Appendix Y

Scenario Results for the Non-Pilot Watersheds

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Georgia-Florida Coastal Basins 35
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Lake Erie-St. Clair Basin 71
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Sacramento River Watershed 174
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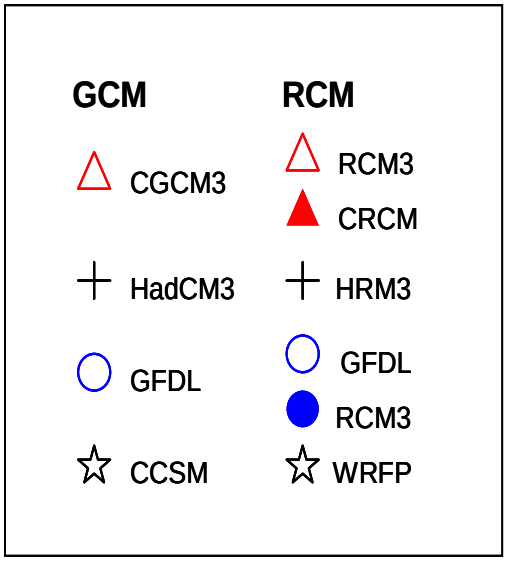
LEGEND:



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Coastal Southern California Watersheds

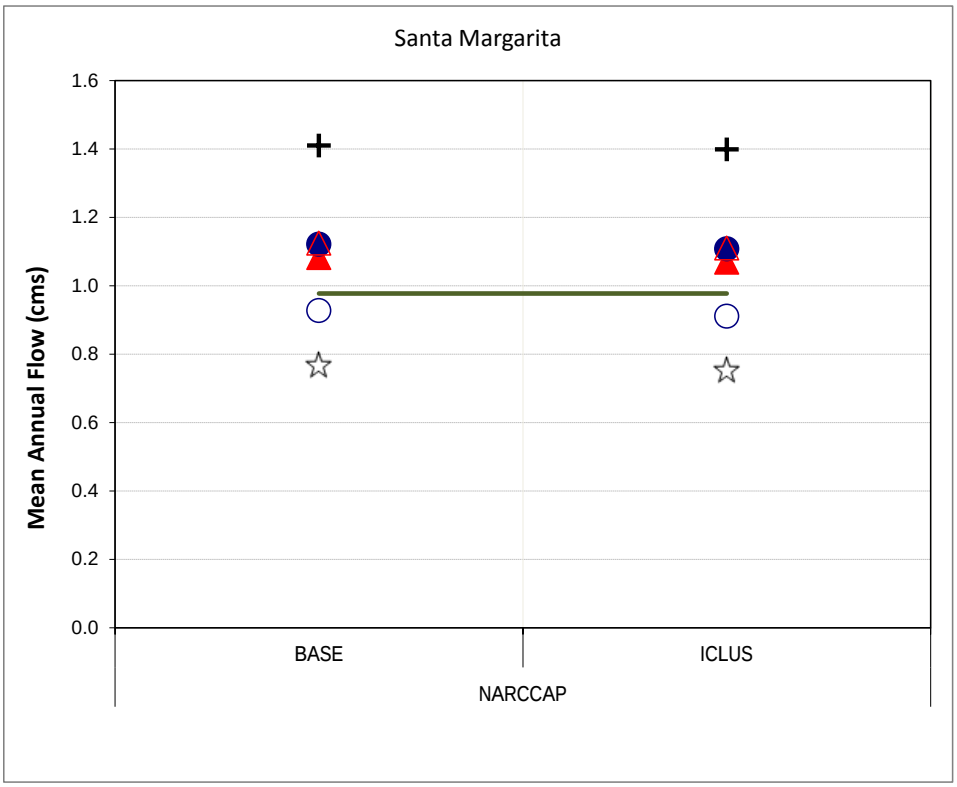
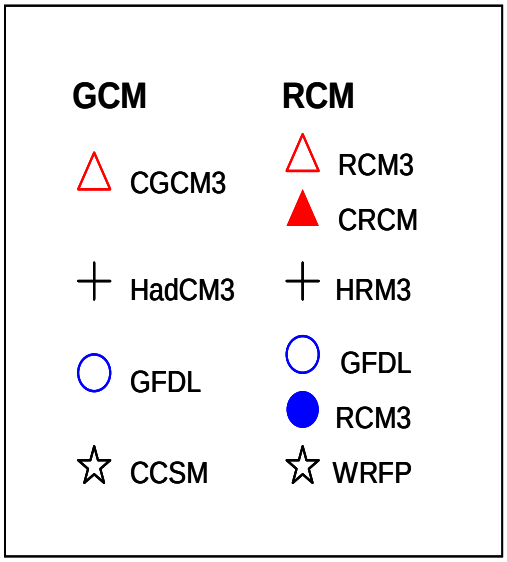


Figure 1. Mean annual flow (cms), Santa Margarita River (SWAT)



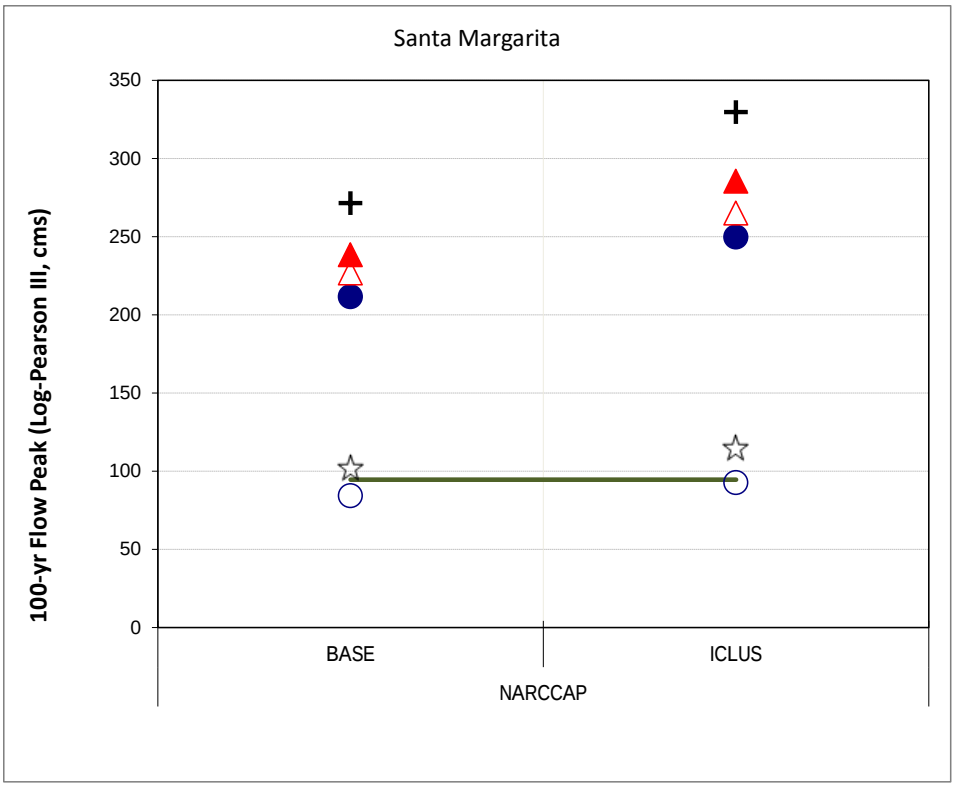


Figure 2. **100-yr Flow Peak (Log-Pearson III, cms), Santa Margarita River (SWAT)**

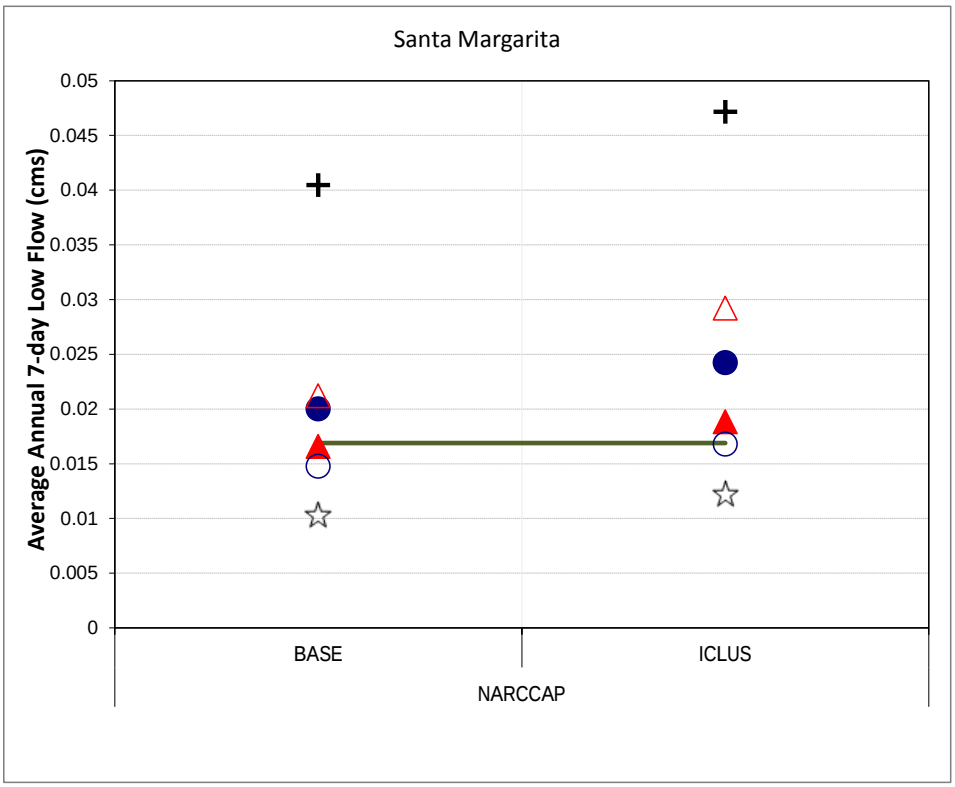


Figure 3. **Average Annual 7-day Low Flow (cms), Santa Margarita River (SWAT)**

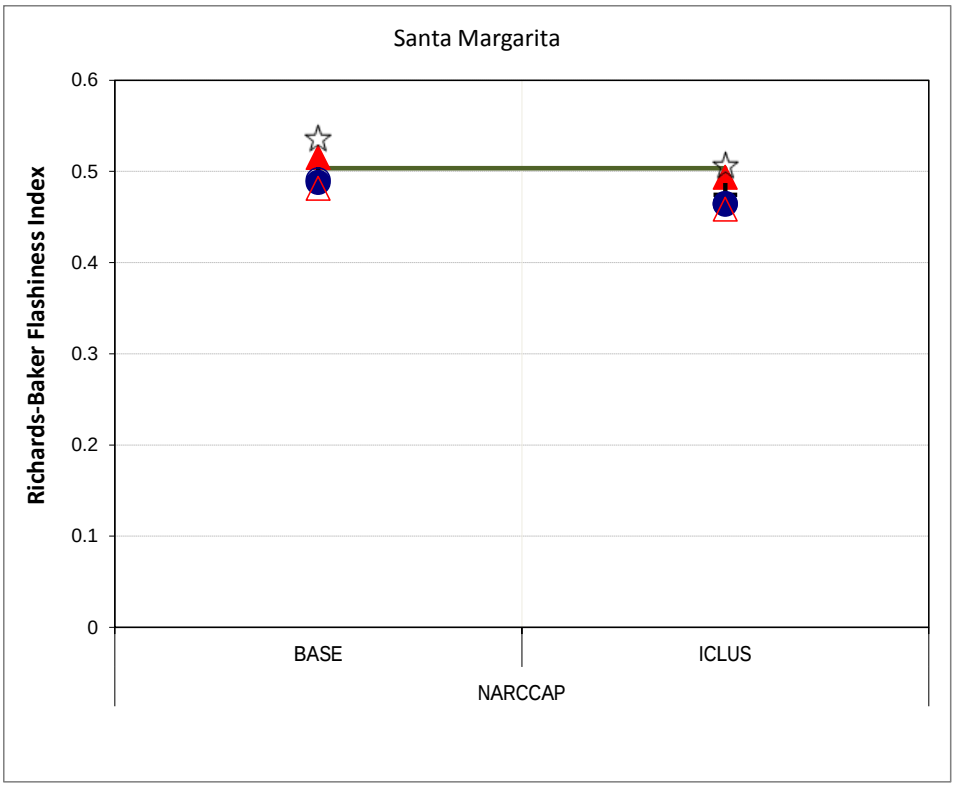


Figure 4. Richards-Baker Flashiness Index, Average Annual 7-day Low Flow (cms), Santa Margarita River (SWAT)

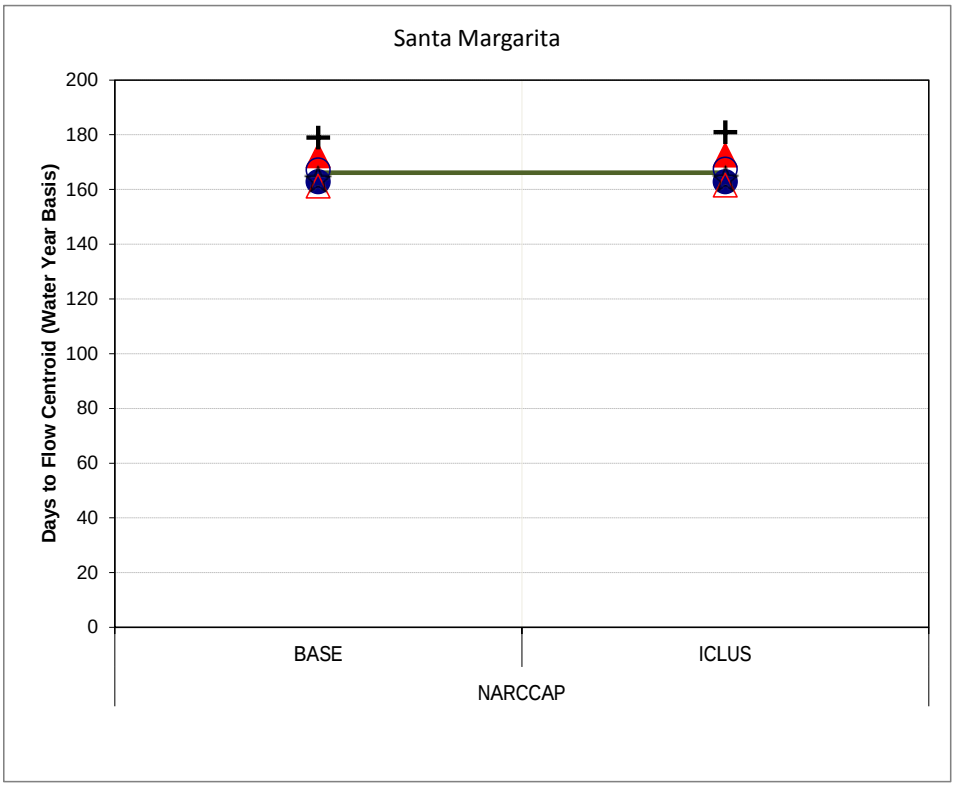


Figure 5. Days to Flow Centroid (Water Year Basis), Santa Margarita River (SWAT)

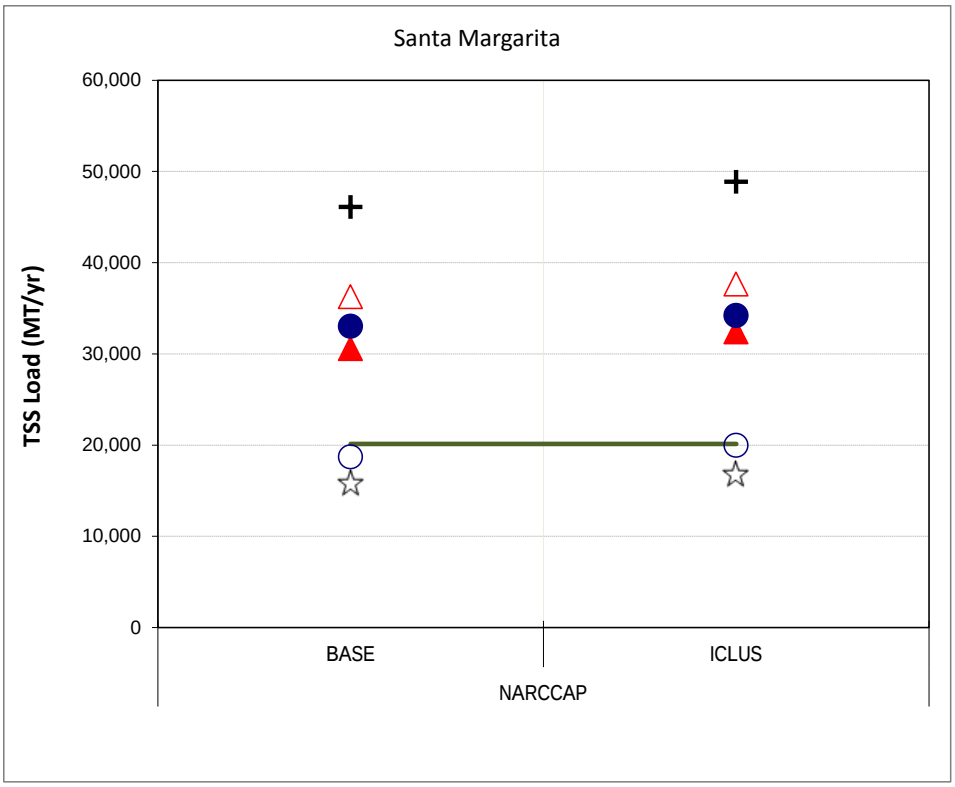


Figure 6. TSS Load (MT/yr), Santa Margarita River (SWAT)

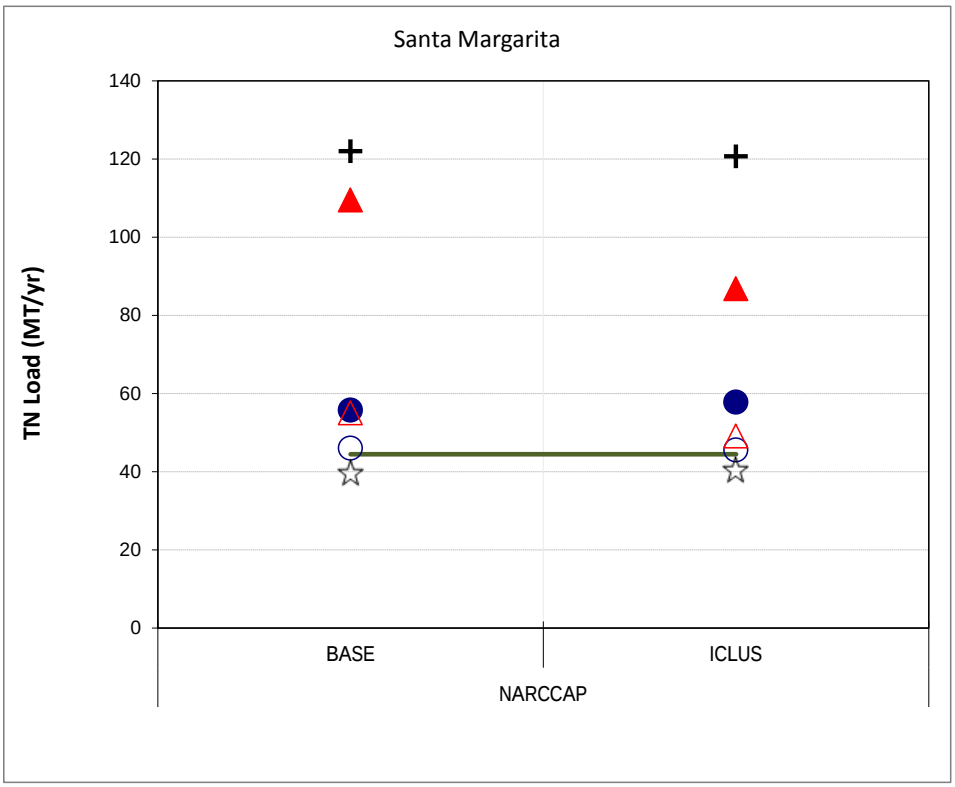


Figure 7. TN Load (MT/yr), Santa Margarita River (SWAT)

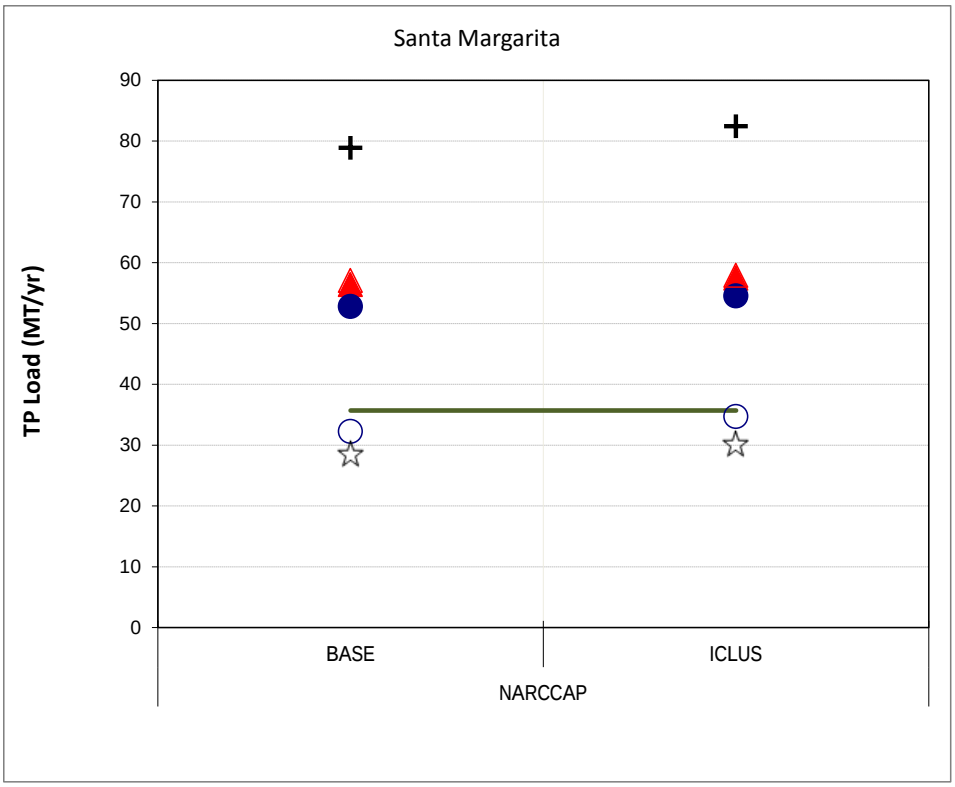


Figure 8. TP Load (MT/yr), Santa Margarita River (SWAT)

Table 1. Summary of range of change relative to existing conditions for NARCCAP dynamically downscaled scenarios, Coastal Southern California basins SWAT model

	Results without LU change				Results with LU change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
Ventura River HUC 1807010								
Flow	-6.97%	-4.45%	1.93%	24.41%	-8.98%	-6.25%	-0.14%	21.98%
TSS	-18.83%	-9.61%	4.66%	61.06%	-11.51%	-3.99%	10.99%	70.69%
TN	1.40%	16.53%	19.95%	41.86%	-4.32%	15.73%	14.87%	34.38%
TP	-10.69%	6.90%	11.25%	36.48%	-9.83%	12.42%	10.00%	32.22%
Santa Clara HUC 18070102								
Flow	-9.40%	0.69%	2.81%	21.67%	-13.62%	-4.41%	-2.00%	16.57%
TSS	-31.29%	-19.22%	-17.82%	5.53%	-36.07%	-25.28%	-23.92%	-2.31%
TN	-10.46%	-6.48%	-6.37%	-0.23%	-13.77%	-10.86%	-9.61%	0.15%
TP	-70.02%	-66.08%	-65.68%	-57.92%	-70.63%	-67.29%	-66.64%	-58.83%
Calleguas HUC 18070103								
Flow	-11.30%	0.42%	2.33%	24.17%	-17.87%	-7.20%	-5.14%	14.72%
TSS	-4.20%	2.99%	12.58%	70.34%	-9.45%	-2.67%	5.66%	56.17%
TN	-0.79%	3.25%	8.41%	38.23%	-1.50%	2.41%	5.36%	23.31%
TP	-10.49%	2.85%	9.60%	59.30%	-17.10%	-4.53%	1.04%	40.75%
Los Angeles HUC 18070105								
Flow	-15.87%	2.80%	4.30%	37.89%	-18.50%	-0.63%	1.11%	34.64%
TSS	-35.29%	-19.33%	-18.02%	10.98%	-36.71%	-21.50%	-19.74%	10.97%
TN	-9.75%	-0.09%	9.06%	39.81%	-17.07%	-2.52%	5.67%	36.96%
TP	-46.85%	-38.86%	-35.25%	-12.03%	-47.04%	-35.50%	-31.18%	-3.79%
San Gabriel HUC 18070106								
Flow	-10.97%	2.25%	3.71%	25.91%	-12.23%	0.68%	2.20%	24.32%
TSS	-46.48%	-33.68%	-30.44%	-0.95%	-46.72%	-34.15%	-30.68%	-0.68%
TN	-4.55%	-3.02%	-2.06%	3.79%	-5.60%	-4.09%	-3.12%	2.80%
TP	-31.36%	-18.19%	-15.99%	9.90%	-33.83%	-21.16%	-18.30%	9.20%
San Jacinto HUC 18070202								
Flow	-26.91%	13.96%	13.70%	62.19%	-33.66%	4.16%	3.95%	48.71%
TSS	-29.47%	30.18%	32.03%	115.28%	-38.69%	14.54%	16.01%	89.84%
TN	52.93%	114.81%	163.48%	473.72%	43.09%	128.20%	164.27%	466.14%
TP	-16.17%	40.99%	48.26%	148.01%	-18.05%	22.10%	31.58%	124.47%
Santa Ana HUC 18070203								
Flow	-17.57%	11.28%	13.34%	56.22%	-22.45%	4.51%	6.64%	46.75%
TSS	-17.88%	14.58%	16.54%	64.12%	-22.71%	6.92%	9.40%	52.57%
TN	14.95%	49.96%	56.12%	144.14%	32.98%	77.79%	88.47%	208.75%
TP	-11.22%	25.87%	28.55%	88.59%	-9.68%	30.87%	31.92%	97.83%
Newport Bay HUC 18070204								
Flow	-16.15%	0.13%	3.74%	37.46%	-18.48%	-3.44%	-0.03%	31.52%

	Results without LU change				Results with LU change			
	Min	**Median**	**Mean**	**Max**	**Min**	**Median**	**Mean**	**Max**
TSS	-21.33%	3.64%	8.69%	55.79%	-21.50%	-1.30%	3.39%	44.39%
TN	7.48%	23.29%	45.09%	174.31%	9.53%	24.60%	50.29%	190.28%
TP	-10.91%	12.80%	25.25%	111.24%	-6.18%	11.34%	26.90%	122.82%
Santa Margarita HUC 18070302								
Flow	-21.03%	12.76%	9.79%	44.30%	-24.27%	8.77%	5.84%	39.81%
TSS	-20.57%	58.05%	49.64%	129.12%	-24.97%	47.01%	39.83%	115.71%
TN	-10.04%	24.47%	60.42%	174.21%	-17.61%	8.10%	35.06%	144.07%
TP	-19.56%	53.00%	42.96%	121.01%	-21.32%	45.06%	37.06%	113.56%
Santa Ana at MWD (Gage 11066460)								
Flow	-10.41%	2.18%	3.62%	21.08%	-12.23%	0.43%	1.73%	18.88%
TSS	-22.83%	-2.88%	-1.15%	21.77%	-23.01%	-2.98%	-1.69%	20.54%
TN	0.13%	3.40%	3.29%	5.51%	1.65%	6.08%	6.13%	8.87%
TP	-10.55%	0.59%	2.69%	20.77%	-7.75%	2.48%	4.30%	21.85%
Santa Clara at Piru (Gage 11109000)								
Flow	-13.99%	3.78%	4.73%	34.04%	-18.83%	-1.35%	-0.26%	29.08%
TSS	-18.30%	3.45%	8.02%	53.98%	-21.49%	-0.85%	3.55%	47.19%
TN	-3.07%	2.19%	6.65%	33.14%	-12.87%	-7.62%	-0.49%	40.07%
TP	-21.57%	1.53%	10.96%	69.37%	-25.97%	-4.58%	4.45%	61.09%
Santa Margarita nr Temecula (Gage 1104400)								
Flow	-21.99%	31.46%	26.94%	81.69%	-28.25%	21.51%	17.40%	69.34%
TSS	-20.54%	49.13%	41.71%	110.32%	-24.68%	36.25%	30.04%	91.47%
TN	-14.68%	70.49%	96.33%	289.14%	-24.59%	46.71%	68.34%	231.33%
TP	-22.14%	61.06%	53.75%	141.38%	-22.61%	56.67%	50.73%	142.63%

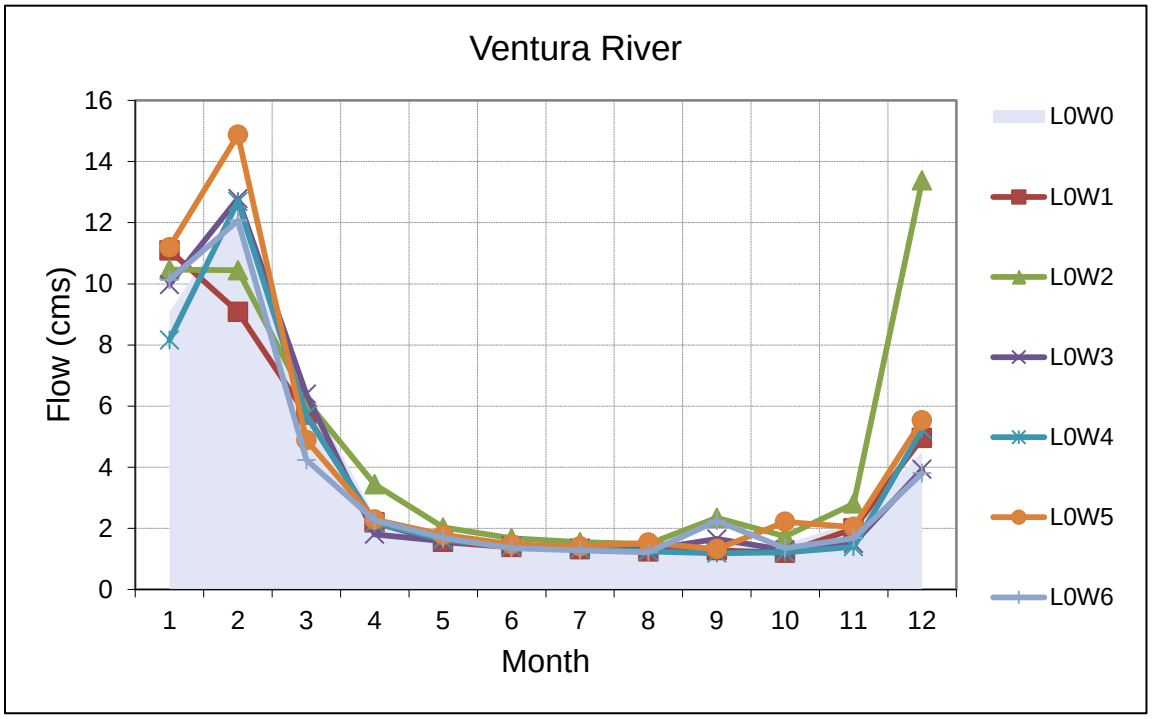


Figure 9. Monthly average flows, Ventura River (SWAT)

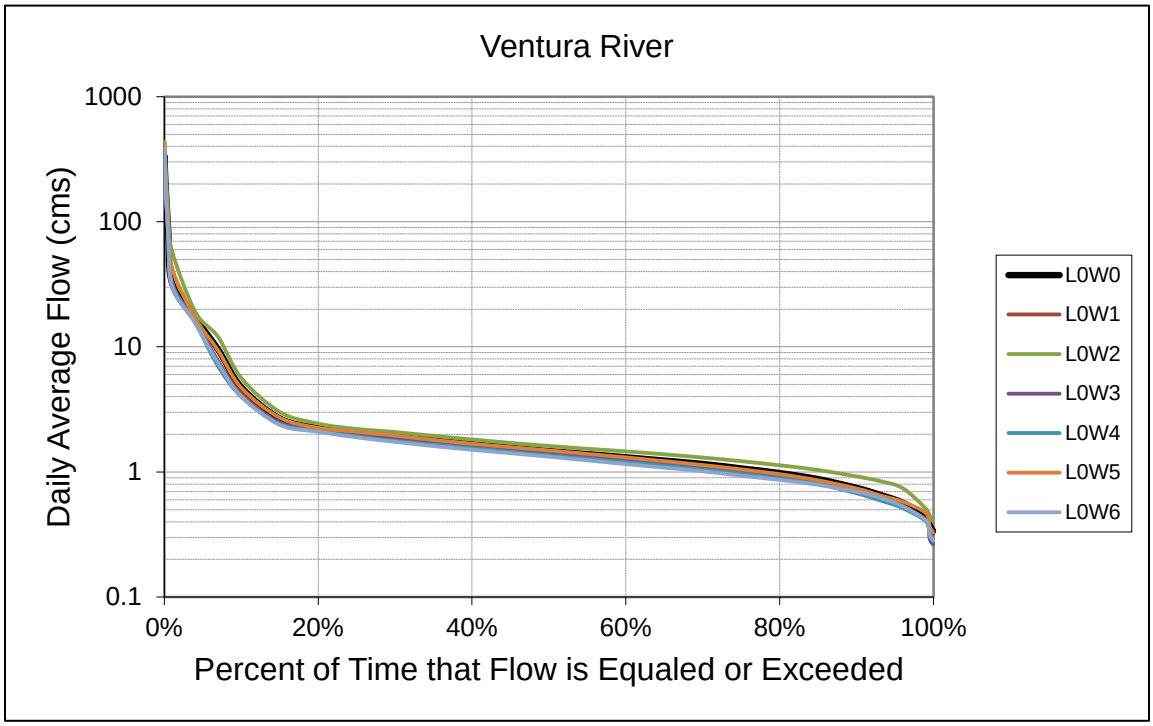


Figure 10. Flow duration, Ventura River (SWAT)

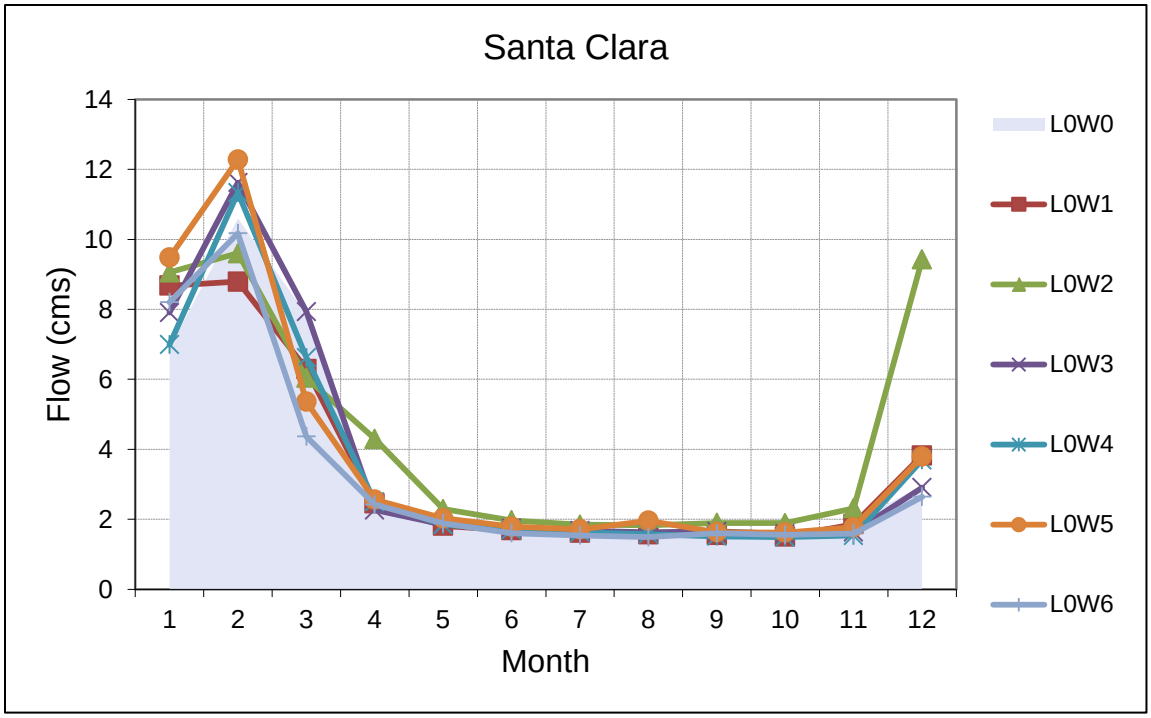


Figure 11. Monthly average flows, Santa Clara River (SWAT)

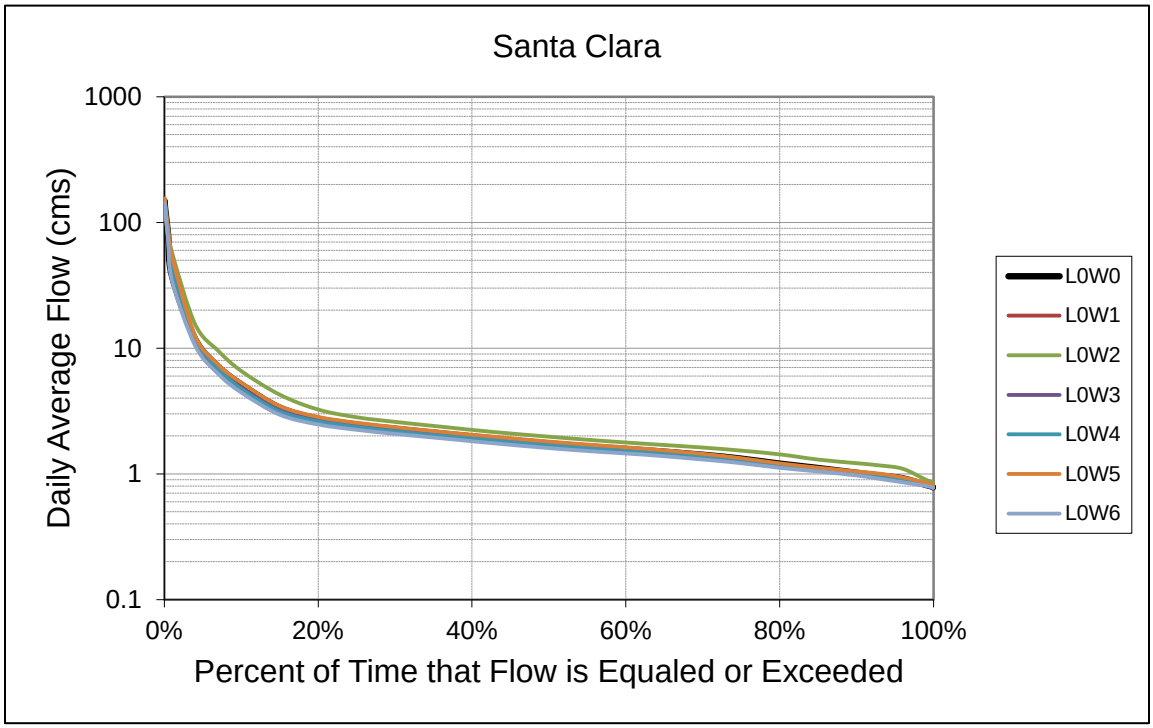


Figure 12. Flow duration, Santa Clara River (SWAT)

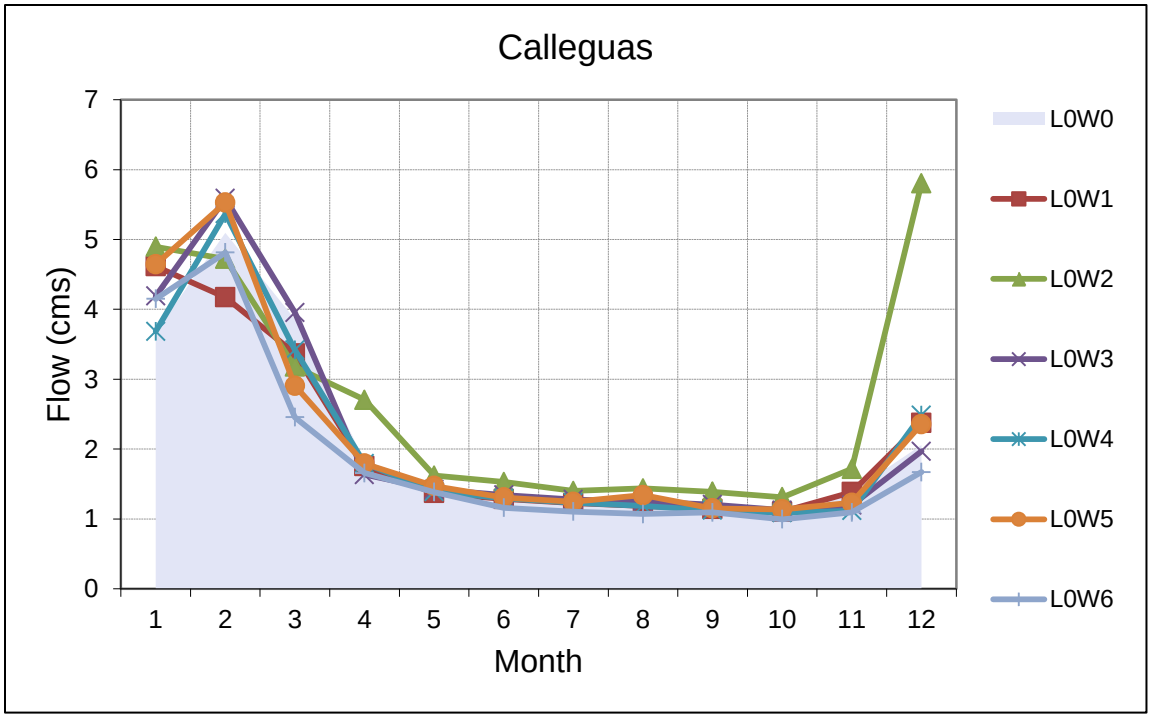


Figure 13. Monthly average flows, Calleguas River (SWAT)

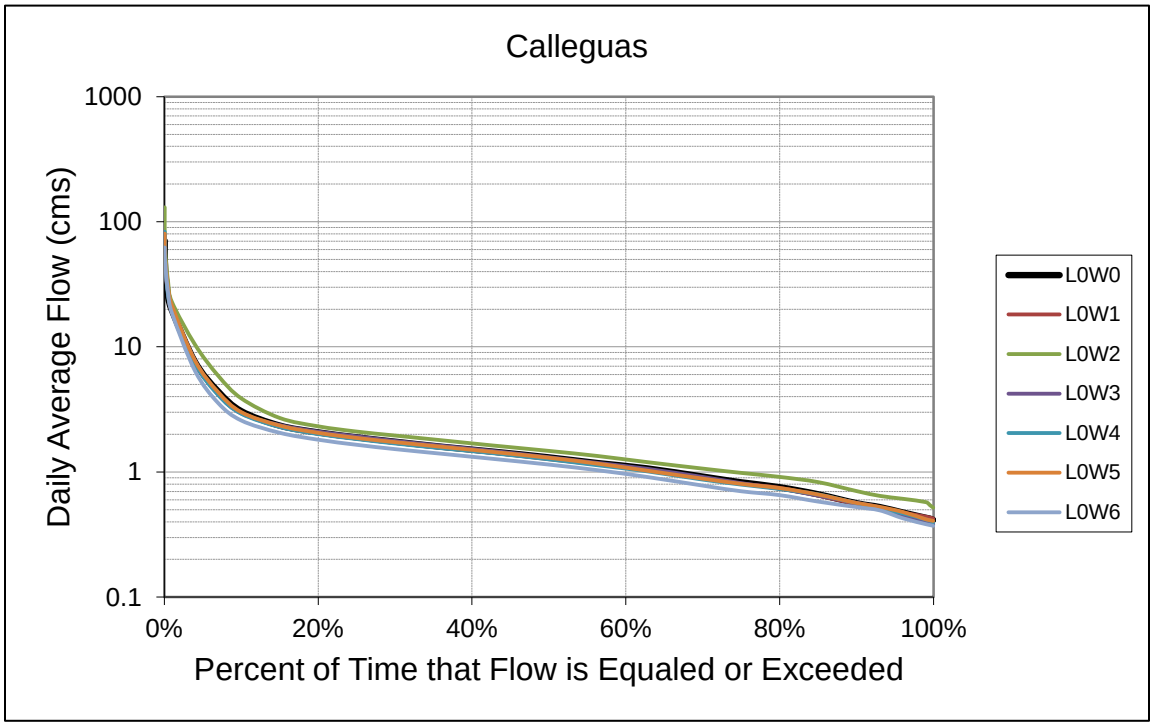


Figure 14. Flow duration, Calleguas River (SWAT)

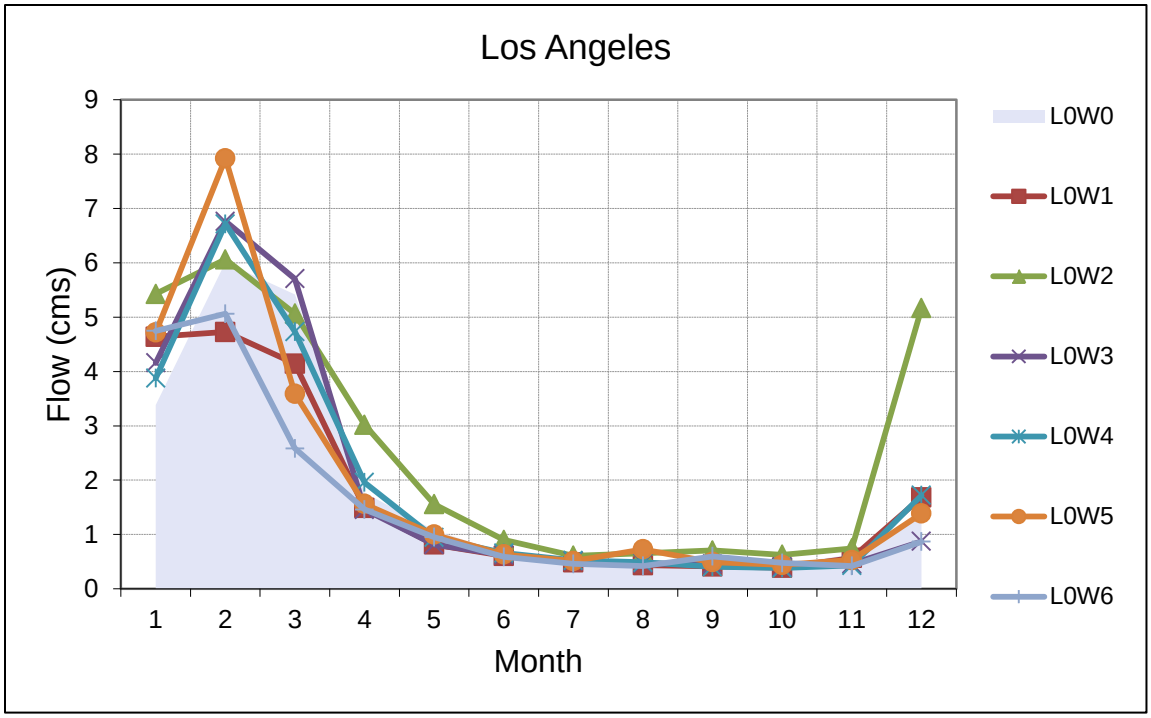


Figure 15. Monthly average flows, Los Angeles River (SWAT)

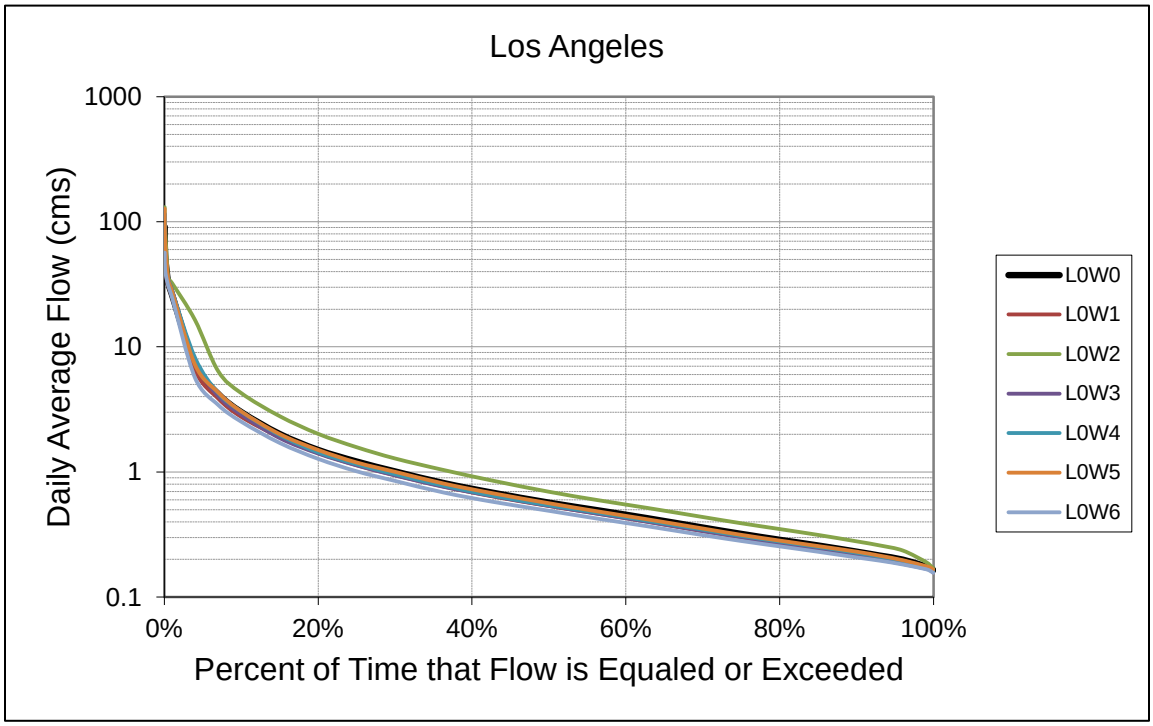


Figure 16. Flow duration, Los Angeles River (SWAT)

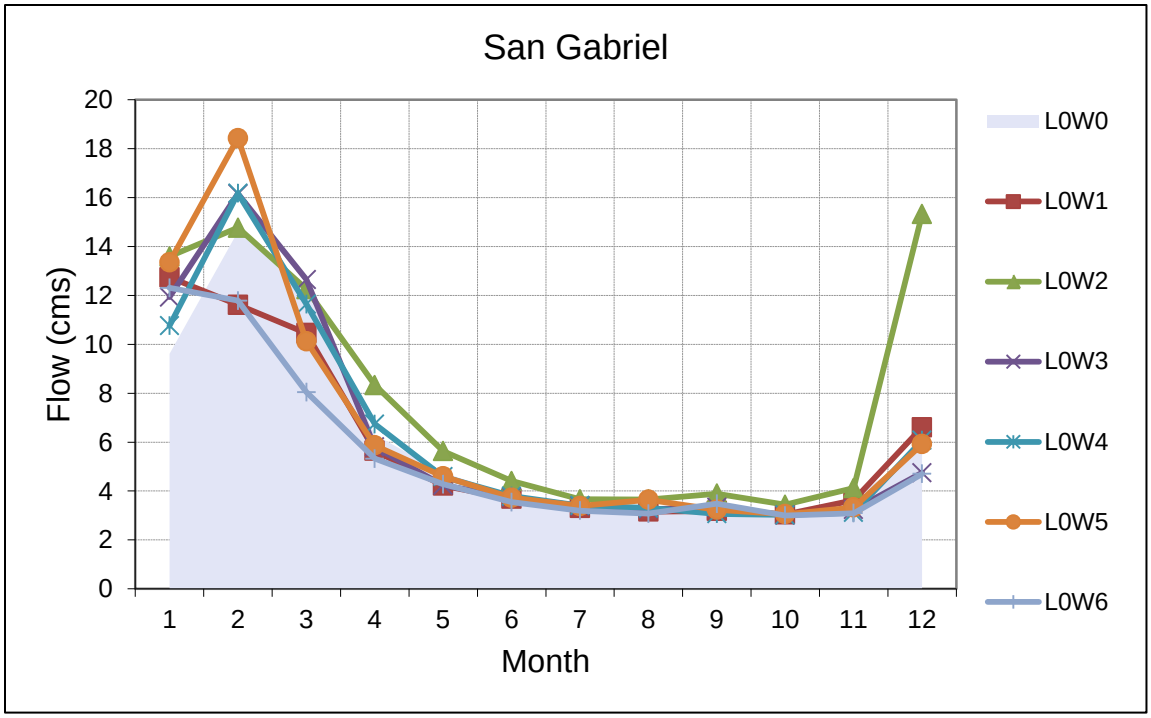


Figure 17. Monthly average flows, San Gabriel River (SWAT)

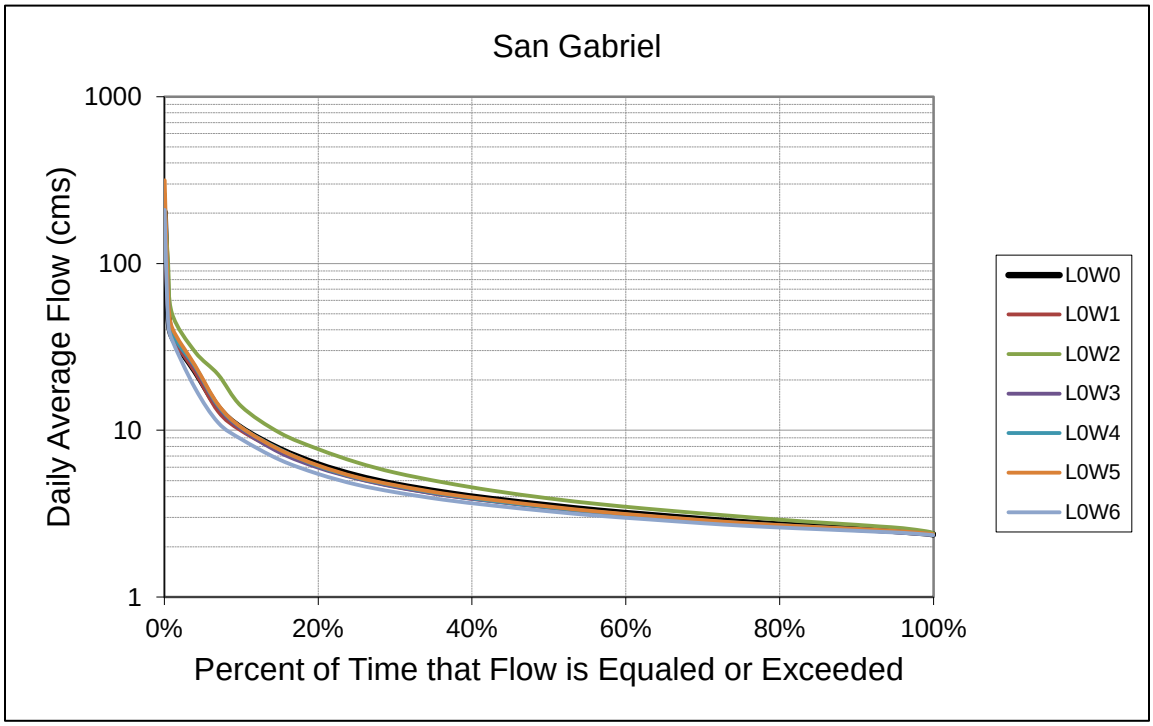


Figure 18. Flow duration, San Gabriel River (SWAT)

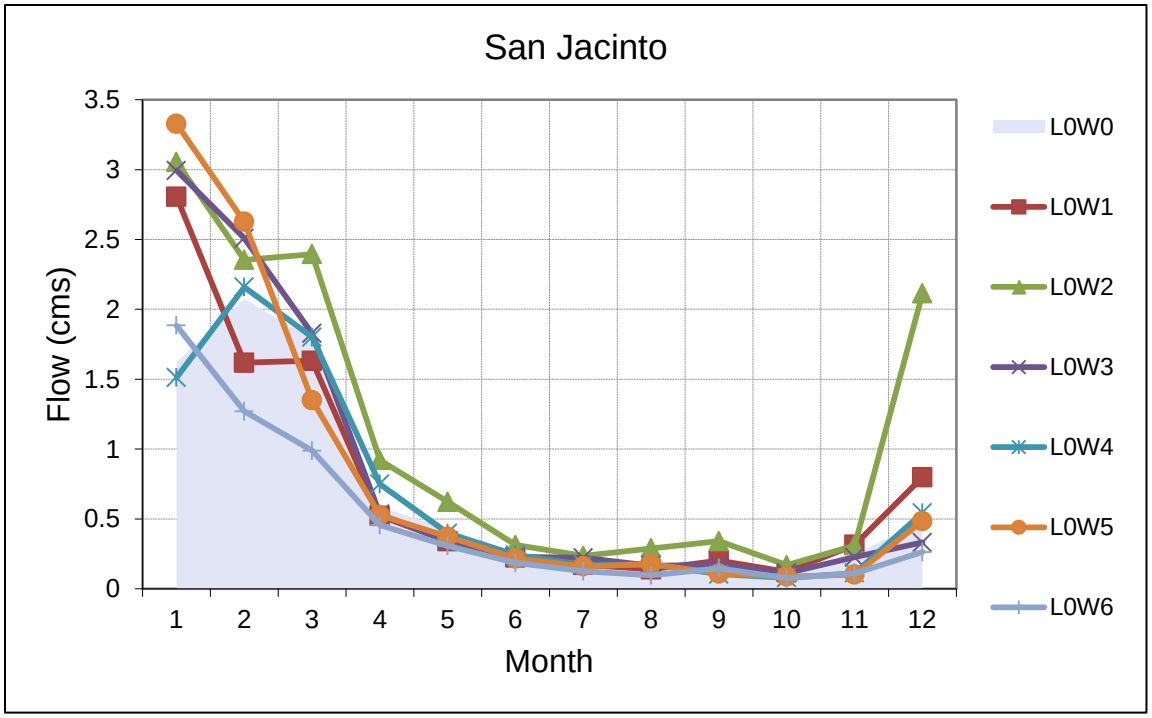


Figure 19. Monthly average flows, San Jacinto River (SWAT)

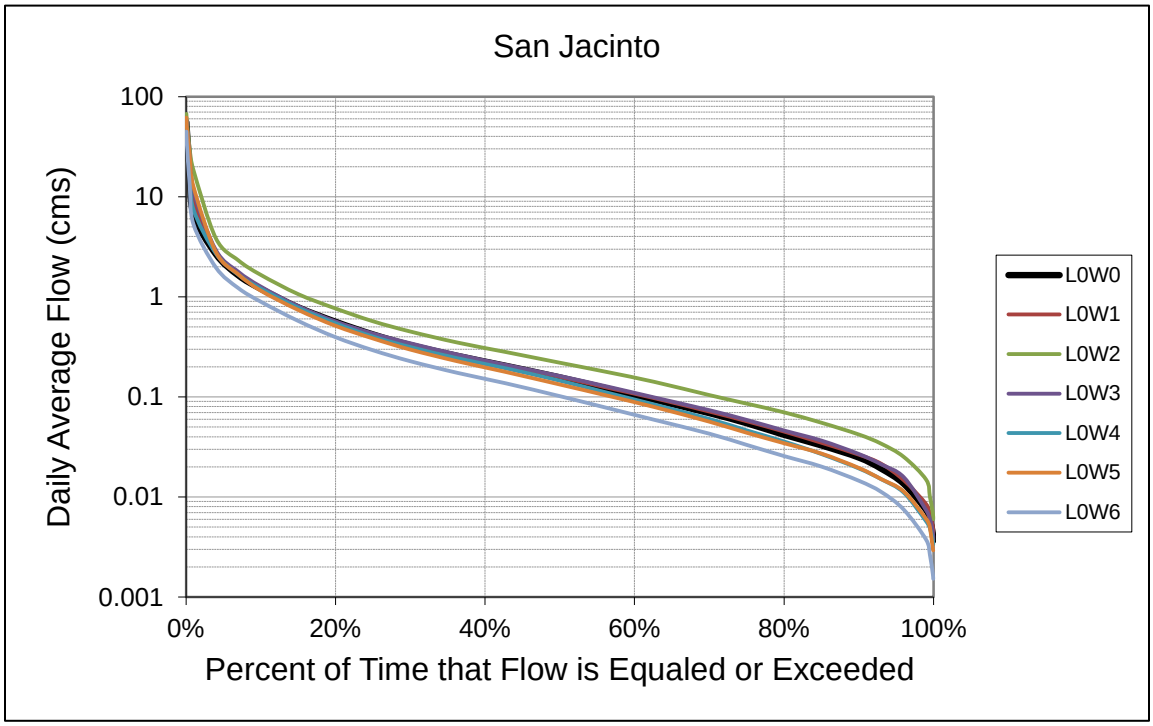


Figure 20. Flow duration, San Jacinto River (SWAT)

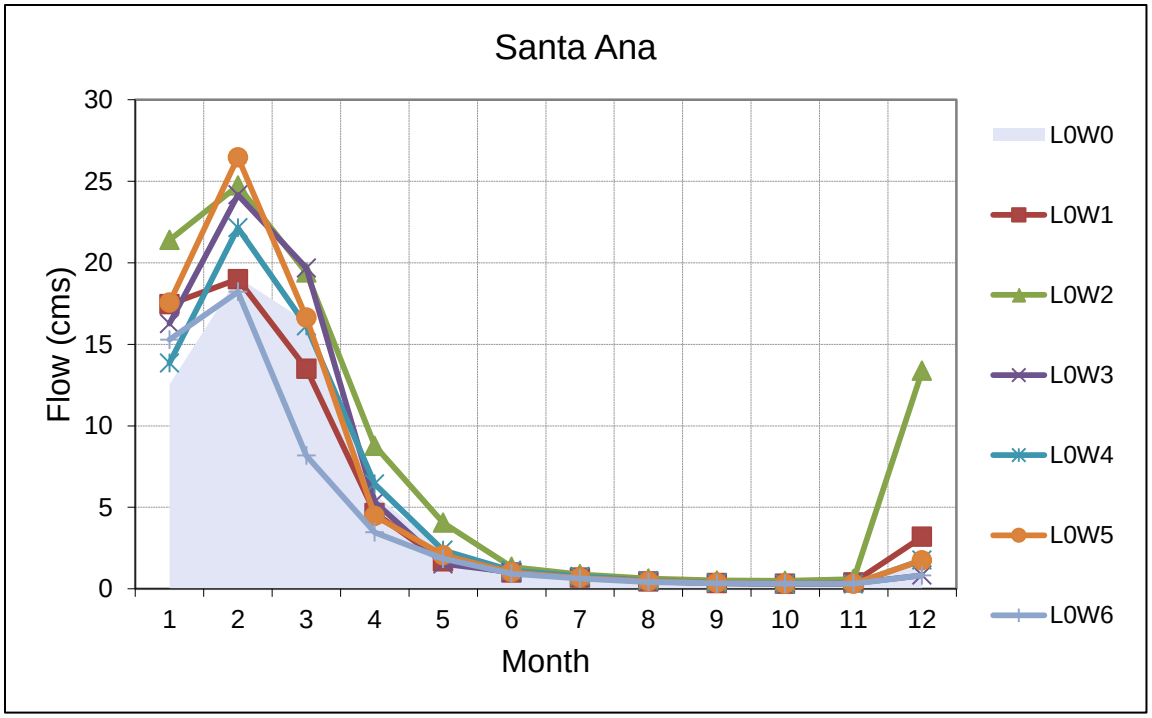


Figure 21. Monthly average flows, Santa Ana River (SWAT)

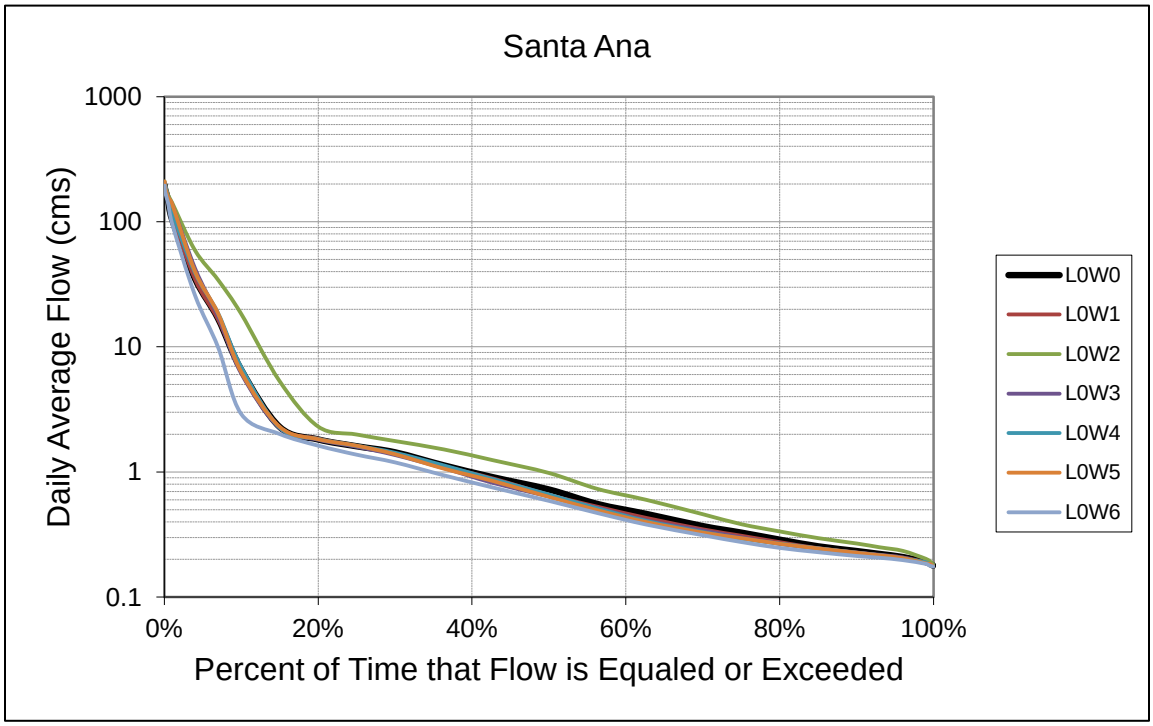


Figure 22. Flow duration, Santa Ana River (SWAT)

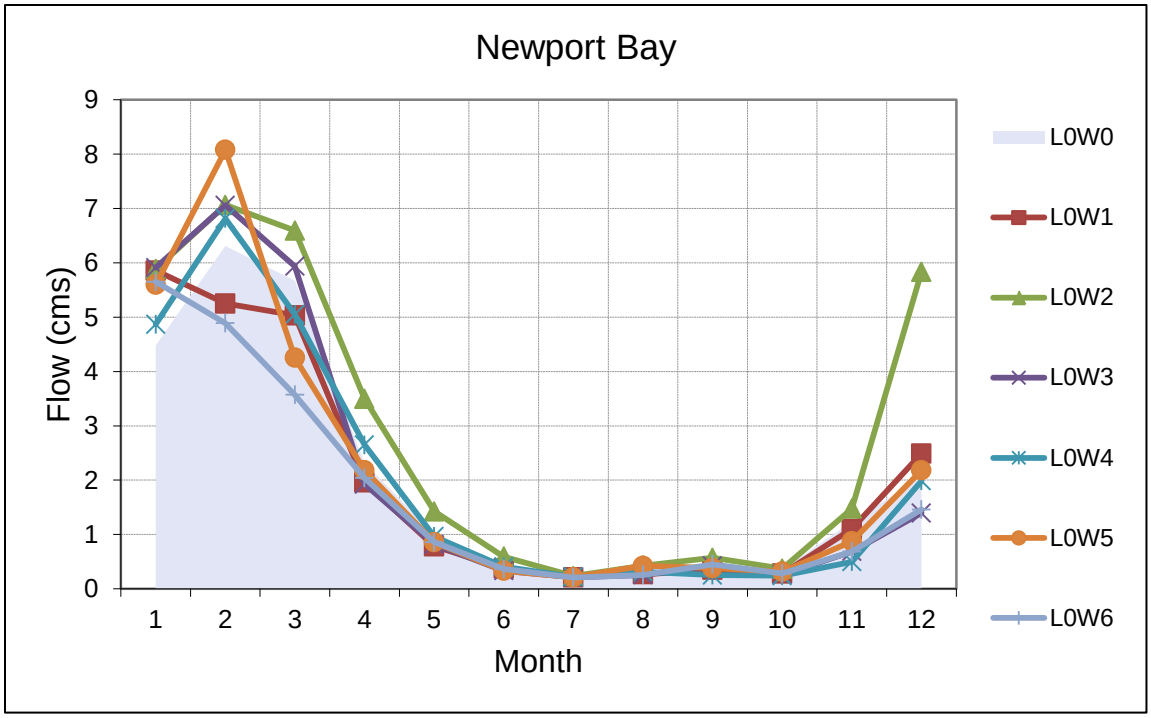


Figure 23. Monthly average flows, Newport Bay HUC8 (SWAT)

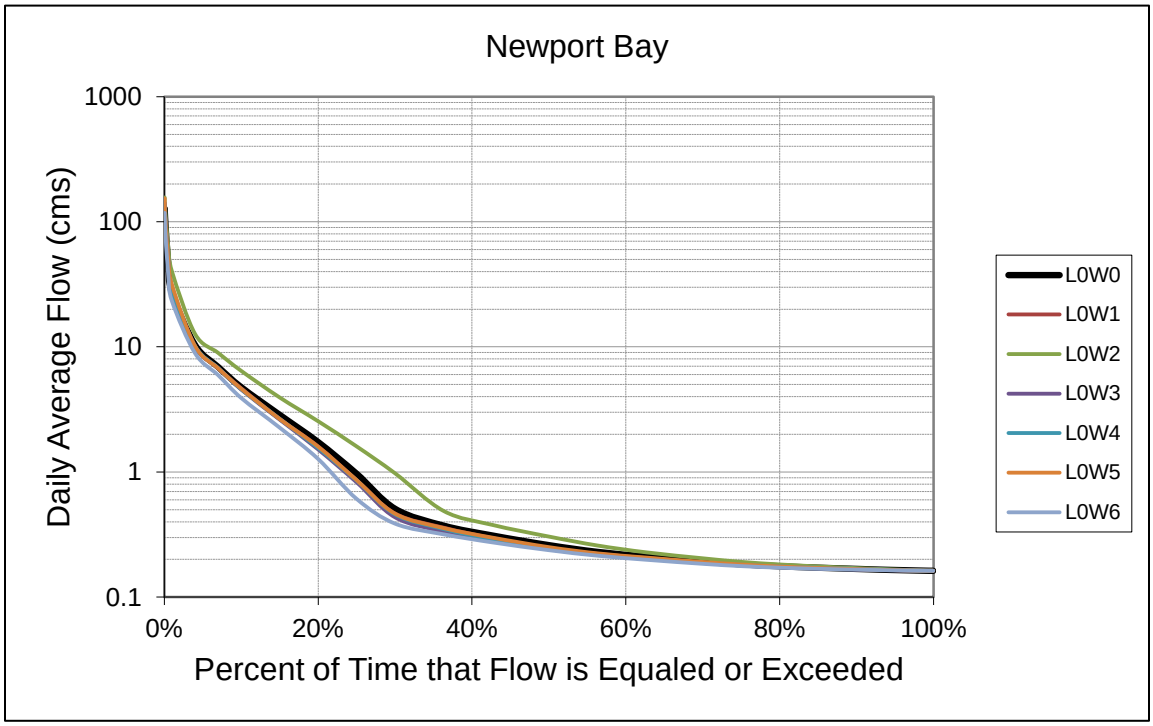


Figure 24. Flow duration, Newport Bay HUC8 (SWAT)

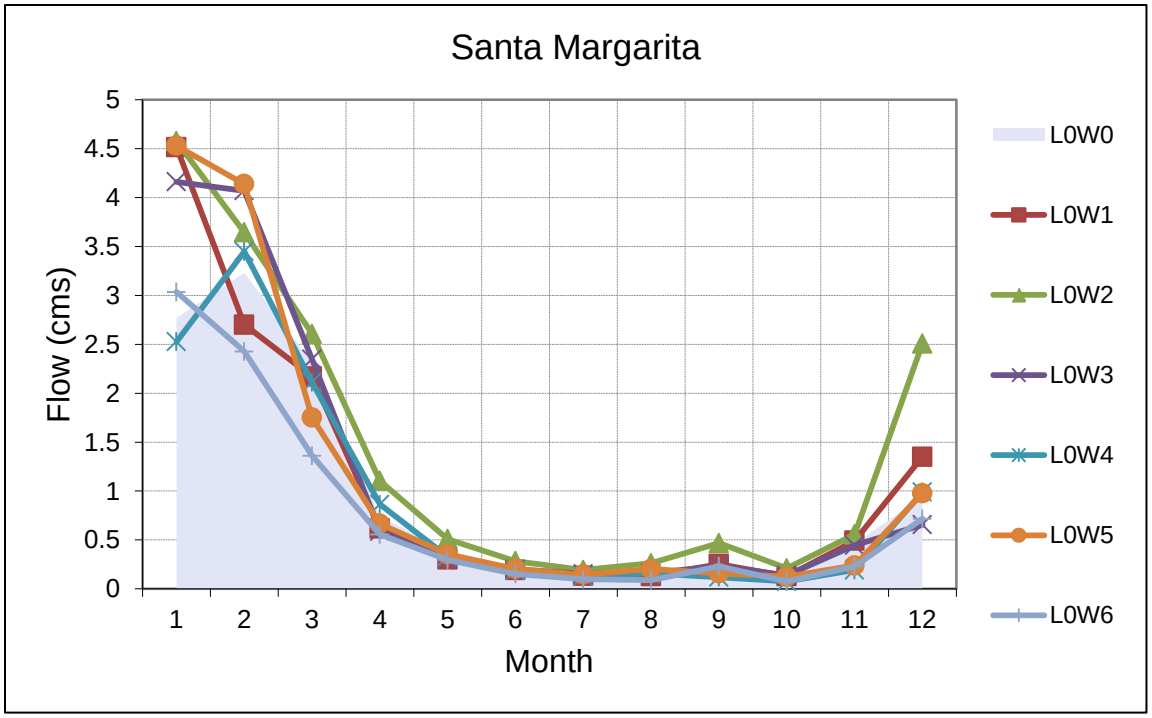


Figure 25. Monthly average flows, Santa Margarita River (SWAT)

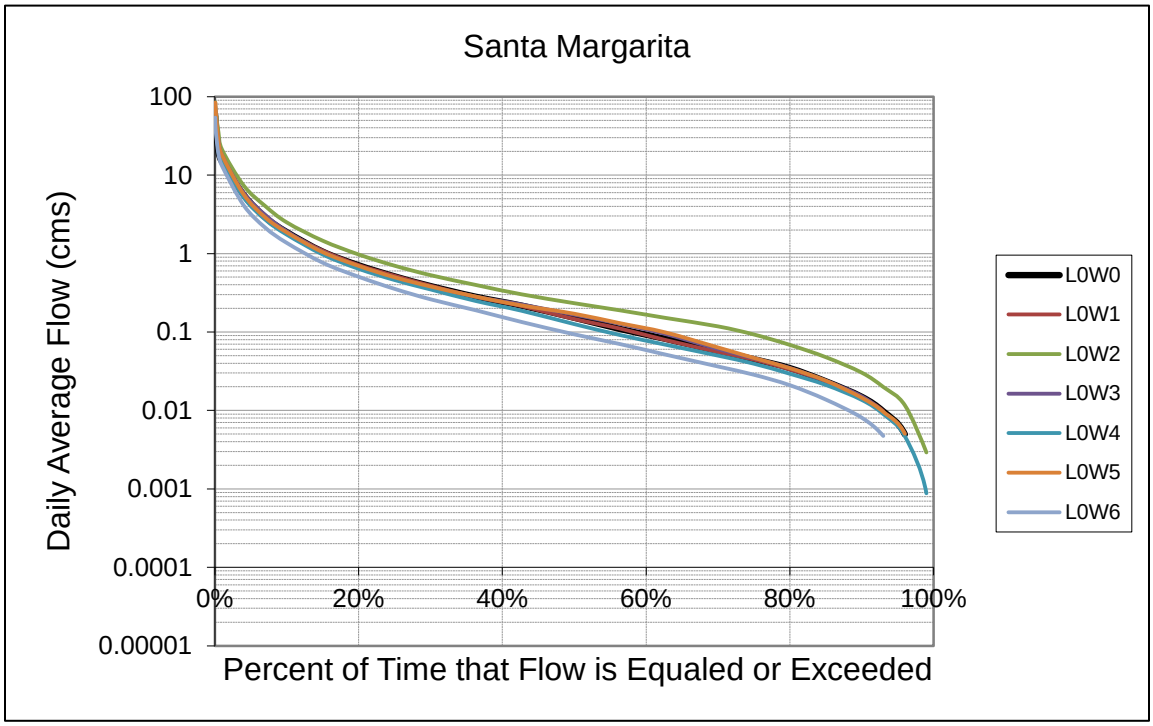


Figure 26. Flow duration, Santa Margarita River (SWAT)

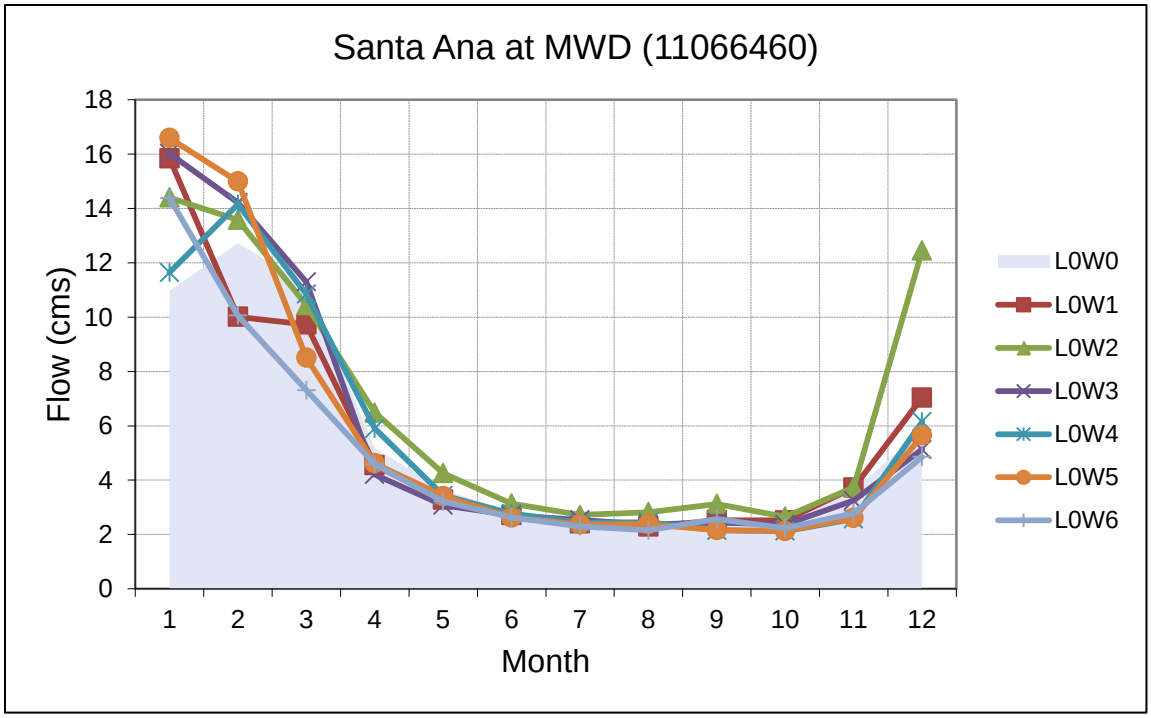


Figure 27. Monthly average flows, Santa Ana River at MWD (SWAT)

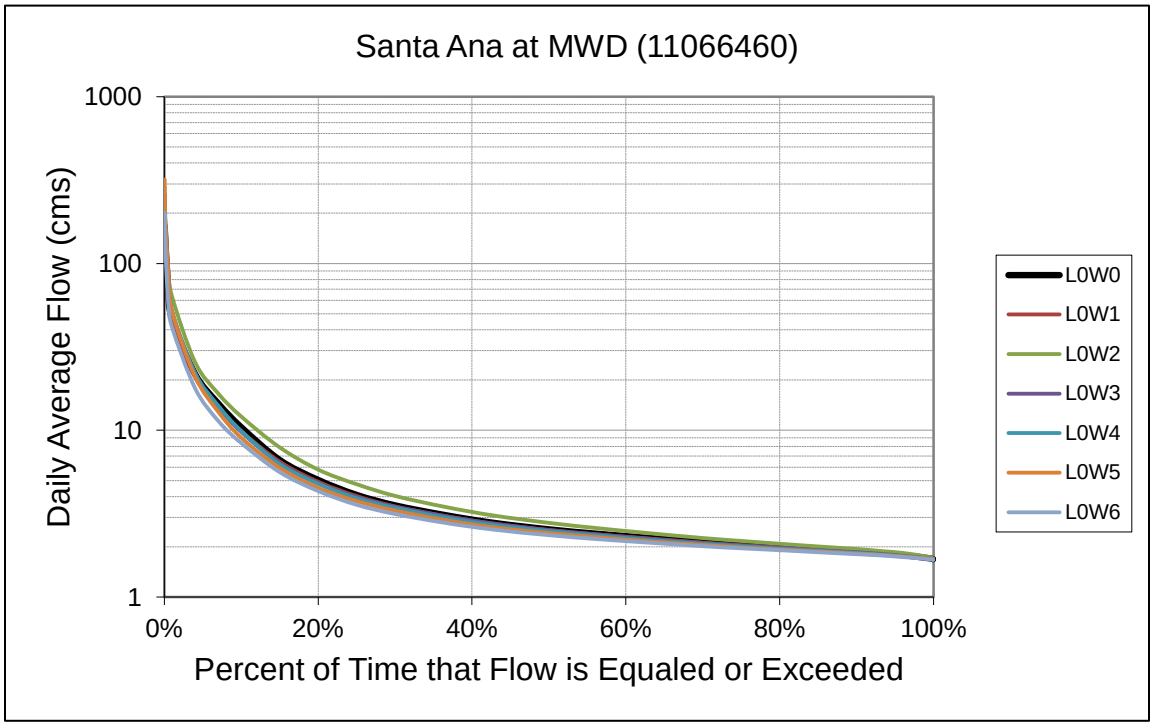


Figure 28. Flow duration, Santa Ana River at MWD (SWAT)

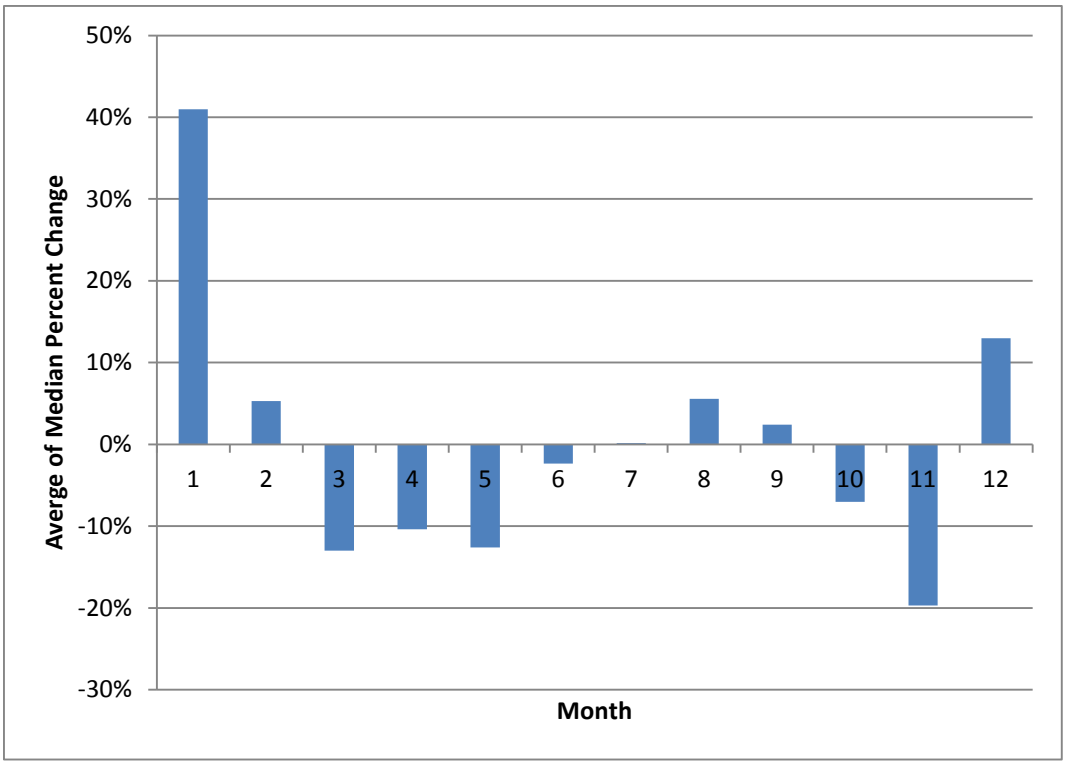


Figure 29. Average of median percent change in flow; NARCCAP Scenarios W1-W6 at all stations, Coastal Southern California basins (SWAT)

Cook Inlet Basin

Note: Coverage for the Cook Inlet basin is provided by only three of the six NARCCAP downscaled scenario outputs. In addition, the ICLUS land use change analysis does not cover Alaska.

