occurred in July under critical water year types under the NAA, Alternative 2 Without TUCP Delta VA, Alternative 2 Without TUCP Systemwide VA, and Alternative 3 (Table M.2-86). The lowest percent of months outside the range was 0% and occurred in all months except August of at least one water year type under the NAA and all alternatives. Combining water year types, the highest percent of months above the upper limit occurred during July and August and the lowest occurred during October through May under the NAA and all alternatives. Air temperatures drove these temporal patterns.

Table M.2-85. Percent (difference in percent relative to NAA) of months above the 72°F upper water temperature limit for high survival and low occurrences of embryonic developmental abnormalities of western river lamprey ammocoete rearing and emigration by water year type and month, and for all years combined, American River at Hazel Avenue, year-round (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
AN	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 (0.0%)	0.0 (0.0%)
AN	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
D	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 (0.0%)	0.0 (0.0%)
D	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	6.3 (6.3%)
C	8	6.3	0.0 (-6.3%)	6.3 (0.0%)	25.0 (18.8%)	0.0 (-6.3%)	0.0 (-6.3%)	0.0 (-6.3%)	12.5 (6.3%)
C	9	0.0	0.0 (0.0%)	0.0 (0.0%)	6.3 (6.3%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	1.0 (1.0%)
All	8	1.0	0.0 (-1.0%)	1.0 (0.0%)	4.0 (3.0%)	0.0 (-1.0%)	0.0 (-1.0%)	0.0 (-1.0%)	2.0 (1.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
All	9	0.0	0.0 (0.0%)	0.0 (0.0%)	1.0 (1.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	All	0.5	0.0 (-0.5%)	0.5 (0.0%)	2.6 (2.1%)	0.0 (-0.5%)	0.0 (-0.5%)	0.0 (-0.5%)	1.6 (1.1%)
All	All	0.1	0.0 (-0.1%)	0.1 (0.0%)	0.4 (0.3%)	0.0 (-0.1%)	0.0 (-0.1%)	0.0 (-0.1%)	0.3 (0.2%)

Table M.2-86. Percent (difference in percent relative to NAA) of months above the 72°F upper water temperature limit for high survival and low occurrences of embryonic developmental abnormalities of western river lamprey ammocoete rearing and emigration by water year type and month, and for all years combined, American River at Watt Avenue, year-round (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	6	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	3.6 (3.6%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	8	10.7	25.0 (14.3%)	7.1 (-3.6%)	3.6 (-7.1%)	7.1 (-3.6%)	3.6 (-7.1%)	10.7 (0.0%)	3.6 (-7.1%)
W	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 (0.0%)	0.0 (0.0%)
W	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	6	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	7.7 (7.7%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	8	7.7	7.7 (0.0%)	7.7 (0.0%)	7.7 (0.0%)	7.7 (0.0%)	7.7 (0.0%)	0.0 (-7.7%)	15.4 (7.7%)
AN	9	0.0	7.7 (7.7%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	7.7 (7.7%)	7.7 (7.7%)	7.7 (7.7%)
AN	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	6	5.6	0.0 (-5.6%)	11.1 (5.6%)	11.1 (5.6%)	11.1 (5.6%)	11.1 (5.6%)	16.7 (11.1%)	11.1 (5.6%)
BN	7	5.6	0.0 (-5.6%)	5.6 (0.0%)	5.6 (0.0%)	5.6 (0.0%)	0.0 (-5.6%)	11.1 (5.6%)	5.6 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
BN	8	11.1	5.6 (-5.6%)	11.1 (0.0%)	16.7 (5.6%)	11.1 (0.0%)	16.7 (5.6%)	5.6 (-5.6%)	27.8 (16.7%)
BN	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 (0.0%)	0.0 (0.0%)
BN	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	6	4.2	12.5 (8.3%)	12.5 (8.3%)	8.3 (4.2%)	12.5 (8.3%)	4.2 (0.0%)	25.0 (20.8%)	8.3 (4.2%)
D	7	12.5	4.2 (-8.3%)	16.7 (4.2%)	16.7 (4.2%)	16.7 (4.2%)	12.5 (0.0%)	8.3 (-4.2%)	4.2 (-8.3%)
D	8	25.0	16.7 (-8.3%)	16.7 (-8.3%)	20.8 (-4.2%)	16.7 (-8.3%)	12.5 (-12.5%)	16.7 (-8.3%)	4.2 (-20.8%)
D	9	4.2	8.3 (4.2%)	4.2 (0.0%)	4.2 (0.0%)	4.2 (0.0%)	4.2 (0.0%)	16.7 (12.5%)	0.0 (-4.2%)
D	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	5	0.0	12.5 (12.5%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	6	31.3	25.0 (-6.3%)	43.8 (12.5%)	31.3 (0.0%)	37.5 (6.3%)	37.5 (6.3%)	50.0 (18.8%)	37.5 (6.3%)
C	7	75.0	31.3 (-43.8%)	68.8 (-6.3%)	62.5 (-12.5%)	75.0 (0.0%)	75.0 (0.0%)	75.0 (0.0%)	56.3 (-18.8%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
C	8	62.5	56.3 (-6.3%)	62.5 (0.0%)	62.5 (0.0%)	62.5 (0.0%)	56.3 (-6.3%)	68.8 (6.3%)	62.5 (0.0%)
C	9	25.0	31.3 (6.3%)	25.0 (0.0%)	25.0 (0.0%)	6.3 (-18.8%)	12.5 (-12.5%)	18.8 (-6.3%)	31.3 (6.3%)
C	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	5	0.0	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%)
All	6	7.1	7.1 (0.0%)	12.1 (5.1%)	9.1 (2.0%)	11.1 (4.0%)	9.1 (2.0%)	19.2 (12.1%)	10.1 (3.0%)
All	7	16.2	6.1 (-10.1%)	16.2 (0.0%)	15.2 (-1.0%)	17.2 (1.0%)	15.2 (-1.0%)	16.2 (0.0%)	11.1 (-5.1%)
All	8	22.2	22.2 (0.0%)	19.2 (-3.0%)	20.2 (-2.0%)	19.2 (-3.0%)	17.2 (-5.1%)	19.2 (-3.0%)	19.2 (-3.0%)
All	9	5.1	8.1 (3.0%)	5.1 (0.0%)	5.1 (0.0%)	2.0 (-3.0%)	4.0 (-1.0%)	8.1 (3.0%)	6.1 (1.0%)
All	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	All	0.9	2.1 (1.2%)	0.6 (-0.3%)	0.3 (-0.6%)	0.6 (-0.3%)	0.3 (-0.6%)	1.2 (0.3%)	0.3 (-0.6%)
AN	All	0.6	1.2 (0.6%)	0.6 (0.0%)	0.6 (0.0%)	0.6 (0.0%)	1.2 (0.6%)	1.2 (0.6%)	1.9 (1.2%)
BN	All	1.9	0.5 (-1.4%)	2.3 (0.5%)	2.8 (0.9%)	2.3 (0.5%)	2.3 (0.5%)	2.8 (0.9%)	3.7 (1.9%)
D	All	3.8	3.5 (-0.3%)	4.2 (0.3%)	4.2 (0.3%)	4.2 (0.3%)	2.8 (-1.0%)	5.6 (1.7%)	1.4 (-2.4%)
C	All	16.4	13.2 (-3.2%)	16.9 (0.5%)	15.3 (-1.1%)	15.3 (-1.1%)	15.3 (-1.1%)	18.0 (1.6%)	15.9 (-0.5%)
All	All	4.2	3.8 (-0.4%)	4.4 (0.2%)	4.1 (-0.1%)	4.1 (-0.1%)	3.8 (-0.4%)	5.2 (1.0%)	3.9 (-0.3%)

M.2.3.8 Sacramento Splittail

M.2.3.8.1   Spawning

Water temperature related effects on Sacramento splittail spawning in the Sacramento River were evaluated by assessing the percent of months with water temperature outside the 45°F - 75°F temperature range observed for suitable spawning (DWR 2004) at Hazel Avenue and Watt Avenue (Table M.2-2).

Results outside the 45°F - 75°F water temperature range observed for suitable spawning temperatures of Sacramento splittail are presented in Table M.2-87 for Hazel Avenue and Table M.2-88 for Watt Avenue.

- At Hazel Avenue, there were no occurrences outside of the range throughout the period except for 4.2% of months during February of dry years under the NAA, Alternative 1 and all phases of Alternative 2 (Table M.2-87).

- At Watt Avenue, the percent of months outside the range was 0% for all months, water year types, and under the NAA and all alternatives (Table M.2-88).

Table M.2-87. Percent (difference in percent relative to NAA) of months outside the 45°F - 75°F water temperature range observed for suitable spawning of Sacramento splittail spawning by water year type and month, and for all years combined, American River at Hazel Avenue, February - May (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	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 (0.0%)	0.0 (0.0%)
W	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
D	2	4.2	4.2 (0.0%)	4.2 (0.0%)	4.2 (0.0%)	4.2 (0.0%)	4.2 (0.0%)	0.0 (-4.2%)	0.0 (-4.2%)
D	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
All	2	1.0	1.0 (0.0%)	1.0 (0.0%)	1.0 (0.0%)	1.0 (0.0%)	1.0 (0.0%)	0.0 (-1.0%)	0.0 (-1.0%)
All	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
W	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	All	1.0	1.0 (0.0%)	1.0 (0.0%)	1.0 (0.0%)	1.0 (0.0%)	1.0 (0.0%)	0.0 (-1.0%)	0.0 (-1.0%)
C	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	All	0.3	0.3 (0.0%)	0.3 (0.0%)	0.3 (0.0%)	0.3 (0.0%)	0.3 (0.0%)	0.0 (-0.3%)	0.0 (-0.3%)

Table M.2-88. Percent (difference in percent relative to NAA) of months outside the 45°F - 75°F water temperature range observed for suitable spawning temperatures of Sacramento splittail spawning by water year type and month, and for all years combined, American River at Watt Avenue, February – May (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	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 (0.0%)	0.0 (0.0%)
W	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
BN	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 (0.0%)	0.0 (0.0%)
BN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
W	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)

M.2.3.9 Hardhead

M.2.3.9.1 *Spawning*

Water temperature related effects on hardhead spawning in the American River were evaluated by assessing the percent of months with water temperature outside the 59°F - 64°F optimal range (Wang 1986) at Hazel Avenue and Watt Avenue (Table M.2-2).

Results outside the outside the 59°F - 64°F water temperature optimal range for hardhead spawning are presented in Table M.2-89 for Hazel Avenue and Table M.2-90 for Watt Avenue.

- At Hazel Avenue, the highest percent of months outside the optimal range was 100% and occurred during May of wet years under Alternative 1, and during April of all water type years under the NAA and all alternatives, except during dry years under Alternative 1 (Table M.2-89). The lowest percent of months outside the range was 21.4% and occurred during June of wet water years under Alternative 4. Combining water year types, the highest percent of months outside the range was during April and the lowest percent occurred during June under the NAA and all alternatives. Air temperatures drove these temporal patterns.

- At Watt Avenue, the highest percent of months outside the optimal range was 100% and occurred during April of at least one water year type under the NAA and all alternatives except Alternative 1, and during June of at least one water year type under all alternatives except the NAA, Alternative 1, Alternative 2 Without TUCP Without VA (Table M.2-90). The lowest percent of months outside the range was 23.1% and occurred during May of above normal waters year under the NAA, and all Alternative 2 phases. Combining water year types, the highest percent of months outside the range occurred during April or June, depending on alternative, and the lowest percent occurred during May under the NAA and all alternatives. Air temperatures drove these temporal patterns.

Table M.2-89. Percent (difference in percent relative to NAA) of months outside the 59°F - 64°F optimal water temperature range for hardhead spawning by water year type and month, and for all years combined, American River at Hazel Avenue, April – June (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	5	96.4	100.0 (3.6%)	96.4 (0.0%)	96.4 (0.0%)	96.4 (0.0%)	96.4 (0.0%)	89.3 (-7.1%)	96.4 (0.0%)
W	6	25.0	32.1 (7.1%)	28.6 (3.6%)	28.6 (3.6%)	25.0 (0.0%)	28.6 (3.6%)	28.6 (3.6%)	21.4 (-3.6%)
AN	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	5	84.6	92.3 (7.7%)	92.3 (7.7%)	84.6 (0.0%)	84.6 (0.0%)	84.6 (0.0%)	69.2 (-15.4%)	84.6 (0.0%)
AN	6	53.8	53.8 (0.0%)	61.5 (7.7%)	61.5 (7.7%)	53.8 (0.0%)	61.5 (7.7%)	30.8 (-23.1%)	61.5 (7.7%)
BN	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	5	66.7	61.1 (-5.6%)	66.7 (0.0%)	66.7 (0.0%)	66.7 (0.0%)	66.7 (0.0%)	61.1 (-5.6%)	66.7 (0.0%)
BN	6	50.0	44.4 (-5.6%)	44.4 (-5.6%)	50.0 (0.0%)	44.4 (-5.6%)	55.6 (5.6%)	38.9 (-11.1%)	50.0 (0.0%)
D	4	100.0	95.8 (-4.2%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	5	50.0	33.3 (-16.7%)	45.8 (-4.2%)	50.0 (0.0%)	41.7 (-8.3%)	37.5 (-12.5%)	37.5 (-12.5%)	25.0 (-25.0%)
D	6	45.8	58.3 (12.5%)	66.7 (20.8%)	70.8 (25.0%)	66.7 (20.8%)	66.7 (20.8%)	45.8 (0.0%)	54.2 (8.3%)
C	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	5	43.8	37.5 (-6.3%)	18.8 (-25.0%)	37.5 (-6.3%)	37.5 (-6.3%)	50.0 (6.3%)	43.8 (0.0%)	37.5 (-6.3%)
C	6	56.3	62.5 (6.3%)	68.8 (12.5%)	56.3 (0.0%)	68.8 (12.5%)	68.8 (12.5%)	68.8 (12.5%)	68.8 (12.5%)
All	4	100.0	99.0 (-1.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	5	69.7	65.7 (-4.0%)	65.7 (-4.0%)	68.7 (-1.0%)	66.7 (-3.0%)	67.7 (-2.0%)	61.6 (-8.1%)	62.6 (-7.1%)
All	6	43.4	48.5 (5.1%)	51.5 (8.1%)	51.5 (8.1%)	49.5 (6.1%)	53.5 (10.1%)	41.4 (-2.0%)	47.5 (4.0%)
W	All	73.8	77.4 (3.6%)	75.0 (1.2%)	75.0 (1.2%)	73.8 (0.0%)	75.0 (1.2%)	72.6 (-1.2%)	72.6 (-1.2%)
AN	All	79.5	82.1 (2.6%)	84.6 (5.1%)	82.1 (2.6%)	79.5 (0.0%)	82.1 (2.6%)	66.7 (-12.8%)	82.1 (2.6%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
BN	All	72.2	68.5 (-3.7%)	70.4 (-1.9%)	72.2 (0.0%)	70.4 (-1.9%)	74.1 (1.9%)	66.7 (-5.6%)	72.2 (0.0%)
D	All	65.3	62.5 (-2.8%)	70.8 (5.6%)	73.6 (8.3%)	69.4 (4.2%)	68.1 (2.8%)	61.1 (-4.2%)	59.7 (-5.6%)
C	All	66.7	66.7 (0.0%)	62.5 (-4.2%)	64.6 (-2.1%)	68.8 (2.1%)	72.9 (6.3%)	70.8 (4.2%)	68.8 (2.1%)
All	All	71.0	71.0 (0.0%)	72.4 (1.3%)	73.4 (2.4%)	72.1 (1.0%)	73.7 (2.7%)	67.7 (-3.4%)	70.0 (-1.0%)

Table M.2-90. Percent (difference in percent relative to NAA) of months outside the 59°F - 64°F optimal water temperature range for hardhead spawning by water year type and month, and for all years combined, American River at Watt Avenue, April – June (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	4	100.0	96.4 (-3.6%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	5	60.7	57.1 (-3.6%)	60.7 (0.0%)	60.7 (0.0%)	60.7 (0.0%)	60.7 (0.0%)	64.3 (3.6%)	60.7 (0.0%)
W	6	53.6	57.1 (3.6%)	53.6 (0.0%)	53.6 (0.0%)	53.6 (0.0%)	50.0 (-3.6%)	60.7 (7.1%)	57.1 (3.6%)
AN	4	92.3	92.3 (0.0%)	92.3 (0.0%)	92.3 (0.0%)	92.3 (0.0%)	92.3 (0.0%)	100.0 (7.7%)	92.3 (0.0%)
AN	5	23.1	30.8 (7.7%)	23.1 (0.0%)	23.1 (0.0%)	23.1 (0.0%)	23.1 (0.0%)	46.2 (23.1%)	30.8 (7.7%)
AN	6	76.9	76.9 (0.0%)	76.9 (0.0%)	76.9 (0.0%)	76.9 (0.0%)	69.2 (-7.7%)	100.0 (23.1%)	76.9 (0.0%)
BN	4	83.3	83.3 (0.0%)	72.2 (-11.1%)	72.2 (-11.1%)	72.2 (-11.1%)	77.8 (-5.6%)	100.0 (16.7%)	72.2 (-11.1%)
BN	5	33.3	38.9 (5.6%)	33.3 (0.0%)	33.3 (0.0%)	33.3 (0.0%)	44.4 (11.1%)	38.9 (5.6%)	27.8 (-5.6%)
BN	6	88.9	88.9 (0.0%)	88.9 (0.0%)	88.9 (0.0%)	88.9 (0.0%)	88.9 (0.0%)	94.4 (5.6%)	88.9 (0.0%)
D	4	75.0	83.3 (8.3%)	70.8 (-4.2%)	70.8 (-4.2%)	70.8 (-4.2%)	75.0 (0.0%)	95.8 (20.8%)	79.2 (4.2%)
D	5	37.5	50.0 (12.5%)	50.0 (12.5%)	45.8 (8.3%)	50.0 (12.5%)	50.0 (12.5%)	41.7 (4.2%)	58.3 (20.8%)
D	6	95.8	95.8 (0.0%)	95.8 (0.0%)	95.8 (0.0%)	91.7 (-4.2%)	100.0 (4.2%)	91.7 (-4.2%)	100.0 (4.2%)
C	4	31.3	87.5 (56.3%)	56.3 (25.0%)	25.0 (-6.3%)	50.0 (18.8%)	62.5 (31.3%)	43.8 (12.5%)	25.0 (-6.3%)
C	5	87.5	87.5 (0.0%)	87.5 (0.0%)	87.5 (0.0%)	75.0 (-12.5%)	75.0 (-12.5%)	87.5 (0.0%)	75.0 (-12.5%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
C	6	93.8	93.8 (0.0%)	100.0 (6.3%)	93.8 (0.0%)	100.0 (6.3%)	100.0 (6.3%)	100.0 (6.3%)	93.8 (0.0%)
All	4	78.8	88.9 (10.1%)	79.8 (1.0%)	74.7 (-4.0%)	78.8 (0.0%)	82.8 (4.0%)	89.9 (11.1%)	76.8 (-2.0%)
All	5	49.5	53.5 (4.0%)	52.5 (3.0%)	51.5 (2.0%)	50.5 (1.0%)	52.5 (3.0%)	55.6 (6.1%)	52.5 (3.0%)
All	6	79.8	80.8 (1.0%)	80.8 (1.0%)	79.8 (0.0%)	79.8 (0.0%)	79.8 (0.0%)	85.9 (6.1%)	81.8 (2.0%)
W	All	71.4	70.2 (-1.2%)	71.4 (0.0%)	71.4 (0.0%)	71.4 (0.0%)	70.2 (-1.2%)	75.0 (3.6%)	72.6 (1.2%)
AN	All	64.1	66.7 (2.6%)	64.1 (0.0%)	64.1 (0.0%)	64.1 (0.0%)	61.5 (-2.6%)	82.1 (17.9%)	66.7 (2.6%)
BN	All	68.5	70.4 (1.9%)	64.8 (-3.7%)	64.8 (-3.7%)	64.8 (-3.7%)	70.4 (1.9%)	77.8 (9.3%)	63.0 (-5.6%)
D	All	69.4	76.4 (6.9%)	72.2 (2.8%)	70.8 (1.4%)	70.8 (1.4%)	75.0 (5.6%)	76.4 (6.9%)	79.2 (9.7%)
C	All	70.8	89.6 (18.8%)	81.3 (10.4%)	68.8 (-2.1%)	75.0 (4.2%)	79.2 (8.3%)	77.1 (6.3%)	64.6 (-6.2%)
All	All	69.4	74.4 (5.1%)	71.0 (1.7%)	68.7 (-0.7%)	69.7 (0.3%)	71.7 (2.4%)	77.1 (7.7%)	70.4 (1.0%)

M.2.3.9.2   Non-Spawning Adults

Water temperature related effects on non-spawning adult hardhead in the American River were evaluated by assessing the percent of months with water temperature outside the 57.2°F – 78.8°F commonly observed range (Thompson et al. 2012) at Hazel Avenue and Watt Avenue (Table M.2-2).

Results outside the outside the 57.2°F – 78.8°F observed water temperature range for hardhead are presented in Table M.2-91 for Hazel Avenue and Table M.2-92 for Watt Avenue.

- At Hazel Avenue, the highest percent of months outside the range was 100% and generally occurred during December through March of all water year types under the NAA and all alternatives (Table M.2-91). The lowest percent of months outside the range was 0% and occurred during June through October of all water year types under the NAA and all alternatives and during May of critical water years under the NAA, all phases of Alternative 2 except Alternative 2 Without TUCP Without VA, and Alternative 3. Combining water year types, the highest percent of months outside the range occurred during December through March and the lowest percent occurred during June through October under the NAA and all alternatives. Air temperatures drove these temporal patterns.

- At Watt Avenue, the highest percent of months outside the observed range was 100% and occurred during December through March under at least one water year type under the NAA and all project alternatives, except March of Alternative 1 (Table M.2-92). The lowest percent of months outside the range was 0% and generally occurred during May through October of all water year types (except March of wet years) under the NAA and all alternatives. Combining water year types, the highest percent of months outside the range occurred during December through February depending on alternative for the NAA and all alternatives. The lowest percent occurred during June through October under the NAA and all alternatives. Air temperatures drove these temporal patterns.

Table M.2-91. Percent (difference in percent relative to NAA) of months outside the 57.2°F – 78.8°F water temperature range observed for non-spawning adult hardhead by water year type and month, and for all years combined, American River at Hazel Avenue, year-round (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	5	82.1	82.1 (0.0%)	82.1 (0.0%)	82.1 (0.0%)	85.7 (3.6%)	85.7 (3.6%)	71.4 (-10.7%)	71.4 (-10.7%)
W	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 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	11	32.1	28.6 (-3.6%)	35.7 (3.6%)	32.1 (0.0%)	28.6 (-3.6%)	32.1 (0.0%)	35.7 (3.6%)	28.6 (-3.6%)
W	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	4	100.0	92.3 (-7.7%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	5	30.8	38.5 (7.7%)	30.8 (0.0%)	30.8 (0.0%)	30.8 (0.0%)	30.8 (0.0%)	0.0 (-30.8%)	30.8 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
AN	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	11	50.0	64.3 (14.3%)	57.1 (7.1%)	57.1 (7.1%)	50.0 (0.0%)	64.3 (14.3%)	64.3 (14.3%)	57.1 (7.1%)
AN	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	4	100.0	94.4 (-5.6%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	5	16.7	22.2 (5.6%)	16.7 (0.0%)	16.7 (0.0%)	16.7 (0.0%)	16.7 (0.0%)	16.7 (0.0%)	22.2 (5.6%)
BN	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 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	11	33.3	61.1 (27.8%)	44.4 (11.1%)	33.3 (0.0%)	38.9 (5.6%)	50.0 (16.7%)	33.3 (0.0%)	50.0 (16.7%)
BN	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	4	100.0	87.5 (-12.5%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	5	16.7	8.3 (-8.3%)	12.5 (-4.2%)	12.5 (-4.2%)	20.8 (4.2%)	8.3 (-8.3%)	12.5 (-4.2%)	4.2 (-12.5%)
D	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 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
D	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	11	54.2	58.3 (4.2%)	54.2 (0.0%)	50.0 (-4.2%)	66.7 (12.5%)	45.8 (-8.3%)	41.7 (-12.5%)	41.7 (-12.5%)
D	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	95.8 (-4.2%)	100.0 (0.0%)
C	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	3	100.0	93.8 (-6.3%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	4	93.8	87.5 (-6.3%)	93.8 (0.0%)	93.8 (0.0%)	93.8 (0.0%)	93.8 (0.0%)	93.8 (0.0%)	93.8 (0.0%)
C	5	0.0	6.3 (6.3%)	0.0 (0.0%)	6.3 (6.3%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	6.3 (6.3%)
C	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 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	11	13.3	20.0 (6.7%)	26.7 (13.3%)	26.7 (13.3%)	26.7 (13.3%)	20.0 (6.7%)	13.3 (0.0%)	20.0 (6.7%)
C	12	100.0	93.3 (-6.7%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	3	100.0	99.0 (-1.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	4	99.0	92.9 (-6.1%)	99.0 (0.0%)	99.0 (0.0%)	99.0 (0.0%)	99.0 (0.0%)	99.0 (0.0%)	99.0 (0.0%)
All	5	34.3	35.4 (1.0%)	33.3 (-1.0%)	34.3 (0.0%)	36.4 (2.0%)	33.3 (-1.0%)	26.3 (-8.1%)	30.3 (-4.0%)
All	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 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
All	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	11	37.4	45.5 (8.1%)	43.4 (6.1%)	39.4 (2.0%)	42.4 (5.1%)	41.4 (4.0%)	37.4 (0.0%)	38.4 (1.0%)
All	12	100.0	99.0 (-1.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	99.0 (-1.0%)	100.0 (0.0%)
W	All	51.2	50.9 (-0.3%)	51.5 (0.3%)	51.2 (0.0%)	51.2 (0.0%)	51.5 (0.3%)	50.6 (-0.6%)	50.0 (-1.2%)
AN	All	48.7	50.0 (1.3%)	49.4 (0.6%)	49.4 (0.6%)	48.7 (0.0%)	50.0 (1.3%)	47.5 (-1.3%)	49.4 (0.6%)
BN	All	45.8	48.1 (2.3%)	46.8 (0.9%)	45.8 (0.0%)	46.3 (0.5%)	47.2 (1.4%)	45.8 (0.0%)	47.7 (1.9%)
D	All	47.6	46.2 (-1.4%)	47.2 (-0.3%)	46.9 (-0.7%)	49.0 (1.4%)	46.2 (-1.4%)	45.8 (-1.7%)	45.5 (-2.1%)
C	All	42.3	41.8 (-0.5%)	43.4 (1.1%)	43.9 (1.6%)	43.4 (1.1%)	42.9 (0.5%)	42.3 (0.0%)	43.4 (1.1%)
All	All	47.6	47.7 (0.1%)	48.0 (0.4%)	47.8 (0.2%)	48.2 (0.6%)	47.9 (0.3%)	46.8 (-0.8%)	47.3 (-0.3%)

Table M.2-92. Percent (difference in percent relative to NAA) of months outside the 57.2°F – 78.8°F water temperature range observed for non-spawning adult hardhead by water year type and month, and for all years combined, American River at Watt Avenue, year-round (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	3	100.0	96.4 (-3.6%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	4	92.9	85.7 (-7.1%)	92.9 (0.0%)	92.9 (0.0%)	92.9 (0.0%)	92.9 (0.0%)	100.0 (7.1%)	92.9 (0.0%)
W	5	14.3	14.3 (0.0%)	14.3 (0.0%)	14.3 (0.0%)	14.3 (0.0%)	14.3 (0.0%)	14.3 (0.0%)	14.3 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	11	28.6	21.4 (-7.1%)	25.0 (-3.6%)	25.0 (-3.6%)	25.0 (-3.6%)	25.0 (-3.6%)	17.9 (-10.7%)	25.0 (-3.6%)
W	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	3	100.0	84.6 (-15.4%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	92.3 (-7.7%)
AN	4	76.9	76.9 (0.0%)	76.9 (0.0%)	76.9 (0.0%)	76.9 (0.0%)	76.9 (0.0%)	92.3 (15.4%)	76.9 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	11	35.7	57.1 (21.4%)	35.7 (0.0%)	50.0 (14.3%)	50.0 (14.3%)	57.1 (21.4%)	57.1 (21.4%)	42.9 (7.1%)
AN	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	3	100.0	66.7 (-33.3%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	4	44.4	61.1 (16.7%)	44.4 (0.0%)	44.4 (0.0%)	44.4 (0.0%)	50.0 (5.6%)	88.9 (44.4%)	55.6 (11.1%)
BN	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 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
BN	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	11	33.3	38.9 (5.6%)	38.9 (5.6%)	33.3 (0.0%)	33.3 (0.0%)	33.3 (0.0%)	16.7 (-16.7%)	33.3 (0.0%)
BN	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	3	100.0	62.5 (-37.5%)	95.8 (-4.2%)	95.8 (-4.2%)	95.8 (-4.2%)	95.8 (-4.2%)	100.0 (0.0%)	79.2 (-20.8%)
D	4	58.3	58.3 (0.0%)	62.5 (4.2%)	62.5 (4.2%)	62.5 (4.2%)	58.3 (0.0%)	79.2 (20.8%)	62.5 (4.2%)
D	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 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	11	37.5	45.8 (8.3%)	37.5 (0.0%)	37.5 (0.0%)	50.0 (12.5%)	33.3 (-4.2%)	33.3 (-4.2%)	37.5 (0.0%)
D	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	2	93.8	93.8 (0.0%)	93.8 (0.0%)	93.8 (0.0%)	93.8 (0.0%)	100.0 (6.3%)	100.0 (6.3%)	93.8 (0.0%)
C	3	62.5	43.8 (-18.8%)	50.0 (-12.5%)	43.8 (-18.8%)	50.0 (-12.5%)	62.5 (0.0%)	56.3 (-6.3%)	37.5 (-25.0%)
C	4	6.3	56.3 (50.0%)	37.5 (31.3%)	6.3 (0.0%)	43.8 (37.5%)	50.0 (43.8%)	18.8 (12.5%)	12.5 (6.3%)
C	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 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
C	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	11	6.7	20.0 (13.3%)	20.0 (13.3%)	26.7 (20.0%)	13.3 (6.7%)	20.0 (13.3%)	13.3 (6.7%)	20.0 (13.3%)
C	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	2	99.0	99.0 (0.0%)	99.0 (0.0%)	99.0 (0.0%)	99.0 (0.0%)	100.0 (1.0%)	100.0 (1.0%)	99.0 (0.0%)
All	3	93.9	72.7 (-21.2%)	90.9 (-3.0%)	89.9 (-4.0%)	90.9 (-3.0%)	92.9 (-1.0%)	92.9 (-1.0%)	83.8 (-10.1%)
All	4	59.6	68.7 (9.1%)	65.7 (6.1%)	60.6 (1.0%)	66.7 (7.1%)	67.7 (8.1%)	78.8 (19.2%)	63.6 (4.0%)
All	5	4.0	4.0 (0.0%)	4.0 (0.0%)	4.0 (0.0%)	4.0 (0.0%)	4.0 (0.0%)	4.0 (0.0%)	4.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	11	29.3	35.4 (6.1%)	31.3 (2.0%)	33.3 (4.0%)	34.3 (5.1%)	32.3 (3.0%)	26.3 (-3.0%)	31.3 (2.0%)
All	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	All	44.6	43.2 (-1.5%)	44.3 (-0.3%)	44.3 (-0.3%)	44.3 (-0.3%)	44.3 (-0.3%)	44.3 (-0.3%)	44.3 (-0.3%)
AN	All	44.1	44.7 (0.6%)	44.1 (0.0%)	45.3 (1.2%)	45.3 (1.2%)	46.0 (1.9%)	47.2 (3.1%)	44.1 (0.0%)
BN	All	39.8	38.9 (-0.9%)	40.3 (0.5%)	39.8 (0.0%)	39.8 (0.0%)	40.3 (0.5%)	42.1 (2.3%)	40.7 (0.9%)
D	All	41.3	38.9 (-2.4%)	41.3 (0.0%)	41.3 (0.0%)	42.4 (1.0%)	40.6 (-0.7%)	42.7 (1.4%)	39.9 (-1.4%)
C	All	30.7	34.4 (3.7%)	33.3 (2.6%)	30.7 (0.0%)	33.3 (2.6%)	36.0 (5.3%)	32.3 (1.6%)	30.2 (-0.5%)
All	All	40.5	40.0 (-0.5%)	40.9 (0.4%)	40.6 (0.1%)	41.3 (0.8%)	41.4 (0.9%)	41.9 (1.3%)	40.2 (-0.3%)

M.2.3.10   Striped Bass

M.2.3.10.1   Adults

Water temperature related effects on adult striped bass in the American River were evaluated by assessing the percent of months in which water temperature was above the 77°F stress initiation water temperature value (Moyle 2002) at Hazel Avenue and Watt Avenue (Table M.2-2).

Results for the 77°F stress initiation value for striped bass adults are presented in Table M.2-93 for Hazel Avenue and Table M.2-94 for Watt Avenue.

- At Hazel Avenue, water temperatures during all months of all water year types were below the value under the NAA and all alternatives (Table M.2-93).

- At Watt Avenue, water temperatures were predominantly below the stress initiation value during all of all water year types for the NAA and all alternatives with one exception. Water temperatures exceeded the stress initiation value in 6.3% of months during July of critical water years under the NAA, Alternative 1, all phases of Alternative 2 excpet Alternative 2 Without TUCP Without VA, Alternative 3, and Alternative 4.

Table M.2-93. Percent (difference in percent relative to NAA) of months above the 77°F stress initiation water temperature value for adult striped bass by water year type and month, and for all years combined, American River at Hazel Avenue, year-round (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
AN	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
D	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
All	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)

Table M.2-94. Percent (difference in percent relative to NAA) of months above the 77°F stress initiation water temperature value for adult striped bass by water year type and month, and for all years combined, American River at Watt Avenue, year-round (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
BN	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	7	6.3	6.3 (0.0%)	6.3 (0.0%)	0.0 (-6.3%)	6.3 (0.0%)	6.3 (0.0%)	6.3 (0.0%)	0.0 (-6.3%)
C	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 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
C	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	1	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	3	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	7	1.0	1.0 (0.0%)	1.0 (0.0%)	0.0 (-1.0%)	1.0 (0.0%)	1.0 (0.0%)	1.0 (0.0%)	0.0 (-1.0%)
All	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 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	11	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	12	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	All	0.5	0.5 (0.0%)	0.5 (0.0%)	0.0 (-0.5%)	0.5 (0.0%)	0.5 (0.0%)	0.5 (0.0%)	0.0 (-0.5%)
All	All	0.1	0.1 (0.0%)	0.1 (0.0%)	0.0 (-0.1%)	0.1 (0.0%)	0.1 (0.0%)	0.1 (0.0%)	0.0 (-0.1%)

M.2.3.10.2 Juvenile rearing

Water temperature related effects on striped bass juvenile rearing in the American River were evaluated by assessing the percent of months with water temperature outside the 61°F - 71°F optimal range (Faye et al. 1983) at Hazel Avenue and Watt Avenue (Table M.2-2).

Results outside the 61°F - 71°F water temperature optimal range for striped bass juvenile rearing are presented in Table M.2-95 for Hazel Avenue and Table M.2-96 for Watt Avenue.

- At Hazel Avenue, the highest percent of months with temperatures outside the optimal range was 100% and occurred during December through May in at least one water year type under the NAA and all alternatives except during May under Alternative 3 (Table M.2-95). The lowest percent of months outside the range was 0% and occurred during July though September of all water year types under the NAA and all alternatives, during June of critical water years under all phases of Alternative 2 except Alternative 2 Without TUCP Without VA, and during October of critical water years under the NAA, all phases of Alternative 2 except Alternative 2 Without TUCP Without VA, and Alternative 4. Combining water year types, the highest percent generally occurred during December through April and the lowest generally occurred during July through September under the NAA and all alternatives. Air temperatures drove these temporal patterns.

- At Watt Avenue, the highest percent of months outside the optimal range was 100% and generally occurred during November through April of at least one water year type under the NAA and all alternatives except during April under Alternative 1 (Table M.2-96). The lowest percent of months outside the range was 0% and occurred during June of at least one water year types under the NAA and all alternatives except Alternative 3, during July below normal water years under the NAA, and during October of at least one water year type under the NAA and all alternatives. Combining water year types, the highest percent of months outside the optimal range occurred during December through March depending on alternative. The lowest percent of months occurred during October under the NAA and all alternatives. Air temperatures drove these temporal patterns.