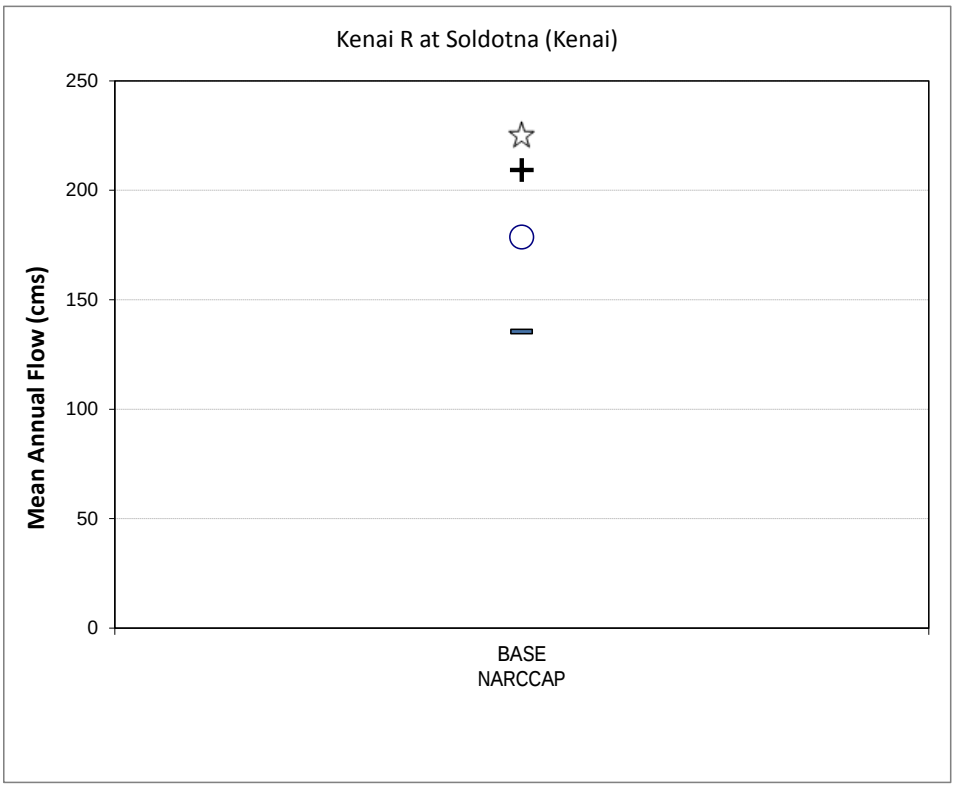


Figure 30. Mean annual flow (cms), Kenai River at Soldotna (SWAT)

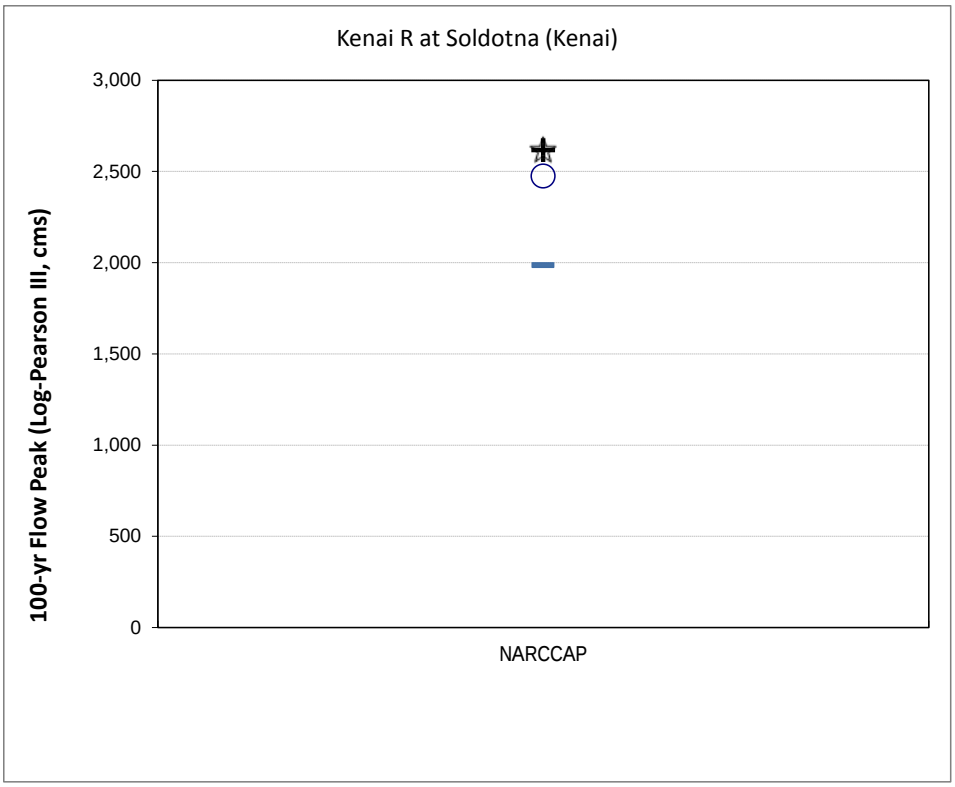


Figure 31. 100-yr Flow Peak (Log-Pearson III, cms), Kenai River at Soldotna (SWAT)

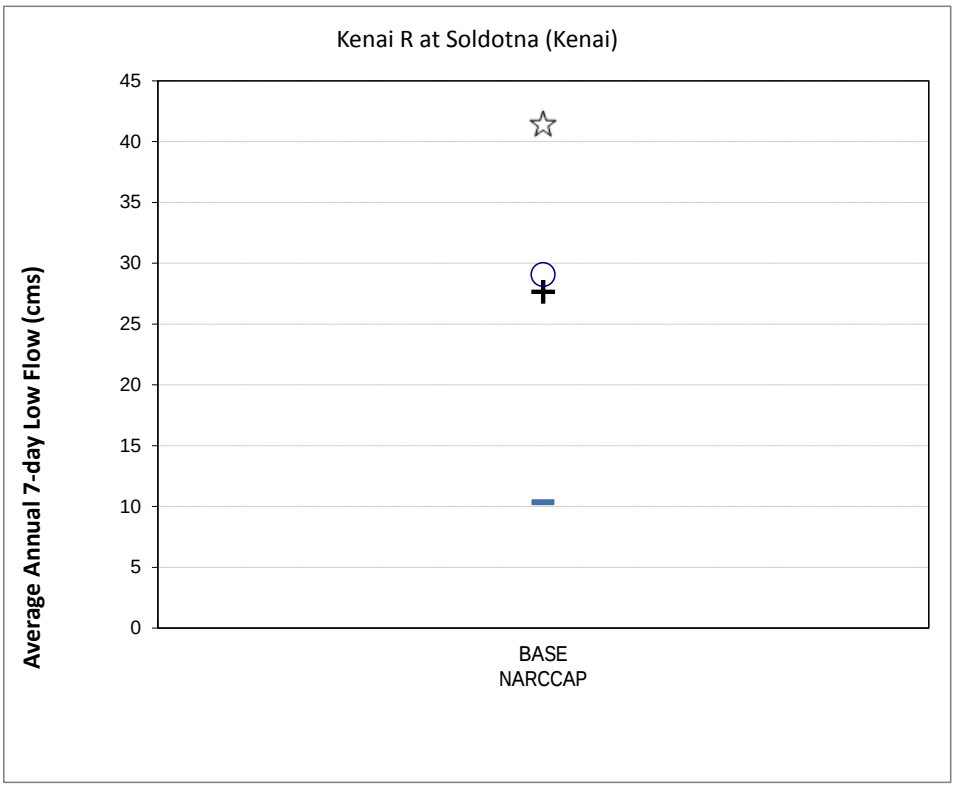


Figure 30. Average Annual 7-day Low Flow (cms), Kenai River at Soldotna (SWAT)

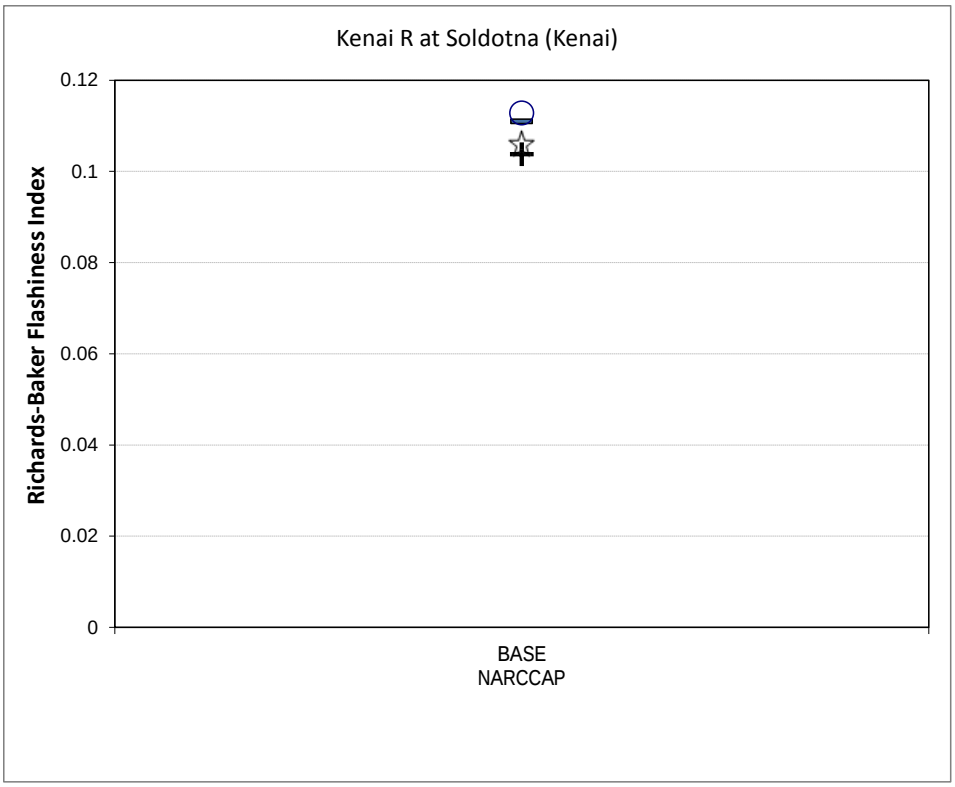


Figure 31. Richards-Baker Flashiness Index, Average Annual 7-day Low Flow (cms), Kenai River at Soldotna (SWAT)

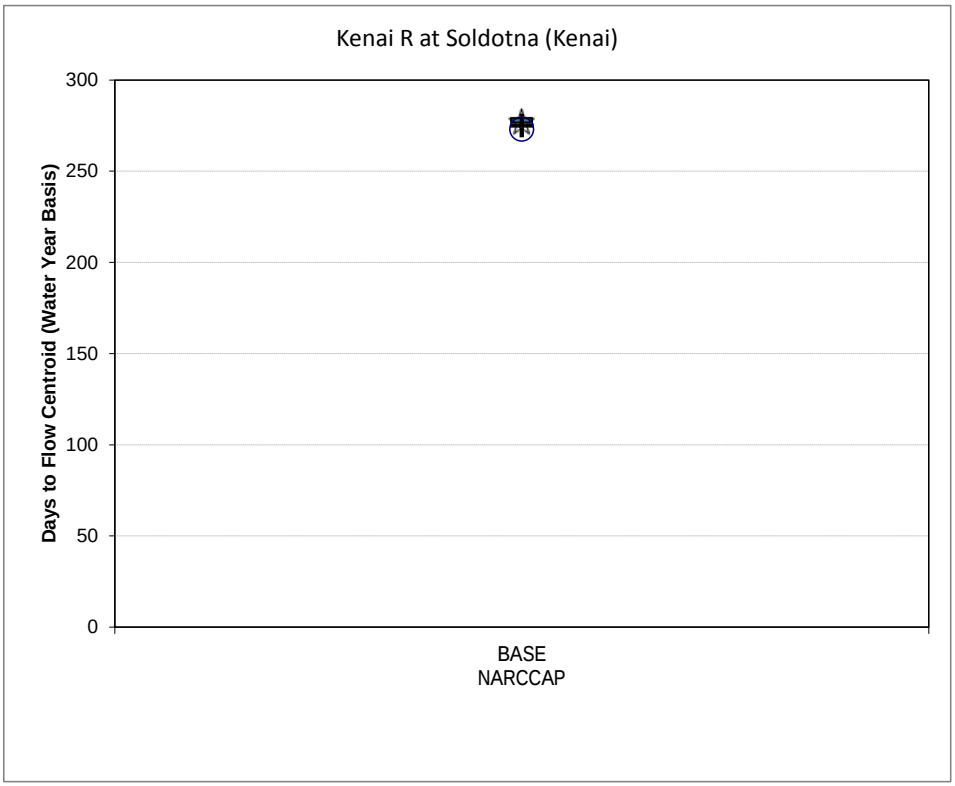


Figure 32. Days to Flow Centroid (Water Year Basis), Kenai River at Soldotna (SWAT)

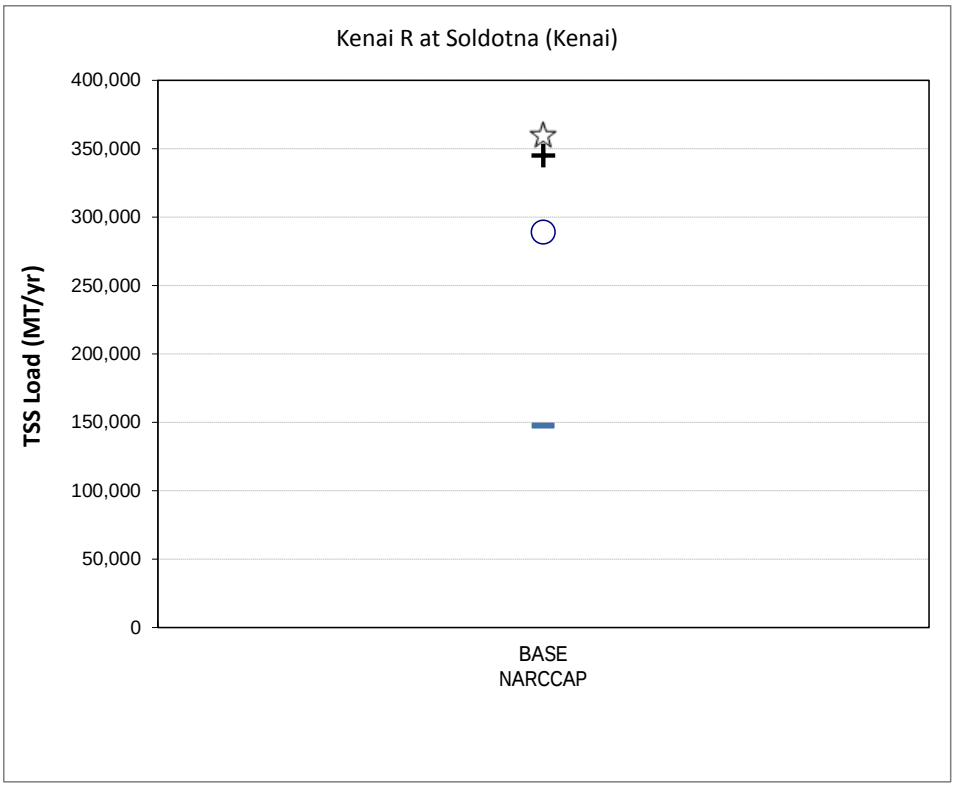


Figure 33. TSS Load (MT/yr), Kenai River at Soldotna (SWAT)

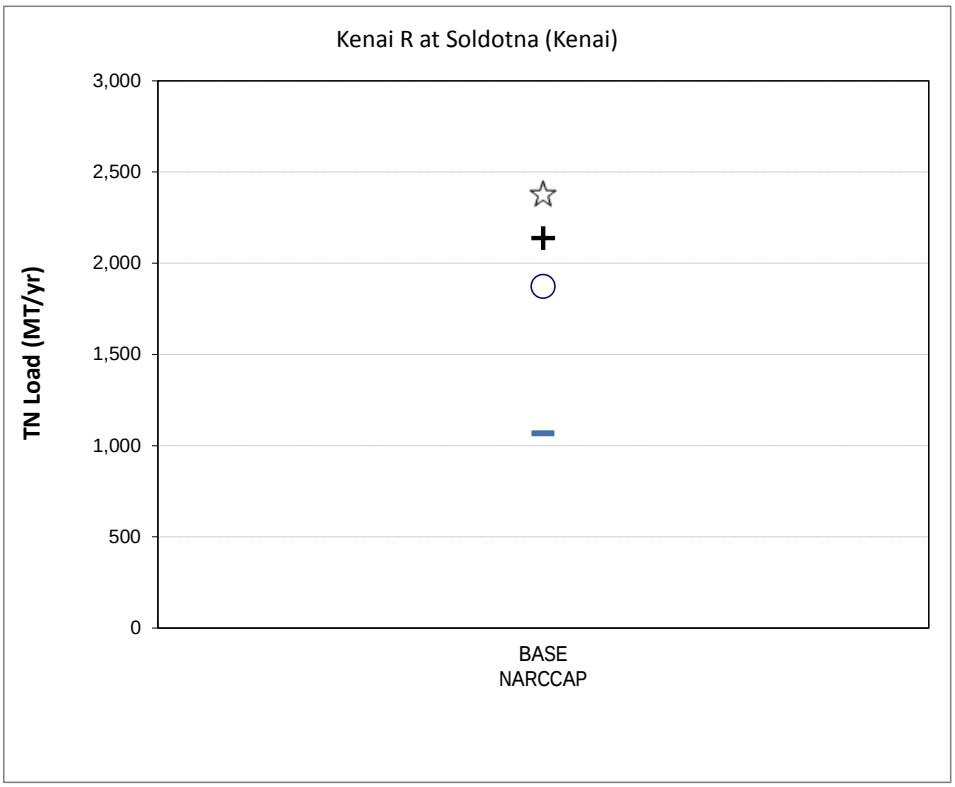


Figure 34. TN Load (MT/yr), Kenai River at Soldotna (SWAT)

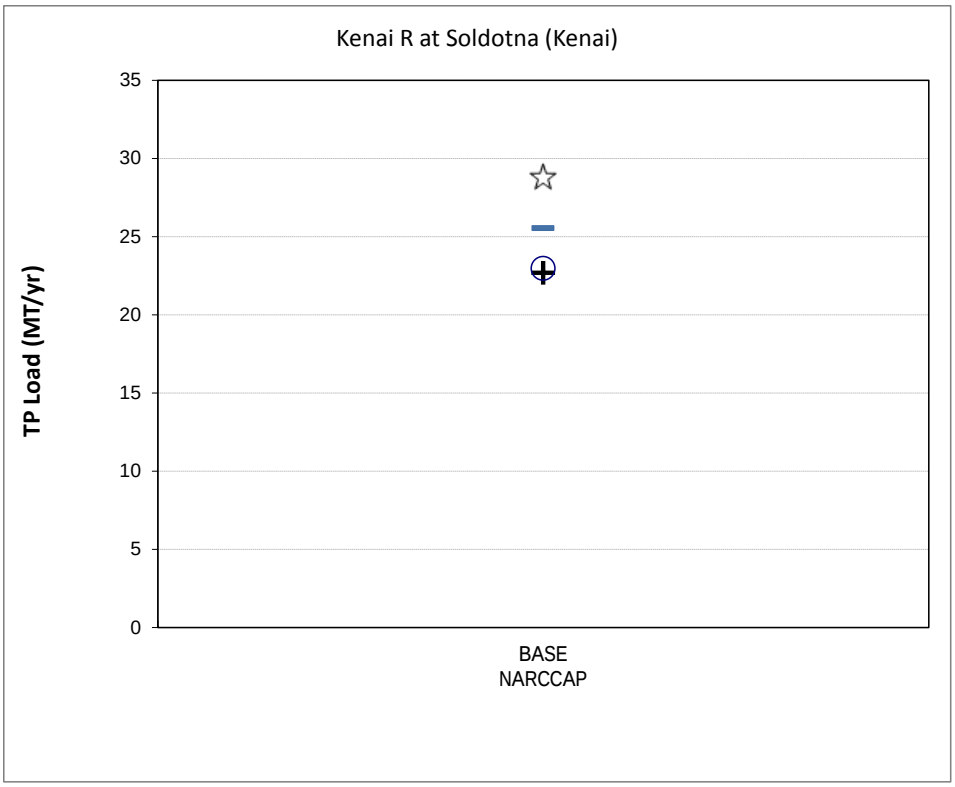


Figure 35. TP Load (MT/yr), Kenai River at Soldotna (SWAT)

Table 2. Summary of range of change relative to existing conditions for NARCCAP dynamically downscaled scenarios, Cook Inlet basin SWAT model

	Results without LU change			
	Min	Median	Mean	Max
Kenai R at Soldotna (Kenai)				
Flow	31.74%	54.35%	50.89%	66.56%
TSS	95.66%	133.64%	124.56%	144.37%
TN	75.39%	100.25%	99.69%	123.44%
TP	-11.23%	-10.13%	-2.72%	13.18%
Talkeetna R. near Talkeetna				
Flow	19.47%	27.66%	26.18%	31.42%
TSS	79.65%	97.68%	94.21%	105.28%
TN	11.74%	17.74%	17.20%	22.13%
TP	-13.52%	-8.28%	-9.72%	-7.37%
Upper Susitna HUC 19020501				
Flow	9.12%	26.59%	23.33%	34.27%
TSS	60.09%	97.28%	91.60%	117.41%
TN	1.83%	7.02%	10.31%	22.07%
TP	-21.37%	-11.77%	-14.06%	-9.04%
Matanuska HUC 19020402				
Flow	10.16%	19.90%	16.81%	20.35%
TSS	70.16%	90.58%	84.52%	92.81%
TN	39.83%	49.58%	46.85%	51.12%
TP	-20.66%	-9.76%	-12.96%	-8.47%
Lower Susitna HUC 19020505				
Flow	12.06%	19.42%	18.59%	24.29%
TSS	75.34%	94.99%	91.77%	104.99%
TN	15.63%	17.88%	19.96%	26.36%
TP	-22.65%	-14.35%	-16.84%	-13.52%
Chulitna HUC 19020502				
Flow	8.57%	14.12%	13.78%	18.65%
TSS	45.01%	57.93%	54.52%	60.63%
TN	23.36%	25.87%	27.33%	32.77%
TP	-19.45%	-12.57%	-14.57%	-11.69%
Talkeetna River Mouth HUC 19020503				
Flow	16.46%	23.87%	22.75%	27.92%
TSS	76.83%	92.96%	90.59%	101.99%
TN	12.13%	17.86%	17.60%	22.81%
TP	-14.71%	-9.99%	-11.39%	-9.46%

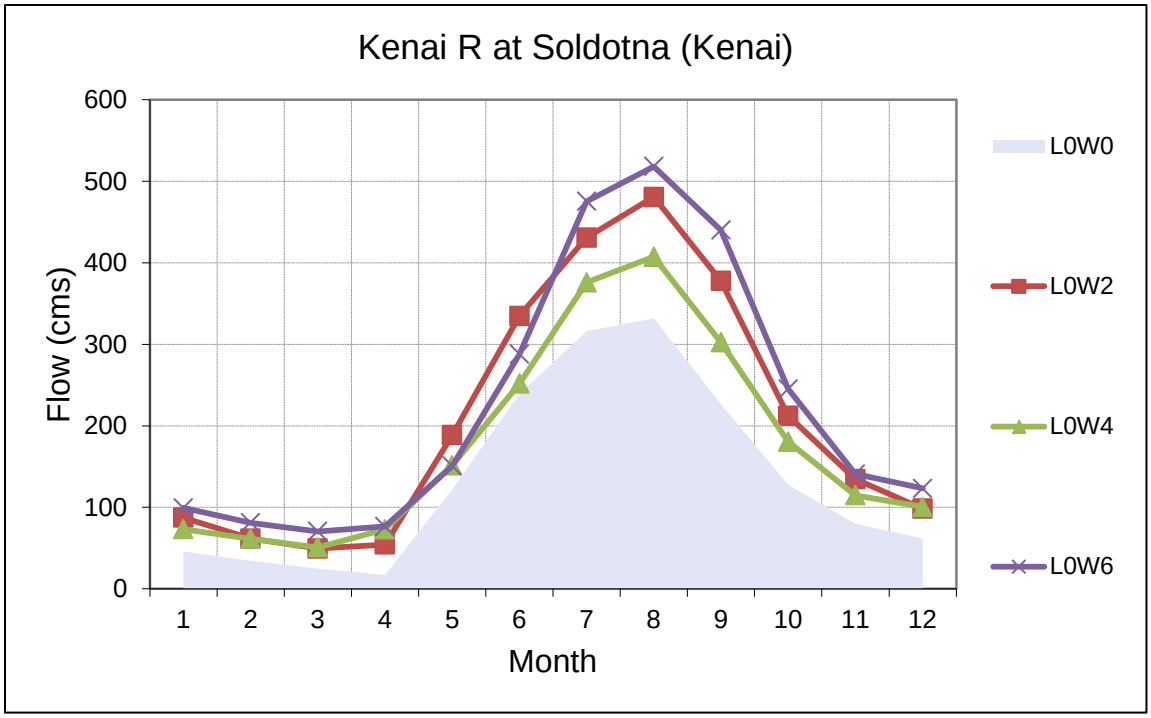


Figure 36. Monthly average flows, Kenai River at Soldotna (SWAT)

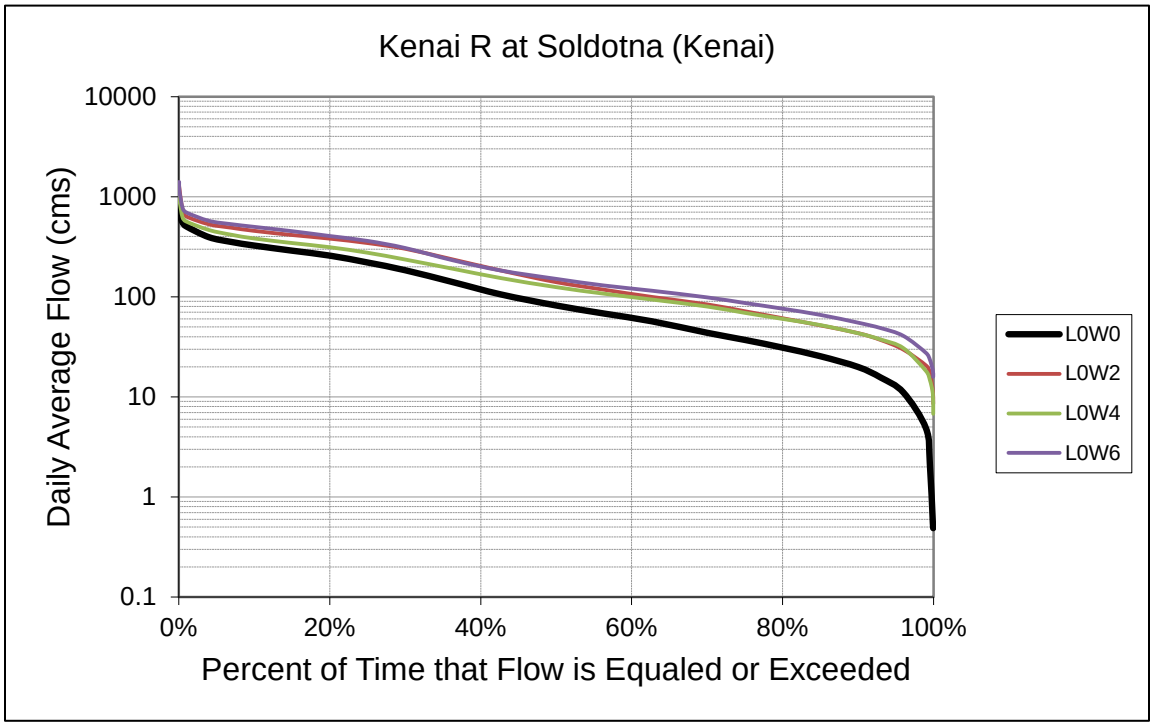


Figure 37. Flow duration, Kenai River at Soldotna (SWAT)

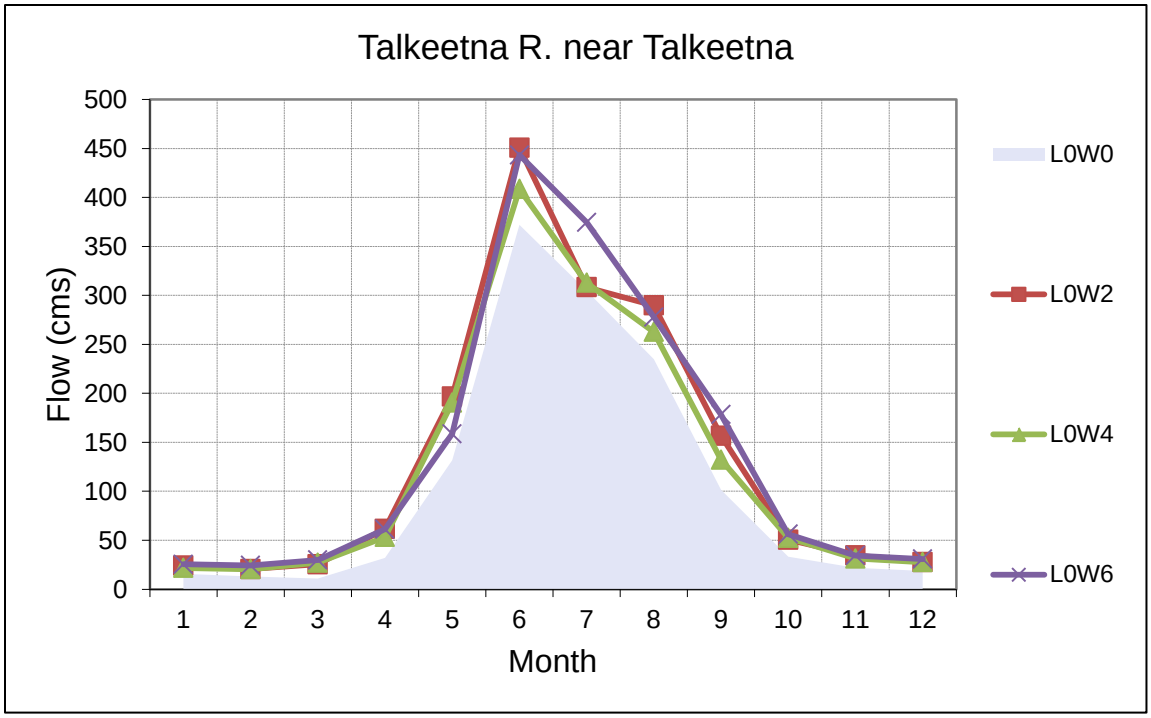


Figure 38. Monthly average flows, Talkeetna River near Talkeetna (SWAT)

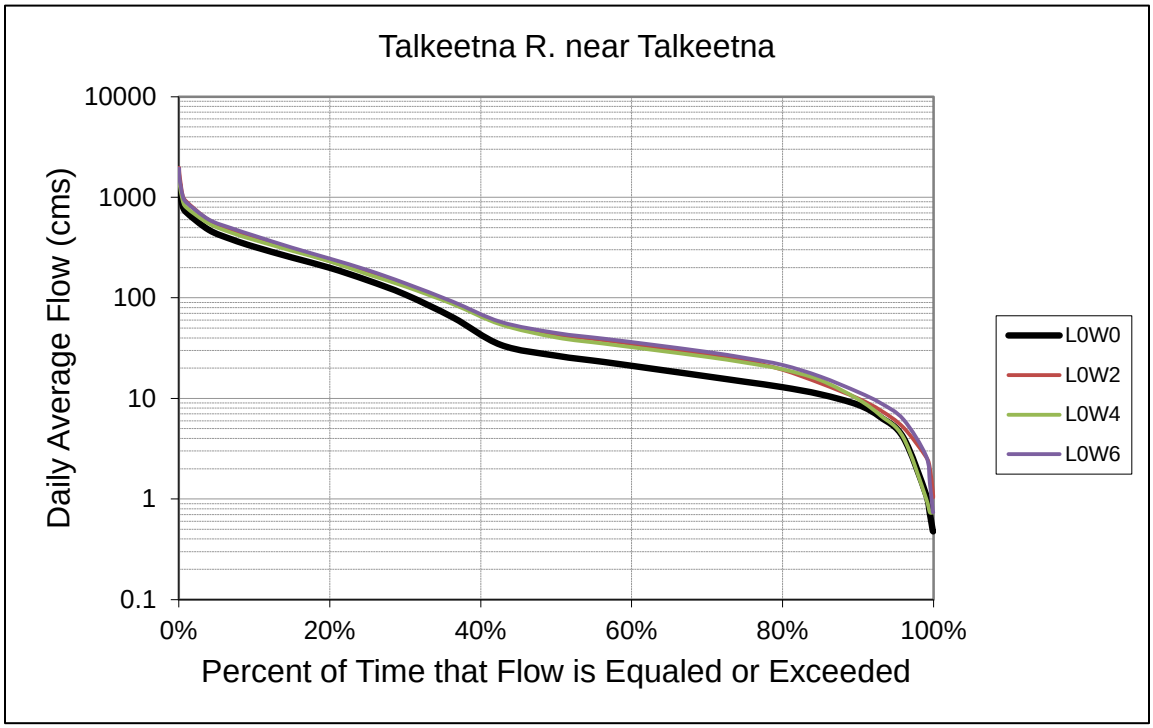


Figure 39. Flow duration, Talkeetna River near Talkeetna (SWAT)

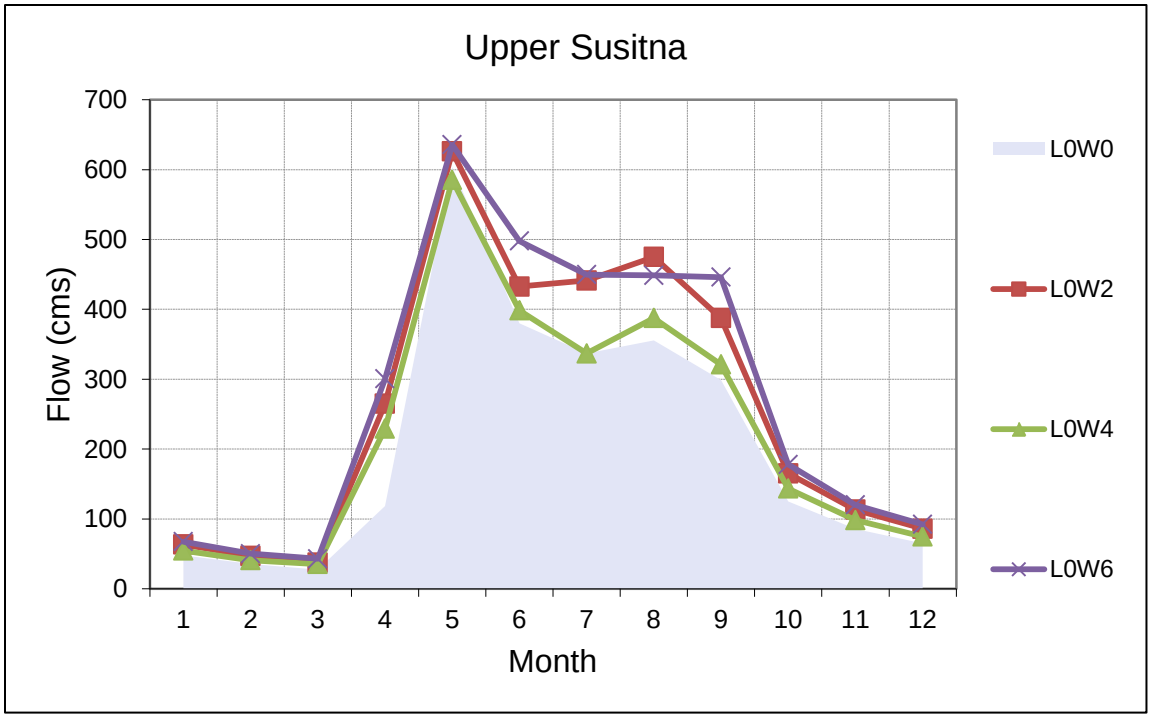


Figure 40. Monthly average flows, Upper Susitna River (SWAT)

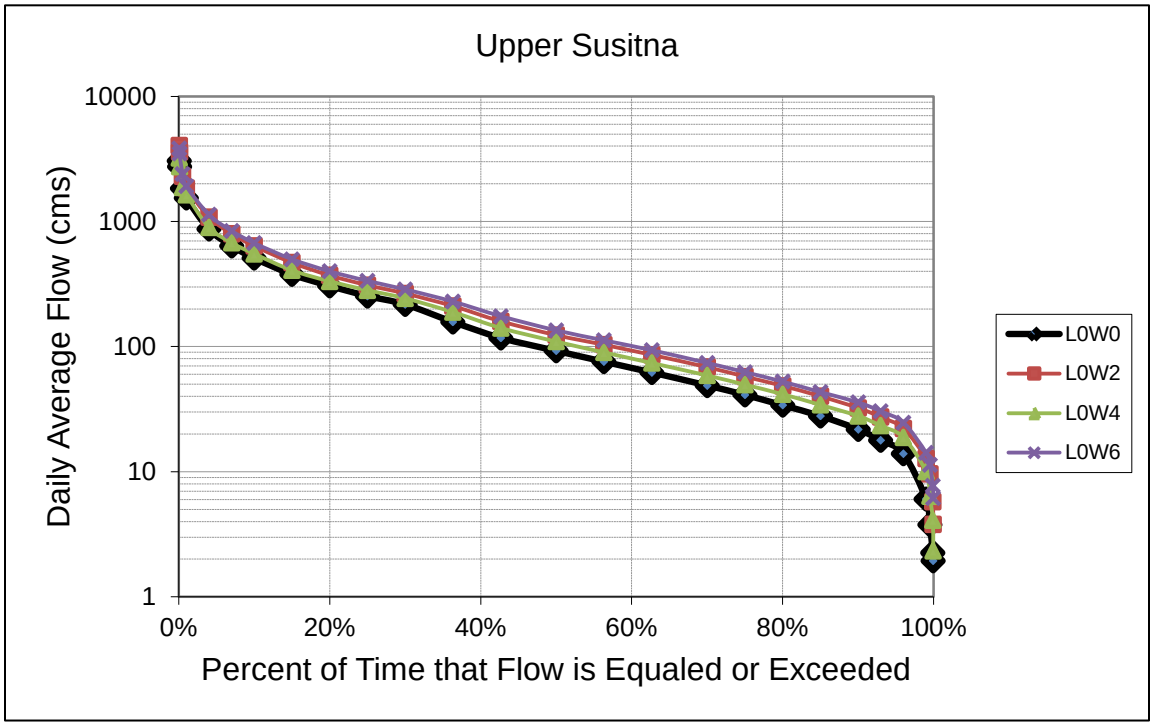


Figure 41. Flow duration, Upper Susitna River (SWAT)

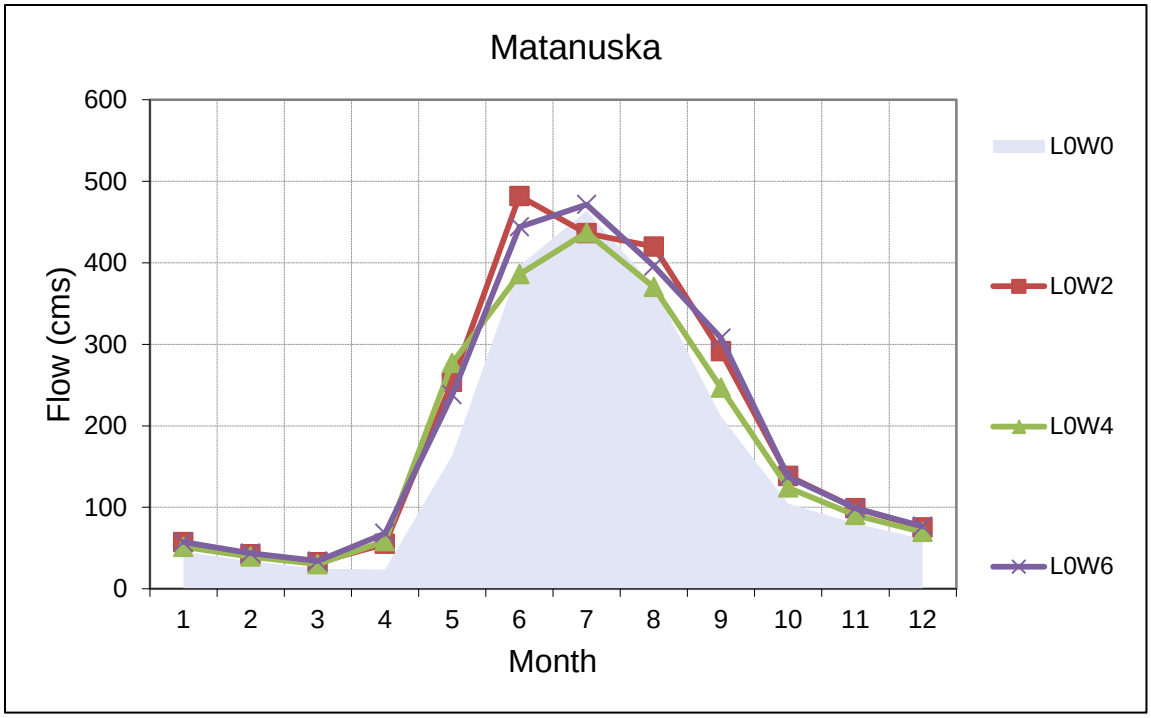


Figure 42. Monthly average flows, Matanuska River (SWAT)

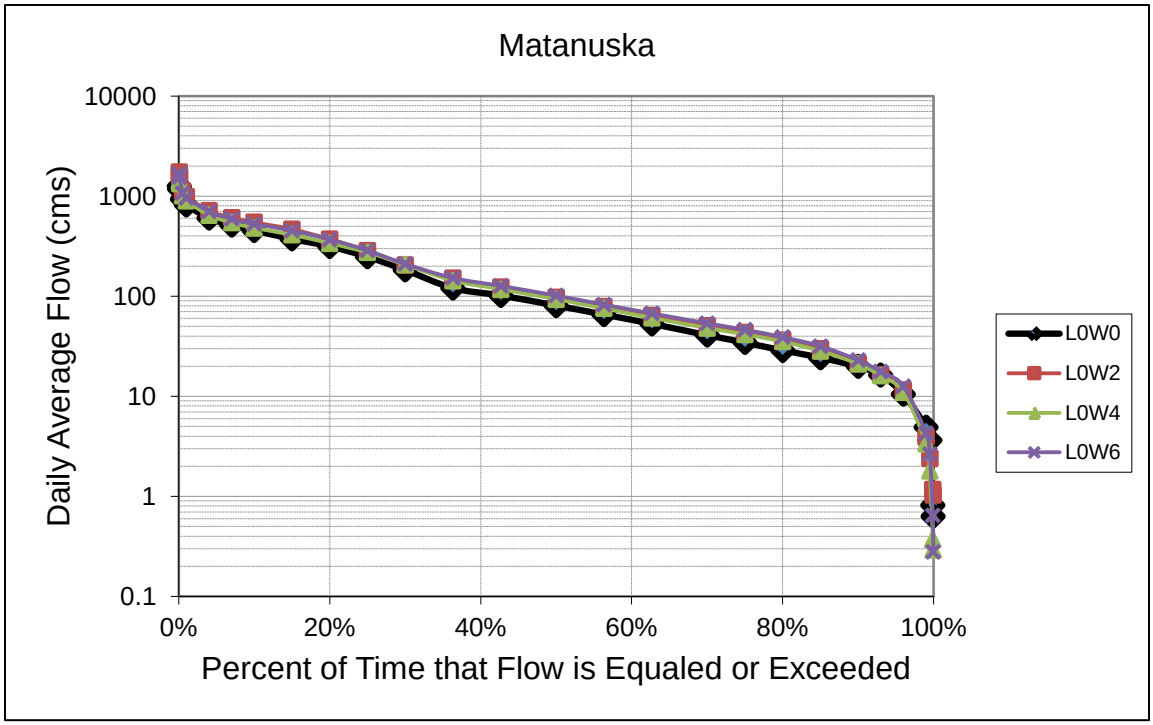


Figure 43. Flow duration, Matanuska River (SWAT)

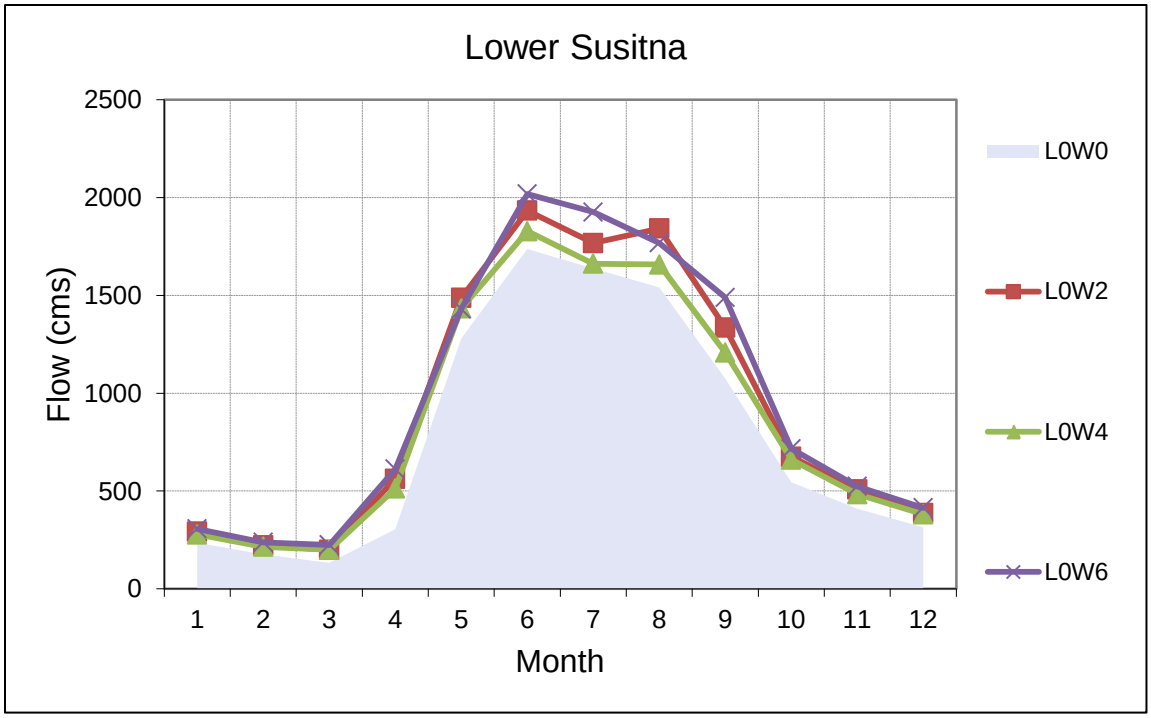


Figure 44. Monthly average flows, Lower Susitna River (SWAT)

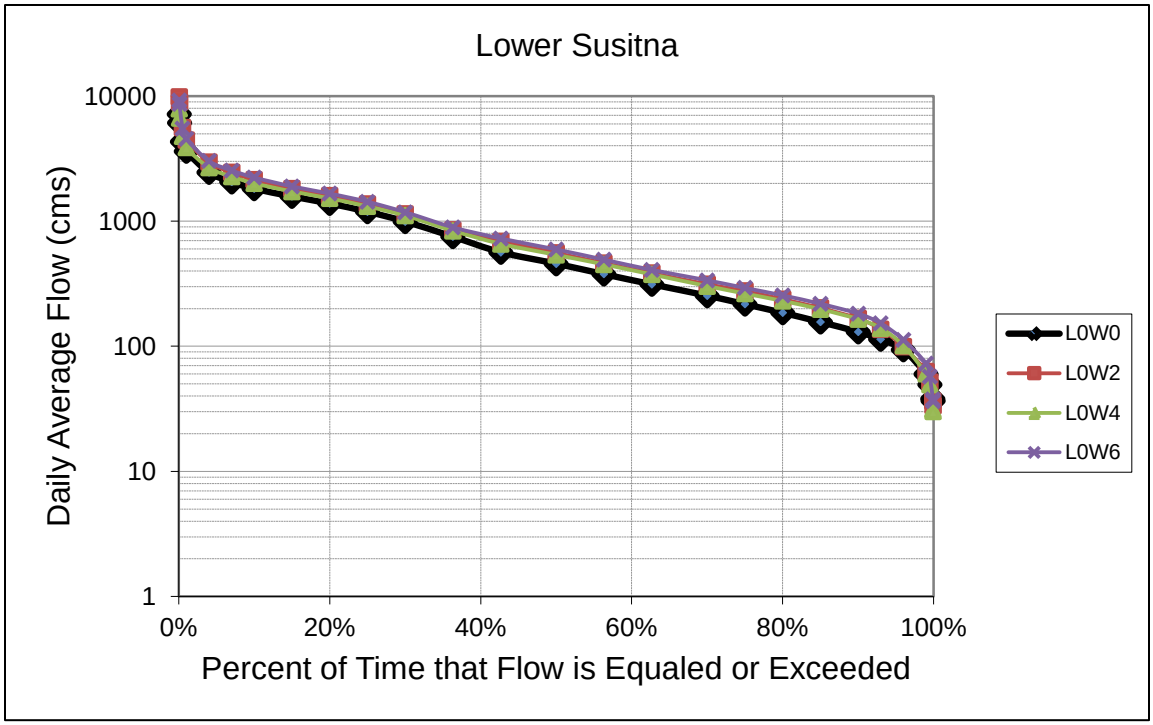


Figure 45. Flow duration, Lower Susitna River (SWAT)

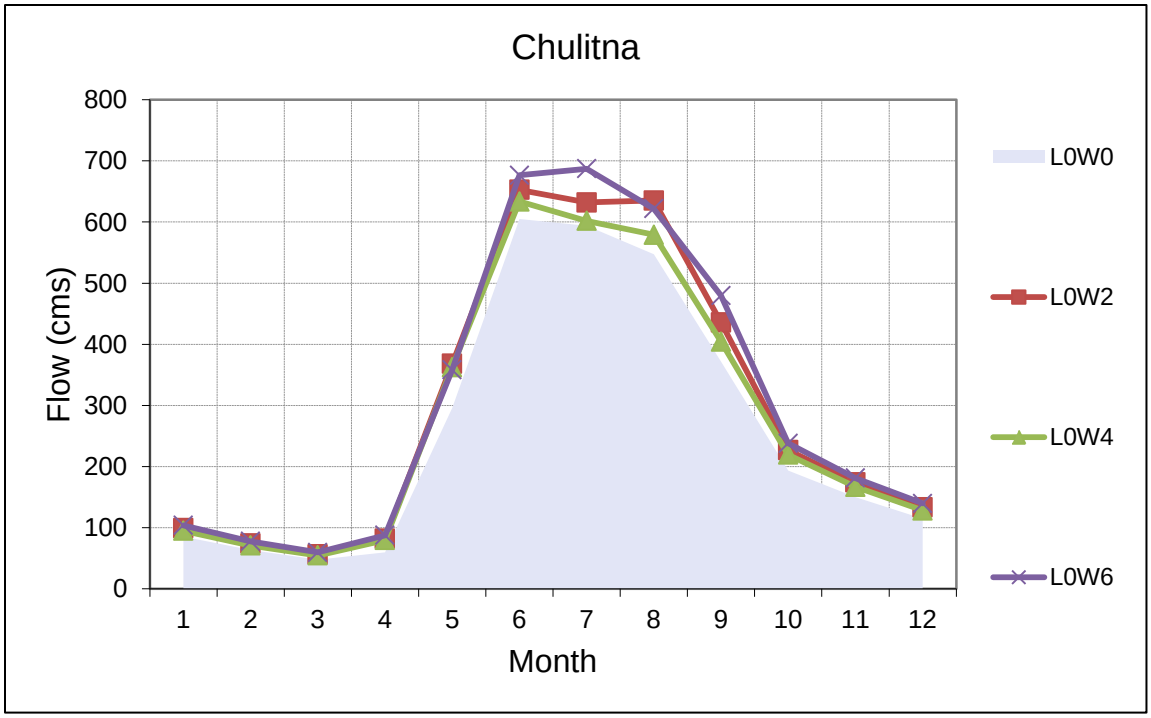


Figure 46. Monthly average flows, Chulitna River (SWAT)

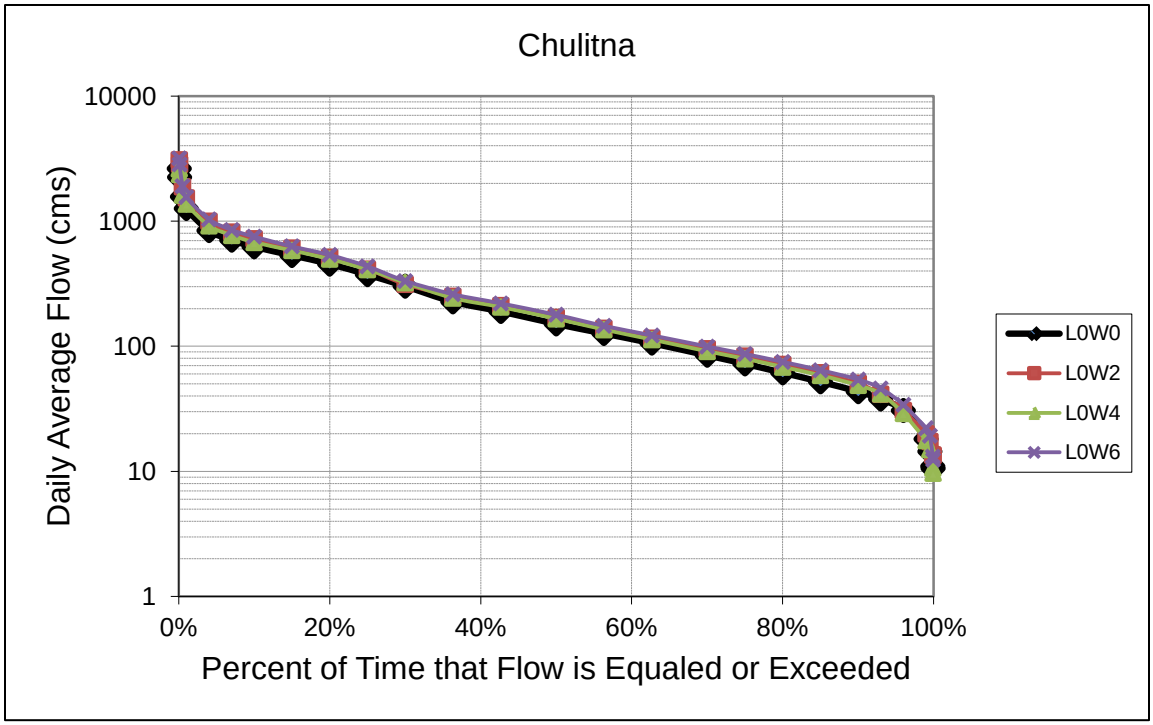


Figure 47. Flow duration, Chulitna River (SWAT)

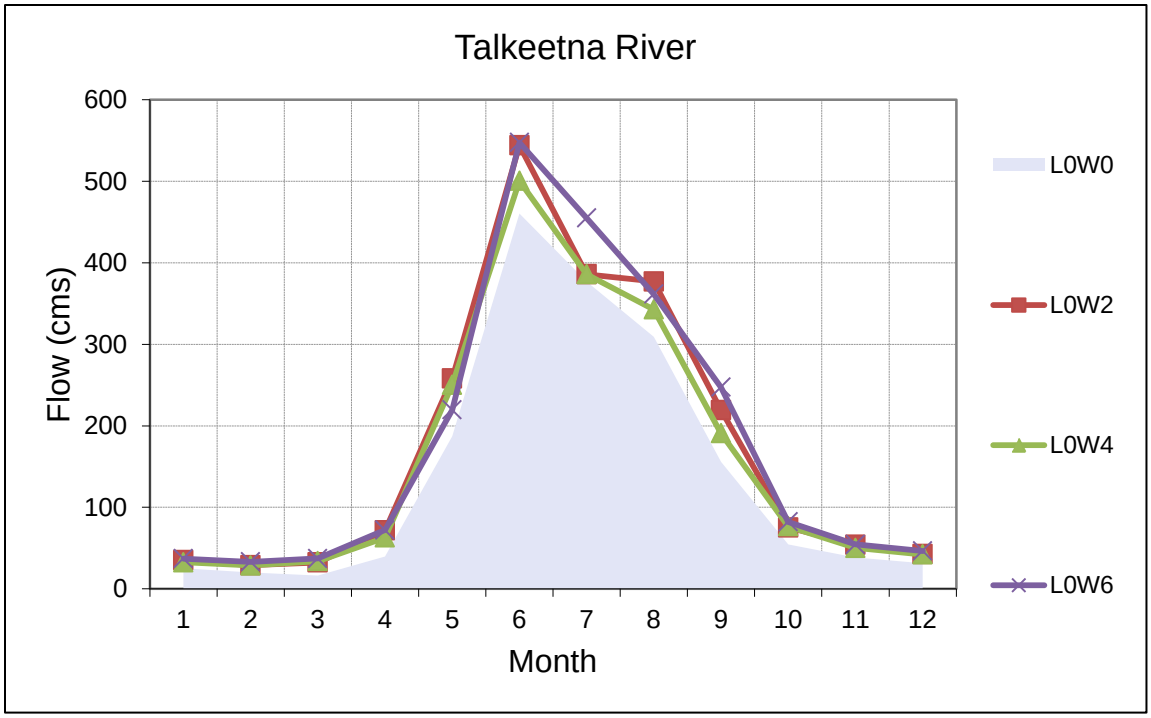


Figure 48. Monthly average flows, Talkeetna River Mouth (SWAT)

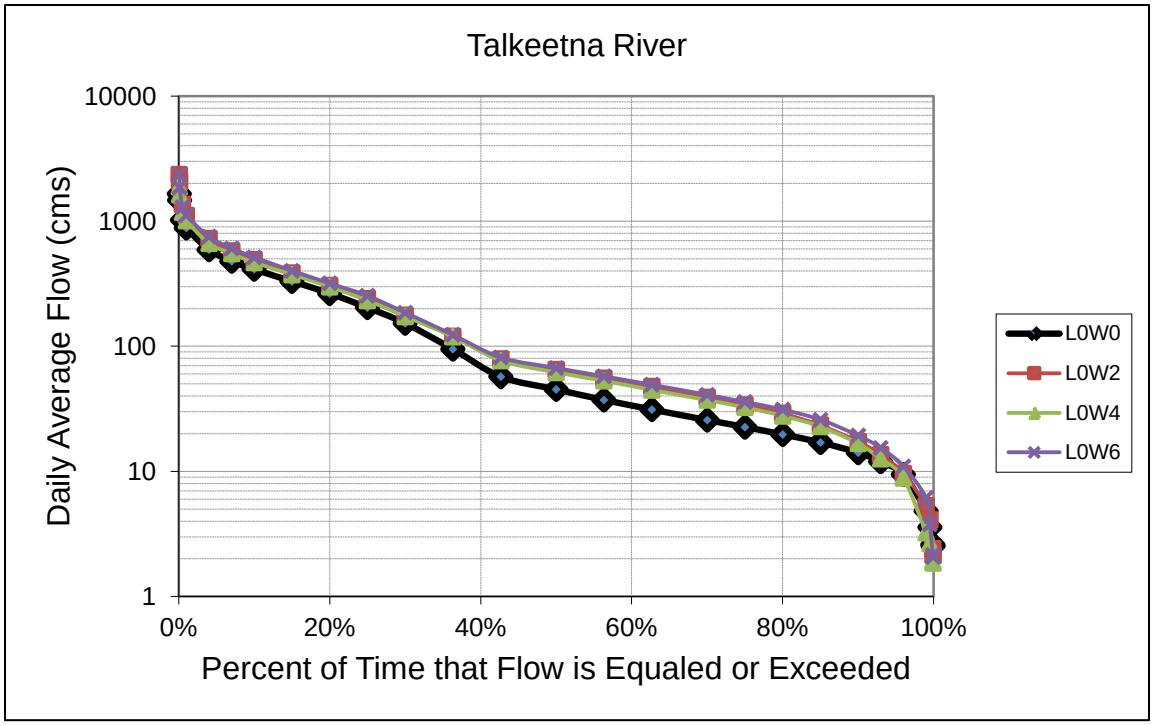


Figure 49. Flow duration, Talkeetna River Mouth (SWAT)

Georgia-Florida Coastal Basins

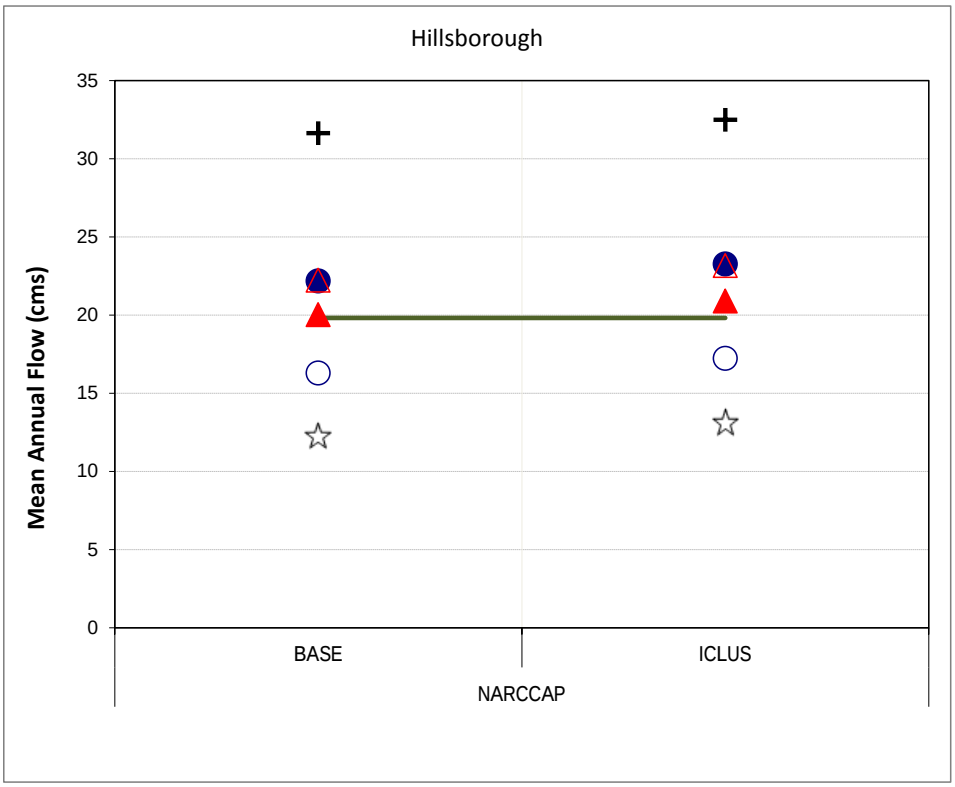


Figure 50. Mean annual flow (cms), Hillsborough River (SWAT)

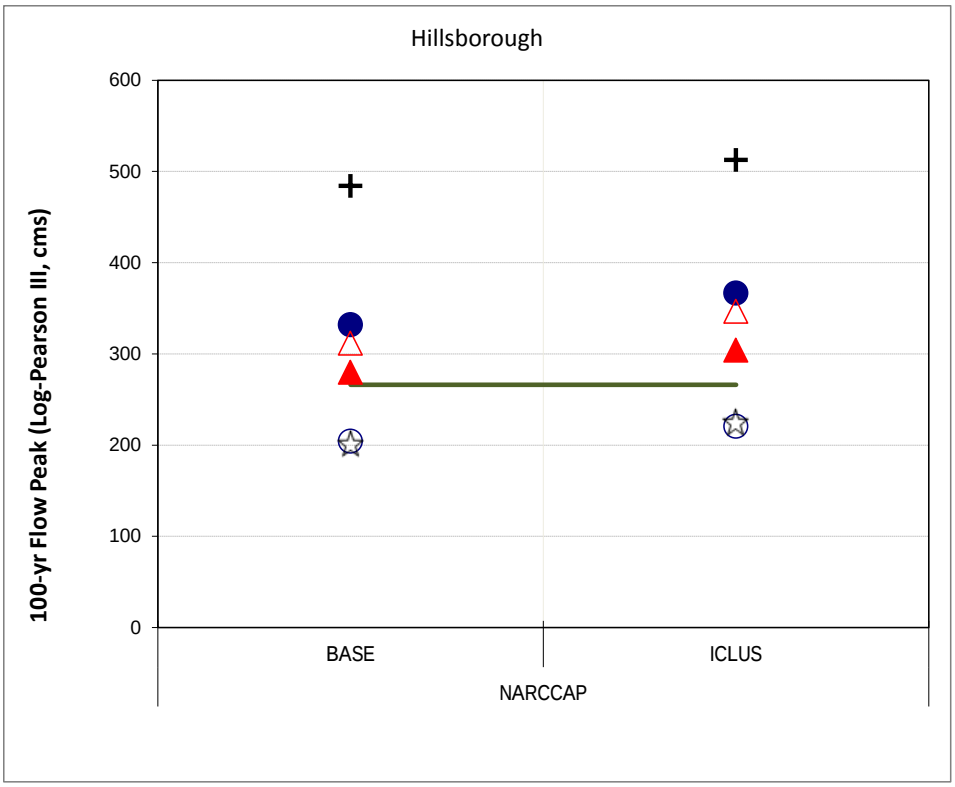


Figure 51. 100-yr Flow Peak (Log-Pearson III, cms), Hillsborough River (SWAT)

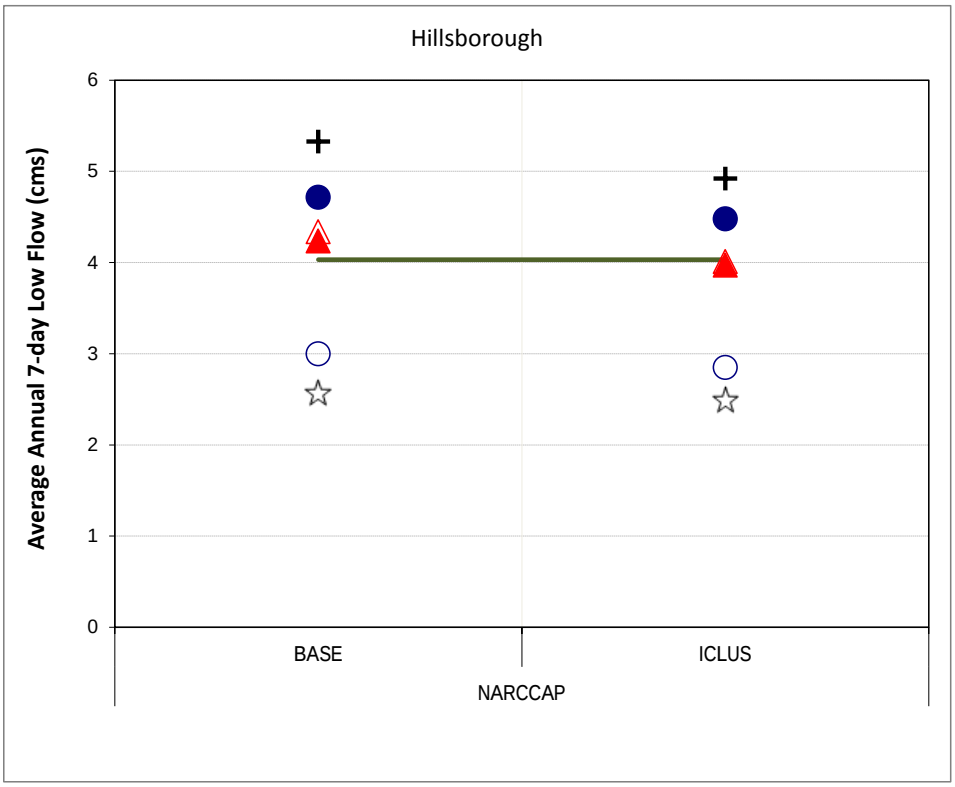


Figure 52. Average Annual 7-day Low Flow (cms), Hillsborough River (SWAT)

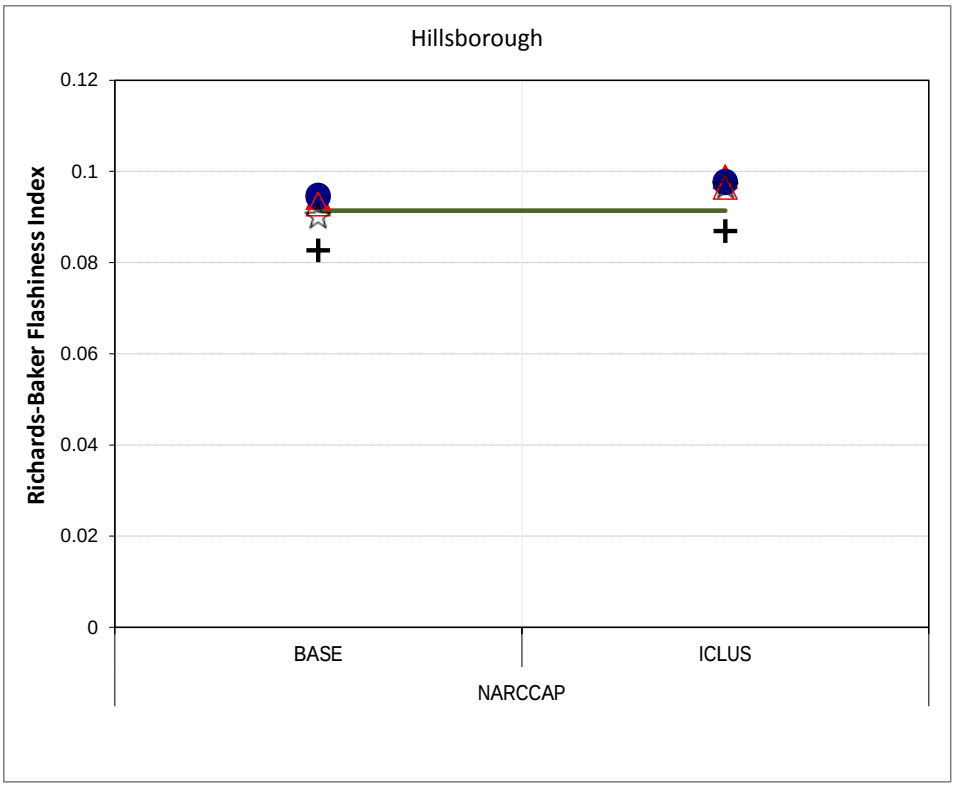


Figure 53. Richards-Baker Flashiness Index, Average Annual 7-day Low Flow (cms), Hillsborough River (SWAT)

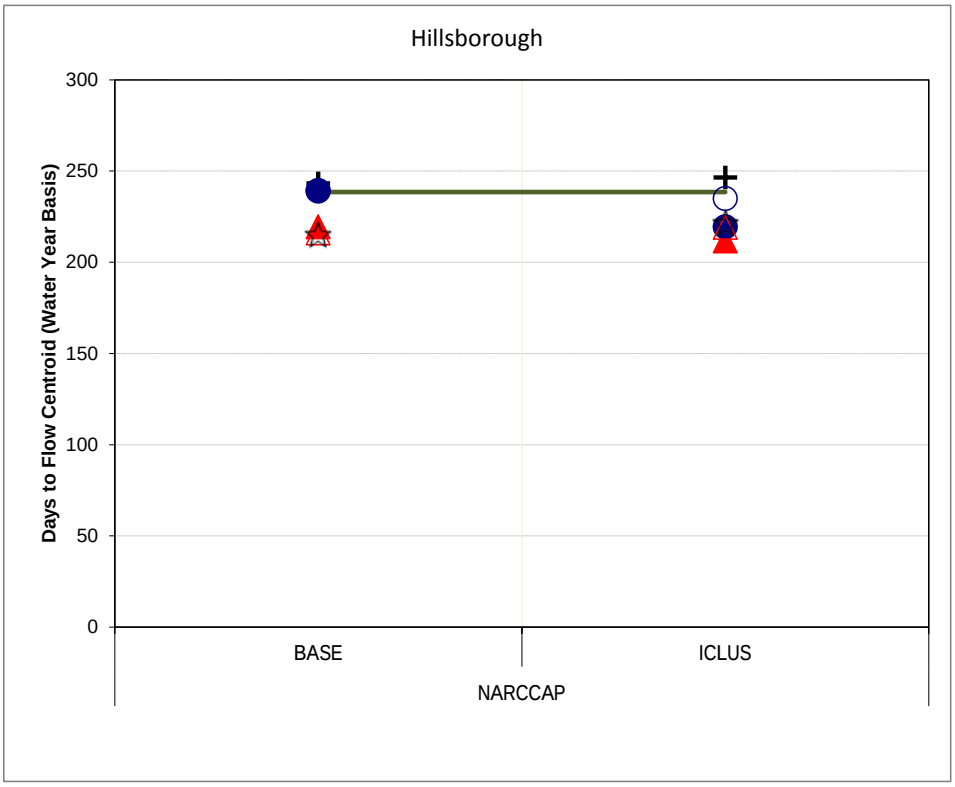


Figure 54. Days to Flow Centroid (Water Year Basis), Hillsborough River (SWAT)

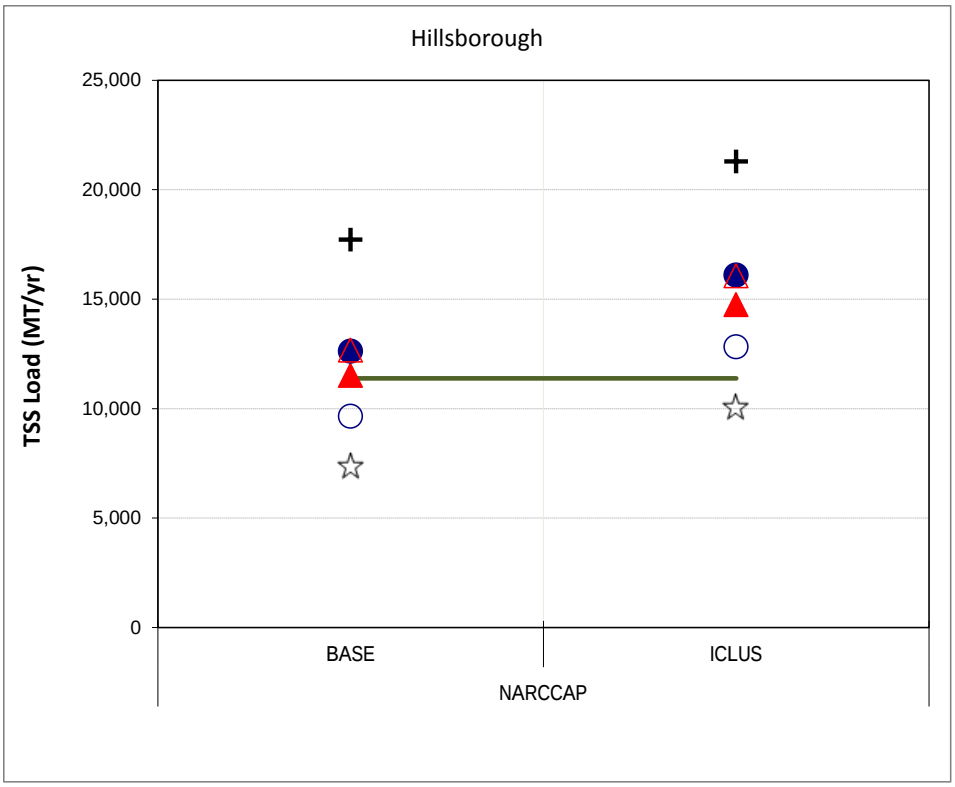


Figure 55. TSS Load (MT/yr), Hillsborough River (SWAT)

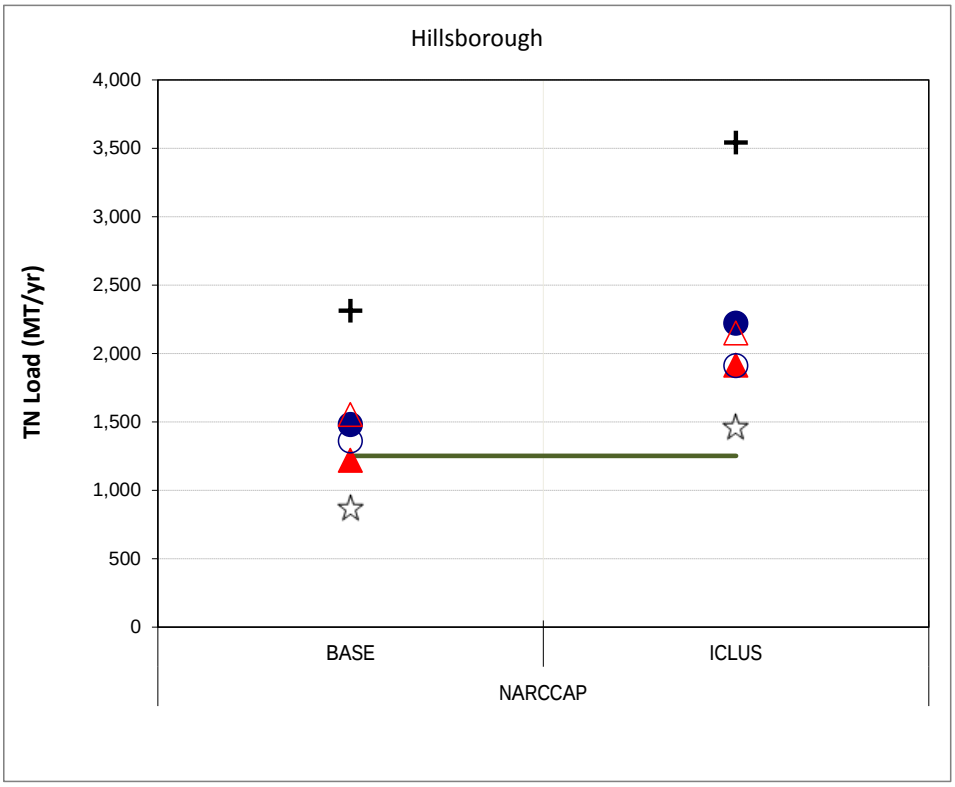


Figure 56. TN Load (MT/yr), Hillsborough River (SWAT)

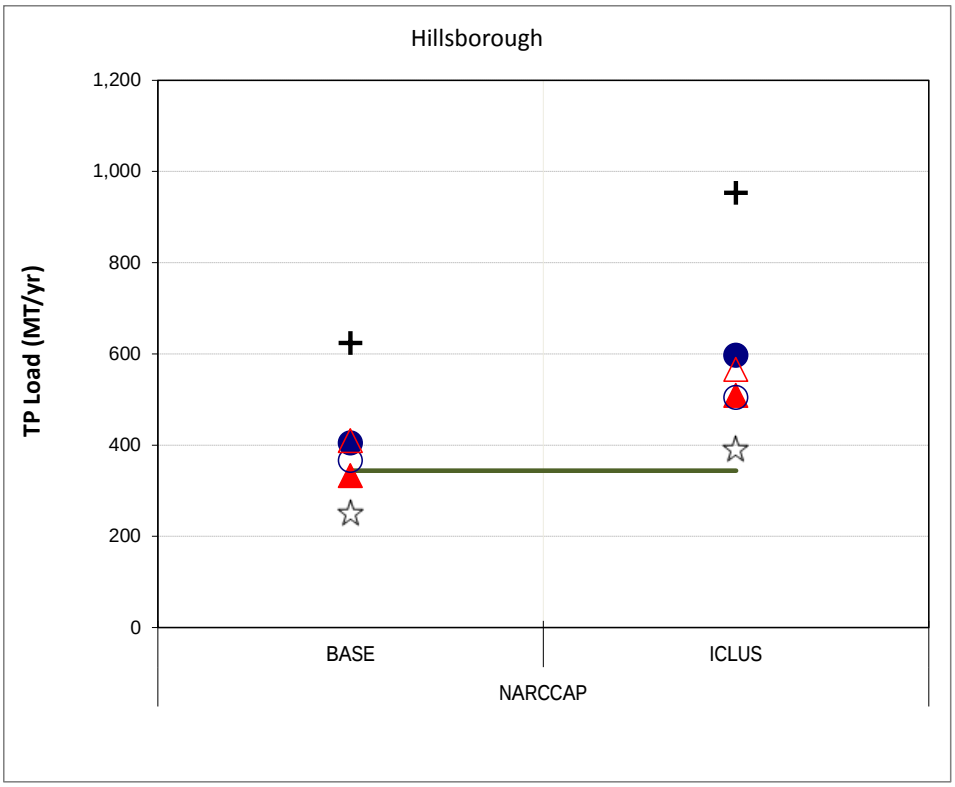


Figure 57. TP Load (MT/yr), Hillsborough River (SWAT)

Table 3. Summary of range of change relative to existing conditions for NARCCAP dynamically downscaled scenarios, Georgia-Florida basins SWAT model

	Results without LU change				Results with LU change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
Aucilla HUC 03110103								
Flow	-23.75%	12.24%	13.58%	45.52%	-23.75%	12.23%	13.58%	45.52%
TSS	-20.42%	18.12%	22.64%	66.75%	-20.40%	18.10%	22.62%	66.73%
TN	-1.99%	12.71%	13.99%	24.82%	-2.06%	12.69%	13.99%	24.97%
TP	-18.40%	22.65%	33.35%	89.73%	-18.71%	22.48%	33.32%	90.36%
Upper Suwanee HUC 03110201								
Flow	-24.84%	28.79%	26.01%	68.81%	-24.81%	28.73%	25.97%	68.71%
TSS	-24.26%	39.56%	37.78%	98.24%	-24.23%	39.49%	37.72%	98.07%
TN	-23.50%	23.01%	22.03%	61.67%	-22.71%	23.87%	22.88%	62.43%
TP	-24.98%	25.16%	24.20%	69.24%	-23.70%	25.90%	25.02%	71.25%
Alapaha HUC 03110202								
Flow	-15.81%	25.16%	21.59%	57.95%	-15.78%	25.09%	21.53%	57.81%
TSS	-18.00%	31.27%	28.14%	76.14%	-17.97%	31.12%	28.01%	75.79%
TN	-11.17%	23.77%	20.63%	52.80%	-9.70%	24.31%	21.62%	53.11%
TP	-23.30%	13.11%	10.13%	43.22%	-21.52%	13.97%	11.48%	43.43%
Withlacoochee (nr Pinetta, FL)								
Flow	-21.49%	24.44%	21.42%	69.85%	-21.48%	24.34%	21.32%	69.60%
TSS	-25.76%	28.45%	26.79%	85.95%	-25.72%	28.36%	26.72%	85.78%
TN	-10.73%	32.23%	29.50%	85.42%	-11.02%	31.22%	28.96%	84.79%
TP	-21.61%	21.51%	20.29%	70.56%	-21.56%	21.14%	20.42%	71.62%
Little HUC 03110204								
Flow	-25.92%	24.76%	20.44%	67.92%	-25.89%	24.69%	20.37%	67.74%
TSS	-27.77%	24.16%	20.64%	69.75%	-27.74%	24.08%	20.61%	69.67%
TN	-11.90%	32.94%	27.78%	71.48%	-12.55%	32.45%	28.19%	73.81%
TP	-23.93%	23.99%	19.96%	59.29%	-24.05%	24.13%	21.23%	63.09%
Lower Suwanee HUC 03110205								
Flow	-24.77%	21.27%	19.99%	56.44%	-24.81%	21.19%	19.89%	56.27%
TSS	-26.02%	29.60%	30.11%	81.11%	-26.06%	29.50%	29.97%	80.86%
TN	-15.26%	30.76%	30.75%	66.08%	-15.75%	30.60%	31.00%	66.62%
TP	-24.37%	25.22%	26.51%	73.14%	-	25.58%	27.00%	74.17%

	Results without LU change				Results with LU change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
					25.00%			
Santa Fe HUC 03110206								
Flow	-26.50%	15.44%	12.31%	37.17%	-26.64%	15.29%	12.14%	36.95%
TSS	-34.97%	24.34%	21.88%	63.75%	-34.48%	23.78%	21.33%	62.17%
TN	0.76%	34.95%	34.17%	52.87%	-2.79%	33.01%	31.08%	50.12%
TP	-30.13%	19.26%	16.36%	52.01%	-32.41%	21.55%	15.81%	49.06%
Apalachee Bay - St. Marks HUC 03120001								
Flow	-25.80%	10.87%	12.84%	45.59%	-25.92%	10.36%	12.20%	44.44%
TSS	-20.78%	13.04%	17.60%	55.25%	-20.01%	10.39%	13.52%	45.25%
TN	-3.33%	18.02%	18.73%	38.17%	-7.19%	15.56%	17.39%	39.98%
TP	-27.82%	11.78%	15.72%	59.93%	-30.89%	8.01%	13.45%	57.31%
Upper Ochlockonee HUC 03120002								
Flow	-25.04%	26.32%	19.62%	61.25%	-25.03%	26.30%	19.61%	61.22%
TSS	-38.65%	34.32%	27.93%	82.94%	-38.65%	34.31%	27.92%	82.92%
TN	-22.80%	29.48%	24.54%	77.46%	-22.12%	30.39%	25.48%	79.43%
TP	-31.13%	13.95%	9.86%	51.03%	-30.52%	14.76%	10.75%	53.16%
Lower Ochlockonee HUC 03120003								
Flow	-30.24%	14.32%	13.81%	50.41%	-30.23%	14.11%	13.56%	49.94%
TSS	-31.40%	20.86%	21.26%	69.71%	-31.52%	20.58%	20.90%	69.17%
TN	-16.07%	22.06%	22.91%	59.18%	-17.77%	21.60%	22.00%	57.25%
TP	-34.99%	16.34%	18.35%	74.66%	-36.39%	15.54%	16.71%	69.16%
Little Manatee HUC 03100203								
Flow	-39.73%	-1.06%	0.44%	47.18%	-39.16%	-1.25%	-0.05%	44.98%
TSS	-45.87%	-2.45%	3.26%	67.43%	-41.56%	-2.06%	0.73%	52.77%
TN	-35.64%	17.99%	27.11%	109.29%	-33.32%	0.81%	11.16%	74.13%
TP	-42.97%	7.04%	17.11%	98.78%	-37.23%	-3.02%	7.99%	75.35%
Alafia HUC 03100204								
Flow	-35.01%	4.37%	1.61%	46.53%	-34.18%	4.30%	1.29%	43.89%
TSS	-35.63%	6.13%	3.28%	51.25%	-33.45%	5.77%	2.78%	46.56%
TN	-20.18%	13.29%	30.43%	123.07%	-7.94%	14.11%	30.90%	95.91%
TP	-26.24%	5.15%	1.69%	31.06%	-24.25%	5.79%	3.49%	32.00%

	Results without LU change				Results with LU change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
Hillsborough HUC 03100205								
Flow	-37.66%	6.42%	4.82%	59.53%	-36.21%	6.31%	4.77%	56.79%
TSS	-34.82%	6.04%	4.86%	55.70%	-30.98%	5.05%	3.58%	45.17%
TN	-29.58%	13.41%	17.23%	84.71%	-24.74%	3.81%	12.50%	80.96%
TP	-26.00%	12.06%	15.92%	81.45%	-25.62%	1.54%	10.93%	80.06%

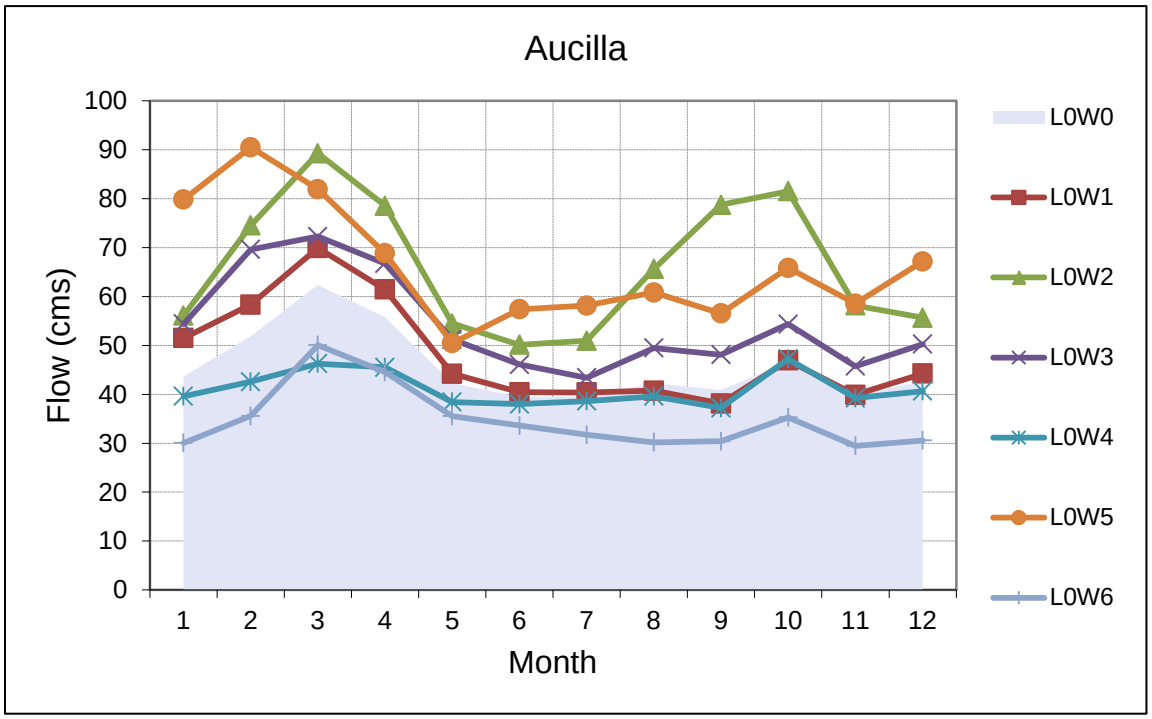


Figure 58. Monthly average flows, Aucilla River (SWAT)

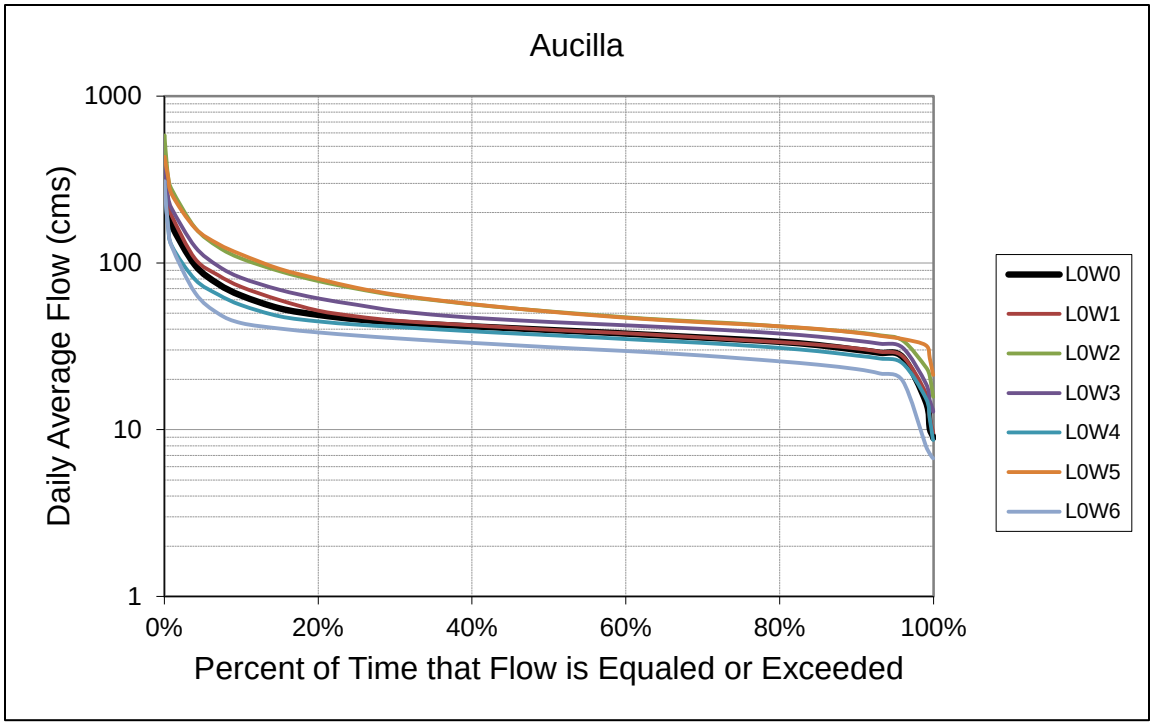


Figure 59. Flow duration, Aucilla River (SWAT)