Table M.2-95. Percent (difference in percent relative to NAA) of months outside the 61°F - 71°F water temperature optimal range for striped bass juvenile rearing by water year type and month, and for all years combined, American River at Hazel Avenue, year-round (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	96.4 (-3.6%)	100.0 (0.0%)
W	6	75.0	67.9 (-7.1%)	78.6 (3.6%)	78.6 (3.6%)	78.6 (3.6%)	82.1 (7.1%)	67.9 (-7.1%)	75.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	8	0.0	3.6 (3.6%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	9	0.0	3.6 (3.6%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
W	10	7.1	3.6 (-3.6%)	0.0 (-7.1%)	0.0 (-7.1%)	0.0 (-7.1%)	0.0 (-7.1%)	0.0 (-7.1%)	10.7 (3.6%)
W	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	96.4 (-3.6%)	100.0 (0.0%)
W	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	92.3 (-7.7%)	100.0 (0.0%)
AN	6	30.8	38.5 (7.7%)	38.5 (7.7%)	38.5 (7.7%)	38.5 (7.7%)	38.5 (7.7%)	15.4 (-15.4%)	38.5 (7.7%)
AN	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
AN	10	23.1	15.4 (-7.7%)	23.1 (0.0%)	23.1 (0.0%)	23.1 (0.0%)	23.1 (0.0%)	7.7 (-15.4%)	15.4 (-7.7%)
AN	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	5	83.3	88.9 (5.6%)	77.8 (-5.6%)	77.8 (-5.6%)	83.3 (0.0%)	88.9 (5.6%)	83.3 (0.0%)	83.3 (0.0%)
BN	6	22.2	16.7 (-5.6%)	22.2 (0.0%)	22.2 (0.0%)	22.2 (0.0%)	16.7 (-5.6%)	11.1 (-11.1%)	27.8 (5.6%)
BN	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 (0.0%)	0.0 (0.0%)
BN	8	0.0	0.0 (0.0%)	5.6 (5.6%)	5.6 (5.6%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	10	27.8	11.1 (-16.7%)	27.8 (0.0%)	27.8 (0.0%)	38.9 (11.1%)	33.3 (5.6%)	0.0 (-27.8%)	33.3 (5.6%)
BN	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	94.4 (-5.6%)	100.0 (0.0%)
BN	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	4	100.0	95.8 (-4.2%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	5	83.3	62.5 (-20.8%)	75.0 (-8.3%)	75.0 (-8.3%)	83.3 (0.0%)	75.0 (-8.3%)	79.2 (-4.2%)	66.7 (-16.7%)
D	6	12.5	8.3 (-4.2%)	8.3 (-4.2%)	12.5 (0.0%)	12.5 (0.0%)	16.7 (4.2%)	12.5 (0.0%)	4.2 (-8.3%)
D	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 (0.0%)	0.0 (0.0%)
D	8	4.2	0.0 (-4.2%)	4.2 (0.0%)	4.2 (0.0%)	4.2 (0.0%)	0.0 (-4.2%)	4.2 (0.0%)	0.0 (-4.2%)
D	9	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	8.3 (8.3%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
D	10	12.5	20.8 (8.3%)	16.7 (4.2%)	12.5 (0.0%)	25.0 (12.5%)	4.2 (-8.3%)	8.3 (-4.2%)	8.3 (-4.2%)
D	11	100.0	100.0 (0.0%)	95.8 (-4.2%)	95.8 (-4.2%)	100.0 (0.0%)	95.8 (-4.2%)	91.7 (-8.3%)	95.8 (-4.2%)
D	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	5	68.8	56.3 (-12.5%)	81.3 (12.5%)	100.0 (31.3%)	68.8 (0.0%)	68.8 (0.0%)	62.5 (-6.3%)	87.5 (18.8%)
C	6	6.3	6.3 (0.0%)	0.0 (-6.3%)	18.8 (12.5%)	0.0 (-6.3%)	0.0 (-6.3%)	6.3 (0.0%)	6.3 (0.0%)
C	7	6.3	0.0 (-6.3%)	0.0 (-6.3%)	6.3 (0.0%)	0.0 (-6.3%)	0.0 (-6.3%)	0.0 (-6.3%)	6.3 (0.0%)
C	8	12.5	0.0 (-12.5%)	12.5 (0.0%)	25.0 (12.5%)	18.8 (6.3%)	6.3 (-6.3%)	6.3 (-6.3%)	25.0 (12.5%)
C	9	6.3	0.0 (-6.3%)	0.0 (-6.3%)	12.5 (6.3%)	0.0 (-6.3%)	0.0 (-6.3%)	0.0 (-6.3%)	0.0 (-6.3%)
C	10	0.0	6.7 (6.7%)	0.0 (0.0%)	6.7 (6.7%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	20.0 (20.0%)
C	11	73.3	53.3 (-20.0%)	80.0 (6.7%)	66.7 (-6.7%)	66.7 (-6.7%)	86.7 (13.3%)	73.3 (0.0%)	66.7 (-6.7%)
C	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	4	100.0	99.0 (-1.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	5	87.9	81.8 (-6.1%)	86.9 (-1.0%)	89.9 (2.0%)	87.9 (0.0%)	86.9 (-1.0%)	83.8 (-4.0%)	86.9 (-1.0%)
All	6	33.3	30.3 (-3.0%)	33.3 (0.0%)	37.4 (4.0%)	34.3 (1.0%)	35.4 (2.0%)	27.3 (-6.1%)	33.3 (0.0%)
All	7	1.0	0.0 (-1.0%)	0.0 (-1.0%)	1.0 (0.0%)	0.0 (-1.0%)	0.0 (-1.0%)	0.0 (-1.0%)	1.0 (0.0%)
All	8	3.0	1.0 (-2.0%)	4.0 (1.0%)	6.1 (3.0%)	4.0 (1.0%)	1.0 (-2.0%)	2.0 (-1.0%)	4.0 (1.0%)
All	9	1.0	1.0 (0.0%)	0.0 (-1.0%)	2.0 (1.0%)	0.0 (-1.0%)	0.0 (-1.0%)	2.0 (1.0%)	0.0 (-1.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
All	10	13.3	11.2 (-2.0%)	12.2 (-1.0%)	12.2 (-1.0%)	16.3 (3.1%)	10.2 (-3.1%)	3.1 (-10.2%)	16.3 (3.1%)
All	11	96.0	92.9 (-3.0%)	96.0 (0.0%)	93.9 (-2.0%)	94.9 (-1.0%)	97.0 (1.0%)	91.9 (-4.0%)	93.9 (-2.0%)
All	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	All	65.2	64.9 (-0.3%)	64.9 (-0.3%)	64.9 (-0.3%)	64.9 (-0.3%)	65.2 (0.0%)	63.4 (-1.8%)	65.5 (0.3%)
AN	All	63.3	63.3 (0.0%)	63.9 (0.6%)	63.9 (0.6%)	63.9 (0.6%)	63.9 (0.6%)	60.1 (-3.2%)	63.3 (0.0%)
BN	All	61.1	59.7 (-1.4%)	61.1 (0.0%)	61.1 (0.0%)	62.0 (0.9%)	61.6 (0.5%)	57.4 (-3.7%)	62.0 (0.9%)
D	All	59.4	57.3 (-2.1%)	58.3 (-1.0%)	58.3 (-1.0%)	60.4 (1.0%)	57.6 (-1.7%)	58.7 (-0.7%)	56.3 (-3.1%)
C	All	56.1	51.9 (-4.2%)	56.1 (0.0%)	61.4 (5.3%)	54.5 (-1.6%)	55.0 (-1.1%)	54.0 (-2.1%)	59.3 (3.2%)
All	All	61.3	59.8 (-1.5%)	61.1 (-0.3%)	61.9 (0.6%)	61.5 (0.2%)	60.9 (-0.4%)	59.2 (-2.1%)	61.3 (0.0%)

Table M.2-96. Percent (difference in percent relative to NAA) of months outside the 61°F - 71°F optimal water temperature range for striped bass juvenile rearing by water year type and month, and for all years combined, American River at Watt Avenue, year-round (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	5	78.6	78.6 (0.0%)	78.6 (0.0%)	78.6 (0.0%)	78.6 (0.0%)	78.6 (0.0%)	75.0 (-3.6%)	75.0 (-3.6%)
W	6	7.1	7.1 (0.0%)	7.1 (0.0%)	7.1 (0.0%)	7.1 (0.0%)	7.1 (0.0%)	10.7 (3.6%)	7.1 (0.0%)
W	7	0.0	7.1 (7.1%)	3.6 (3.6%)	3.6 (3.6%)	0.0 (0.0%)	0.0 (0.0%)	3.6 (3.6%)	7.1 (7.1%)
W	8	35.7	57.1 (21.4%)	39.3 (3.6%)	53.6 (17.9%)	46.4 (10.7%)	42.9 (7.1%)	35.7 (0.0%)	57.1 (21.4%)
W	9	17.9	32.1 (14.3%)	28.6 (10.7%)	28.6 (10.7%)	25.0 (7.1%)	25.0 (7.1%)	25.0 (7.1%)	28.6 (10.7%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	10	3.6	0.0 (-3.6%)	0.0 (-3.6%)	0.0 (-3.6%)	0.0 (-3.6%)	0.0 (-3.6%)	0.0 (-3.6%)	0.0 (-3.6%)
W	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	96.4 (-3.6%)	100.0 (0.0%)	96.4 (-3.6%)	100.0 (0.0%)
W	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	3	100.0	92.3 (-7.7%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	4	100.0	84.6 (-15.4%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	5	38.5	38.5 (0.0%)	38.5 (0.0%)	38.5 (0.0%)	38.5 (0.0%)	38.5 (0.0%)	23.1 (-15.4%)	38.5 (0.0%)
AN	6	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	7.7 (7.7%)	0.0 (0.0%)
AN	7	7.7	0.0 (-7.7%)	7.7 (0.0%)	7.7 (0.0%)	7.7 (0.0%)	7.7 (0.0%)	7.7 (0.0%)	7.7 (0.0%)
AN	8	15.4	23.1 (7.7%)	15.4 (0.0%)	23.1 (7.7%)	23.1 (7.7%)	7.7 (-7.7%)	15.4 (0.0%)	23.1 (7.7%)
AN	9	15.4	23.1 (7.7%)	7.7 (-7.7%)	7.7 (-7.7%)	0.0 (-15.4%)	7.7 (-7.7%)	7.7 (-7.7%)	23.1 (7.7%)
AN	10	7.7	0.0 (-7.7%)	0.0 (-7.7%)	0.0 (-7.7%)	0.0 (-7.7%)	7.7 (0.0%)	0.0 (-7.7%)	0.0 (-7.7%)
AN	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	3	100.0	94.4 (-5.6%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	4	100.0	77.8 (-22.2%)	94.4 (-5.6%)	100.0 (0.0%)	94.4 (-5.6%)	100.0 (0.0%)	100.0 (0.0%)	94.4 (-5.6%)
BN	5	22.2	27.8 (5.6%)	22.2 (0.0%)	22.2 (0.0%)	22.2 (0.0%)	22.2 (0.0%)	22.2 (0.0%)	22.2 (0.0%)
BN	6	16.7	0.0 (-16.7%)	16.7 (0.0%)	11.1 (-5.6%)	16.7 (0.0%)	22.2 (5.6%)	16.7 (0.0%)	16.7 (0.0%)
BN	7	5.6	0.0 (-5.6%)	5.6 (0.0%)	5.6 (0.0%)	5.6 (0.0%)	5.6 (0.0%)	27.8 (22.2%)	5.6 (0.0%)
BN	8	22.2	16.7 (-5.6%)	33.3 (11.1%)	38.9 (16.7%)	16.7 (-5.6%)	27.8 (5.6%)	27.8 (5.6%)	33.3 (11.1%)
BN	9	5.6	5.6 (0.0%)	5.6 (0.0%)	11.1 (5.6%)	5.6 (0.0%)	16.7 (11.1%)	5.6 (0.0%)	11.1 (5.6%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
BN	10	5.6	0.0 (-5.6%)	5.6 (0.0%)	5.6 (0.0%)	5.6 (0.0%)	5.6 (0.0%)	0.0 (-5.6%)	5.6 (0.0%)
BN	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	88.9 (-11.1%)	100.0 (0.0%)
BN	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	3	100.0	95.8 (-4.2%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	4	91.7	75.0 (-16.7%)	87.5 (-4.2%)	87.5 (-4.2%)	87.5 (-4.2%)	95.8 (4.2%)	95.8 (4.2%)	83.3 (-8.3%)
D	5	12.5	12.5 (0.0%)	12.5 (0.0%)	12.5 (0.0%)	12.5 (0.0%)	16.7 (4.2%)	12.5 (0.0%)	12.5 (0.0%)
D	6	8.3	12.5 (4.2%)	16.7 (8.3%)	16.7 (8.3%)	16.7 (8.3%)	16.7 (8.3%)	29.2 (20.8%)	12.5 (4.2%)
D	7	29.2	12.5 (-16.7%)	25.0 (-4.2%)	29.2 (0.0%)	25.0 (-4.2%)	20.8 (-8.3%)	25.0 (-4.2%)	20.8 (-8.3%)
D	8	45.8	37.5 (-8.3%)	41.7 (-4.2%)	41.7 (-4.2%)	45.8 (0.0%)	41.7 (-4.2%)	33.3 (-12.5%)	29.2 (-16.7%)
D	9	16.7	29.2 (12.5%)	12.5 (-4.2%)	16.7 (0.0%)	8.3 (-8.3%)	20.8 (4.2%)	29.2 (12.5%)	20.8 (4.2%)
D	10	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	11	100.0	100.0 (0.0%)	95.8 (-4.2%)	95.8 (-4.2%)	100.0 (0.0%)	95.8 (-4.2%)	91.7 (-8.3%)	95.8 (-4.2%)
D	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	3	100.0	81.3 (-18.8%)	93.8 (-6.3%)	93.8 (-6.3%)	93.8 (-6.3%)	93.8 (-6.3%)	100.0 (0.0%)	100.0 (0.0%)
C	4	68.8	62.5 (-6.3%)	87.5 (18.8%)	62.5 (-6.3%)	68.8 (0.0%)	93.8 (25.0%)	81.3 (12.5%)	37.5 (-31.3%)
C	5	6.3	37.5 (31.3%)	6.3 (0.0%)	6.3 (0.0%)	6.3 (0.0%)	12.5 (6.3%)	6.3 (0.0%)	6.3 (0.0%)
C	6	50.0	31.3 (-18.8%)	50.0 (0.0%)	43.8 (-6.3%)	50.0 (0.0%)	50.0 (0.0%)	68.8 (18.8%)	50.0 (0.0%)
C	7	93.8	68.8 (-25.0%)	93.8 (0.0%)	81.3 (-12.5%)	87.5 (-6.3%)	93.8 (0.0%)	87.5 (-6.3%)	75.0 (-18.8%)
C	8	81.3	81.3 (0.0%)	100.0 (18.8%)	75.0 (-6.3%)	87.5 (6.3%)	93.8 (12.5%)	93.8 (12.5%)	75.0 (-6.3%)
C	9	43.8	62.5 (18.8%)	75.0 (31.3%)	56.3 (12.5%)	56.3 (12.5%)	56.3 (12.5%)	50.0 (6.3%)	43.8 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
C	10	6.7	6.7 (0.0%)	6.7 (0.0%)	0.0 (-6.7%)	0.0 (-6.7%)	0.0 (-6.7%)	6.7 (0.0%)	0.0 (-6.7%)
C	11	80.0	53.3 (-26.7%)	80.0 (0.0%)	66.7 (-13.3%)	66.7 (-13.3%)	80.0 (0.0%)	80.0 (0.0%)	66.7 (-13.3%)
C	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	3	100.0	93.9 (-6.1%)	99.0 (-1.0%)	99.0 (-1.0%)	99.0 (-1.0%)	99.0 (-1.0%)	100.0 (0.0%)	100.0 (0.0%)
All	4	92.9	81.8 (-11.1%)	93.9 (1.0%)	90.9 (-2.0%)	90.9 (-2.0%)	98.0 (5.1%)	96.0 (3.0%)	84.8 (-8.1%)
All	5	35.4	41.4 (6.1%)	35.4 (0.0%)	35.4 (0.0%)	35.4 (0.0%)	37.4 (2.0%)	32.3 (-3.0%)	34.3 (-1.0%)
All	6	15.2	10.1 (-5.1%)	17.2 (2.0%)	15.2 (0.0%)	17.2 (2.0%)	18.2 (3.0%)	25.3 (10.1%)	16.2 (1.0%)
All	7	24.2	16.2 (-8.1%)	24.2 (0.0%)	23.2 (-1.0%)	22.2 (-2.0%)	22.2 (-2.0%)	27.3 (3.0%)	21.2 (-3.0%)
All	8	40.4	44.4 (4.0%)	45.5 (5.1%)	47.5 (7.1%)	44.4 (4.0%)	43.4 (3.0%)	40.4 (0.0%)	44.4 (4.0%)
All	9	19.2	30.3 (11.1%)	25.3 (6.1%)	24.2 (5.1%)	19.2 (0.0%)	25.3 (6.1%)	24.2 (5.1%)	25.3 (6.1%)
All	10	4.1	1.0 (-3.1%)	2.0 (-2.0%)	1.0 (-3.1%)	1.0 (-3.1%)	2.0 (-2.0%)	1.0 (-3.1%)	1.0 (-3.1%)
All	11	97.0	92.9 (-4.0%)	96.0 (-1.0%)	93.9 (-3.0%)	93.9 (-3.0%)	96.0 (-1.0%)	91.9 (-5.1%)	93.9 (-3.0%)
All	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	All	61.9	65.2 (3.3%)	63.1 (1.2%)	64.3 (2.4%)	62.8 (0.9%)	62.8 (0.9%)	62.2 (0.3%)	64.6 (2.7%)
AN	All	57.6	55.7 (-1.9%)	56.3 (-1.3%)	57.0 (-0.6%)	56.3 (-1.3%)	56.3 (-1.3%)	55.7 (-1.9%)	58.2 (0.6%)
BN	All	56.5	51.9 (-4.6%)	56.9 (0.5%)	57.9 (1.4%)	55.6 (-0.9%)	58.3 (1.9%)	57.4 (0.9%)	57.4 (0.9%)
D	All	58.7	56.3 (-2.4%)	57.6 (-1.0%)	58.3 (-0.3%)	58.0 (-0.7%)	59.0 (0.3%)	59.7 (1.0%)	56.3 (-2.4%)
C	All	69.3	65.6 (-3.7%)	74.6 (5.3%)	65.6 (-3.7%)	68.3 (-1.1%)	73.0 (3.7%)	73.0 (3.7%)	63.0 (-6.3%)
All	All	60.7	59.4 (-1.3%)	61.6 (0.8%)	60.9 (0.2%)	60.3 (-0.4%)	61.8 (1.1%)	61.6 (0.8%)	60.2 (-0.6%)

M.2.3.11 American Shad

M.2.3.11.1 Spawning and Larval Rearing

Water temperature related effects on American shad spawning and larval rearing in the American River were evaluated by assessing the percent of months with water temperature outside the 62°F - 75°F optimal range (Moyle 2002) at Hazel Avenue and Watt Avenue (Table M.2-2).