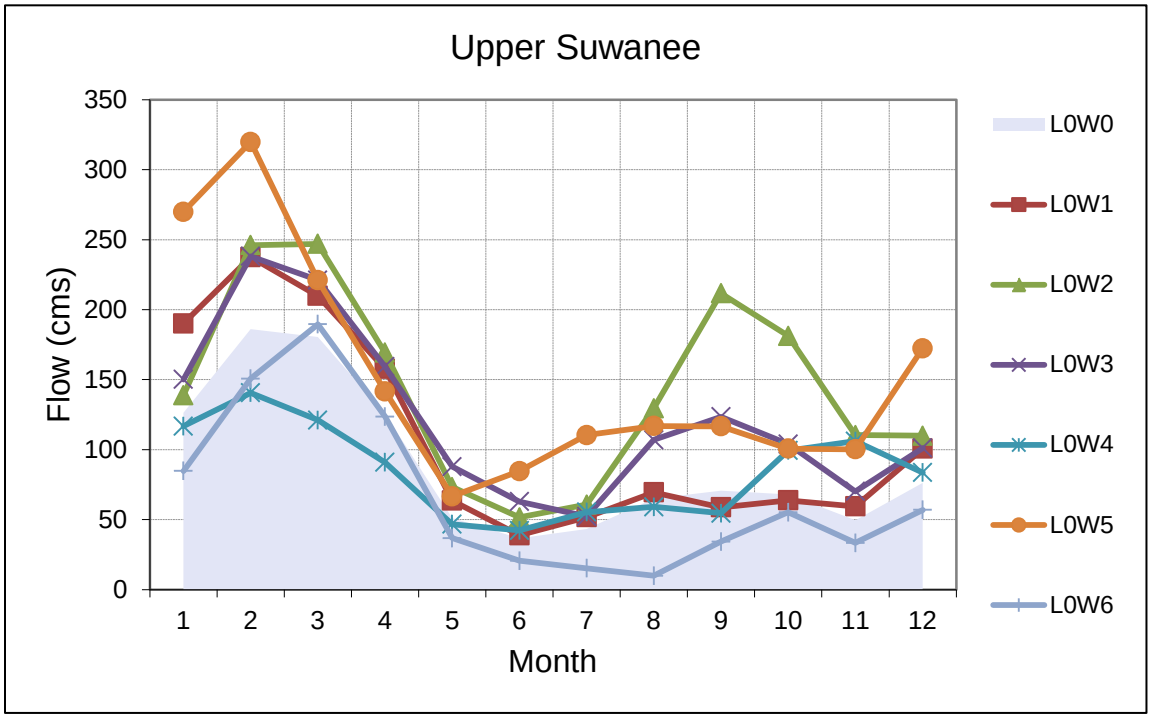


Figure 60. Monthly average flows, Upper Suwanee River (SWAT)

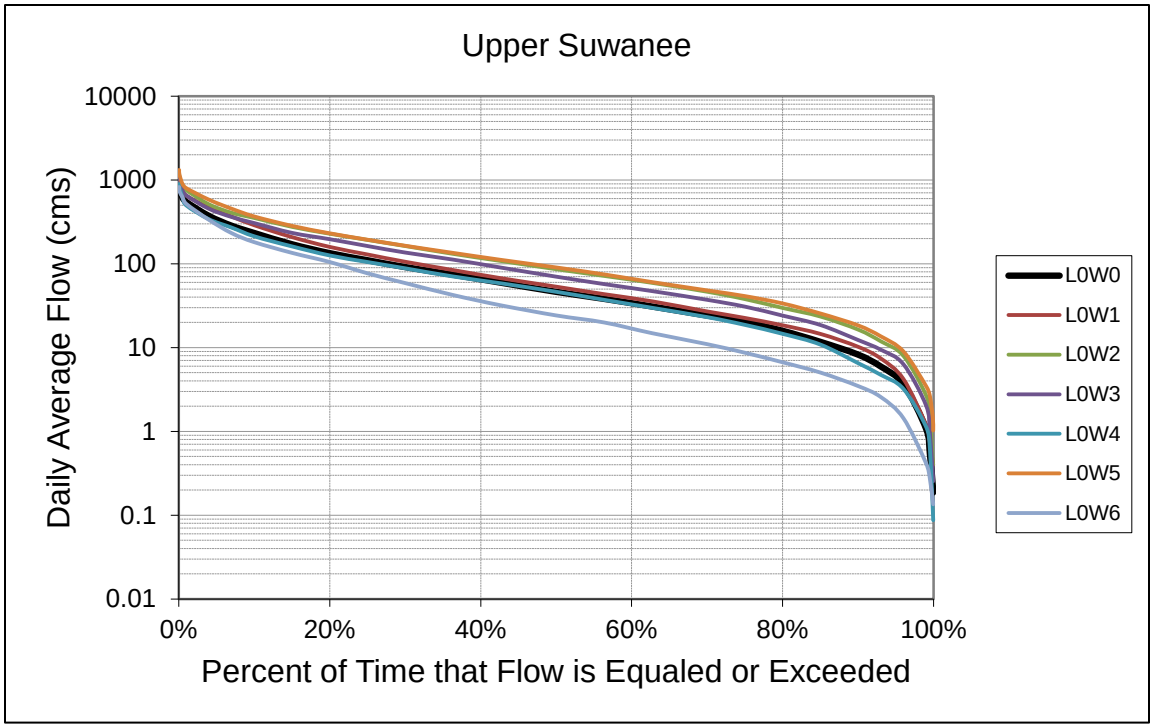


Figure 61. Flow duration, Upper Suwanee River (SWAT)

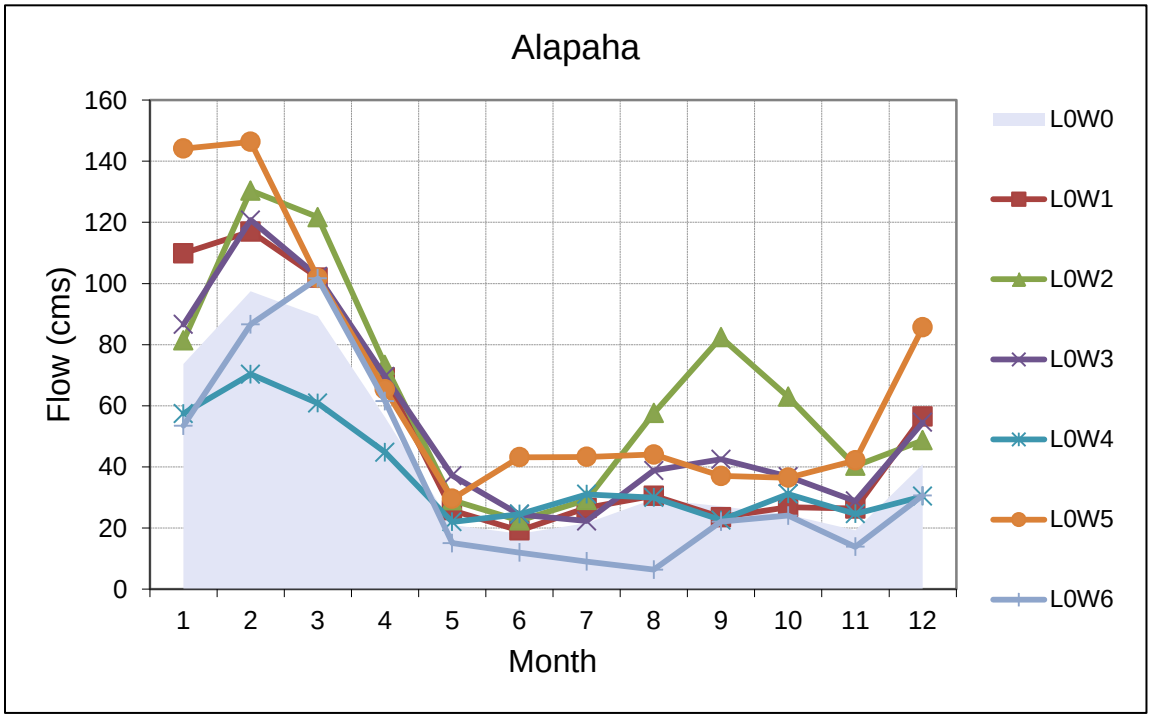


Figure 62. Monthly average flows, Alapaha River (SWAT)

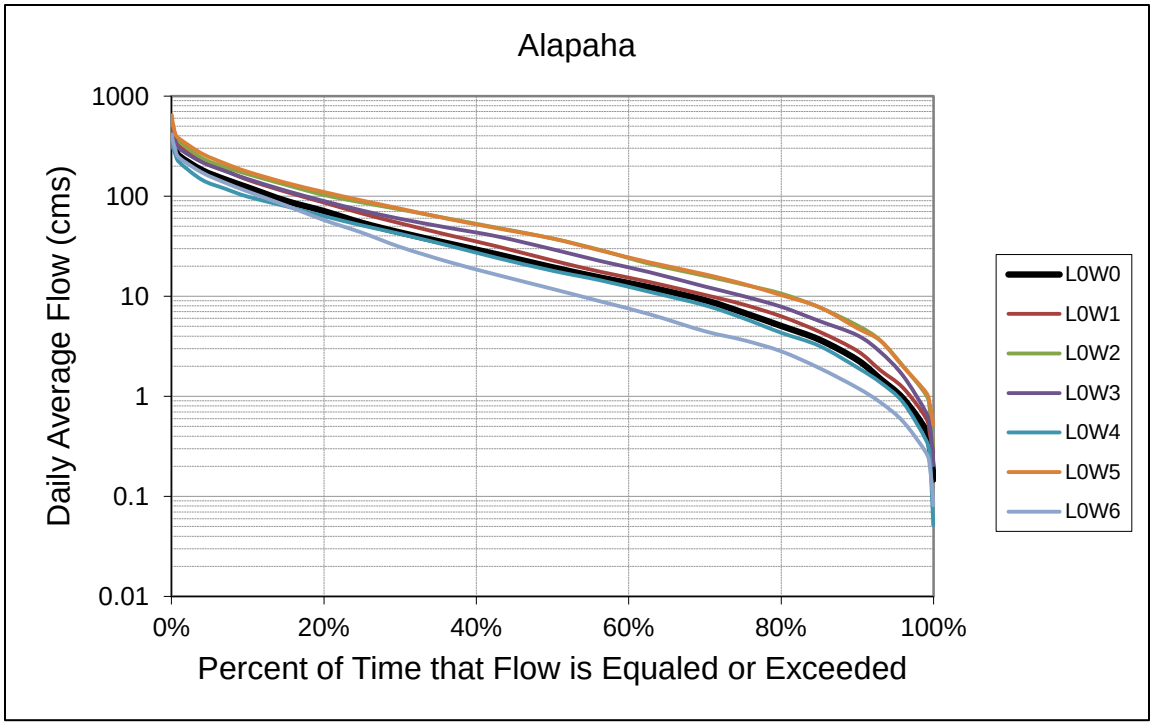


Figure 63. Flow duration, Alapaha River (SWAT)

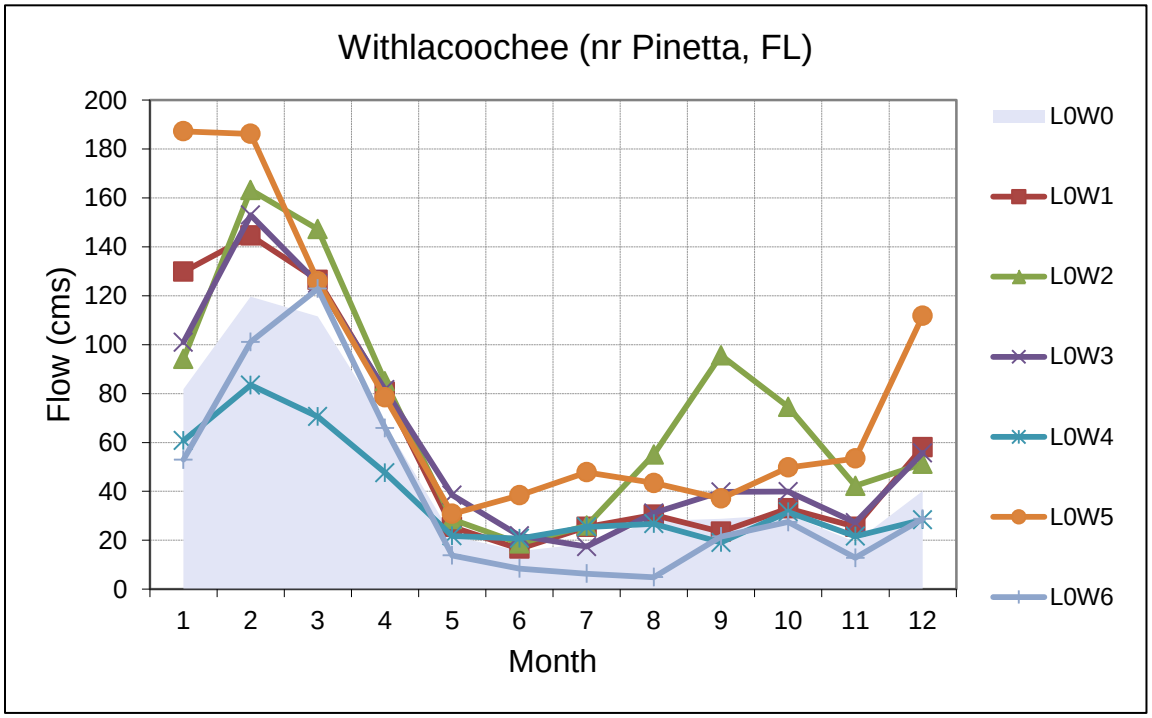


Figure 64. Monthly average flows, Withlacoochee River near Pinetta, FL (SWAT)

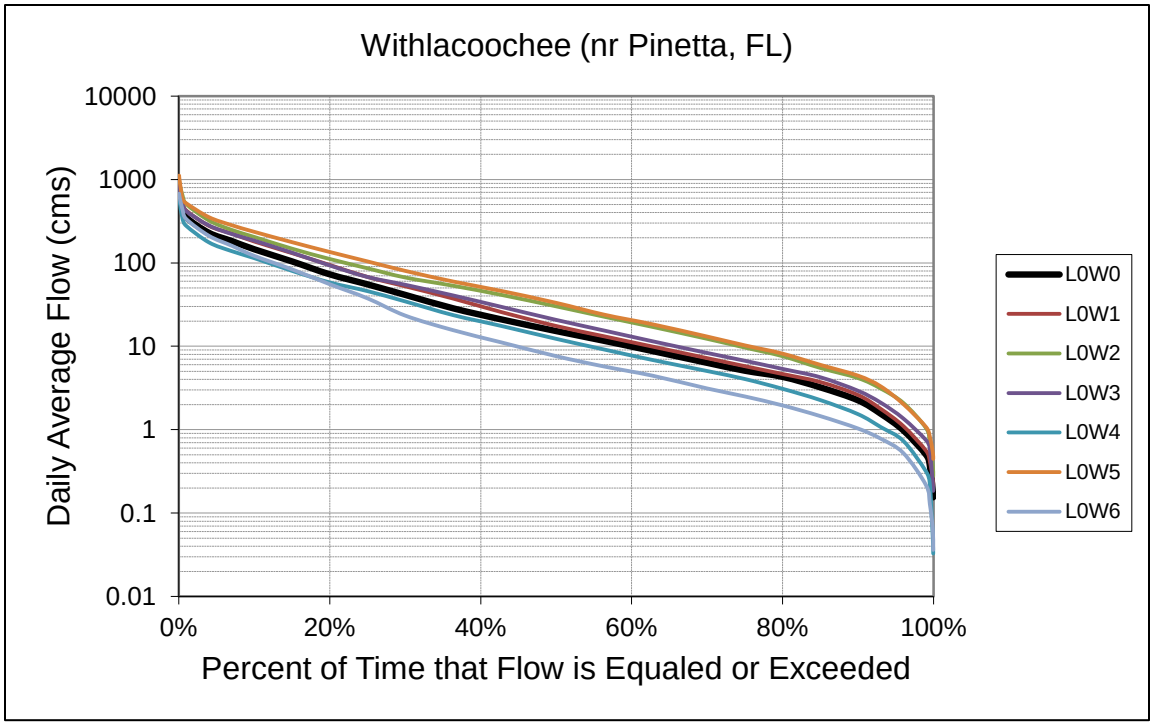


Figure 65. Flow duration, Withlacoochee River near Pinetta, FL (SWAT)

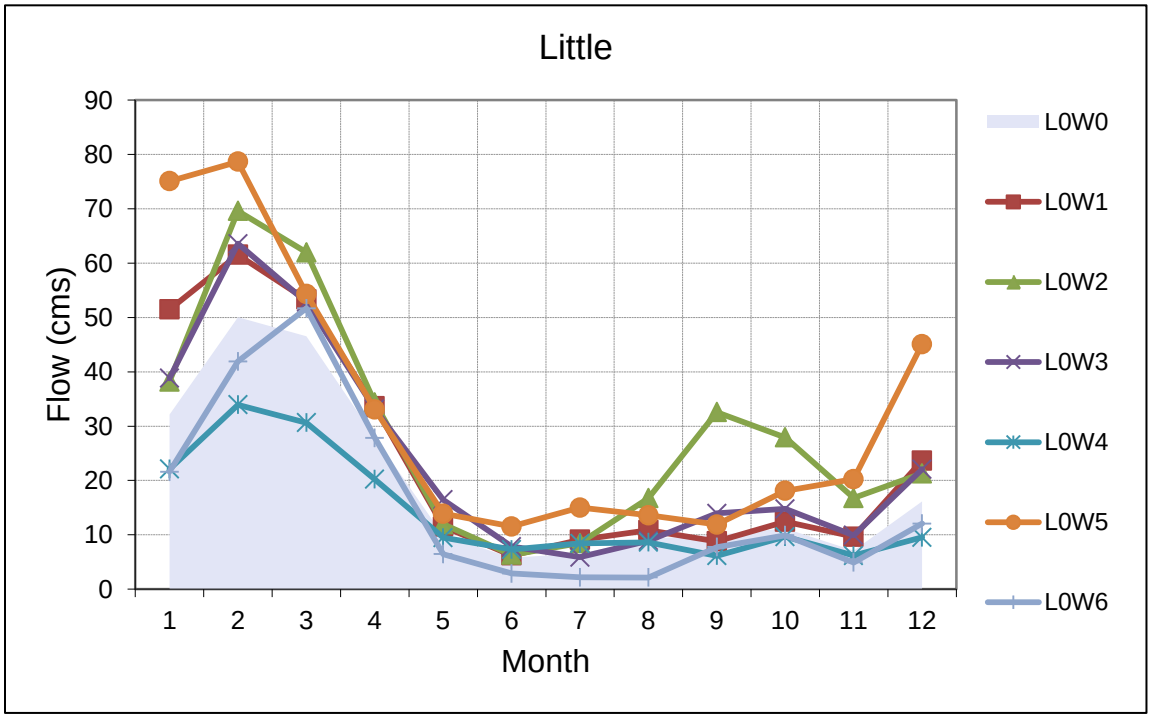


Figure 66. Monthly average flows, Little River (SWAT)

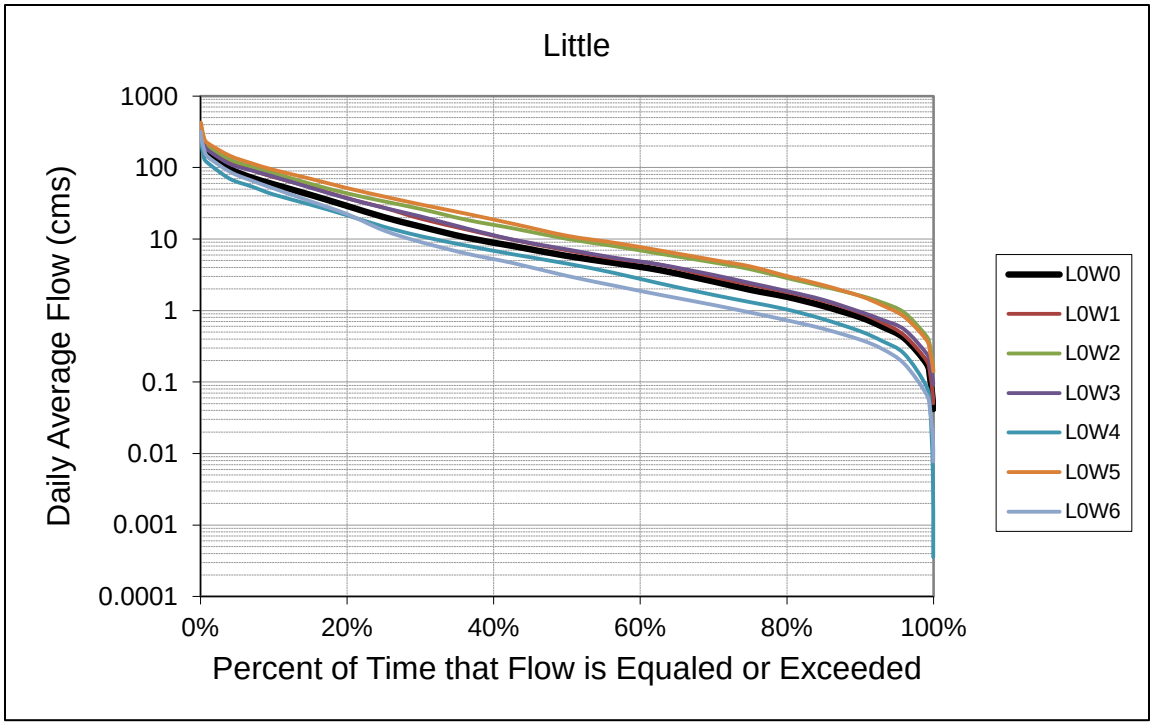


Figure 67. Flow duration, Little River (SWAT)

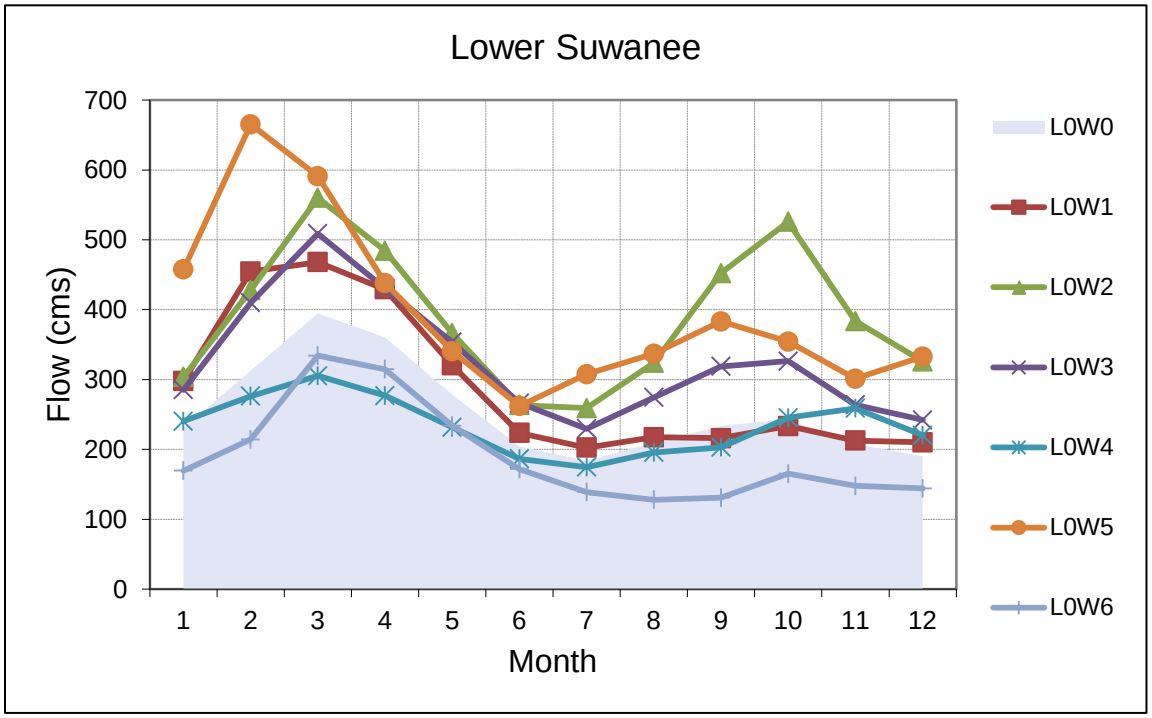


Figure 68. Monthly average flows, Lower Suwanee River (SWAT)

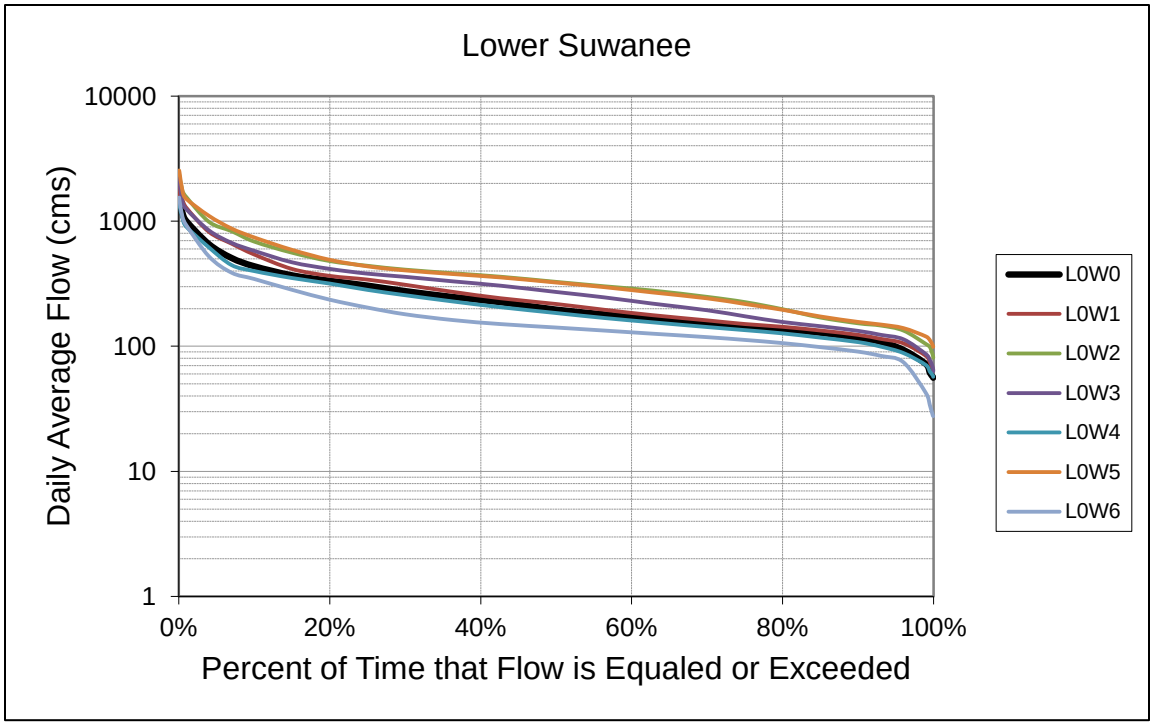


Figure 69. Flow duration, Lower Suwanee River (SWAT)

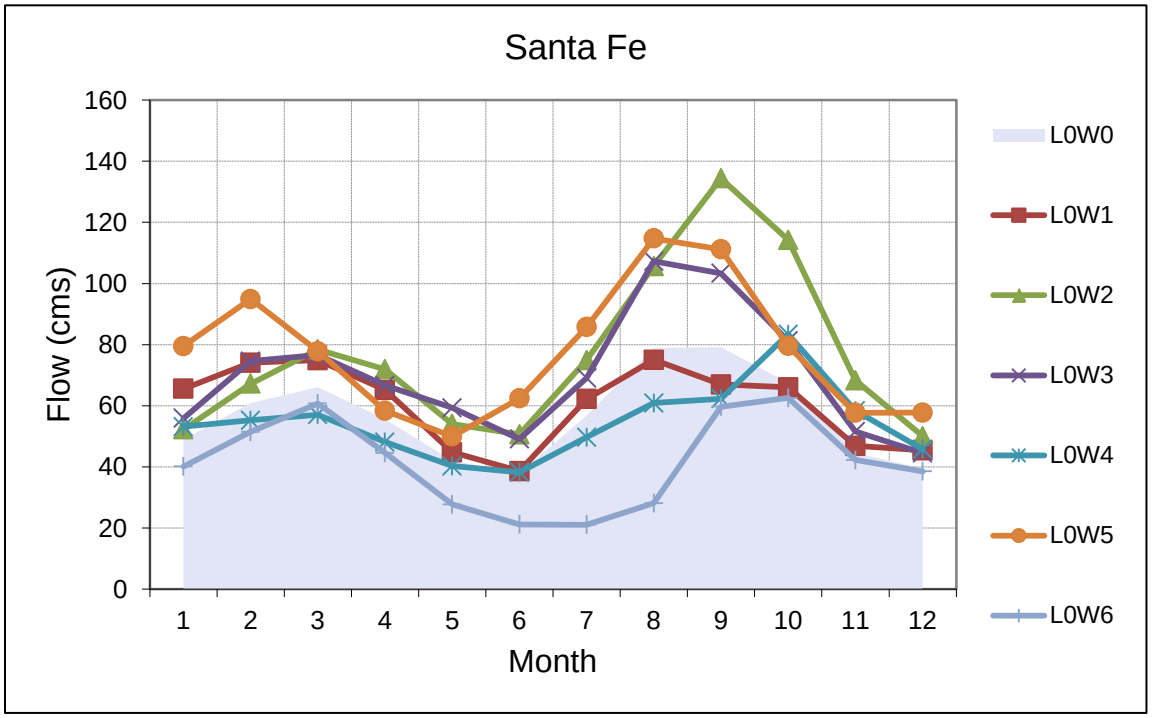


Figure 70. Monthly average flows, Santa Fe River (SWAT)

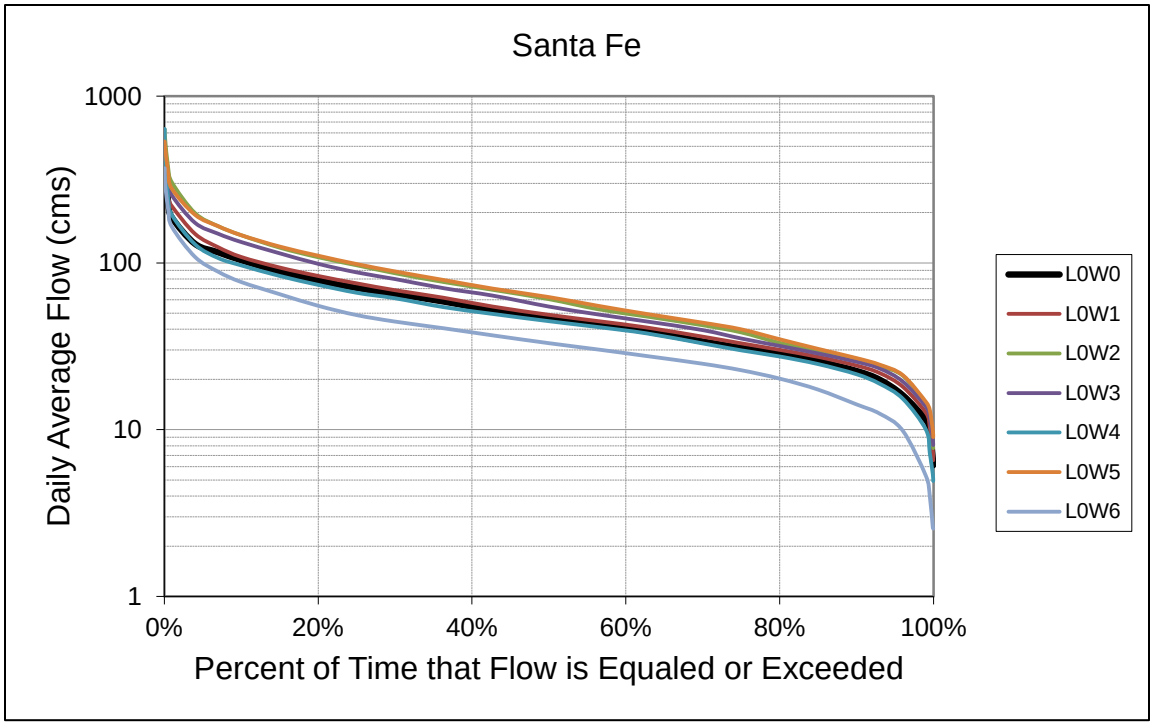


Figure 71. Flow duration, Santa Fe River (SWAT)

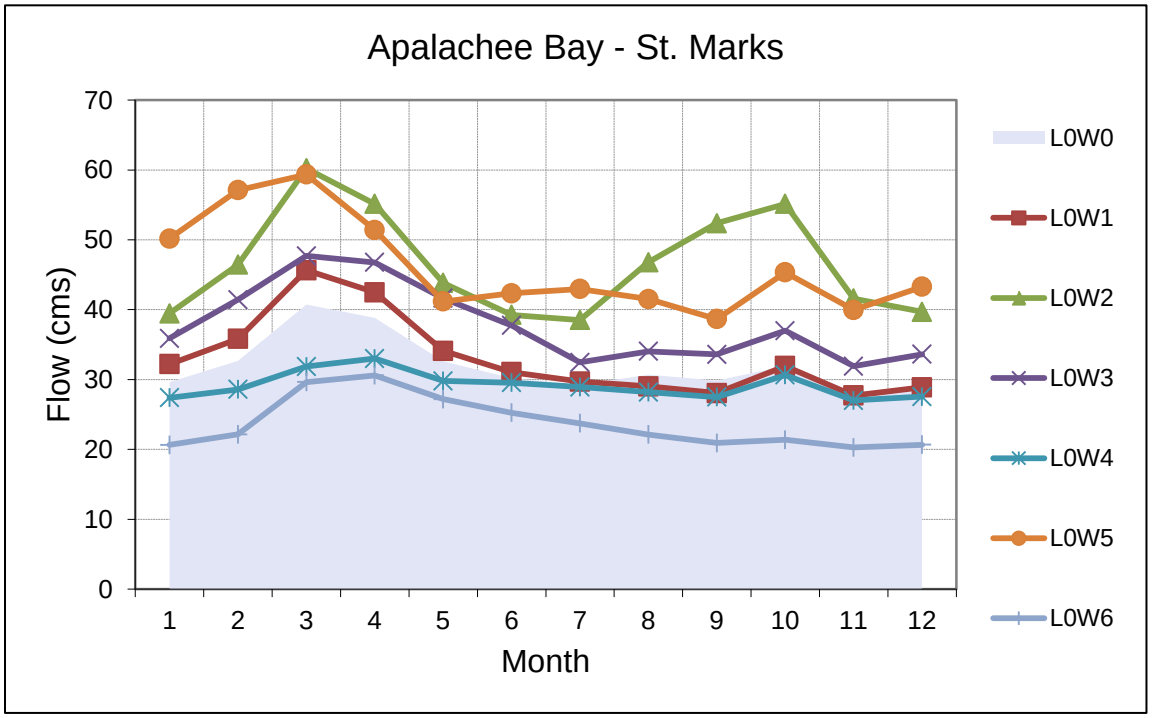


Figure 72. Monthly average flows, Apalachee Bay at St. Marks HUC8 (SWAT)

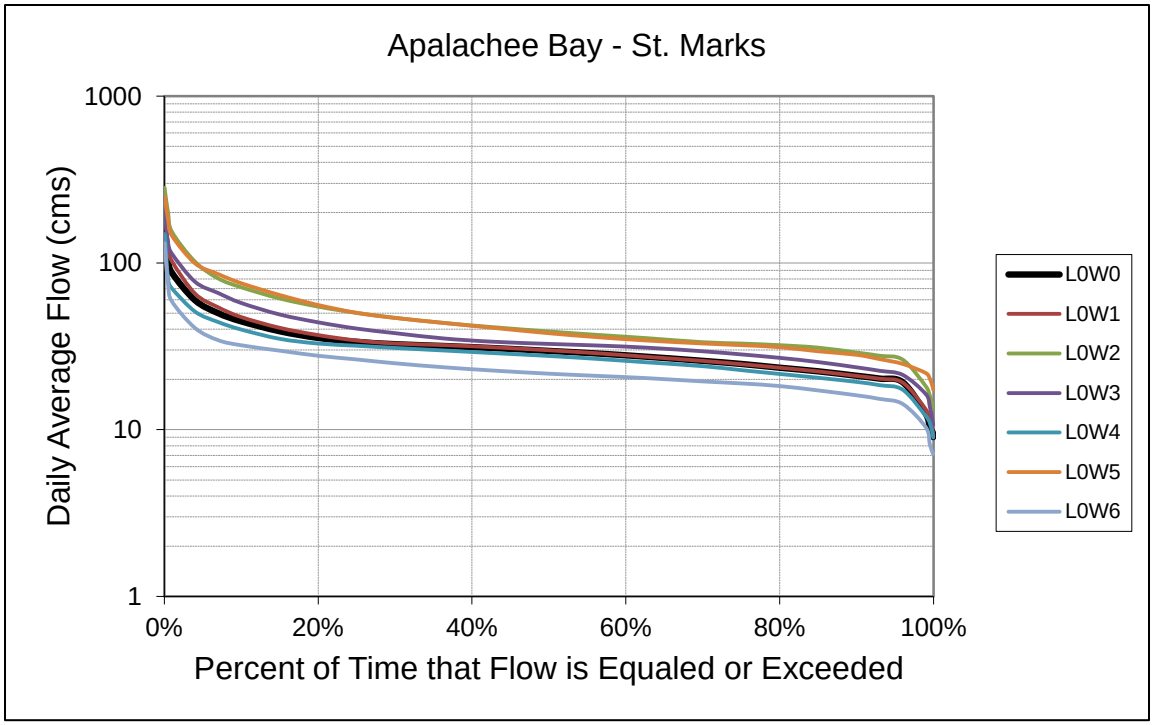


Figure 73. Flow duration, Apalachee Bay at St. Marks HUC8 (SWAT)

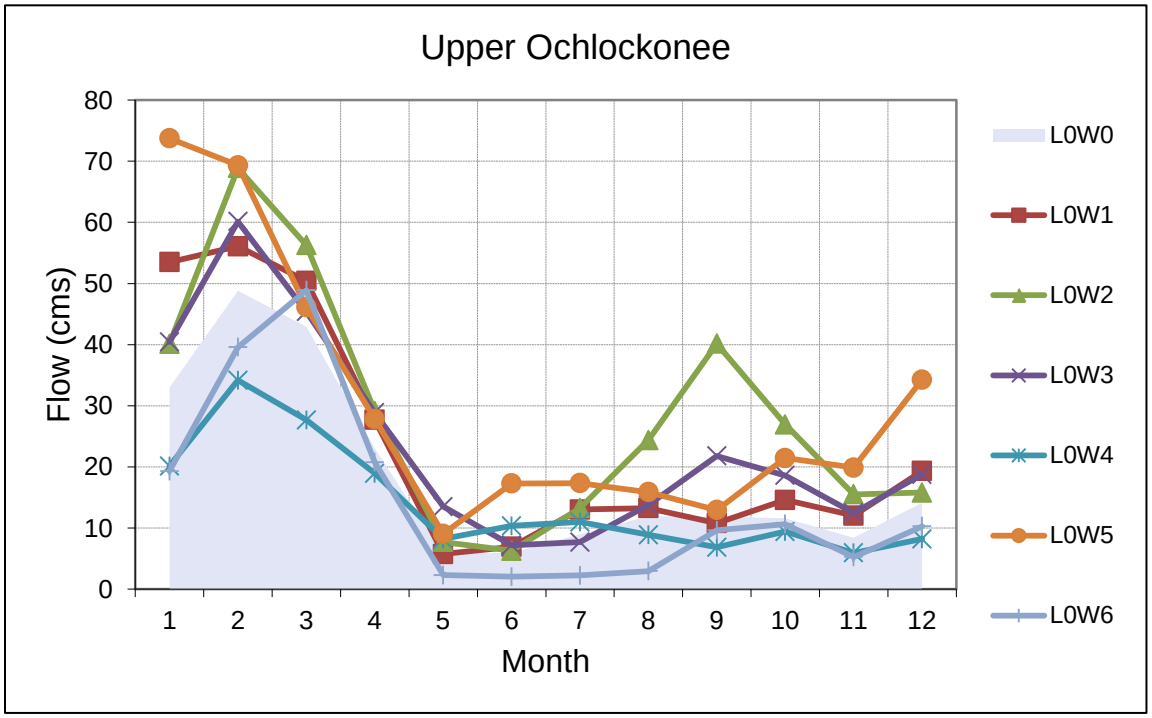


Figure 74. Monthly average flows, Upper Ochlockonee River (SWAT)

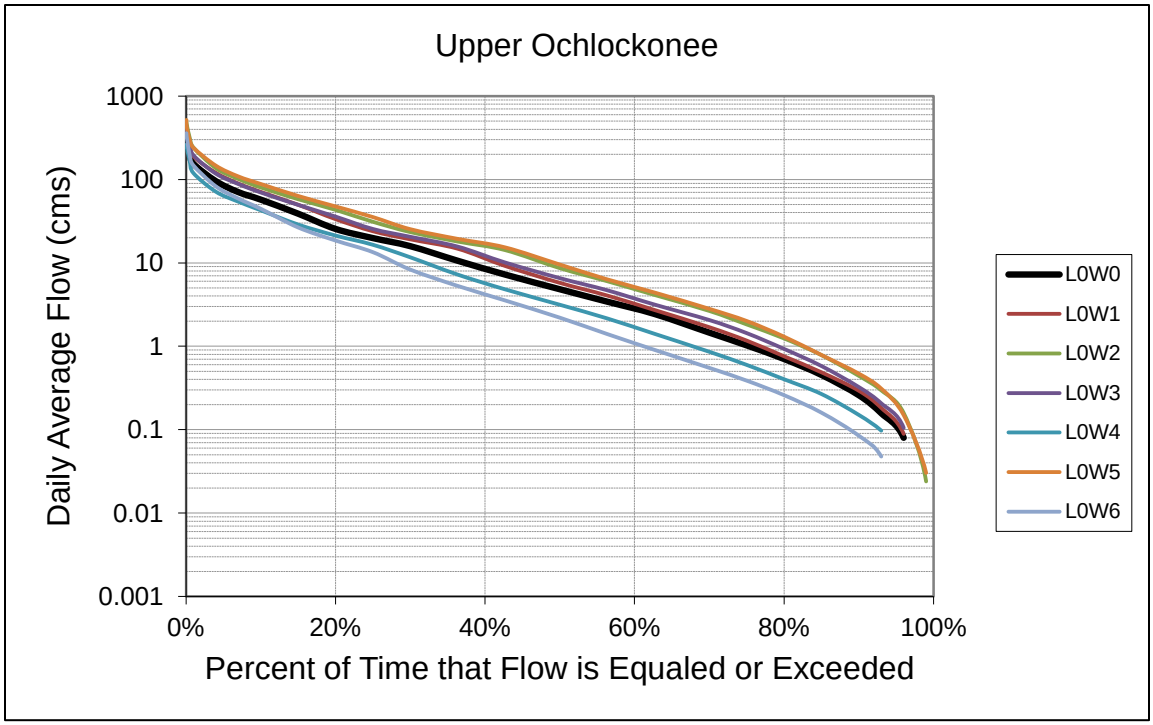


Figure 75. Flow duration, Upper Ochlockonee River (SWAT)

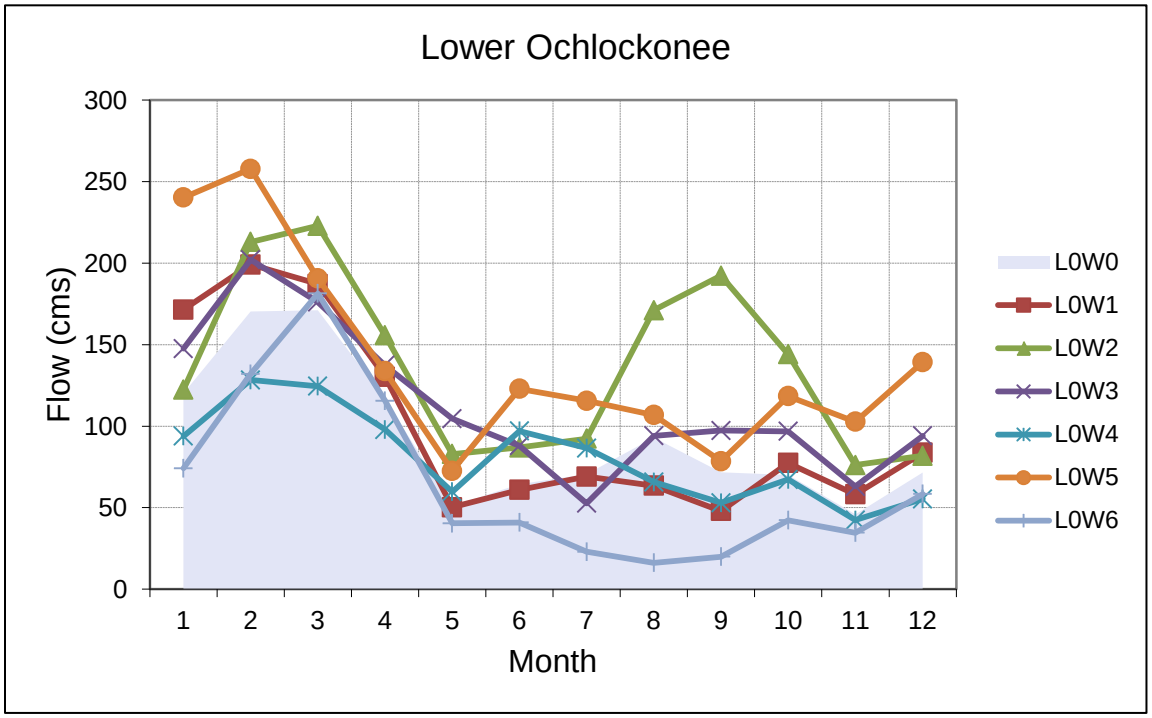


Figure 76. Monthly average flows, Lower Ochlockonee River (SWAT)

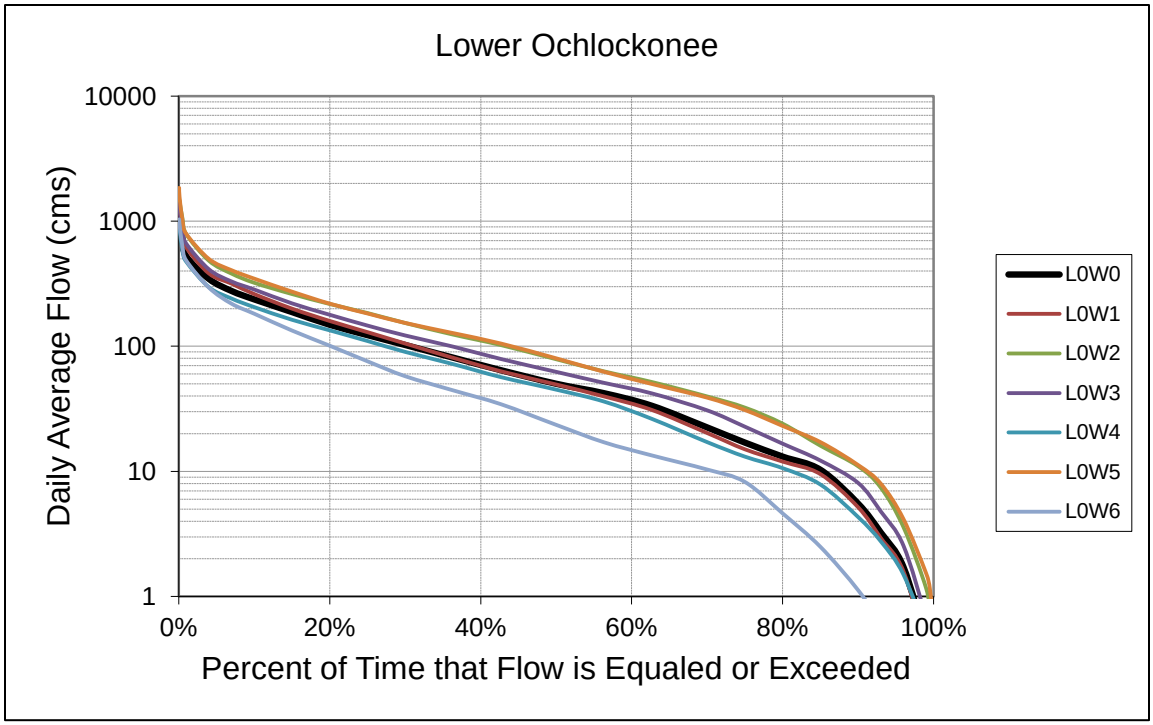


Figure 77. Flow duration, Lower Ochlockonee River (SWAT)

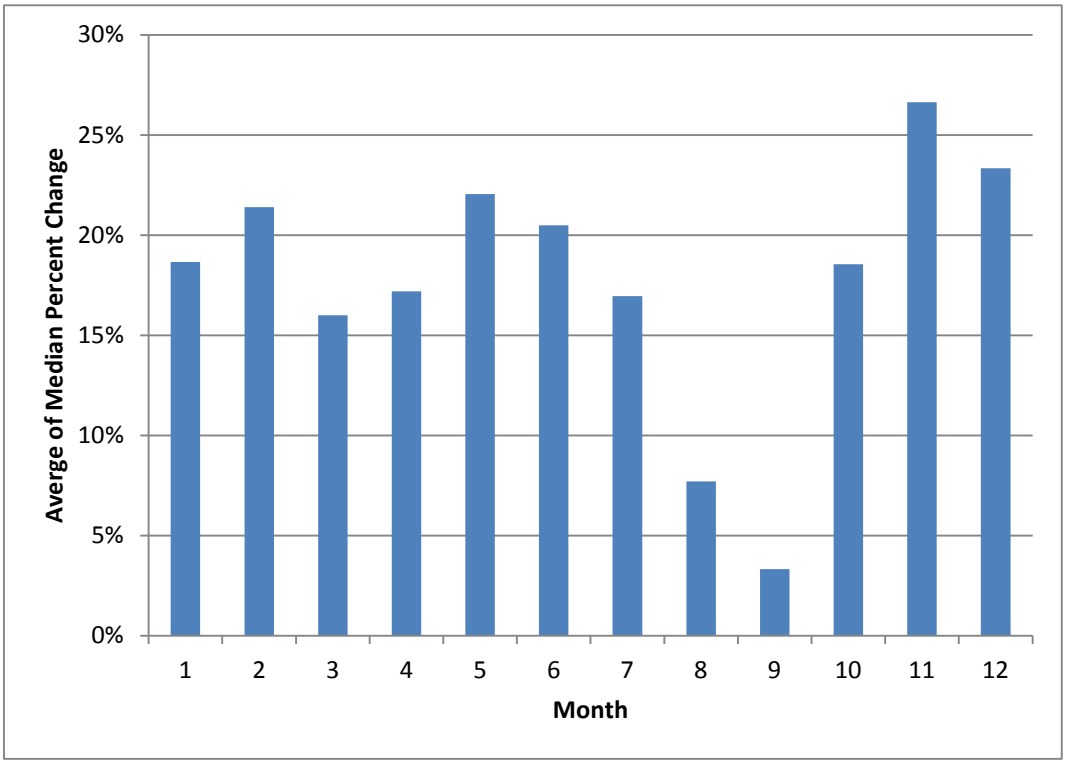


Figure 78. Average of median percent change in flow; NARCCAP Scenarios W1-W6 at all stations, Georgia-Florida basins (SWAT)

Illinois River Basin

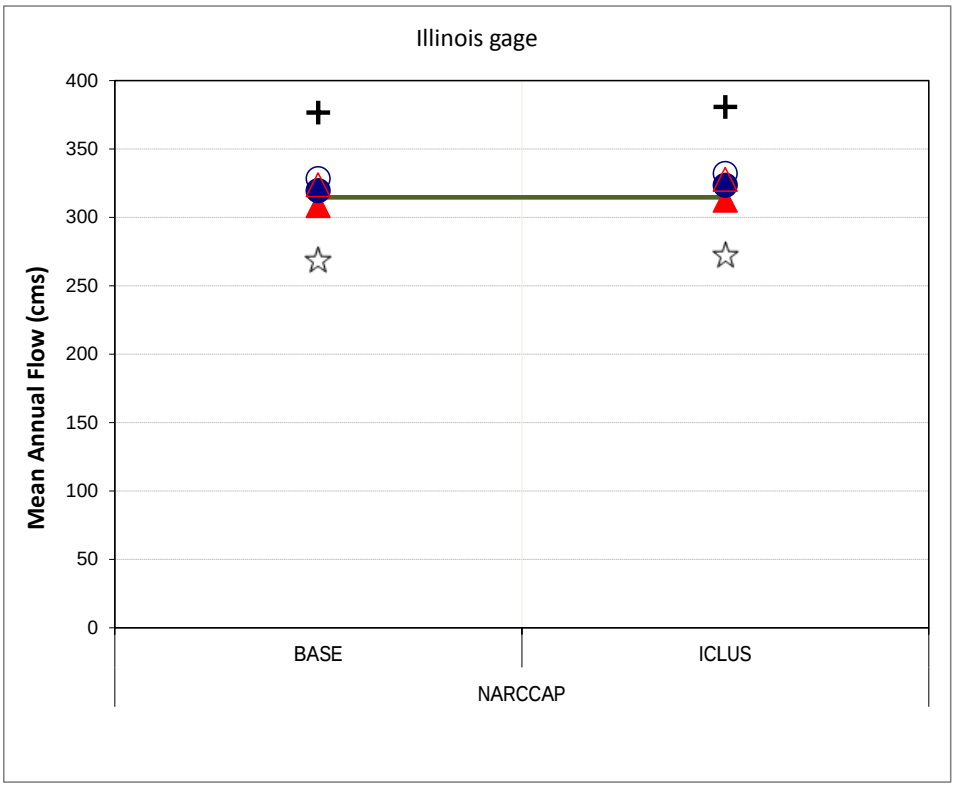


Figure 79. Mean annual flow (cms), Illinois River at Marseilles Gage (SWAT)

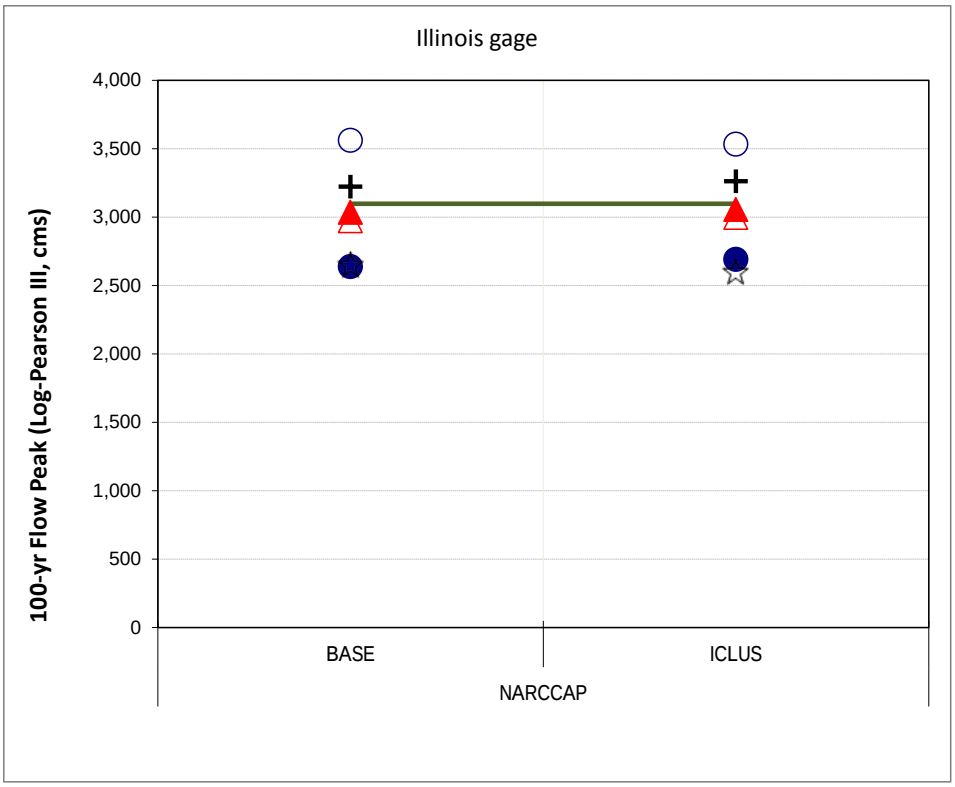


Figure 80. 100-yr Flow Peak (Log-Pearson III, cms), Illinois River at Marseilles Gage (SWAT)

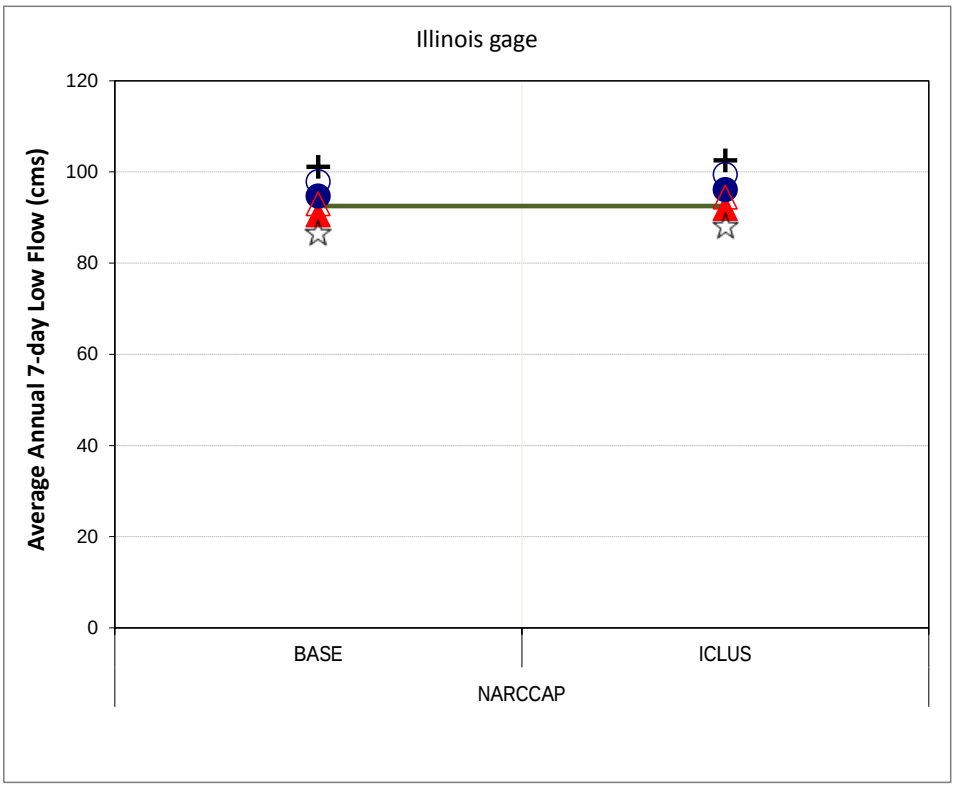


Figure 81. Average Annual 7-day Low Flow (cms), Illinois River at Marseilles Gage (SWAT)

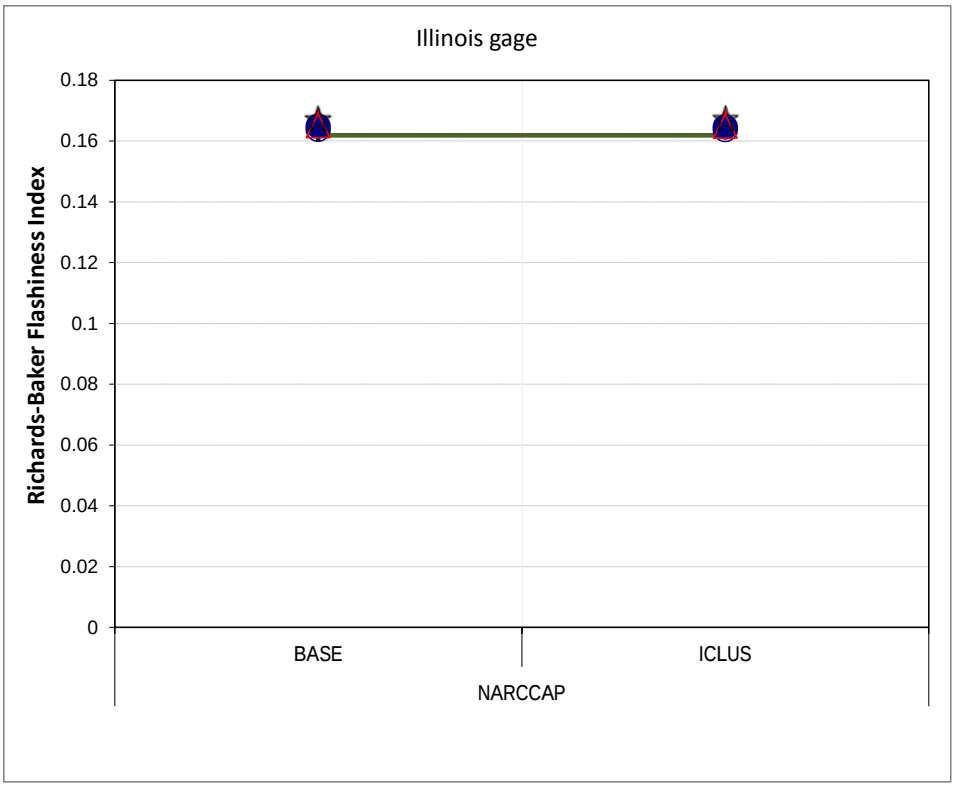


Figure 82. Richards-Baker Flashiness Index, Average Annual 7-day Low Flow (cms), Illinois River at Marseilles Gage (SWAT)

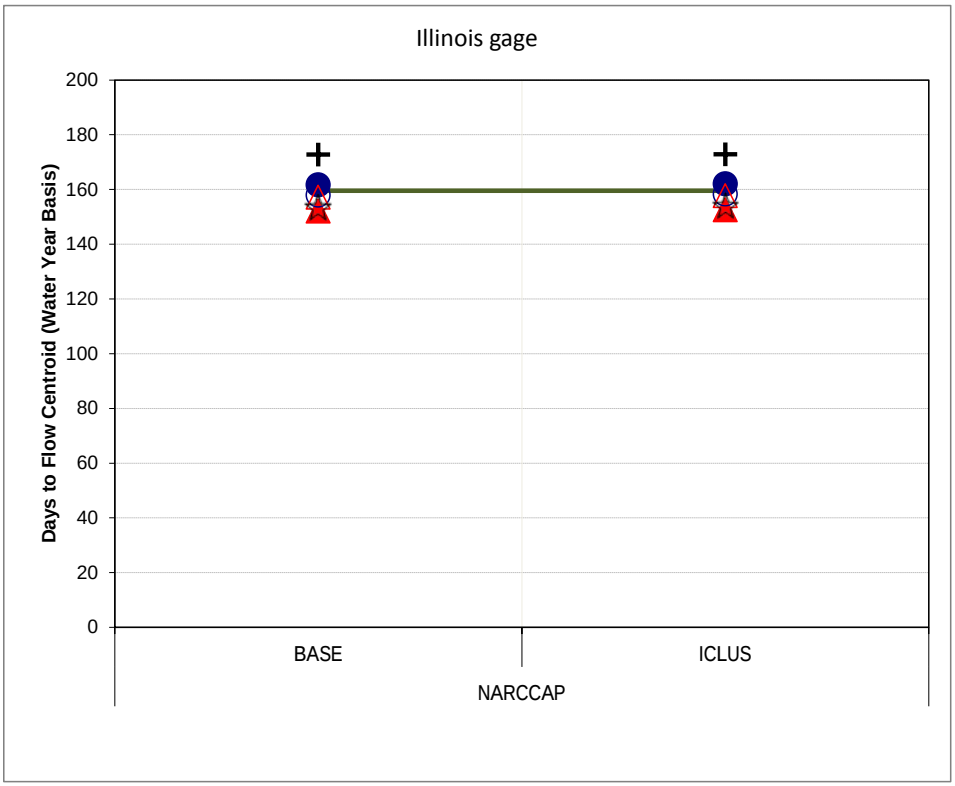


Figure 83. Days to Flow Centroid (Water Year Basis), Illinois River at Marseilles Gage (SWAT)

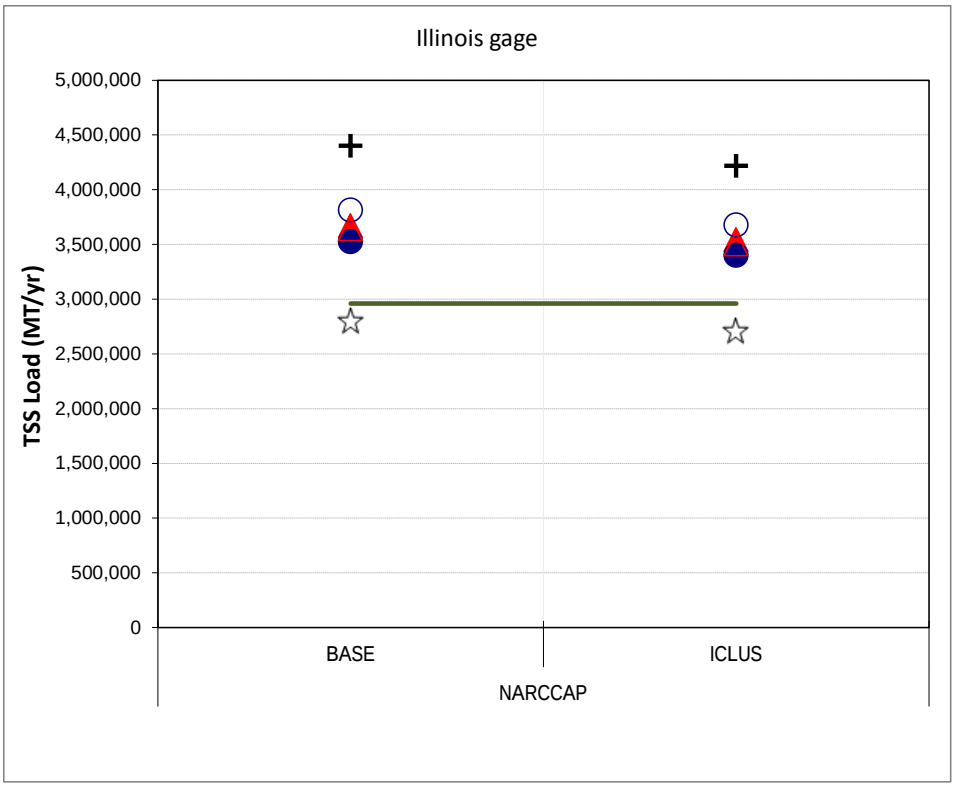


Figure 84. TSS Load (MT/yr), Illinois River at Marseilles Gage (SWAT)

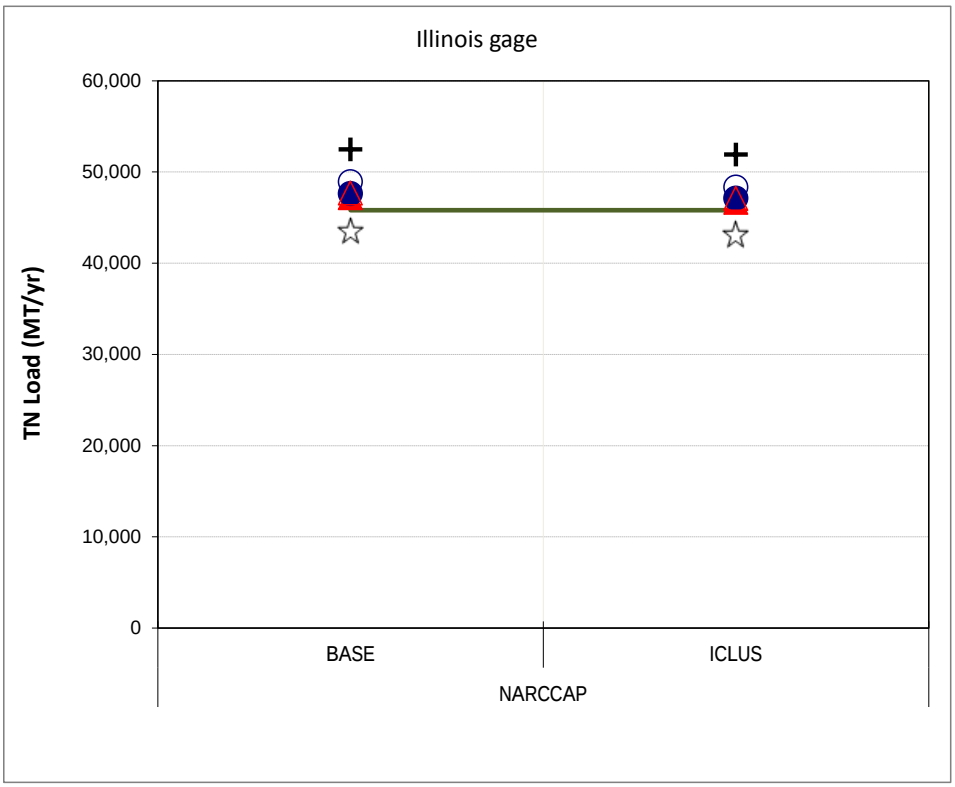


Figure 85. TN Load (MT/yr), Illinois River at Marseilles Gage (SWAT)

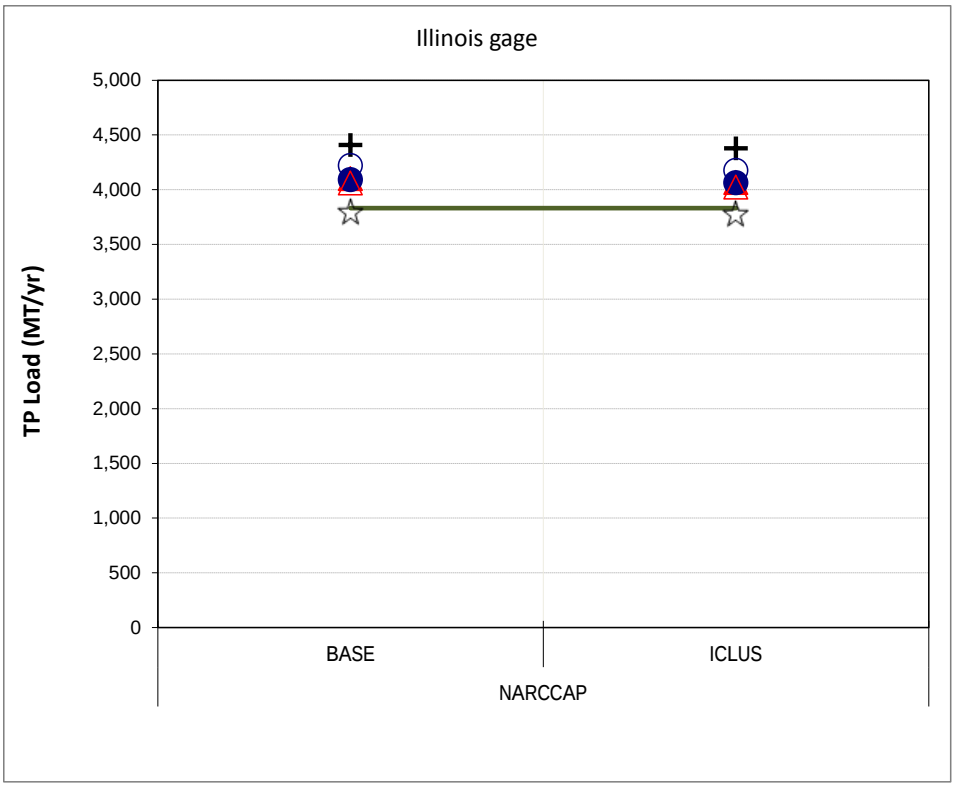


Figure 86. TP Load (MT/yr), Illinois River at Marseilles Gage (SWAT)

Table 4. Summary of range of change relative to existing conditions for NARCCAP dynamically downscaled scenarios, Illinois River basin SWAT model

	Results without LU change				Results with LU change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
Kankakee HUC 07120001								
Flow	-21.45%	2.47%	3.59%	29.22%	-21.59%	2.08%	3.19%	28.55%
TSS	-4.70%	23.89%	25.87%	55.44%	-4.99%	23.13%	25.18%	54.44%
TN	-11.22%	4.31%	6.39%	24.79%	-10.86%	4.52%	6.74%	25.60%
TP	1.71%	20.63%	22.77%	41.20%	1.25%	19.38%	21.99%	41.12%
Iroquois HUC 07120002								
Flow	-19.02%	1.08%	2.38%	24.71%	-19.02%	1.08%	2.38%	24.71%
TSS	-1.36%	19.70%	22.64%	46.79%	-1.36%	19.69%	22.63%	46.77%
TN	-9.61%	3.63%	5.93%	22.43%	-9.63%	3.62%	5.93%	22.44%
TP	6.98%	25.45%	27.23%	43.90%	6.94%	25.43%	27.21%	43.90%
Des Plaines HUC 07120004								
Flow	-15.37%	1.06%	2.90%	30.24%	-16.38%	-0.98%	0.87%	26.80%
TSS	-7.59%	3.38%	3.87%	19.58%	-7.27%	3.11%	3.40%	17.52%
TN	1.54%	3.17%	4.01%	8.33%	2.72%	3.89%	4.89%	9.12%
TP	-0.95%	0.97%	1.77%	6.25%	-0.10%	1.29%	2.27%	6.67%
Upper Illinois HUC 07120005								
Flow	-13.76%	1.92%	1.90%	18.95%	-14.07%	1.39%	1.35%	18.13%

	Results without LU change				Results with LU change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
TSS	-3.34%	23.58%	23.64%	48.18%	-3.11%	22.89%	22.91%	46.20%
TN	-4.84%	3.04%	3.59%	12.71%	-4.34%	3.28%	3.90%	13.11%
TP	-0.78%	6.23%	6.67%	13.81%	-0.91%	5.75%	6.22%	13.47%
Upper Fox HUC 0120006								
Flow	-15.30%	6.91%	7.15%	34.00%	-16.54%	3.58%	3.85%	28.15%
TSS	-0.89%	27.24%	28.25%	59.62%	-6.85%	16.85%	17.17%	43.56%
TN	-3.41%	5.50%	5.56%	15.65%	-2.54%	5.69%	5.87%	15.56%
TP	-3.84%	4.68%	4.58%	13.37%	-4.29%	3.56%	3.52%	11.83%
Lower Fox HUC 0120007								
Flow	-19.24%	3.40%	3.91%	29.74%	-20.41%	0.54%	1.06%	24.97%
TSS	-5.98%	28.20%	27.28%	58.02%	-6.48%	26.05%	25.05%	53.73%
TN	-3.68%	8.72%	8.80%	21.69%	-2.70%	9.00%	9.09%	21.61%
TP	-4.31%	8.80%	8.09%	19.62%	-5.22%	6.76%	6.12%	17.14%
Lower Illinois-Senachwine HUC 07130001								
Flow	-15.36%	3.02%	2.39%	21.65%	-15.85%	2.05%	1.45%	20.22%
TSS	-5.82%	25.70%	24.77%	52.66%	-5.81%	24.84%	23.91%	50.68%
TN	-4.57%	5.67%	5.54%	16.21%	-4.02%	5.89%	5.83%	16.48%
TP	-1.58%	6.95%	7.40%	15.77%	-2.01%	6.15%	6.56%	14.90%
Vermillion HUC 07130002								
Flow	-17.02%	5.33%	4.19%	25.88%	-17.02%	5.33%	4.18%	25.88%
TSS	-0.45%	20.30%	22.43%	46.88%	-0.53%	20.21%	22.34%	46.82%
TN	-7.19%	9.15%	9.13%	24.45%	-7.19%	9.09%	9.10%	24.48%
TP	9.87%	24.75%	26.19%	38.87%	9.85%	24.68%	26.13%	38.88%
Lower Illinois-Chatauqua HUC 07130003								
Flow	-22.22%	1.49%	0.68%	24.55%	-22.56%	0.73%	-0.06%	23.37%
TSS	-9.74%	18.25%	18.44%	41.52%	-9.81%	18.21%	18.27%	41.03%
TN	-7.11%	6.95%	6.38%	18.30%	-6.71%	7.09%	6.59%	18.40%
TP	-0.59%	7.55%	7.84%	13.24%	-0.73%	7.25%	7.56%	12.97%
Mackinaw HUC 07130004								
Flow	-14.96%	5.97%	5.18%	21.81%	-14.97%	5.92%	5.13%	21.73%
TSS	-0.53%	20.39%	21.41%	34.77%	-0.41%	20.45%	21.44%	34.76%
TN	-0.05%	12.48%	12.33%	20.57%	0.30%	12.61%	12.60%	20.92%
TP	8.38%	23.27%	24.11%	38.81%	8.52%	23.15%	24.06%	38.53%
Kankakee gage 05520500								
Flow	-23.05%	3.44%	5.13%	33.23%	-23.18%	3.03%	4.68%	32.45%
TSS	-8.32%	20.60%	24.03%	51.31%	-8.56%	19.71%	23.18%	50.16%
TN	-12.85%	4.24%	6.82%	26.37%	-12.08%	4.78%	7.56%	27.42%
TP	-2.31%	18.25%	21.51%	42.18%	-2.24%	17.52%	21.12%	42.26%
Illinois River at Marseilles gage 05543500								

	Results without LU change				Results with LU change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
Flow	-14.29%	2.23%	2.05%	19.70%	-14.56%	1.73%	1.54%	18.92%
TSS	-5.10%	23.52%	23.10%	48.70%	-4.89%	23.03%	22.59%	47.25%
TN	-4.61%	4.07%	4.64%	14.55%	-4.14%	4.31%	4.96%	14.94%
TP	-0.61%	6.93%	7.41%	15.05%	-0.80%	6.51%	6.97%	14.71%

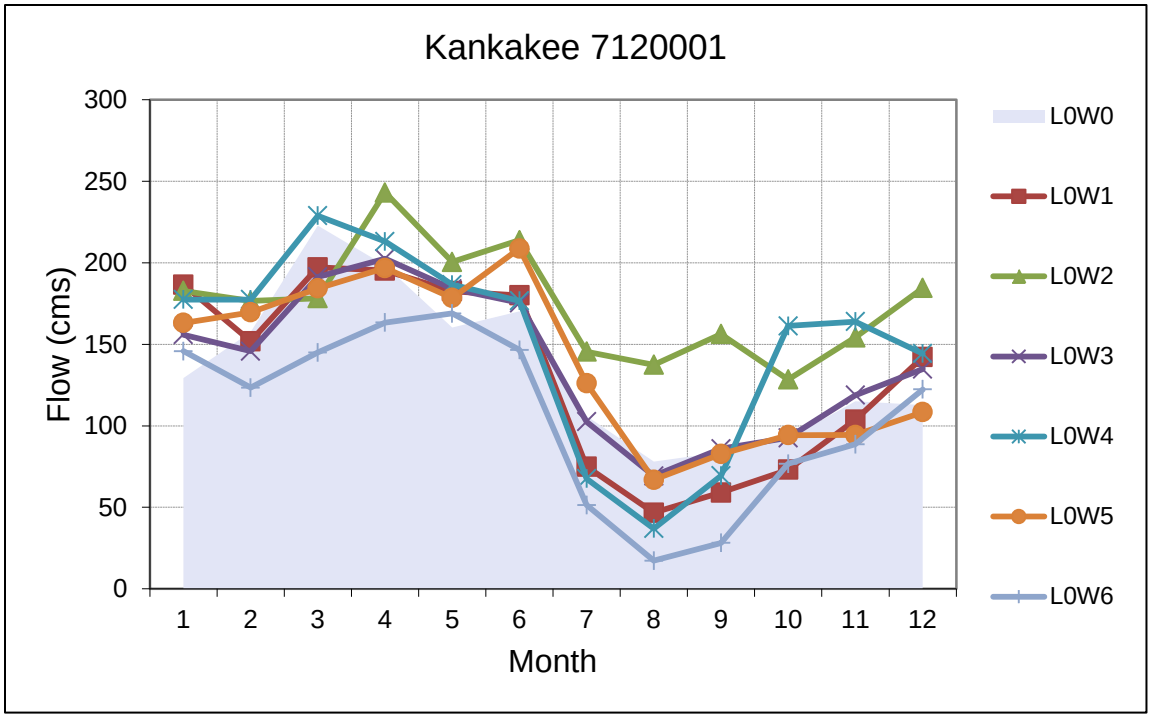


Figure 87. Monthly average flows, Kankakee River (SWAT)

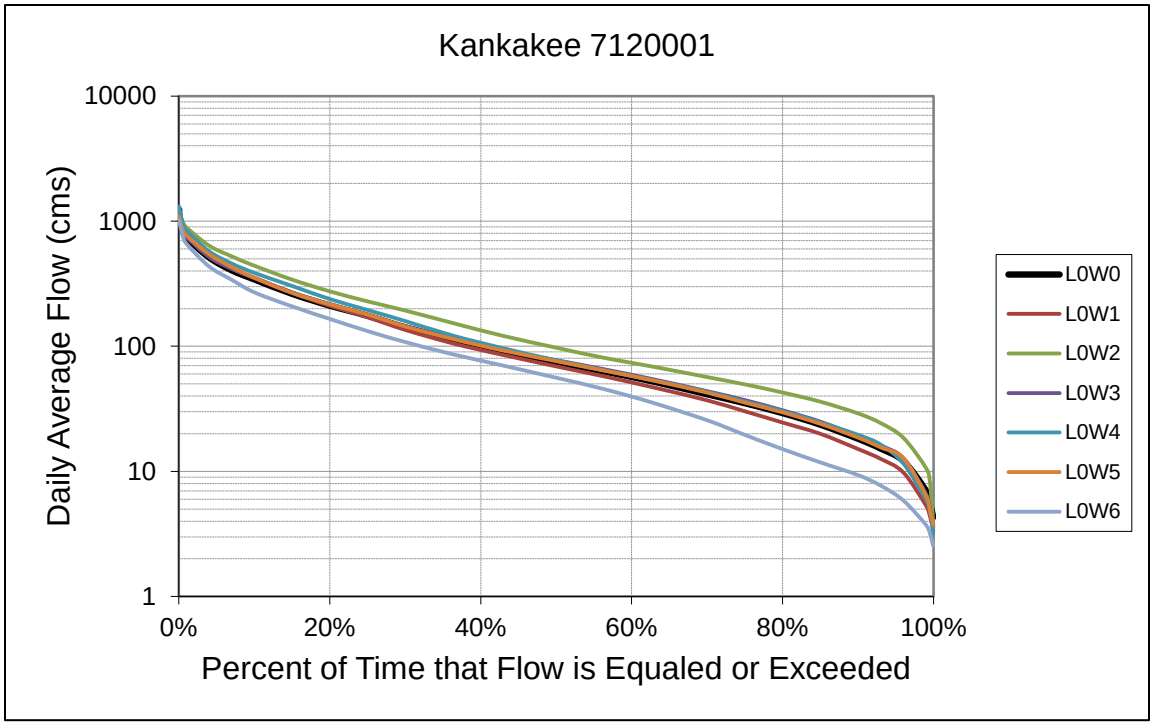


Figure 88. Flow duration, Kankakee River (SWAT)

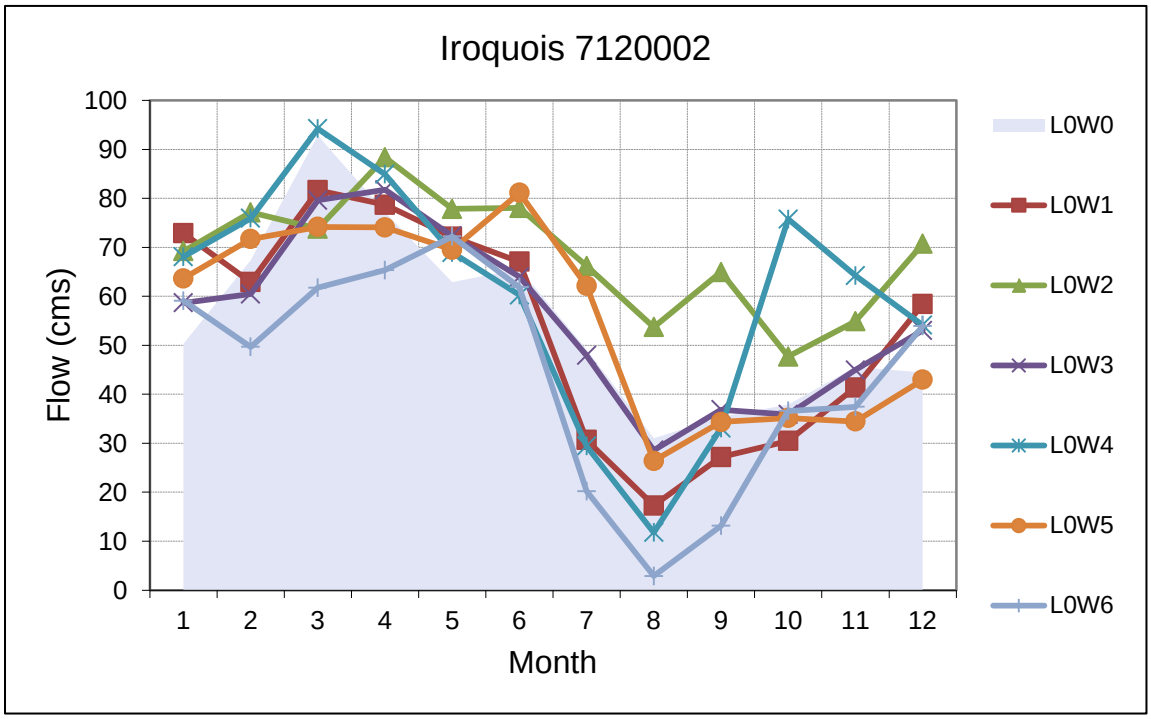


Figure 89. Monthly average flows, Iroquois River (SWAT)

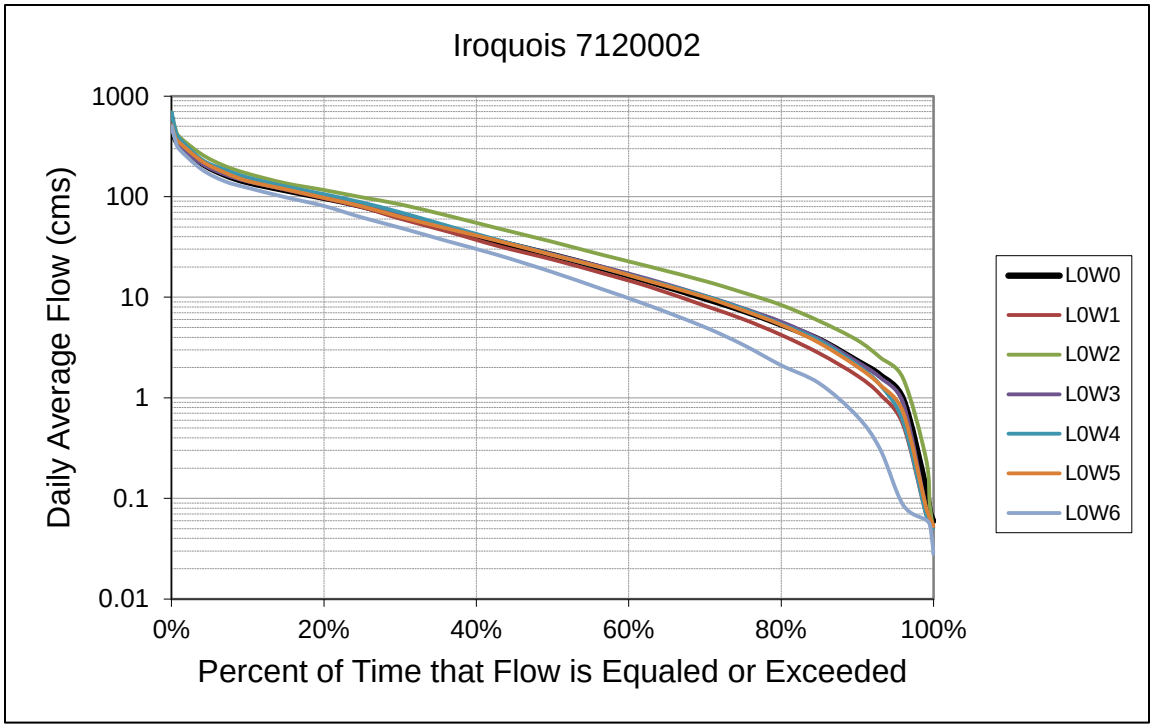


Figure 90. Flow duration, Iroquois River (SWAT)

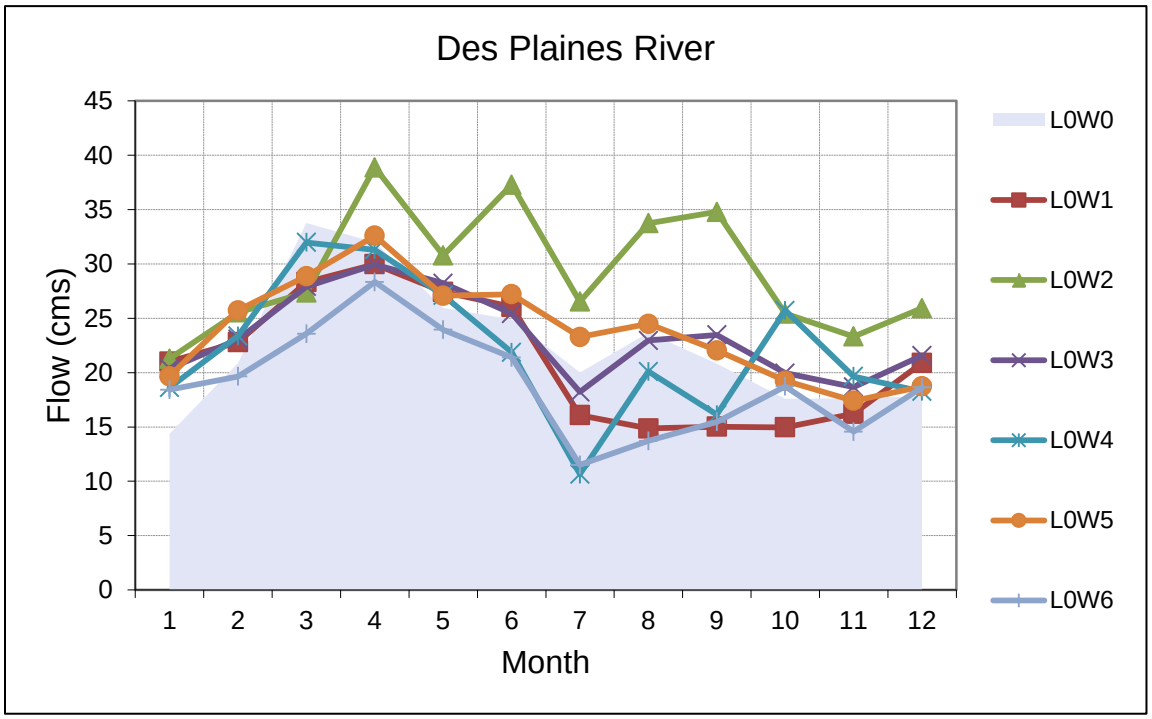


Figure 91. Monthly average flows, Des Plaines River (SWAT)

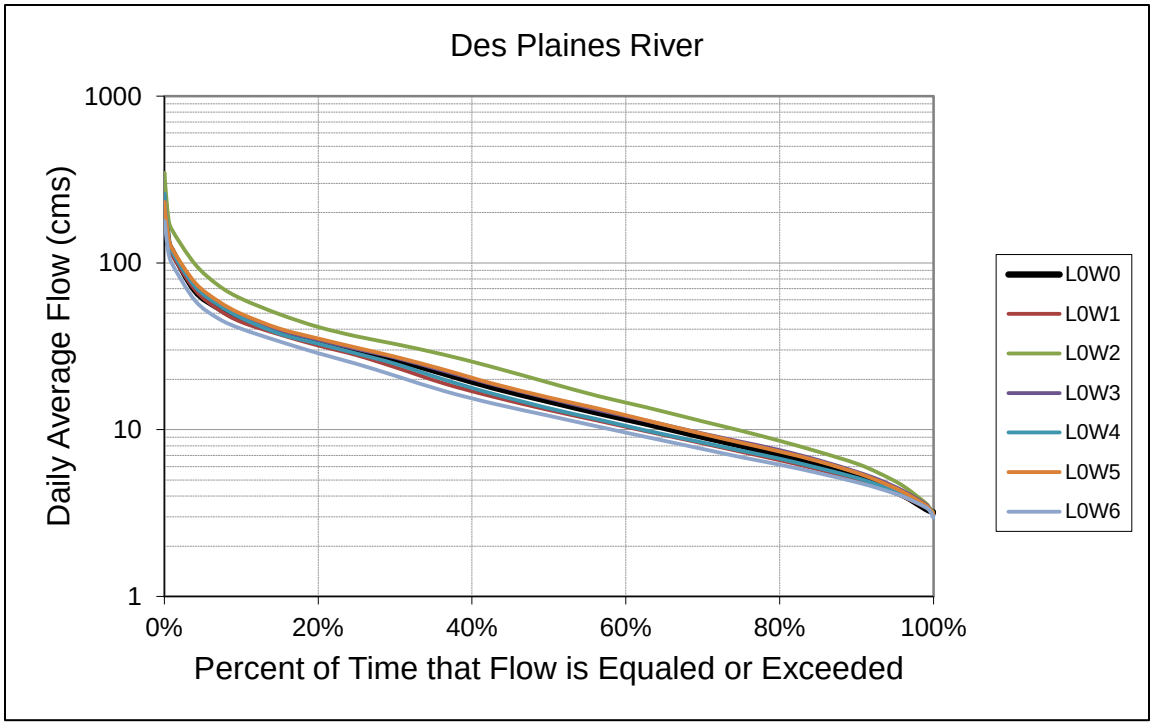


Figure 92. Flow duration, Des Plaines River (SWAT)

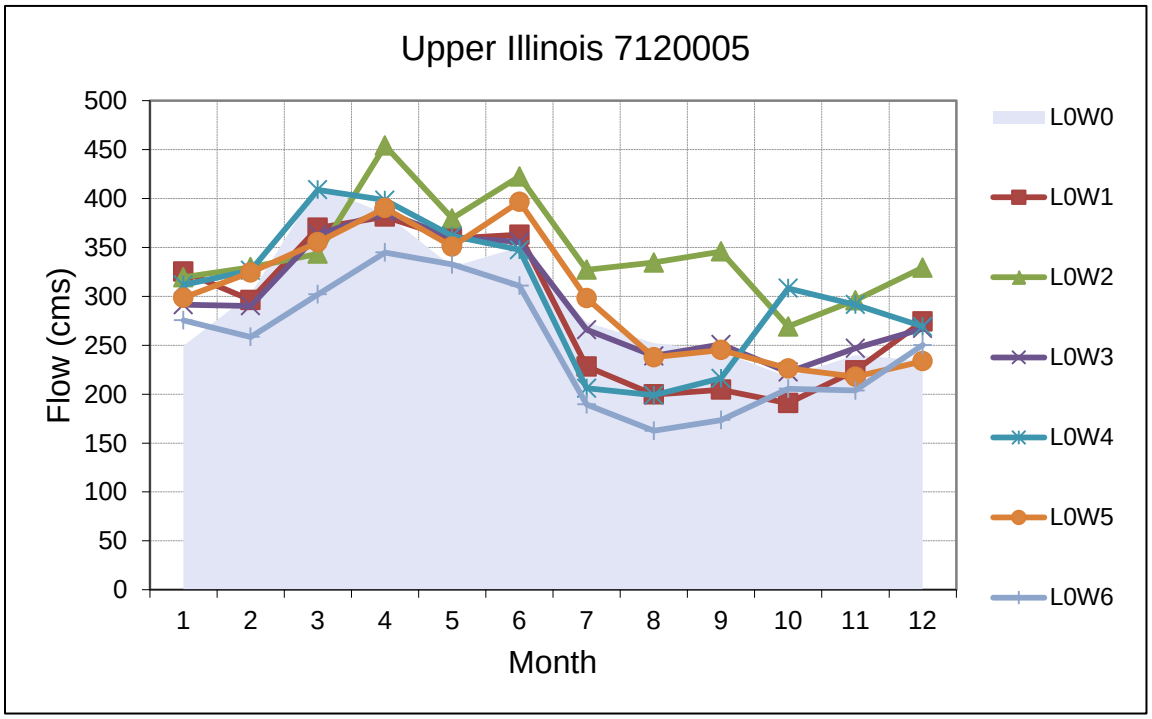


Figure 93. Monthly average flows, Upper Illinois River (SWAT)

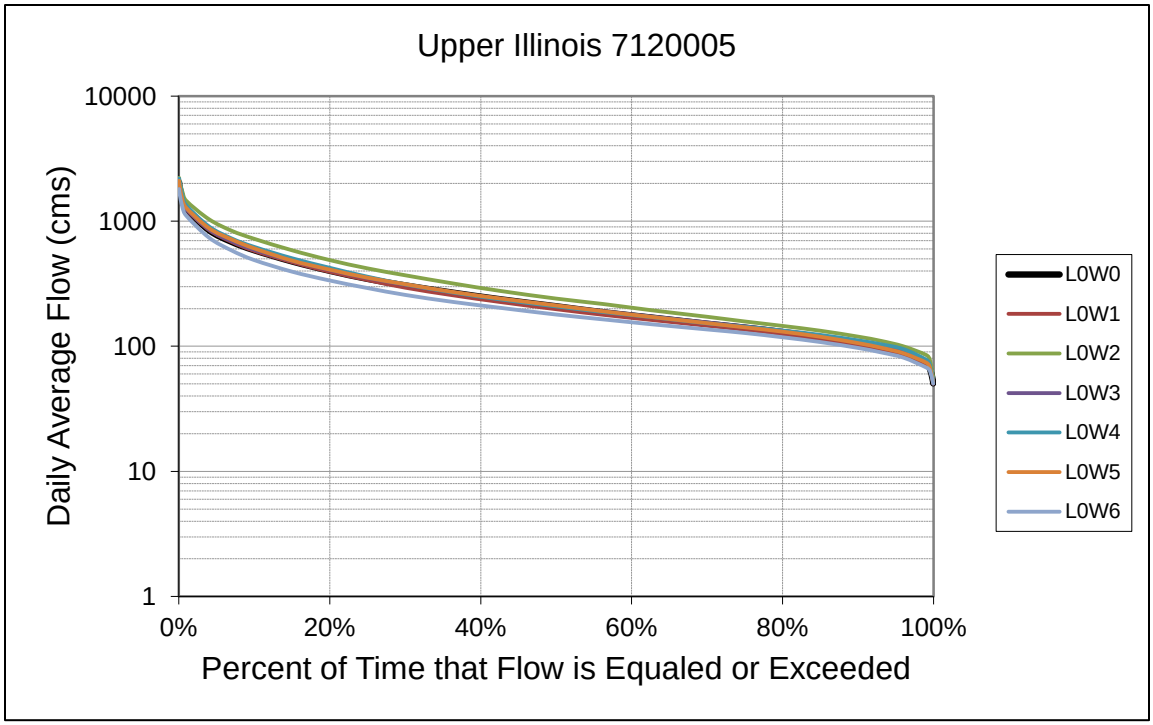


Figure 94. Flow duration, Upper Illinois River (SWAT)

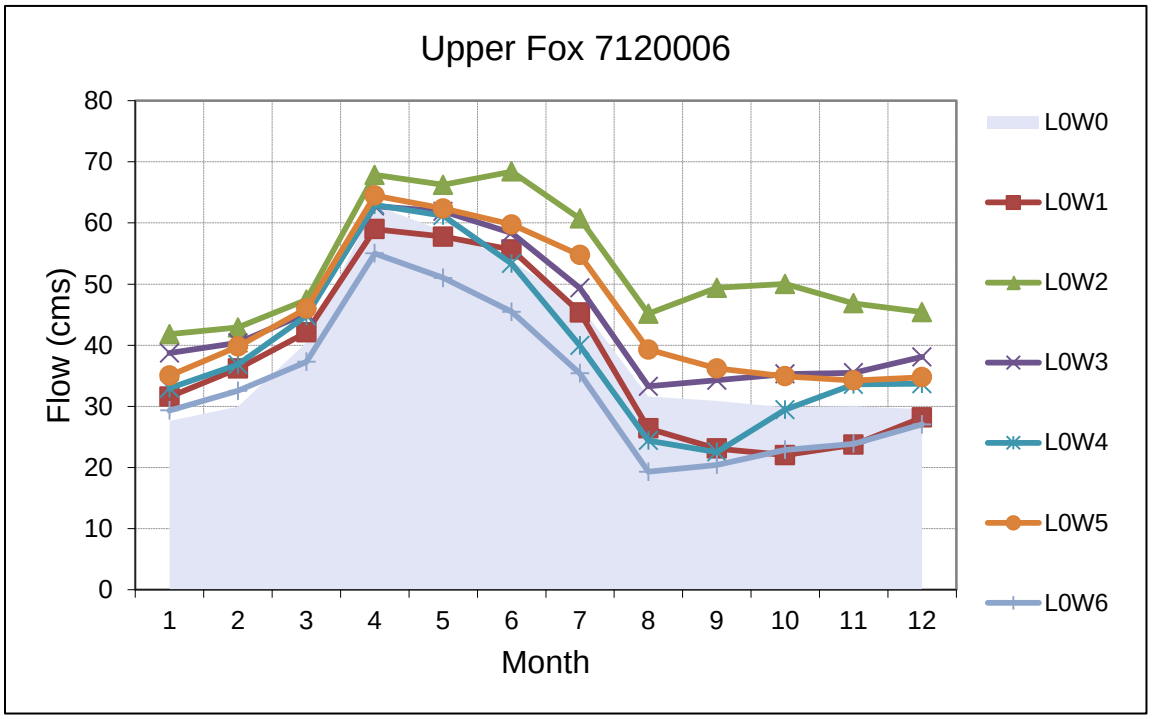


Figure 95. Monthly average flows, Upper Fox River (SWAT)

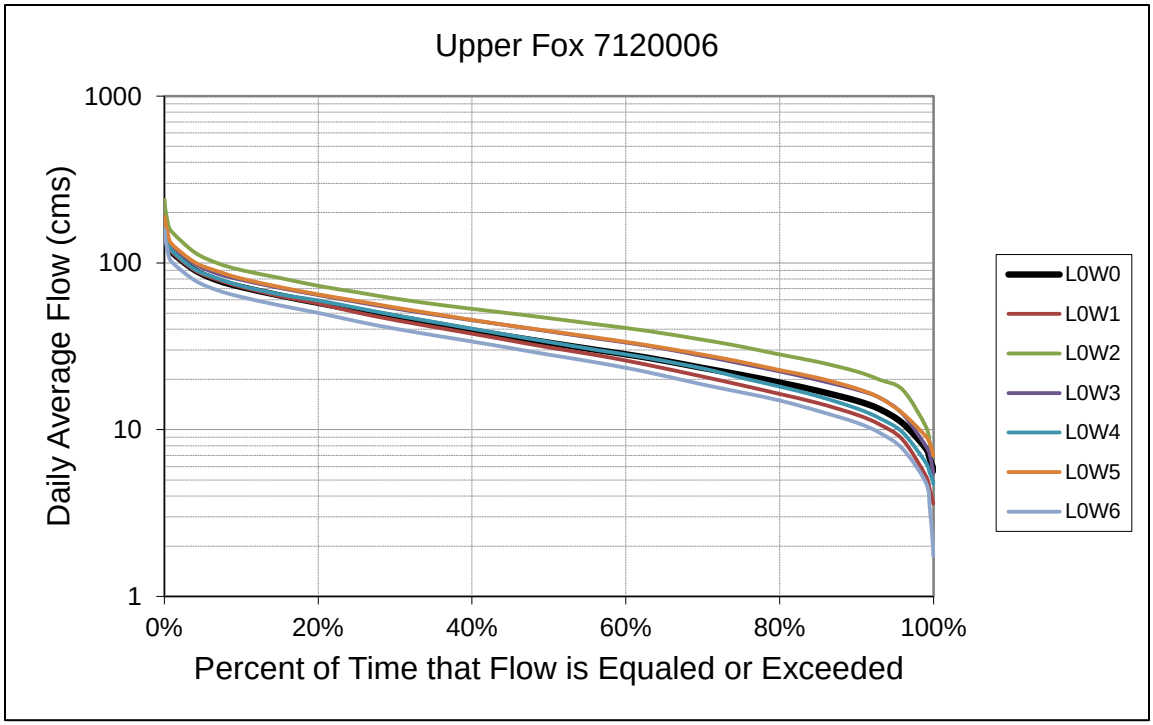


Figure 96. Flow duration, Upper Fox River (SWAT)

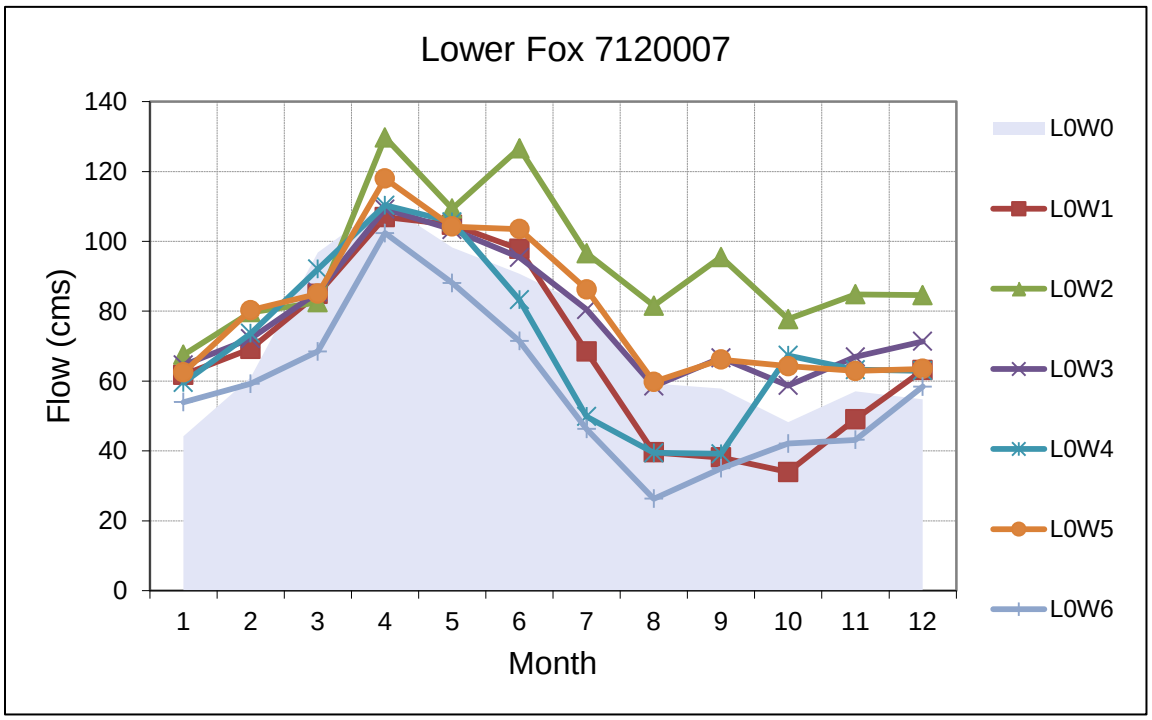


Figure 97. Monthly average flows, Lower Fox River (SWAT)

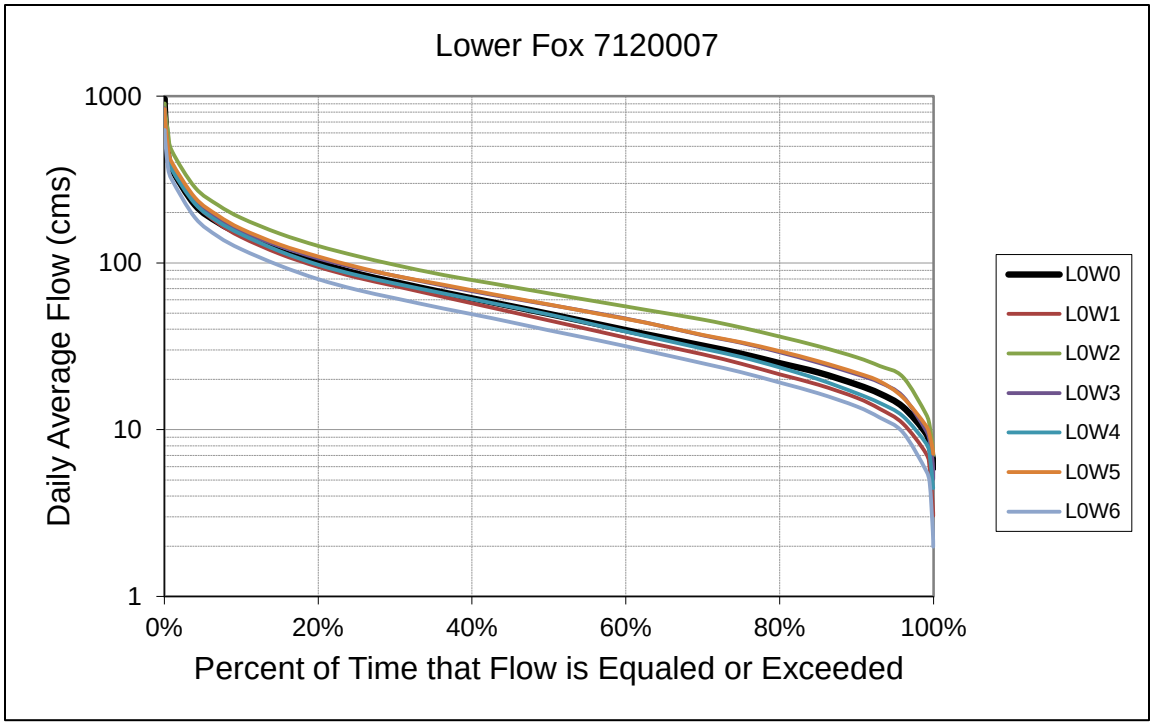


Figure 98. Flow duration, Lower Fox River (SWAT)

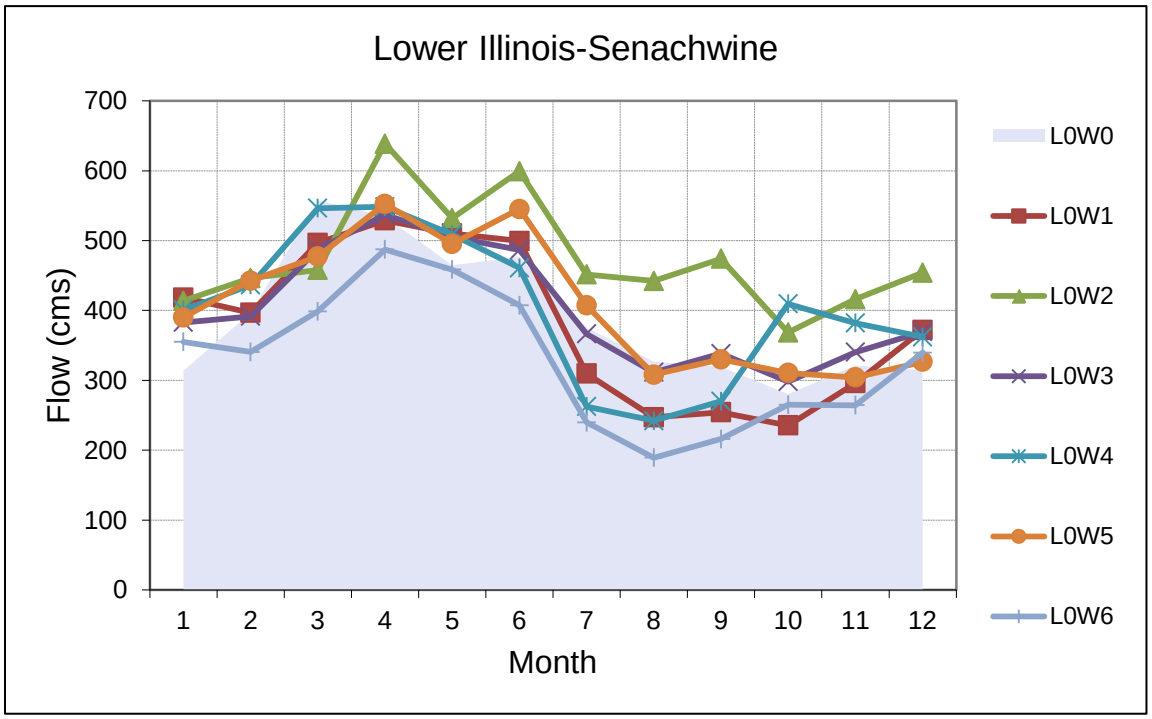


Figure 99. Monthly average flows, Lower Illinois-Senachwine River (SWAT)

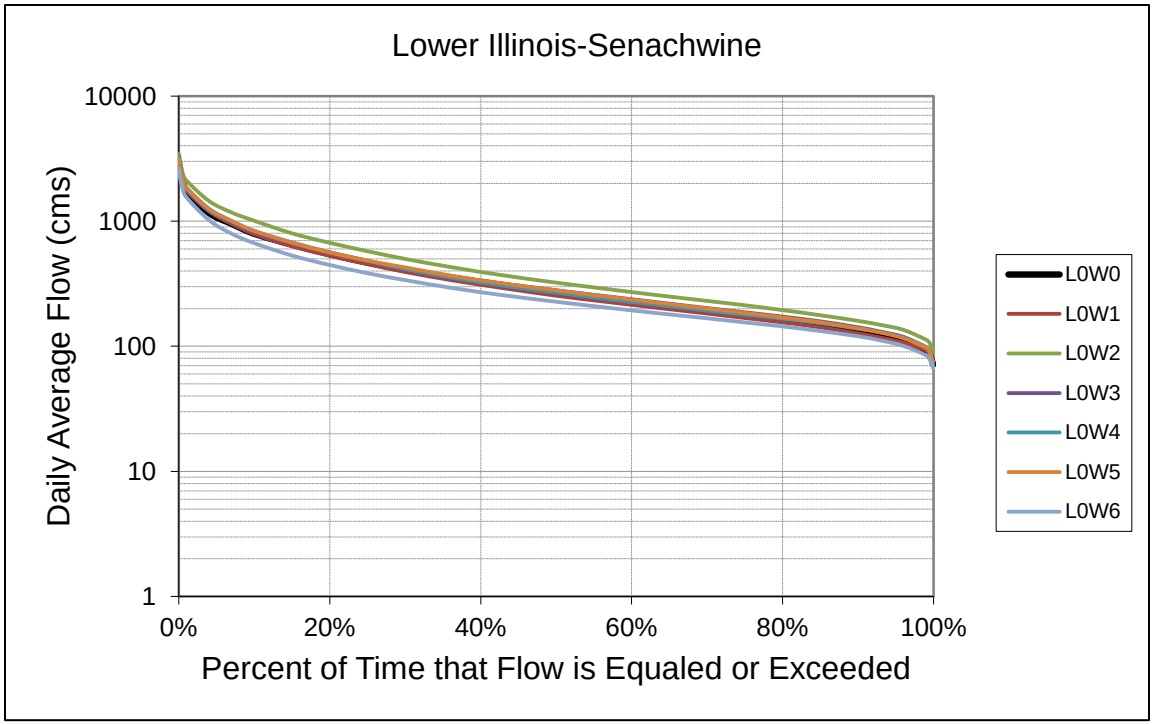


Figure 100. Flow duration, Lower Illinois-Senachwine River (SWAT)

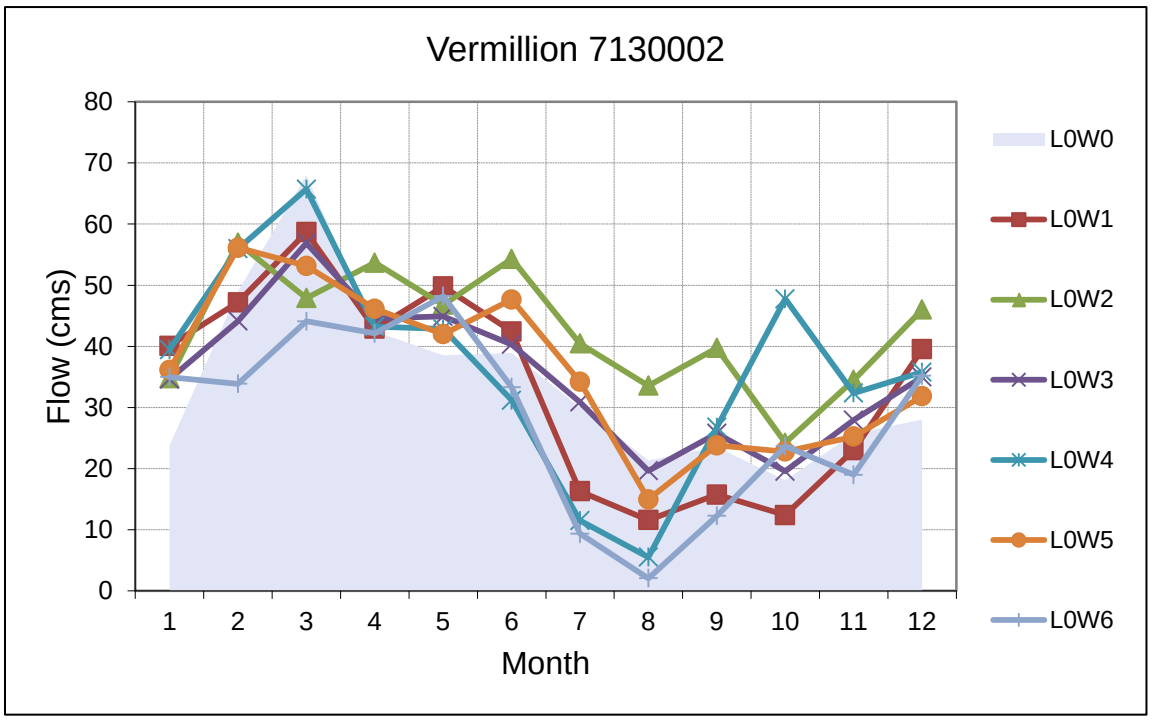


Figure 101. Monthly average flows, Vermillion River (SWAT)

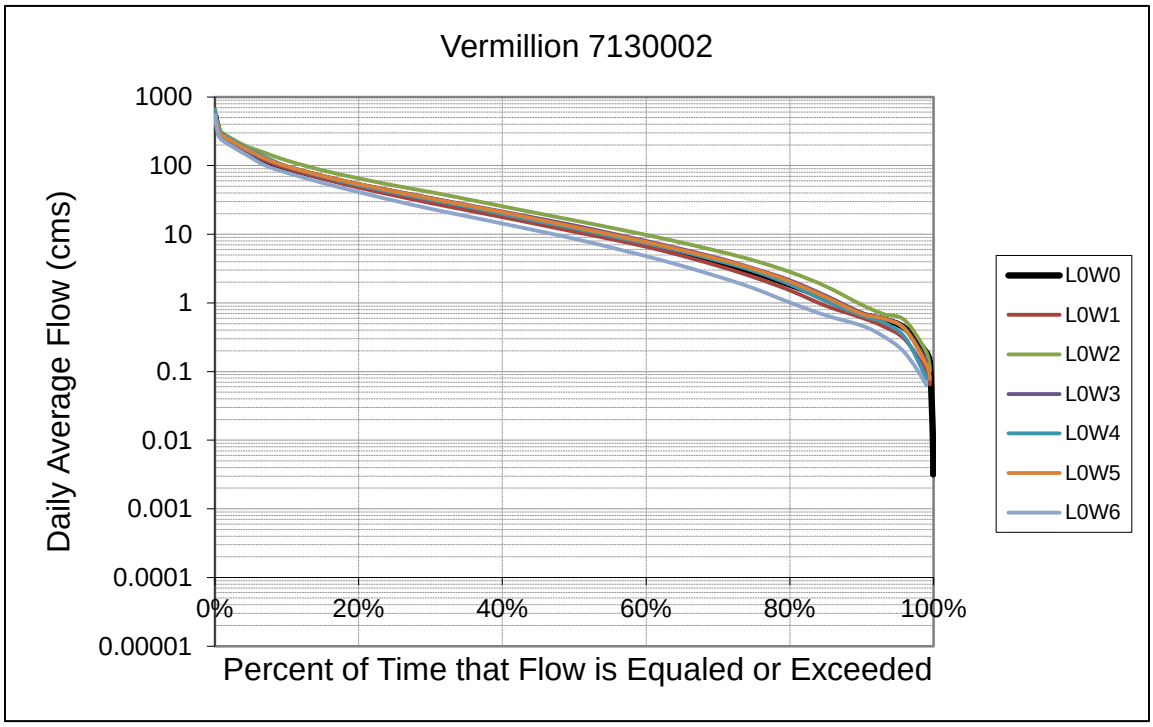


Figure 102. Flow duration, Vermillion River (SWAT)

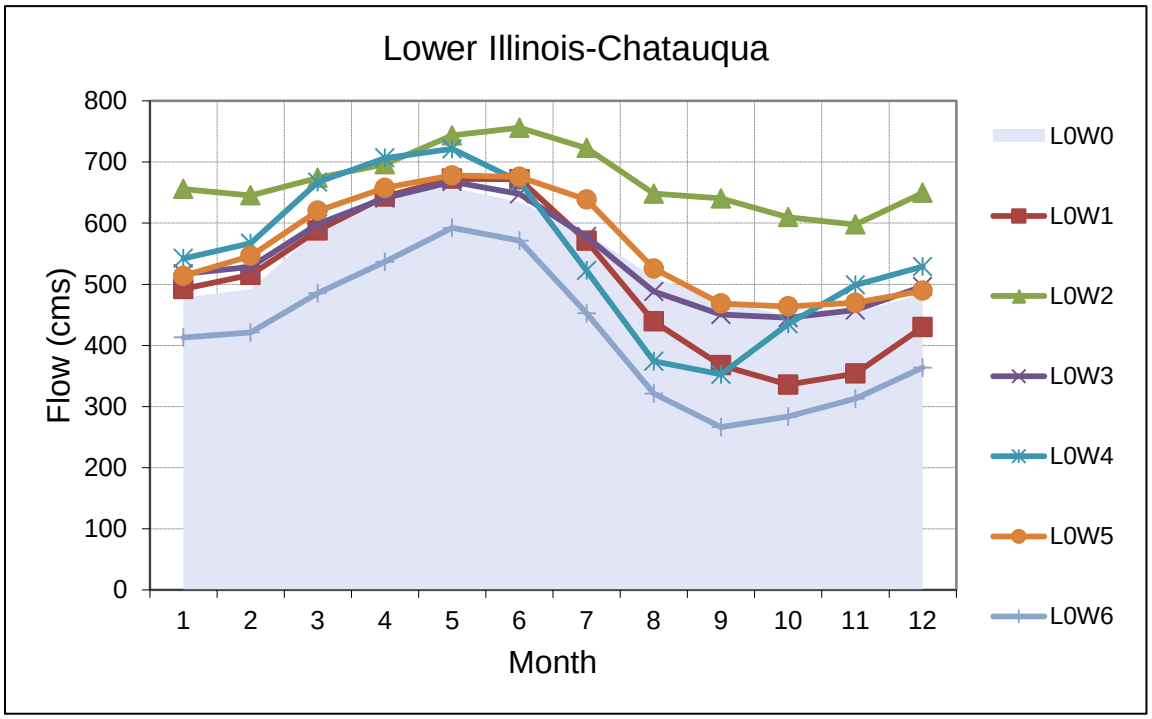


Figure 103. Monthly average flows, Lower Illinois River – Lake Chatauqua (SWAT)

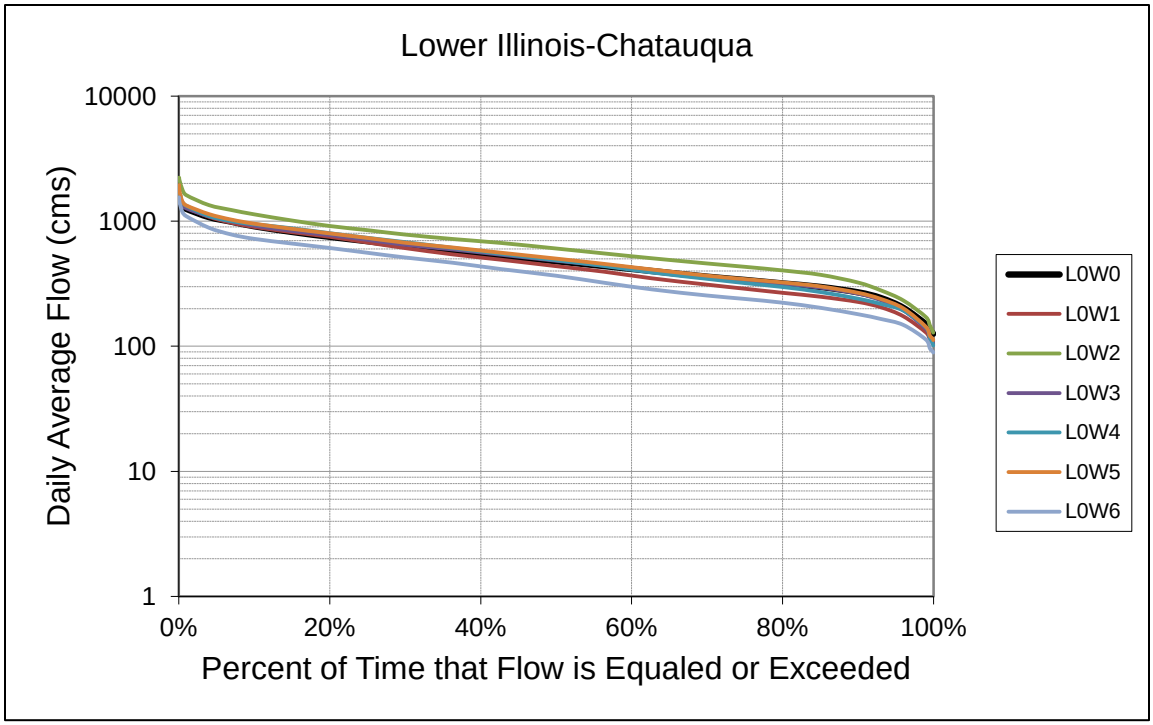


Figure 104. Flow duration, Lower Illinois River – Lake Chatauqua (SWAT)

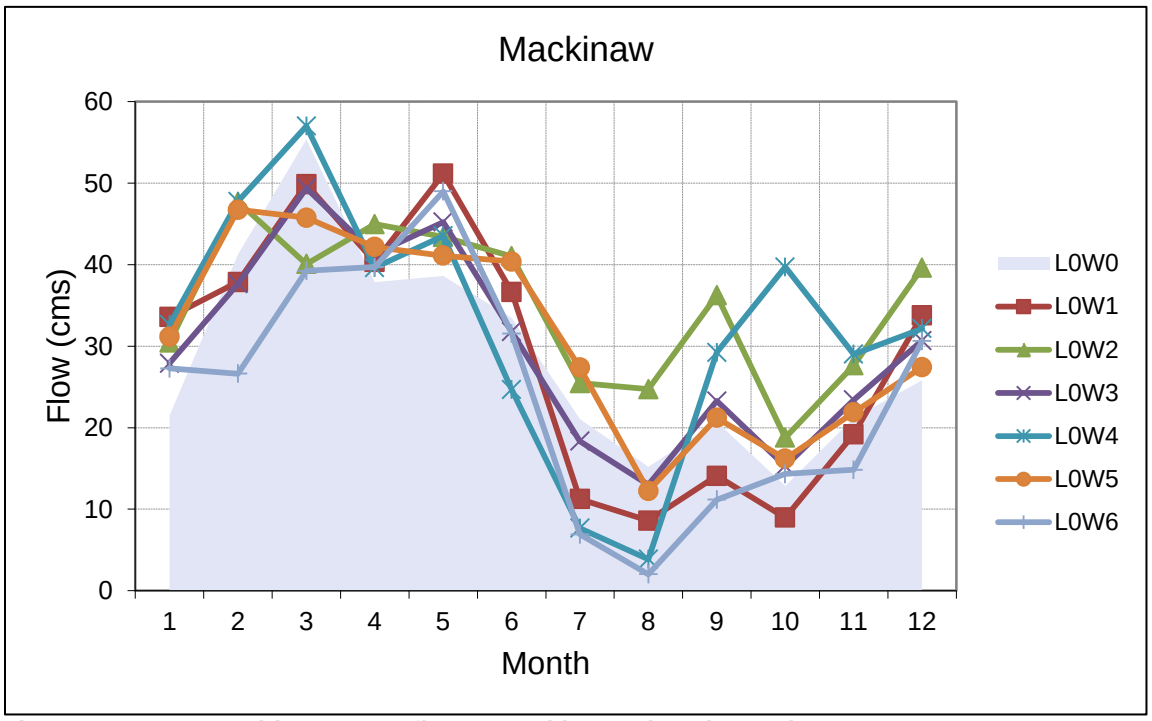


Figure 105. Monthly average flows, Mackinaw River (SWAT)

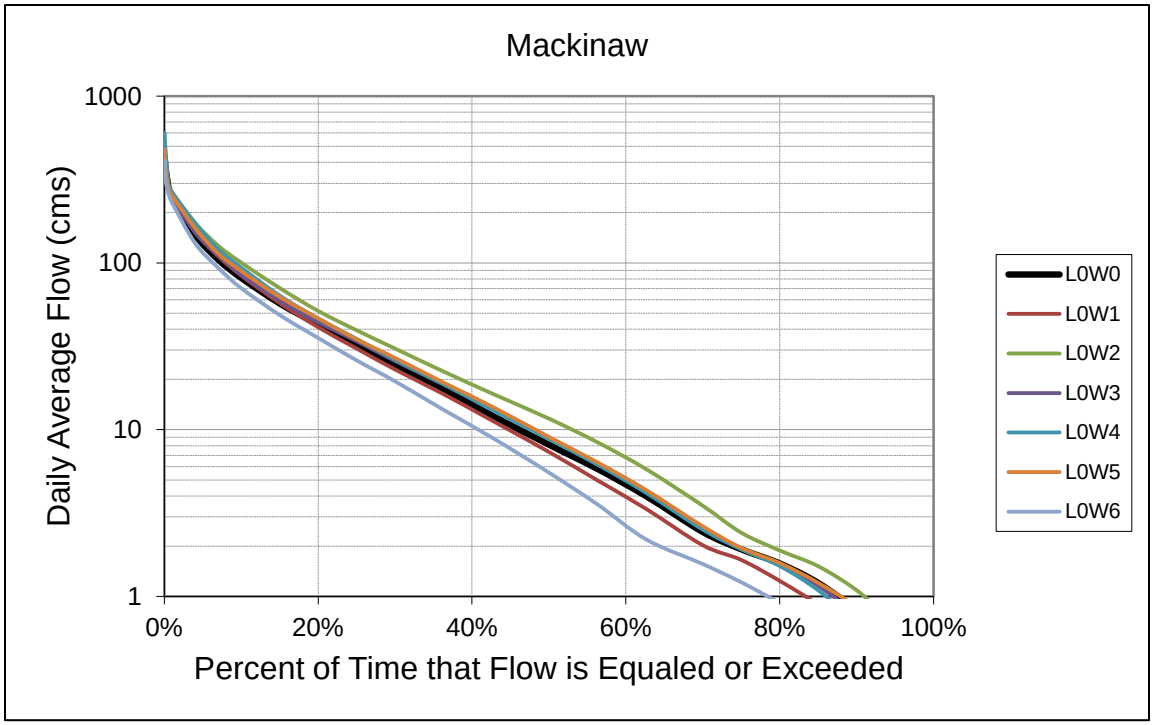


Figure 106. Flow duration, Mackinaw River (SWAT)

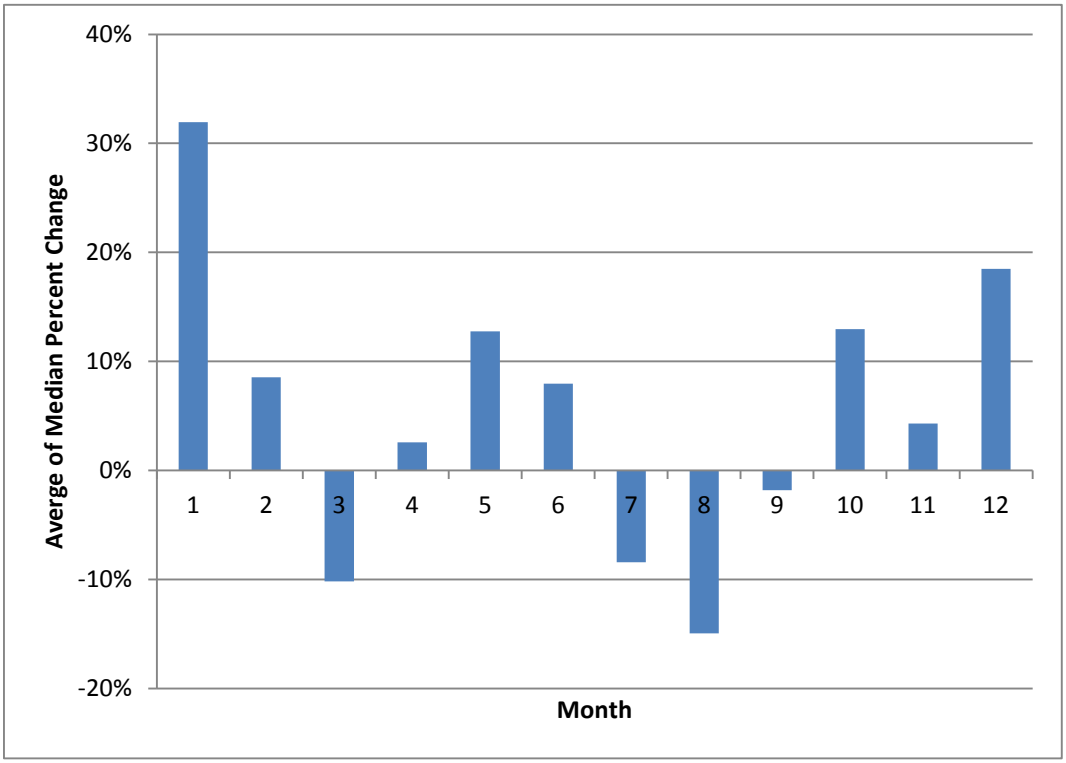


Figure 107. Average of median percent change in flow; NARCCAP Scenarios W1-W6 at all stations, Illinois River basin (SWAT)

Lake Erie-St. Clair Basin

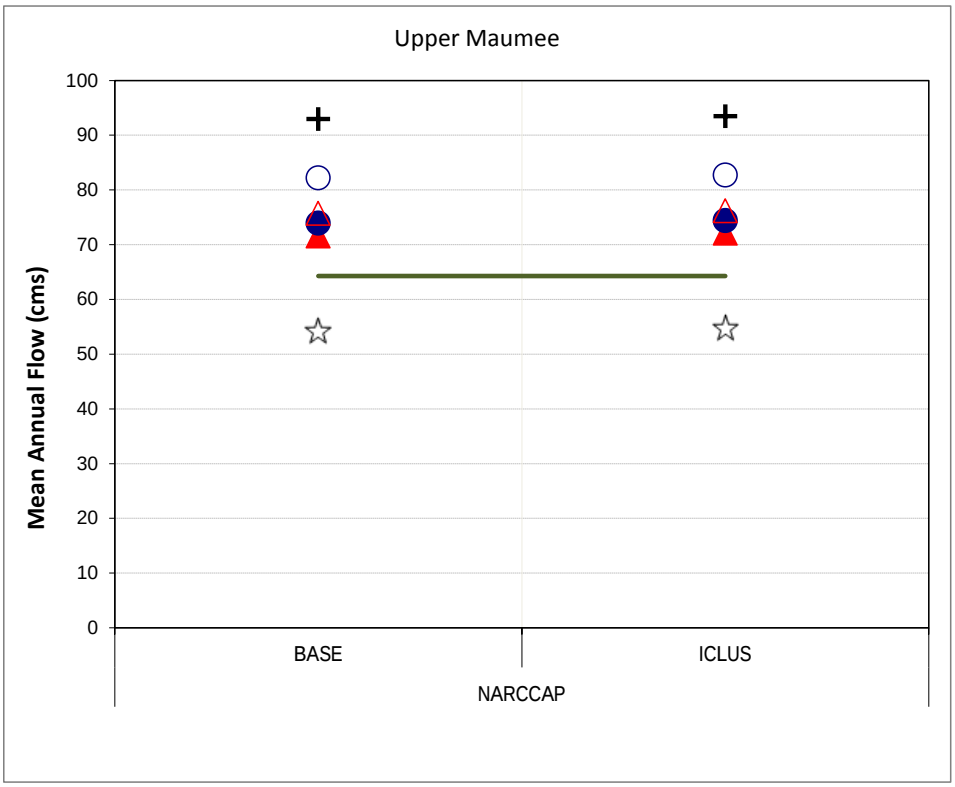


Figure 108. Mean annual flow (cms), Upper Maumee River (SWAT)

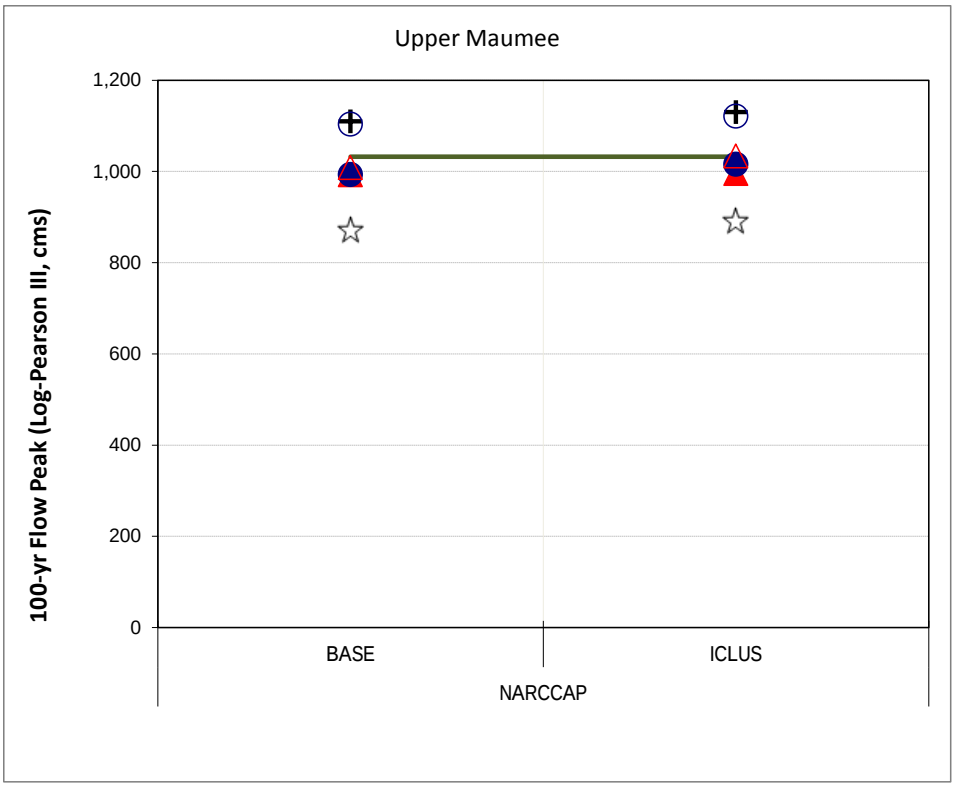


Figure 109. 100-yr Flow Peak (Log-Pearson III, cms), Upper Maumee River (SWAT)

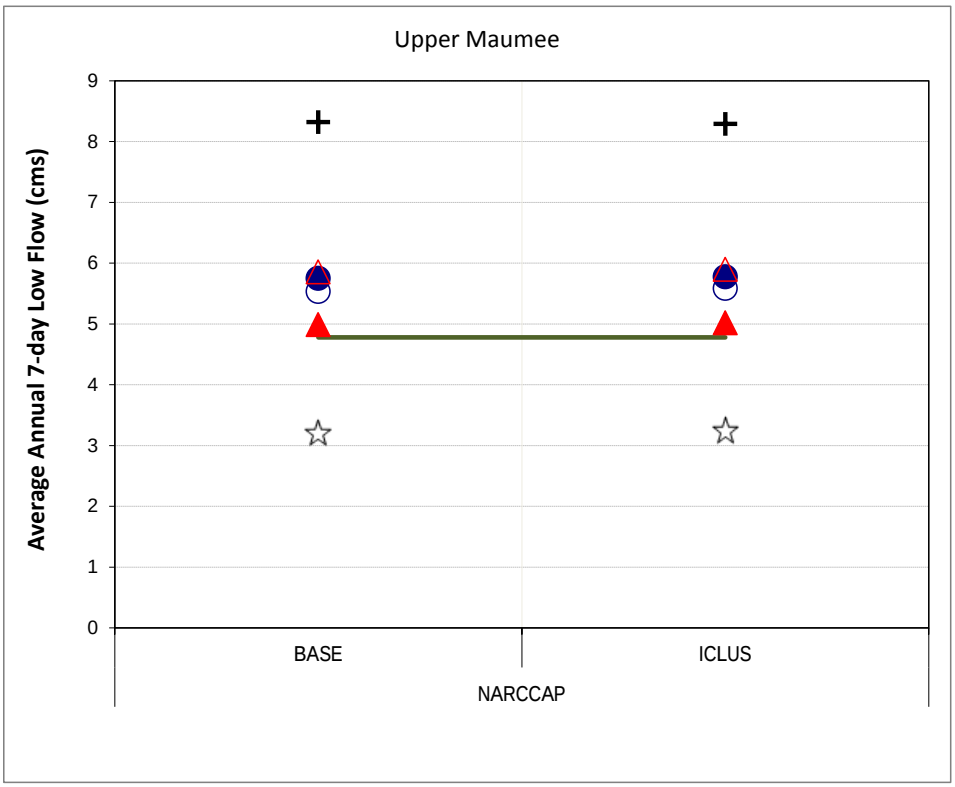


Figure 110. Average Annual 7-day Low Flow (cms), Upper Maumee River (SWAT)

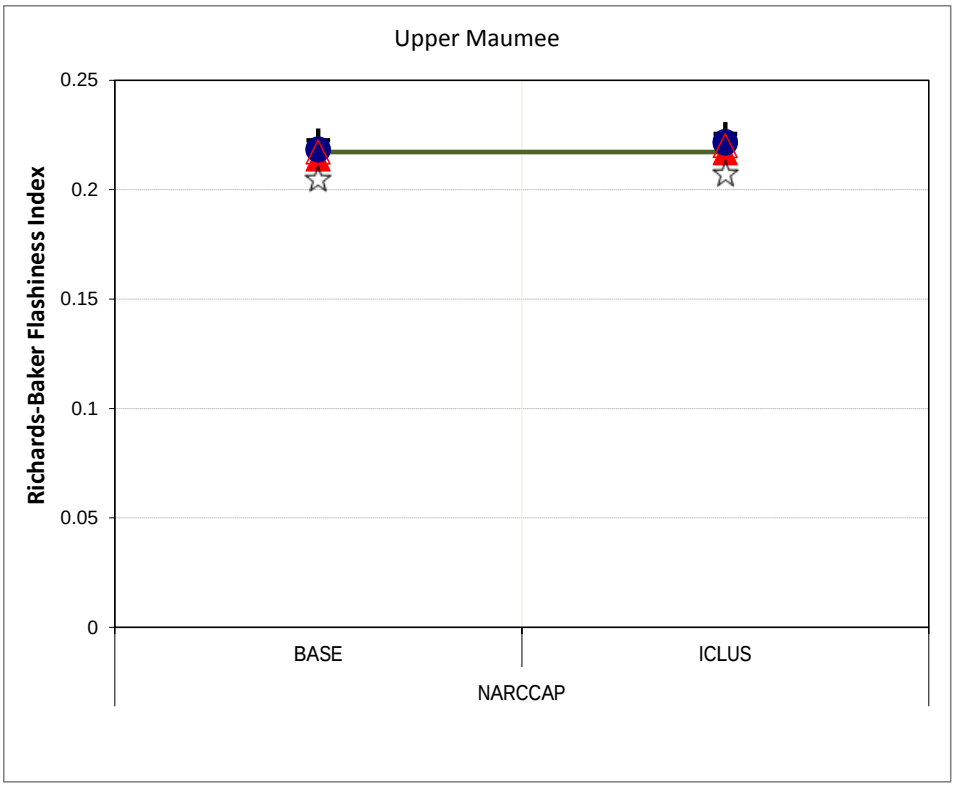


Figure 111. Richards-Baker Flashiness Index, Average Annual 7-day Low Flow (cms), Upper Maumee River (SWAT)

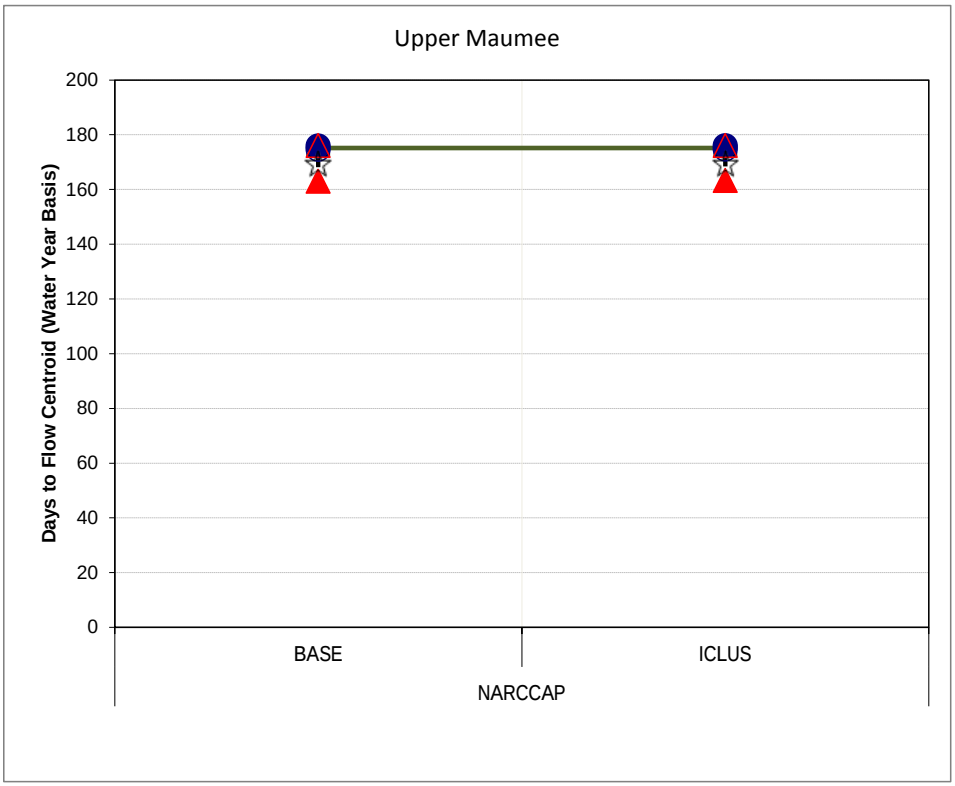


Figure 112. Days to Flow Centroid (Water Year Basis), Upper Maumee River (SWAT)

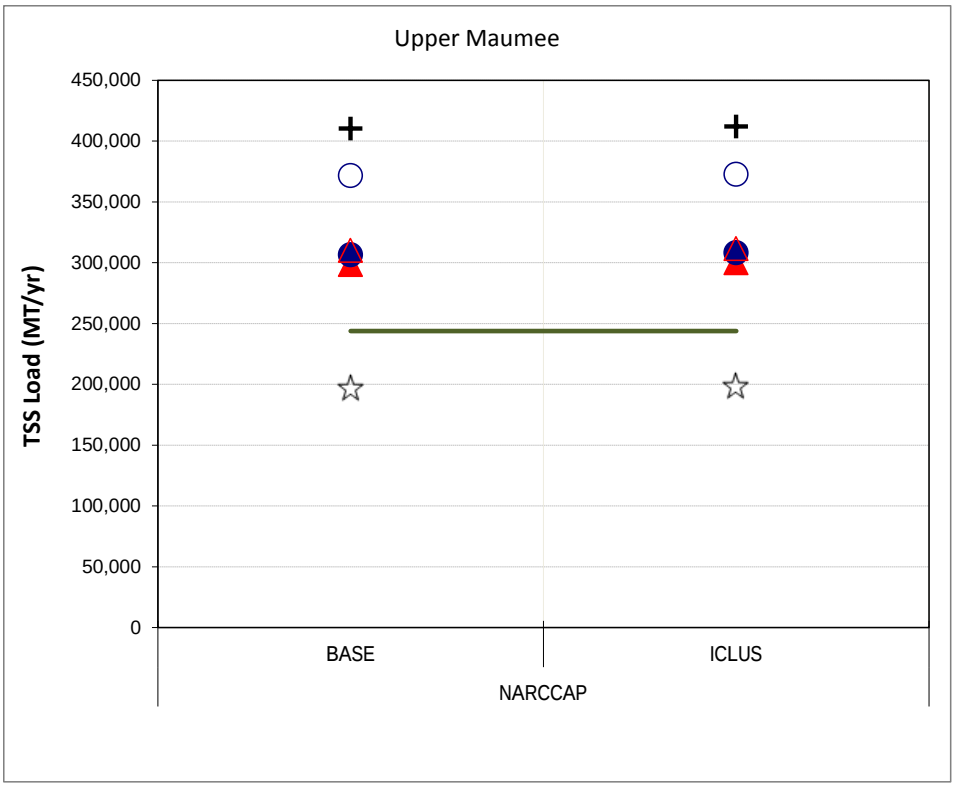


Figure 113. TSS Load (MT/yr), Upper Maumee River (SWAT)

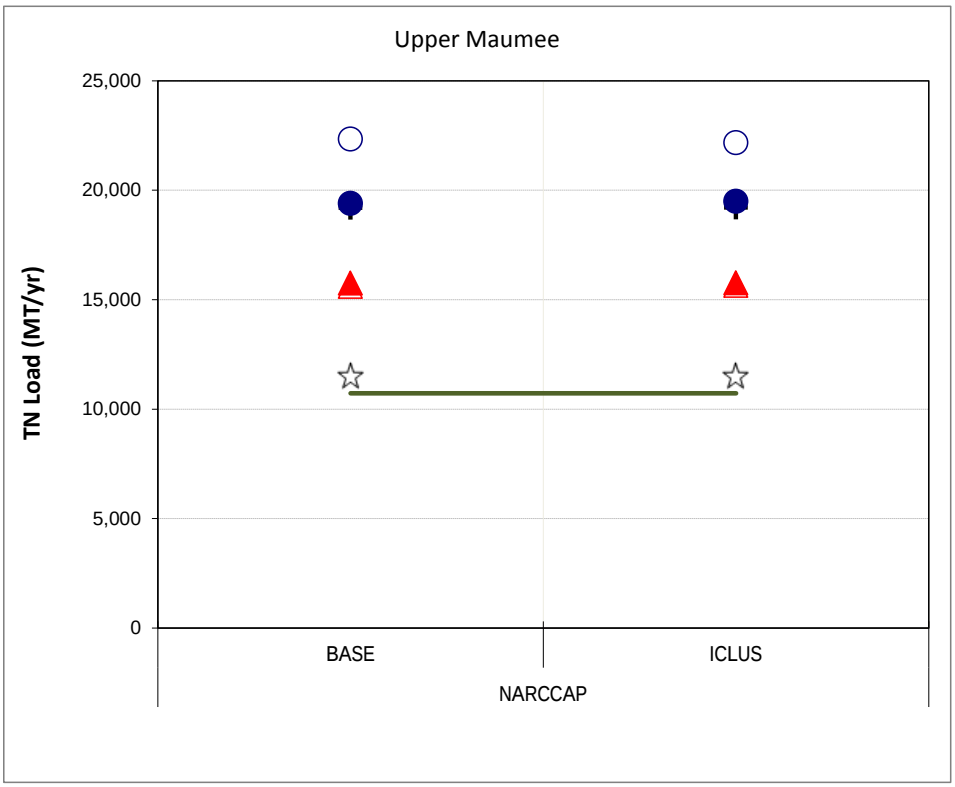


Figure 114. TN Load (MT/yr), Upper Maumee River (SWAT)

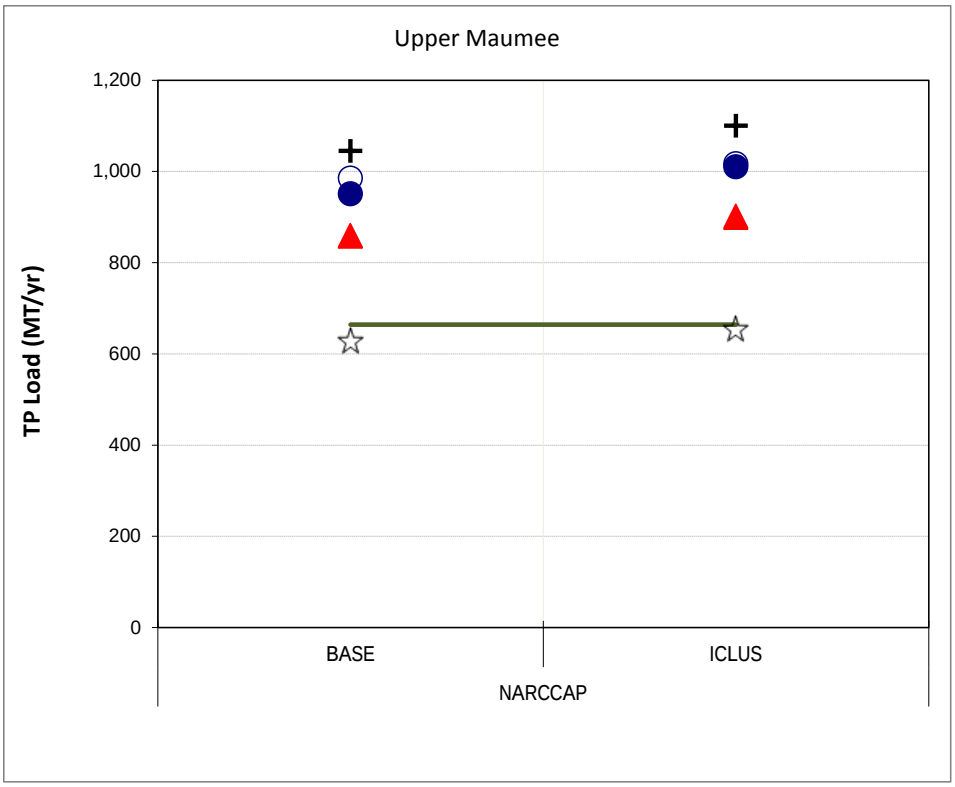


Figure 115. TP Load (MT/yr), Upper Maumee River (SWAT)

Table 5. Summary of range of change relative to existing conditions for NARCCAP dynamically downscaled scenarios, Lake Erie-St. Clair basin SWAT model

	Results without LU change				Results with LU change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
St. Joseph HUC 04100003								
Flow	-22.89%	12.80%	10.51%	33.57%	-22.79%	12.71%	10.43%	33.34%
TSS	-25.64%	16.90%	14.96%	43.07%	-25.50%	16.73%	14.94%	43.09%
TN	25.95%	77.70%	77.53%	105.26%	26.28%	77.52%	77.11%	104.36%
TP	-8.66%	23.49%	21.83%	42.97%	-7.76%	24.07%	22.14%	43.21%
St. Marys HUC 04100004								
Flow	-4.24%	28.80%	30.53%	72.13%	-4.34%	28.42%	30.13%	71.35%
TSS	-3.73%	41.27%	44.47%	91.08%	-2.98%	41.22%	44.40%	90.43%
TN	-16.79%	18.83%	34.44%	104.97%	-15.82%	20.67%	35.94%	105.37%
TP	-6.10%	43.32%	37.39%	61.91%	-3.21%	48.43%	42.73%	68.63%
Upper Maumee HUC 04100005								
Flow	-15.25%	16.41%	16.93%	44.67%	-15.22%	16.21%	16.71%	44.22%
TSS	-18.67%	26.44%	29.55%	68.27%	-18.62%	26.10%	29.16%	67.68%
TN	7.69%	62.93%	61.35%	108.23%	8.41%	64.07%	62.32%	107.87%
TP	-4.90%	36.28%	33.75%	57.36%	-3.07%	40.80%	37.14%	62.09%
Tiffin HUC 04100006								
Flow	-13.80%	21.85%	20.13%	44.42%	-13.86%	21.85%	20.11%	44.37%
TSS	-17.44%	27.37%	25.32%	50.60%	-17.48%	27.35%	25.30%	50.56%
TN	-9.81%	62.88%	58.46%	111.70%	-9.58%	63.13%	58.57%	111.71%
TP	-17.53%	32.57%	27.38%	52.46%	-17.64%	32.17%	27.09%	51.51%
Lower Maumee HUC 04100009								
Flow	-11.71%	21.11%	22.12%	50.16%	-11.68%	20.98%	21.98%	49.87%
TSS	-13.77%	27.92%	31.24%	69.34%	-13.79%	27.75%	31.05%	68.96%
TN	-6.13%	42.66%	42.80%	90.76%	-6.02%	43.03%	42.95%	90.45%
TP	-12.30%	25.08%	25.60%	50.32%	-11.70%	26.38%	26.85%	52.88%
Sandusky HUC 04100011								
Flow	-0.95%	25.32%	25.96%	52.06%	-0.95%	25.32%	25.96%	52.06%
TSS	-8.31%	29.94%	33.12%	67.69%	-8.31%	29.94%	33.12%	67.69%
TN	-31.81%	1.59%	7.79%	53.03%	-31.81%	1.59%	7.79%	53.03%
TP	-12.38%	17.28%	16.17%	33.74%	-12.38%	17.28%	16.17%	33.74%
Huron-Vermillion HUC 04100012								
Flow	-1.54%	23.92%	25.09%	52.60%	-1.54%	23.92%	25.09%	52.60%
TSS	-4.89%	27.39%	28.15%	62.82%	-4.88%	27.40%	28.15%	62.82%
TN	-11.76%	21.83%	25.71%	60.68%	-11.76%	21.88%	25.73%	60.70%
TP	-6.58%	19.66%	17.61%	32.56%	-6.58%	19.66%	17.61%	32.57%
Black-Rocky HUC 04110001								
Flow	-3.80%	15.11%	13.38%	28.15%	-3.45%	15.31%	13.58%	28.20%

	Results without LU change				Results with LU change			
	Min	**Median**	**Mean**	**Max**	**Min**	**Median**	**Mean**	**Max**
TSS	-4.59%	24.78%	22.34%	46.53%	-4.30%	25.05%	22.45%	46.22%
TN	5.43%	23.11%	24.65%	47.06%	10.90%	28.63%	30.45%	54.90%
TP	8.64%	29.40%	30.01%	60.10%	15.60%	36.56%	37.41%	69.39%
Cuyahoga HUC 04110002								
Flow	-3.53%	8.57%	8.88%	21.12%	-3.54%	8.52%	8.84%	21.06%
TSS	-4.69%	12.57%	13.09%	30.95%	-4.72%	12.49%	13.03%	30.83%
TN	25.29%	39.35%	42.79%	61.17%	25.92%	39.69%	43.26%	63.33%
TP	19.28%	33.47%	35.85%	58.22%	20.90%	35.07%	37.31%	61.39%
Grand HUC 04110004								
Flow	-0.30%	8.34%	10.17%	26.75%	-0.28%	8.35%	10.18%	26.76%
TSS	-2.32%	9.20%	10.80%	31.03%	-2.31%	9.14%	10.78%	31.07%
TN	9.67%	19.91%	21.34%	39.53%	9.98%	19.53%	21.27%	40.15%
TP	5.95%	17.69%	19.39%	42.00%	6.56%	17.82%	19.46%	42.58%
Auglaize HUC 04100007								
Flow	-7.88%	22.58%	25.44%	55.81%	-7.86%	22.57%	25.44%	55.79%
TSS	-9.63%	30.52%	36.15%	76.22%	-9.60%	30.54%	36.11%	75.94%
TN	-8.36%	33.77%	35.11%	84.13%	-8.30%	33.71%	35.04%	84.06%
TP	-12.16%	23.93%	25.75%	53.96%	-12.13%	23.76%	25.70%	54.09%
Blanchard HUC 04100008								
Flow	-10.08%	20.91%	22.64%	51.46%	-10.03%	20.90%	22.63%	51.42%
TSS	-7.81%	31.52%	35.53%	74.47%	-7.76%	31.50%	35.52%	74.43%
TN	0.65%	41.36%	41.39%	83.21%	0.83%	41.31%	41.34%	83.25%
TP	-7.93%	31.74%	30.58%	55.72%	-7.84%	31.43%	30.52%	55.81%

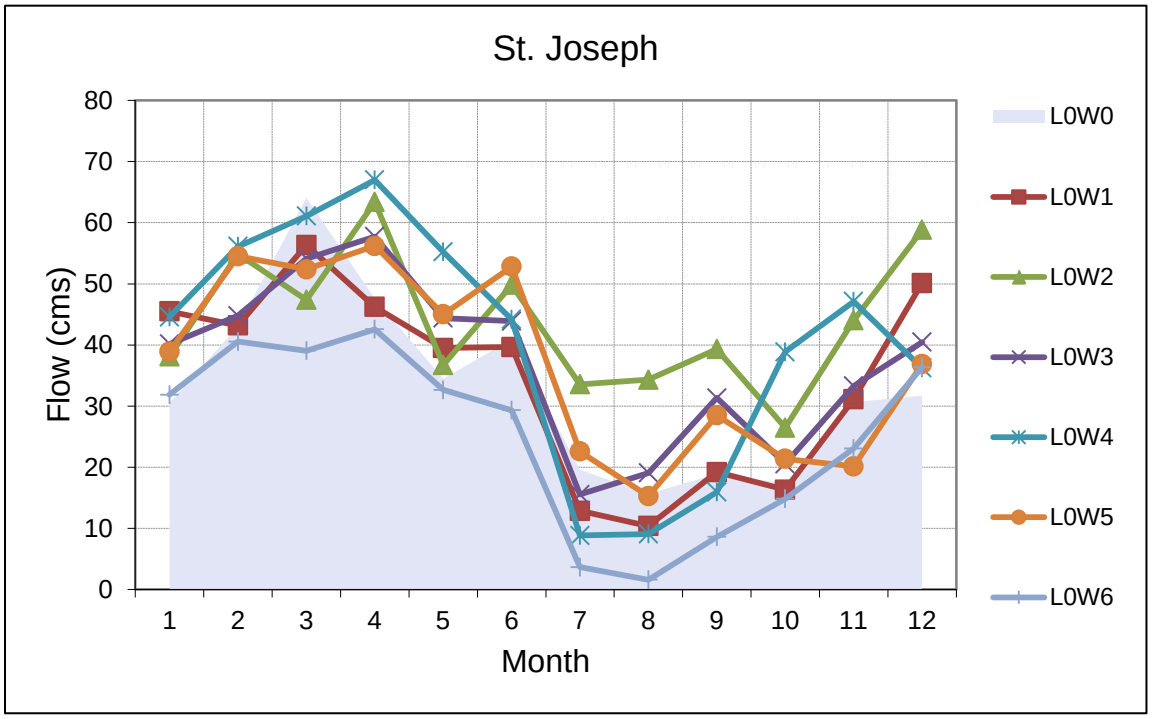


Figure 116. Monthly average flows, St. Joseph River (SWAT)

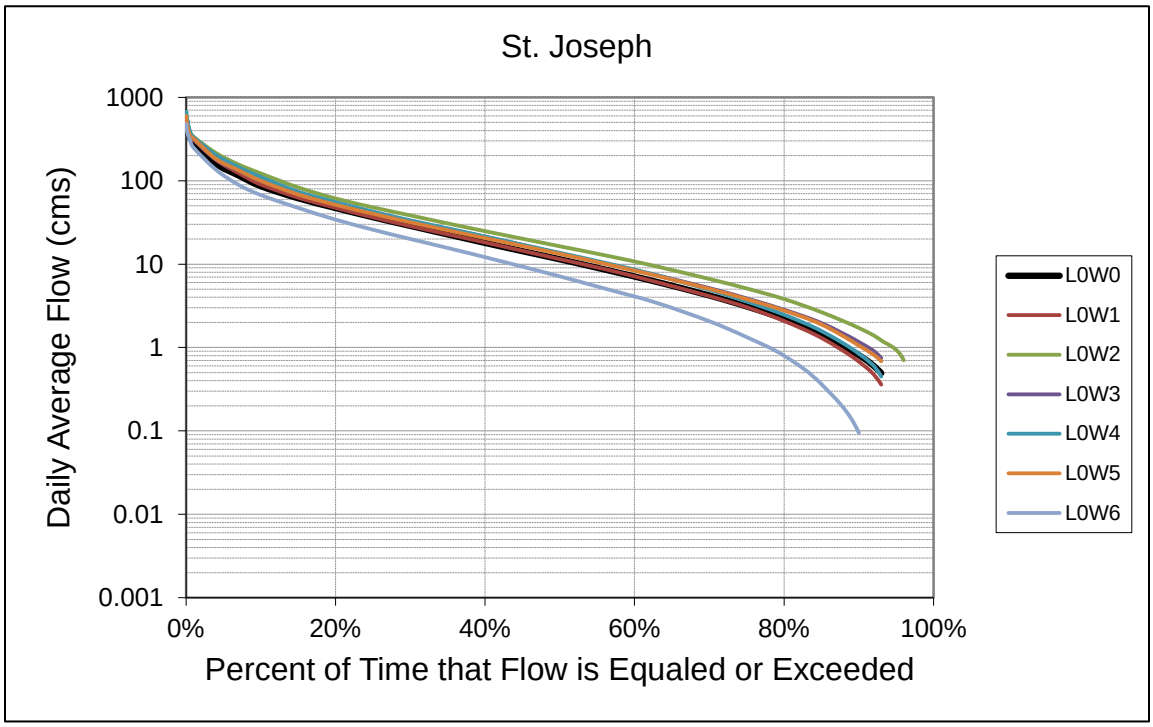


Figure 117. Flow duration, St. Joseph River (SWAT)

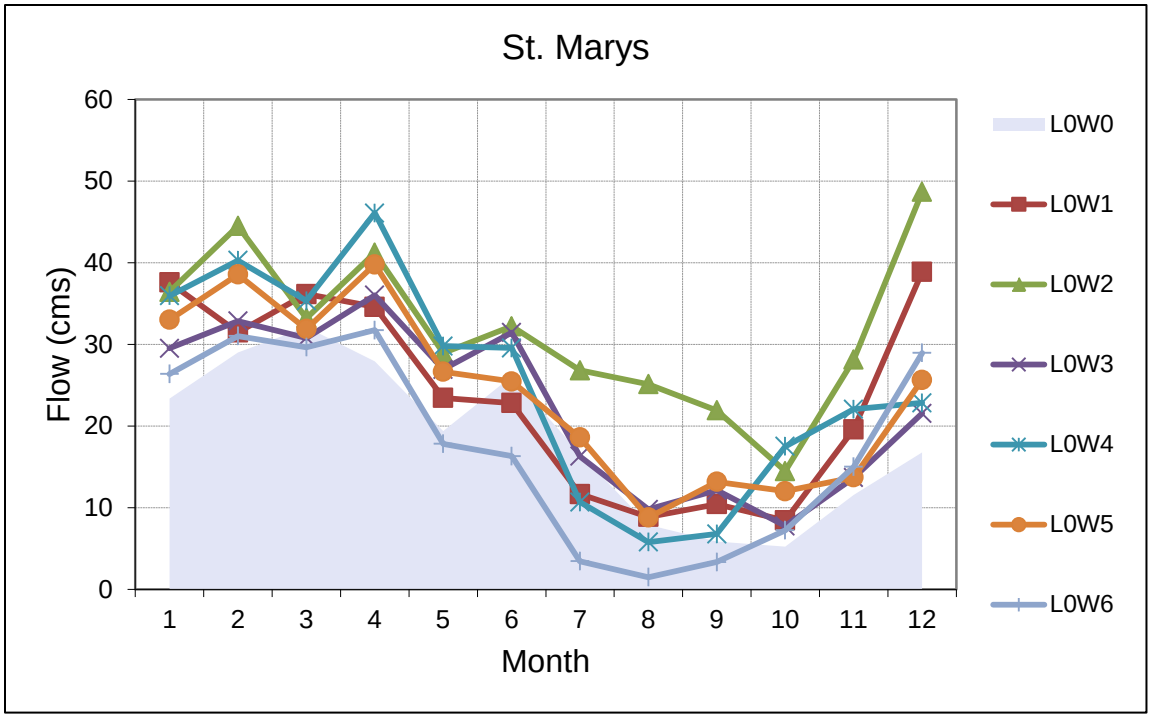


Figure 118. Monthly average flows, St. Marys River (SWAT)

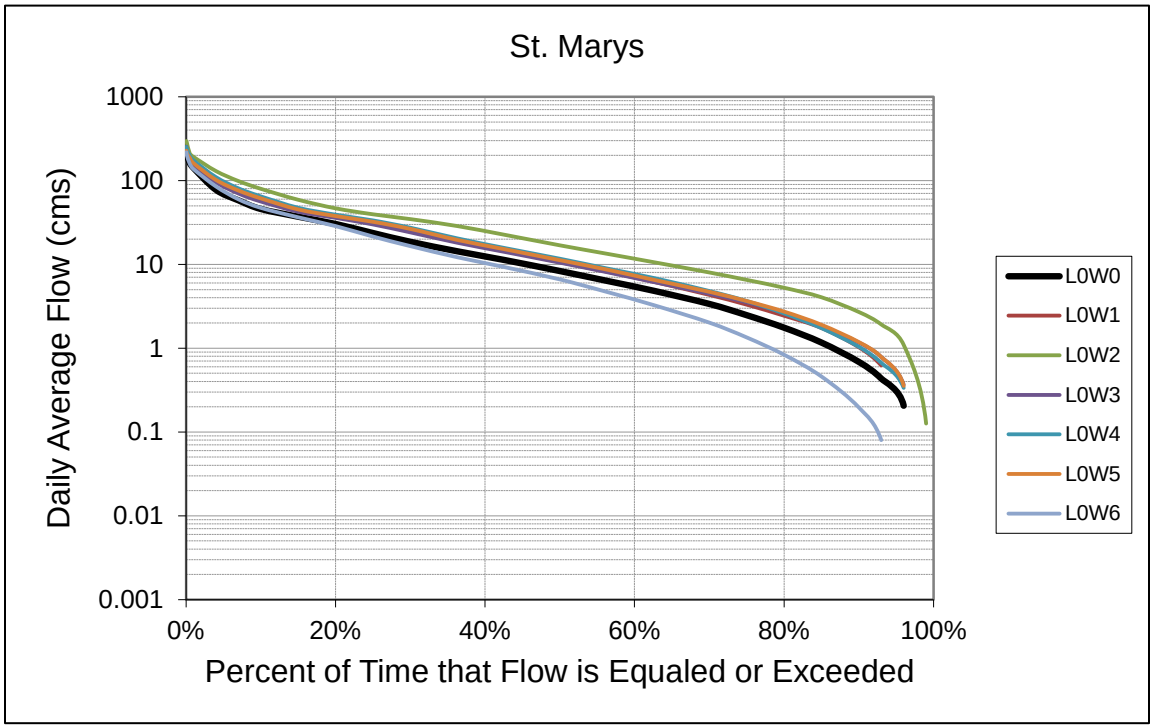


Figure 119. Flow duration, St. Marys River (SWAT)

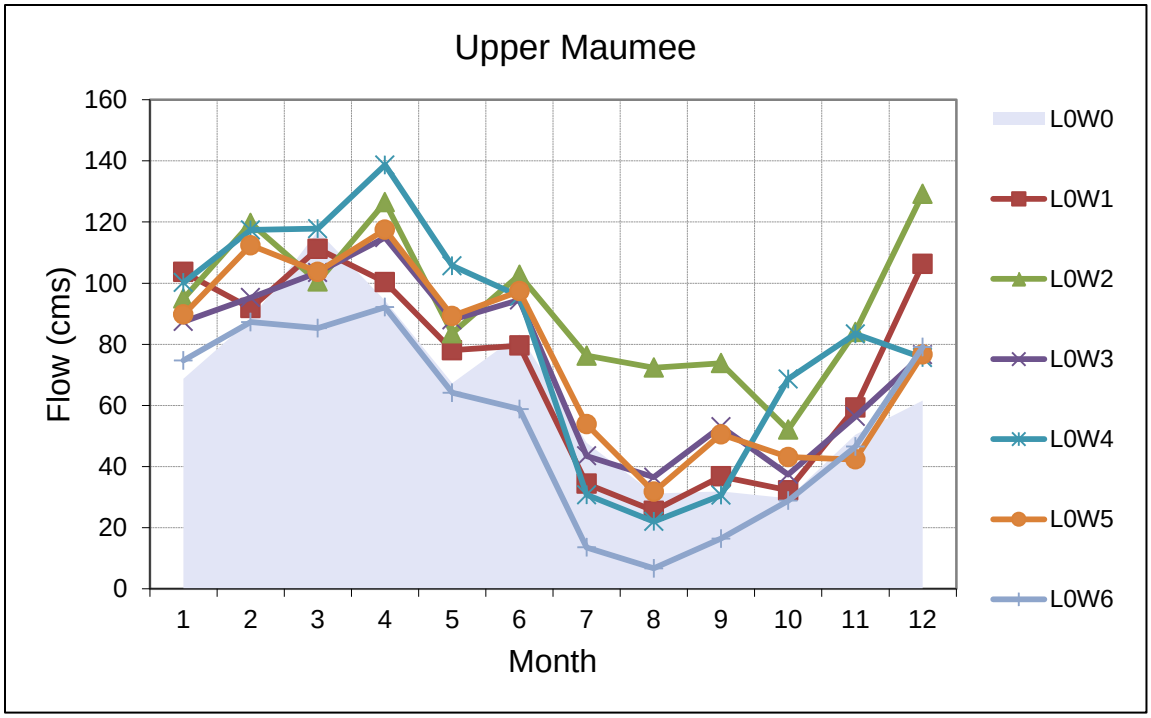


Figure 120. Monthly average flows, Upper Maumee River (SWAT)

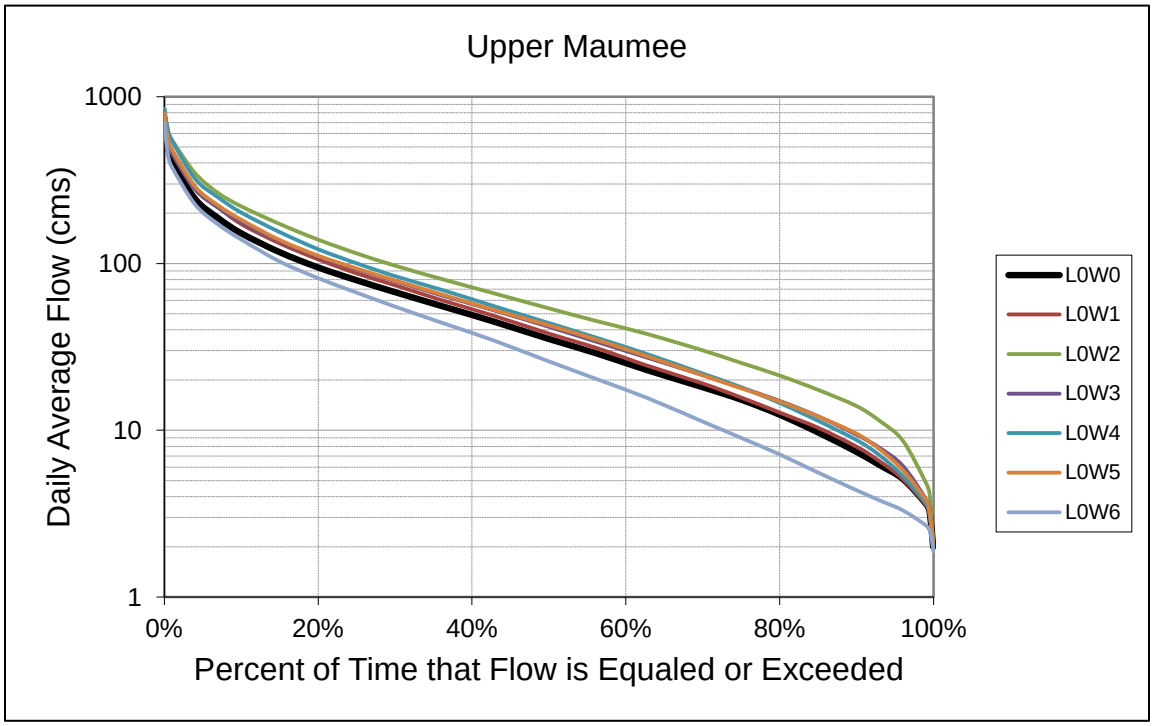


Figure 121. Flow duration, Upper Maumee River (SWAT)