Results outside the 62°F - 75°F water temperature optimal range for American shad spawning larval rearing are presented in Table M.2-97 for Hazel Avenue and Table M.2-98 for Watt Avenue.

- At Hazel Avenue, the highest percent of months with water temperature outside the range was 100% and occurred during April of each water year type under the NAA and all alternatives and during May of wet and above normal water year types under the NAA and all alternatives except Alternative 3 (Table M.2-97). The lowest was 0% and occurred in June during critically dry water year type under Alternative 2 Without TUCP Systemwide VA. Combining water year types, the highest percent of months with water temperature outside the optimal range occurred during April and the lowest percent of months occurred during June under the NAA and all alternatives. Air temperatures drove these temporal patterns.

- At Watt Avenue, the highest percent of months with water temperatures outside the range was 100% and occurred during April of at least one water year type under the NAA and all alternatives (Table M.2-98). The lowest percent of month was 0% and occurred during June of at least one water year type under the NAA and all alternatives. Combining water year types, the highest percent of months with temperatures outside the range occurred during April and the lowest percent of months occurred during June under the NAA and all alternatives. Air temperatures drove these temporal patterns.

Table M.2-97. Percent (difference in percent relative to NAA) of months outside the 62°F - 75°F optimal water temperature range for American shad spawning larval rearing by water year type and month, and for all years combined, American River at Hazel Avenue, April June (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	96.4 (-3.6%)	100.0 (0.0%)
W	6	82.1	71.4 (-10.7%)	82.1 (0.0%)	82.1 (0.0%)	82.1 (0.0%)	82.1 (0.0%)	78.6 (-3.6%)	78.6 (-3.6%)
AN	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	92.3 (-7.7%)	100.0 (0.0%)
AN	6	46.2	46.2 (0.0%)	38.5 (-7.7%)	38.5 (-7.7%)	38.5 (-7.7%)	38.5 (-7.7%)	30.8 (-15.4%)	38.5 (-7.7%)
BN	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	5	88.9	94.4 (5.6%)	88.9 (0.0%)	94.4 (5.6%)	88.9 (0.0%)	88.9 (0.0%)	94.4 (5.6%)	88.9 (0.0%)
BN	6	44.4	33.3 (-11.1%)	44.4 (0.0%)	44.4 (0.0%)	50.0 (5.6%)	44.4 (0.0%)	27.8 (-16.7%)	44.4 (0.0%)
D	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	5	95.8	87.5 (-8.3%)	91.7 (-4.2%)	91.7 (-4.2%)	87.5 (-8.3%)	87.5 (-8.3%)	95.8 (0.0%)	83.3 (-12.5%)
D	6	16.7	12.5 (-4.2%)	12.5 (-4.2%)	12.5 (-4.2%)	16.7 (0.0%)	16.7 (0.0%)	16.7 (0.0%)	4.2 (-12.5%)
C	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	5	87.5	75.0 (-12.5%)	81.3 (-6.3%)	100.0 (12.5%)	87.5 (0.0%)	75.0 (-12.5%)	75.0 (-12.5%)	87.5 (0.0%)
C	6	12.5	25.0 (12.5%)	6.3 (-6.3%)	25.0 (12.5%)	6.3 (-6.3%)	0.0 (-12.5%)	12.5 (0.0%)	18.8 (6.3%)
All	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	5	94.9	91.9 (-3.0%)	92.9 (-2.0%)	97.0 (2.0%)	92.9 (-2.0%)	90.9 (-4.0%)	91.9 (-3.0%)	91.9 (-3.0%)
All	6	43.4	39.4 (-4.0%)	40.4 (-3.0%)	43.4 (0.0%)	42.4 (-1.0%)	40.4 (-3.0%)	37.4 (-6.1%)	39.4 (-4.0%)
W	All	94.0	90.5 (-3.6%)	94.0 (0.0%)	94.0 (0.0%)	94.0 (0.0%)	94.0 (0.0%)	91.7 (-2.4%)	92.9 (-1.2%)
AN	All	82.1	82.1 (0.0%)	79.5 (-2.6%)	79.5 (-2.6%)	79.5 (-2.6%)	79.5 (-2.6%)	74.4 (-7.7%)	79.5 (-2.6%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
BN	All	77.8	75.9 (-1.9%)	77.8 (0.0%)	79.6 (1.9%)	79.6 (1.9%)	77.8 (0.0%)	74.1 (-3.7%)	77.8 (0.0%)
D	All	70.8	66.7 (-4.2%)	68.1 (-2.8%)	68.1 (-2.8%)	68.1 (-2.8%)	68.1 (-2.8%)	70.8 (0.0%)	62.5 (-8.3%)
C	All	66.7	66.7 (0.0%)	62.5 (-4.2%)	75.0 (8.3%)	64.6 (-2.1%)	58.3 (-8.3%)	62.5 (-4.2%)	68.8 (2.1%)
All	All	79.5	77.1 (-2.4%)	77.8 (-1.7%)	80.1 (0.7%)	78.5 (-1.0%)	77.1 (-2.4%)	76.4 (-3.0%)	77.1 (-2.4%)

Table M.2-98. Percent (difference in percent relative to NAA) of months outside the 62°F - 75°F optimal water temperature range for American shad spawning larval rearing by water year type and month, and for all years combined, American River at Watt Avenue, April – June (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	5	82.1	82.1 (0.0%)	82.1 (0.0%)	82.1 (0.0%)	82.1 (0.0%)	85.7 (3.6%)	82.1 (0.0%)	78.6 (-3.6%)
W	6	14.3	14.3 (0.0%)	14.3 (0.0%)	14.3 (0.0%)	14.3 (0.0%)	14.3 (0.0%)	14.3 (0.0%)	14.3 (0.0%)
AN	4	100.0	92.3 (-7.7%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	5	46.2	53.8 (7.7%)	46.2 (0.0%)	46.2 (0.0%)	46.2 (0.0%)	46.2 (0.0%)	38.5 (-7.7%)	46.2 (0.0%)
AN	6	0.0	7.7 (7.7%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	4	100.0	77.8 (-22.2%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	5	33.3	33.3 (0.0%)	33.3 (0.0%)	33.3 (0.0%)	33.3 (0.0%)	33.3 (0.0%)	33.3 (0.0%)	33.3 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
D	4	95.8	70.8 (-25.0%)	95.8 (0.0%)	95.8 (0.0%)	100.0 (4.2%)	100.0 (4.2%)	100.0 (4.2%)	95.8 (0.0%)
D	5	25.0	16.7 (-8.3%)	25.0 (0.0%)	25.0 (0.0%)	25.0 (0.0%)	25.0 (0.0%)	16.7 (-8.3%)	12.5 (-12.5%)
D	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 (0.0%)	0.0 (0.0%)
C	4	75.0	68.8 (-6.3%)	93.8 (18.8%)	75.0 (0.0%)	81.3 (6.3%)	93.8 (18.8%)	81.3 (6.3%)	68.8 (-6.3%)
C	5	6.3	6.3 (0.0%)	0.0 (-6.3%)	6.3 (0.0%)	0.0 (-6.3%)	0.0 (-6.3%)	6.3 (0.0%)	6.3 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
C	6	0.0	6.3 (6.3%)	6.3 (6.3%)	6.3 (6.3%)	6.3 (6.3%)	6.3 (6.3%)	6.3 (6.3%)	12.5 (12.5%)
All	4	94.9	82.8 (-12.1%)	98.0 (3.0%)	94.9 (0.0%)	97.0 (2.0%)	99.0 (4.0%)	97.0 (2.0%)	93.9 (-1.0%)
All	5	42.4	41.4 (-1.0%)	41.4 (-1.0%)	42.4 (0.0%)	41.4 (-1.0%)	42.4 (0.0%)	39.4 (-3.0%)	38.4 (-4.0%)
All	6	4.0	6.1 (2.0%)	5.1 (1.0%)	5.1 (1.0%)	5.1 (1.0%)	5.1 (1.0%)	5.1 (1.0%)	6.1 (2.0%)
W	All	65.5	65.5 (0.0%)	65.5 (0.0%)	65.5 (0.0%)	65.5 (0.0%)	66.7 (1.2%)	65.5 (0.0%)	64.3 (-1.2%)
AN	All	48.7	51.3 (2.6%)	48.7 (0.0%)	48.7 (0.0%)	48.7 (0.0%)	48.7 (0.0%)	46.2 (-2.6%)	48.7 (0.0%)
BN	All	44.4	37.0 (-7.4%)	44.4 (0.0%)	44.4 (0.0%)	44.4 (0.0%)	44.4 (0.0%)	44.4 (0.0%)	44.4 (0.0%)
D	All	40.3	29.2 (-11.1%)	40.3 (0.0%)	40.3 (0.0%)	41.7 (1.4%)	41.7 (1.4%)	38.9 (-1.4%)	36.1 (-4.2%)
C	All	27.1	27.1 (0.0%)	33.3 (6.3%)	29.2 (2.1%)	29.2 (2.1%)	33.3 (6.3%)	31.3 (4.2%)	29.2 (2.1%)
All	All	47.1	43.4 (-3.7%)	48.1 (1.0%)	47.5 (0.3%)	47.8 (0.7%)	48.8 (1.7%)	47.1 (0.0%)	46.1 (-1.0%)

M.2.3.11.2 Juvenile Rearing and Emigration

Water temperature related effects on American shad juvenile rearing and emigration in the American River were evaluated by assessing the percent of months with water temperature outside the 63°F - 77°F optimal range (Moyle 2002) at Hazel Avenue and Watt Avenue (Table M.2-2).

Results outside the 63°F - 77°F water temperature optimal range for American shad juvenile rearing and emigration are presented in Table M.2-99 for Hazel Avenue and Table M.2-100 for Watt Avenue.

- At Hazel Avenue, the highest percent of months with water temperature outside the optimal range was 100% and occurred during November of most water year types under the NAA and all alternatives (Table M.2-99). The lowest percent of months with water temperature outside the range was 0% and occurred during July through September of at least one water year type under the NAA and all alternatives. Combining water year types, the highest percent of months with water temperature outside the range occurred during November under the NAA and all alternatives and the lowest percent of months occurred during July or September depending on alternative.

- At Watt Avenue, the highest percent of months with water temperature outside the optimal range was 100% and occurred during November of most water year types under the NAA and all alternatives (Table M.2-100). The lowest percent of months outside the range was 0% and occurred during July through September of most water year types under the NAA and all alternatives and during October of critical years under the NAA, Alternative 1, Alternative 2 Without TUCP Without VA, Alternative 2 Without TUCP Delta VA, Alternative 2 Without TUCP Systemwide VA, and Alternative 3. Combining water year types, the highest percent of months with water temperature outside the range was November under the NAA and all alternatives and the lowest percent in July and September depending on water year type.

Table M.2-99. Percent (difference in percent relative to NAA) of months outside the 63°F - 77°F optimal water temperature range for American shad juvenile rearing and emigration by water year type and month, and for all years combined, American River at Hazel Avenue, July – November (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	7	17.9	17.9 (0.0%)	17.9 (0.0%)	14.3 (-3.6%)	17.9 (0.0%)	17.9 (0.0%)	17.9 (0.0%)	17.9 (0.0%)
W	8	3.6	7.1 (3.6%)	7.1 (3.6%)	7.1 (3.6%)	3.6 (0.0%)	3.6 (0.0%)	7.1 (3.6%)	10.7 (7.1%)
W	9	0.0	7.1 (7.1%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	3.6 (3.6%)	0.0 (0.0%)	7.1 (7.1%)
W	10	28.6	21.4 (-7.1%)	14.3 (-14.3%)	14.3 (-14.3%)	17.9 (-10.7%)	17.9 (-10.7%)	25.0 (-3.6%)	14.3 (-14.3%)
W	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	7	7.7	15.4 (7.7%)	7.7 (0.0%)	7.7 (0.0%)	7.7 (0.0%)	7.7 (0.0%)	0.0 (-7.7%)	7.7 (0.0%)
AN	8	7.7	0.0 (-7.7%)	0.0 (-7.7%)	0.0 (-7.7%)	0.0 (-7.7%)	0.0 (-7.7%)	7.7 (0.0%)	15.4 (7.7%)
AN	9	0.0	7.7 (7.7%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	15.4 (15.4%)
AN	10	61.5	46.2 (-15.4%)	53.8 (-7.7%)	53.8 (-7.7%)	53.8 (-7.7%)	53.8 (-7.7%)	38.5 (-23.1%)	30.8 (-30.8%)
AN	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	7	0.0	5.6 (5.6%)	0.0 (0.0%)	0.0 (0.0%)	5.6 (5.6%)	0.0 (0.0%)	5.6 (5.6%)	0.0 (0.0%)
BN	8	11.1	11.1 (0.0%)	11.1 (0.0%)	5.6 (-5.6%)	16.7 (5.6%)	16.7 (5.6%)	0.0 (-11.1%)	11.1 (0.0%)
BN	9	0.0	5.6 (5.6%)	5.6 (5.6%)	5.6 (5.6%)	0.0 (0.0%)	5.6 (5.6%)	5.6 (5.6%)	5.6 (5.6%)
BN	10	61.1	61.1 (0.0%)	50.0 (-11.1%)	61.1 (0.0%)	55.6 (-5.6%)	55.6 (-5.6%)	33.3 (-27.8%)	72.2 (11.1%)
BN	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	7	0.0	4.2 (4.2%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	4.2 (4.2%)	0.0 (0.0%)
D	8	4.2	0.0 (-4.2%)	0.0 (-4.2%)	4.2 (0.0%)	0.0 (-4.2%)	0.0 (-4.2%)	0.0 (-4.2%)	4.2 (0.0%)
D	9	0.0	8.3 (8.3%)	4.2 (4.2%)	4.2 (4.2%)	12.5 (12.5%)	4.2 (4.2%)	16.7 (16.7%)	4.2 (4.2%)
D	10	45.8	58.3 (12.5%)	62.5 (16.7%)	58.3 (12.5%)	62.5 (16.7%)	54.2 (8.3%)	45.8 (0.0%)	45.8 (0.0%)
D	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	95.8 (-4.2%)	95.8 (-4.2%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
C	7	6.3	0.0 (-6.3%)	0.0 (-6.3%)	6.3 (0.0%)	0.0 (-6.3%)	0.0 (-6.3%)	0.0 (-6.3%)	6.3 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	9	6.3	0.0 (-6.3%)	0.0 (-6.3%)	6.3 (0.0%)	0.0 (-6.3%)	0.0 (-6.3%)	0.0 (-6.3%)	6.3 (0.0%)
C	10	13.3	13.3 (0.0%)	13.3 (0.0%)	20.0 (6.7%)	6.7 (-6.7%)	0.0 (-13.3%)	13.3 (0.0%)	26.7 (13.3%)
C	11	86.7	73.3 (-13.3%)	93.3 (6.7%)	86.7 (0.0%)	93.3 (6.7%)	93.3 (6.7%)	93.3 (6.7%)	80.0 (-6.7%)
All	7	7.1	9.1 (2.0%)	6.1 (-1.0%)	6.1 (-1.0%)	7.1 (0.0%)	6.1 (-1.0%)	7.1 (0.0%)	7.1 (0.0%)
All	8	5.1	4.0 (-1.0%)	4.0 (-1.0%)	4.0 (-1.0%)	4.0 (-1.0%)	4.0 (-1.0%)	3.0 (-2.0%)	8.1 (3.0%)
All	9	1.0	6.1 (5.1%)	2.0 (1.0%)	3.0 (2.0%)	3.0 (2.0%)	3.0 (2.0%)	5.1 (4.0%)	7.1 (6.1%)
All	10	40.8	39.8 (-1.0%)	37.8 (-3.1%)	39.8 (-1.0%)	38.8 (-2.0%)	35.7 (-5.1%)	31.6 (-9.2%)	36.7 (-4.1%)
All	11	98.0	96.0 (-2.0%)	99.0 (1.0%)	98.0 (0.0%)	99.0 (1.0%)	99.0 (1.0%)	98.0 (0.0%)	96.0 (-2.0%)
W	All	30.0	30.7 (0.7%)	27.9 (-2.1%)	27.1 (-2.9%)	27.9 (-2.1%)	28.6 (-1.4%)	30.0 (0.0%)	30.0 (0.0%)
AN	All	36.4	34.8 (-1.5%)	33.3 (-3.0%)	33.3 (-3.0%)	33.3 (-3.0%)	33.3 (-3.0%)	30.3 (-6.1%)	34.8 (-1.5%)
BN	All	34.4	36.7 (2.2%)	33.3 (-1.1%)	34.4 (0.0%)	35.6 (1.1%)	35.6 (1.1%)	28.9 (-5.6%)	37.8 (3.3%)
D	All	30.0	34.2 (4.2%)	33.3 (3.3%)	33.3 (3.3%)	35.0 (5.0%)	31.7 (1.7%)	32.5 (2.5%)	30.0 (0.0%)
C	All	21.8	16.7 (-5.1%)	20.5 (-1.3%)	23.1 (1.3%)	19.2 (-2.6%)	17.9 (-3.8%)	20.5 (-1.3%)	23.1 (1.3%)
All	All	30.4	31.0 (0.6%)	29.8 (-0.6%)	30.2 (-0.2%)	30.4 (0.0%)	29.6 (-0.8%)	28.9 (-1.4%)	31.0 (0.6%)