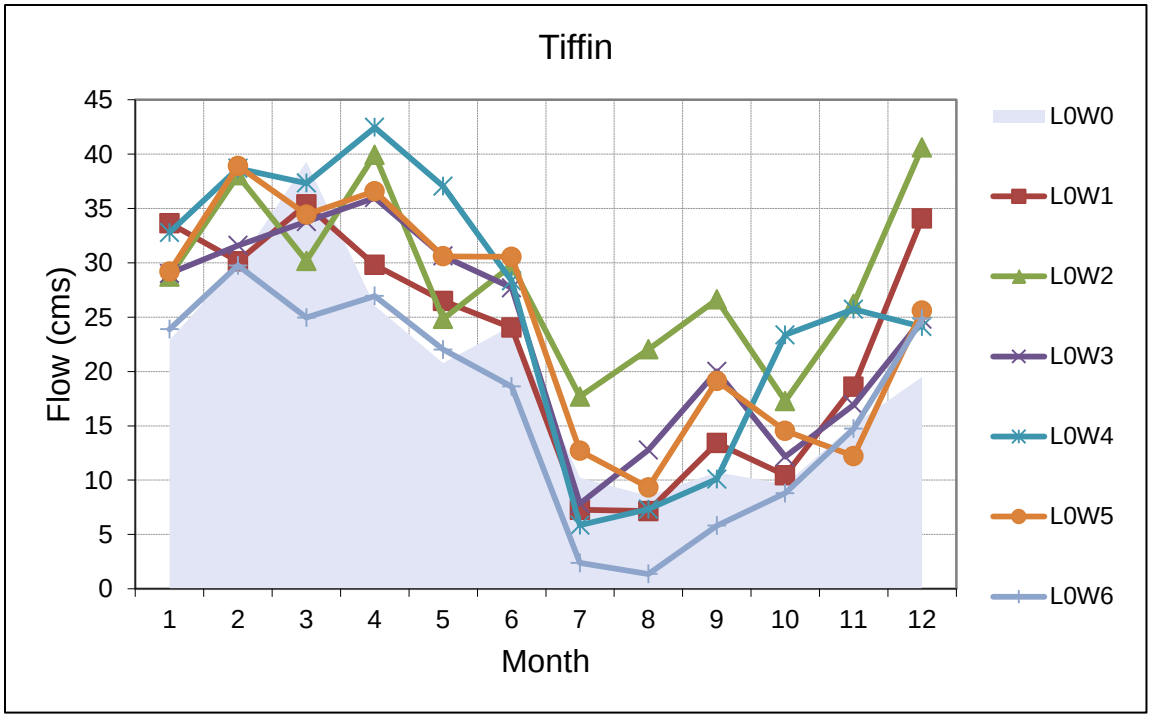


Figure 122. Monthly average flows, Tiffin River (SWAT)

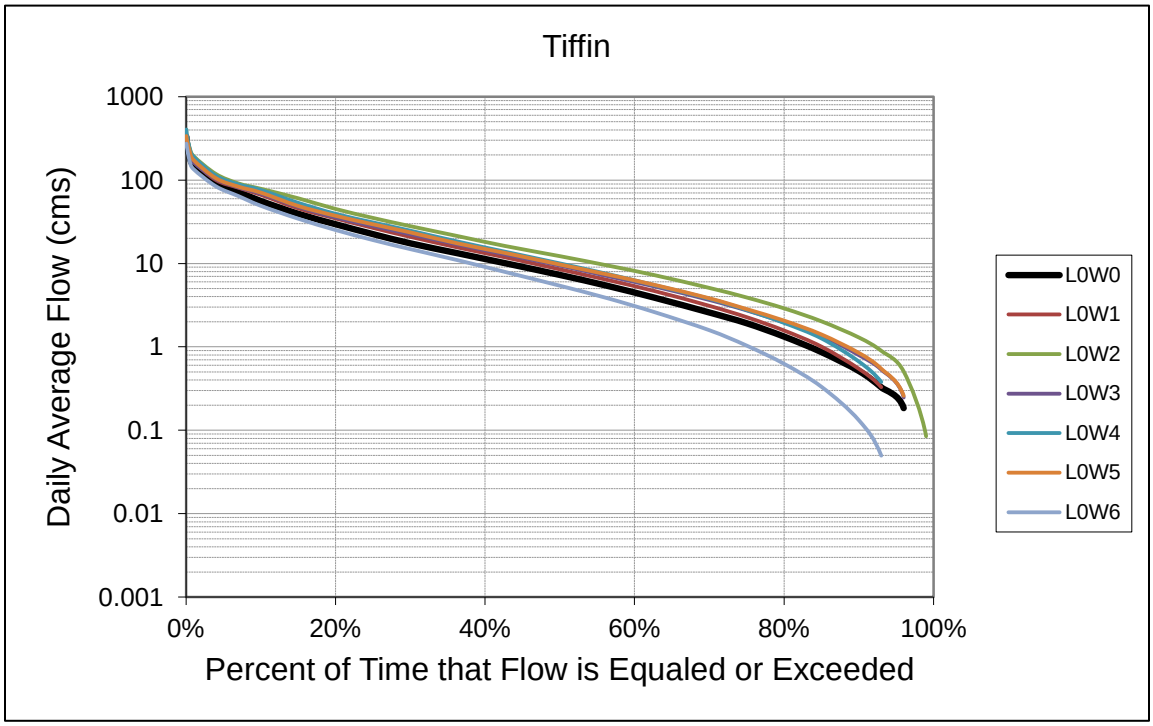


Figure 123. Flow duration, Tiffin River (SWAT)

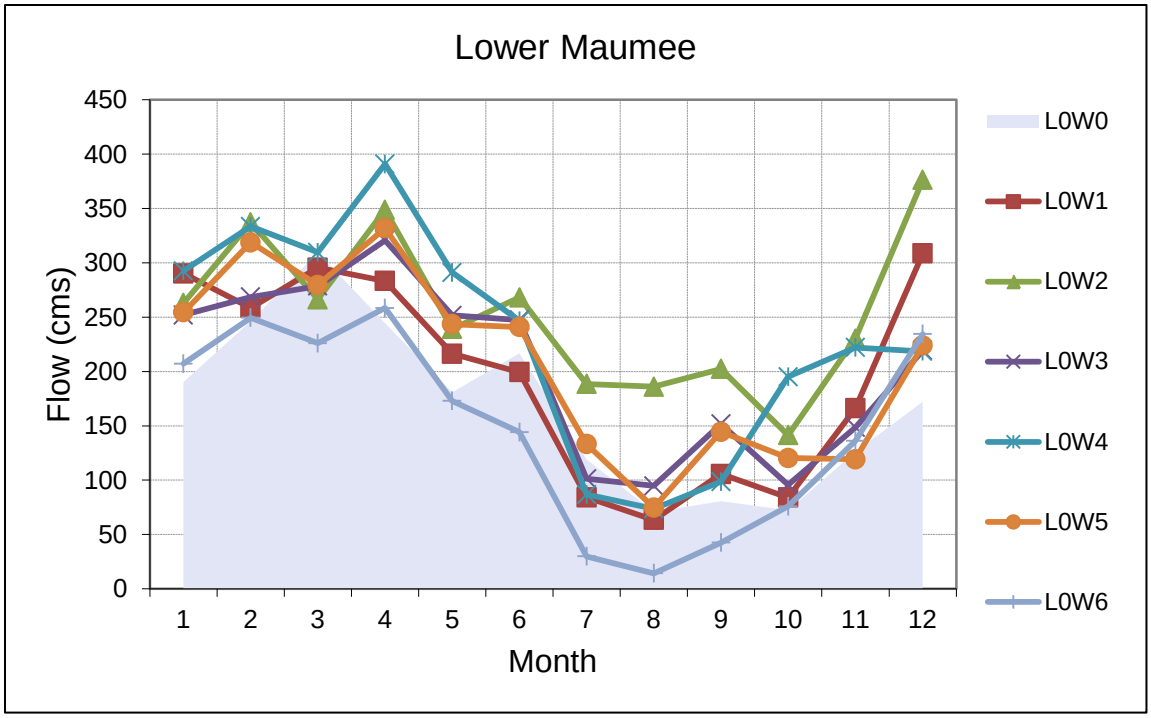


Figure 124. Monthly average flows, Lower Maumee River (SWAT)

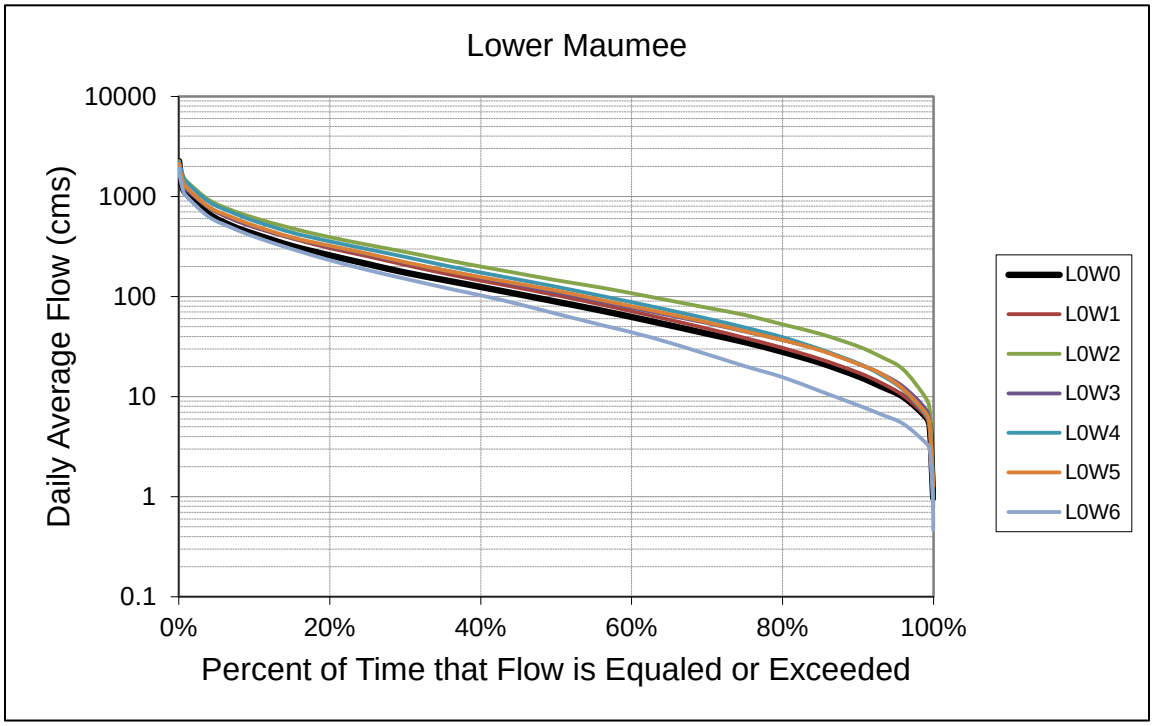


Figure 125. Flow duration, Lower Maumee River (SWAT)

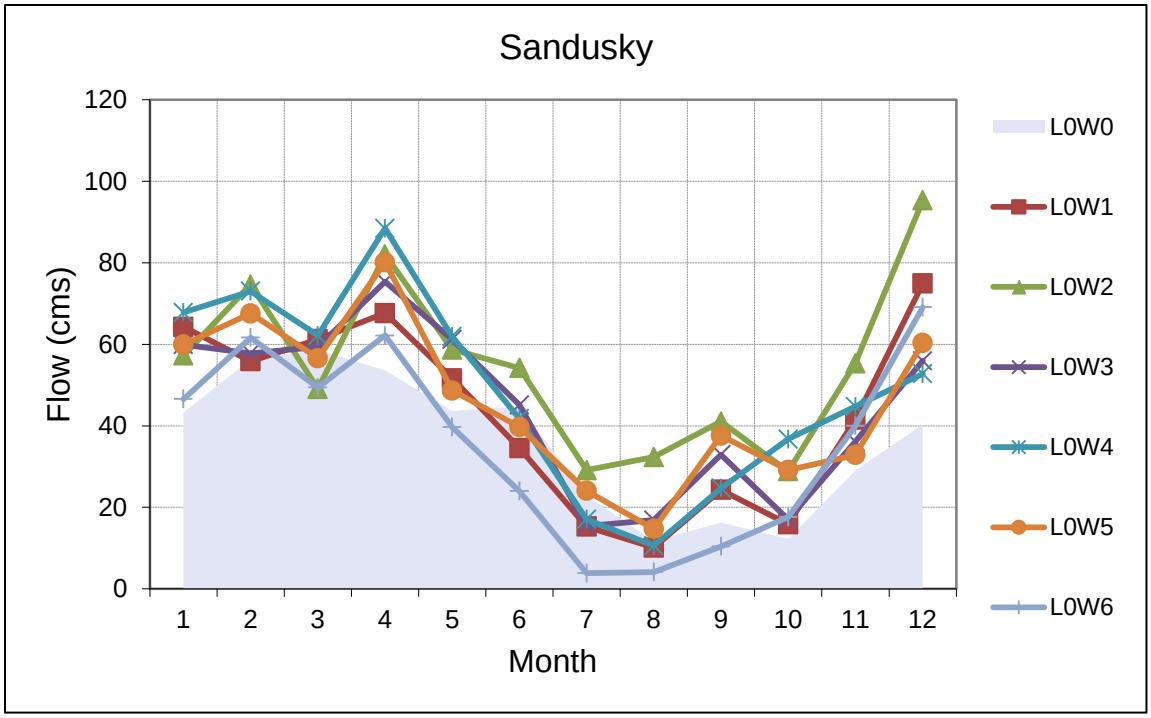


Figure 126. Monthly average flows, Sandusky River (SWAT)

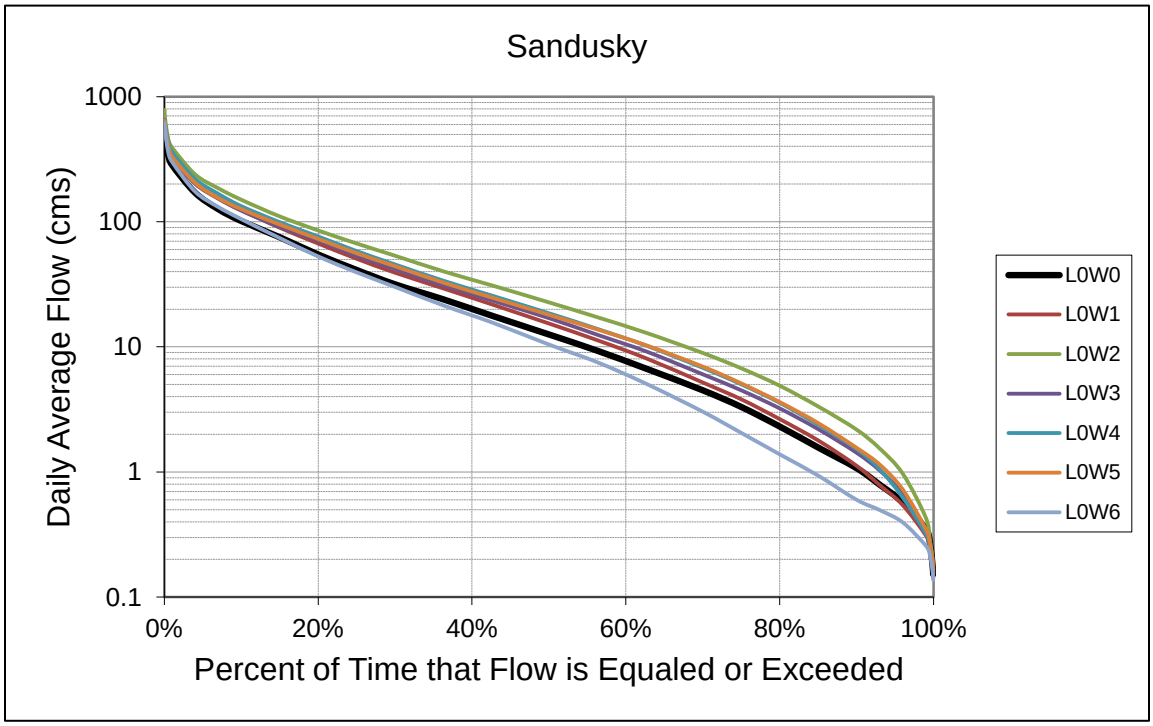


Figure 127. Flow duration, Sandusky River (SWAT)

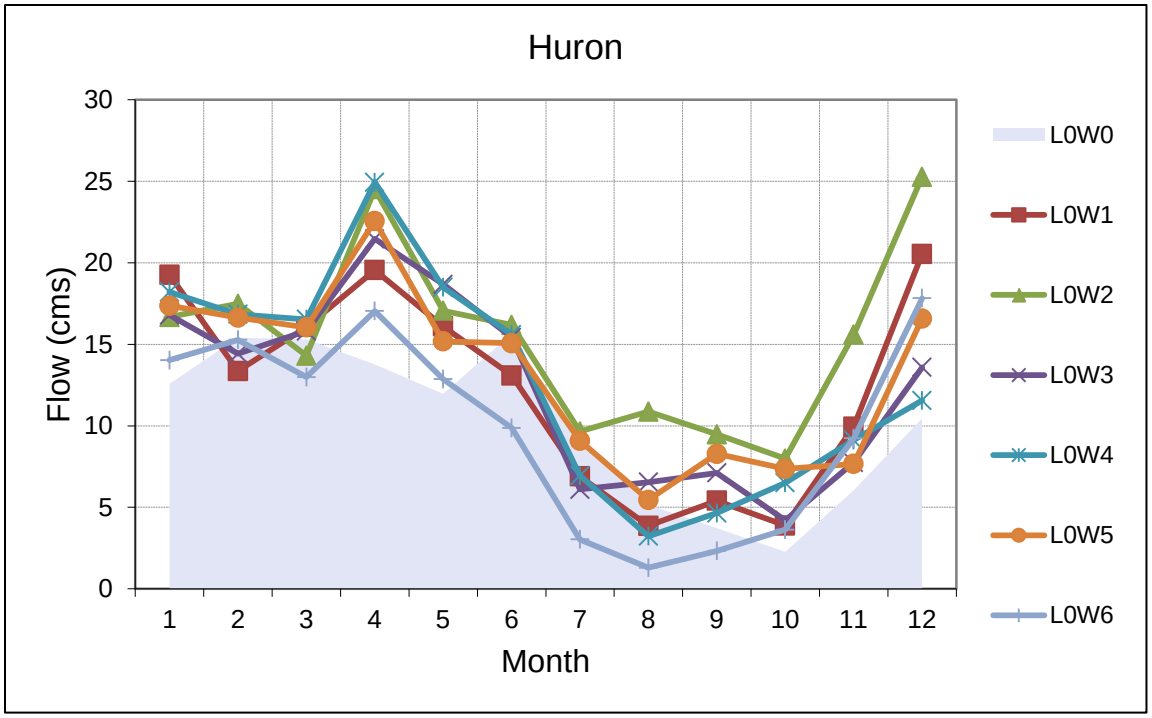


Figure 128. Monthly average flows, Huron River (SWAT)

Figure 129. Flow duration, Huron River (SWAT)

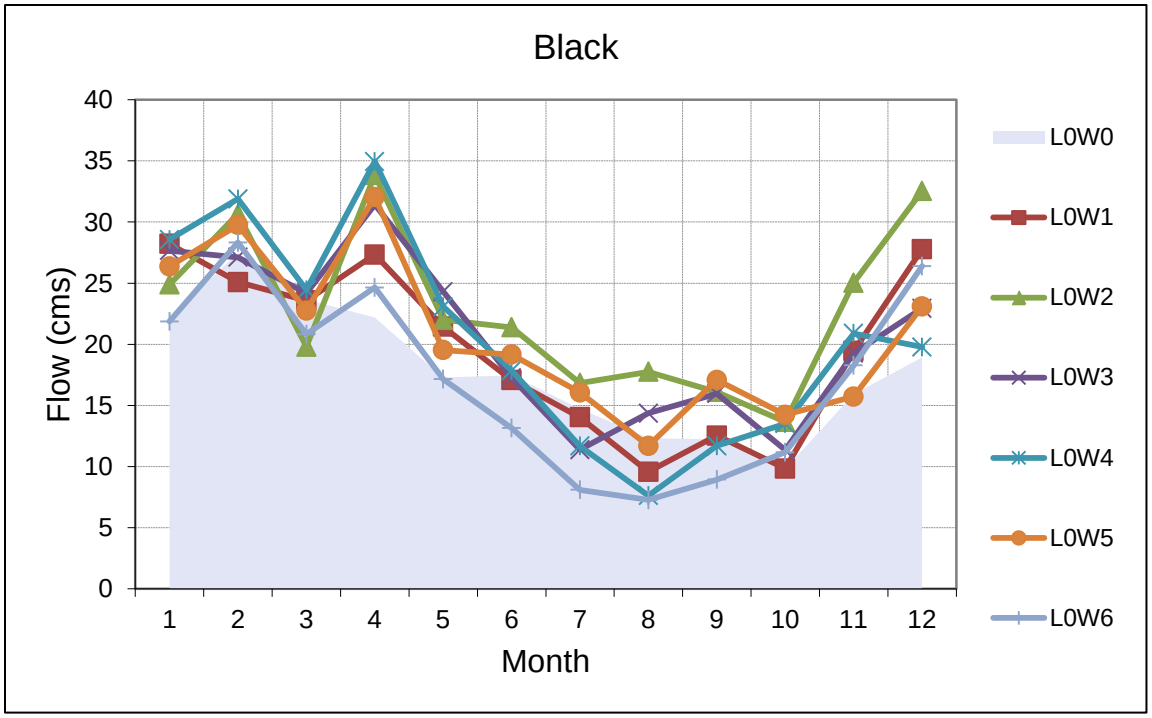


Figure 130. Monthly average flows, Black River (SWAT)

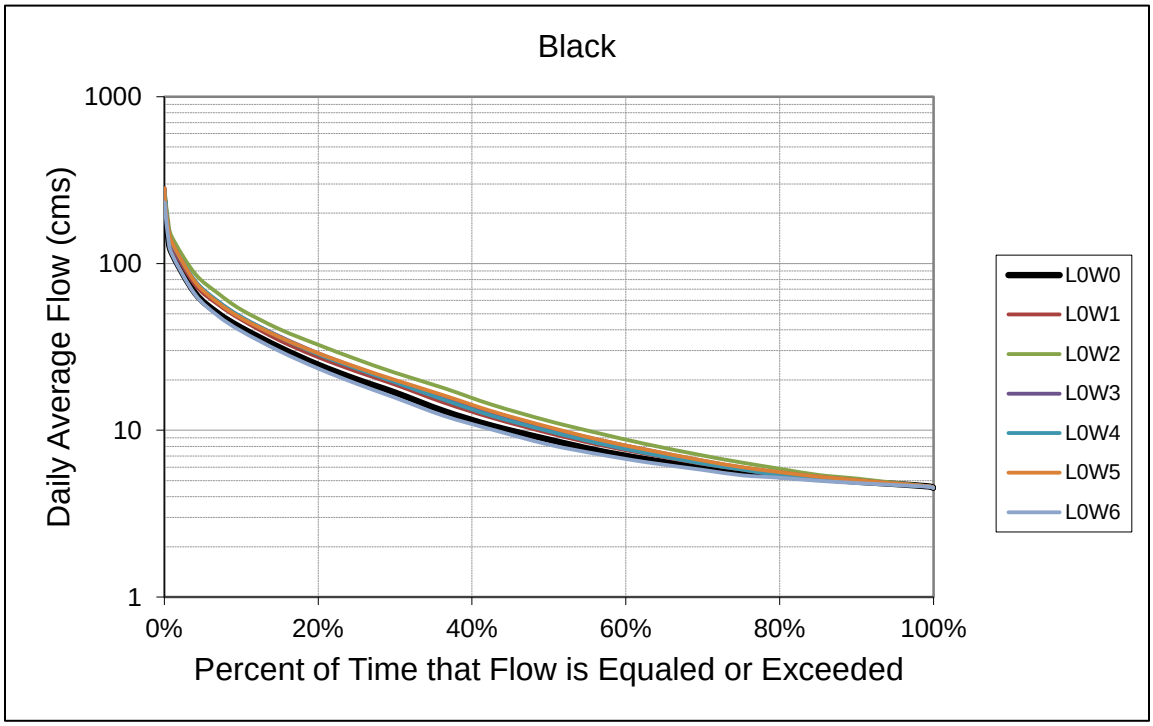


Figure 131. Flow duration, Black River (SWAT)

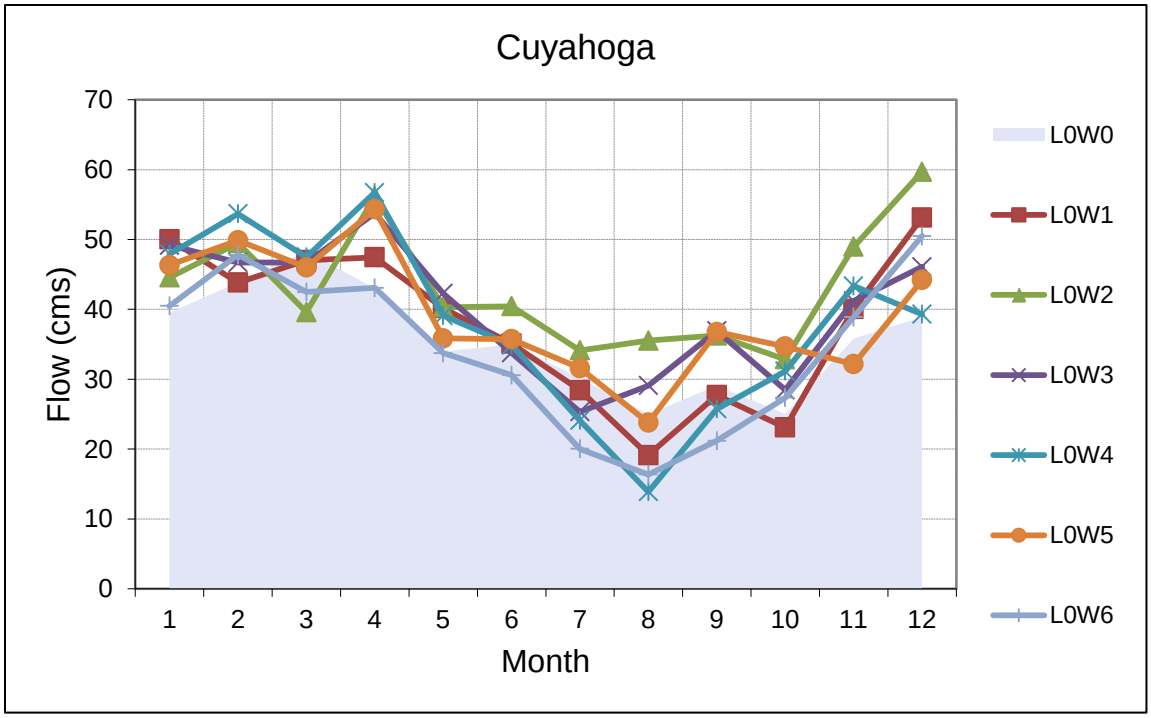


Figure 132. Monthly average flows, Cuyahoga River (SWAT)

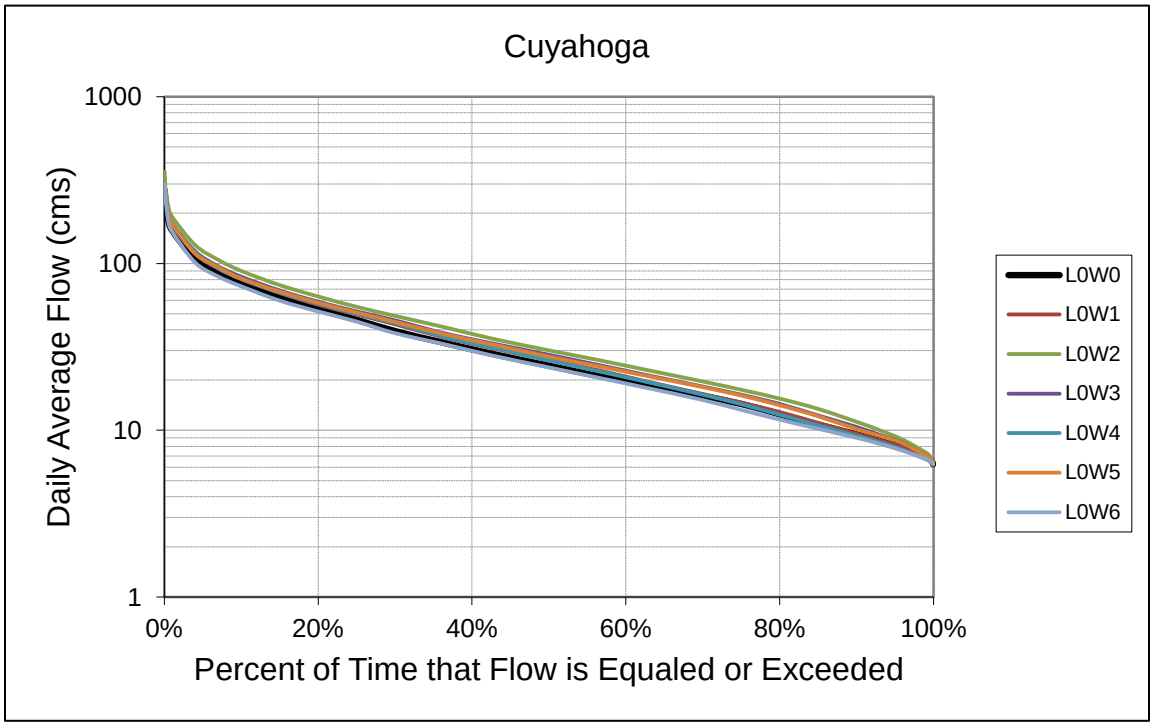


Figure 133. Flow duration, Cuyahoga River (SWAT)

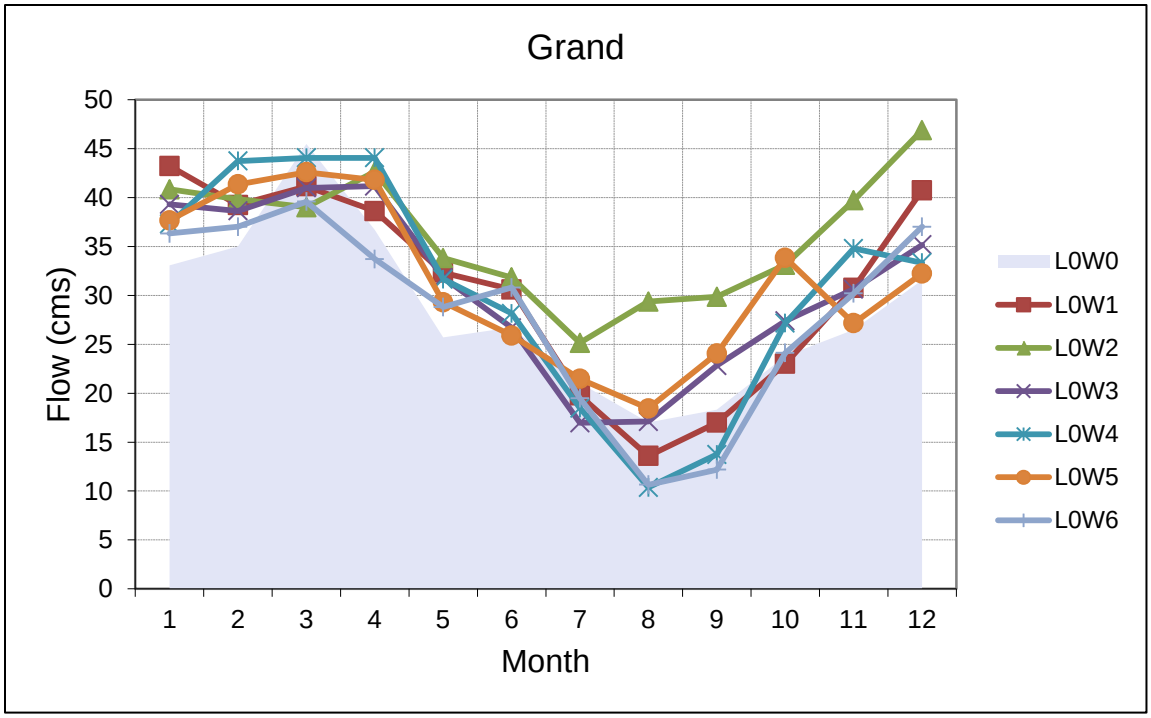


Figure 134. Monthly average flows, Grand River (SWAT)

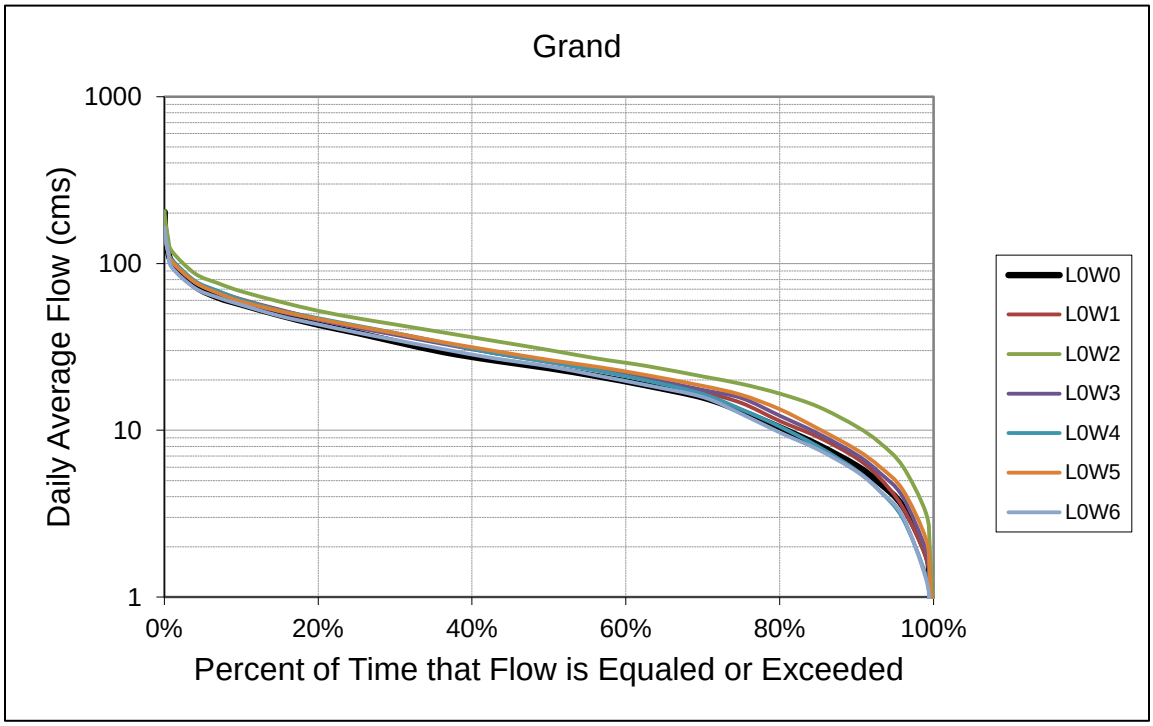


Figure 135. Flow duration, Grand River (SWAT)

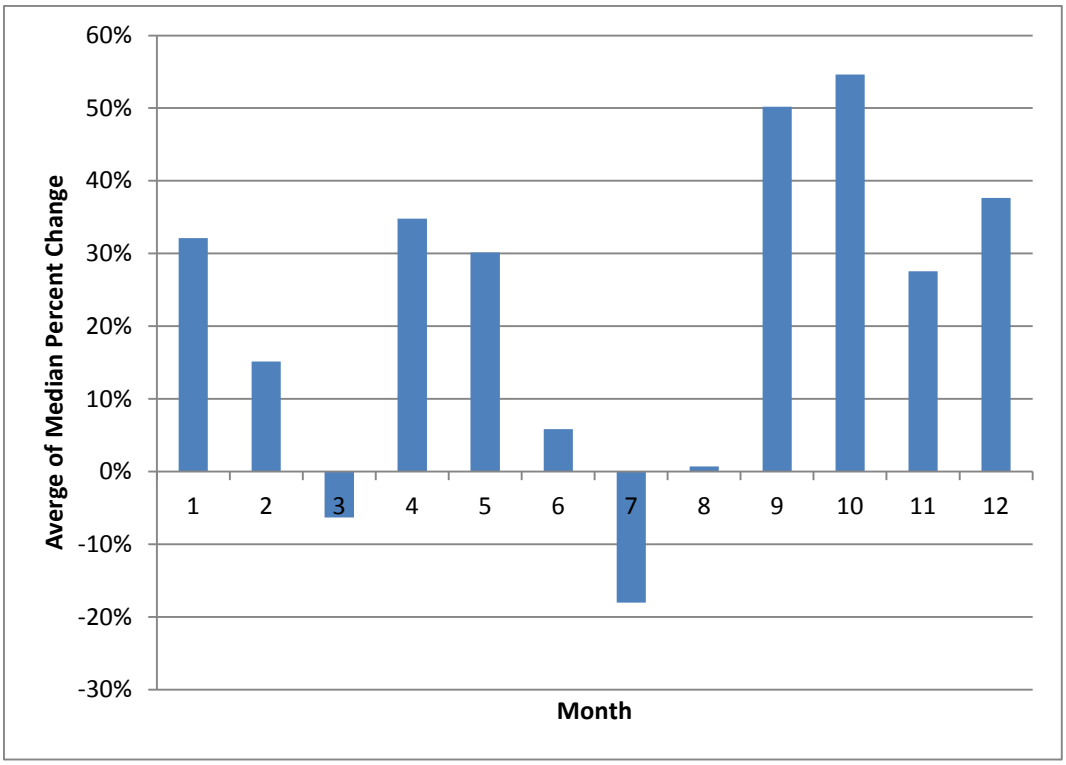


Figure 136. Average of median percent change in flow; NARCCAP Scenarios W1-W6 at all stations, Lake Erie-St. Clair basin (SWAT)

Loup-Elkhorn River Watershed

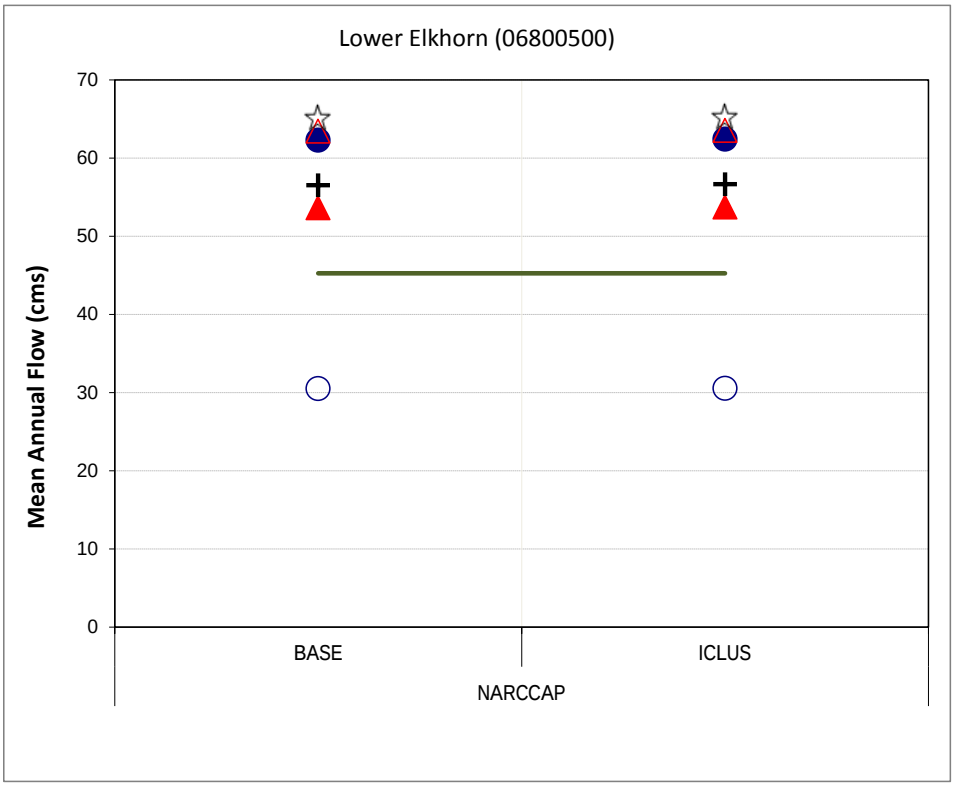


Figure 137. Mean annual flow (cms), Lower Elkhorn River (SWAT)

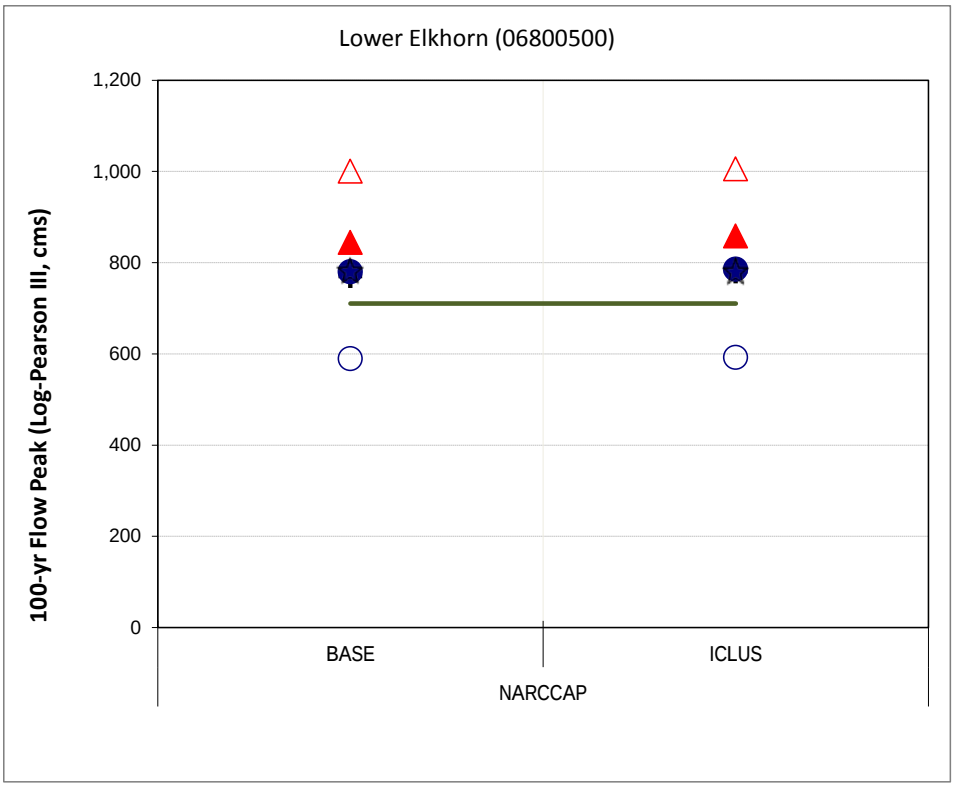


Figure 138. 100-yr Flow Peak (Log-Pearson III, cms), Lower Elkhorn River (SWAT)

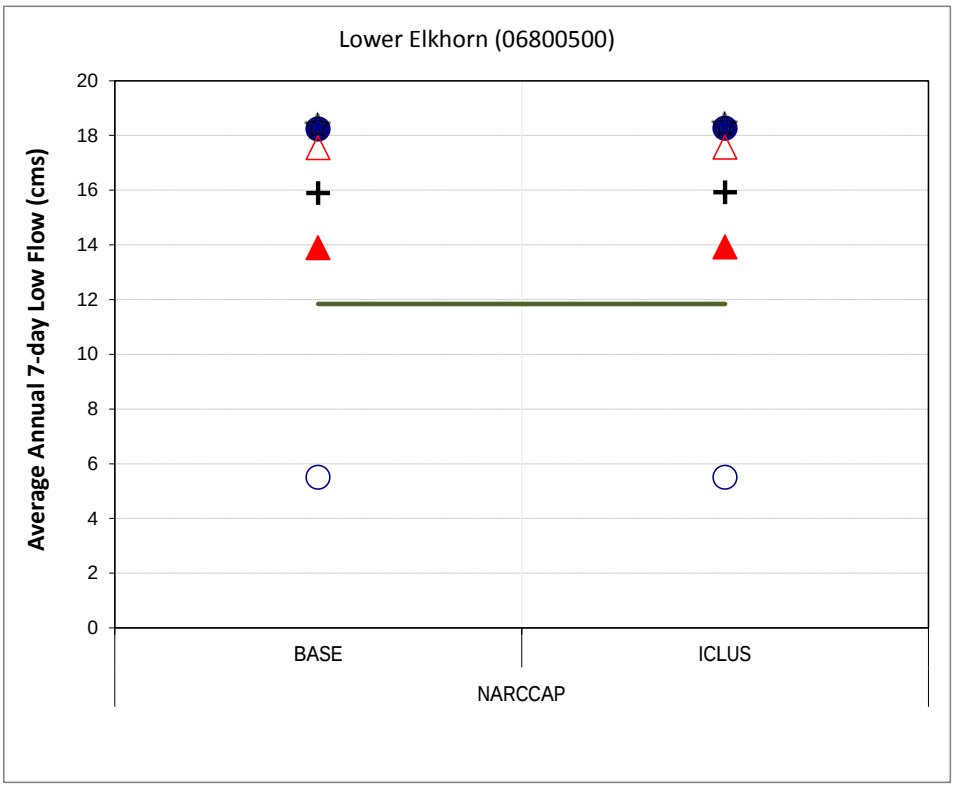


Figure 139. Average Annual 7-day Low Flow (cms), Lower Elkhorn River (SWAT)

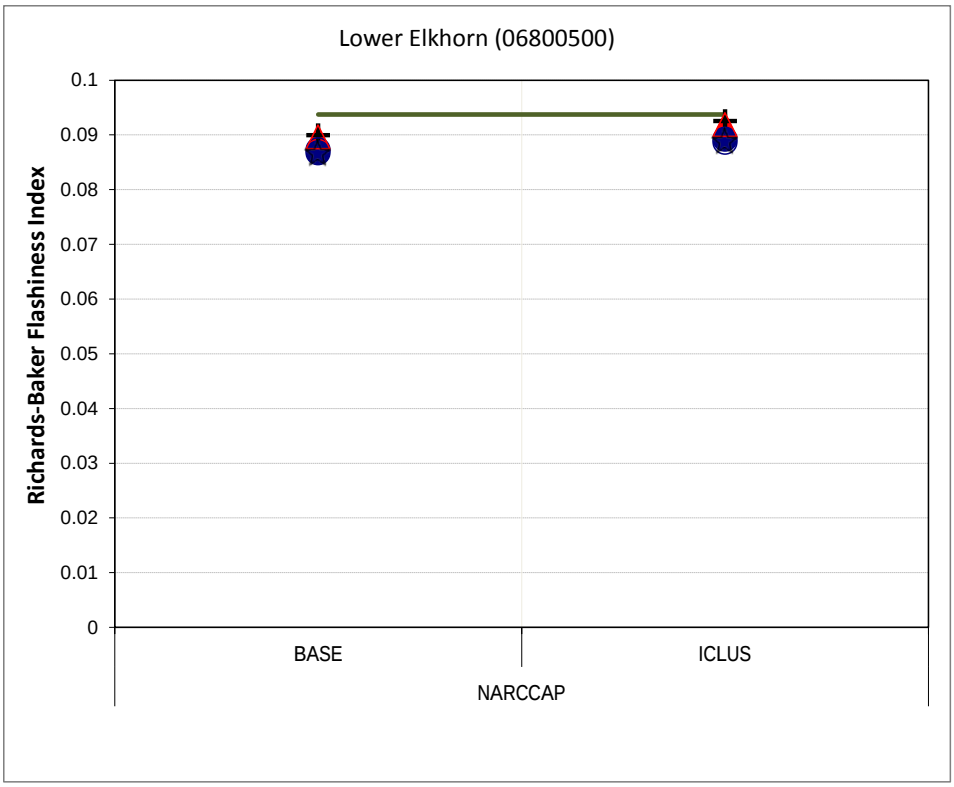


Figure 140. Richards-Baker Flashiness Index, Average Annual 7-day Low Flow (cms), Lower Elkhorn River (SWAT)

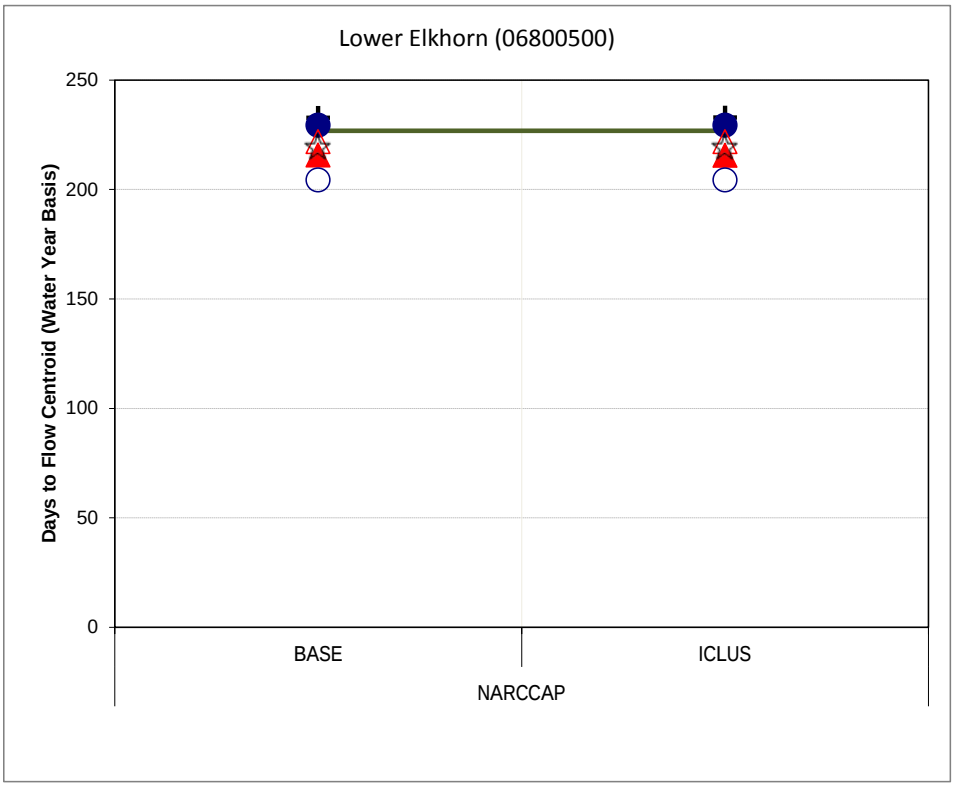


Figure 141. Days to Flow Centroid (Water Year Basis), Lower Elkhorn River (SWAT)

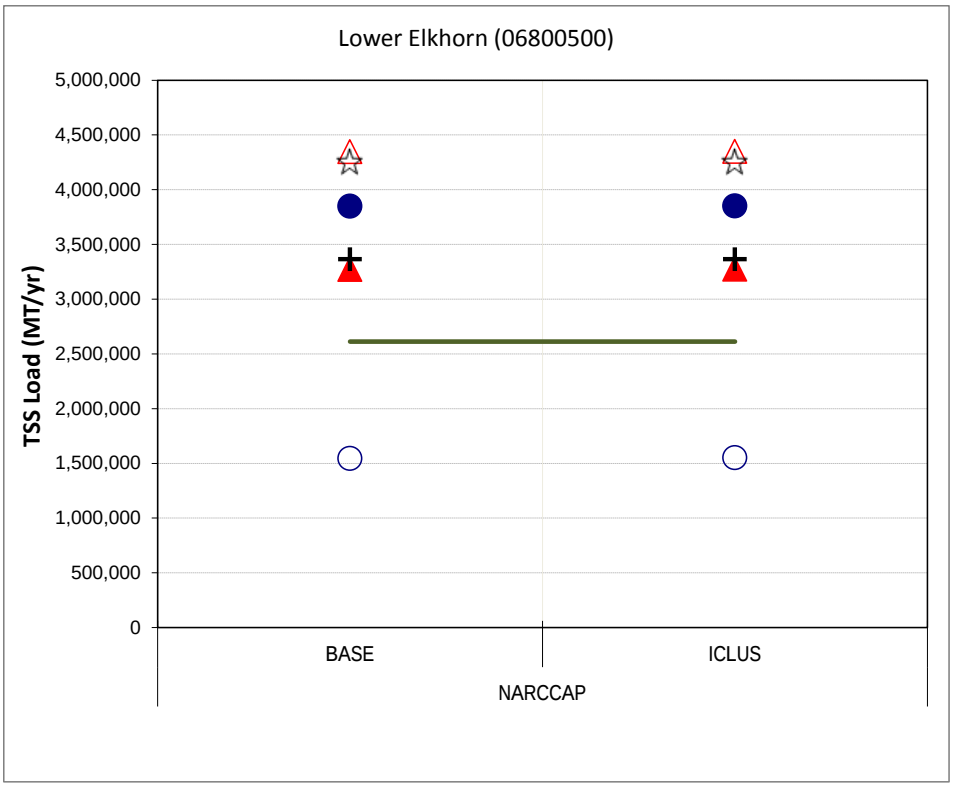


Figure 142. TSS Load (MT/yr), Lower Elkhorn River (SWAT)

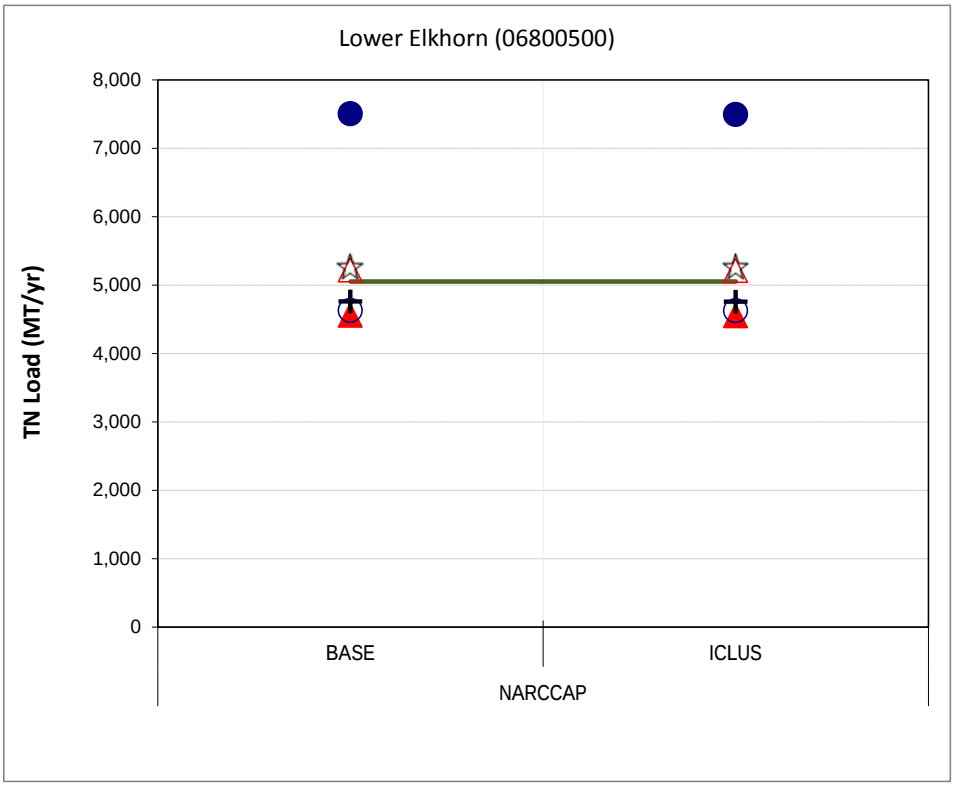


Figure 143. TN Load (MT/yr), Lower Elkhorn River (SWAT)

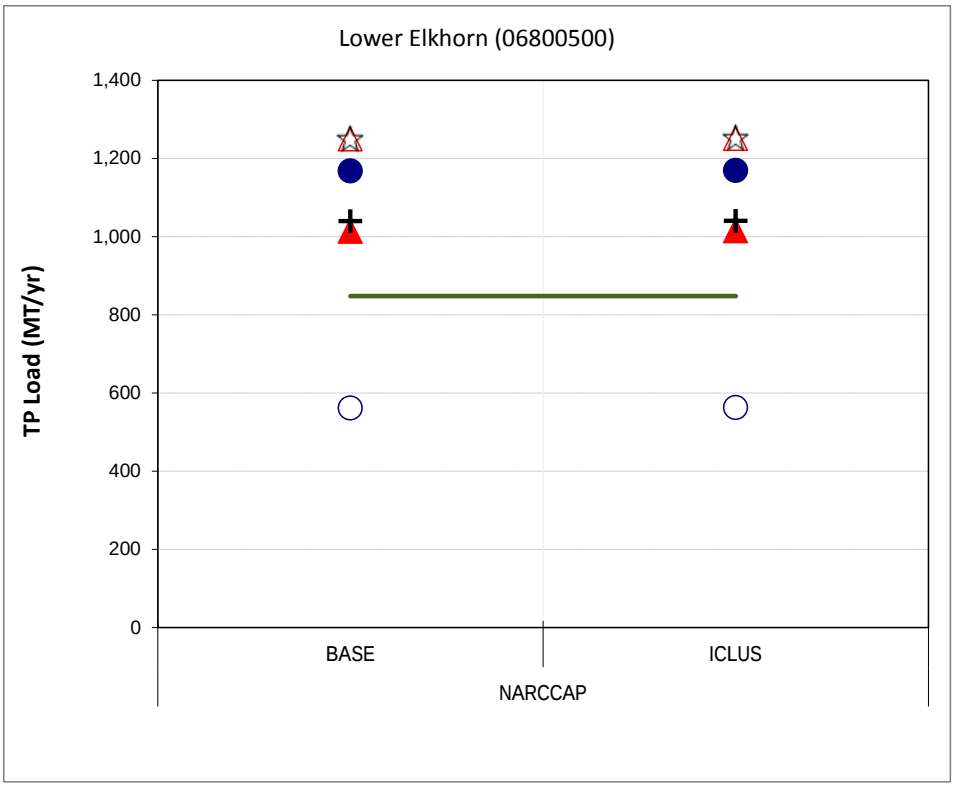


Figure 144. TP Load (MT/yr), Lower Elkhorn River (SWAT)

Table 6. Summary of range of change relative to existing conditions for NARCCAP dynamically downscaled scenarios, Loup and Elkhorn basins SWAT model

	Results without LU change				Results with LU change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
Upper Elkhorn gage 06799500								
Flow	-40.91%	20.67%	15.60%	44.85%	-40.91%	20.67%	15.60%	44.85%
TSS	-48.71%	23.81%	18.16%	53.48%	-48.71%	23.81%	18.16%	53.48%
TN	-45.95%	19.40%	12.23%	37.62%	-45.95%	19.41%	12.23%	37.62%
TP	-50.71%	25.59%	19.75%	57.25%	-50.71%	25.59%	19.75%	57.25%
Lower Elkhorn gage 06800500								
Flow	-32.58%	31.22%	22.12%	44.27%	-32.72%	31.16%	22.02%	44.15%
TSS	-40.87%	38.10%	31.72%	66.45%	-40.63%	38.10%	31.74%	66.42%
TN	-9.84%	-1.27%	5.39%	48.54%	-9.80%	-1.18%	5.46%	48.56%
TP	-33.76%	30.15%	23.54%	47.83%	-33.69%	30.12%	23.51%	47.76%
N Fork Elkhorn HUC 10220002								
Flow	-30.59%	27.79%	19.43%	42.55%	-30.60%	27.79%	19.43%	42.55%
TSS	-21.96%	32.05%	25.64%	53.20%	-21.93%	32.04%	25.64%	53.19%
TN	-23.97%	-10.44%	-4.78%	40.91%	-23.98%	-10.45%	-4.79%	40.91%
TP	-15.01%	15.20%	11.16%	23.84%	-15.03%	15.20%	11.16%	23.84%
Logan HUC 10220004								
Flow	-17.84%	45.65%	40.14%	70.19%	-17.86%	45.64%	40.12%	70.17%
TSS	-8.34%	54.42%	50.66%	87.91%	-8.26%	54.41%	50.67%	87.88%
TN	-4.16%	11.67%	18.43%	69.21%	-4.16%	11.68%	18.43%	69.21%
TP	-5.65%	46.75%	43.79%	72.54%	-5.76%	46.71%	43.74%	72.48%
Upper Middle Loup HUC 10210001								
Flow	-37.05%	-1.99%	-1.38%	20.69%	-37.05%	-1.99%	-1.38%	20.69%
TSS	-52.10%	-3.63%	-1.52%	33.23%	-52.10%	-3.63%	-1.52%	33.23%
TN	-36.49%	2.98%	3.65%	29.33%	-36.49%	2.98%	3.65%	29.33%
TP	-43.29%	-2.70%	-1.68%	26.14%	-43.29%	-2.70%	-1.68%	26.14%
Dismal HUC 10210002								
Flow	-36.25%	-4.29%	-1.71%	23.11%	-36.25%	-4.29%	-1.71%	23.11%
TSS	-48.55%	-7.65%	-1.92%	35.71%	-48.55%	-7.65%	-1.92%	35.71%
TN	-30.87%	14.97%	9.86%	29.85%	-30.87%	14.97%	9.86%	29.85%
TP	-41.23%	-6.22%	-2.21%	28.03%	-41.23%	-6.22%	-2.21%	28.03%
Lower Middle Loup HUC 10210003								
Flow	-45.76%	-0.16%	0.99%	31.87%	-45.76%	-0.15%	0.99%	31.87%
TSS	-56.47%	-1.63%	4.35%	54.15%	-56.47%	-1.61%	4.36%	54.14%
TN	-46.45%	3.25%	2.36%	37.21%	-46.46%	3.28%	2.34%	37.15%
TP	-49.46%	-2.35%	0.92%	36.62%	-49.46%	-2.33%	0.93%	36.65%
South Loup HUC 10210004								
Flow	-53.36%	12.45%	8.63%	50.65%	-53.36%	12.47%	8.64%	50.65%

	Results without LU change				Results with LU change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
TSS	-64.38%	21.20%	22.46%	119.74%	-64.40%	21.12%	22.52%	119.55%
TN	-49.13%	5.11%	-1.32%	36.59%	-49.31%	4.94%	-1.62%	35.75%
TP	-52.19%	10.14%	7.70%	52.78%	-52.16%	10.23%	7.70%	52.82%
Mud HUC 10210005								
Flow	-72.77%	17.69%	11.76%	65.16%	-72.77%	17.70%	11.76%	65.17%
TSS	-79.92%	19.20%	27.04%	158.46%	-80.07%	18.33%	26.11%	156.56%
TN	-52.55%	-1.46%	-4.02%	29.07%	-52.88%	-2.27%	-4.79%	28.07%
TP	-73.13%	15.83%	12.21%	75.34%	-72.96%	16.30%	12.68%	76.05%
Upper North Loup HUC 10210006								
Flow	-29.40%	0.64%	1.67%	22.15%	-29.40%	0.64%	1.67%	22.15%
TSS	-35.81%	12.32%	9.74%	40.51%	-35.81%	12.32%	9.74%	40.51%
TN	-15.81%	32.55%	28.87%	67.90%	-15.81%	32.55%	28.87%	67.90%
TP	-3.45%	4.04%	3.60%	7.89%	-3.45%	4.04%	3.60%	7.89%
Lower North Loup HUC 10210007								
Flow	-51.78%	2.95%	1.77%	34.81%	-51.78%	2.95%	1.77%	34.81%
TSS	-56.65%	3.53%	5.50%	51.61%	-56.65%	3.53%	5.50%	51.60%
TN	-45.19%	17.24%	11.00%	47.41%	-45.15%	17.26%	11.04%	47.53%
TP	-52.30%	1.48%	3.37%	42.24%	-52.29%	1.49%	3.38%	42.25%
Calamus HUC 10210008								
Flow	-39.54%	1.58%	0.43%	24.27%	-39.54%	1.58%	0.43%	24.27%
TSS	-50.78%	1.41%	1.94%	36.88%	-50.78%	1.41%	1.94%	36.88%
TN	-28.31%	23.37%	13.43%	30.18%	-28.31%	23.37%	13.43%	30.18%
TP	-41.44%	0.59%	0.55%	26.88%	-41.44%	0.59%	0.55%	26.88%
Loup HUC 10210009								
Flow	-77.45%	11.95%	12.24%	74.20%	-77.45%	11.96%	12.25%	74.21%
TSS	-88.08%	23.93%	26.35%	120.27%	-88.08%	23.95%	26.37%	120.29%
TN	-61.41%	17.05%	11.30%	57.00%	-61.41%	16.91%	11.26%	57.05%
TP	-65.57%	8.18%	10.50%	66.39%	-65.57%	8.19%	10.51%	66.41%
Cedar HUC 10210010								
Flow	-47.33%	16.19%	8.01%	30.02%	-47.33%	16.19%	8.01%	30.02%
TSS	-59.33%	27.83%	15.54%	44.97%	-59.33%	27.83%	15.54%	44.99%
TN	-48.27%	5.41%	-1.69%	17.99%	-48.28%	5.35%	-1.53%	17.91%
TP	-47.96%	16.46%	8.13%	30.27%	-47.95%	16.47%	8.14%	30.27%

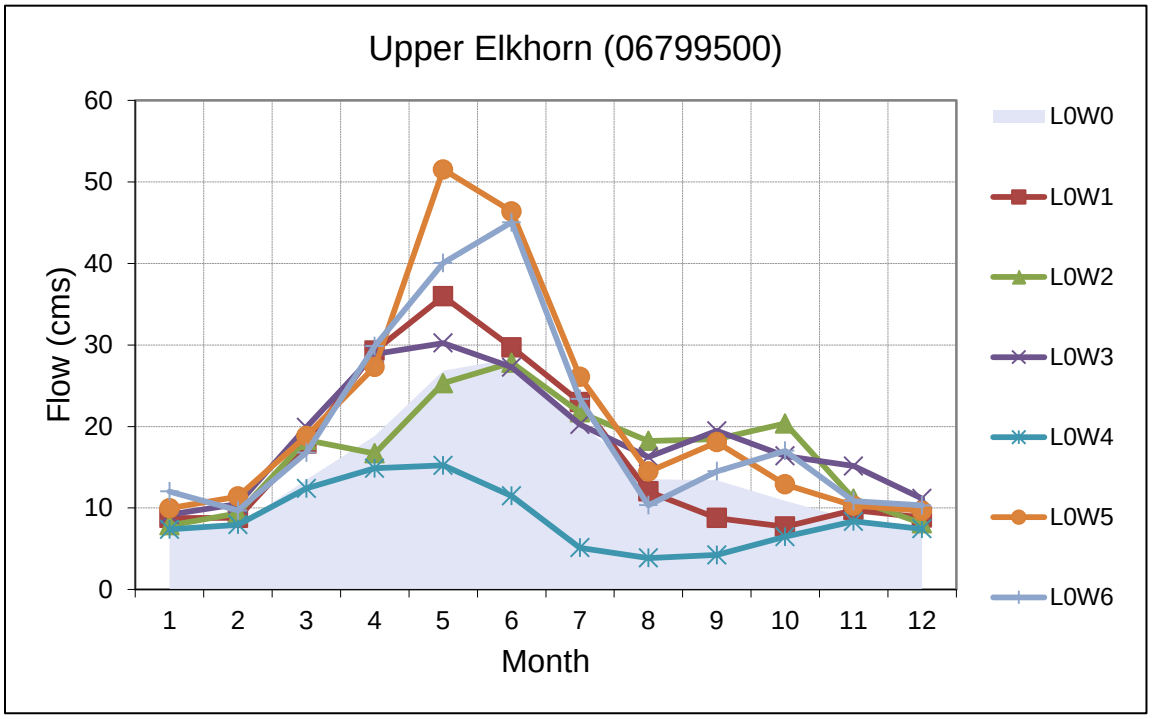


Figure 145. Monthly average flows, Upper Elkhorn River (SWAT)

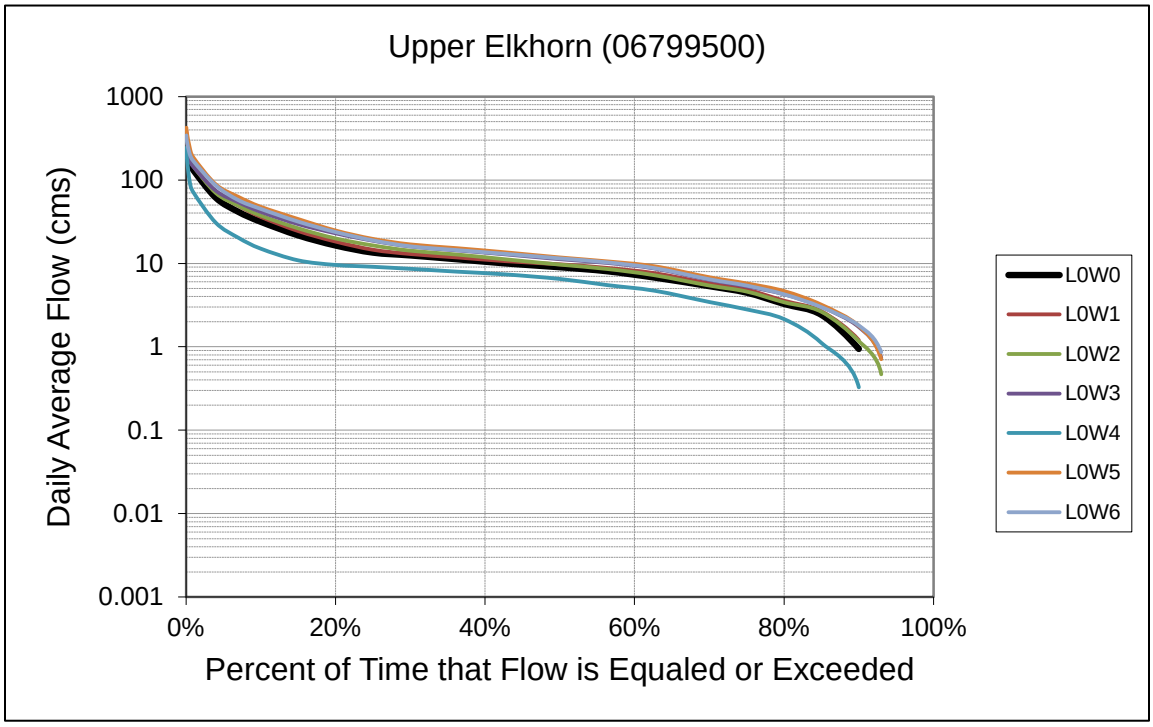


Figure 146. Flow duration, Upper Elkhorn River (SWAT)

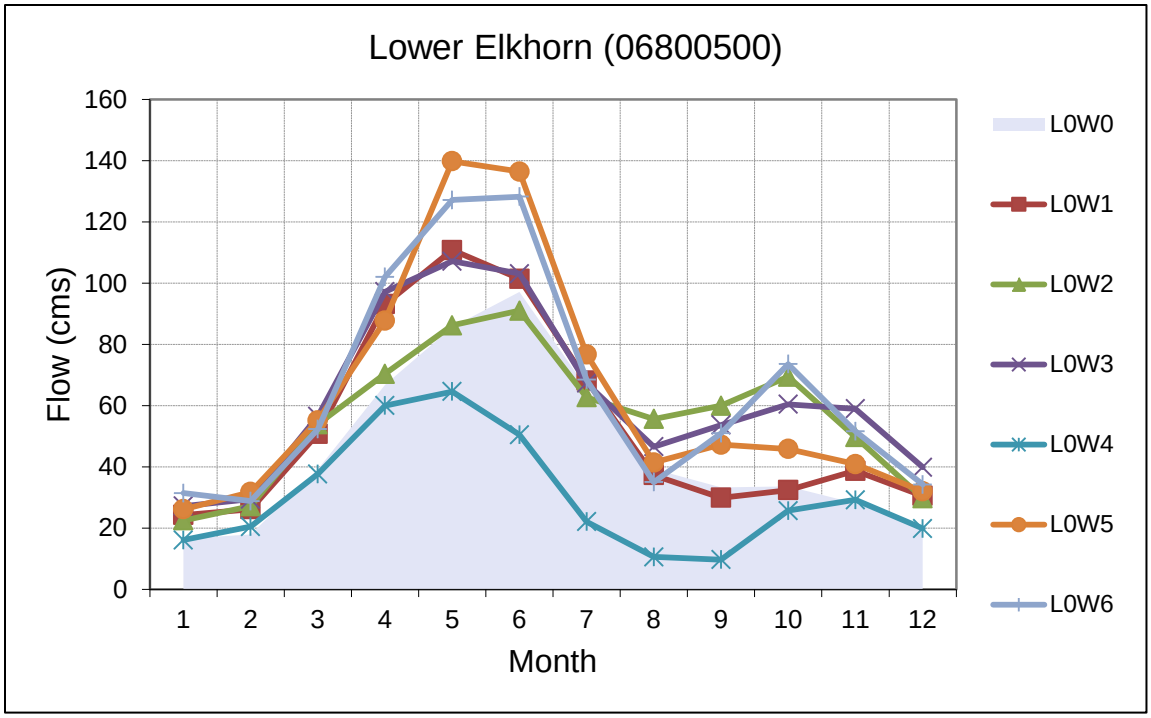


Figure 147. Monthly average flows, Lower Elkhorn River (SWAT)

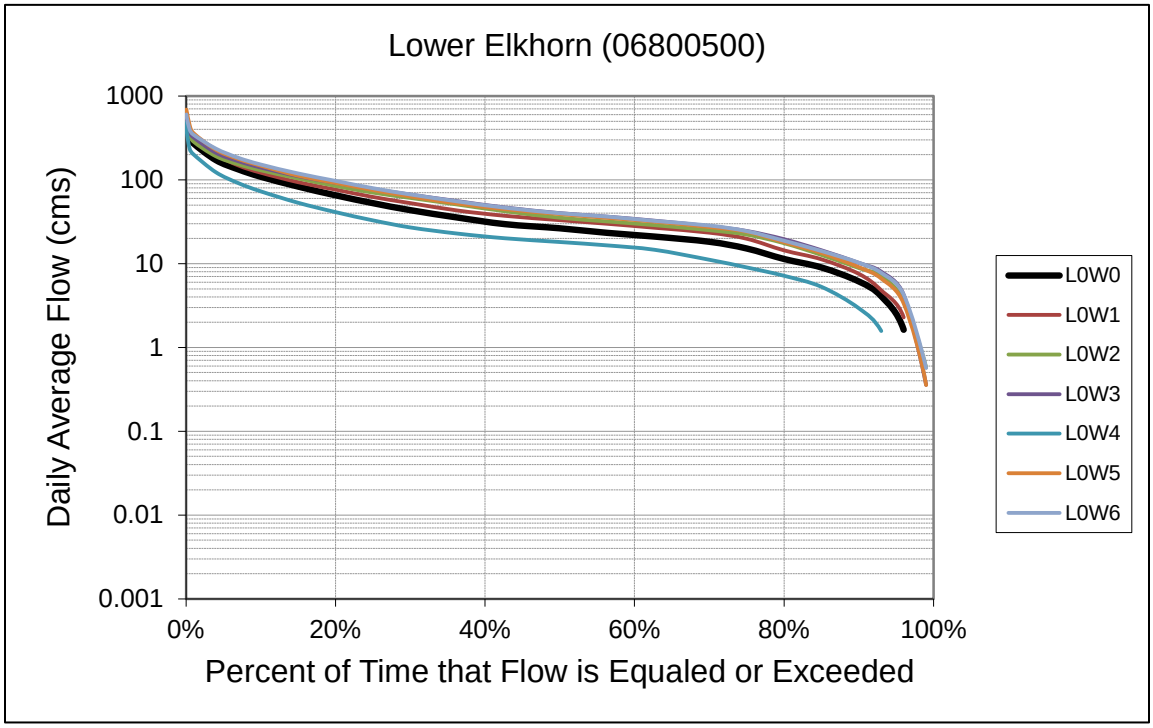


Figure 148. Flow duration, Lower Elkhorn River (SWAT)

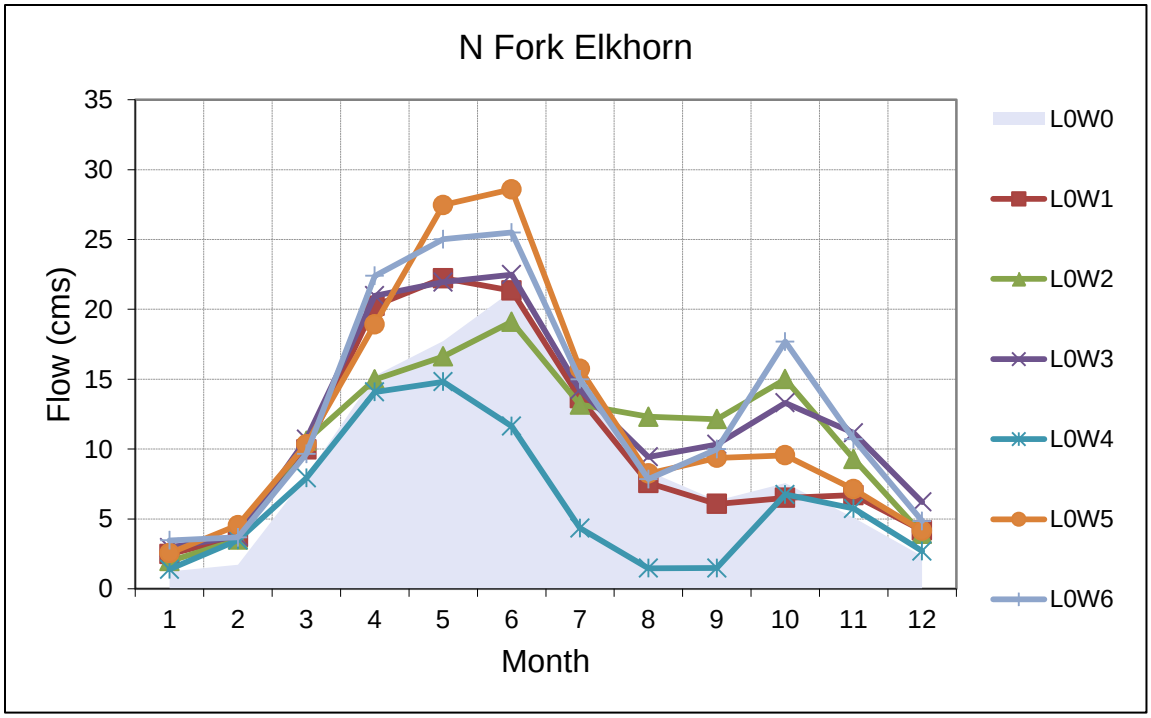


Figure 149. Monthly average flows, North Fork Elkhorn River (SWAT)

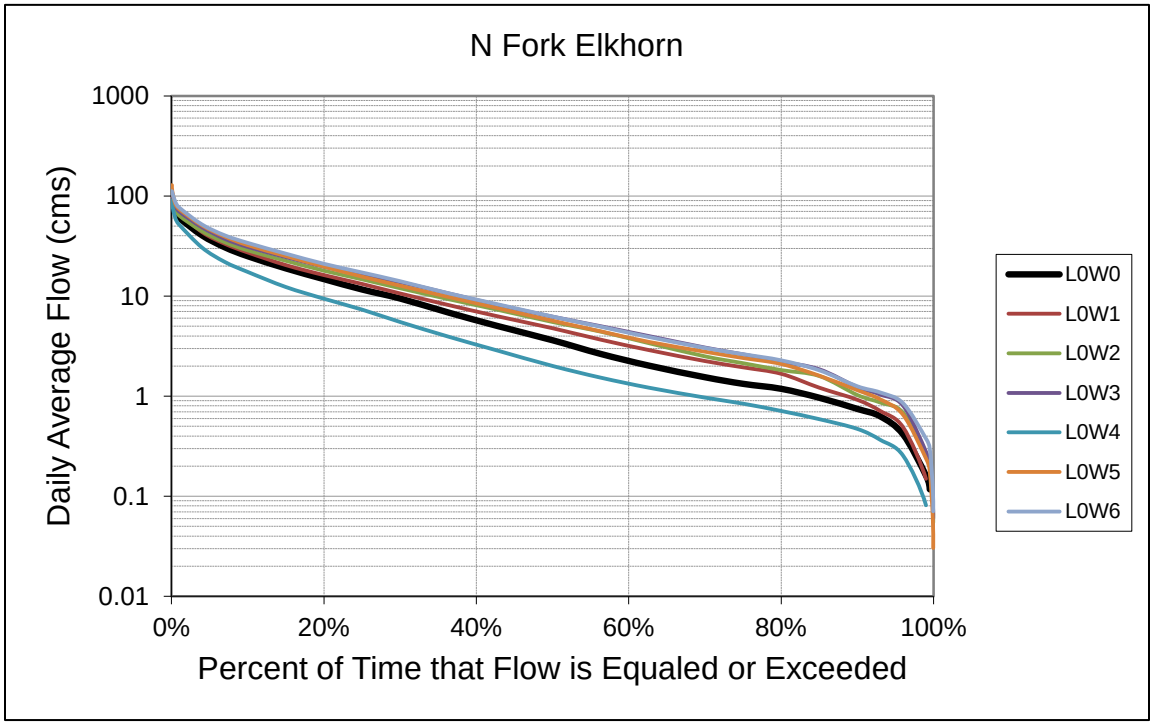


Figure 150. Flow duration, North Fork Elkhorn River (SWAT)

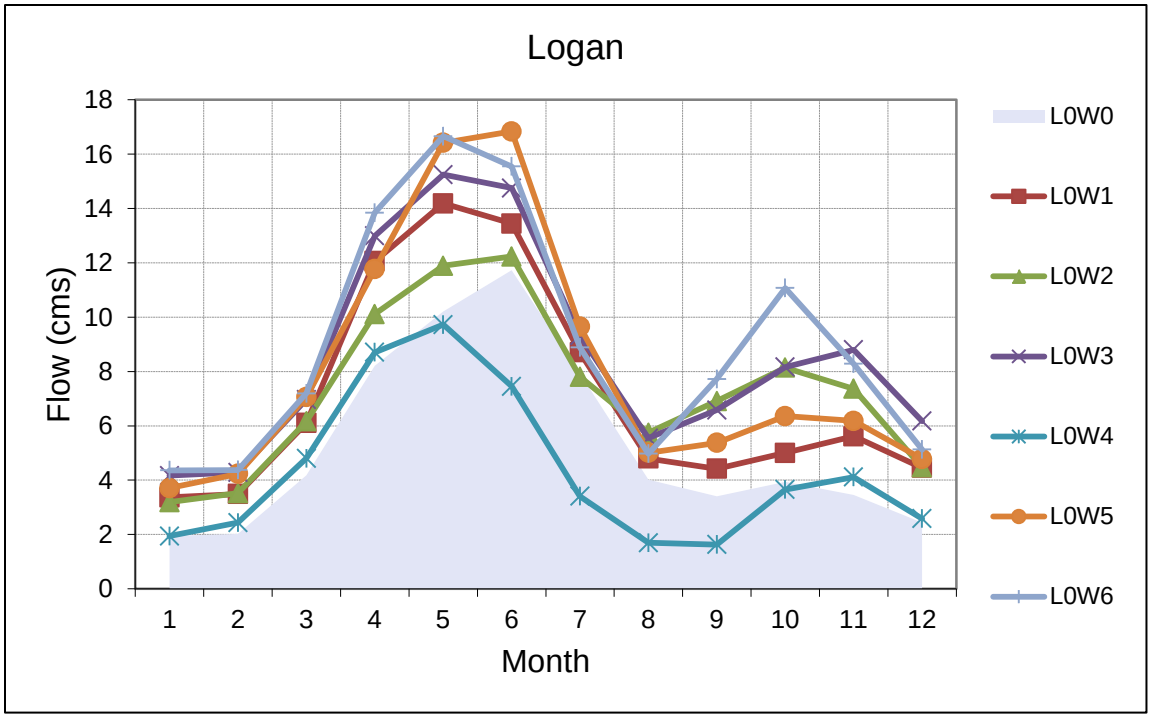


Figure 151. Monthly average flows, Logan River (SWAT)

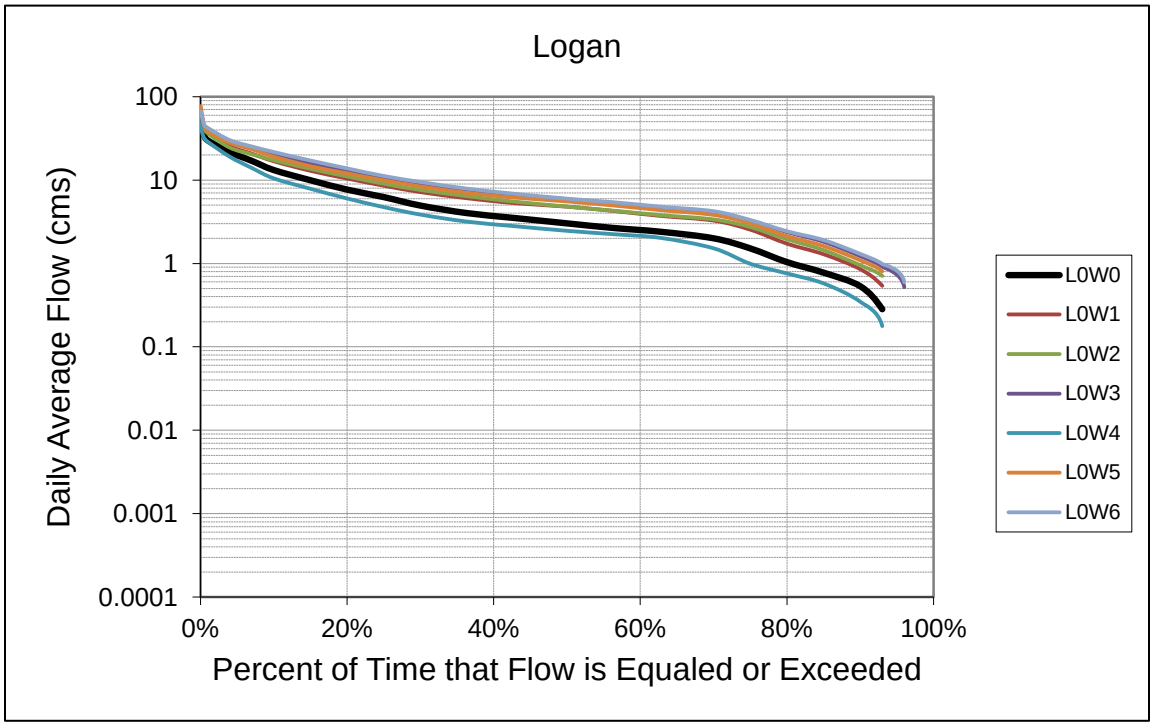


Figure 152. Flow duration, Logan River (SWAT)