Table M.2-100. Percent (difference in percent relative to NAA) of months outside the 63°F - 77°F optimal water temperature range for American shad juvenile rearing and emigration by water year type and month, and for all years combined, American River at Watt Avenue, July – November (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	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 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	10	14.3	3.6 (-10.7%)	7.1 (-7.1%)	3.6 (-10.7%)	3.6 (-10.7%)	0.0 (-14.3%)	3.6 (-10.7%)	10.7 (-3.6%)
W	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	10	30.8	15.4 (-15.4%)	38.5 (7.7%)	38.5 (7.7%)	38.5 (7.7%)	30.8 (0.0%)	7.7 (-23.1%)	15.4 (-15.4%)
AN	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	10	27.8	22.2 (-5.6%)	22.2 (-5.6%)	27.8 (0.0%)	22.2 (-5.6%)	22.2 (-5.6%)	5.6 (-22.2%)	22.2 (-5.6%)
BN	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	10	20.8	12.5 (-8.3%)	16.7 (-4.2%)	12.5 (-8.3%)	20.8 (0.0%)	4.2 (-16.7%)	16.7 (-4.2%)	12.5 (-8.3%)
D	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	95.8 (-4.2%)	100.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
C	7	6.3	6.3 (0.0%)	6.3 (0.0%)	0.0 (-6.3%)	6.3 (0.0%)	6.3 (0.0%)	6.3 (0.0%)	0.0 (-6.3%)
C	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 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	10	0.0	0.0 (0.0%)	6.7 (6.7%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	6.7 (6.7%)
C	11	100.0	80.0 (-20.0%)	100.0 (0.0%)	93.3 (-6.7%)	93.3 (-6.7%)	100.0 (0.0%)	93.3 (-6.7%)	86.7 (-13.3%)
All	7	1.0	1.0 (0.0%)	1.0 (0.0%)	0.0 (-1.0%)	1.0 (0.0%)	1.0 (0.0%)	1.0 (0.0%)	0.0 (-1.0%)
All	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 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	10	18.4	10.2 (-8.2%)	16.3 (-2.0%)	14.3 (-4.1%)	15.3 (-3.1%)	9.2 (-9.2%)	7.1 (-11.2%)	13.3 (-5.1%)
All	11	100.0	97.0 (-3.0%)	100.0 (0.0%)	99.0 (-1.0%)	99.0 (-1.0%)	100.0 (0.0%)	98.0 (-2.0%)	98.0 (-2.0%)
W	All	22.9	20.7 (-2.1%)	21.4 (-1.4%)	20.7 (-2.1%)	20.7 (-2.1%)	20.0 (-2.9%)	20.7 (-2.1%)	22.1 (-0.7%)
AN	All	27.3	24.2 (-3.0%)	28.8 (1.5%)	28.8 (1.5%)	28.8 (1.5%)	27.3 (0.0%)	22.7 (-4.5%)	24.2 (-3.0%)
BN	All	25.6	24.4 (-1.1%)	24.4 (-1.1%)	25.6 (0.0%)	24.4 (-1.1%)	24.4 (-1.1%)	21.1 (-4.4%)	24.4 (-1.1%)
D	All	24.2	22.5 (-1.7%)	23.3 (-0.8%)	22.5 (-1.7%)	24.2 (0.0%)	20.8 (-3.3%)	22.5 (-1.7%)	22.5 (-1.7%)
C	All	20.5	16.7 (-3.8%)	21.8 (1.3%)	17.9 (-2.6%)	19.2 (-1.3%)	20.5 (0.0%)	19.2 (-1.3%)	17.9 (-2.6%)
All	All	23.9	21.7 (-2.2%)	23.5 (-0.4%)	22.7 (-1.2%)	23.1 (-0.8%)	22.1 (-1.8%)	21.3 (-2.6%)	22.3 (-1.6%)

M.2.3.12   Threadfin Shad

M.2.3.12.1   Spawning

Water temperature related effects on threadfin shad spawning in the American River were evaluated by assessing the percent of months with water temperature outside the 63°F - 77°F optimal range (Moyle 2002) at Hazel Avenue and Watt Avenue (Table M.2-2).

Results for the 63°F - 77°F optimal water temperature range for threadfin shad spawning are presented in Table M.2-101 for Hazel Avenue and Table M.2-102 for Watt Avenue.

- At Hazel Avenue, the highest percent of months with water temperature outside the range was 100% and occurred during April of all water year types and during May of at least one water year type under the NAA and all alternatives (Table M.2-101). The lowest percent of months with water temperature outside the range was 0% and occurred during July and August of at least one water year type under the NAA and all alternatives. Combining water year types, the highest percent of months with water temperature outside the range occurred during April and the lowest occurred during July or August for the NAA and all alternatives. Air temperatures drove these temporal patterns.

- At Watt Avenue, the highest percent of months with water temperature outside the range was 100% and occurred during April of at least one water year type under the NAA and all alternatives (Table M.2-102). The lowest percent of months with water temperature outside the range was 0% and occurred during June through August of at least one water year types under the NAA and all alternatives. Combining water year types, the highest percent of months with water temperature outside the range occurred during April and the lowest occurred during July and August for the NAA and all alternatives. Air temperatures drove these temporal patterns.

Table M.2-101. Percent (difference in percent relative to NAA) of months outside the 63°F - 77°F optimal water temperature range for threadfin shad spawning by water year type and month, and for all years combined, American River at Hazel Avenue, April – August (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	96.4 (-3.6%)	100.0 (0.0%)
W	6	89.3	78.6 (-10.7%)	85.7 (-3.6%)	85.7 (-3.6%)	85.7 (-3.6%)	85.7 (-3.6%)	89.3 (0.0%)	85.7 (-3.6%)
W	7	17.9	17.9 (0.0%)	17.9 (0.0%)	14.3 (-3.6%)	17.9 (0.0%)	17.9 (0.0%)	17.9 (0.0%)	17.9 (0.0%)
W	8	3.6	7.1 (3.6%)	7.1 (3.6%)	7.1 (3.6%)	3.6 (0.0%)	3.6 (0.0%)	7.1 (3.6%)	10.7 (7.1%)
AN	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	6	46.2	46.2 (0.0%)	46.2 (0.0%)	46.2 (0.0%)	46.2 (0.0%)	46.2 (0.0%)	61.5 (15.4%)	46.2 (0.0%)
AN	7	7.7	15.4 (7.7%)	7.7 (0.0%)	7.7 (0.0%)	7.7 (0.0%)	7.7 (0.0%)	0.0 (-7.7%)	7.7 (0.0%)
AN	8	7.7	0.0 (-7.7%)	0.0 (-7.7%)	0.0 (-7.7%)	0.0 (-7.7%)	0.0 (-7.7%)	7.7 (0.0%)	15.4 (7.7%)
BN	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	5	94.4	100.0 (5.6%)	94.4 (0.0%)	94.4 (0.0%)	94.4 (0.0%)	94.4 (0.0%)	94.4 (0.0%)	100.0 (5.6%)
BN	6	50.0	44.4 (-5.6%)	50.0 (0.0%)	50.0 (0.0%)	50.0 (0.0%)	44.4 (-5.6%)	50.0 (0.0%)	50.0 (0.0%)
BN	7	0.0	5.6 (5.6%)	0.0 (0.0%)	0.0 (0.0%)	5.6 (5.6%)	0.0 (0.0%)	5.6 (5.6%)	0.0 (0.0%)
BN	8	11.1	11.1 (0.0%)	11.1 (0.0%)	5.6 (-5.6%)	16.7 (5.6%)	16.7 (5.6%)	0.0 (-11.1%)	11.1 (0.0%)
D	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	5	100.0	91.7 (-8.3%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	95.8 (-4.2%)
D	6	33.3	25.0 (-8.3%)	20.8 (-12.5%)	20.8 (-12.5%)	29.2 (-4.2%)	20.8 (-12.5%)	29.2 (-4.2%)	25.0 (-8.3%)
D	7	0.0	4.2 (4.2%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	4.2 (4.2%)	0.0 (0.0%)
D	8	4.2	0.0 (-4.2%)	0.0 (-4.2%)	4.2 (0.0%)	0.0 (-4.2%)	0.0 (-4.2%)	0.0 (-4.2%)	4.2 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
C	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	5	87.5	81.3 (-6.3%)	81.3 (-6.3%)	100.0 (12.5%)	93.8 (6.3%)	81.3 (-6.3%)	87.5 (0.0%)	93.8 (6.3%)
C	6	31.3	31.3 (0.0%)	6.3 (-25.0%)	25.0 (-6.3%)	12.5 (-18.8%)	18.8 (-12.5%)	12.5 (-18.8%)	31.3 (0.0%)
C	7	6.3	0.0 (-6.3%)	0.0 (-6.3%)	6.3 (0.0%)	0.0 (-6.3%)	0.0 (-6.3%)	0.0 (-6.3%)	6.3 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
All	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	5	97.0	94.9 (-2.0%)	96.0 (-1.0%)	99.0 (2.0%)	98.0 (1.0%)	96.0 (-1.0%)	96.0 (-1.0%)	98.0 (1.0%)
All	6	53.5	47.5 (-6.1%)	45.5 (-8.1%)	48.5 (-5.1%)	48.5 (-5.1%)	46.5 (-7.1%)	51.5 (-2.0%)	50.5 (-3.0%)
All	7	7.1	9.1 (2.0%)	6.1 (-1.0%)	6.1 (-1.0%)	7.1 (0.0%)	6.1 (-1.0%)	7.1 (0.0%)	7.1 (0.0%)
All	8	5.1	4.0 (-1.0%)	4.0 (-1.0%)	4.0 (-1.0%)	4.0 (-1.0%)	4.0 (-1.0%)	3.0 (-2.0%)	8.1 (3.0%)
W	All	62.1	60.7 (-1.4%)	62.1 (0.0%)	61.4 (-0.7%)	61.4 (-0.7%)	61.4 (-0.7%)	62.1 (0.0%)	62.9 (0.7%)
AN	All	52.3	52.3 (0.0%)	50.8 (-1.5%)	50.8 (-1.5%)	50.8 (-1.5%)	50.8 (-1.5%)	53.8 (1.5%)	53.8 (1.5%)
BN	All	51.1	52.2 (1.1%)	51.1 (0.0%)	50.0 (-1.1%)	53.3 (2.2%)	51.1 (0.0%)	50.0 (-1.1%)	52.2 (1.1%)
D	All	47.5	44.2 (-3.3%)	44.2 (-3.3%)	45.0 (-2.5%)	45.8 (-1.7%)	44.2 (-3.3%)	46.7 (-0.8%)	45.0 (-2.5%)
C	All	45.0	42.5 (-2.5%)	37.5 (-7.5%)	46.3 (1.3%)	41.3 (-3.8%)	40.0 (-5.0%)	40.0 (-5.0%)	46.3 (1.3%)
All	All	52.5	51.1 (-1.4%)	50.3 (-2.2%)	51.5 (-1.0%)	51.5 (-1.0%)	50.5 (-2.0%)	51.5 (-1.0%)	52.7 (0.2%)

Table M.2-102. Percent (difference in percent relative to NAA) of months outside the 63°F - 77°F optimal water temperature range for threadfin shad spawning by water year type and month, and for all years combined, American River at Watt Avenue, April – August (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	5	89.3	85.7 (-3.6%)	89.3 (0.0%)	89.3 (0.0%)	89.3 (0.0%)	89.3 (0.0%)	85.7 (-3.6%)	89.3 (0.0%)
W	6	21.4	21.4 (0.0%)	21.4 (0.0%)	21.4 (0.0%)	21.4 (0.0%)	21.4 (0.0%)	21.4 (0.0%)	21.4 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
AN	4	100.0	92.3 (-7.7%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	5	53.8	53.8 (0.0%)	53.8 (0.0%)	53.8 (0.0%)	53.8 (0.0%)	53.8 (0.0%)	46.2 (-7.7%)	53.8 (0.0%)
AN	6	0.0	7.7 (7.7%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	7.7 (7.7%)	0.0 (0.0%)	7.7 (7.7%)
AN	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
BN	4	100.0	77.8 (-22.2%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	5	61.1	55.6 (-5.6%)	61.1 (0.0%)	61.1 (0.0%)	55.6 (-5.6%)	50.0 (-11.1%)	50.0 (-11.1%)	61.1 (0.0%)
BN	6	5.6	11.1 (5.6%)	5.6 (0.0%)	5.6 (0.0%)	5.6 (0.0%)	5.6 (0.0%)	5.6 (0.0%)	5.6 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
D	4	100.0	79.2 (-20.8%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	95.8 (-4.2%)
D	5	37.5	33.3 (-4.2%)	50.0 (12.5%)	50.0 (12.5%)	41.7 (4.2%)	33.3 (-4.2%)	37.5 (0.0%)	37.5 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
C	4	87.5	75.0 (-12.5%)	93.8 (6.3%)	81.3 (-6.3%)	93.8 (6.3%)	93.8 (6.3%)	87.5 (0.0%)	87.5 (0.0%)
C	5	6.3	12.5 (6.3%)	0.0 (-6.3%)	6.3 (0.0%)	0.0 (-6.3%)	0.0 (-6.3%)	12.5 (6.3%)	6.3 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	7	6.3	6.3 (0.0%)	6.3 (0.0%)	0.0 (-6.3%)	6.3 (0.0%)	6.3 (0.0%)	6.3 (0.0%)	0.0 (-6.3%)
C	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 (0.0%)	0.0 (0.0%)
All	4	98.0	85.9 (-12.1%)	99.0 (1.0%)	97.0 (-1.0%)	99.0 (1.0%)	99.0 (1.0%)	98.0 (0.0%)	97.0 (-1.0%)
All	5	53.5	51.5 (-2.0%)	55.6 (2.0%)	56.6 (3.0%)	52.5 (-1.0%)	49.5 (-4.0%)	50.5 (-3.0%)	53.5 (0.0%)
All	6	7.1	9.1 (2.0%)	7.1 (0.0%)	7.1 (0.0%)	7.1 (0.0%)	8.1 (1.0%)	7.1 (0.0%)	8.1 (1.0%)
All	7	1.0	1.0 (0.0%)	1.0 (0.0%)	0.0 (-1.0%)	1.0 (0.0%)	1.0 (0.0%)	1.0 (0.0%)	0.0 (-1.0%)
All	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 (0.0%)	0.0 (0.0%)
W	All	42.1	41.4 (-0.7%)	42.1 (0.0%)	42.1 (0.0%)	42.1 (0.0%)	42.1 (0.0%)	41.4 (-0.7%)	42.1 (0.0%)
AN	All	30.8	30.8 (0.0%)	30.8 (0.0%)	30.8 (0.0%)	30.8 (0.0%)	32.3 (1.5%)	29.2 (-1.5%)	32.3 (1.5%)
BN	All	33.3	28.9 (-4.4%)	33.3 (0.0%)	33.3 (0.0%)	32.2 (-1.1%)	31.1 (-2.2%)	31.1 (-2.2%)	33.3 (0.0%)
D	All	27.5	22.5 (-5.0%)	30.0 (2.5%)	30.0 (2.5%)	28.3 (0.8%)	26.7 (-0.8%)	27.5 (0.0%)	26.7 (-0.8%)
C	All	20.0	18.8 (-1.3%)	20.0 (0.0%)	17.5 (-2.5%)	20.0 (0.0%)	20.0 (0.0%)	21.3 (1.3%)	18.8 (-1.3%)
All	All	31.9	29.5 (-2.4%)	32.5 (0.6%)	32.1 (0.2%)	31.9 (0.0%)	31.5 (-0.4%)	31.3 (-0.6%)	31.7 (-0.2%)

M.2.3.12.2 Non-spawning Adult

Water temperature related effects on non-spawning adult threadfin shad in the American River were evaluated by assessing the percent of months with water temperature outside the 63°F - 77°F optimal range (Moyle 2002) at Hazel Avenue and Watt Avenue (Table M.2-2).

Results outside the 63°F - 77°F water temperature optimal range for non-spawning adult threadfin shad are presented in Table M.2-103 for Hazel Avenue and Table M.2-104 for Watt Avenue.

- At Hazel Avenue the highest percent of months with water temperatures outside the range was 100% and occurred during November through May of at least one water year type under the NAA and all alternatives (Table M.2-103). The lowest percent of months with water temperatures outside the range was 0% and occurred during July through September of at least one water year type under the NAA and all alternatives. Combining water year types, the highest percent of months with water temperatures outside the range occurred during November through April and the lowest percent of months occurred during August and September under the NAA and all alternatives. Air temperatures drove these temporal patterns.

- At Watt Avenue, the highest percent of months with water temperature outside the range was 100% and occurred during November through April of at least one water year type under the NAA and all alternatives (Table M.2-104). The lowest percent of months with water temperature outside the range was 0% and occurred during June through September of at least one water year types under the NAA and all alternatives and during October of critical water years under the NAA, Alternative 1, Alternative 2 Without TUCP Without VA, and Alternative 2 Without TUCP Delta VA. Combining water year types, the highest percent of months with water temperature outside the range occurred during November through March and the lowest percent of months occurred during July through and September under the NAA and all alternatives. Air temperatures drove these temporal patterns.