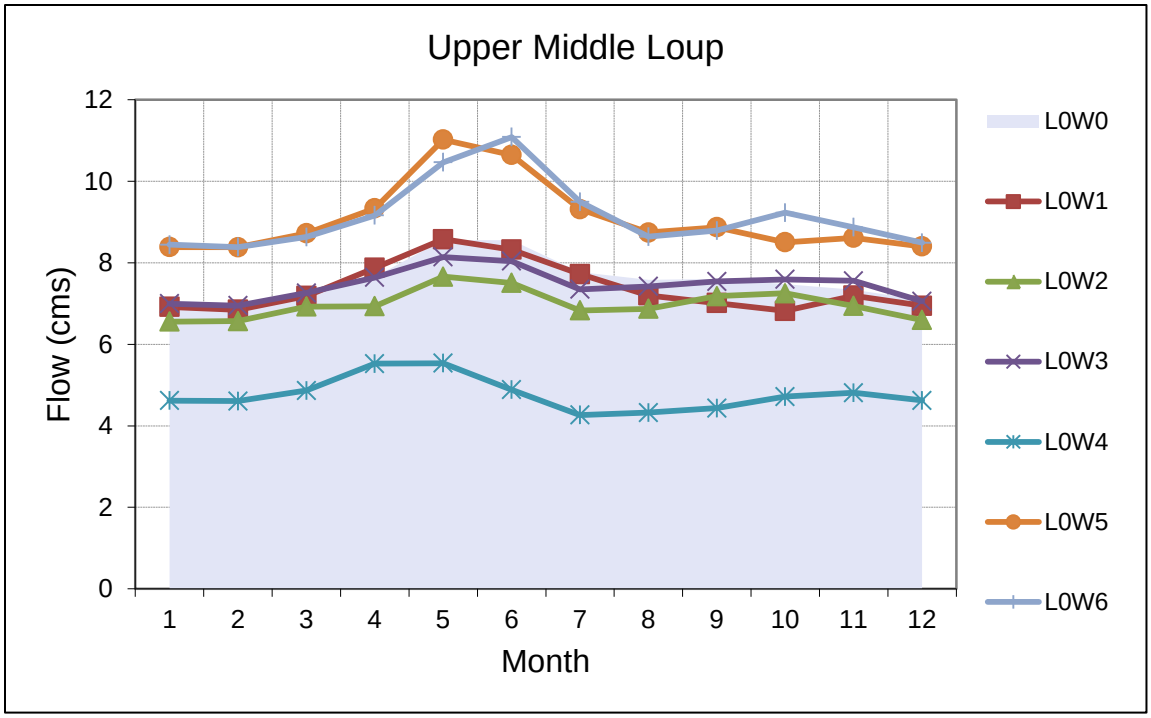


Figure 153. Monthly average flows, Upper Middle Loup River (SWAT)

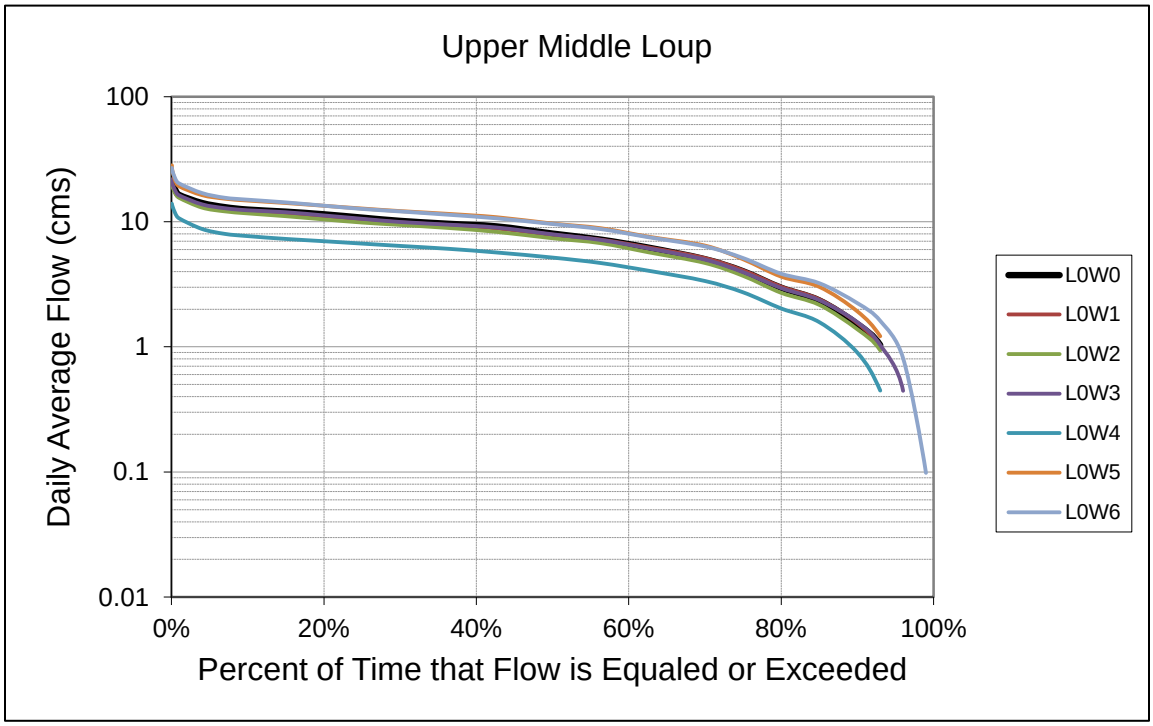


Figure 154. Flow duration, Upper Middle Loup River (SWAT)

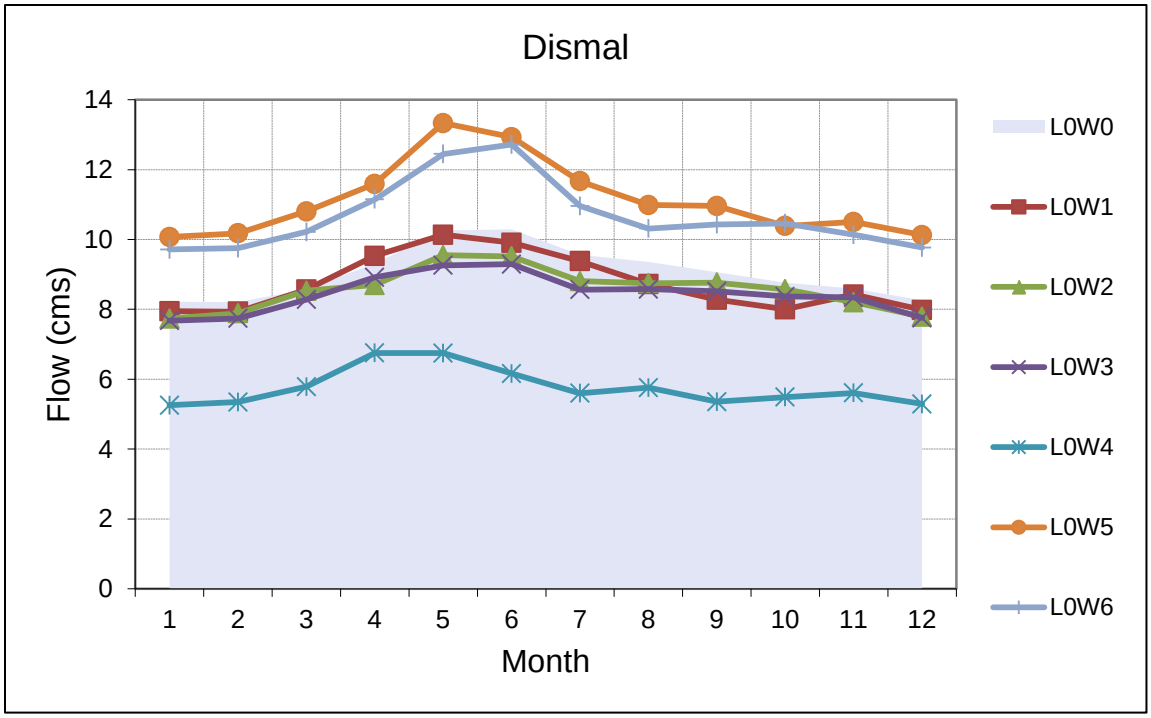


Figure 155. Monthly average flows, Dismal River (SWAT)

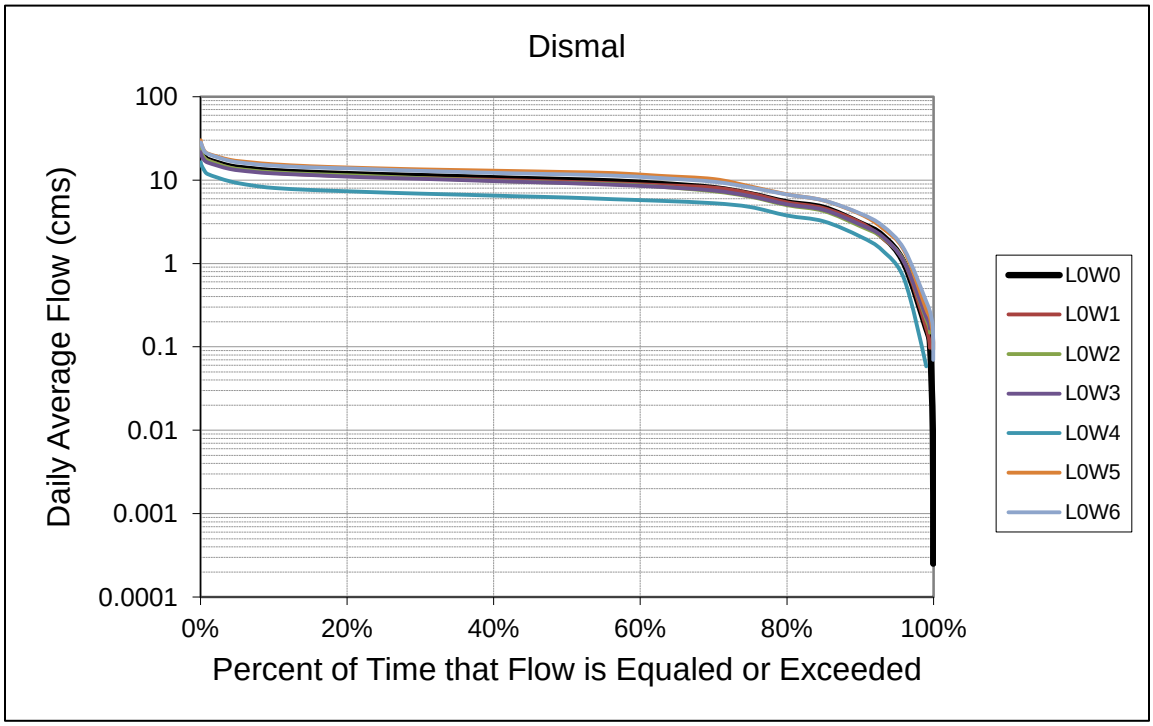


Figure 156. Flow duration, Dismal River (SWAT)

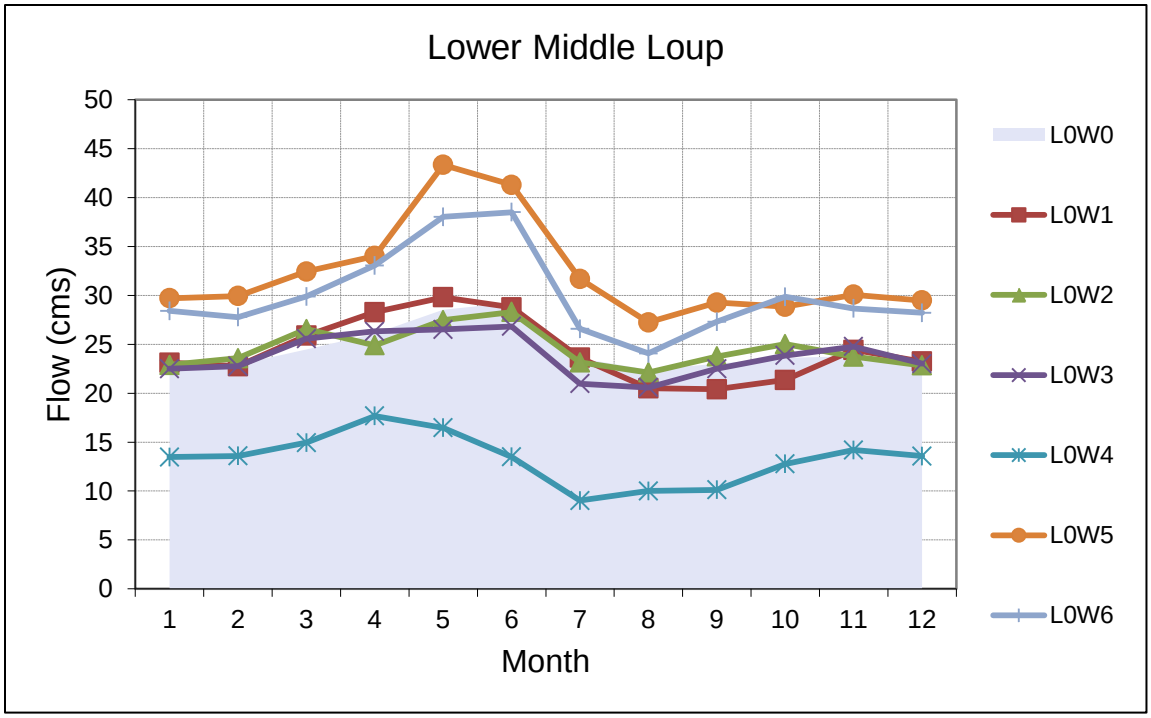


Figure 157. Monthly average flows, Lower Middle Loup River (SWAT)

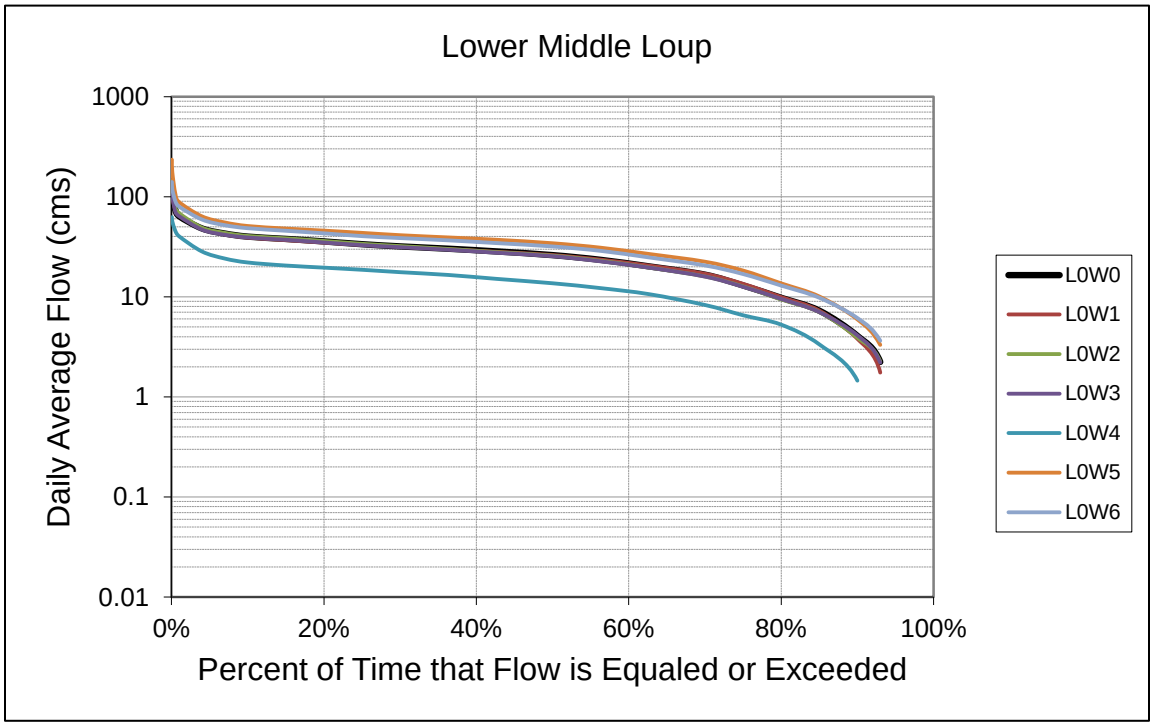


Figure 158. Flow duration, Lower Middle Loup River (SWAT)

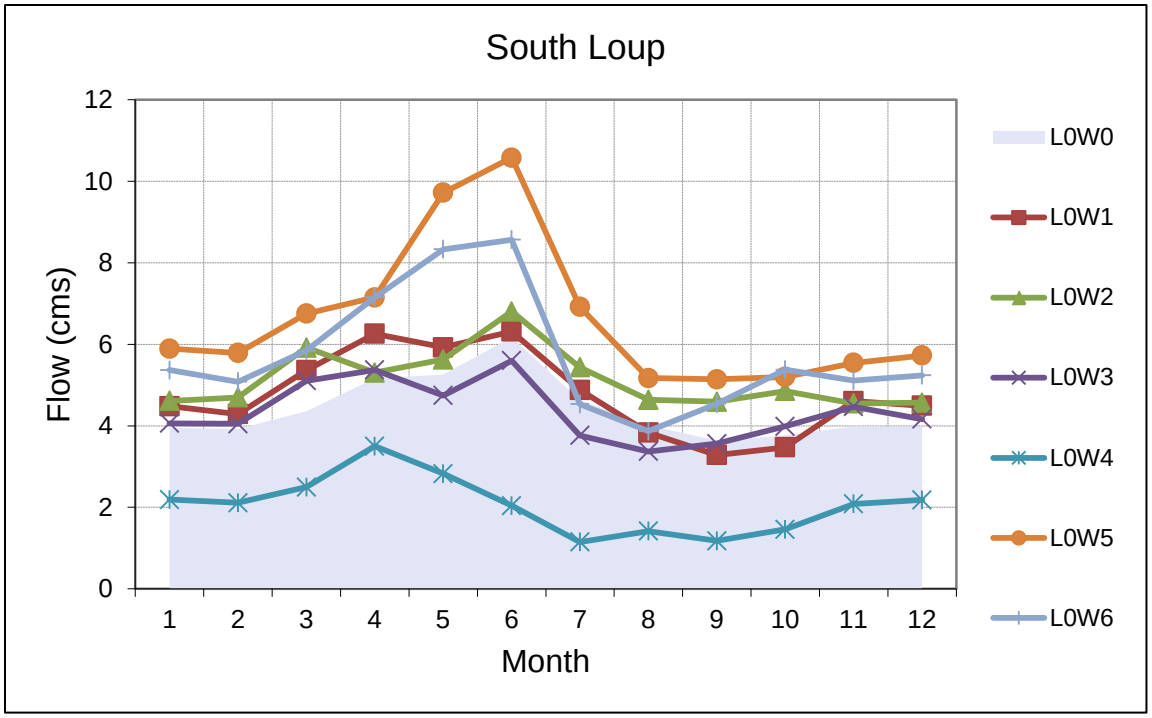


Figure 159. Monthly average flows, South Loup River (SWAT)

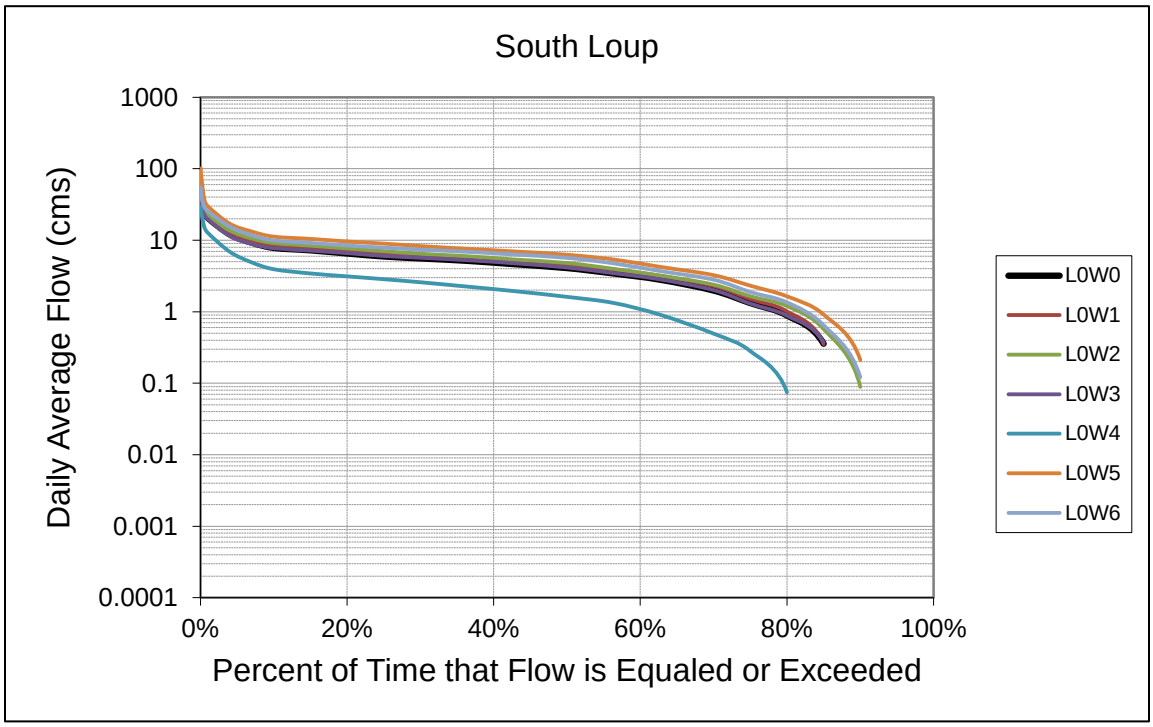


Figure 160. Flow duration, South Loup River (SWAT)

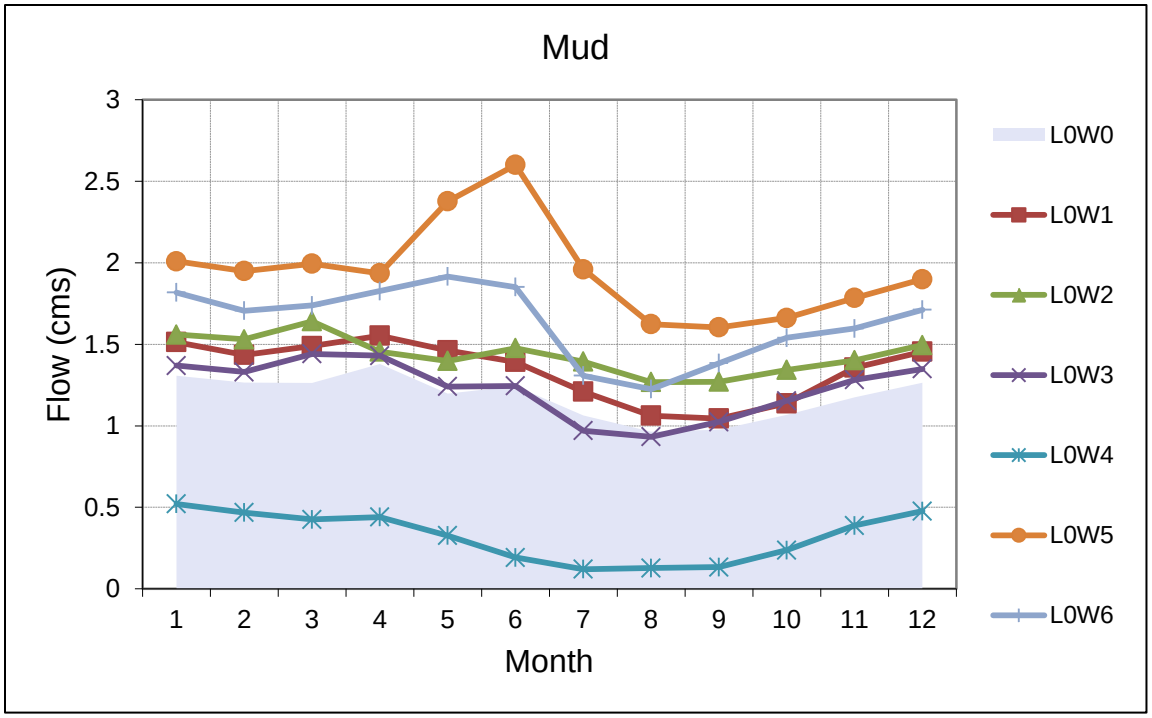


Figure 161. Monthly average flows, Mud River (SWAT)

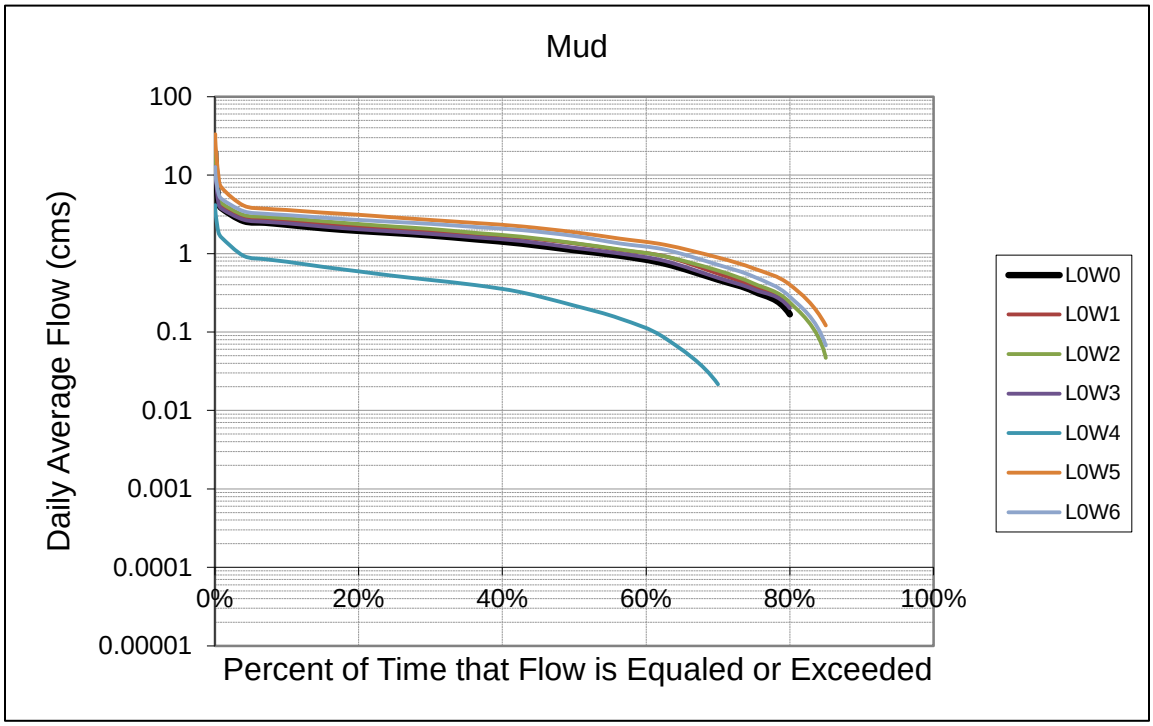


Figure 162. Flow duration, Mud River (SWAT)

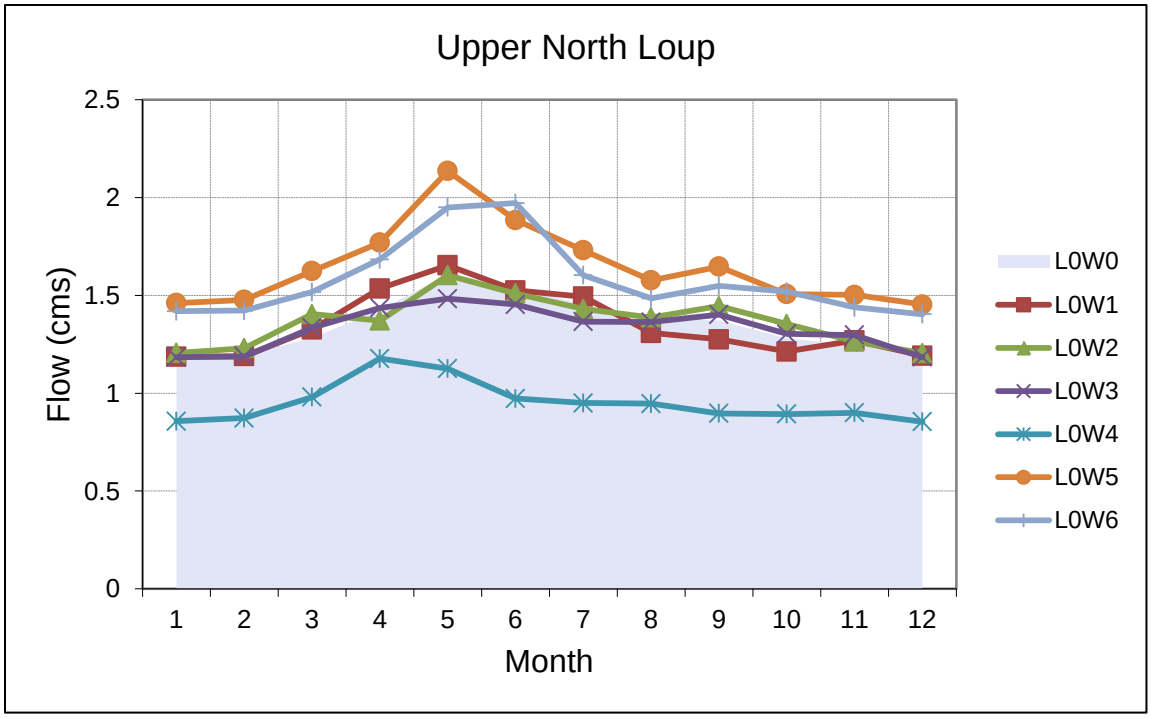


Figure 163. Monthly average flows, Upper North Loup River (SWAT)

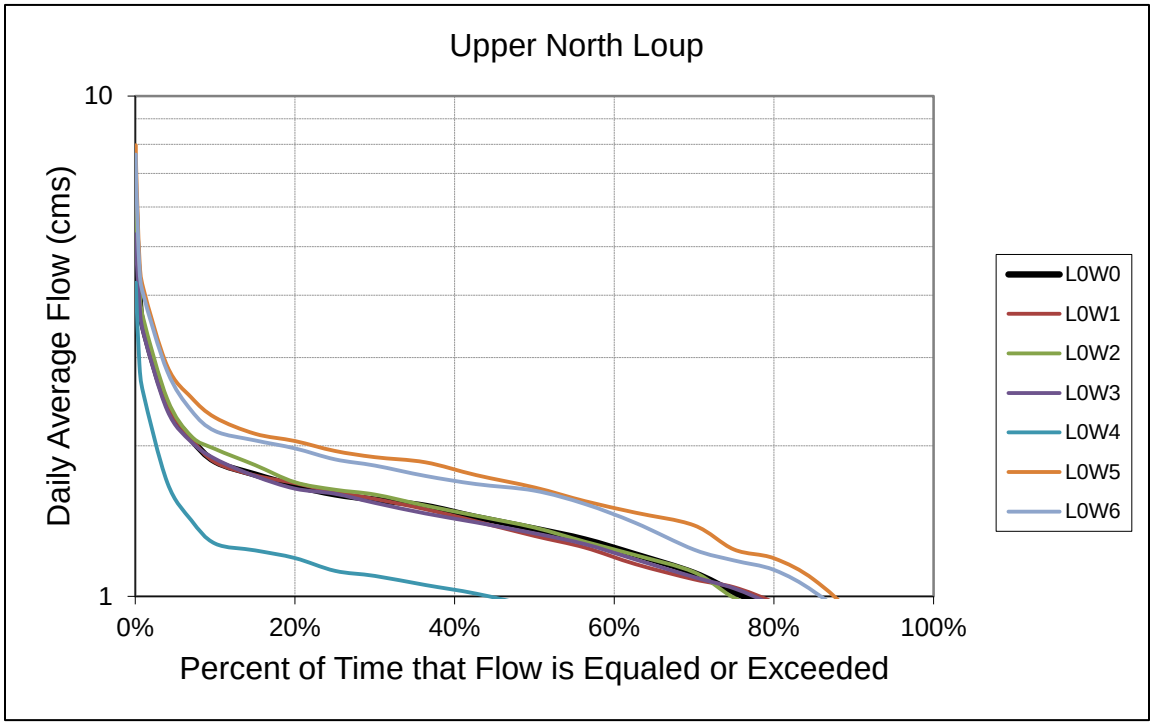


Figure 164. Flow duration, Upper North Loup River (SWAT)

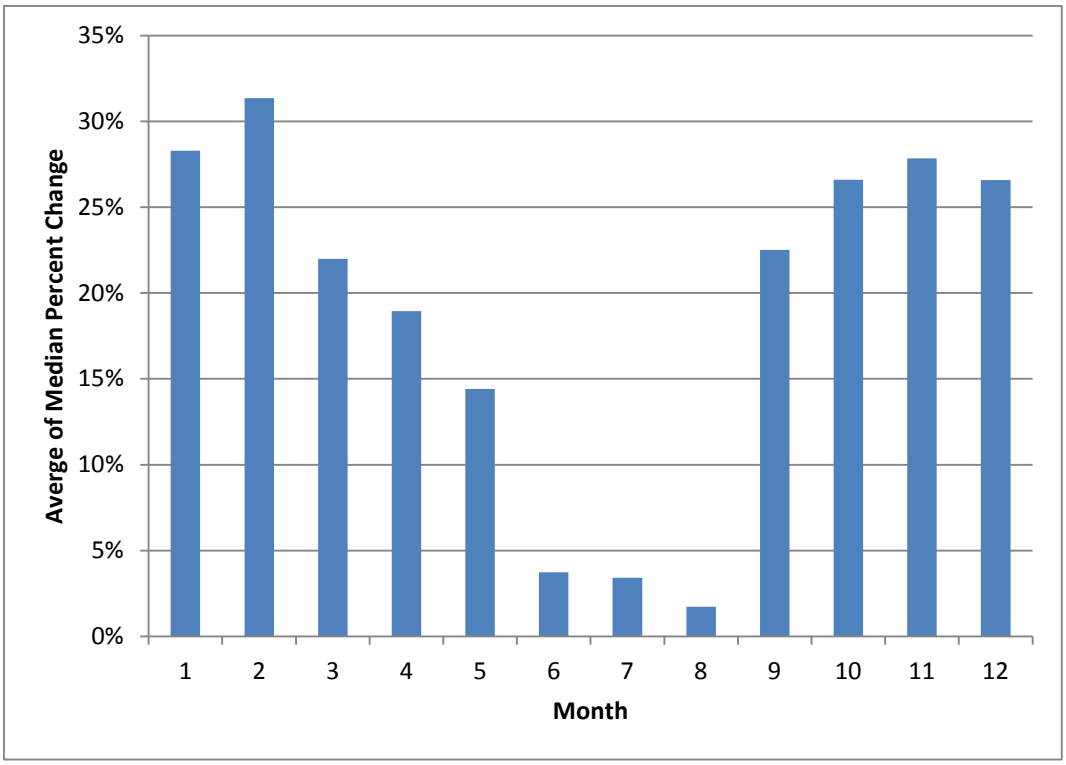


Figure 165. Average of median percent change in flow; NARCCAP Scenarios W1-W6 at all stations, Loup-Elkhorn basins (SWAT)

Tar-Neuse Watershed

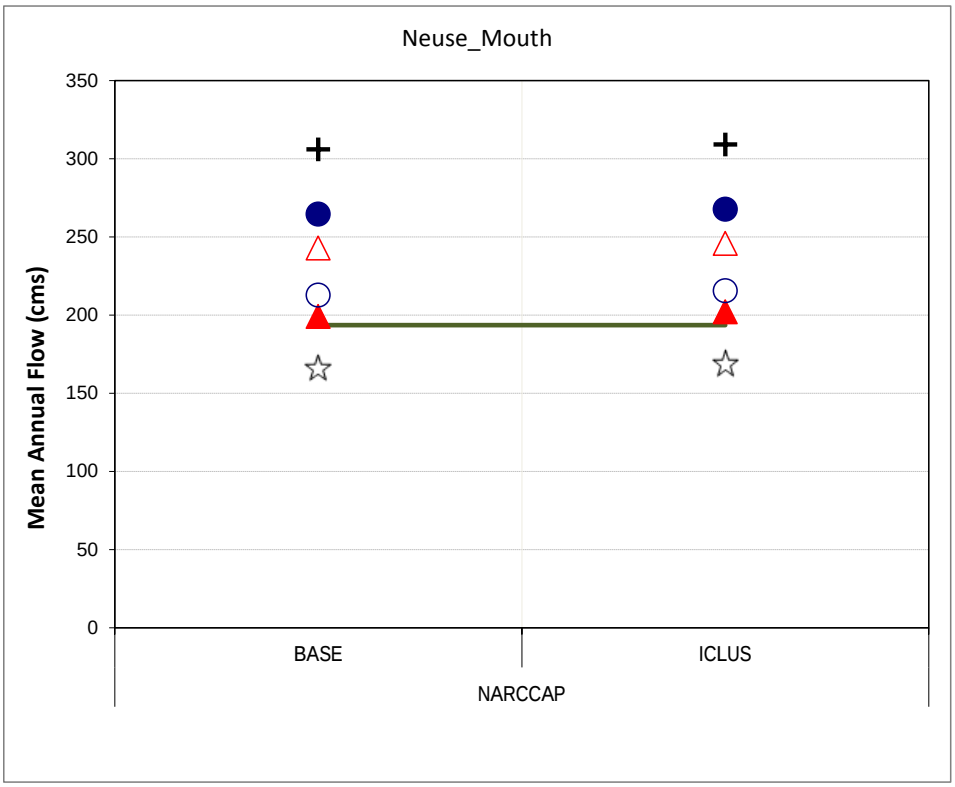


Figure 166. Mean annual flow (cms), mouth of Neuse River (SWAT)

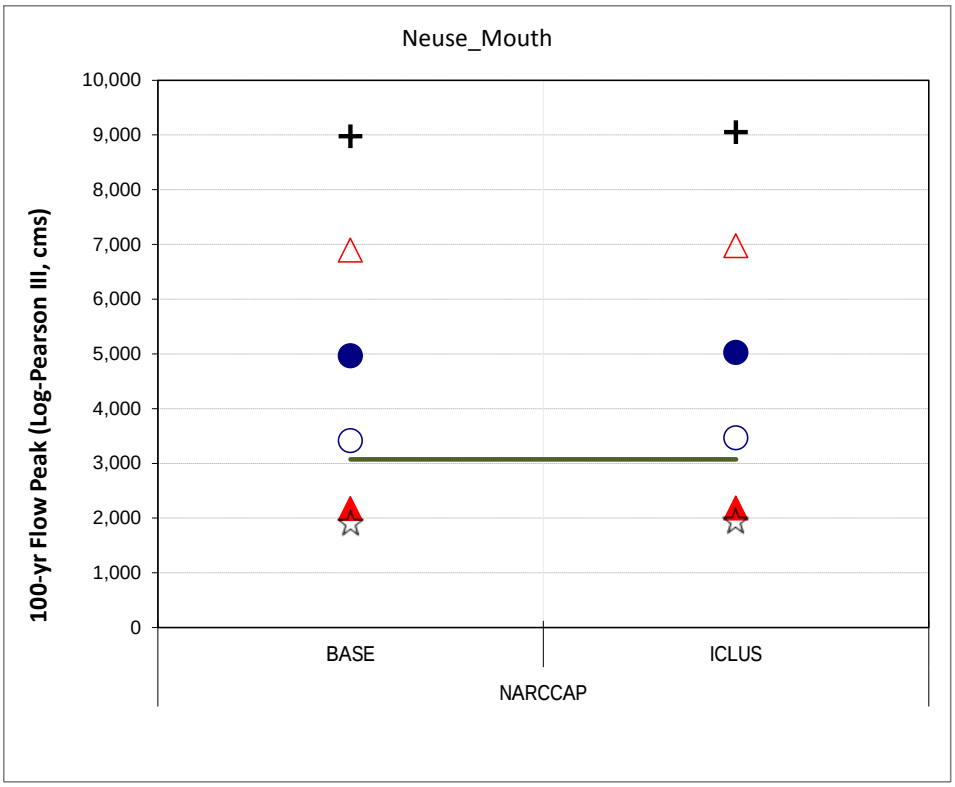


Figure 167. 100-yr Flow Peak (Log-Pearson III, cms), mouth of Neuse River (SWAT)

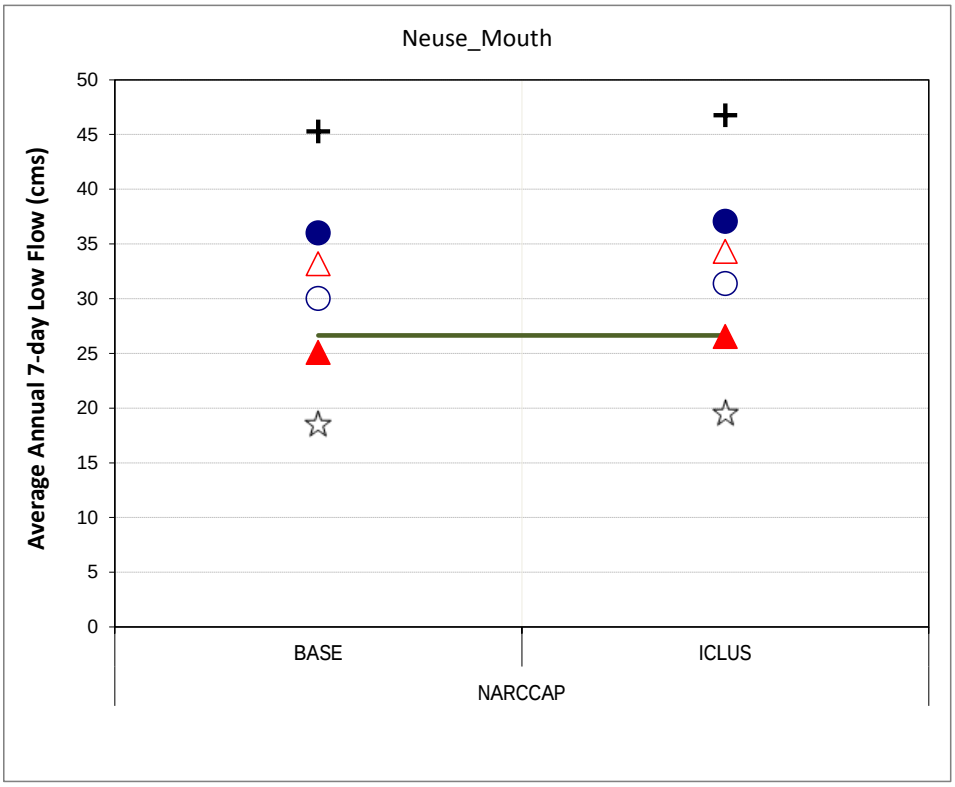


Figure 168. Average Annual 7-day Low Flow (cms), mouth of Neuse River (SWAT)

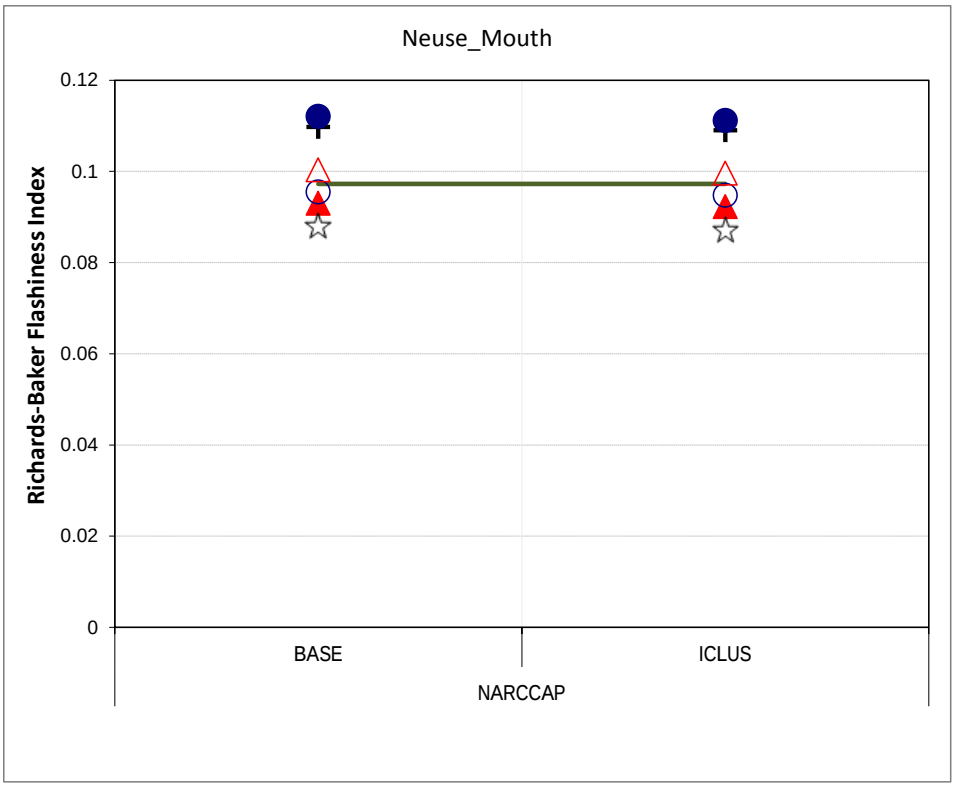


Figure 169. Richards-Baker Flashiness Index, Average Annual 7-day Low Flow (cms), mouth of Neuse River (SWAT)

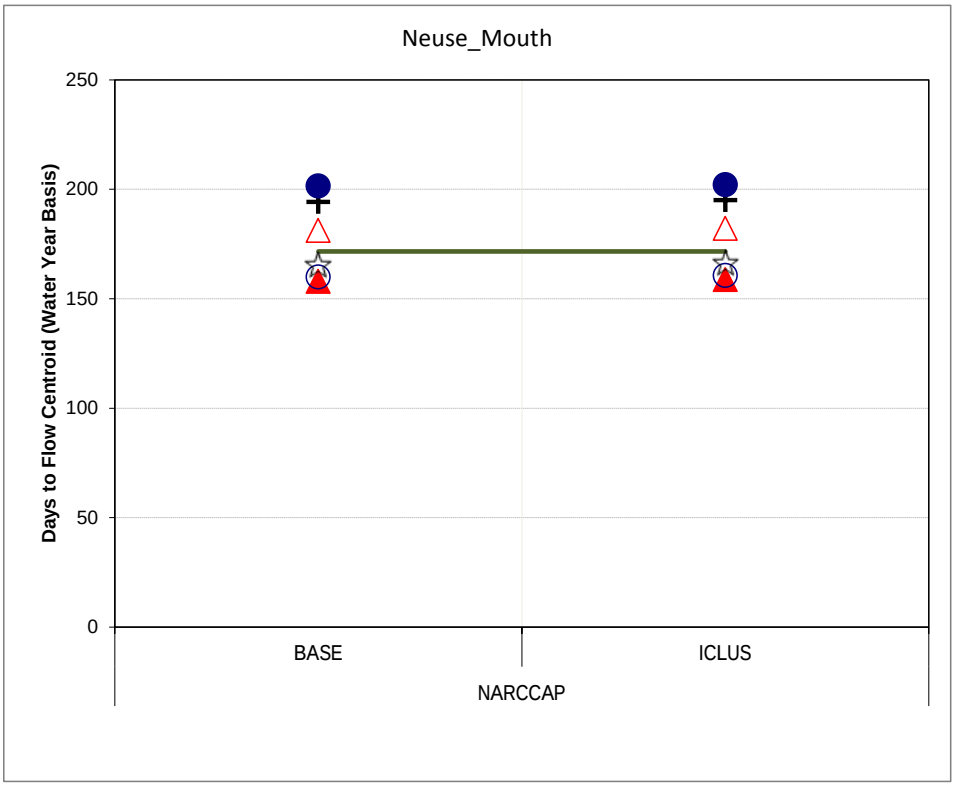


Figure 170. Days to Flow Centroid (Water Year Basis), mouth of Neuse River (SWAT)

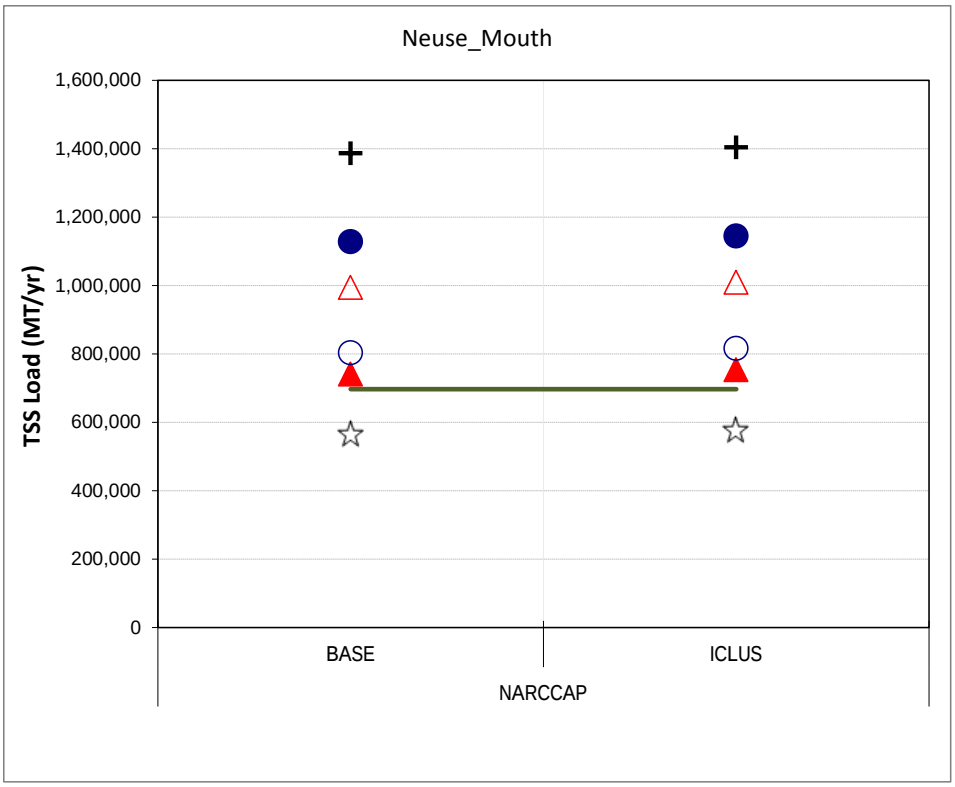


Figure 171. TSS Load (MT/yr), mouth of Neuse River (SWAT)

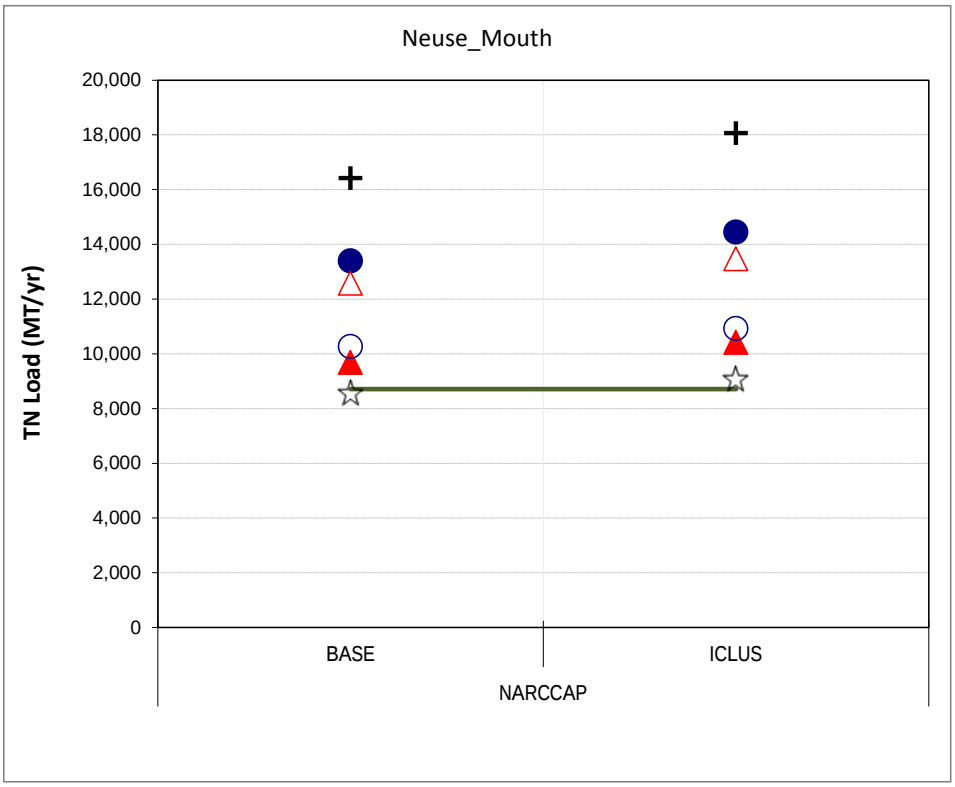


Figure 172. TN Load (MT/yr), mouth of Neuse River (SWAT)

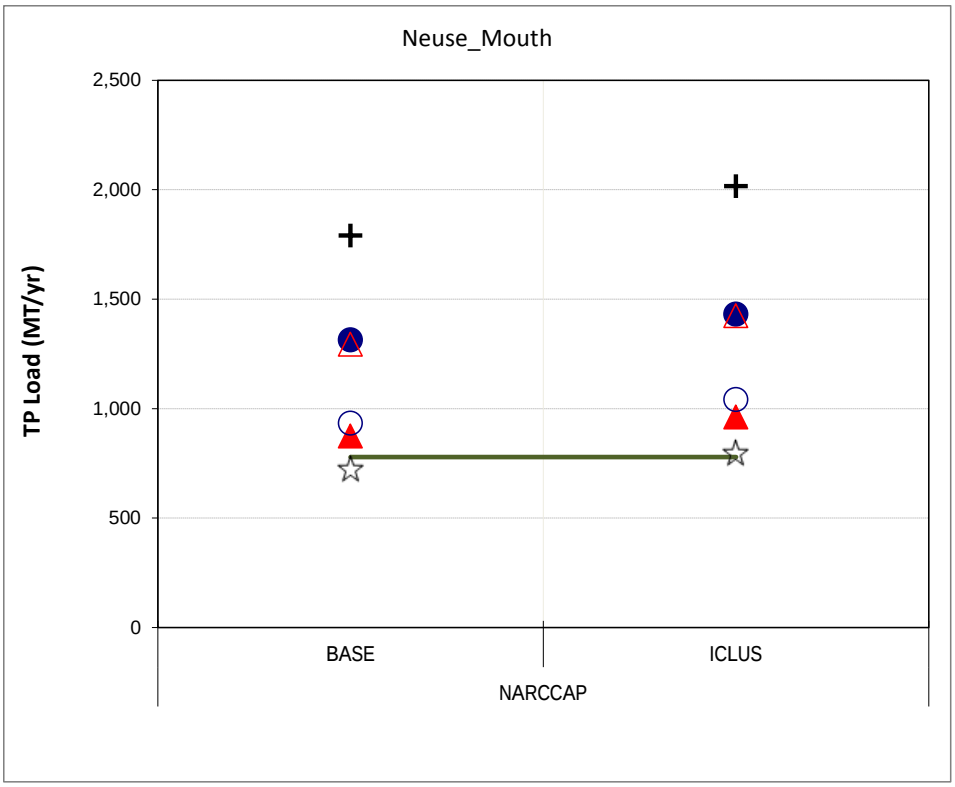


Figure 173. TP Load (MT/yr), mouth of Neuse River (SWAT)

Table 7. Summary of range of change relative to existing conditions for NARCCAP dynamically downscaled scenarios, Tar-Neuse watershed SWAT model

	Results without LU change				Results with LU change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
Contentnea Creek (gage 02091500)								
Flow	-11.95%	20.12%	21.63%	61.83%	-11.94%	19.88%	21.40%	61.34%
TSS	-22.15%	49.06%	58.45%	190.18%	-22.13%	48.83%	58.05%	188.94%
TN	-3.11%	44.81%	53.26%	141.32%	-2.79%	46.27%	54.87%	143.00%
TP	-10.80%	47.10%	57.60%	166.11%	-10.45%	47.50%	57.59%	164.93%
Neuse River at Kinston (gage 02089500)								
Flow	-7.77%	20.31%	22.01%	59.34%	-8.12%	19.10%	20.76%	56.94%
TSS	-10.52%	30.82%	36.31%	107.02%	-10.56%	30.00%	35.40%	105.08%
TN	5.65%	40.64%	43.90%	97.93%	14.33%	52.17%	57.70%	127.50%
TP	1.69%	43.42%	50.77%	120.14%	7.85%	53.00%	61.64%	146.07%
Neuse at Mouth HUC 03020204								
Flow	-13.65%	17.69%	19.90%	58.08%	-13.71%	17.15%	19.35%	56.99%
TSS	-18.16%	29.00%	34.52%	99.03%	-18.37%	28.07%	33.50%	96.92%
TN	-1.17%	31.19%	35.80%	88.54%	1.51%	35.54%	41.61%	100.72%
TP	-6.45%	42.94%	48.33%	129.77%	-3.23%	48.33%	53.95%	142.56%
Tar River at Tarboro (Upper Tar, Fishing); HUCs 03020101 and 03020102								
Flow	-4.58%	20.27%	23.15%	61.50%	-4.61%	20.18%	23.05%	61.30%
TSS	-7.85%	31.12%	42.58%	126.63%	-7.79%	31.07%	42.51%	126.44%
TN	8.65%	27.11%	31.52%	61.86%	8.00%	28.37%	32.58%	64.49%
TP	2.23%	29.91%	31.09%	71.26%	1.98%	31.64%	32.55%	74.33%
Pamlico (Tar Mouth) HUC 03020104								
Flow	-9.47%	19.57%	20.91%	57.03%	-9.49%	19.45%	20.79%	56.79%
TSS	-13.29%	31.58%	34.71%	96.24%	-13.32%	31.41%	34.52%	95.77%
TN	-1.21%	28.35%	30.96%	58.91%	-0.27%	30.32%	34.42%	64.57%
TP	-8.97%	31.05%	34.74%	77.35%	-7.62%	33.21%	38.10%	83.03%
Lower Tar HUC 03020103								
Flow	-7.29%	20.69%	22.12%	60.12%	-7.32%	20.51%	21.94%	59.75%
TSS	-14.95%	40.55%	46.67%	144.39%	-14.96%	40.38%	46.43%	143.72%
TN	3.23%	30.57%	34.36%	72.61%	5.11%	36.84%	40.96%	82.45%
TP	-6.89%	31.72%	35.75%	92.03%	-3.73%	39.27%	42.98%	103.36%
Upper Neuse HUC 03020201								
Flow	-6.73%	20.35%	21.98%	58.69%	-7.16%	19.03%	20.56%	55.96%
TSS	-8.38%	31.16%	40.77%	118.63%	-8.99%	29.65%	38.81%	114.27%
TN	7.82%	36.82%	43.72%	102.65%	22.37%	55.25%	64.51%	143.10%
TP	5.87%	39.80%	49.61%	122.46%	18.41%	54.61%	67.38%	158.17%
Middle Neuse HUC 03020202								
Flow	-11.22%	19.38%	21.18%	59.87%	-11.38%	18.63%	20.42%	58.38%

	Results without LU change				Results with LU change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
TSS	-18.29%	38.51%	45.11%	140.27%	-18.42%	37.61%	44.13%	137.90%
TN	0.24%	35.61%	38.59%	89.70%	5.27%	41.60%	47.52%	107.46%
TP	-5.32%	39.93%	42.78%	108.29%	-0.99%	46.18%	50.37%	124.56%
Contentnea HUC 03020203								
Flow	-12.43%	20.47%	21.42%	61.60%	-12.43%	20.17%	21.13%	60.97%
TSS	-20.96%	42.94%	49.15%	160.75%	-20.88%	42.63%	48.77%	159.54%
TN	-4.11%	37.92%	43.31%	111.71%	-3.82%	38.47%	45.60%	114.03%
TP	-9.95%	38.83%	43.97%	124.92%	-9.31%	37.67%	44.44%	123.57%

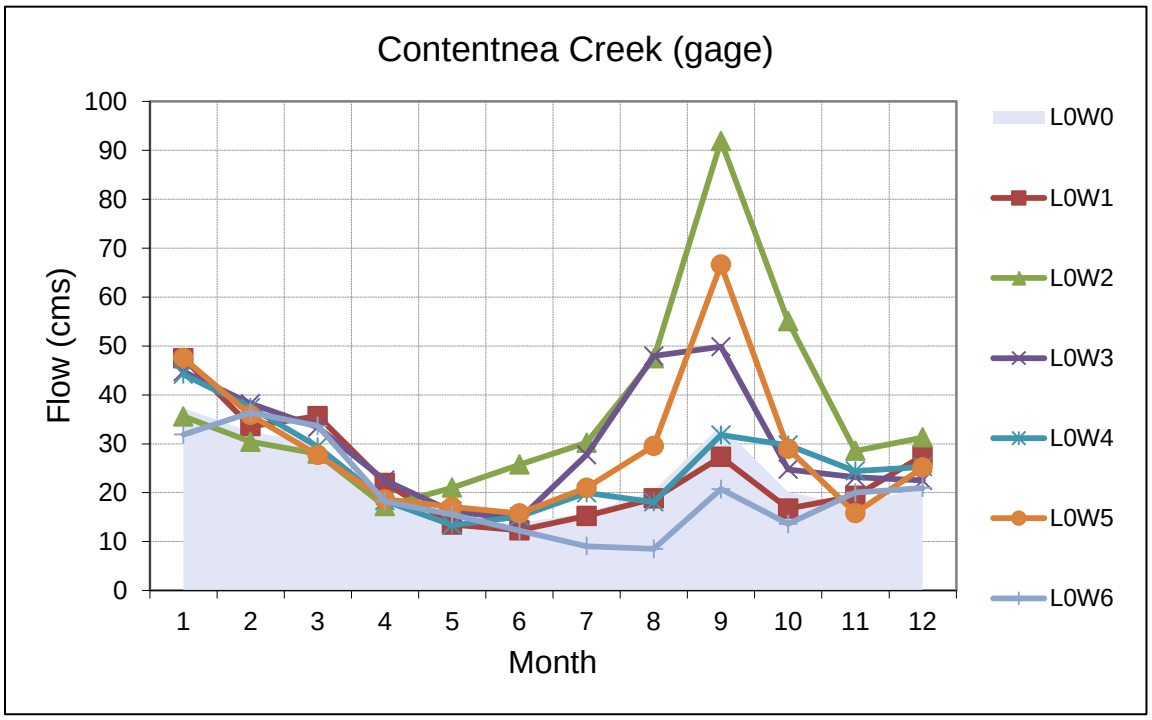


Figure 174. Monthly average flows, Contentnea Creek gage (SWAT)

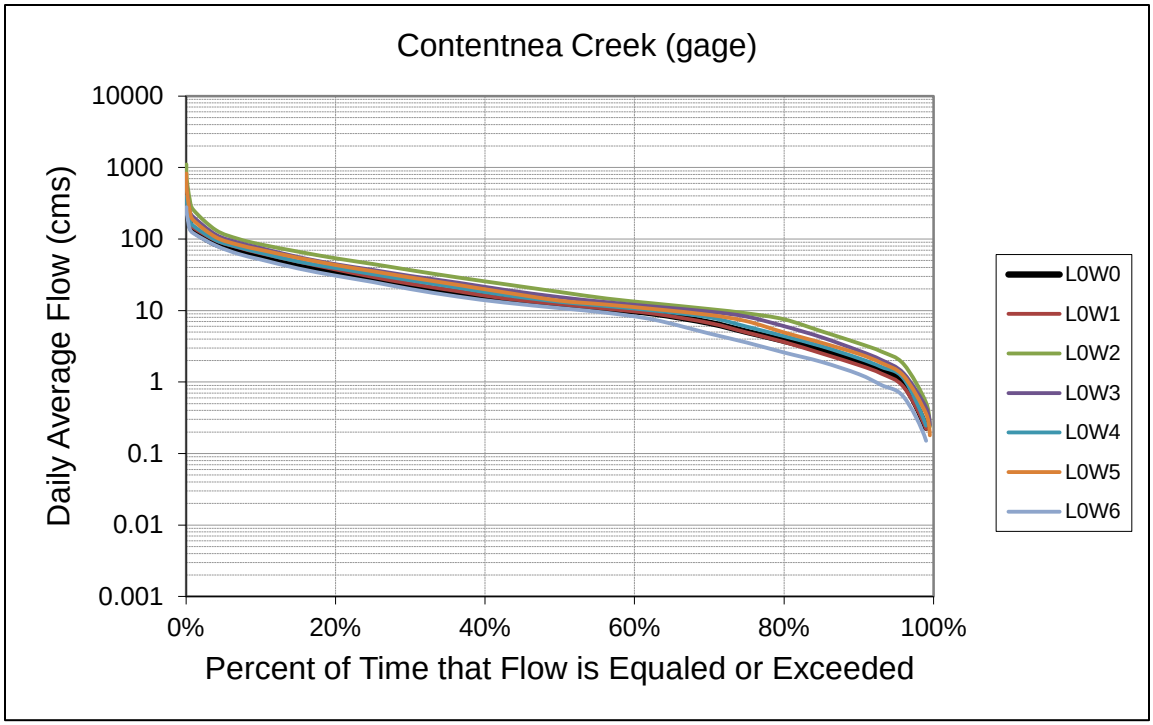


Figure 175. Flow duration, Contentnea Creek gage (SWAT)

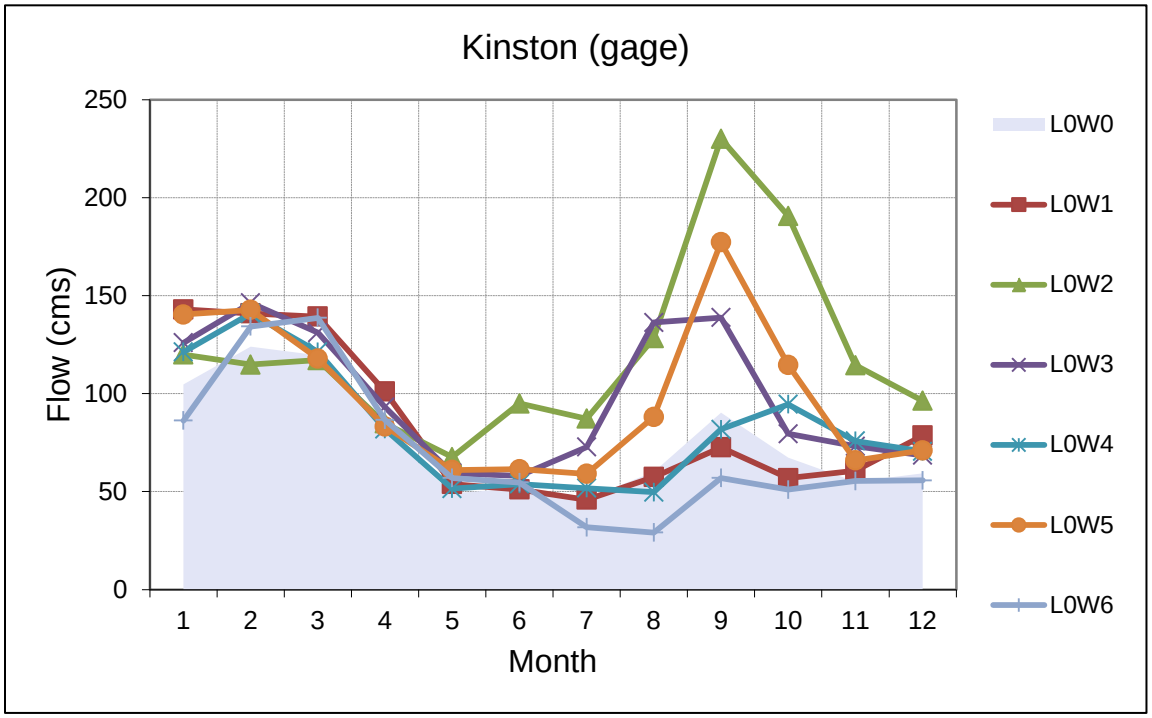


Figure 176. Monthly average flows, Neuse River at Kinston (SWAT)

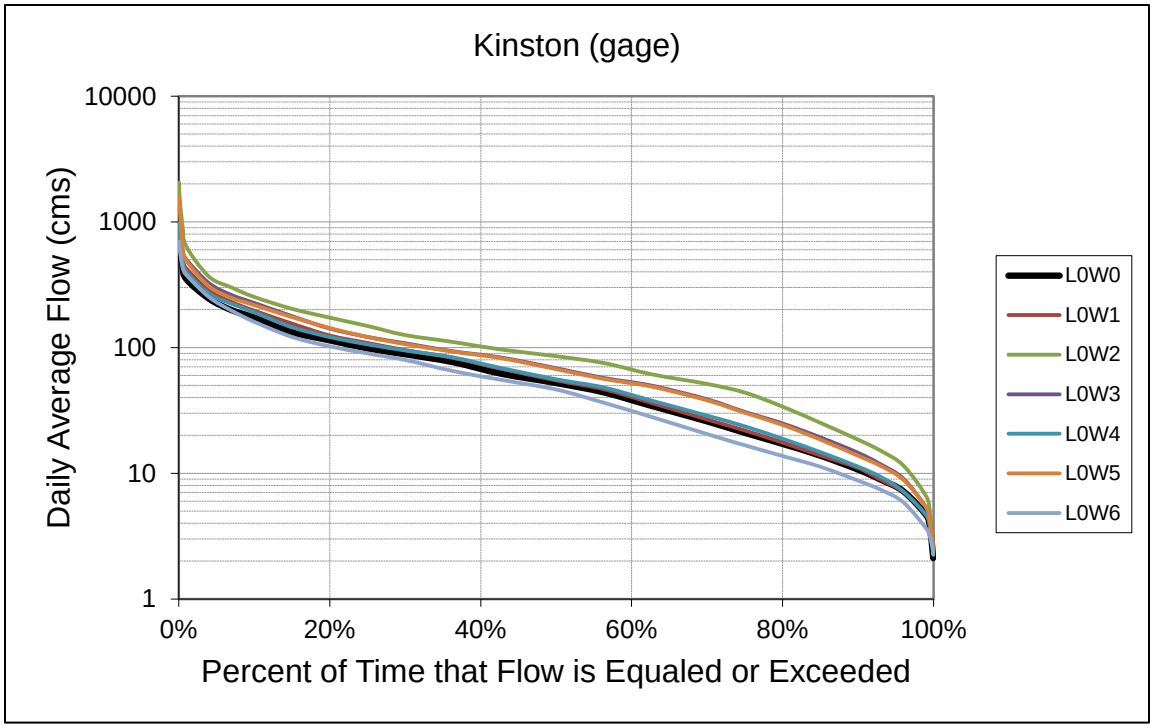


Figure 177. Flow duration, Neuse River at Kinston (SWAT)

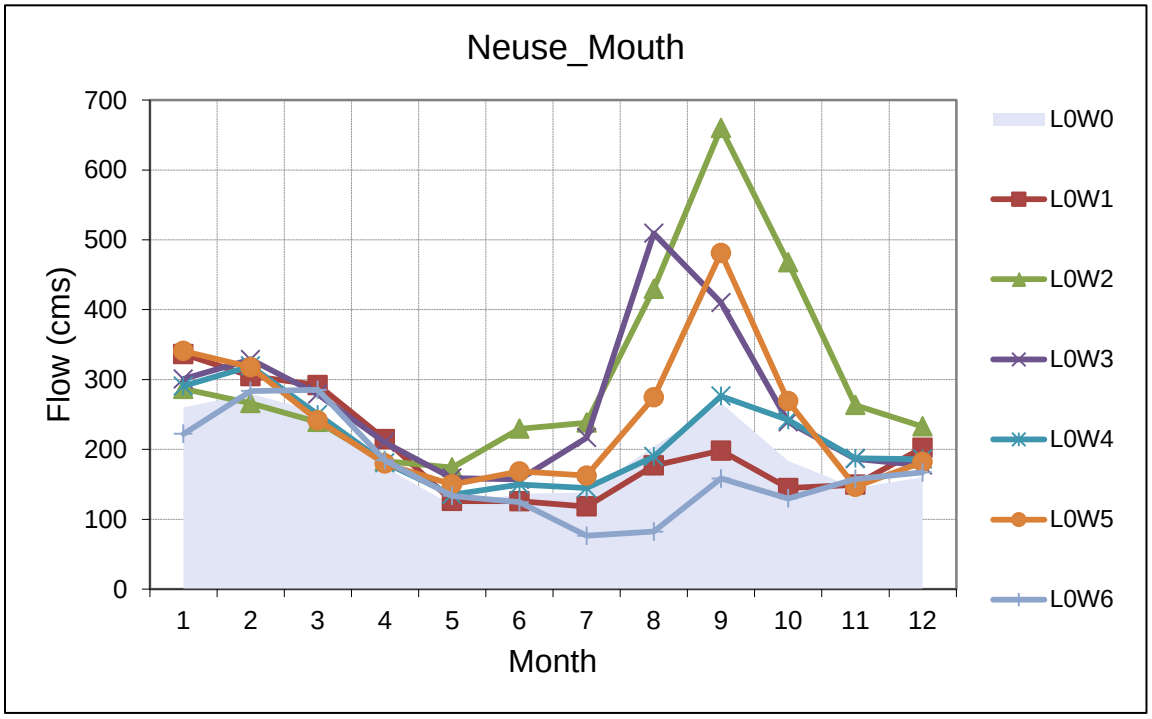


Figure 178. Monthly average flows, mouth of Neuse River (SWAT)

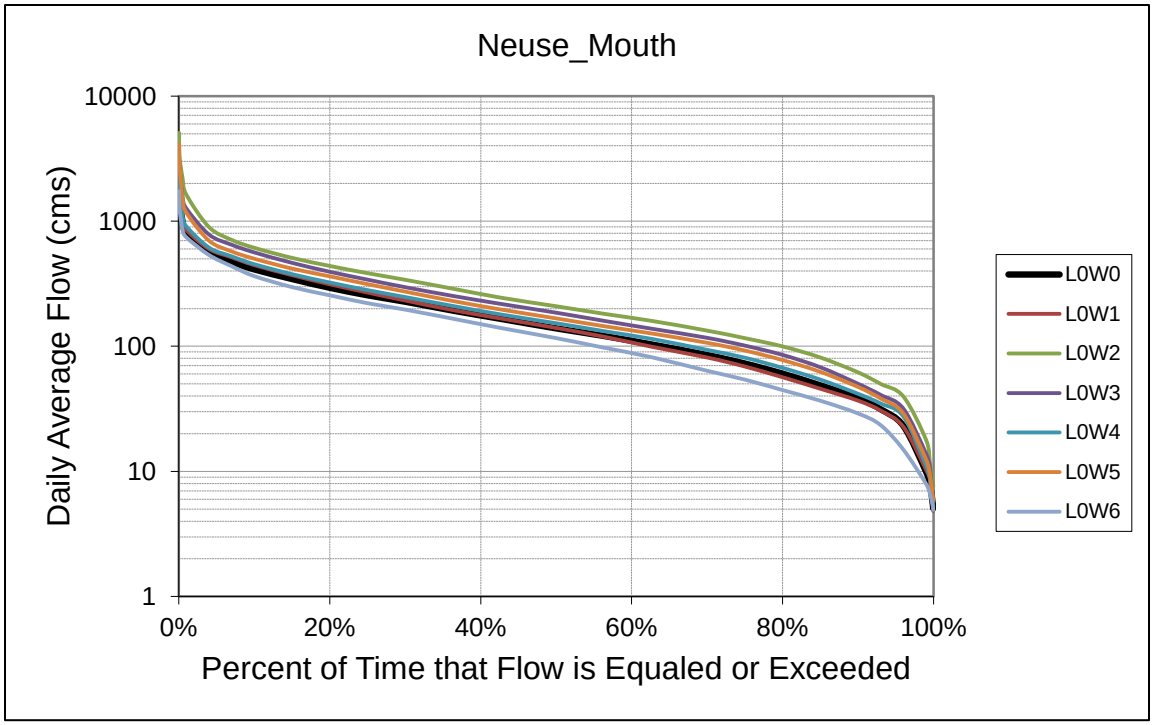


Figure 179. Flow duration, mouth of Neuse River (SWAT)

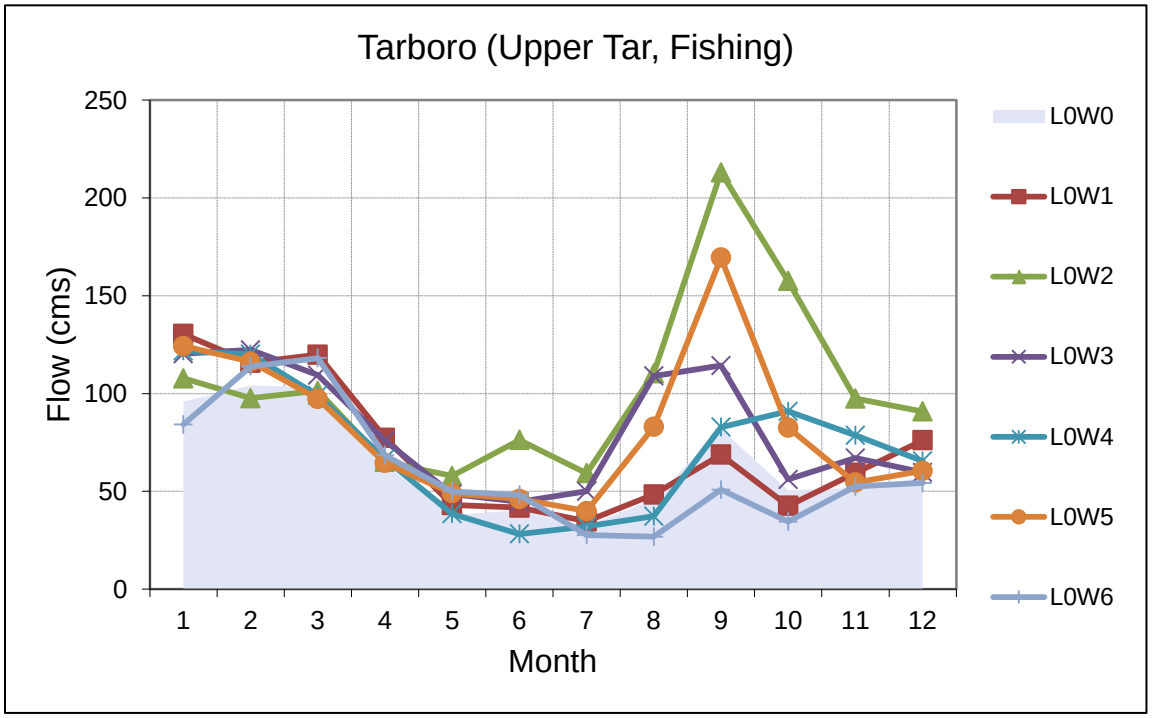


Figure 180. Monthly average flows, Upper Tar River at Tarboro (SWAT)

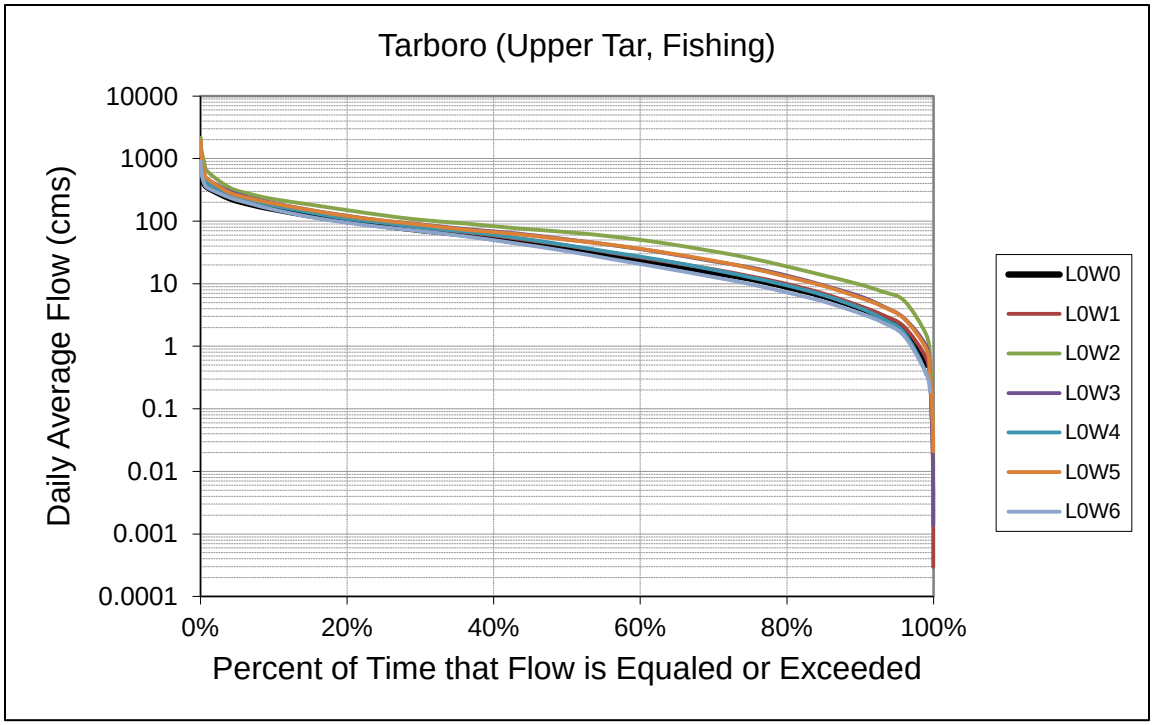


Figure 181. Flow duration, Upper Tar River at Tarboro (SWAT)

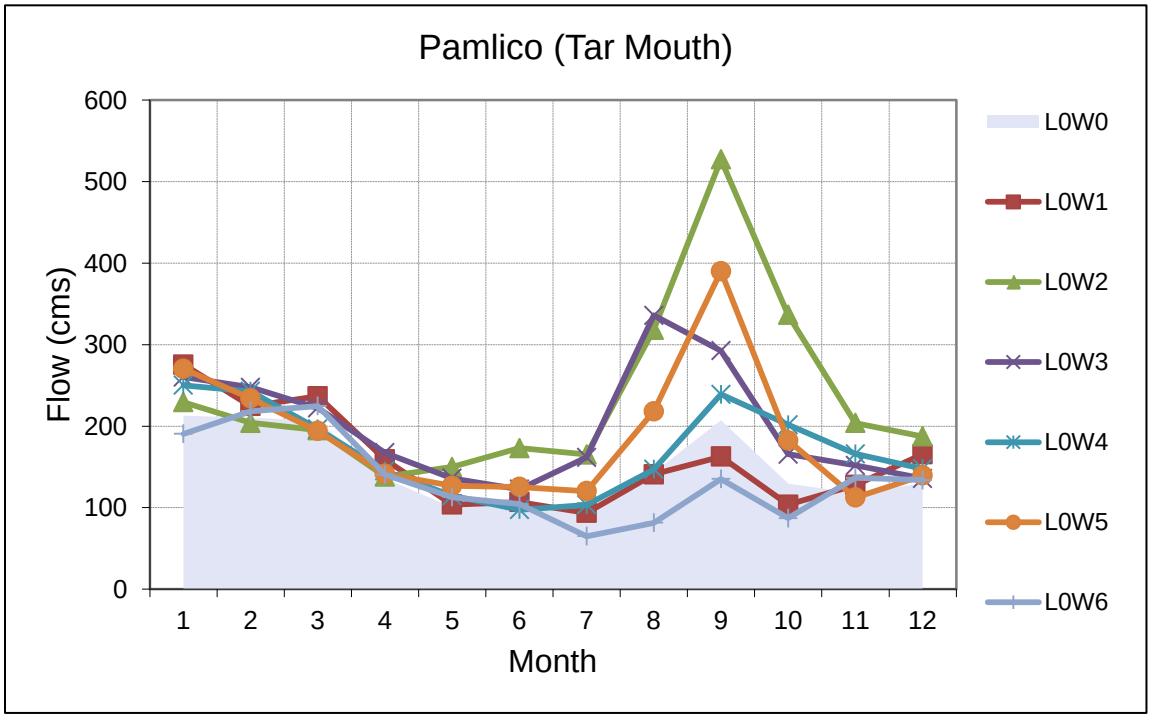


Figure 182. Monthly average flows, mouth of Tar River at Pamlico (SWAT)

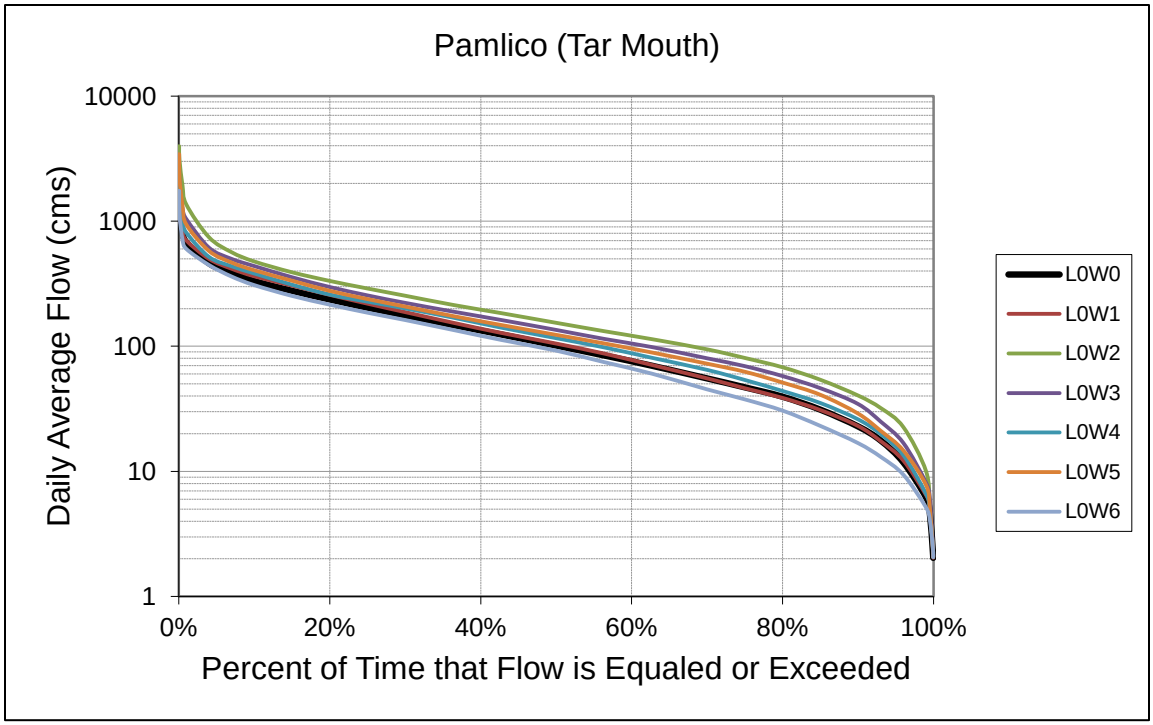


Figure 183. Flow duration, mouth of Tar River at Pamlico (SWAT)

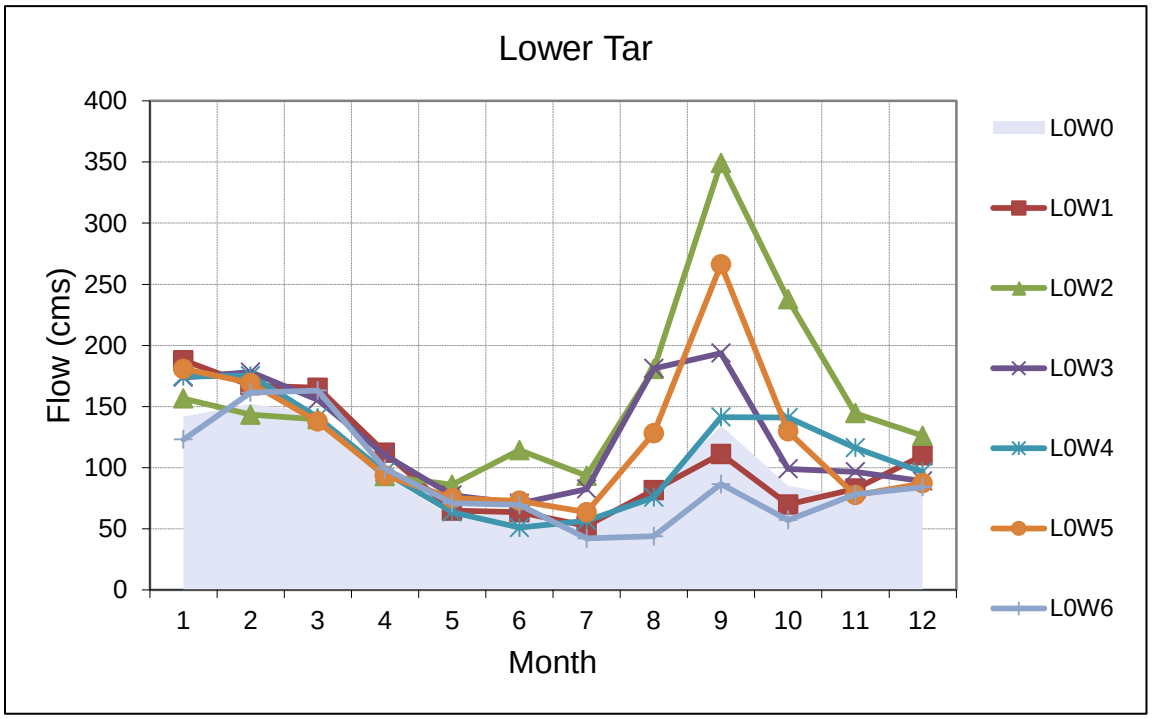


Figure 184. Monthly average flows, Lower Tar River (SWAT)