Table M.2-103. Percent (difference in percent relative to NAA) of months outside the 63°F - 77°F optimal water temperature range for non-spawning adult threadfin shad by water year type and month, and for all years combined, American River at Hazel Avenue, year-round (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	96.4 (-3.6%)	100.0 (0.0%)
W	6	89.3	78.6 (-10.7%)	85.7 (-3.6%)	85.7 (-3.6%)	85.7 (-3.6%)	85.7 (-3.6%)	89.3 (0.0%)	85.7 (-3.6%)
W	7	17.9	17.9 (0.0%)	17.9 (0.0%)	14.3 (-3.6%)	17.9 (0.0%)	17.9 (0.0%)	17.9 (0.0%)	17.9 (0.0%)
W	8	3.6	7.1 (3.6%)	7.1 (3.6%)	7.1 (3.6%)	3.6 (0.0%)	3.6 (0.0%)	7.1 (3.6%)	10.7 (7.1%)
W	9	0.0	7.1 (7.1%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	3.6 (3.6%)	0.0 (0.0%)	7.1 (7.1%)
W	10	28.6	21.4 (-7.1%)	14.3 (-14.3%)	14.3 (-14.3%)	17.9 (-10.7%)	17.9 (-10.7%)	25.0 (-3.6%)	14.3 (-14.3%)
W	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	6	46.2	46.2 (0.0%)	46.2 (0.0%)	46.2 (0.0%)	46.2 (0.0%)	46.2 (0.0%)	61.5 (15.4%)	46.2 (0.0%)
AN	7	7.7	15.4 (7.7%)	7.7 (0.0%)	7.7 (0.0%)	7.7 (0.0%)	7.7 (0.0%)	0.0 (-7.7%)	7.7 (0.0%)
AN	8	7.7	0.0 (-7.7%)	0.0 (-7.7%)	0.0 (-7.7%)	0.0 (-7.7%)	0.0 (-7.7%)	7.7 (0.0%)	15.4 (7.7%)
AN	9	0.0	7.7 (7.7%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	15.4 (15.4%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
AN	10	61.5	46.2 (-15.4%)	53.8 (-7.7%)	53.8 (-7.7%)	53.8 (-7.7%)	53.8 (-7.7%)	38.5 (-23.1%)	30.8 (-30.8%)
AN	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	5	94.4	100.0 (5.6%)	94.4 (0.0%)	94.4 (0.0%)	94.4 (0.0%)	94.4 (0.0%)	94.4 (0.0%)	100.0 (5.6%)
BN	6	50.0	44.4 (-5.6%)	50.0 (0.0%)	50.0 (0.0%)	50.0 (0.0%)	44.4 (-5.6%)	50.0 (0.0%)	50.0 (0.0%)
BN	7	0.0	5.6 (5.6%)	0.0 (0.0%)	0.0 (0.0%)	5.6 (5.6%)	0.0 (0.0%)	5.6 (5.6%)	0.0 (0.0%)
BN	8	11.1	11.1 (0.0%)	11.1 (0.0%)	5.6 (-5.6%)	16.7 (5.6%)	16.7 (5.6%)	0.0 (-11.1%)	11.1 (0.0%)
BN	9	0.0	5.6 (5.6%)	5.6 (5.6%)	5.6 (5.6%)	0.0 (0.0%)	5.6 (5.6%)	5.6 (5.6%)	5.6 (5.6%)
BN	10	61.1	61.1 (0.0%)	50.0 (-11.1%)	61.1 (0.0%)	55.6 (-5.6%)	55.6 (-5.6%)	33.3 (-27.8%)	72.2 (11.1%)
BN	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	5	100.0	91.7 (-8.3%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	95.8 (-4.2%)
D	6	33.3	25.0 (-8.3%)	20.8 (-12.5%)	20.8 (-12.5%)	29.2 (-4.2%)	20.8 (-12.5%)	29.2 (-4.2%)	25.0 (-8.3%)
D	7	0.0	4.2 (4.2%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	4.2 (4.2%)	0.0 (0.0%)
D	8	4.2	0.0 (-4.2%)	0.0 (-4.2%)	4.2 (0.0%)	0.0 (-4.2%)	0.0 (-4.2%)	0.0 (-4.2%)	4.2 (0.0%)
D	9	0.0	8.3 (8.3%)	4.2 (4.2%)	4.2 (4.2%)	12.5 (12.5%)	4.2 (4.2%)	16.7 (16.7%)	4.2 (4.2%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
D	10	45.8	58.3 (12.5%)	62.5 (16.7%)	58.3 (12.5%)	62.5 (16.7%)	54.2 (8.3%)	45.8 (0.0%)	45.8 (0.0%)
D	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	95.8 (-4.2%)	95.8 (-4.2%)
D	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	5	87.5	81.3 (-6.3%)	81.3 (-6.3%)	100.0 (12.5%)	93.8 (6.3%)	81.3 (-6.3%)	87.5 (0.0%)	93.8 (6.3%)
C	6	31.3	31.3 (0.0%)	6.3 (-25.0%)	25.0 (-6.3%)	12.5 (-18.8%)	18.8 (-12.5%)	12.5 (-18.8%)	31.3 (0.0%)
C	7	6.3	0.0 (-6.3%)	0.0 (-6.3%)	6.3 (0.0%)	0.0 (-6.3%)	0.0 (-6.3%)	0.0 (-6.3%)	6.3 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	9	6.3	0.0 (-6.3%)	0.0 (-6.3%)	6.3 (0.0%)	0.0 (-6.3%)	0.0 (-6.3%)	0.0 (-6.3%)	6.3 (0.0%)
C	10	13.3	13.3 (0.0%)	13.3 (0.0%)	20.0 (6.7%)	6.7 (-6.7%)	0.0 (-13.3%)	13.3 (0.0%)	26.7 (13.3%)
C	11	86.7	73.3 (-13.3%)	93.3 (6.7%)	86.7 (0.0%)	93.3 (6.7%)	93.3 (6.7%)	93.3 (6.7%)	80.0 (-6.7%)
C	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	5	97.0	94.9 (-2.0%)	96.0 (-1.0%)	99.0 (2.0%)	98.0 (1.0%)	96.0 (-1.0%)	96.0 (-1.0%)	98.0 (1.0%)
All	6	53.5	47.5 (-6.1%)	45.5 (-8.1%)	48.5 (-5.1%)	48.5 (-5.1%)	46.5 (-7.1%)	51.5 (-2.0%)	50.5 (-3.0%)
All	7	7.1	9.1 (2.0%)	6.1 (-1.0%)	6.1 (-1.0%)	7.1 (0.0%)	6.1 (-1.0%)	7.1 (0.0%)	7.1 (0.0%)
All	8	5.1	4.0 (-1.0%)	4.0 (-1.0%)	4.0 (-1.0%)	4.0 (-1.0%)	4.0 (-1.0%)	3.0 (-2.0%)	8.1 (3.0%)
All	9	1.0	6.1 (5.1%)	2.0 (1.0%)	3.0 (2.0%)	3.0 (2.0%)	3.0 (2.0%)	5.1 (4.0%)	7.1 (6.1%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
All	10	40.8	39.8 (-1.0%)	37.8 (-3.1%)	39.8 (-1.0%)	38.8 (-2.0%)	35.7 (-5.1%)	31.6 (-9.2%)	36.7 (-4.1%)
All	11	98.0	96.0 (-2.0%)	99.0 (1.0%)	98.0 (0.0%)	99.0 (1.0%)	99.0 (1.0%)	98.0 (0.0%)	96.0 (-2.0%)
All	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	All	69.9	69.3 (-0.6%)	68.8 (-1.2%)	68.5 (-1.5%)	68.8 (-1.2%)	69.0 (-0.9%)	69.6 (-0.3%)	69.6 (-0.3%)
AN	All	69.0	68.4 (-0.6%)	67.7 (-1.3%)	67.7 (-1.3%)	67.7 (-1.3%)	67.7 (-1.3%)	67.7 (-1.3%)	68.4 (-0.6%)
BN	All	68.1	69.0 (0.9%)	67.6 (-0.5%)	68.1 (0.0%)	68.5 (0.5%)	68.1 (0.0%)	65.7 (-2.3%)	69.9 (1.9%)
D	All	65.3	65.6 (0.3%)	65.6 (0.3%)	65.6 (0.3%)	67.0 (1.7%)	64.9 (-0.3%)	66.0 (0.7%)	64.2 (-1.0%)
C	All	60.8	58.2 (-2.6%)	57.7 (-3.2%)	61.9 (1.1%)	58.7 (-2.1%)	57.7 (-3.2%)	58.7 (-2.1%)	61.9 (1.1%)
All	All	66.9	66.5 (-0.4%)	65.9 (-1.0%)	66.6 (-0.3%)	66.6 (-0.3%)	65.9 (-1.0%)	66.0 (-0.8%)	67.0 (0.1%)

Table M.2-104. Percent (difference in percent relative to NAA) of months outside the 63°F - 77°F optimal water temperature range for non-spawning adult threadfin shad by water year type and month, and for all years combined, American River at Watt Avenue, year-round (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	5	89.3	85.7 (-3.6%)	89.3 (0.0%)	89.3 (0.0%)	89.3 (0.0%)	89.3 (0.0%)	85.7 (-3.6%)	89.3 (0.0%)
W	6	21.4	21.4 (0.0%)	21.4 (0.0%)	21.4 (0.0%)	21.4 (0.0%)	21.4 (0.0%)	21.4 (0.0%)	21.4 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	10	14.3	3.6 (-10.7%)	7.1 (-7.1%)	3.6 (-10.7%)	3.6 (-10.7%)	0.0 (-14.3%)	3.6 (-10.7%)	10.7 (-3.6%)
W	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	4	100.0	92.3 (-7.7%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	5	53.8	53.8 (0.0%)	53.8 (0.0%)	53.8 (0.0%)	53.8 (0.0%)	53.8 (0.0%)	46.2 (-7.7%)	53.8 (0.0%)
AN	6	0.0	7.7 (7.7%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	7.7 (7.7%)	0.0 (0.0%)	7.7 (7.7%)
AN	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	10	30.8	15.4 (-15.4%)	38.5 (7.7%)	38.5 (7.7%)	38.5 (7.7%)	30.8 (0.0%)	7.7 (-23.1%)	15.4 (-15.4%)
AN	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	4	100.0	77.8 (-22.2%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	5	61.1	55.6 (-5.6%)	61.1 (0.0%)	61.1 (0.0%)	55.6 (-5.6%)	50.0 (-11.1%)	50.0 (-11.1%)	61.1 (0.0%)
BN	6	5.6	11.1 (5.6%)	5.6 (0.0%)	5.6 (0.0%)	5.6 (0.0%)	5.6 (0.0%)	5.6 (0.0%)	5.6 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
BN	10	27.8	22.2 (-5.6%)	22.2 (-5.6%)	27.8 (0.0%)	22.2 (-5.6%)	22.2 (-5.6%)	5.6 (-22.2%)	22.2 (-5.6%)
BN	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	4	100.0	79.2 (-20.8%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	95.8 (-4.2%)
D	5	37.5	33.3 (-4.2%)	50.0 (12.5%)	50.0 (12.5%)	41.7 (4.2%)	33.3 (-4.2%)	37.5 (0.0%)	37.5 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	10	20.8	12.5 (-8.3%)	16.7 (-4.2%)	12.5 (-8.3%)	20.8 (0.0%)	4.2 (-16.7%)	16.7 (-4.2%)	12.5 (-8.3%)
D	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	95.8 (-4.2%)	100.0 (0.0%)
D	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	3	100.0	87.5 (-12.5%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	4	87.5	75.0 (-12.5%)	93.8 (6.3%)	81.3 (-6.3%)	93.8 (6.3%)	93.8 (6.3%)	87.5 (0.0%)	87.5 (0.0%)
C	5	6.3	12.5 (6.3%)	0.0 (-6.3%)	6.3 (0.0%)	0.0 (-6.3%)	0.0 (-6.3%)	12.5 (6.3%)	6.3 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	7	6.3	6.3 (0.0%)	6.3 (0.0%)	0.0 (-6.3%)	6.3 (0.0%)	6.3 (0.0%)	6.3 (0.0%)	0.0 (-6.3%)
C	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 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
C	10	0.0	0.0 (0.0%)	6.7 (6.7%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	6.7 (6.7%)
C	11	100.0	80.0 (-20.0%)	100.0 (0.0%)	93.3 (-6.7%)	93.3 (-6.7%)	100.0 (0.0%)	93.3 (-6.7%)	86.7 (-13.3%)
C	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	3	100.0	98.0 (-2.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	4	98.0	85.9 (-12.1%)	99.0 (1.0%)	97.0 (-1.0%)	99.0 (1.0%)	99.0 (1.0%)	98.0 (0.0%)	97.0 (-1.0%)
All	5	53.5	51.5 (-2.0%)	55.6 (2.0%)	56.6 (3.0%)	52.5 (-1.0%)	49.5 (-4.0%)	50.5 (-3.0%)	53.5 (0.0%)
All	6	7.1	9.1 (2.0%)	7.1 (0.0%)	7.1 (0.0%)	7.1 (0.0%)	8.1 (1.0%)	7.1 (0.0%)	8.1 (1.0%)
All	7	1.0	1.0 (0.0%)	1.0 (0.0%)	0.0 (-1.0%)	1.0 (0.0%)	1.0 (0.0%)	1.0 (0.0%)	0.0 (-1.0%)
All	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 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	10	18.4	10.2 (-8.2%)	16.3 (-2.0%)	14.3 (-4.1%)	15.3 (-3.1%)	9.2 (-9.2%)	7.1 (-11.2%)	13.3 (-5.1%)
All	11	100.0	97.0 (-3.0%)	100.0 (0.0%)	99.0 (-1.0%)	99.0 (-1.0%)	100.0 (0.0%)	98.0 (-2.0%)	98.0 (-2.0%)
All	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	All	60.4	59.2 (-1.2%)	59.8 (-0.6%)	59.5 (-0.9%)	59.5 (-0.9%)	59.2 (-1.2%)	59.2 (-1.2%)	60.1 (-0.3%)
AN	All	57.6	56.3 (-1.3%)	58.2 (0.6%)	58.2 (0.6%)	58.2 (0.6%)	58.2 (0.6%)	55.1 (-2.5%)	57.0 (-0.6%)
BN	All	57.9	55.6 (-2.3%)	57.4 (-0.5%)	57.9 (0.0%)	56.9 (-0.9%)	56.5 (-1.4%)	55.1 (-2.8%)	57.4 (-0.5%)
D	All	54.9	52.1 (-2.8%)	55.6 (0.7%)	55.2 (0.3%)	55.2 (0.3%)	53.1 (-1.7%)	54.2 (-0.7%)	53.8 (-1.0%)
C	All	49.7	46.6 (-3.2%)	50.3 (0.5%)	48.1 (-1.6%)	49.2 (-0.5%)	49.7 (0.0%)	49.7 (0.0%)	48.7 (-1.1%)
All	All	56.5	54.4 (-2.1%)	56.6 (0.1%)	56.2 (-0.3%)	56.2 (-0.3%)	55.6 (-0.9%)	55.2 (-1.3%)	55.9 (-0.7%)

M.2.3.13 Largemouth Bass

M.2.3.13.1 Spawning

Water temperature related effects on largemouth bass spawning in the American River were evaluated by assessing the percent of months with water temperature outside the 52.7°F – 84.2°F observed range (Stuber et al. 1982) at Hazel Avenue and Watt Avenue (Table M.2-2).

Results outside the 52.7°F – 84.2°F water temperature range observed for largemouth bass spawning are presented in Table M.2-105 for Hazel Avenue and Table M.2-106 for Watt Avenue.

- At Hazel Avenue, the highest percent of months with water temperature outside the range was 78.6% and occurred during April of wet water years under Alternative 2 Without TUCP Systemwide VA (Table M.2-105). The lowest percent of months with water temperature outside the range was 0% and occurred during May and June of all water year types under the NAA and all alternatives. Combining water year types, the highest percent of months with water temperature outside the range occurred during April and the lowest percent of months occurred during May and June. Air temperatures drove these temporal patterns.

- At Watt Avenue, water temperature during all months and water year types was within the observed largemouth bass spawning range under the NAA and all alternatives except during April of wet years, in which 14.3% of months were outside the range under the NAA and all alternatives (Table M.2-106).

Table M.2-105. Percent (difference in percent relative to NAA) of months outside the 52.7°F – 84.2°F water temperature range observed for largemouth bass spawning by water year type and month, and for all years combined, American River at Hazel Avenue, April – June (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	4	78.6	75.0 (-3.6%)	78.6 (0.0%)	78.6 (0.0%)	78.6 (0.0%)	82.1 (3.6%)	78.6 (0.0%)	78.6 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
AN	4	69.2	53.8 (-15.4%)	69.2 (0.0%)	61.5 (-7.7%)	69.2 (0.0%)	69.2 (0.0%)	46.2 (-23.1%)	61.5 (-7.7%)
AN	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
BN	4	50.0	44.4 (-5.6%)	50.0 (0.0%)	50.0 (0.0%)	44.4 (-5.6%)	50.0 (0.0%)	38.9 (-11.1%)	55.6 (5.6%)
BN	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 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
D	4	50.0	41.7 (-8.3%)	50.0 (0.0%)	54.2 (4.2%)	54.2 (4.2%)	50.0 (0.0%)	66.7 (16.7%)	58.3 (8.3%)
D	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 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
C	4	12.5	6.3 (-6.3%)	18.8 (6.3%)	12.5 (0.0%)	12.5 (0.0%)	25.0 (12.5%)	12.5 (0.0%)	12.5 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
All	4	54.5	47.5 (-7.1%)	55.6 (1.0%)	54.5 (0.0%)	54.5 (0.0%)	57.6 (3.0%)	53.5 (-1.0%)	56.6 (2.0%)
All	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 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
W	All	26.2	25.0 (-1.2%)	26.2 (0.0%)	26.2 (0.0%)	26.2 (0.0%)	27.4 (1.2%)	26.2 (0.0%)	26.2 (0.0%)
AN	All	23.1	17.9 (-5.1%)	23.1 (0.0%)	20.5 (-2.6%)	23.1 (0.0%)	23.1 (0.0%)	15.4 (-7.7%)	20.5 (-2.6%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
BN	All	16.7	14.8 (-1.9%)	16.7 (0.0%)	16.7 (0.0%)	14.8 (-1.9%)	16.7 (0.0%)	13.0 (-3.7%)	18.5 (1.9%)
D	All	16.7	13.9 (-2.8%)	16.7 (0.0%)	18.1 (1.4%)	18.1 (1.4%)	16.7 (0.0%)	22.2 (5.6%)	19.4 (2.8%)
C	All	4.2	2.1 (-2.1%)	6.3 (2.1%)	4.2 (0.0%)	4.2 (0.0%)	8.3 (4.2%)	4.2 (0.0%)	4.2 (0.0%)
All	All	18.2	15.8 (-2.4%)	18.5 (0.3%)	18.2 (0.0%)	18.2 (0.0%)	19.2 (1.0%)	17.8 (-0.3%)	18.9 (0.7%)

Table M.2-106. Percent (difference in percent relative to NAA) of months outside the 52.7°F – 84.2°F water temperature optimal range for largemouth bass spawning by water year type and month, and for all years combined, American River at Watt Avenue, April – June (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	4	14.3	14.3 (0.0%)	14.3 (0.0%)	14.3 (0.0%)	14.3 (0.0%)	14.3 (0.0%)	14.3 (0.0%)	14.3 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
AN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
BN	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
D	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
C	4	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	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 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
C	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 (0.0%)	0.0 (0.0%)
All	4	4.0	4.0 (0.0%)	4.0 (0.0%)	4.0 (0.0%)	4.0 (0.0%)	4.0 (0.0%)	4.0 (0.0%)	4.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
All	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 (0.0%)	0.0 (0.0%)
W	All	4.8	4.8 (0.0%)	4.8 (0.0%)	4.8 (0.0%)	4.8 (0.0%)	4.8 (0.0%)	4.8 (0.0%)	4.8 (0.0%)
AN	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
D	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
C	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
All	All	1.3	1.3 (0.0%)	1.3 (0.0%)	1.3 (0.0%)	1.3 (0.0%)	1.3 (0.0%)	1.3 (0.0%)	1.3 (0.0%)

M.2.3.13.2   Non-spawning Adult

Water temperature related effects on non-spawning adult largemouth bass in the American River were evaluated by assessing the percent of months with water temperature outside the 77°F - 86°F optimal range for growth (Moyle 2002) at Hazel Avenue and Watt Avenue (Table M.2-2).

Results outside the 77°F - 86°F water temperature optimal range for growth of non-spawning adult largemouth bass are presented in Table M.2-107 for Hazel Avenue and Table M.2-108 for Watt Avenue.

- At Hazel Avenue, water temperature during all months of all water year types was outside the optimal range in 100% of months under the NAA and all alternatives (Table M.2-107).