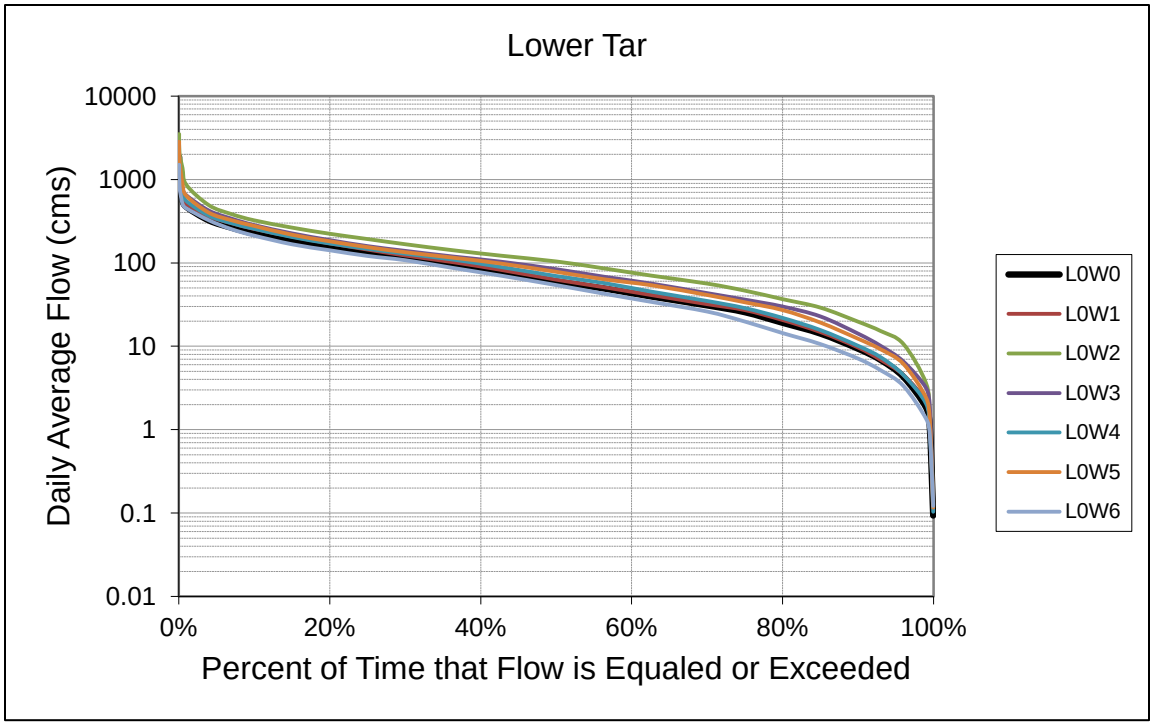


Figure 185. Flow duration, Lower Tar River (SWAT)

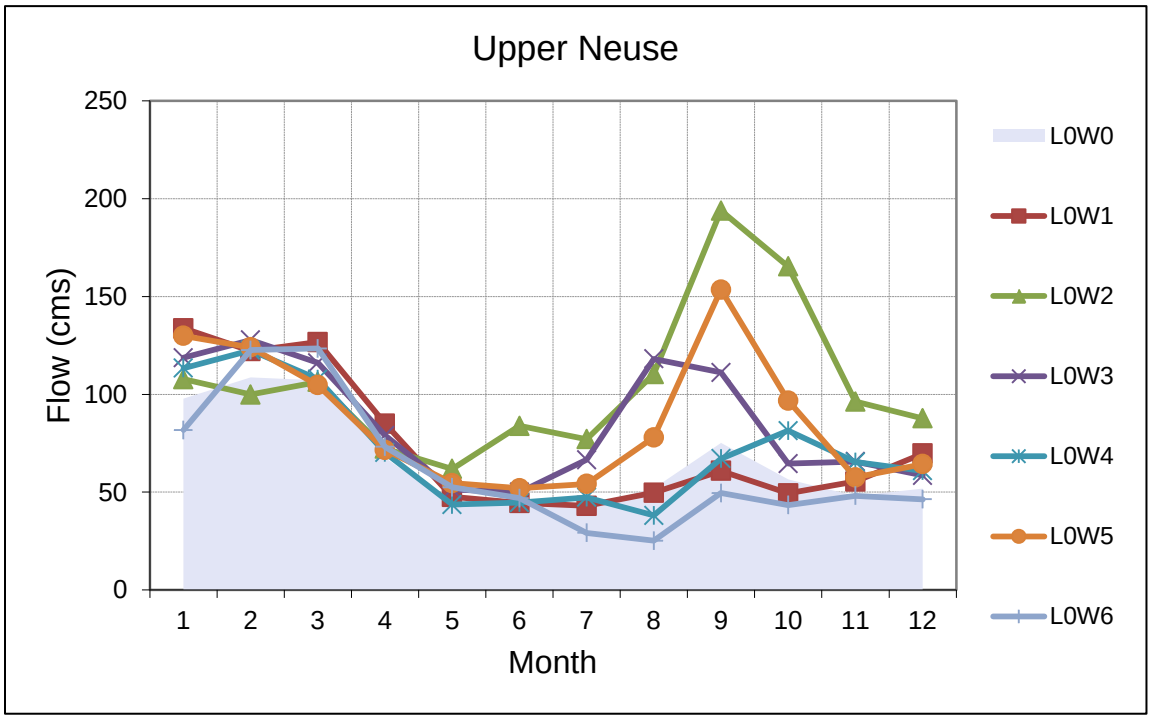


Figure 186. Monthly average flows, Upper Neuse River (SWAT)

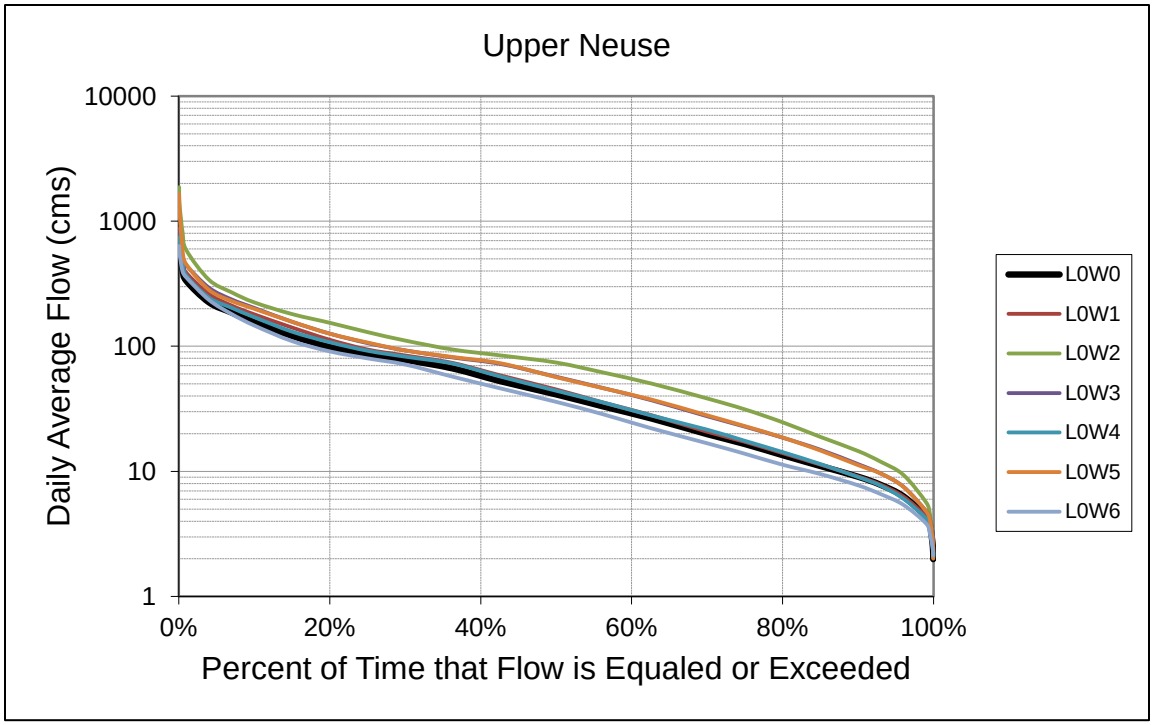


Figure 187. Flow duration, Upper Neuse River (SWAT)

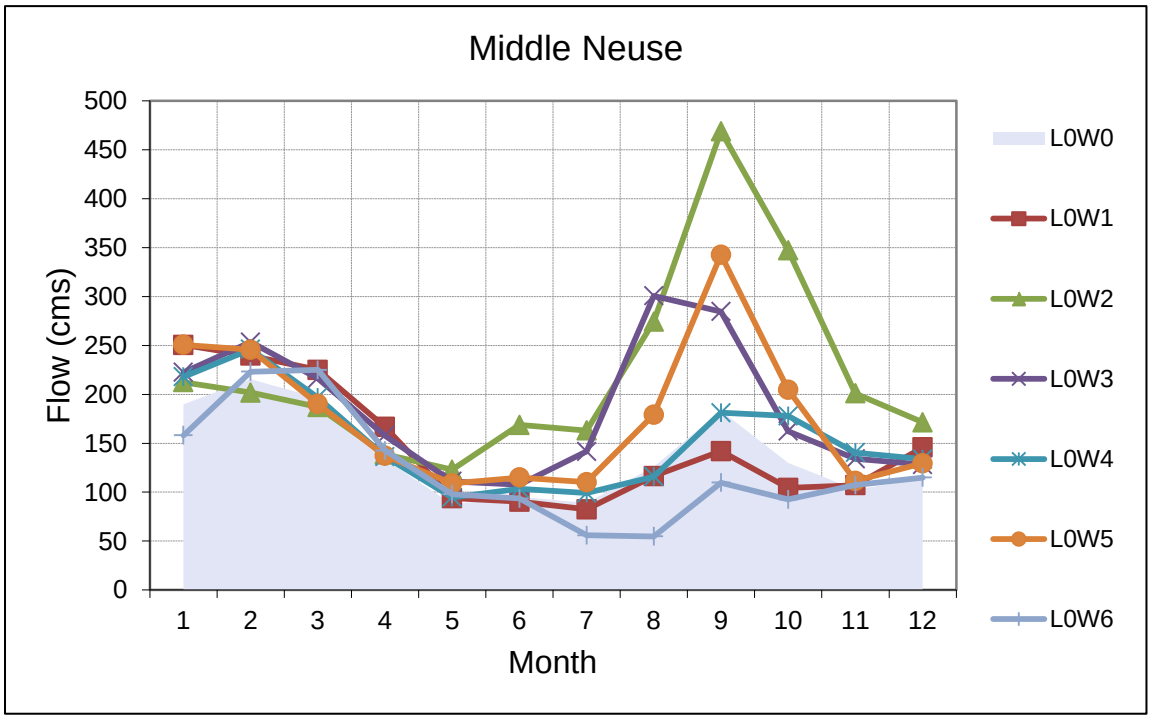


Figure 188. Monthly average flows, Middle Neuse River (SWAT)

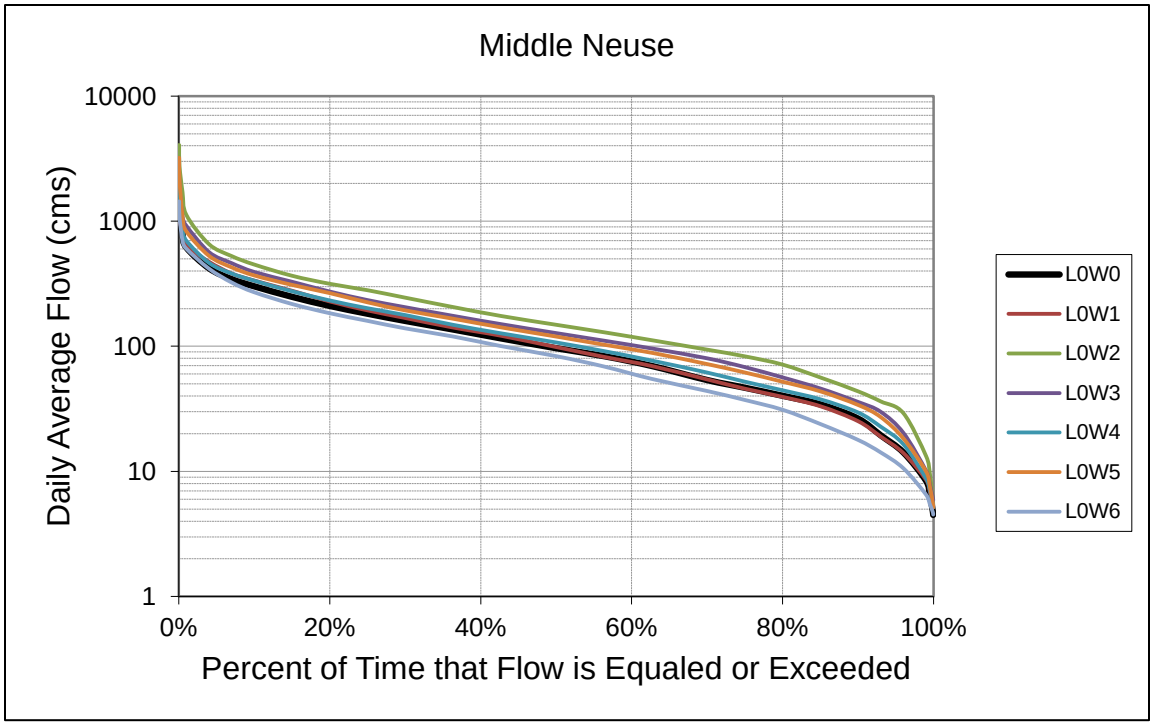


Figure 189. Flow duration, Middle Neuse River (SWAT)

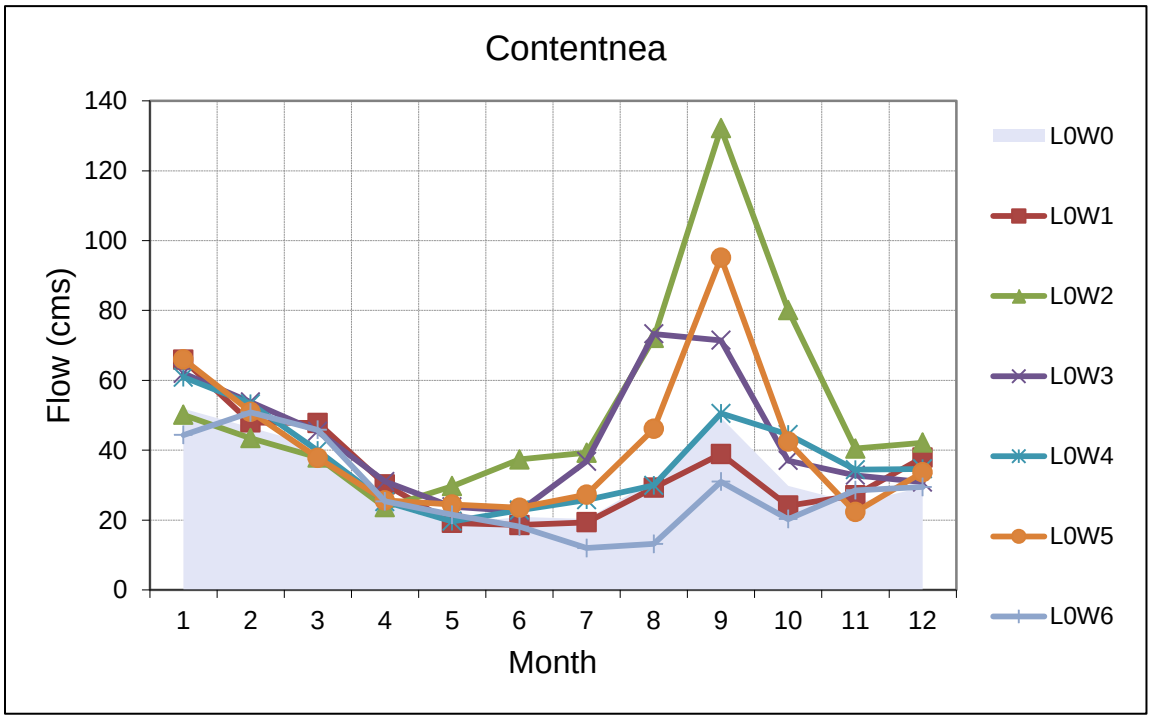


Figure 190. Monthly average flows, Contentnea Creek (SWAT)

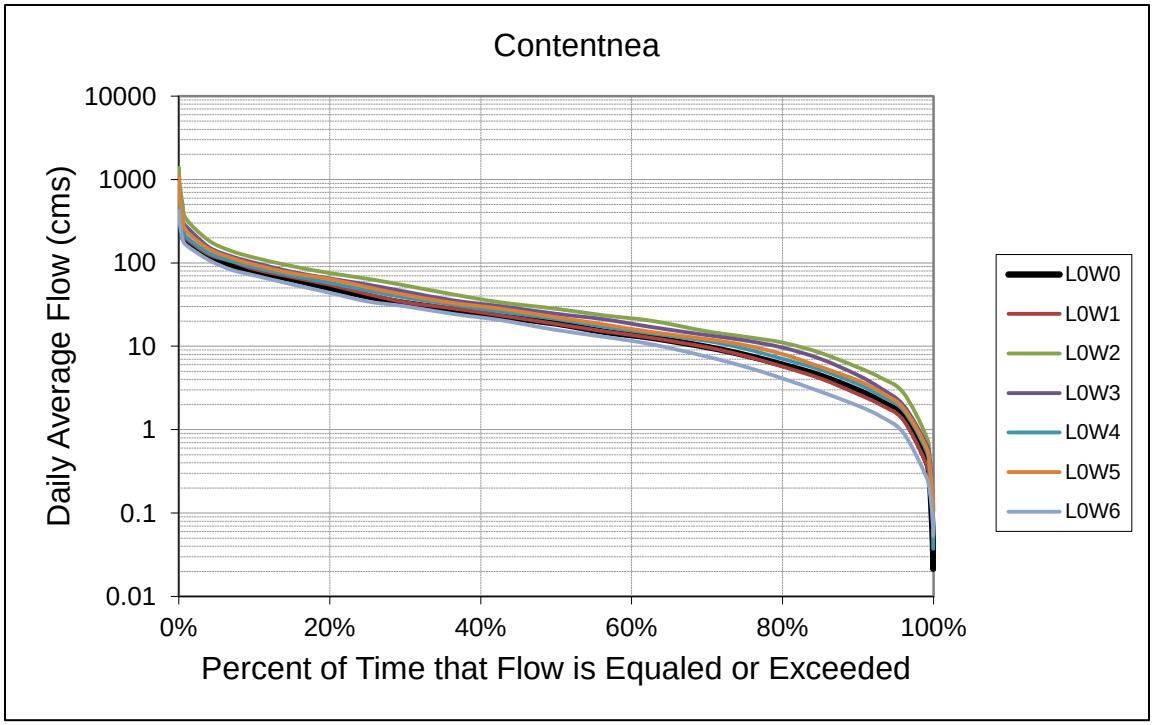


Figure 191. Flow duration, Contentnea Creek (SWAT)

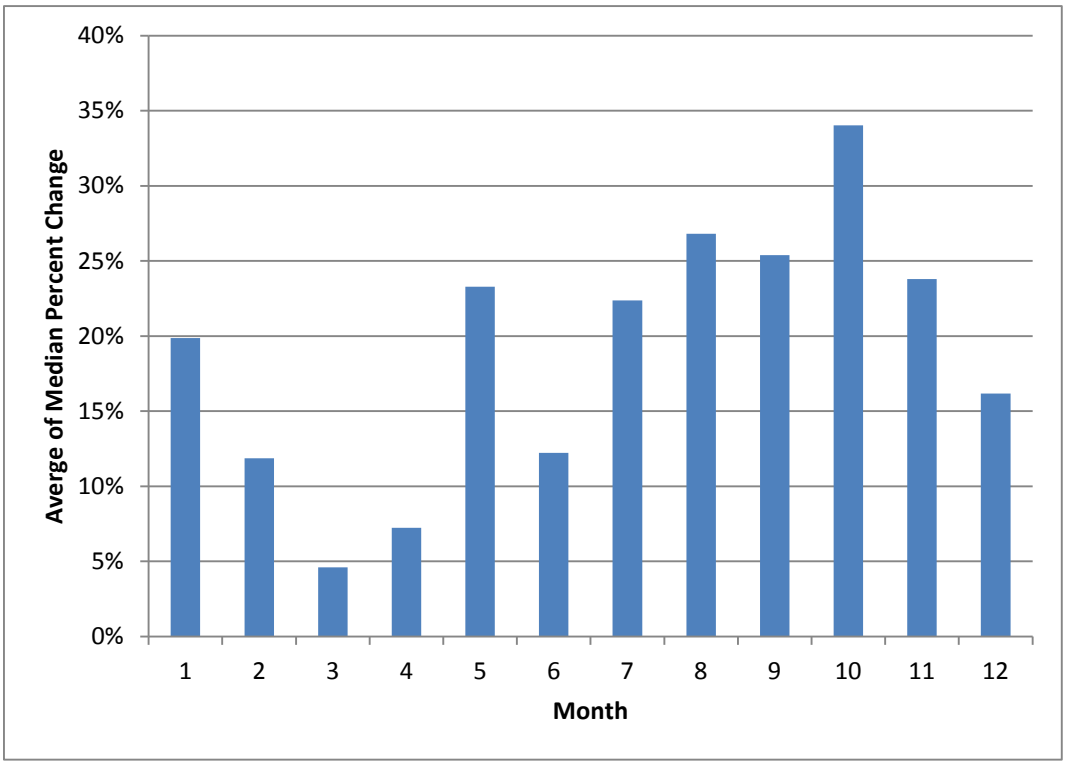


Figure 192. Average of median percent change in flow; NARCCAP Scenarios W1-W6 at all stations, Neuse-Tar watershed (SWAT)

New England Coastal Basins

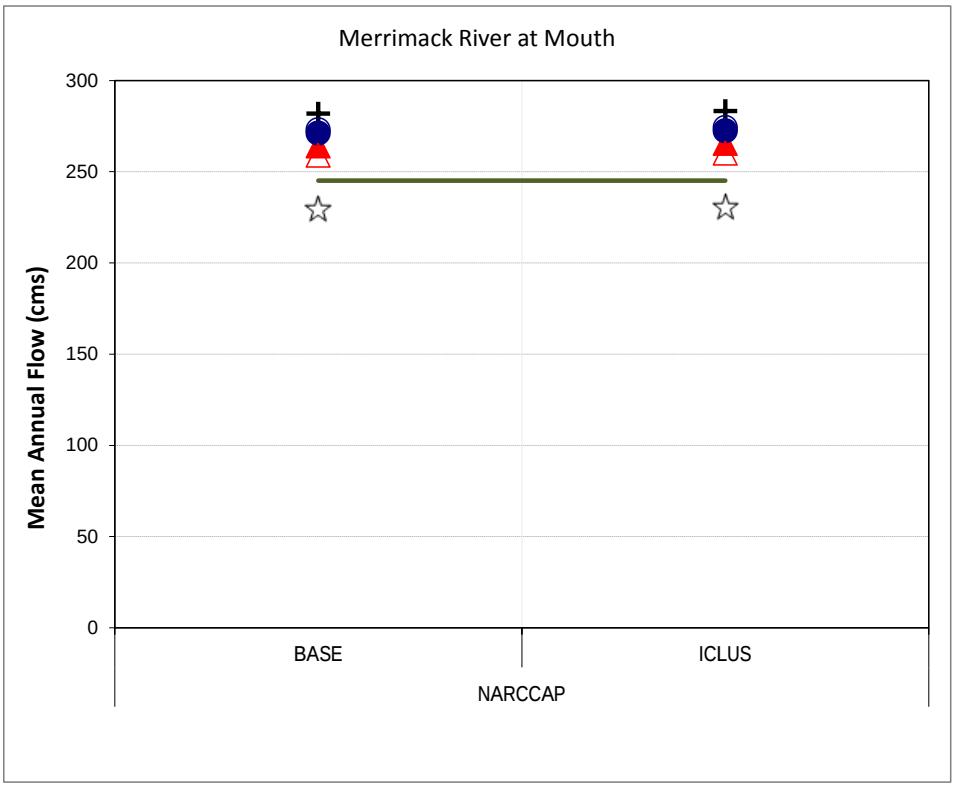


Figure 193. Mean annual flow (cms), mouth of the Merrimack River (SWAT)

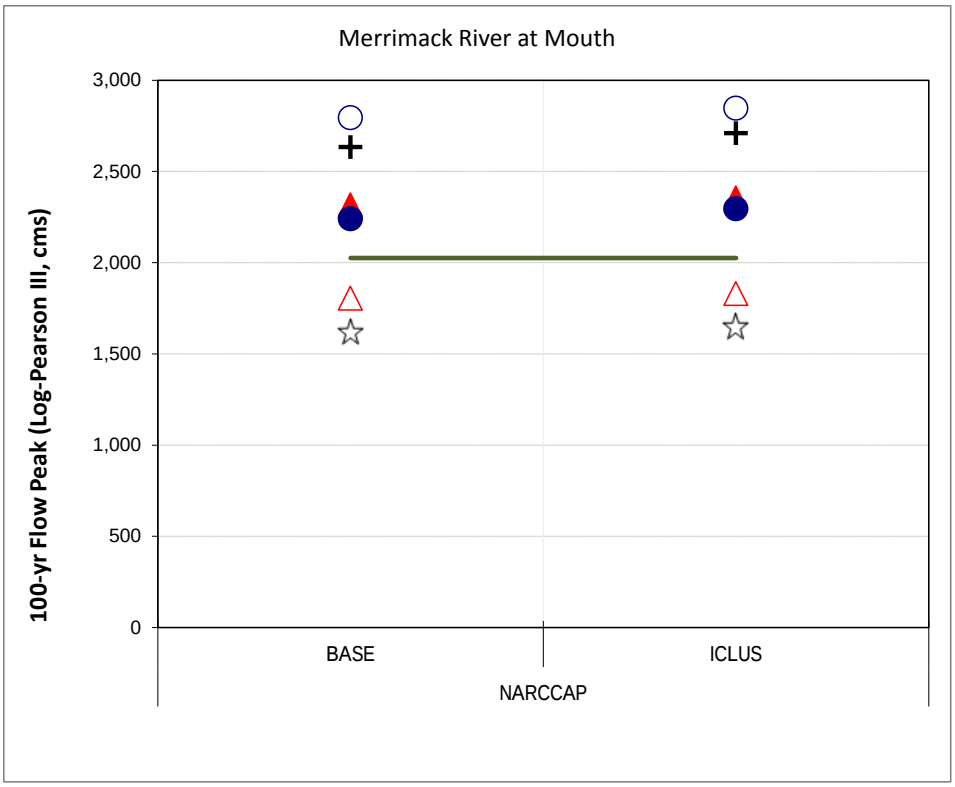


Figure 194. 100-yr Flow Peak (Log-Pearson III, cms), mouth of the Merrimack River (SWAT)

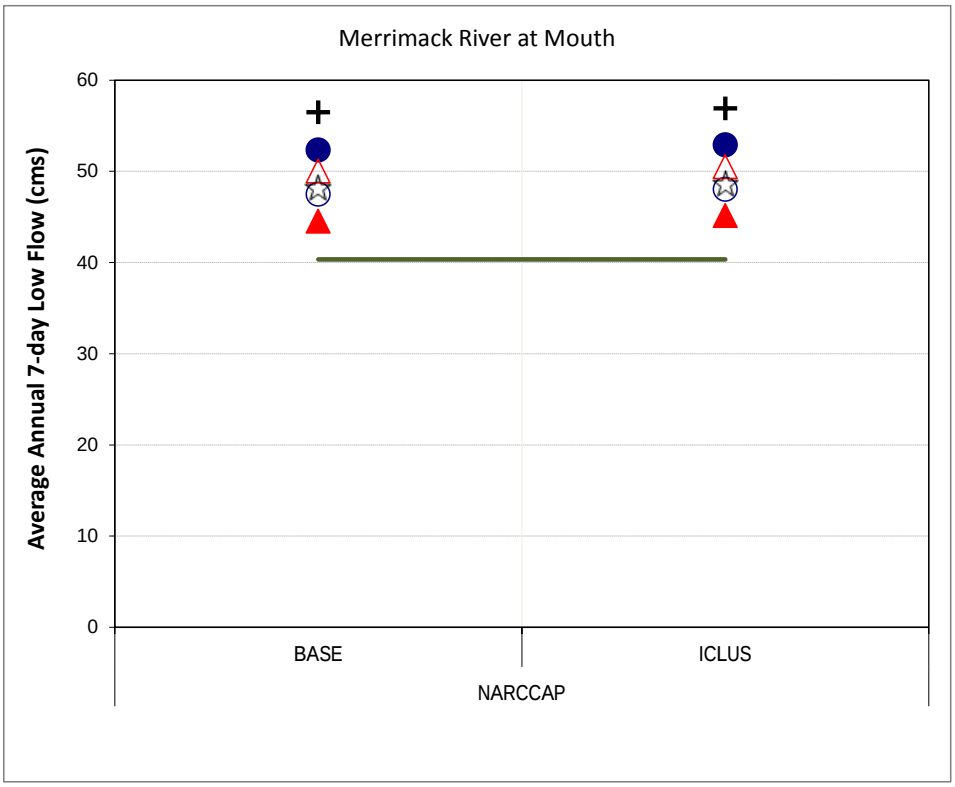


Figure 195. Average Annual 7-day Low Flow (cms), mouth of the Merrimack River (SWAT)

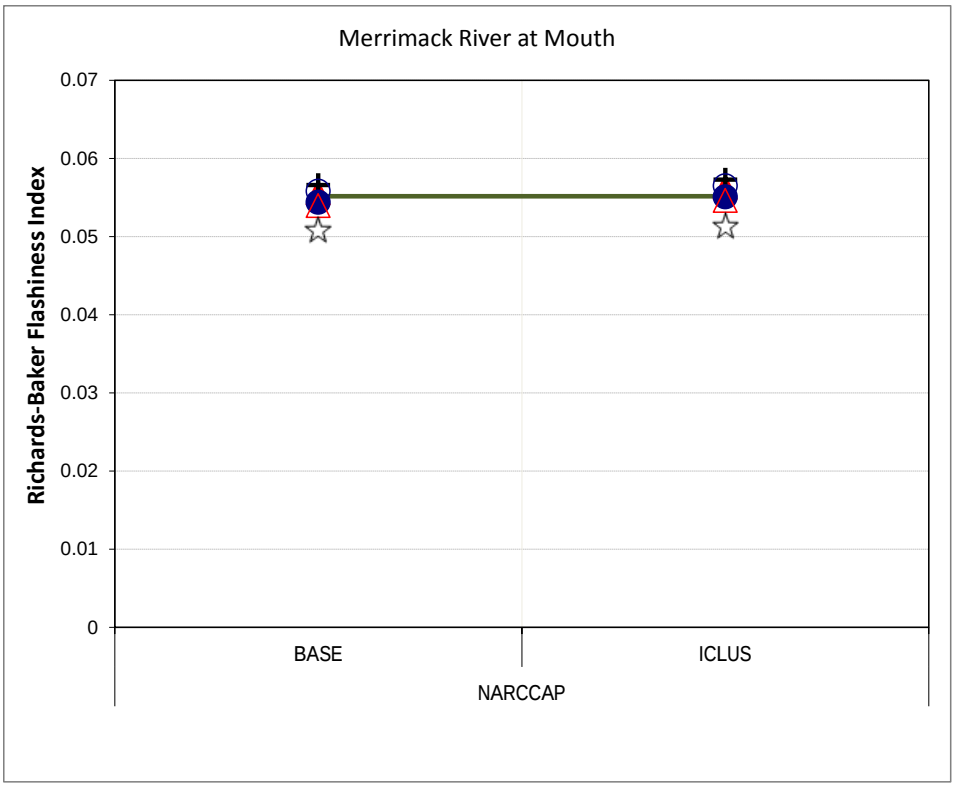


Figure 196. Richards-Baker Flashiness Index, Average Annual 7-day Low Flow (cms), mouth of the Merrimack River (SWAT)

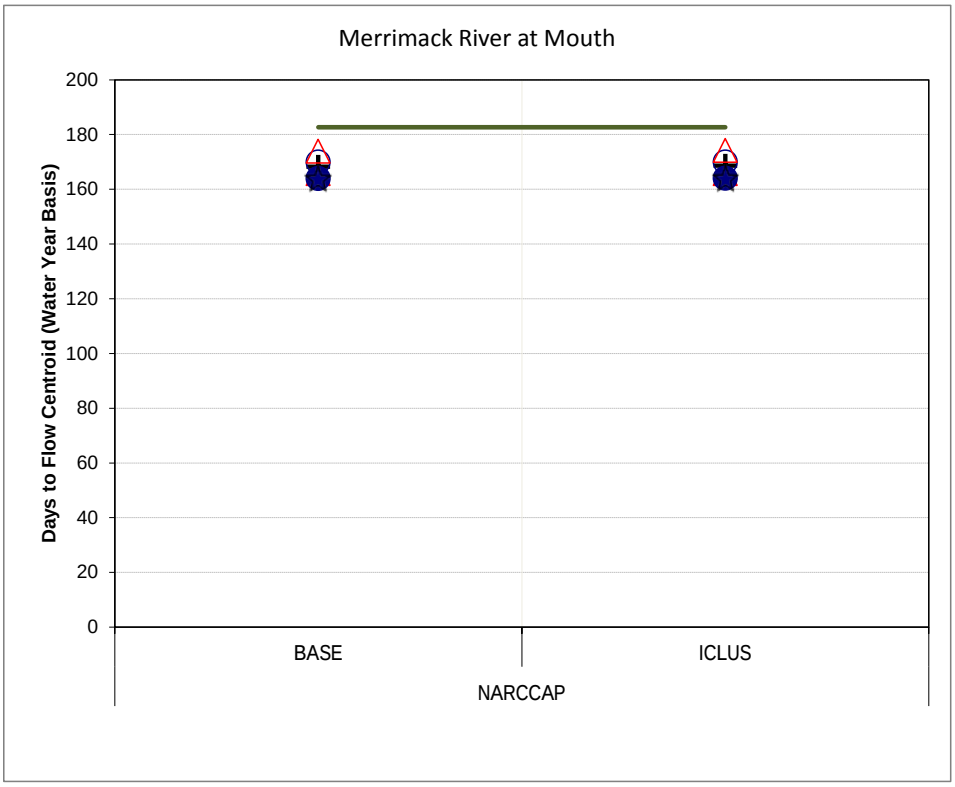


Figure 197. Days to Flow Centroid (Water Year Basis), mouth of the Merrimack River (SWAT)

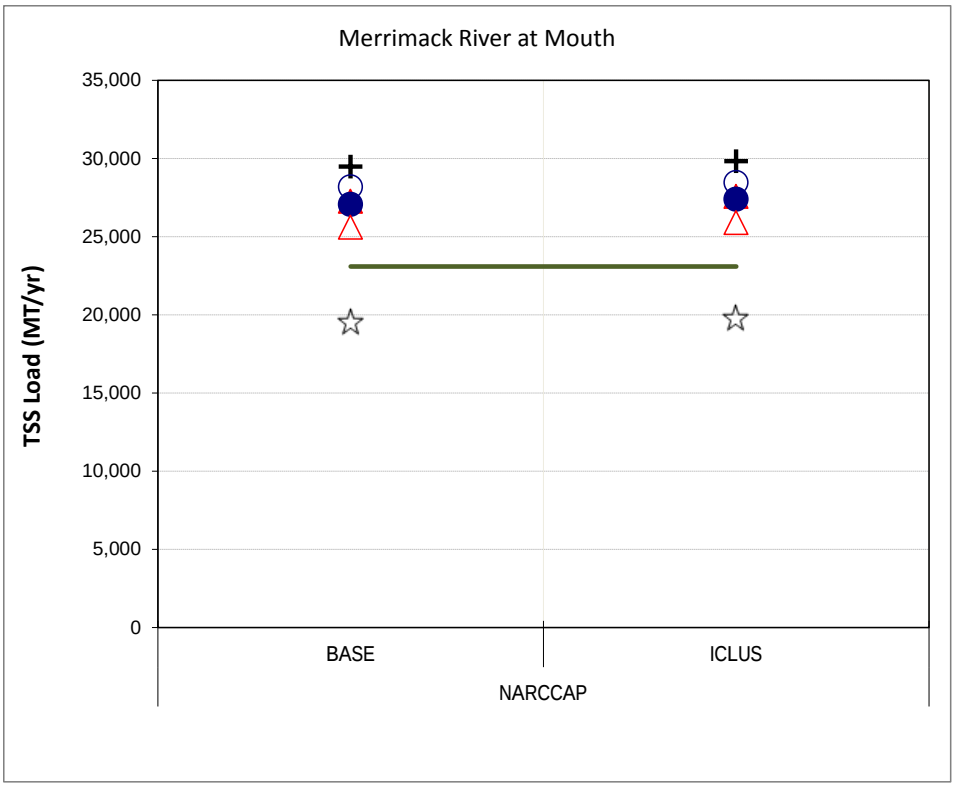


Figure 198. TSS Load (MT/yr), mouth of the Merrimack River (SWAT)

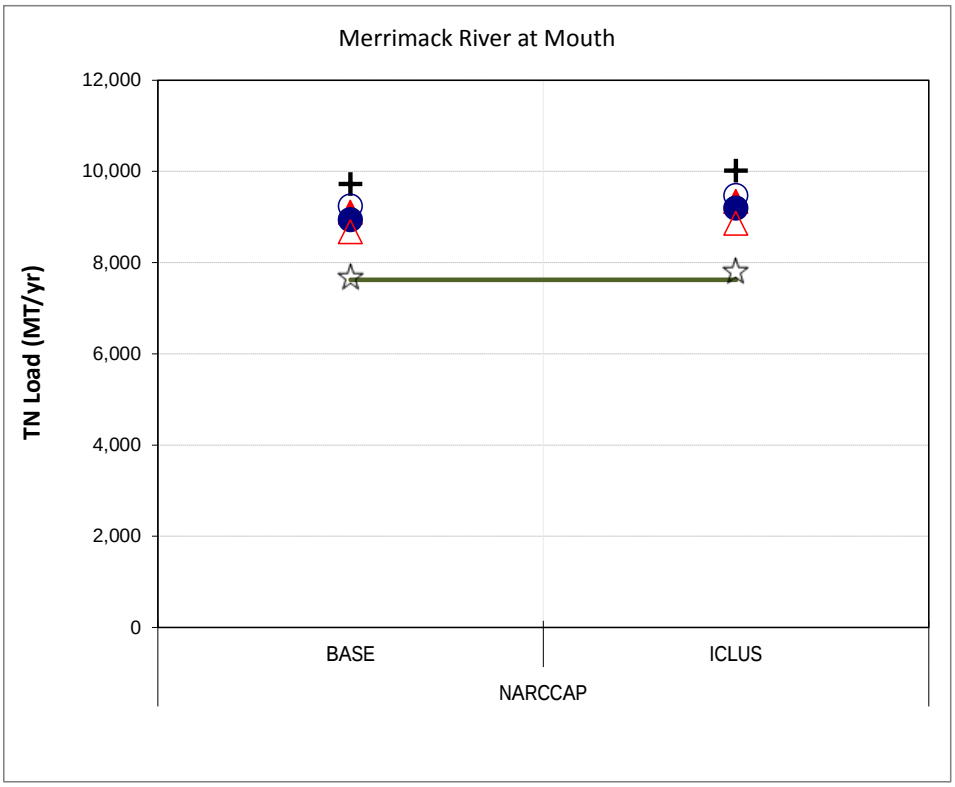


Figure 199. TN Load (MT/yr), mouth of the Merrimack River (SWAT)

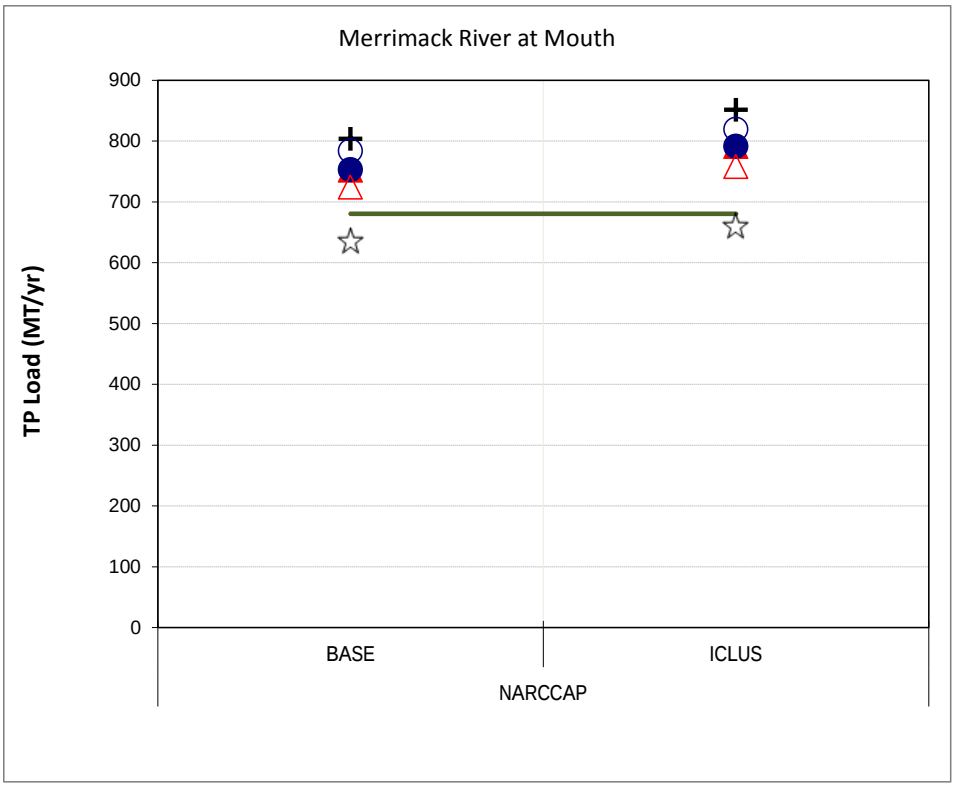


Figure 200. TP Load (MT/yr), mouth of the Merrimack River (SWAT)

Table 8. Summary of range of change relative to existing conditions for NARCCAP dynamically downscaled scenarios, New England Coastal basins SWAT model

	Results without LU change				Results with LU change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
Presumpscot HUC 01060001								
Flow	-7.72%	14.77%	10.95%	18.05%	-7.63%	14.73%	10.92%	17.95%
TSS	-12.76%	11.99%	7.38%	15.10%	-12.60%	11.68%	7.27%	15.01%
TN	-19.40%	-6.11%	-8.73%	-0.88%	-19.60%	-6.61%	-9.41%	-3.23%
TP	-12.75%	15.74%	16.55%	39.60%	-12.11%	13.87%	14.07%	31.27%
Saco River at Mouth HUC 01060002								
Flow	-4.46%	9.65%	7.57%	12.18%	-4.45%	9.64%	7.57%	12.18%
TSS	33.26%	55.66%	55.69%	68.36%	32.52%	54.78%	54.82%	67.47%
TN	6.42%	19.19%	17.66%	23.73%	6.10%	18.81%	17.28%	23.29%
TP	-19.05%	-6.74%	-7.37%	-0.59%	-18.81%	-6.54%	-7.16%	-0.43%
Piscataqua HUC 01060003								
Flow	-6.78%	9.38%	7.23%	14.73%	-6.65%	9.48%	7.32%	14.83%
TSS	-13.21%	12.41%	8.98%	21.98%	-12.85%	12.83%	9.36%	22.47%
TN	21.60%	40.51%	41.00%	60.85%	19.49%	40.86%	39.95%	57.88%
TP	3.69%	35.38%	34.78%	64.83%	1.36%	35.37%	32.89%	56.81%
Merrimack River at Mouth HUC 01070006								
Flow	-6.14%	9.19%	7.37%	14.98%	-6.04%	9.25%	7.44%	15.08%
TSS	-15.05%	17.65%	13.49%	27.68%	-14.87%	17.60%	13.44%	27.62%
TN	1.14%	18.37%	16.74%	27.55%	0.97%	19.24%	17.37%	28.90%
TP	-6.32%	10.57%	9.09%	18.08%	-6.15%	12.02%	10.27%	20.51%
Pemigewasset HUC 01070001								
Flow	-1.75%	8.56%	7.53%	12.70%	-1.74%	8.57%	7.54%	12.71%
TSS	-27.46%	-12.23%	-14.35%	-9.88%	-27.37%	-12.12%	-14.23%	-9.74%
TN	-11.26%	-8.86%	-6.92%	5.57%	-11.14%	-8.79%	-6.89%	5.29%
TP	-21.25%	-18.27%	-17.02%	-5.49%	-20.95%	-17.94%	-16.77%	-5.63%
Concord River at Lowell HUC 01070005								
Flow	-12.55%	10.86%	7.20%	16.86%	-12.39%	10.88%	7.27%	17.02%
TSS	-15.37%	15.26%	10.51%	25.17%	-15.49%	14.90%	10.41%	25.57%
TN	5.83%	14.53%	15.28%	24.74%	5.14%	14.19%	14.77%	24.48%
TP	-1.17%	4.47%	4.09%	9.02%	-1.64%	4.56%	4.15%	9.92%
Charles River at Mouth HUC 01090001								
Flow	-4.45%	5.63%	4.62%	9.16%	-4.41%	5.63%	4.63%	9.21%
TSS	-5.04%	6.85%	5.78%	11.94%	-5.01%	6.90%	5.87%	12.20%
TN	-0.09%	0.64%	0.60%	1.31%	-0.10%	0.63%	0.59%	1.29%
TP	-0.05%	0.31%	0.26%	0.41%	-0.05%	0.32%	0.27%	0.43%
Winnepesaukee River HUC 01070002								
Flow	0.03%	9.88%	9.07%	15.35%	0.05%	9.89%	9.08%	15.37%

	Results without LU change				Results with LU change			
	Min	**Median**	**Mean**	**Max**	**Min**	**Median**	**Mean**	**Max**
TSS	-16.55%	-7.60%	-7.98%	-0.32%	-16.27%	-7.27%	-7.68%	0.02%
TN	5.98%	22.17%	24.11%	54.33%	5.00%	21.40%	23.31%	53.52%
TP	-14.58%	3.20%	9.24%	55.01%	-15.18%	2.89%	8.43%	53.36%
Contoocook HUC 01070003								
Flow	-8.43%	8.37%	6.64%	15.65%	-8.32%	8.45%	6.72%	15.75%
TSS	-28.90%	-3.23%	-5.16%	10.29%	-28.72%	-3.07%	-4.97%	10.65%
TN	9.99%	30.28%	28.91%	42.92%	7.95%	28.21%	27.29%	42.17%
TP	-12.86%	7.33%	4.32%	14.57%	-13.04%	8.78%	4.94%	13.78%
Nashua HUC 01070004								
Flow	-11.94%	11.04%	8.60%	19.79%	-11.80%	11.06%	8.65%	19.93%
TSS	-29.14%	4.66%	0.81%	14.13%	-28.65%	4.81%	1.11%	14.54%
TN	-19.12%	1.95%	4.28%	31.83%	-19.59%	2.34%	5.62%	35.57%
TP	-31.88%	-7.56%	-2.98%	24.15%	-31.27%	-5.86%	-0.54%	30.43%
Nashua River at East Pepperell gage 01096500								
Flow	-11.75%	10.34%	8.32%	20.33%	-11.65%	10.35%	8.36%	20.42%
TSS	-27.21%	10.65%	6.67%	23.02%	-26.93%	10.66%	6.79%	23.44%
TN	-20.27%	-4.91%	-1.04%	26.21%	-21.80%	-6.15%	-2.21%	25.33%
TP	-34.88%	-16.51%	-13.16%	12.60%	-35.84%	-17.26%	-13.77%	12.04%
Saco River at Cornish gage 01066000								
Flow	-4.01%	8.86%	6.87%	10.80%	-4.01%	8.86%	6.87%	10.80%
TSS	-30.52%	-22.56%	-23.95%	-20.95%	-30.45%	-22.48%	-23.88%	-20.88%
TN	-0.09%	11.06%	9.71%	15.89%	-0.18%	10.94%	9.58%	15.73%
TP	-30.86%	-15.88%	-16.73%	-9.98%	-30.22%	-15.43%	-16.29%	-9.72%

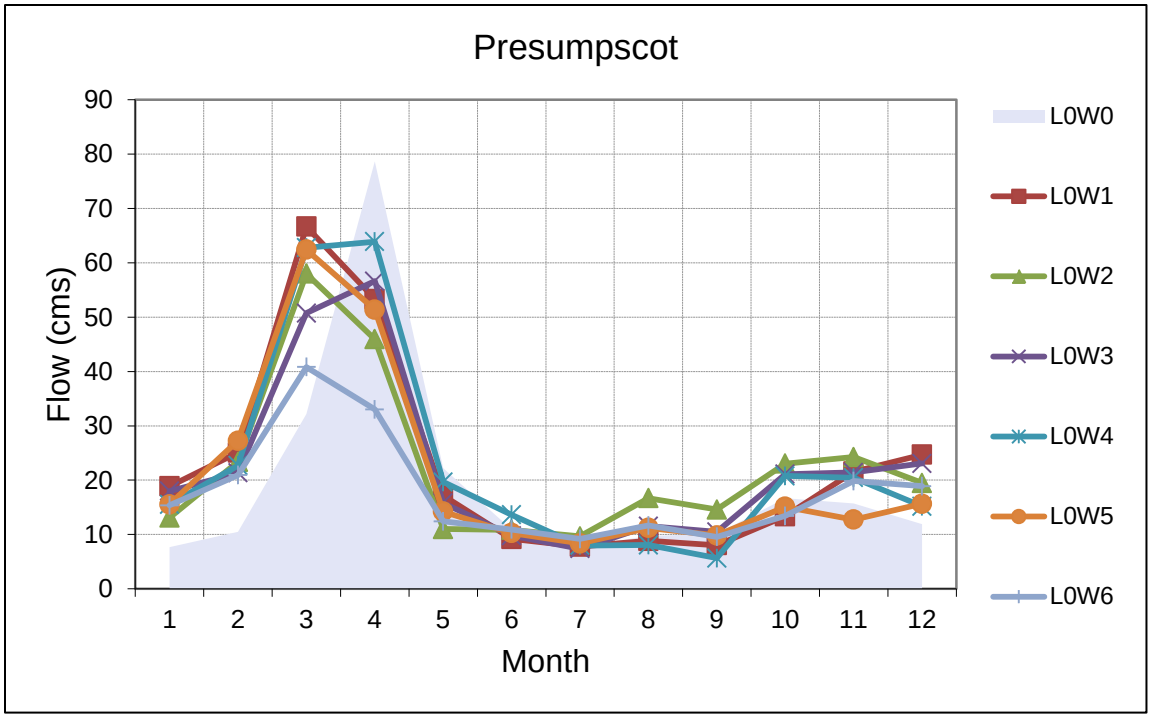


Figure 201. Monthly average flows, Presumpscot River (SWAT)

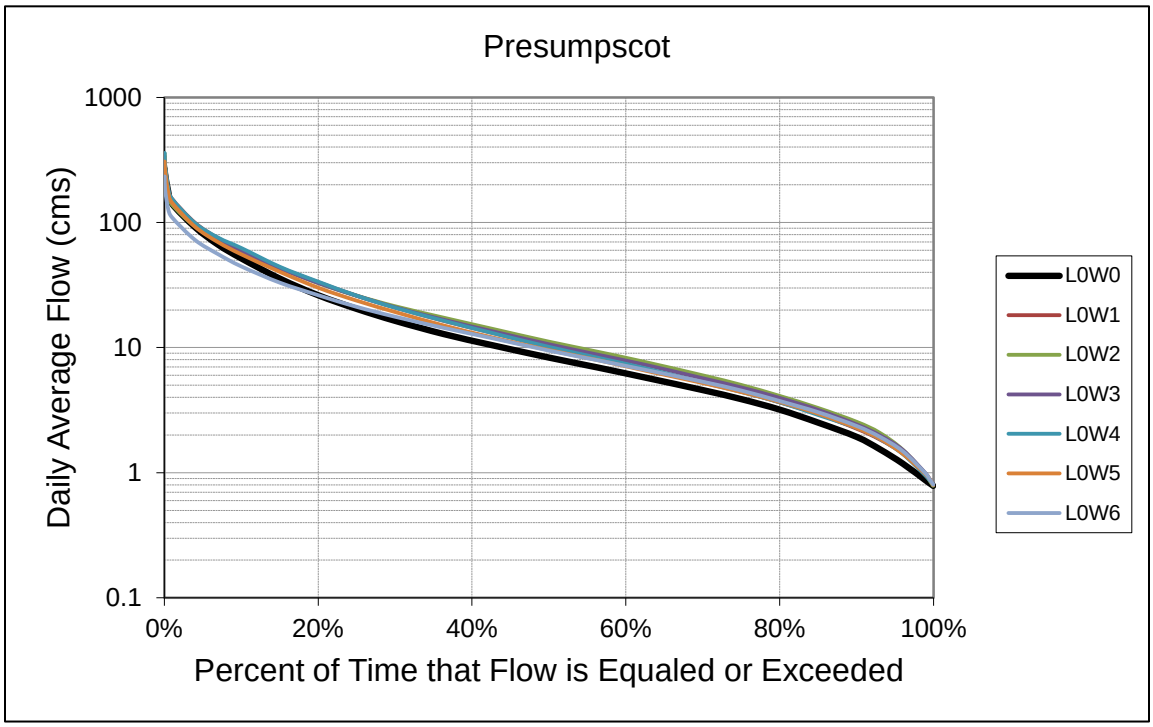


Figure 202. Flow duration, Presumpscot River (SWAT)

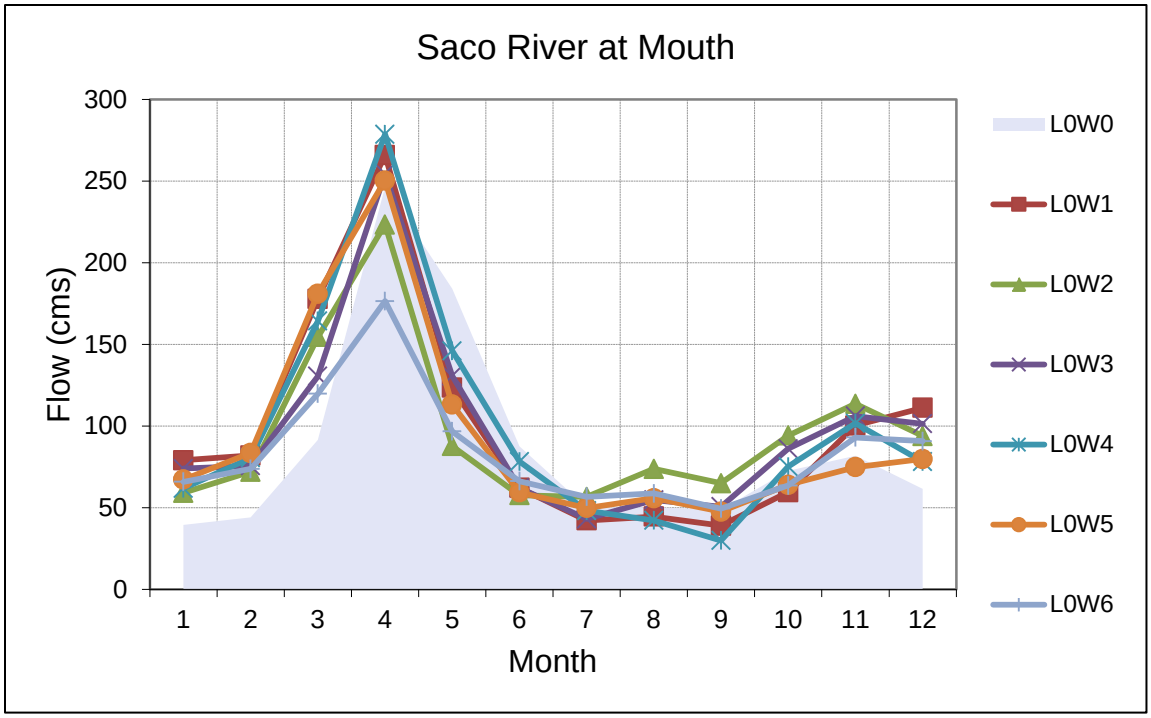


Figure 203. Monthly average flows, mouth of the Saco River (SWAT)

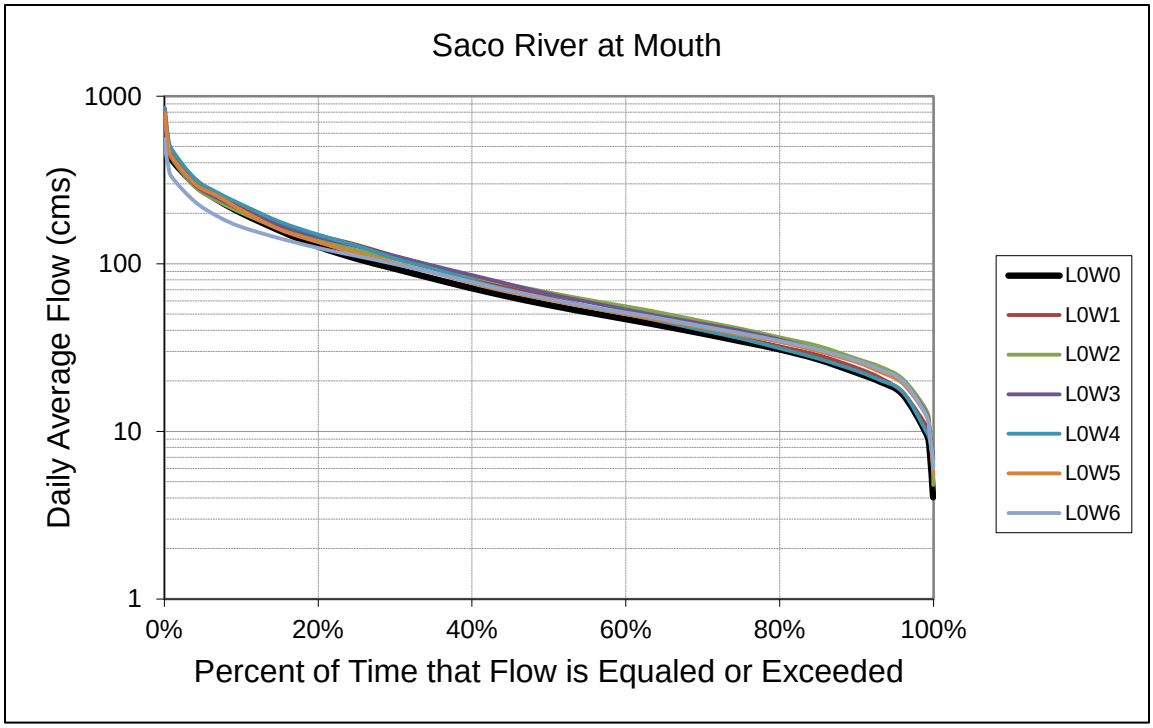


Figure 204. Flow duration, mouth of the Saco River (SWAT)

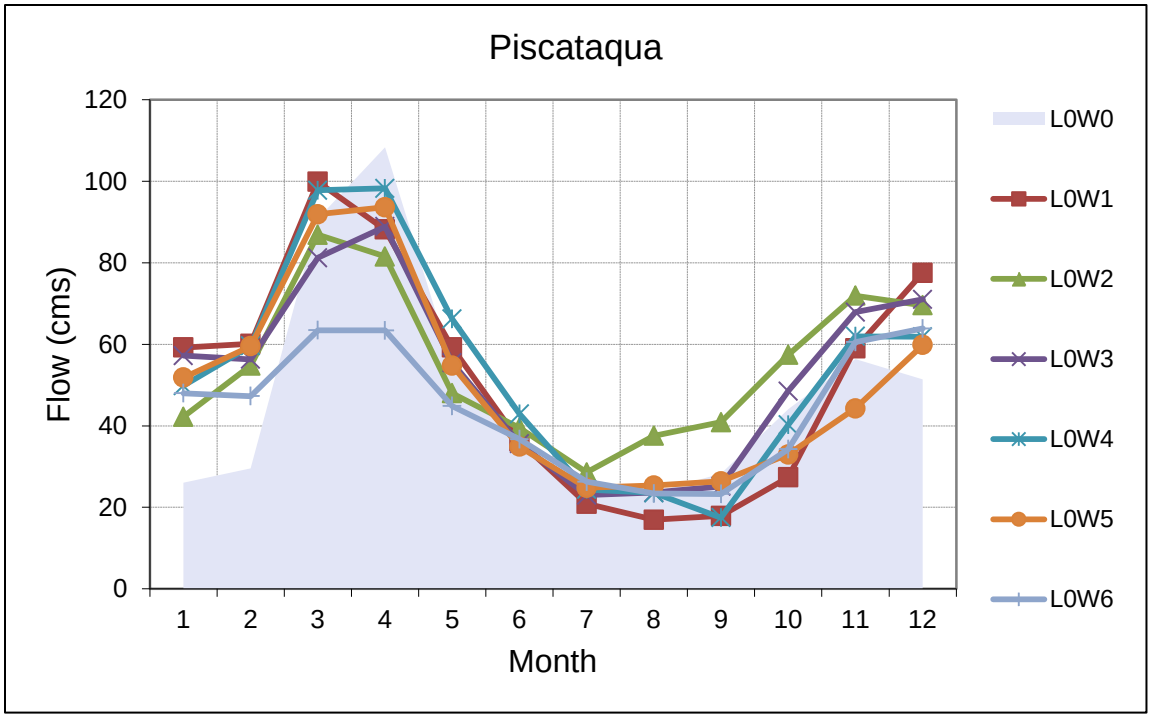


Figure 205. Monthly average flows, Piscataqua River (SWAT)

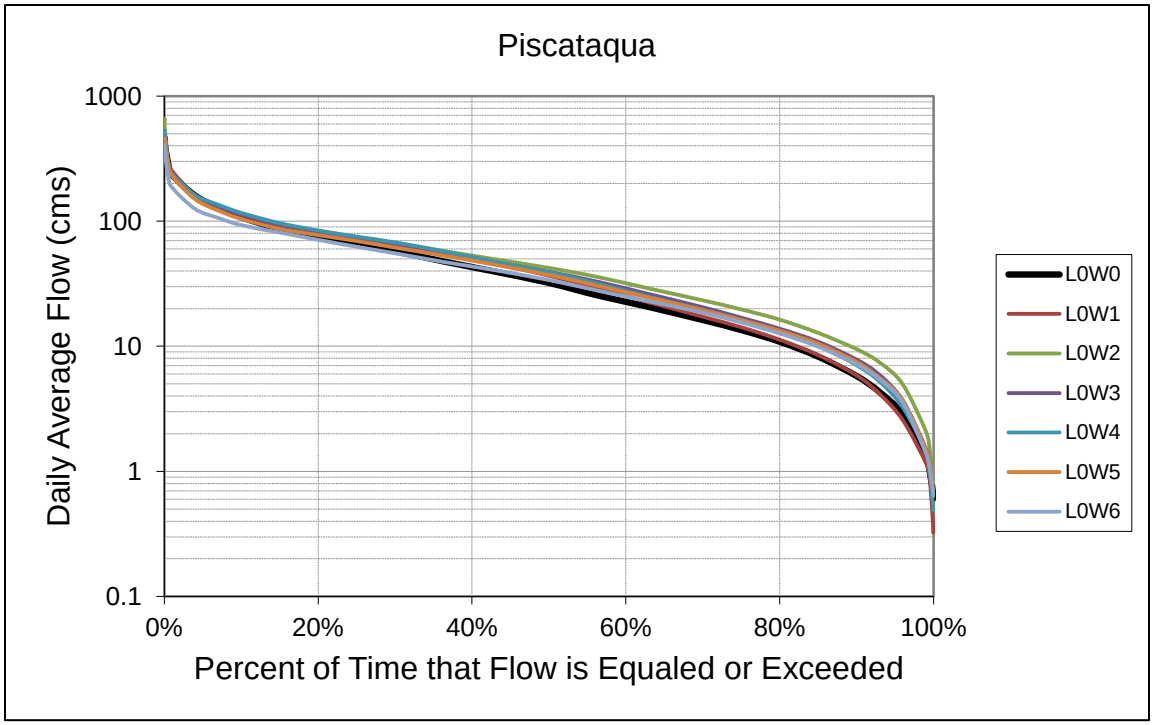


Figure 206. Flow duration, Piscataqua River (SWAT)

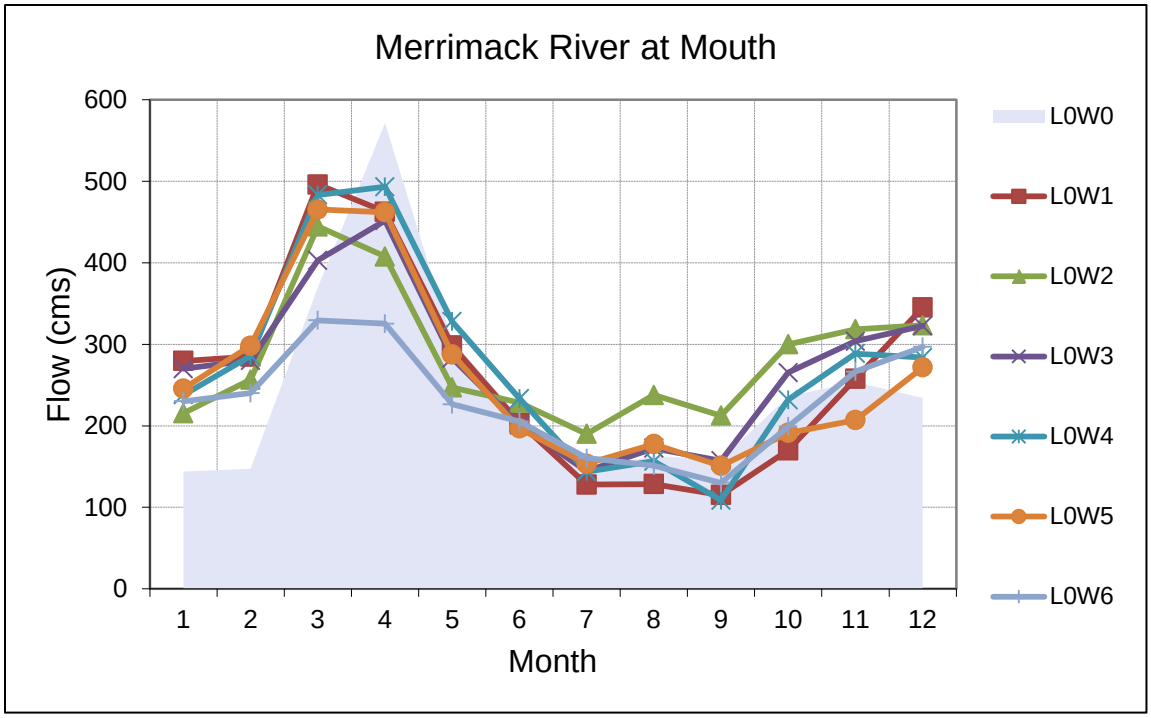


Figure 207. Monthly average flows, mouth of the Merrimack River (SWAT)

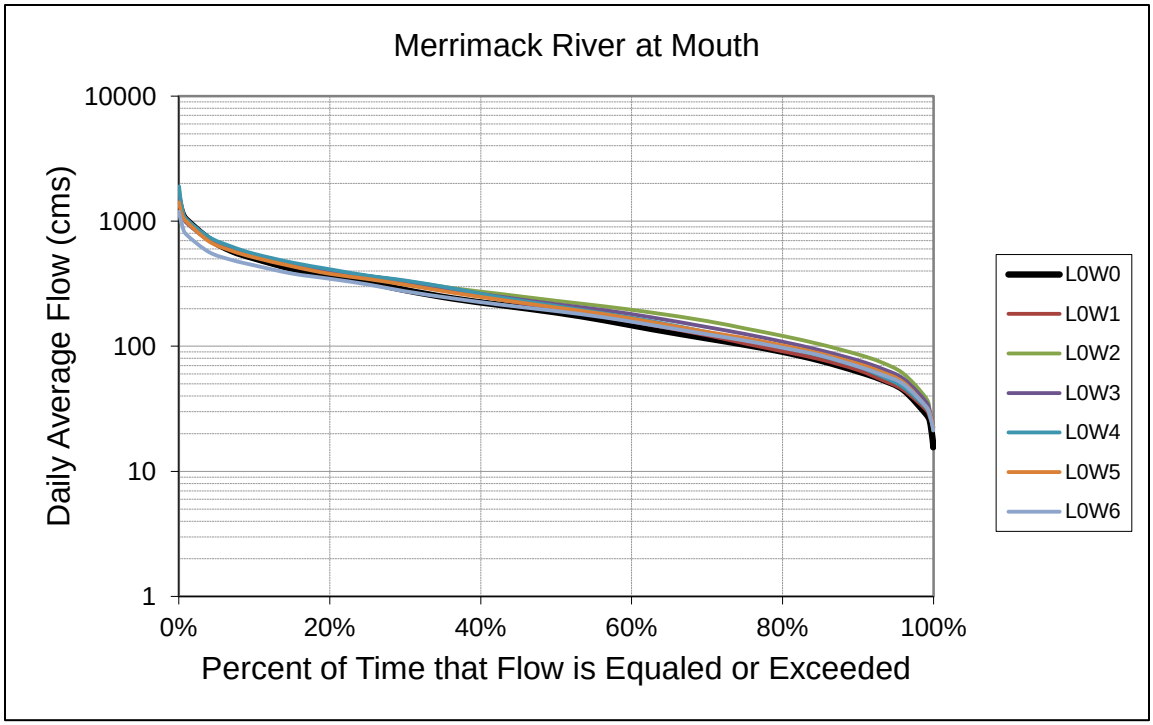


Figure 208. Flow duration, mouth of the Merrimack River (SWAT)

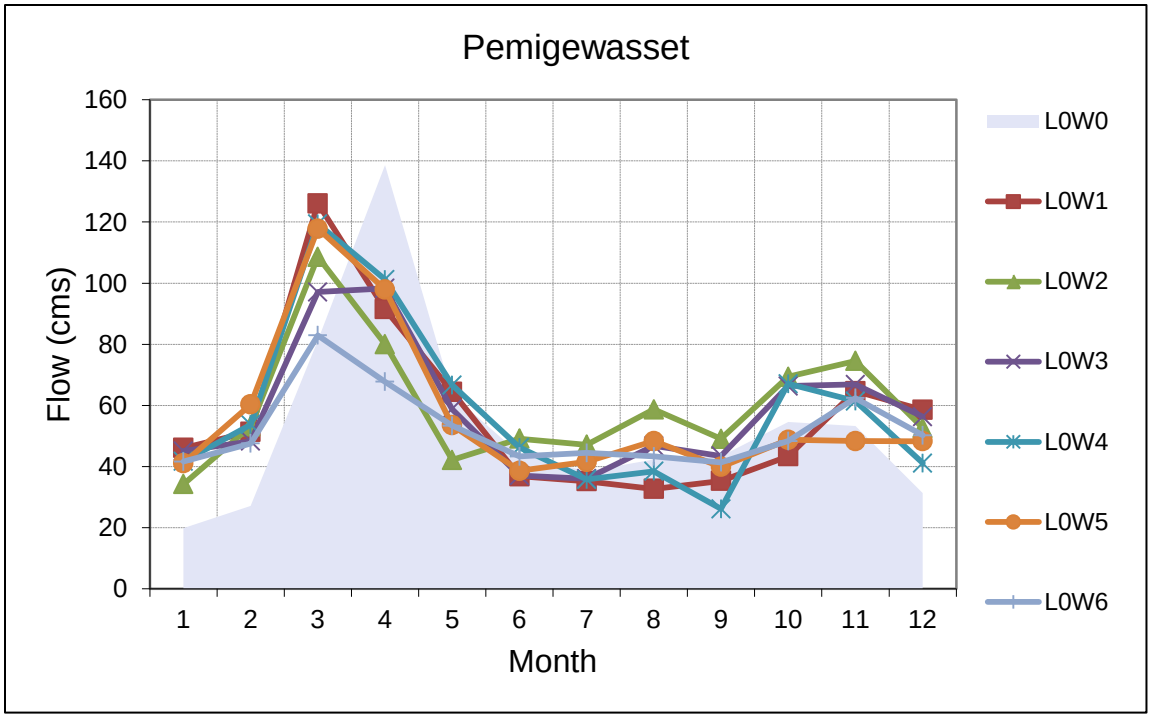


Figure 209. Monthly average flows, Pemigewasset River (SWAT)

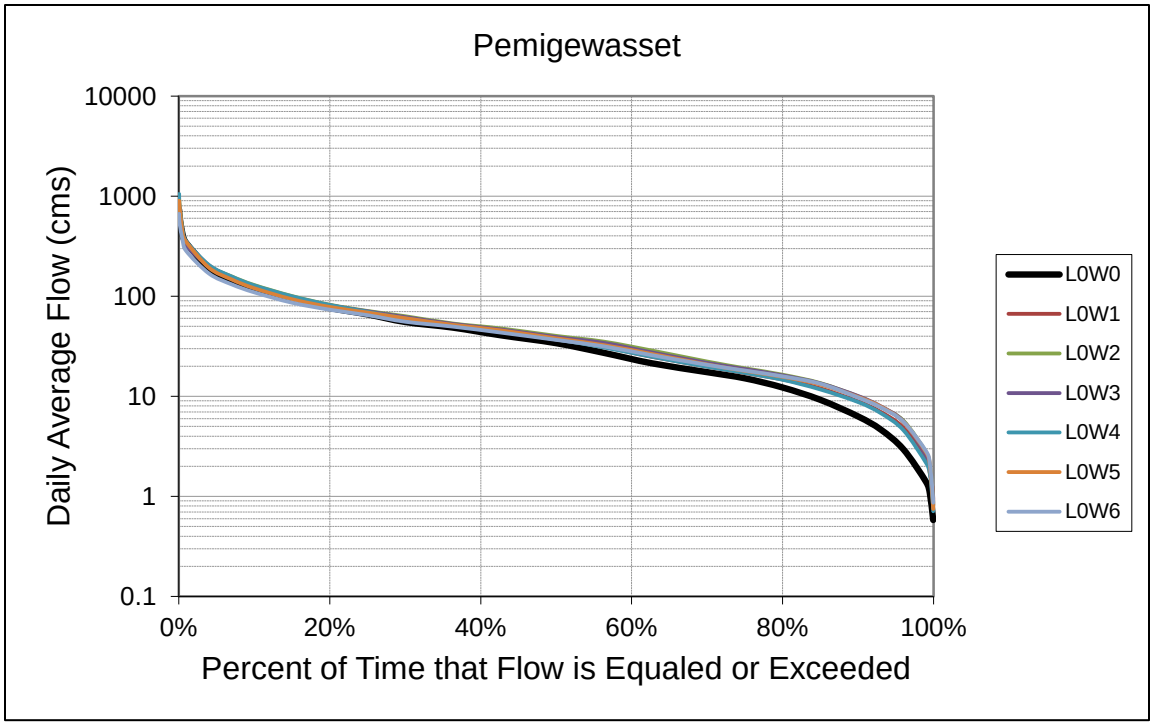


Figure 210. Flow duration, Pemigewasset River (SWAT)

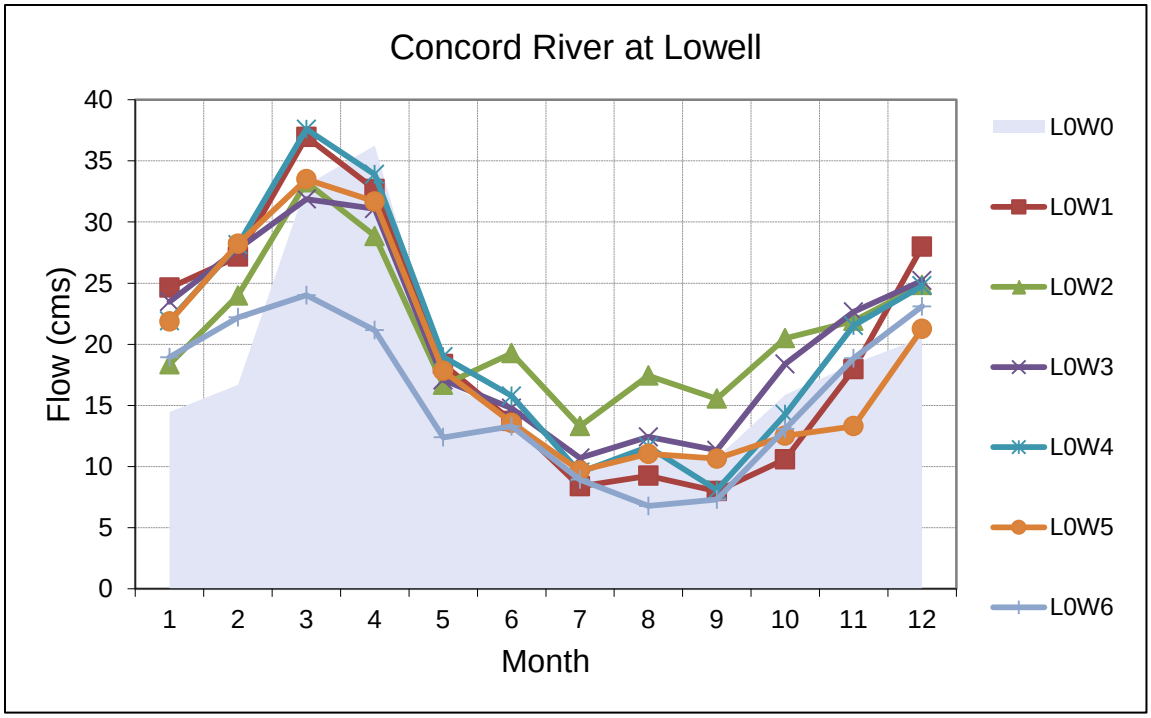


Figure 211. Monthly average flows, Concord River at Lowell (SWAT)

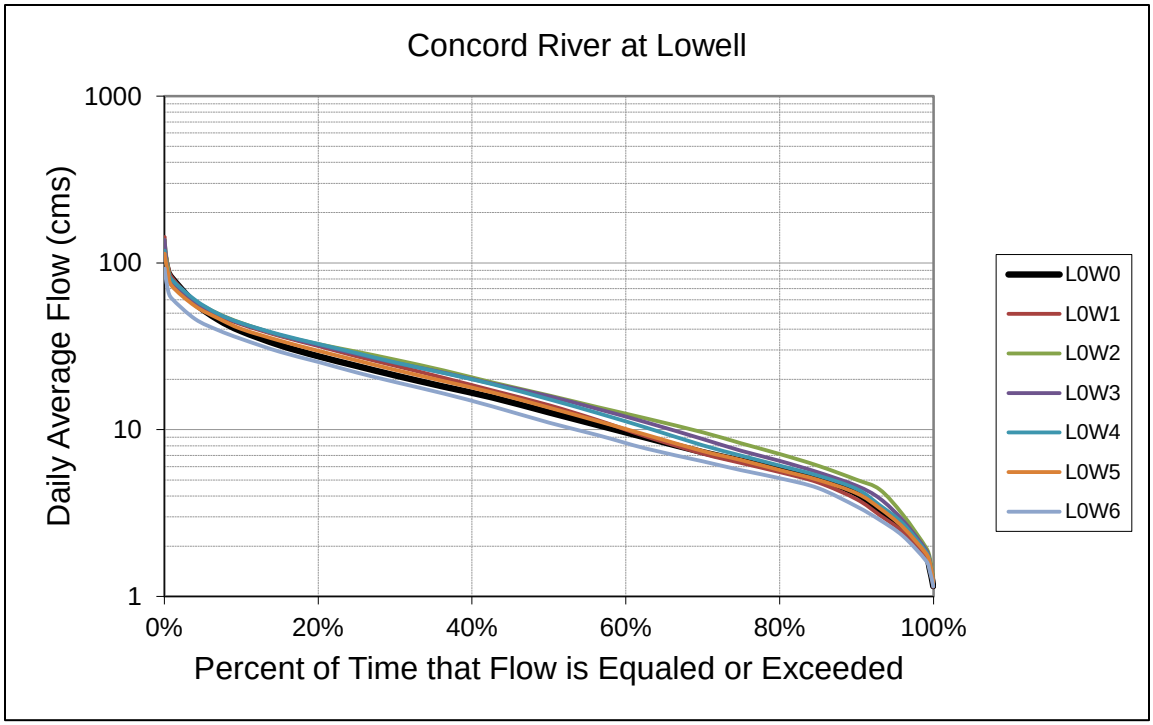


Figure 212. Flow duration, Concord River at Lowell (SWAT)

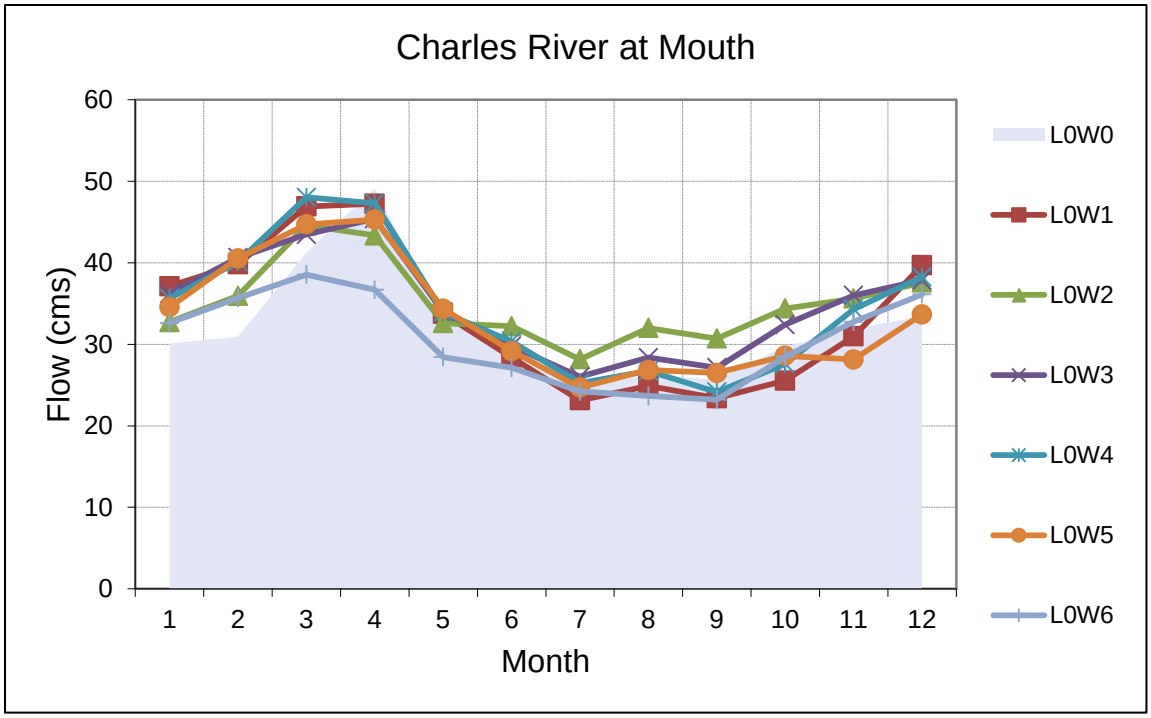


Figure 213. Monthly average flows, mouth of the Charles River (SWAT)

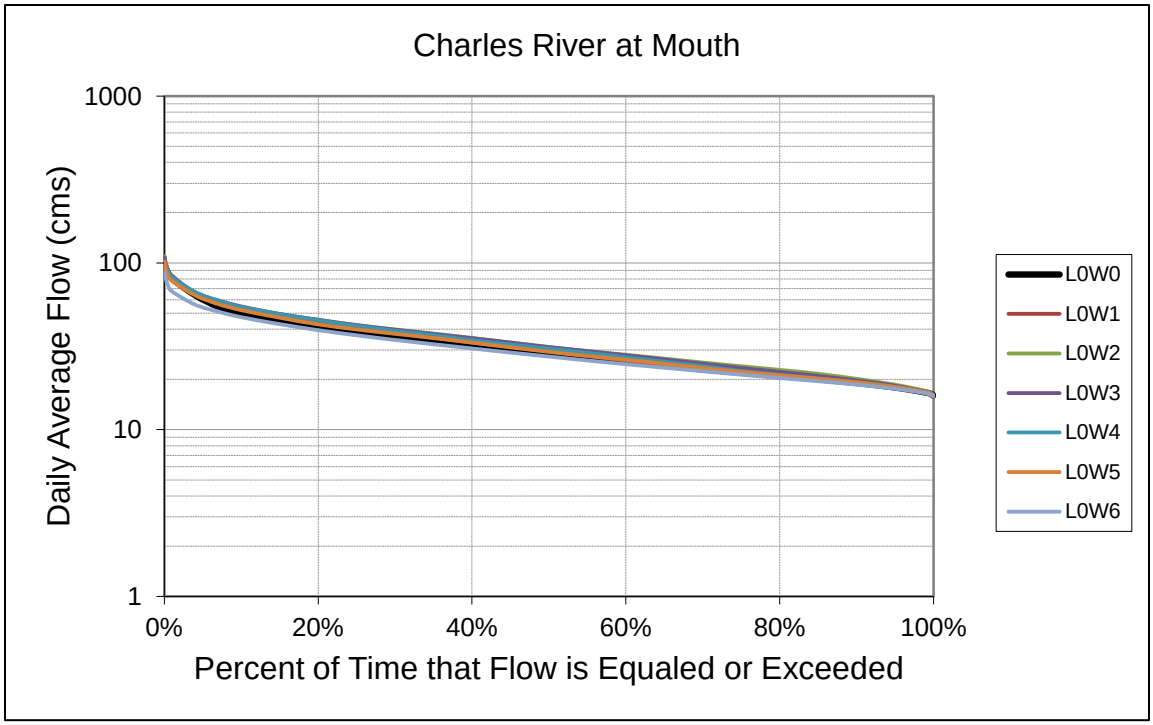


Figure 214. Flow duration, mouth of the Charles River (SWAT)

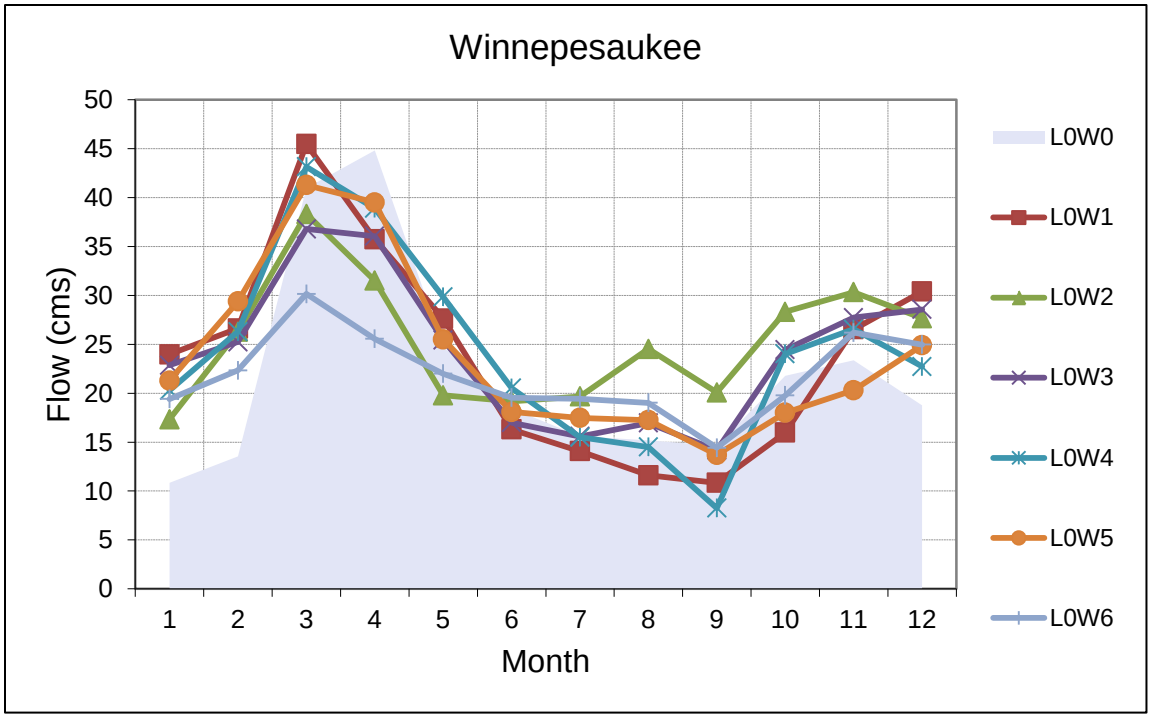


Figure 215. Monthly average flows, Winnepesaukee River (SWAT)