- At Watt Avenue, water temperature during all months of all water year types was outside the optimal range in 100% of months under the NAA and all alternatives, except during July of critical water years under the NAA, Alternative 1, Alternative 2 With TUCP Without VA, Alternative 2 Without TUCP Delta VA, Alternative 2 Without TUCP Systemwide VA, and Alternative 3, in all of which 93.8%of months were outside the range (Table M.2-108).

Table M.2-107. Percent (difference in percent relative to NAA) of months outside the 77°F - 86°F water temperature optimal range for growth of non-spawning adult largemouth bass by water year type and month, and for all years combined, American River at Hazel Avenue, year-round (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
AN	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
D	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
All	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	All	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	All	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	All	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	All	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	All	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	All	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)

Table M.2-108. Percent (difference in percent relative to NAA) of months outside the 77°F - 86°F water temperature optimal range for growth of non-spawning adult largemouth bass by water year type and month, and for all years combined, American River at Watt Avenue, year-round (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
BN	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	7	93.8	93.8 (0.0%)	93.8 (0.0%)	100.0 (6.3%)	93.8 (0.0%)	93.8 (0.0%)	93.8 (0.0%)	100.0 (6.3%)
C	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
C	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	7	99.0	99.0 (0.0%)	99.0 (0.0%)	100.0 (1.0%)	99.0 (0.0%)	99.0 (0.0%)	99.0 (0.0%)	100.0 (1.0%)
All	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	All	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	All	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	All	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	All	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	All	99.5	99.5 (0.0%)	99.5 (0.0%)	100.0 (0.5%)	99.5 (0.0%)	99.5 (0.0%)	99.5 (0.0%)	100.0 (0.5%)
All	All	99.9	99.9 (0.0%)	99.9 (0.0%)	100.0 (0.1%)	99.9 (0.0%)	99.9 (0.0%)	99.9 (0.0%)	100.0 (0.1%)

M.2.3.14   Smallmouth Bass

M.2.3.14.1   Spawning

Water temperature related effects on smallmouth bass spawning in the American River were evaluated by assessing the percent of months with water temperature outside the 55°F - 70°F optimal range (Brown et al. 2009) at Hazel Avenue and Watt Avenue (Table M.2-2).

Results outside the 55°F - 70°F water temperature optimal range for smallmouth bass spawning are presented in Table M.2-109 for Hazel Avenue and Table M.2-110 for Watt Avenue.

- At Hazel Avenue, the highest percent of months with water temperature outside the range was 12.5% and occurred during July of critical water years under the NAA, Alternative 2 without TUCP Delta VA, and Alternative 2 without TUCP Systemwide VA (Table M.2-109). The lowest percent of months with water temperature outside the range was 0% and occurred during May, June, and July of at least one water year type under the NAA and all alternatives. Combining water year types, the highest percent of months with water temperature outside the range occurred in May or July depending on alternative and the lowest percent of months occurred during June under the NAA and all alternatives. Air temperatures drove this temporal pattern.

- At Watt Avenue, the highest percent of months with water temperature outside the range was 93.8% and occurred during July of critical water year types under the NAA and all alternatives except Alternative 1 and Alternative 3 (Table M.2-110). The lowest percent of months with water temperature outside the range was 0% and occurred during May and June of at least one water year type under the NAA and all alternatives. Combining water year types, the highest percent of months with water temperature outside the range occurred during July and the lowest percent of months occurred during May under the NAA and all alternatives. Air temperatures drove this temporal pattern.

Table M.2-109. Percent (difference in percent relative to NAA) of months outside the 55°F - 70°F water temperature optimal range for smallmouth bass spawning by water year type and month, and for all years combined, American River at Hazel Avenue, May – July (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	5	10.7	10.7 (0.0%)	10.7 (0.0%)	7.1 (-3.6%)	10.7 (0.0%)	10.7 (0.0%)	3.6 (-7.1%)	3.6 (-7.1%)
W	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 (0.0%)	0.0 (0.0%)
W	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
BN	7	5.6	0.0 (-5.6%)	5.6 (0.0%)	5.6 (0.0%)	5.6 (0.0%)	0.0 (-5.6%)	0.0 (-5.6%)	5.6 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	7	4.2	4.2 (0.0%)	8.3 (4.2%)	8.3 (4.2%)	8.3 (4.2%)	0.0 (-4.2%)	0.0 (-4.2%)	0.0 (-4.2%)
C	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 (0.0%)	0.0 (0.0%)
C	6	6.3	0.0 (-6.3%)	6.3 (0.0%)	6.3 (0.0%)	6.3 (0.0%)	6.3 (0.0%)	0.0 (-6.3%)	0.0 (-6.3%)
C	7	12.5	6.3 (-6.3%)	6.3 (-6.3%)	6.3 (-6.3%)	12.5 (0.0%)	12.5 (0.0%)	6.3 (-6.3%)	6.3 (-6.3%)
All	5	3.0	3.0 (0.0%)	3.0 (0.0%)	2.0 (-1.0%)	3.0 (0.0%)	3.0 (0.0%)	1.0 (-2.0%)	1.0 (-2.0%)
All	6	1.0	0.0 (-1.0%)	1.0 (0.0%)	1.0 (0.0%)	1.0 (0.0%)	1.0 (0.0%)	0.0 (-1.0%)	0.0 (-1.0%)
All	7	4.0	2.0 (-2.0%)	4.0 (0.0%)	4.0 (0.0%)	5.1 (1.0%)	2.0 (-2.0%)	1.0 (-3.0%)	2.0 (-2.0%)
W	All	3.6	3.6 (0.0%)	3.6 (0.0%)	2.4 (-1.2%)	3.6 (0.0%)	3.6 (0.0%)	1.2 (-2.4%)	1.2 (-2.4%)
AN	All	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
BN	All	1.9	0.0 (-1.9%)	1.9 (0.0%)	1.9 (0.0%)	1.9 (0.0%)	0.0 (-1.9%)	0.0 (-1.9%)	1.9 (0.0%)
D	All	1.4	1.4 (0.0%)	2.8 (1.4%)	2.8 (1.4%)	2.8 (1.4%)	0.0 (-1.4%)	0.0 (-1.4%)	0.0 (-1.4%)
C	All	6.3	2.1 (-4.2%)	4.2 (-2.1%)	4.2 (-2.1%)	6.3 (0.0%)	6.3 (0.0%)	2.1 (-4.2%)	2.1 (-4.2%)
All	All	2.7	1.7 (-1.0%)	2.7 (0.0%)	2.4 (-0.3%)	3.0 (0.3%)	2.0 (-0.7%)	0.7 (-2.0%)	1.0 (-1.7%)

Table M.2-110. Percent (difference in percent relative to NAA) of months outside the 55°F - 70°F water temperature optimal range for smallmouth bass spawning by water year type and month, and for all years combined, American River at Watt Avenue, May – July (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	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 (0.0%)	0.0 (0.0%)
W	6	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	3.6 (3.6%)	0.0 (0.0%)
W	7	17.9	25.0 (7.1%)	25.0 (7.1%)	25.0 (7.1%)	21.4 (3.6%)	17.9 (0.0%)	17.9 (0.0%)	28.6 (10.7%)
AN	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 (0.0%)	0.0 (0.0%)
AN	6	7.7	0.0 (-7.7%)	15.4 (7.7%)	15.4 (7.7%)	7.7 (0.0%)	7.7 (0.0%)	30.8 (23.1%)	7.7 (0.0%)
AN	7	23.1	23.1 (0.0%)	23.1 (0.0%)	23.1 (0.0%)	23.1 (0.0%)	23.1 (0.0%)	30.8 (7.7%)	23.1 (0.0%)
BN	5	0.0	5.6 (5.6%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
BN	6	16.7	0.0 (-16.7%)	16.7 (0.0%)	16.7 (0.0%)	16.7 (0.0%)	22.2 (5.6%)	33.3 (16.7%)	16.7 (0.0%)
BN	7	33.3	22.2 (-11.1%)	33.3 (0.0%)	38.9 (5.6%)	27.8 (-5.6%)	27.8 (-5.6%)	38.9 (5.6%)	33.3 (0.0%)
D	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 (0.0%)	0.0 (0.0%)
D	6	16.7	25.0 (8.3%)	29.2 (12.5%)	29.2 (12.5%)	25.0 (8.3%)	25.0 (8.3%)	33.3 (16.7%)	16.7 (0.0%)
D	7	37.5	29.2 (-8.3%)	37.5 (0.0%)	37.5 (0.0%)	33.3 (-4.2%)	29.2 (-8.3%)	37.5 (0.0%)	37.5 (0.0%)
C	5	6.3	43.8 (37.5%)	12.5 (6.3%)	6.3 (0.0%)	12.5 (6.3%)	12.5 (6.3%)	0.0 (-6.3%)	12.5 (6.3%)
C	6	56.3	62.5 (6.3%)	56.3 (0.0%)	62.5 (6.3%)	56.3 (0.0%)	56.3 (0.0%)	75.0 (18.8%)	68.8 (12.5%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
C	7	93.8	87.5 (-6.3%)	93.8 (0.0%)	93.8 (0.0%)	93.8 (0.0%)	93.8 (0.0%)	87.5 (-6.3%)	93.8 (0.0%)
All	5	1.0	8.1 (7.1%)	2.0 (1.0%)	1.0 (0.0%)	2.0 (1.0%)	2.0 (1.0%)	0.0 (-1.0%)	2.0 (1.0%)
All	6	17.2	16.2 (-1.0%)	21.2 (4.0%)	22.2 (5.1%)	19.2 (2.0%)	20.2 (3.0%)	31.3 (14.1%)	19.2 (2.0%)
All	7	38.4	35.4 (-3.0%)	40.4 (2.0%)	41.4 (3.0%)	37.4 (-1.0%)	35.4 (-3.0%)	39.4 (1.0%)	41.4 (3.0%)
W	All	6.0	8.3 (2.4%)	8.3 (2.4%)	8.3 (2.4%)	7.1 (1.2%)	6.0 (0.0%)	7.1 (1.2%)	9.5 (3.6%)
AN	All	10.3	7.7 (-2.6%)	12.8 (2.6%)	12.8 (2.6%)	10.3 (0.0%)	10.3 (0.0%)	20.5 (10.3%)	10.3 (0.0%)
BN	All	16.7	9.3 (-7.4%)	16.7 (0.0%)	18.5 (1.9%)	14.8 (-1.9%)	16.7 (0.0%)	24.1 (7.4%)	16.7 (0.0%)
D	All	18.1	18.1 (0.0%)	22.2 (4.2%)	22.2 (4.2%)	19.4 (1.4%)	18.1 (0.0%)	23.6 (5.6%)	18.1 (0.0%)
C	All	52.1	64.6 (12.5%)	54.2 (2.1%)	54.2 (2.1%)	54.2 (2.1%)	54.2 (2.1%)	54.2 (2.1%)	58.3 (6.3%)
All	All	18.9	19.9 (1.0%)	21.2 (2.4%)	21.5 (2.7%)	19.5 (0.7%)	19.2 (0.3%)	23.6 (4.7%)	20.9 (2.0%)

M.2.3.14.2   Non-spawning Adult

Water temperature related effects on non-spawning adult smallmouth bass in the American River were evaluated by assessing: (1) the percent of months with water temperature above the 66°F lower end of observed summer-time range (Moyle 2002); and (2) the percent of months with water temperature outside the 77°F - 80°F optimal range for growth (Moyle 2002) at Hazel Avenue and Watt Avenue (Table M.2-2).

Results above the 66°F water temperature lower end of observed summer-time range of non-spawning adult smallmouth bass are presented in Table M.2-111 for Hazel Avenue and Table M.2-112 for Watt Avenue.

- At Hazel Avenue, the highest percent of months with water temperature outside the range was 96.4% and occurred during June of wet water years under Alternative 2 Without TUCP Without VA, Alternative 3, and Alternative 4 (Table M.2-111). The lowest percent of months with water temperature outside the range was 12.5% which occurred during August of critical water years under the NAA, August of dry water years under Alt 1, and July of critical water years under Alternative 2 Without TUCP Without VA. Combining water year types, the highest percent of months with water temperature outside the range occurred during June and the lowest percent of months occurred during August under the NAA and all alternatives. Air temperatures drove this temporal pattern.

- At Watt Avenue, the highest percent of months with water temperature outside the range was 82.1% and occurred during June of wet water yearsunder the NAA and all four phases of Alternative (Table M.2-112). The lowest percent of months with water temperature outside the range was 0% which occurred during July and August of at least one water year type under the NAA and all alternatives and during June of critical water years under Alternative 2 With TUCP Without VA. Combining water year types, the highest percent of months with water temperature outside the range occurred during June and the lowest percent of months with water temperature outside the range occurred during July and August under the NAA and all alternatives. Air temperatures drove this temporal pattern.

Results outside the 77°F - 80°F water temperature optimal range for growth of smallmouth bass are presented in Table M.2-113 for Hazel Avenue and Table M.2-114 Watt Avenue.

- At Hazel Avenue, water temperature was outside the range in 100% of months during all months and water year types under the NAA and all alternatives (Table M.2-113).

- At Watt Avenue, water temperature was outside the range in 100% of months during all months of all water year types and under the NAA and all alternatives, except during July of critical water years under the NAA, Alternative 1, all phases of Alternative 2 except Alternative 2 Without TUCP Without VA, and Alternative 3 (93.8%) (Table M.2-114).

Table M.2-111. Percent (difference in percent relative to NAA) of months above the 66°F water temperature lower end of observed summer-time range of non-spawning adult smallmouth bass by water year type and month, and for all years combined, American River at Hazel Avenue, June – August (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	6	92.9	92.9 (0.0%)	92.9 (0.0%)	96.4 (3.6%)	92.9 (0.0%)	92.9 (0.0%)	96.4 (3.6%)	96.4 (3.6%)
W	7	57.1	57.1 (0.0%)	57.1 (0.0%)	53.6 (-3.6%)	60.7 (3.6%)	67.9 (10.7%)	50.0 (-7.1%)	53.6 (-3.6%)
W	8	17.9	21.4 (3.6%)	14.3 (-3.6%)	17.9 (0.0%)	14.3 (-3.6%)	17.9 (0.0%)	28.6 (10.7%)	17.9 (0.0%)
AN	6	76.9	76.9 (0.0%)	76.9 (0.0%)	76.9 (0.0%)	76.9 (0.0%)	84.6 (7.7%)	84.6 (7.7%)	76.9 (0.0%)
AN	7	38.5	53.8 (15.4%)	46.2 (7.7%)	38.5 (0.0%)	38.5 (0.0%)	53.8 (15.4%)	46.2 (7.7%)	38.5 (0.0%)
AN	8	38.5	38.5 (0.0%)	46.2 (7.7%)	46.2 (7.7%)	38.5 (0.0%)	53.8 (15.4%)	46.2 (7.7%)	46.2 (7.7%)
BN	6	77.8	83.3 (5.6%)	77.8 (0.0%)	77.8 (0.0%)	66.7 (-11.1%)	61.1 (-16.7%)	83.3 (5.6%)	72.2 (-5.6%)
BN	7	44.4	72.2 (27.8%)	38.9 (-5.6%)	38.9 (-5.6%)	38.9 (-5.6%)	44.4 (0.0%)	38.9 (-5.6%)	61.1 (16.7%)
BN	8	27.8	55.6 (27.8%)	33.3 (5.6%)	27.8 (0.0%)	33.3 (5.6%)	33.3 (5.6%)	33.3 (5.6%)	33.3 (5.6%)
D	6	95.8	91.7 (-4.2%)	91.7 (-4.2%)	87.5 (-8.3%)	79.2 (-16.7%)	83.3 (-12.5%)	91.7 (-4.2%)	83.3 (-12.5%)
D	7	54.2	62.5 (8.3%)	50.0 (-4.2%)	50.0 (-4.2%)	50.0 (-4.2%)	50.0 (-4.2%)	50.0 (-4.2%)	54.2 (0.0%)
D	8	25.0	12.5 (-12.5%)	25.0 (0.0%)	25.0 (0.0%)	20.8 (-4.2%)	25.0 (0.0%)	25.0 (0.0%)	20.8 (-4.2%)
C	6	68.8	62.5 (-6.3%)	50.0 (-18.8%)	68.8 (0.0%)	50.0 (-18.8%)	68.8 (0.0%)	62.5 (-6.3%)	68.8 (0.0%)
C	7	25.0	25.0 (0.0%)	25.0 (0.0%)	12.5 (-12.5%)	31.3 (6.3%)	18.8 (-6.3%)	18.8 (-6.3%)	31.3 (6.3%)
C	8	12.5	18.8 (6.3%)	25.0 (12.5%)	25.0 (12.5%)	31.3 (18.8%)	18.8 (6.3%)	18.8 (6.3%)	31.3 (18.8%)
All	6	84.8	83.8 (-1.0%)	80.8 (-4.0%)	83.8 (-1.0%)	75.8 (-9.1%)	79.8 (-5.1%)	85.9 (1.0%)	81.8 (-3.0%)
All	7	46.5	55.6 (9.1%)	45.5 (-1.0%)	41.4 (-5.1%)	46.5 (0.0%)	49.5 (3.0%)	42.4 (-4.0%)	49.5 (3.0%)
All	8	23.2	27.3 (4.0%)	26.3 (3.0%)	26.3 (3.0%)	25.3 (2.0%)	27.3 (4.0%)	29.3 (6.1%)	27.3 (4.0%)
W	All	56.0	57.1 (1.2%)	54.8 (-1.2%)	56.0 (0.0%)	56.0 (0.0%)	59.5 (3.6%)	58.3 (2.4%)	56.0 (0.0%)
AN	All	51.3	56.4 (5.1%)	56.4 (5.1%)	53.8 (2.6%)	51.3 (0.0%)	64.1 (12.8%)	59.0 (7.7%)	53.8 (2.6%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
BN	All	50.0	70.4 (20.4%)	50.0 (0.0%)	48.1 (-1.9%)	46.3 (-3.7%)	46.3 (-3.7%)	51.9 (1.9%)	55.6 (5.6%)
D	All	58.3	55.6 (-2.8%)	55.6 (-2.8%)	54.2 (-4.2%)	50.0 (-8.3%)	52.8 (-5.6%)	55.6 (-2.8%)	52.8 (-5.6%)
C	All	35.4	35.4 (0.0%)	33.3 (-2.1%)	35.4 (0.0%)	37.5 (2.1%)	35.4 (0.0%)	33.3 (-2.1%)	43.8 (8.3%)
All	All	51.5	55.6 (4.0%)	50.8 (-0.7%)	50.5 (-1.0%)	49.2 (-2.4%)	52.2 (0.7%)	52.5 (1.0%)	52.9 (1.3%)

Table M.2-112. Percent (difference in percent relative to NAA) of months above the 66°F water temperature lower end of observed summer-time range of non-spawning adult smallmouth bass by water year type and month, and for all years combined, American River at Watt Avenue, June – August (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	6	82.1	71.4 (-10.7%)	82.1 (0.0%)	82.1 (0.0%)	82.1 (0.0%)	82.1 (0.0%)	67.9 (-14.3%)	75.0 (-7.1%)
W	7	3.6	3.6 (0.0%)	3.6 (0.0%)	3.6 (0.0%)	3.6 (0.0%)	3.6 (0.0%)	0.0 (-3.6%)	3.6 (0.0%)
W	8	0.0	7.1 (7.1%)	3.6 (3.6%)	3.6 (3.6%)	0.0 (0.0%)	0.0 (0.0%)	10.7 (10.7%)	3.6 (3.6%)
AN	6	46.2	46.2 (0.0%)	38.5 (-7.7%)	38.5 (-7.7%)	38.5 (-7.7%)	38.5 (-7.7%)	15.4 (-30.8%)	38.5 (-7.7%)
AN	7	0.0	7.7 (7.7%)	7.7 (7.7%)	7.7 (7.7%)	7.7 (7.7%)	7.7 (7.7%)	0.0 (0.0%)	0.0 (0.0%)
AN	8	0.0	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	7.7 (7.7%)	7.7 (7.7%)
BN	6	16.7	33.3 (16.7%)	22.2 (5.6%)	22.2 (5.6%)	16.7 (0.0%)	16.7 (0.0%)	5.6 (-11.1%)	27.8 (11.1%)
BN	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 (0.0%)	0.0 (0.0%)
BN	8	0.0	5.6 (5.6%)	5.6 (5.6%)	5.6 (5.6%)	5.6 (5.6%)	5.6 (5.6%)	0.0 (0.0%)	5.6 (5.6%)
D	6	25.0	20.8 (-4.2%)	16.7 (-8.3%)	12.5 (-12.5%)	20.8 (-4.2%)	20.8 (-4.2%)	16.7 (-8.3%)	8.3 (-16.7%)
D	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 (0.0%)	0.0 (0.0%)
D	8	0.0	0.0 (0.0%)	0.0 (0.0%)	4.2 (4.2%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	4.2 (4.2%)
C	6	6.3	12.5 (6.3%)	0.0 (-6.3%)	12.5 (6.3%)	6.3 (0.0%)	6.3 (0.0%)	6.3 (0.0%)	12.5 (6.3%)
C	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 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
C	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 (0.0%)	0.0 (0.0%)
All	6	39.4	39.4 (0.0%)	36.4 (-3.0%)	37.4 (-2.0%)	37.4 (-2.0%)	37.4 (-2.0%)	27.3 (-12.1%)	35.4 (-4.0%)
All	7	1.0	2.0 (1.0%)	2.0 (1.0%)	2.0 (1.0%)	2.0 (1.0%)	2.0 (1.0%)	0.0 (-1.0%)	1.0 (0.0%)
All	8	0.0	3.0 (3.0%)	2.0 (2.0%)	3.0 (3.0%)	1.0 (1.0%)	1.0 (1.0%)	4.0 (4.0%)	4.0 (4.0%)
W	All	28.6	27.4 (-1.2%)	29.8 (1.2%)	29.8 (1.2%)	28.6 (0.0%)	28.6 (0.0%)	26.2 (-2.4%)	27.4 (-1.2%)
AN	All	15.4	17.9 (2.6%)	15.4 (0.0%)	15.4 (0.0%)	15.4 (0.0%)	15.4 (0.0%)	7.7 (-7.7%)	15.4 (0.0%)
BN	All	5.6	13.0 (7.4%)	9.3 (3.7%)	9.3 (3.7%)	7.4 (1.9%)	7.4 (1.9%)	1.9 (-3.7%)	11.1 (5.6%)
D	All	8.3	6.9 (-1.4%)	5.6 (-2.8%)	5.6 (-2.8%)	6.9 (-1.4%)	6.9 (-1.4%)	5.6 (-2.8%)	4.2 (-4.2%)
C	All	2.1	4.2 (2.1%)	0.0 (-2.1%)	4.2 (2.1%)	2.1 (0.0%)	2.1 (0.0%)	2.1 (0.0%)	4.2 (2.1%)
All	All	13.5	14.8 (1.3%)	13.5 (0.0%)	14.1 (0.7%)	13.5 (0.0%)	13.5 (0.0%)	10.4 (-3.0%)	13.5 (0.0%)

Table M.2-113. Percent (difference in percent relative to NAA) of months outside the 77°F - 80°F water temperature optimal range for smallmouth bass spawning by water year type and month, and for all years combined, American River at Hazel Avenue year-round (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
BN	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
C	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	All	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	All	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	All	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	All	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	All	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
All	All	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)

Table M.2-114. Percent (difference in percent relative to NAA) of months outside the 77°F - 80°F water temperature optimal range for smallmouth bass spawning by water year type and month, and for all years combined, American River at Watt Avenue, year-round (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
AN	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
D	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	7	93.8	93.8 (0.0%)	93.8 (0.0%)	100.0 (6.3%)	93.8 (0.0%)	93.8 (0.0%)	93.8 (0.0%)	100.0 (6.3%)
C	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	1	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	2	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	3	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
All	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	5	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	7	99.0	99.0 (0.0%)	99.0 (0.0%)	100.0 (1.0%)	99.0 (0.0%)	99.0 (0.0%)	99.0 (0.0%)	100.0 (1.0%)
All	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	9	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	10	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	11	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	12	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	All	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	All	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	All	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	All	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	All	99.5	99.5 (0.0%)	99.5 (0.0%)	100.0 (0.5%)	99.5 (0.0%)	99.5 (0.0%)	99.5 (0.0%)	100.0 (0.5%)
All	All	99.9	99.9 (0.0%)	99.9 (0.0%)	100.0 (0.1%)	99.9 (0.0%)	99.9 (0.0%)	99.9 (0.0%)	100.0 (0.1%)

M.2.3.15 Spotted Bass

M.2.3.15.1 Spawning

Water temperature related effects on spotted bass spawning in the American River were evaluated by assessing the percent of months with water temperature outside the 58.1°F – 73.4°F (Aasen and Henry 1981) at Hazel Avenue and Watt Avenue (Table M.2-2).

Results outside the 58.1°F – 73.4°F water temperature optimal range for spotted bass spawning are presented in Table M.2-115 for Hazel Avenue and Table M.2-116 for Watt Avenue.

- At Hazel Avenue, the highest percent of months with water temperature outside the range was 100% and occurred during April of at least three water year types under the NAA and all alternatives (Table M.2-115). The lowest percent of months except wet years with water temperature outside the range was 0% and occurred during June of all water year types except wet years under the NAA and all alternatives. Combining water year types, the highest percent of months with water temperature outside the range occurred during April and the lowest percent of months occurred during June under the NAA and all alternatives.

- At Watt Avenue, the highest percent of months with water temperature outside the range was 100% and occurred in April of wet water years under the NAA and all alternatives except Alternative 1, and during April of above normal and below normal water years under Alternative 3 (Table M.2-116). The lowest percent of months with water temperature outside the range was 0% and occurred during May and June of at least one water year types under the NAA and all alternatives. Combining water year types, the highest percent of months with water temperature outside the range occurred during in April, and the lowest percent of months occurred during in June.

Table M.2-115. Percent (difference in percent relative to NAA) of months outside the 58.1°F – 73.4°F water temperature for spotted bass spawning by water year type and month, and for all years combined, American River at Hazel Avenue, April – June (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	5	85.7	85.7 (0.0%)	85.7 (0.0%)	85.7 (0.0%)	85.7 (0.0%)	85.7 (0.0%)	75.0 (-10.7%)	85.7 (0.0%)
W	6	7.1	7.1 (0.0%)	7.1 (0.0%)	7.1 (0.0%)	7.1 (0.0%)	3.6 (-3.6%)	3.6 (-3.6%)	0.0 (-7.1%)
AN	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	5	61.5	69.2 (7.7%)	69.2 (7.7%)	69.2 (7.7%)	69.2 (7.7%)	69.2 (7.7%)	15.4 (-46.2%)	69.2 (7.7%)
AN	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 (0.0%)	0.0 (0.0%)
BN	4	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	5	61.1	50.0 (-11.1%)	61.1 (0.0%)	55.6 (-5.6%)	61.1 (0.0%)	50.0 (-11.1%)	33.3 (-27.8%)	50.0 (-11.1%)
BN	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 (0.0%)	0.0 (0.0%)
D	4	100.0	91.7 (-8.3%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	5	33.3	25.0 (-8.3%)	25.0 (-8.3%)	25.0 (-8.3%)	29.2 (-4.2%)	20.8 (-12.5%)	20.8 (-12.5%)	16.7 (-16.7%)
D	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 (0.0%)	0.0 (0.0%)
C	4	100.0	93.8 (-6.3%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	5	18.8	12.5 (-6.3%)	0.0 (-18.8%)	25.0 (6.3%)	0.0 (-18.8%)	0.0 (-18.8%)	18.8 (0.0%)	18.8 (0.0%)
C	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 (0.0%)	0.0 (0.0%)
All	4	100.0	97.0 (-3.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	5	54.5	50.5 (-4.0%)	50.5 (-4.0%)	53.5 (-1.0%)	51.5 (-3.0%)	47.5 (-7.1%)	37.4 (-17.2%)	49.5 (-5.1%)
All	6	2.0	2.0 (0.0%)	2.0 (0.0%)	2.0 (0.0%)	2.0 (0.0%)	1.0 (-1.0%)	1.0 (-1.0%)	0.0 (-2.0%)
W	All	64.3	64.3 (0.0%)	64.3 (0.0%)	64.3 (0.0%)	64.3 (0.0%)	63.1 (-1.2%)	59.5 (-4.8%)	61.9 (-2.4%)
AN	All	53.8	56.4 (2.6%)	56.4 (2.6%)	56.4 (2.6%)	56.4 (2.6%)	56.4 (2.6%)	38.5 (-15.4%)	56.4 (2.6%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
BN	All	53.7	50.0 (-3.7%)	53.7 (0.0%)	51.9 (-1.9%)	53.7 (0.0%)	50.0 (-3.7%)	44.4 (-9.3%)	50.0 (-3.7%)
D	All	44.4	38.9 (-5.6%)	41.7 (-2.8%)	41.7 (-2.8%)	43.1 (-1.4%)	40.3 (-4.2%)	40.3 (-4.2%)	38.9 (-5.6%)
C	All	39.6	35.4 (-4.2%)	33.3 (-6.3%)	41.7 (2.1%)	33.3 (-6.3%)	33.3 (-6.3%)	39.6 (0.0%)	39.6 (0.0%)
All	All	52.2	49.8 (-2.4%)	50.8 (-1.3%)	51.9 (-0.3%)	51.2 (-1.0%)	49.5 (-2.7%)	46.1 (-6.1%)	49.8 (-2.4%)

Table M.2-116. Percent (difference in percent relative to NAA) of months outside the 58.1°F – 73.4°F water temperature for spotted bass spawning by water year type and month, and for all years combined, American River at Watt Avenue, April – June (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	4	100.0	96.4 (-3.6%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	5	42.9	42.9 (0.0%)	42.9 (0.0%)	42.9 (0.0%)	42.9 (0.0%)	42.9 (0.0%)	39.3 (-3.6%)	39.3 (-3.6%)
W	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 (0.0%)	0.0 (0.0%)
AN	4	84.6	76.9 (-7.7%)	84.6 (0.0%)	84.6 (0.0%)	84.6 (0.0%)	92.3 (7.7%)	100.0 (15.4%)	84.6 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
AN	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 (0.0%)	0.0 (0.0%)
BN	4	72.2	72.2 (0.0%)	66.7 (-5.6%)	66.7 (-5.6%)	61.1 (-11.1%)	72.2 (0.0%)	100.0 (27.8%)	72.2 (0.0%)
BN	5	5.6	5.6 (0.0%)	5.6 (0.0%)	5.6 (0.0%)	5.6 (0.0%)	5.6 (0.0%)	5.6 (0.0%)	5.6 (0.0%)
BN	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 (0.0%)	0.0 (0.0%)
D	4	66.7	62.5 (-4.2%)	62.5 (-4.2%)	62.5 (-4.2%)	62.5 (-4.2%)	66.7 (0.0%)	87.5 (20.8%)	62.5 (-4.2%)
D	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 (0.0%)	0.0 (0.0%)
D	6	0.0	4.2 (4.2%)	4.2 (4.2%)	4.2 (4.2%)	4.2 (4.2%)	4.2 (4.2%)	12.5 (12.5%)	4.2 (4.2%)
C	4	12.5	62.5 (50.0%)	50.0 (37.5%)	6.3 (-6.3%)	43.8 (31.3%)	50.0 (37.5%)	25.0 (12.5%)	12.5 (0.0%)
C	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 (0.0%)	0.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
C	6	12.5	12.5 (0.0%)	25.0 (12.5%)	18.8 (6.3%)	25.0 (12.5%)	25.0 (12.5%)	12.5 (0.0%)	18.8 (6.3%)
All	4	70.7	75.8 (5.1%)	74.7 (4.0%)	67.7 (-3.0%)	72.7 (2.0%)	77.8 (7.1%)	84.8 (14.1%)	69.7 (-1.0%)
All	5	13.1	13.1 (0.0%)	13.1 (0.0%)	13.1 (0.0%)	13.1 (0.0%)	13.1 (0.0%)	12.1 (-1.0%)	12.1 (-1.0%)
All	6	2.0	3.0 (1.0%)	5.1 (3.0%)	4.0 (2.0%)	5.1 (3.0%)	5.1 (3.0%)	5.1 (3.0%)	4.0 (2.0%)
W	All	47.6	46.4 (-1.2%)	47.6 (0.0%)	47.6 (0.0%)	47.6 (0.0%)	47.6 (0.0%)	46.4 (-1.2%)	46.4 (-1.2%)
AN	All	28.2	25.6 (-2.6%)	28.2 (0.0%)	28.2 (0.0%)	28.2 (0.0%)	30.8 (2.6%)	33.3 (5.1%)	28.2 (0.0%)
BN	All	25.9	25.9 (0.0%)	24.1 (-1.9%)	24.1 (-1.9%)	22.2 (-3.7%)	25.9 (0.0%)	35.2 (9.3%)	25.9 (0.0%)
D	All	22.2	22.2 (0.0%)	22.2 (0.0%)	22.2 (0.0%)	22.2 (0.0%)	23.6 (1.4%)	33.3 (11.1%)	22.2 (0.0%)
C	All	8.3	25.0 (16.7%)	25.0 (16.7%)	8.3 (0.0%)	22.9 (14.6%)	25.0 (16.7%)	12.5 (4.2%)	10.4 (2.1%)
All	All	28.6	30.6 (2.0%)	31.0 (2.4%)	28.3 (-0.3%)	30.3 (1.7%)	32.0 (3.4%)	34.0 (5.4%)	28.6 (0.0%)

M.2.3.15.2 Non-spawning Adult

Water temperature related effects on non-spawning adult spotted bass in the American River were evaluated by assessing the percent of months with water temperature outside the 75°F - 87°F preferred summer-time range (Moyle 2002) at Hazel Avenue and Watt Avenue (Table M.2-2).

Results outside the 75°F - 87°F water temperature preferred summertime range for non-spawning adult spotted bass are presented in Table M.2-117 for Hazel Avenue and Table M.2-118 for Watt Avenue.

- At Hazel Avenue, water temperatures were outside the range in 100% of months during all months of all water year types under the NAA and all alternatives (Table M.2-117).

- At Watt Avenue, the highest percent of months with water temperature outside the range was 100% and occurred during June through August of at least four water year types under the NAA and all alternatives all months (Table M.2-118). The lowest percent of months with water temperature outside the range was 81.3% and occurred during July of critical water years under Alternative 2 Without TUCP Systemwide VA, Alternative 3 and Alternative 4. Combing water year types, the highest and lowest percent of months with water temperature outside the range occurred during June and/or August depending on alternative.

Table M.2-117. Percent (difference in percent relative to NAA) of months outside the 75°F - 87°F water temperature preferred summer-time range for non-spawning adult spotted bass by water year type and month, and for all years combined, American River at Hazel Avenue, June – August (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	All	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	All	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
BN	All	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	All	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	All	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
All	All	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)

Table M.2-118. Percent (difference in percent relative to NAA) of months outside the 75°F - 87°F water temperature preferred summer-time range for non-spawning adult spotted bass by water year type and month, and for all years combined, American River at Watt Avenue, June – August (EIS Scenarios).

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
W	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
W	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	8	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	6	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	7	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	8	100.0	95.8 (-4.2%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	6	100.0	93.8 (-6.3%)	93.8 (-6.3%)	93.8 (-6.3%)	93.8 (-6.3%)	93.8 (-6.3%)	93.8 (-6.3%)	87.5 (-12.5%)
C	7	93.8	87.5 (-6.3%)	87.5 (-6.3%)	87.5 (-6.3%)	87.5 (-6.3%)	81.3 (-12.5%)	81.3 (-12.5%)	81.3 (-12.5%)

WYT	Month	NAA	Alt1	Alt2wTUCP woVA	Alt2woTUCP woVA	Alt2woTUCP DeltaVA	Alt2woTUCP AllVA	Alt3	Alt4
C	8	100.0	100.0 (0.0%)	87.5 (-12.5%)	93.8 (-6.3%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	93.8 (-6.3%)
All	6	100.0	99.0 (-1.0%)	99.0 (-1.0%)	99.0 (-1.0%)	99.0 (-1.0%)	99.0 (-1.0%)	99.0 (-1.0%)	98.0 (-2.0%)
All	7	99.0	98.0 (-1.0%)	98.0 (-1.0%)	98.0 (-1.0%)	98.0 (-1.0%)	97.0 (-2.0%)	97.0 (-2.0%)	97.0 (-2.0%)
All	8	100.0	99.0 (-1.0%)	98.0 (-2.0%)	99.0 (-1.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	99.0 (-1.0%)
W	All	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
AN	All	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
BN	All	100.0	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
D	All	100.0	98.6 (-1.4%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)	100.0 (0.0%)
C	All	97.9	93.8 (-4.2%)	89.6 (-8.3%)	91.7 (-6.3%)	93.8 (-4.2%)	91.7 (-6.3%)	91.7 (-6.3%)	87.5 (-10.4%)
All	All	99.7	98.7 (-1.0%)	98.3 (-1.3%)	98.7 (-1.0%)	99.0 (-0.7%)	98.7 (-1.0%)	98.7 (-1.0%)	98.0 (-1.7%)

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