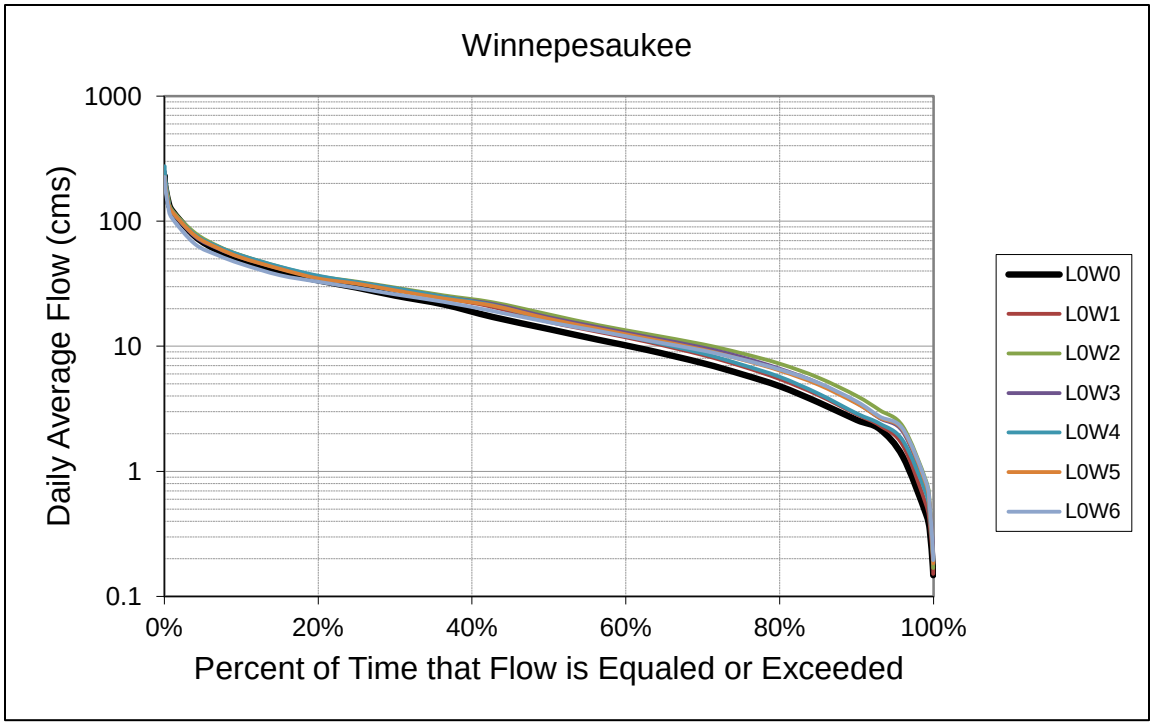


Figure 216. Flow duration, Winnepesaukee River (SWAT)

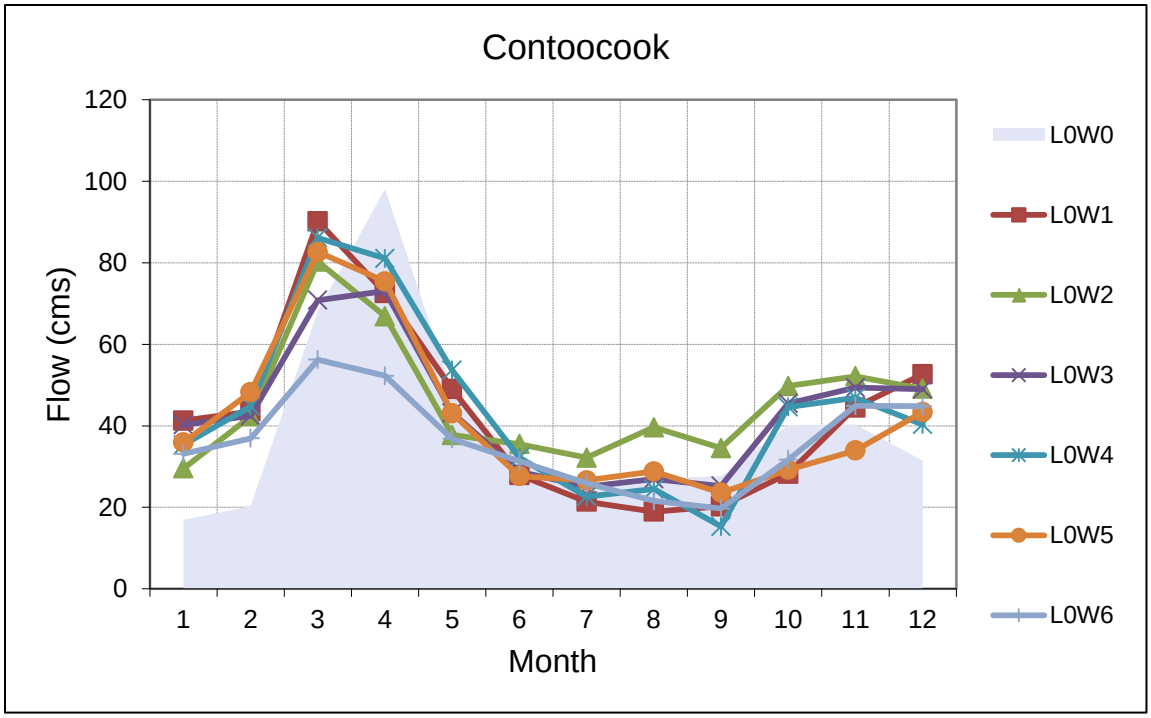


Figure 217. Monthly average flows, Contoocook River (SWAT)

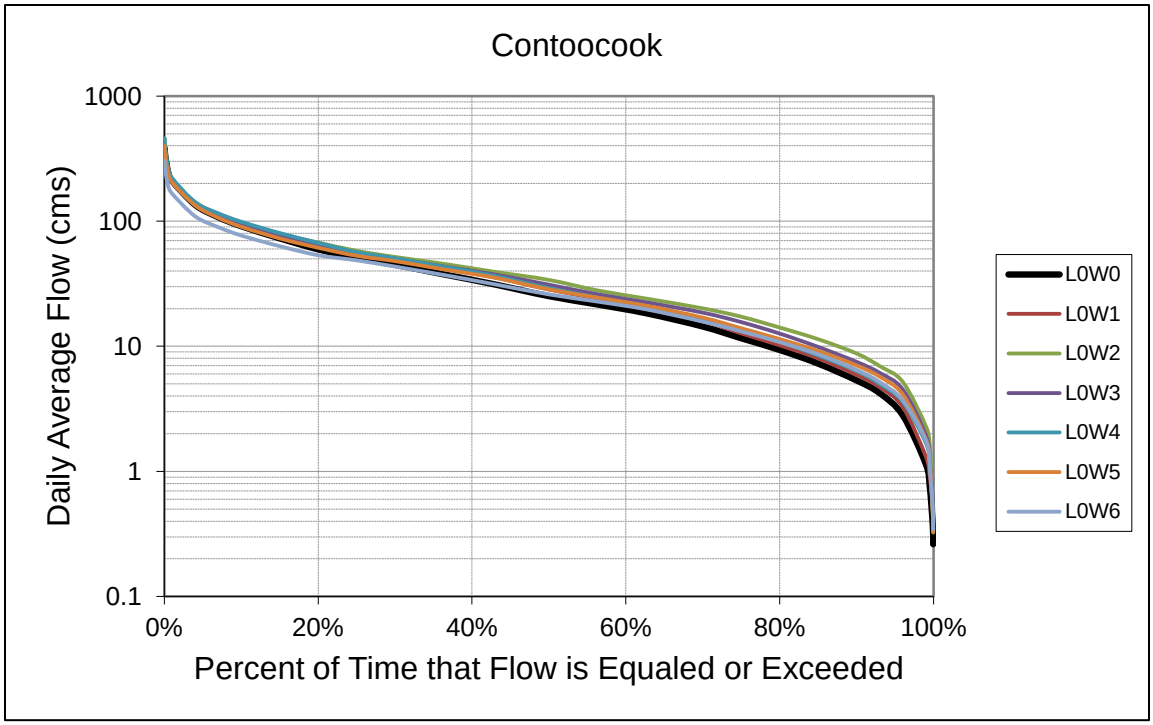


Figure 218. Flow duration, Contoocook River (SWAT)

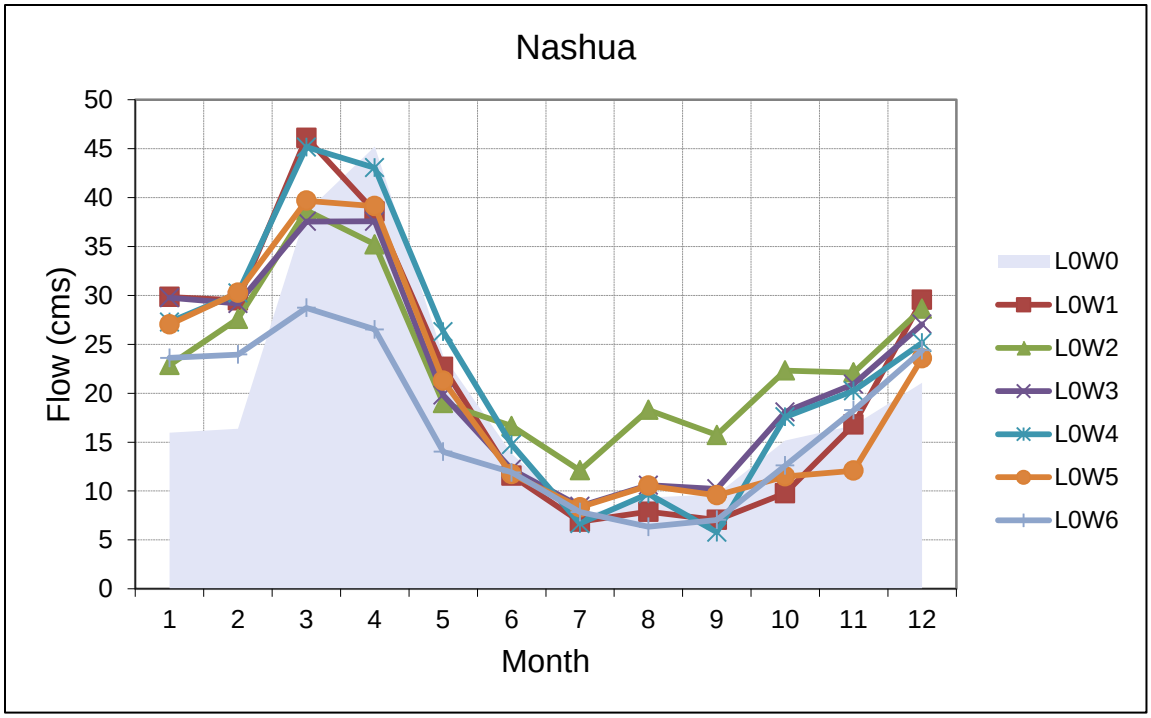


Figure 219. Monthly average flows, Nashua River (SWAT)

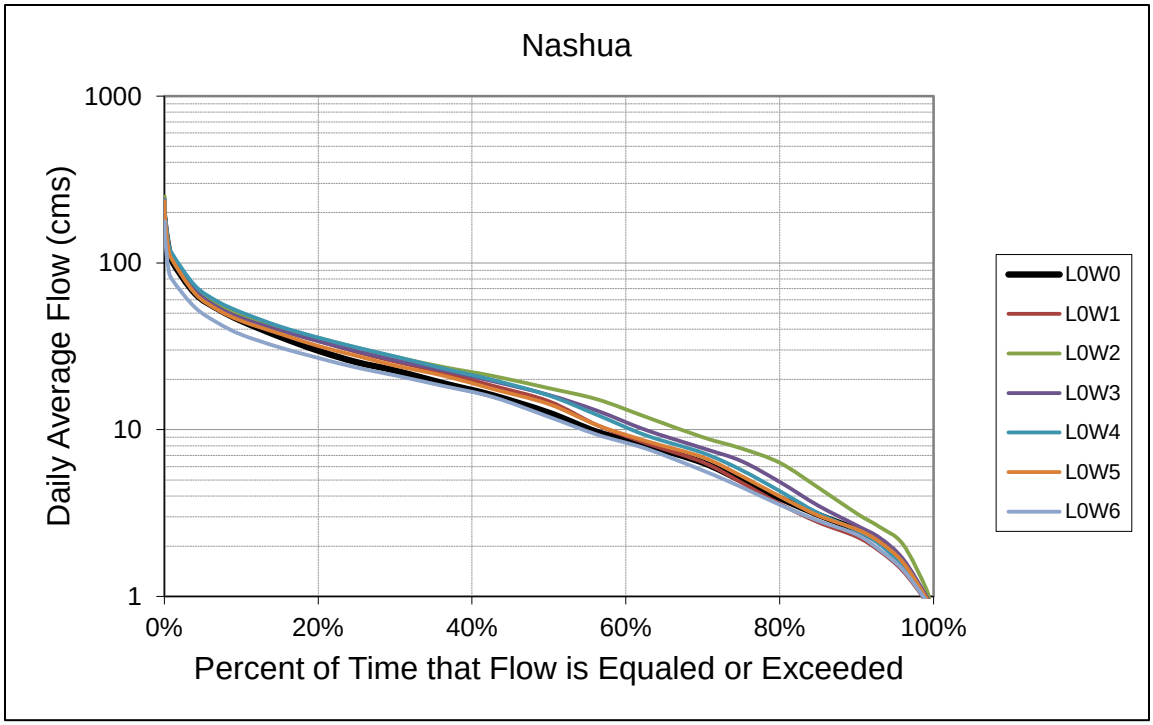


Figure 220. Flow duration, Nashua River (SWAT)

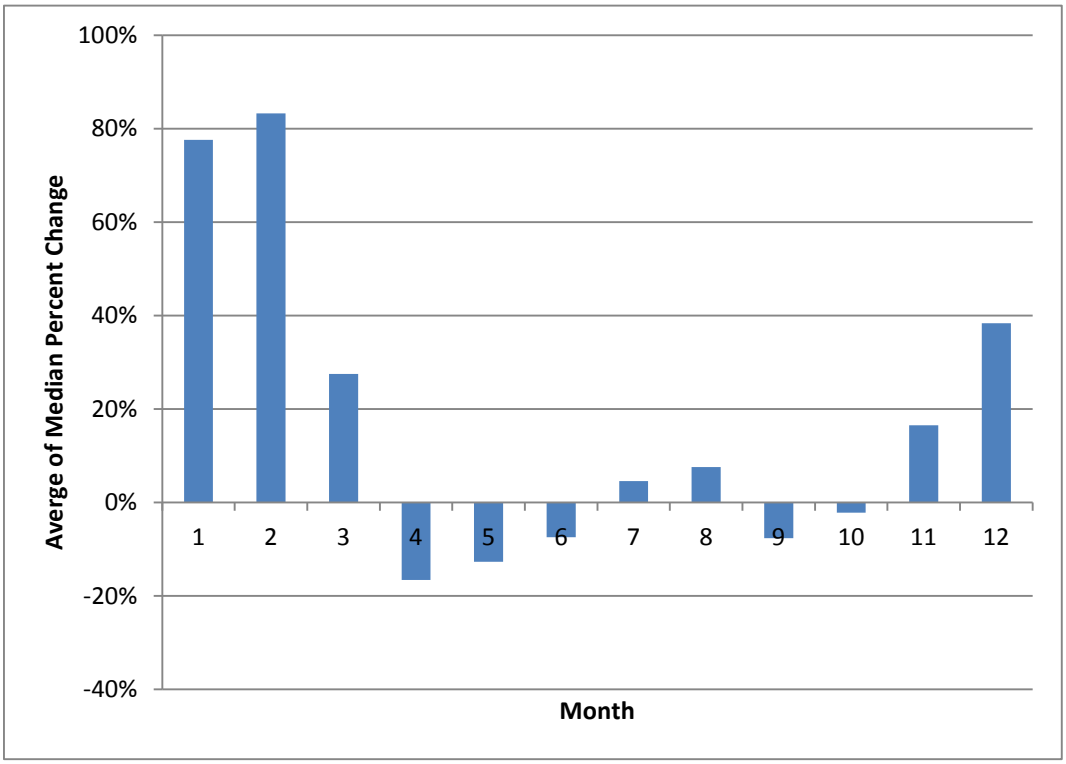


Figure 221. Average of median percent change in flow; NARCCAP Scenarios W1-W6 at all stations, New England Coastal basins (SWAT)

Lake Pontchartrain Basin

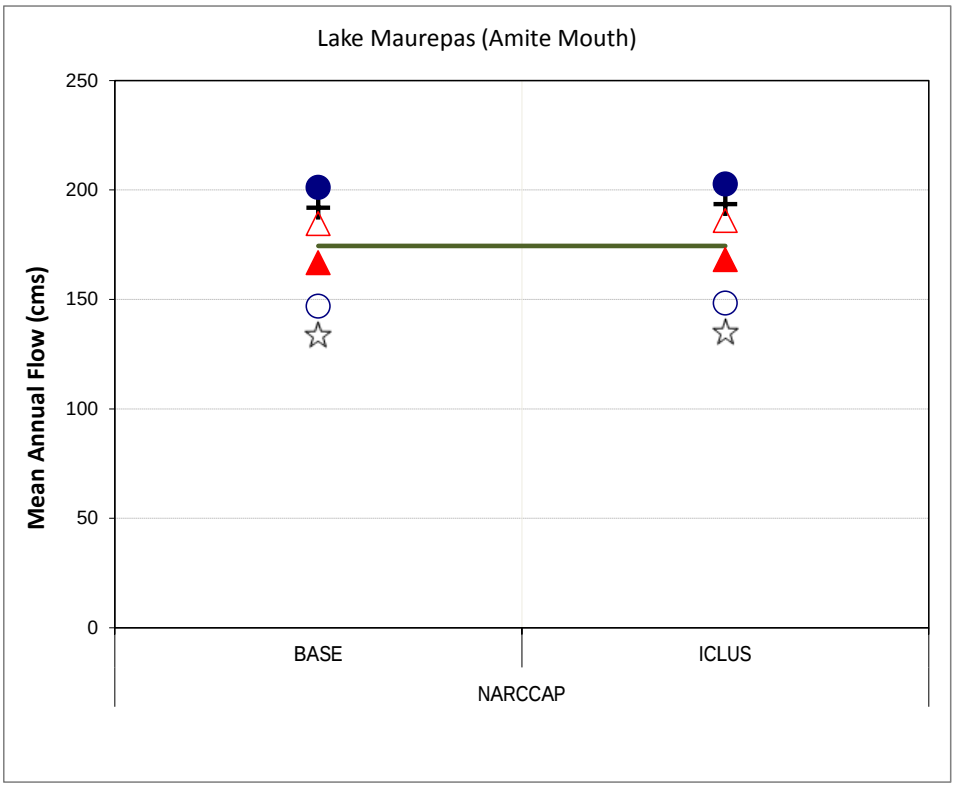


Figure 222. Mean annual flow (cms), mouth of the Amite River at Lake Maurepas (SWAT)

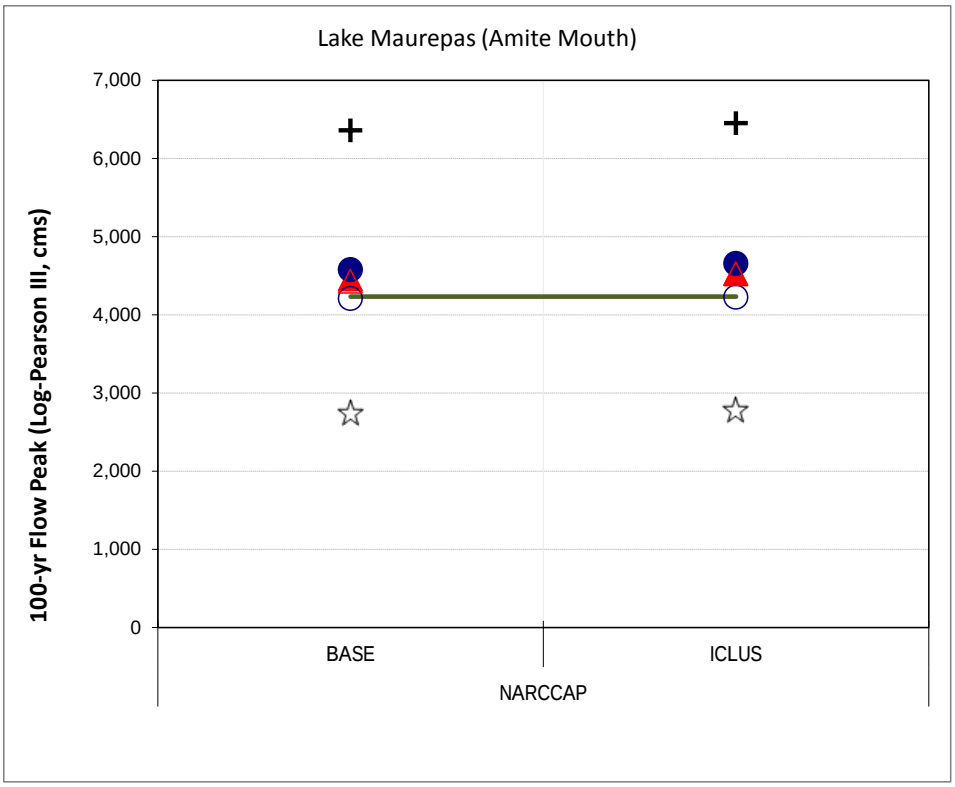


Figure 223. 100-yr Flow Peak (Log-Pearson III, cms), mouth of the Amite River at Lake Maurepas (SWAT)

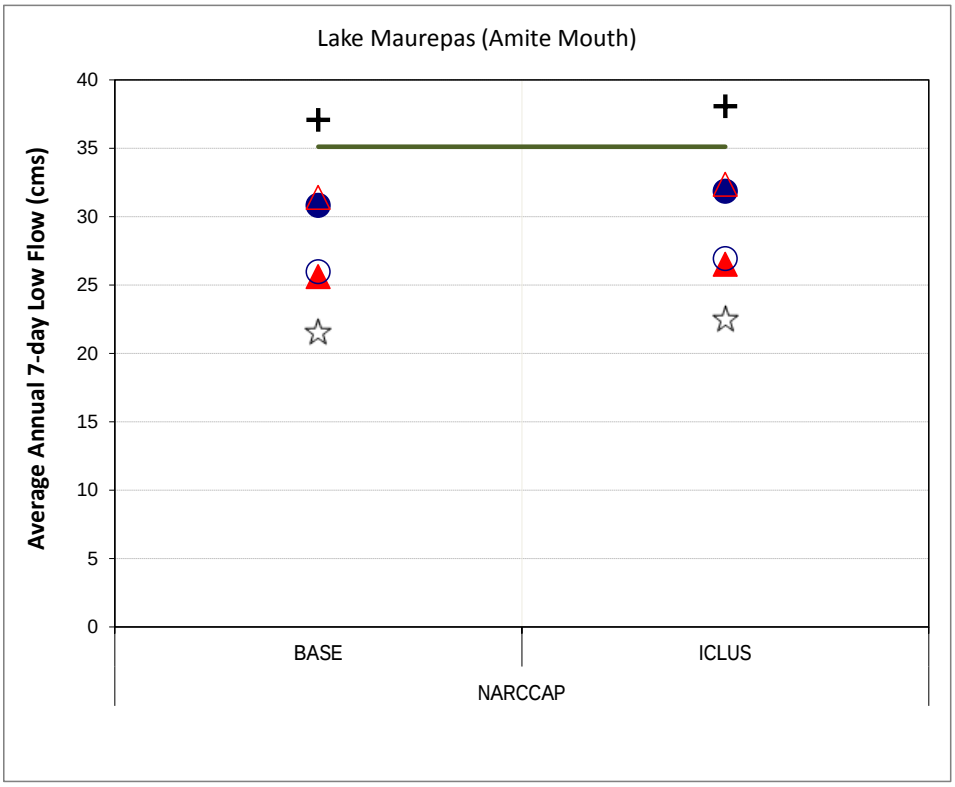


Figure 224. Average Annual 7-day Low Flow (cms), mouth of the Amite River at Lake Maurepas (SWAT)

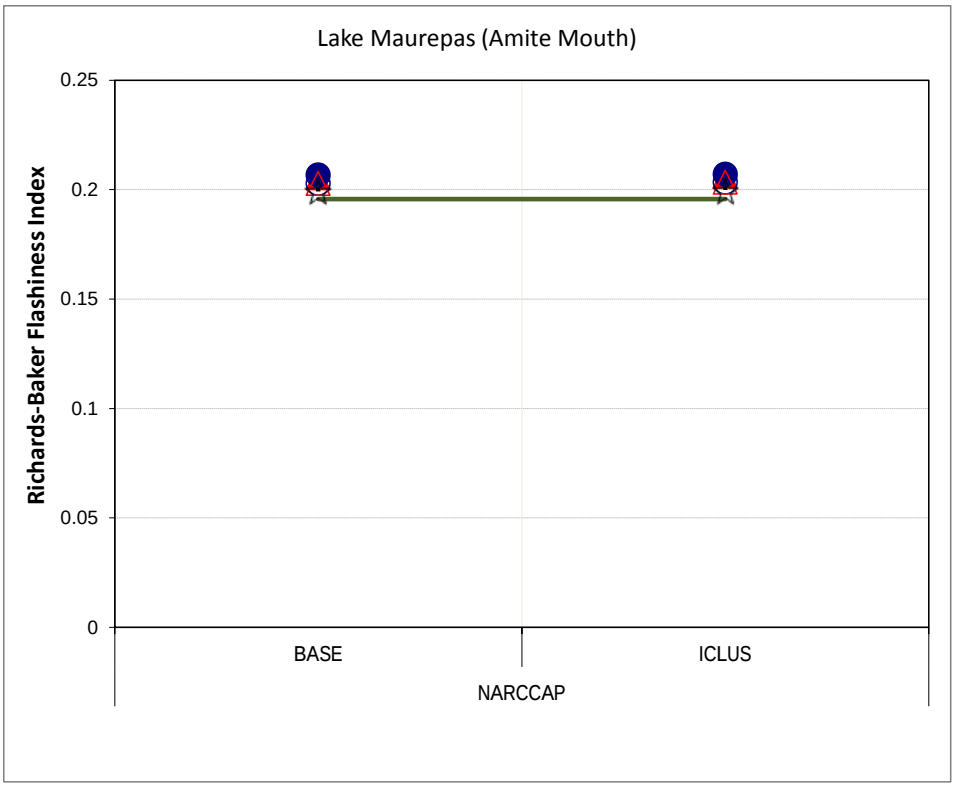


Figure 225. Richards-Baker Flashiness Index, Average Annual 7-day Low Flow (cms), mouth of the Amite River at Lake Maurepas (SWAT)

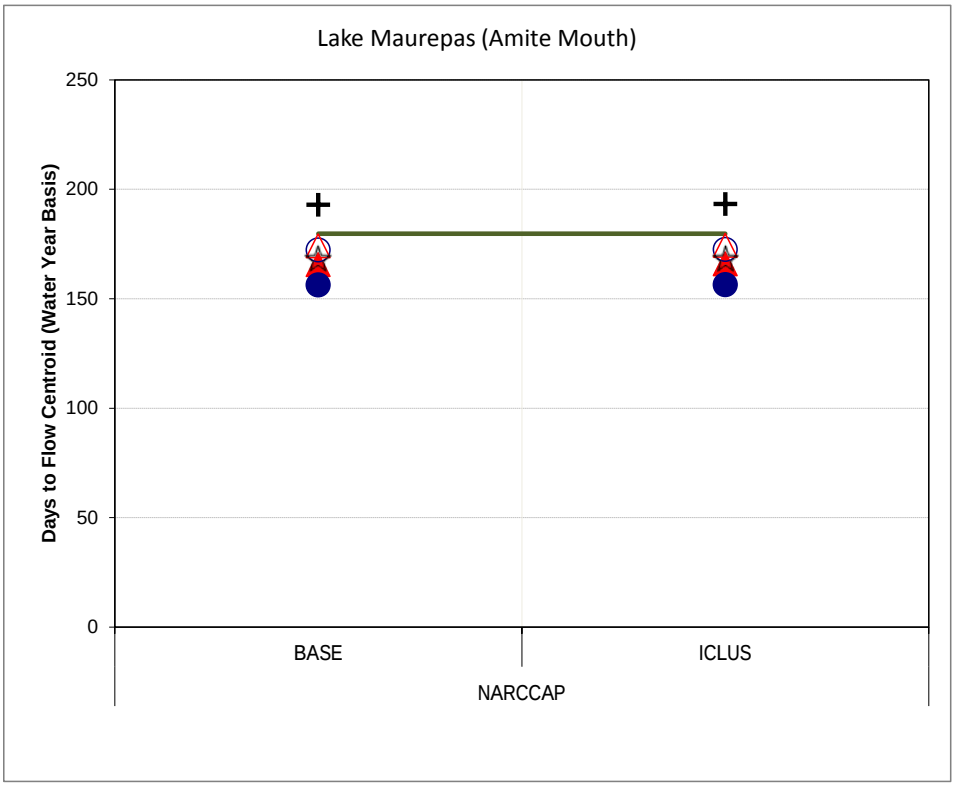


Figure 226. Days to Flow Centroid (Water Year Basis), mouth of the Amite River at Lake Maurepas (SWAT)

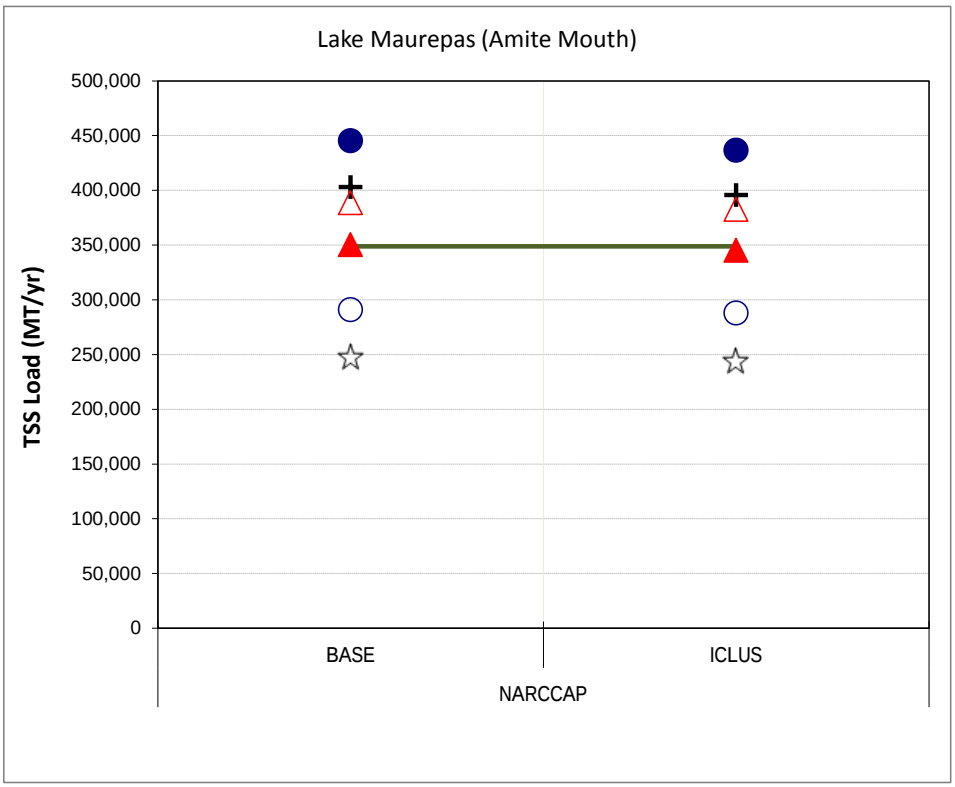


Figure 227. TSS Load (MT/yr), mouth of the Amite River at Lake Maurepas (SWAT)

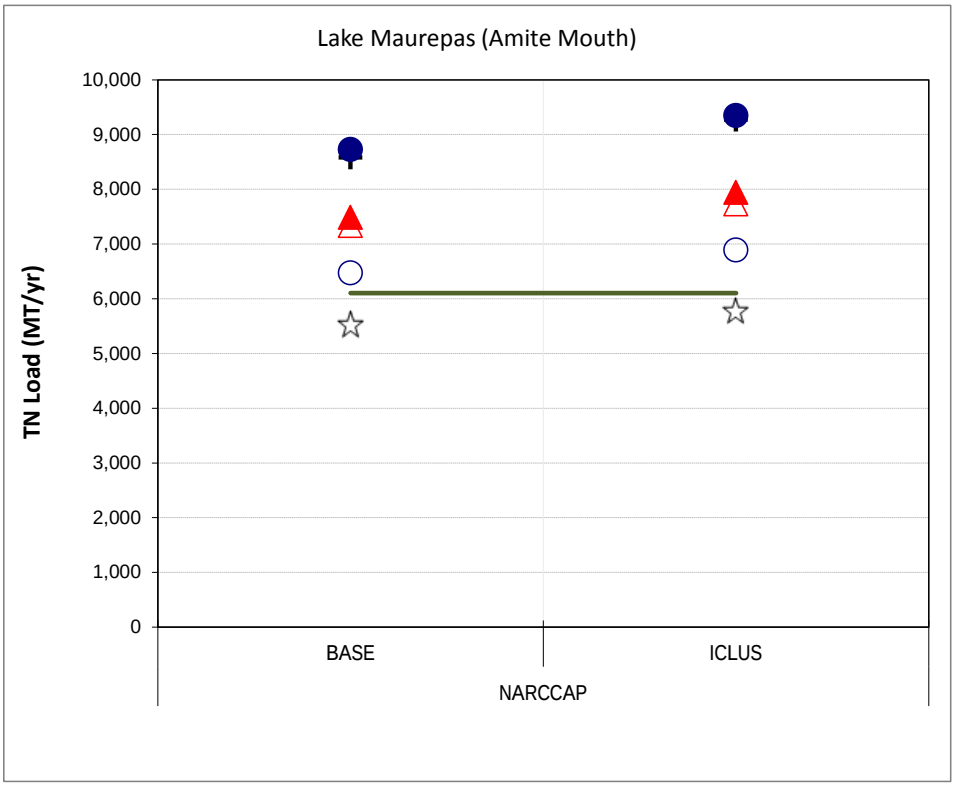


Figure 228. TN Load (MT/yr), mouth of the Amite River at Lake Maurepas (SWAT)

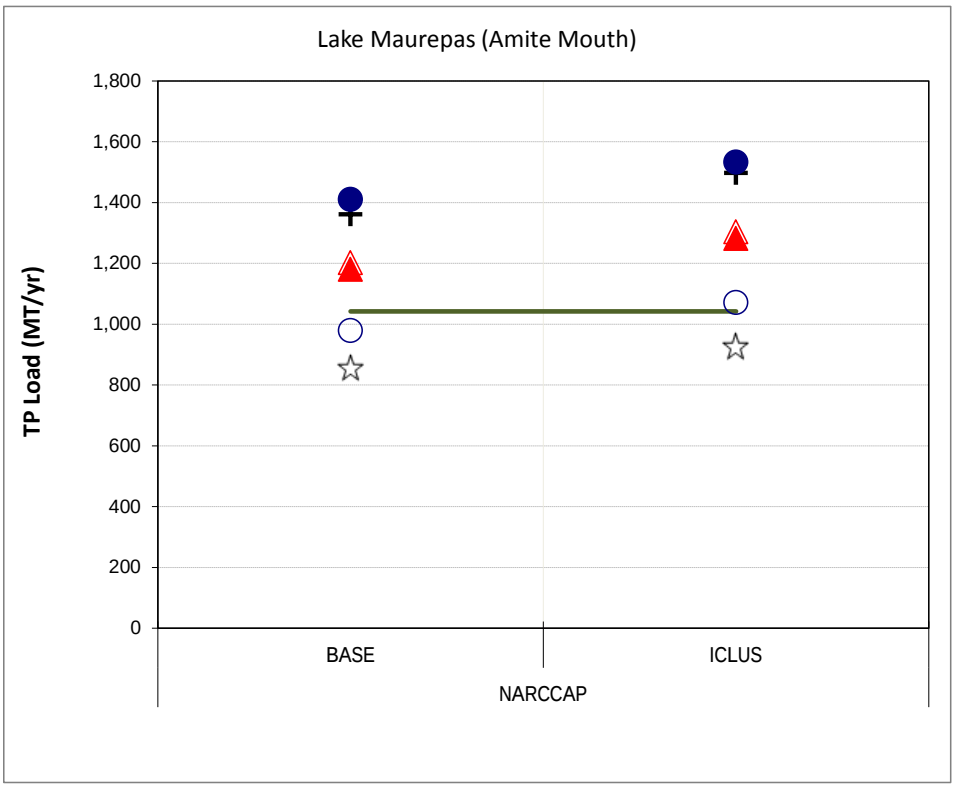


Figure 229. TP Load (MT/yr), mouth of the Amite River at Lake Maurepas (SWAT)

Table 9. Summary of range of change relative to existing conditions for NARCCAP dynamically downscaled scenarios, Neuse-Tar watershed SWAT model

	Results without LU change				Results with LU change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
Amite HUC 08070202								
Flow	-23.29%	2.10%	-1.82%	16.57%	-23.15%	2.10%	-1.81%	16.43%
TSS	-29.86%	7.74%	1.98%	30.26%	-29.85%	7.63%	1.83%	29.43%
TN	-11.70%	21.07%	21.52%	49.95%	-10.61%	23.62%	25.14%	54.81%
TP	-12.27%	15.19%	16.20%	41.72%	-10.96%	17.45%	19.30%	46.13%
Tickfaw HUC 08070203								
Flow	-24.75%	3.41%	-1.67%	15.82%	-24.71%	3.40%	-1.66%	15.79%
TSS	-26.07%	5.13%	0.10%	20.01%	-25.91%	4.91%	-0.01%	19.80%
TN	-20.05%	32.79%	28.86%	60.83%	-22.31%	32.67%	30.15%	65.51%
TP	-26.81%	17.23%	12.52%	39.32%	-27.78%	17.23%	13.31%	41.83%

Lake Maurepas (Amite Mouth) HUC 08070204								
Flow	-23.02%	0.74%	-1.98%	15.38%	-22.87%	0.71%	-1.96%	15.27%
TSS	-28.77%	5.89%	1.57%	27.60%	-28.67%	5.68%	1.33%	26.78%
TN	-9.04%	21.42%	20.56%	42.96%	-8.62%	23.61%	23.48%	47.41%
TP	-17.45%	14.34%	11.87%	35.37%	-16.30%	16.20%	14.15%	37.83%
Tangipahoa R at Robert (gage 07375500)								
Flow	-20.43%	3.61%	-0.44%	14.97%	-20.43%	3.59%	-0.45%	14.96%
TSS	-26.21%	9.45%	3.89%	26.57%	-26.11%	9.61%	4.17%	27.03%
TN	-6.20%	36.55%	26.90%	52.22%	-6.27%	39.25%	28.94%	55.30%
TP	-14.39%	29.94%	20.14%	46.75%	-14.44%	32.14%	21.73%	48.91%
Tchefuncte HUC 08090201								
Flow	-24.68%	-0.53%	-4.23%	15.81%	-24.58%	-0.70%	-4.30%	15.58%
TSS	-25.36%	0.12%	-2.99%	18.15%	-24.63%	-0.40%	-3.27%	16.74%
TN	-14.60%	12.84%	11.39%	32.27%	-16.77%	13.50%	12.23%	36.97%
TP	-19.34%	5.16%	3.52%	24.08%	-19.97%	6.36%	4.76%	28.24%
Tickfaw R at Holden (gage 07376000)								
Flow	-22.01%	7.63%	2.06%	21.82%	-22.01%	7.63%	2.06%	21.82%
TSS	-29.60%	15.24%	9.61%	49.72%	-29.60%	15.24%	9.61%	49.69%
TN	-9.61%	17.93%	12.33%	29.33%	-9.56%	17.98%	12.38%	29.41%
TP	-18.53%	11.44%	5.48%	24.36%	-18.52%	11.48%	5.51%	24.42%
Amite R nr Denham Sprs (gage 07378500)								
Flow	-22.67%	3.18%	-1.05%	16.97%	-22.60%	3.16%	-1.05%	16.90%
TSS	-30.85%	4.21%	-1.11%	24.24%	-30.64%	4.33%	-0.88%	24.28%
TN	-10.47%	16.89%	15.87%	43.35%	-8.72%	18.39%	18.66%	47.57%
TP	-8.75%	13.46%	14.21%	39.65%	-6.61%	15.27%	17.41%	44.42%

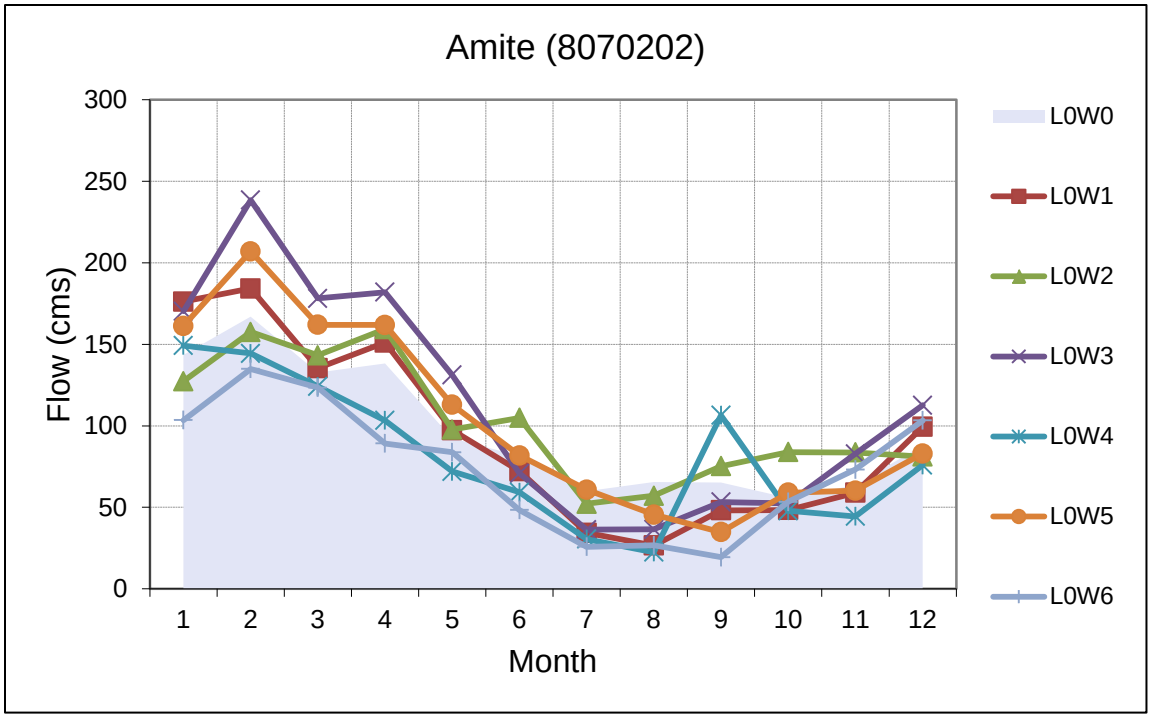


Figure 230. Monthly average flows, Amite River (SWAT)

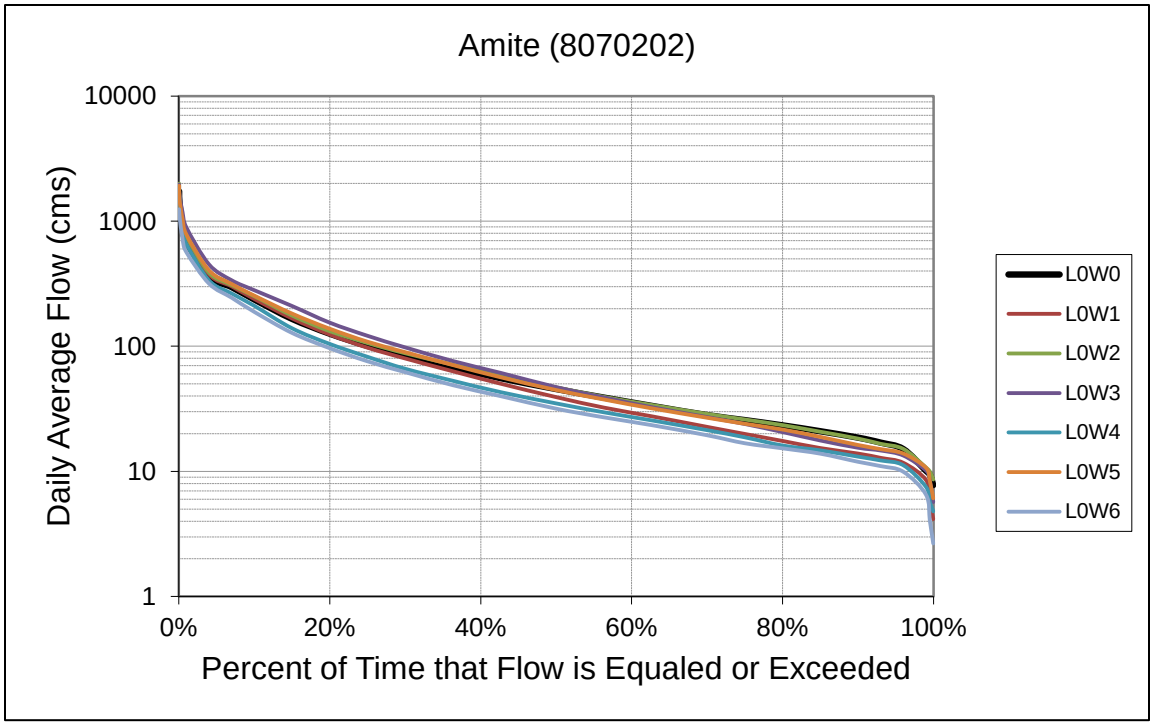


Figure 231. Flow duration, Amite River (SWAT)

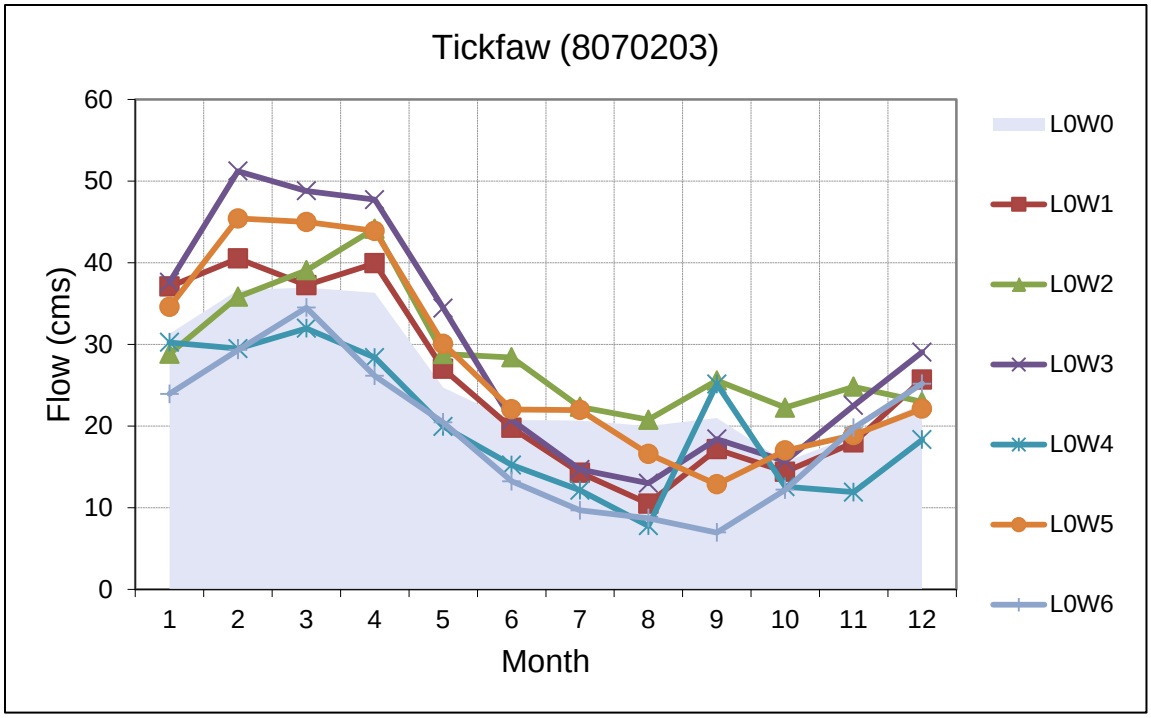


Figure 232. Monthly average flows, Tickfaw River (SWAT)

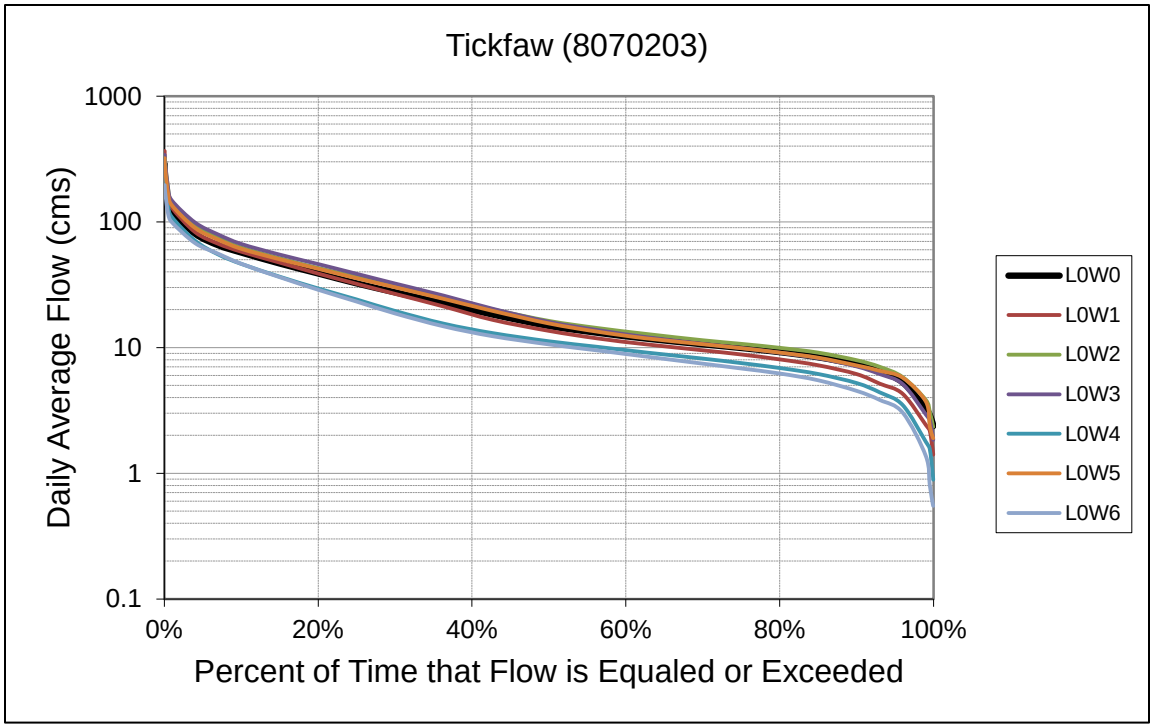


Figure 233. Flow duration, Tickfaw River (SWAT)

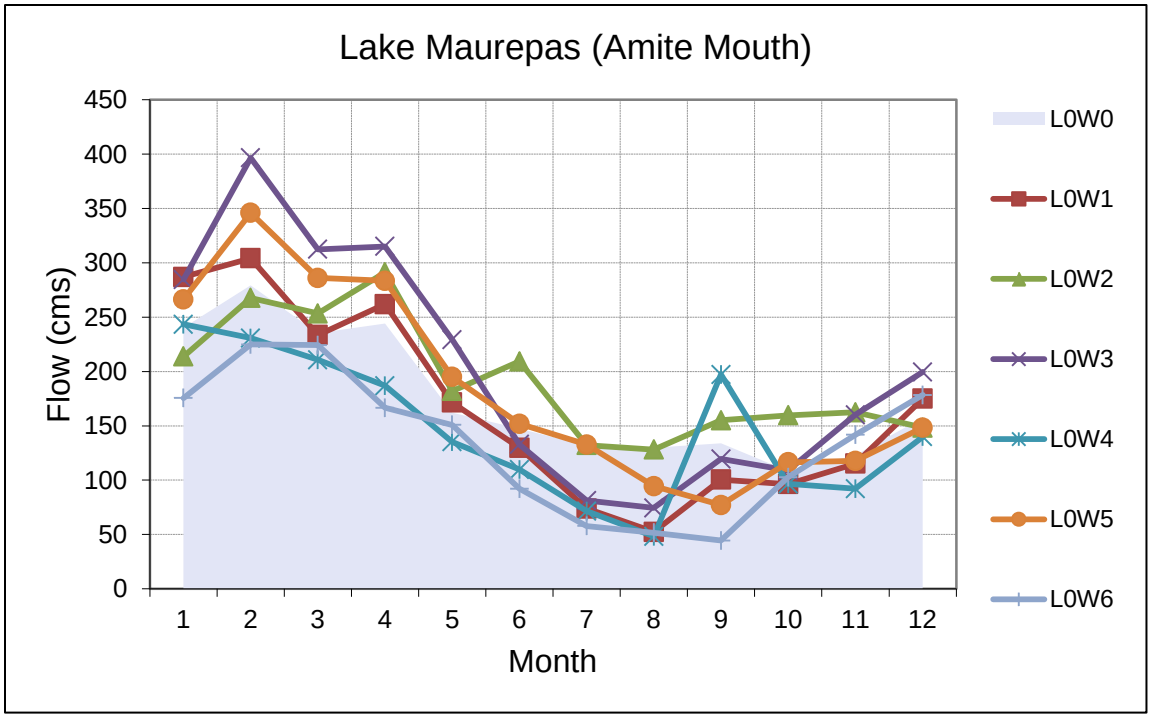


Figure 234. Monthly average flows, Amite River Mouth (SWAT)

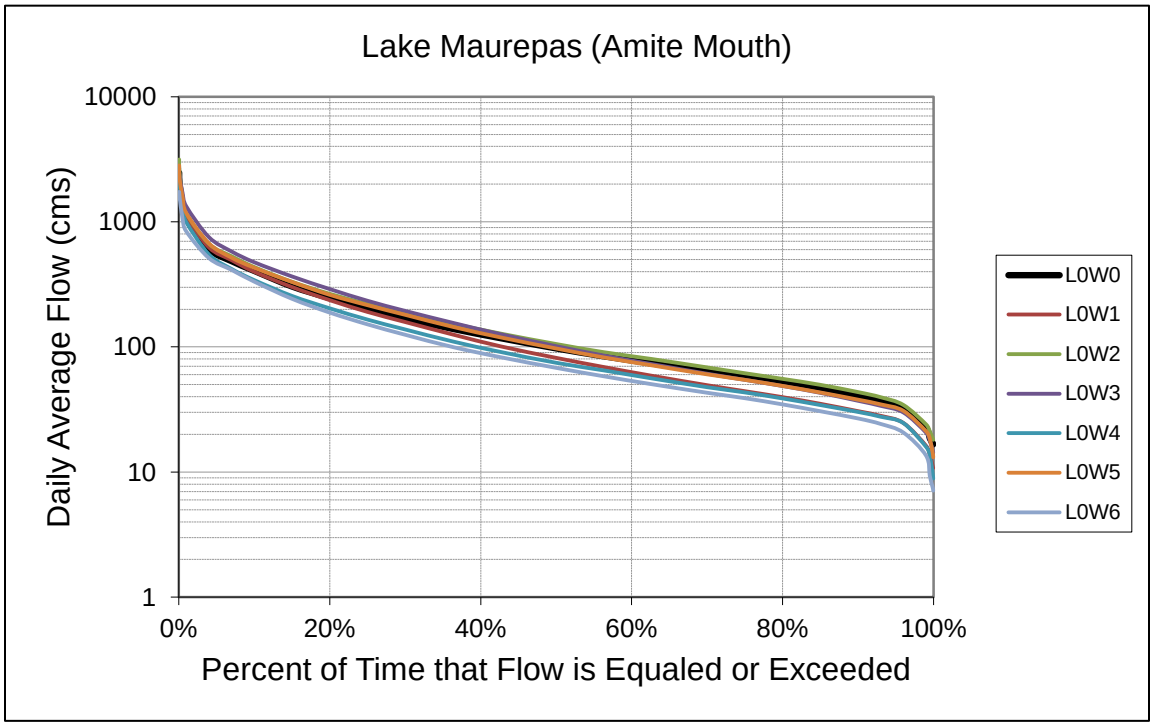


Figure 235. Flow duration, Amite River Mouth (SWAT)

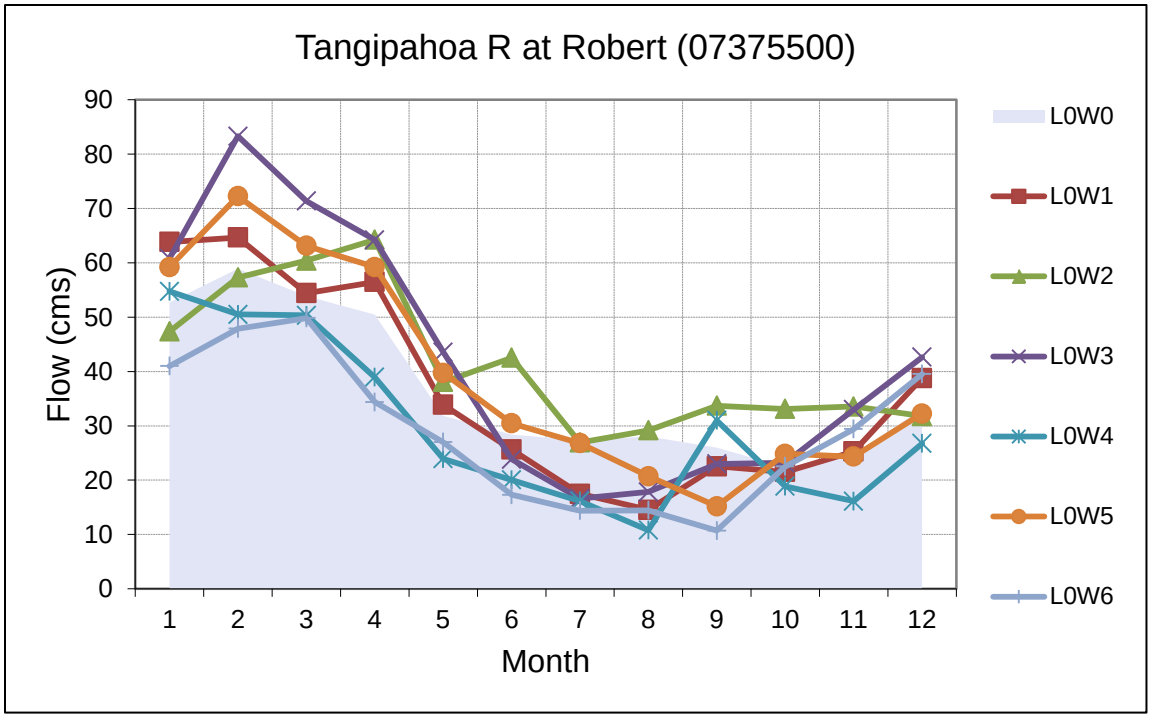


Figure 236. Monthly average flows, Tangipahoa River at Robert (SWAT)

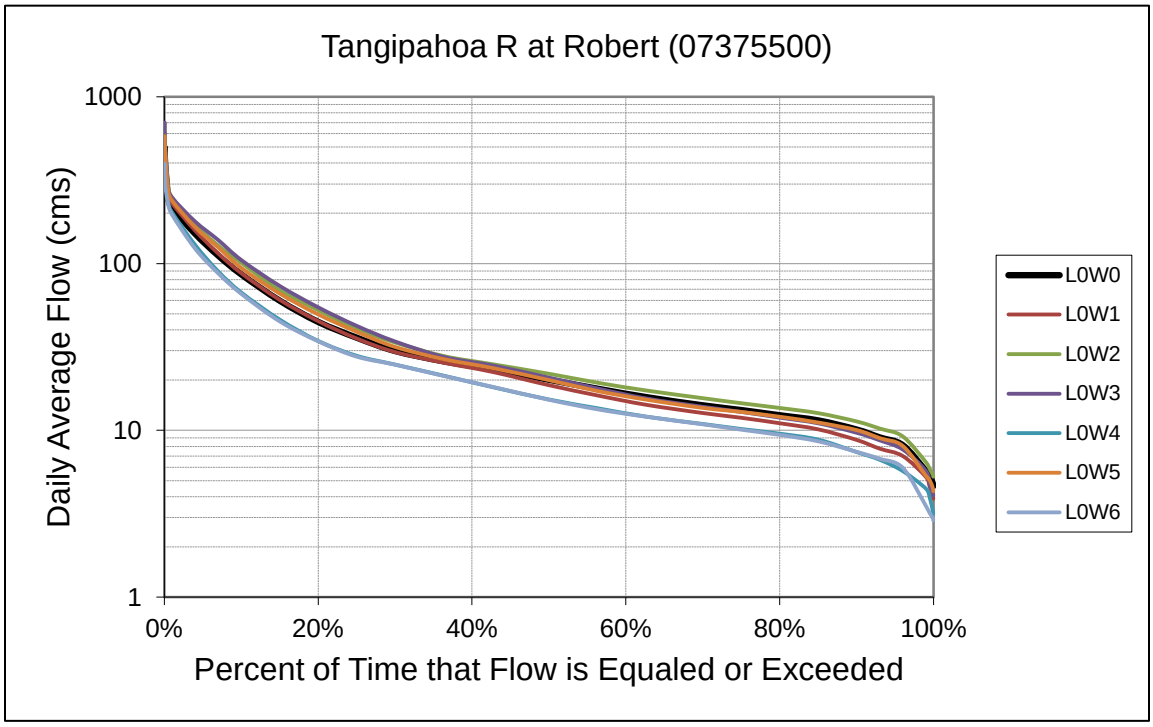


Figure 237. Flow duration, Tangipahoa River at Robert (SWAT)

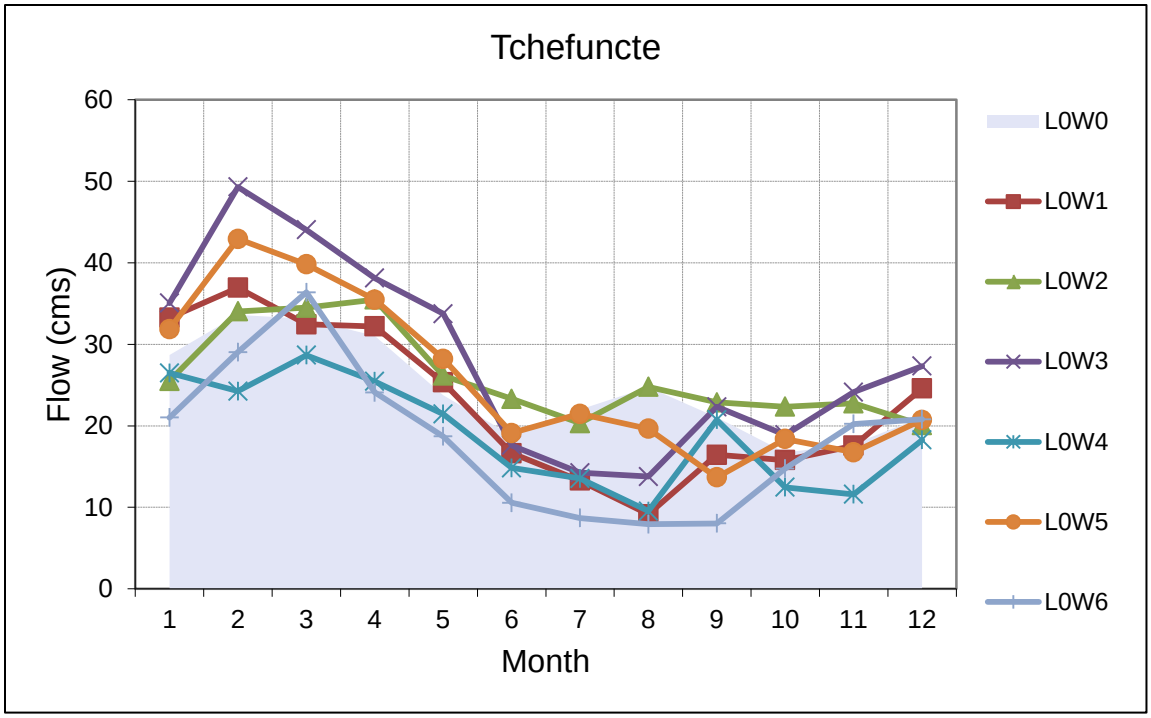


Figure 238. Monthly average flows, Tchefuncte River (SWAT)

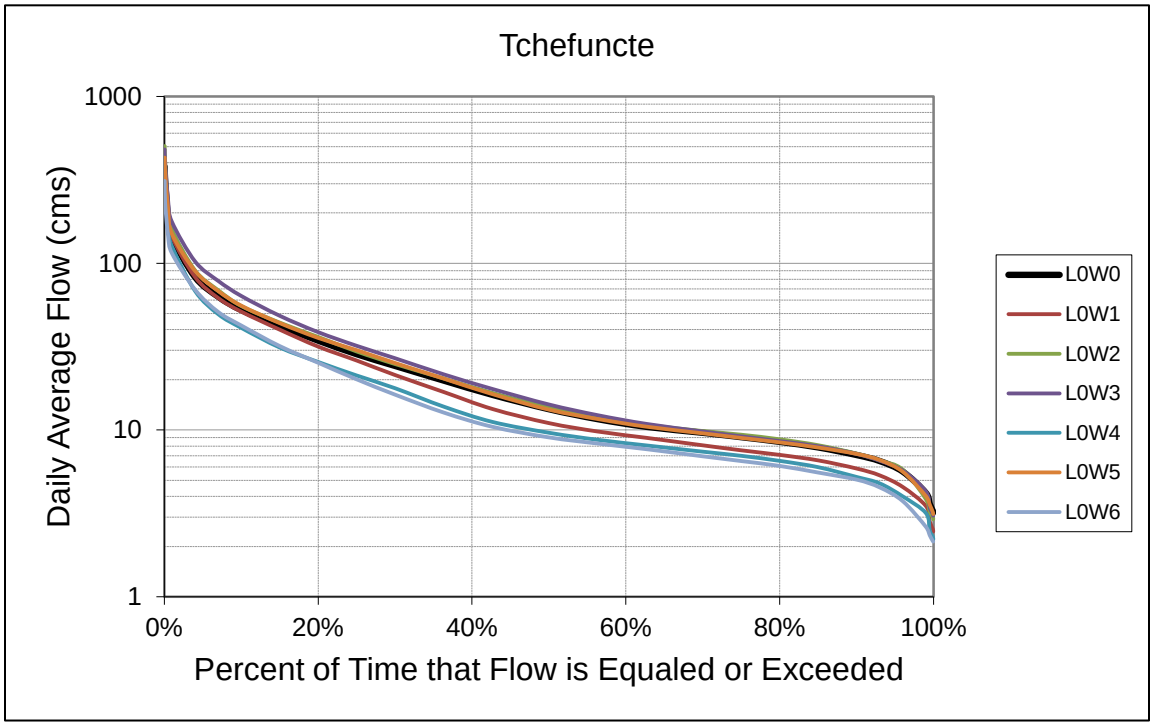


Figure 239. Flow duration, Tchefuncte River (SWAT)

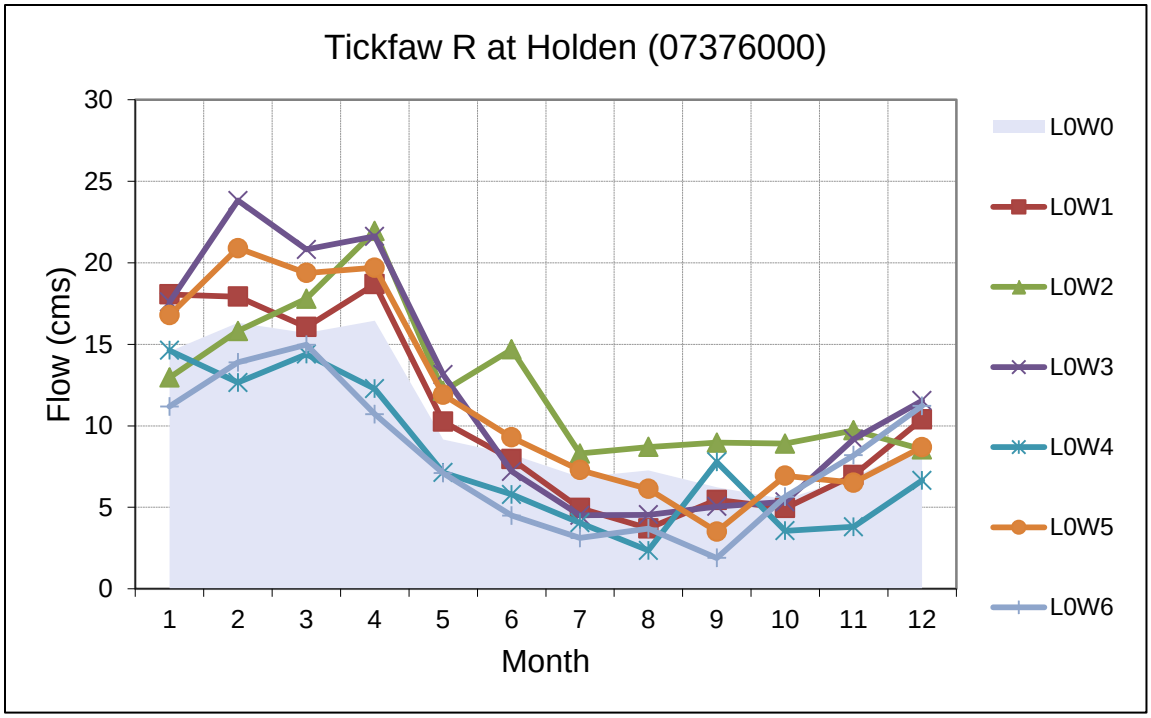


Figure 240. Monthly average flows, Tickfaw River at Holden (SWAT)

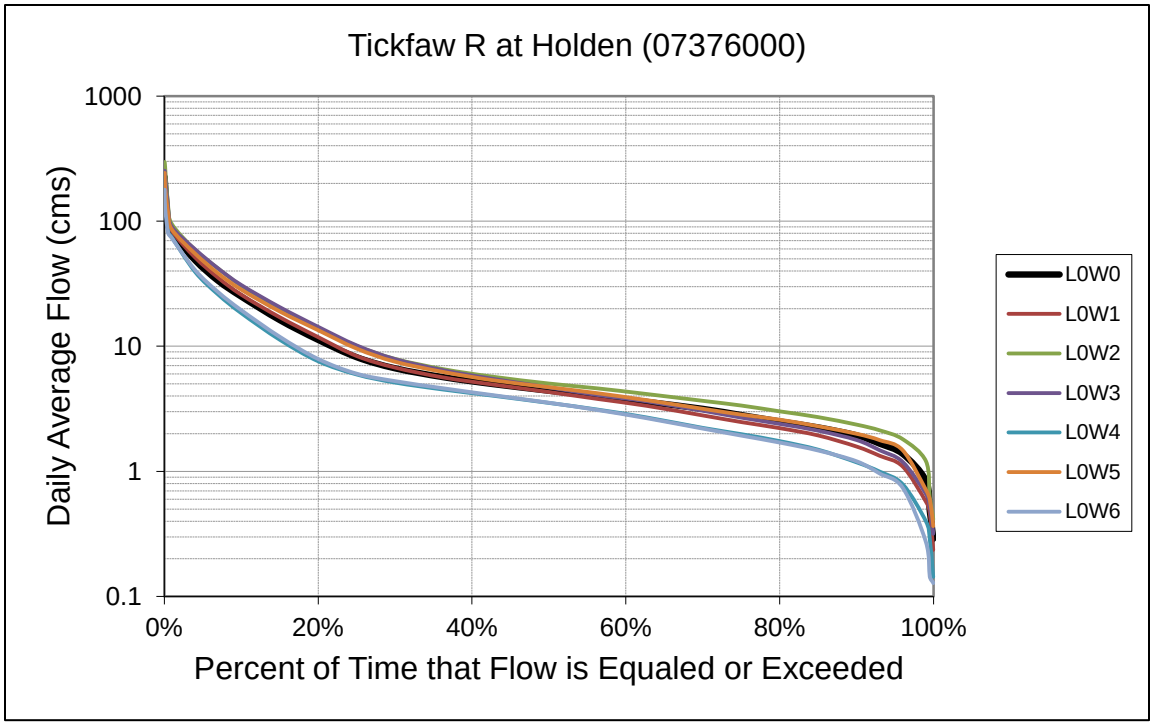


Figure 241. Flow duration, Tickfaw River at Holden (SWAT)

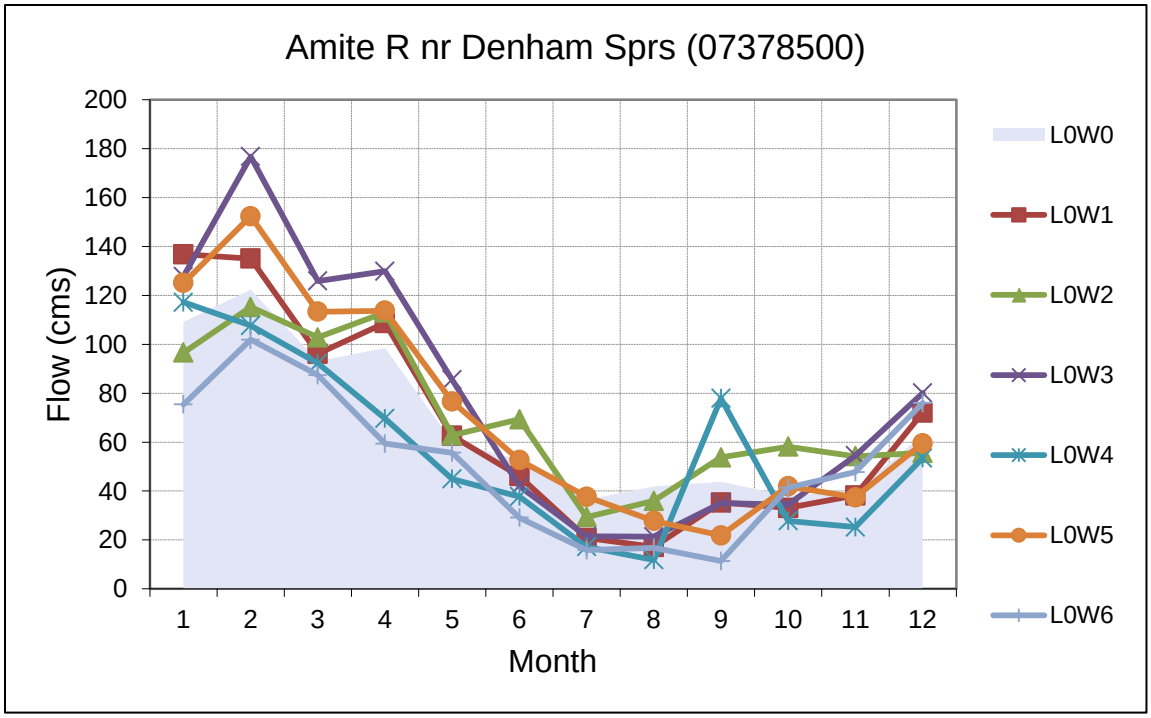


Figure 242. Monthly average flows, Amite River near Denham Springs (SWAT)

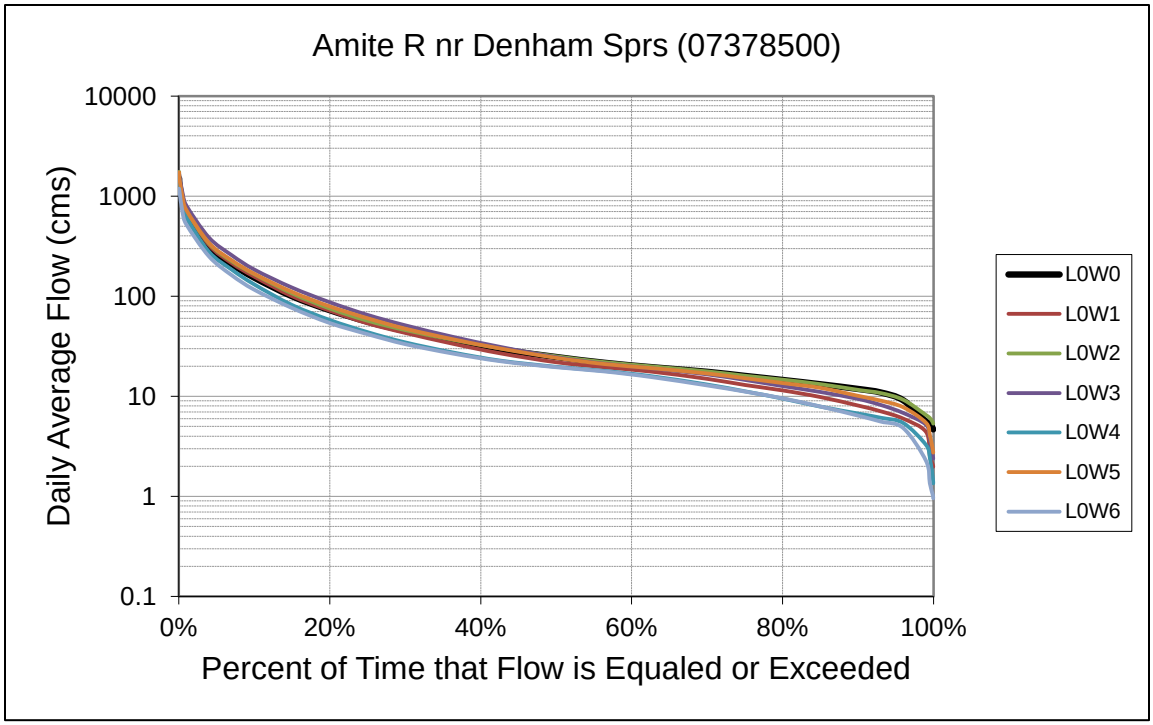


Figure 243. Flow duration, Amite River near Denham Springs (SWAT)

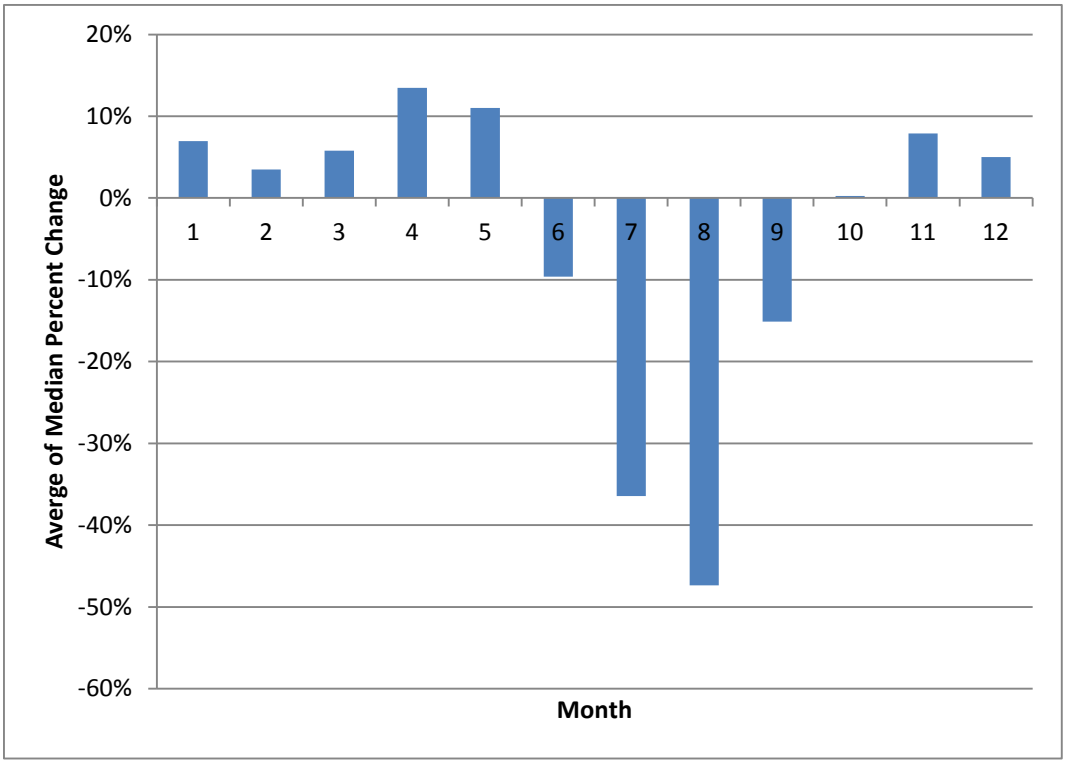


Figure 244. Average of median percent change in flow; NARCCAP Scenarios W1-W6 at all stations, Lake Pontchartrain watershed (SWAT)

Rio Grande Valley Basin

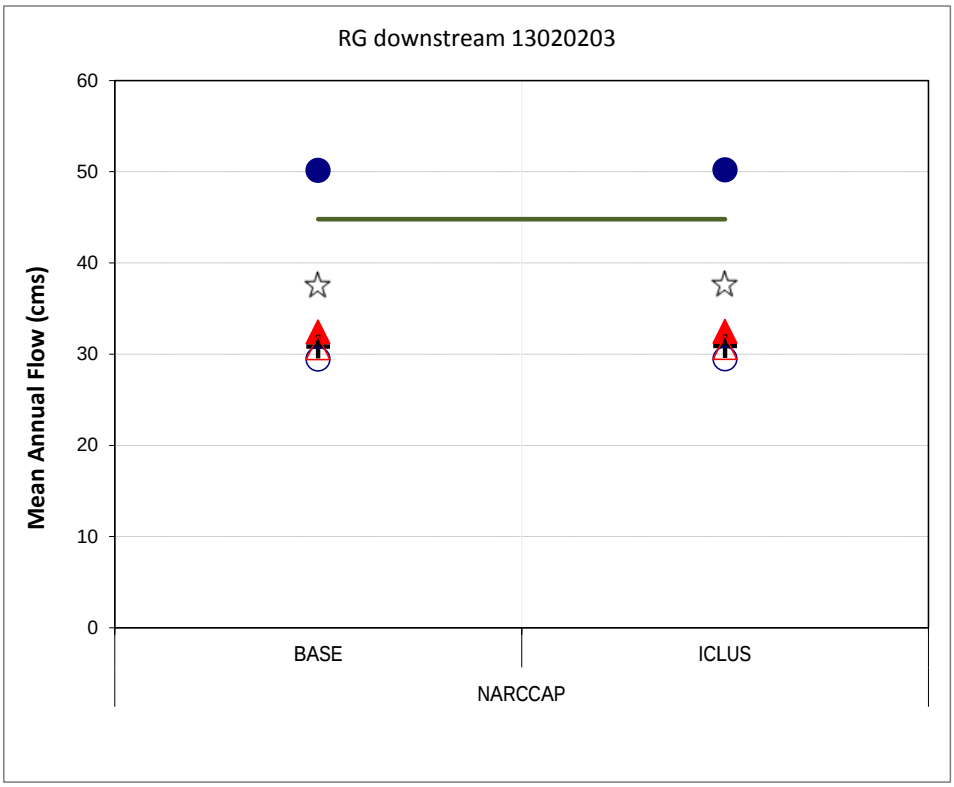


Figure 245. Mean annual flow (cms), Rio Grande downstream (SWAT)

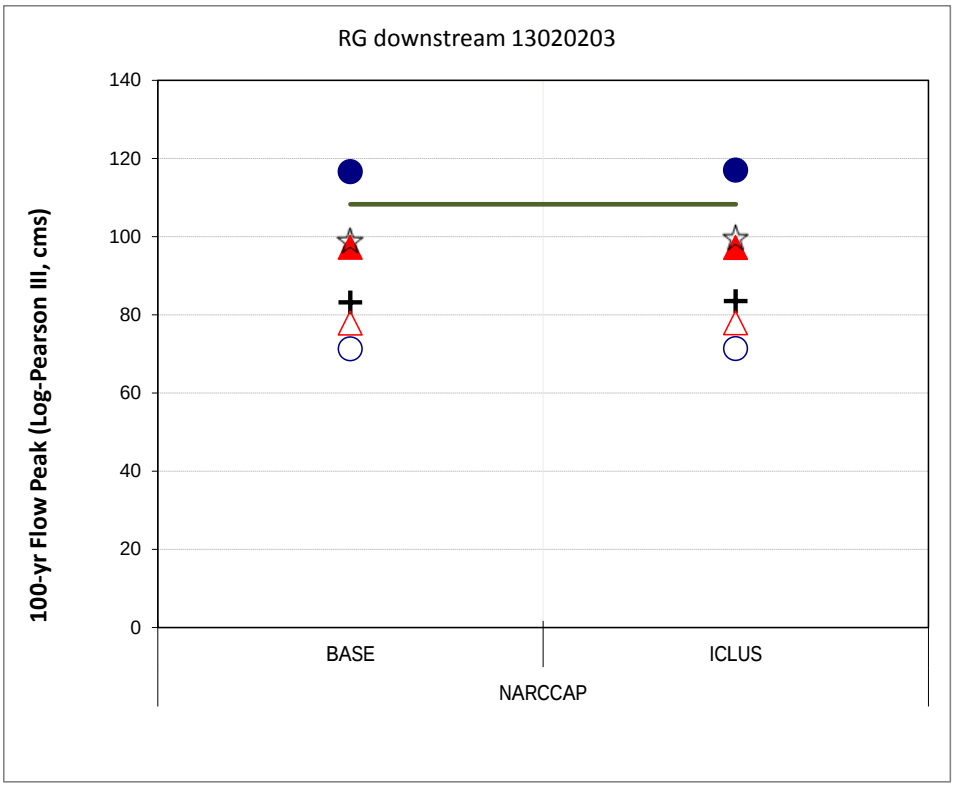


Figure 246. 100-yr Flow Peak (Log-Pearson III, cms), Rio Grande downstream (SWAT)

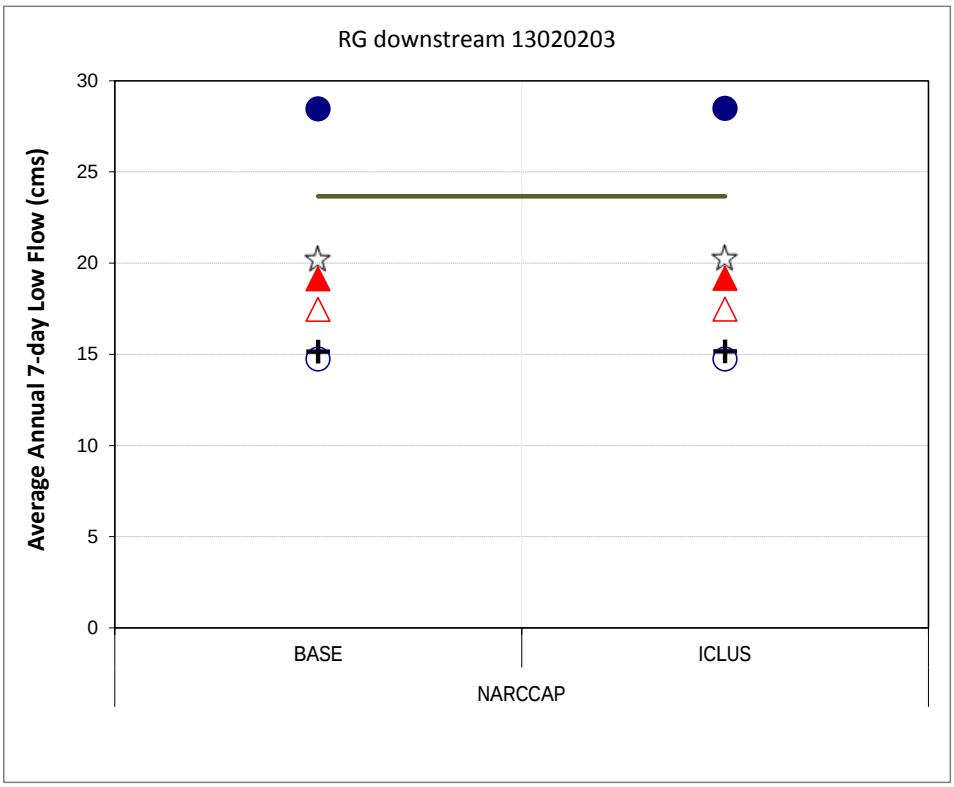


Figure 247. Average Annual 7-day Low Flow (cms), Rio Grande downstream (SWAT)

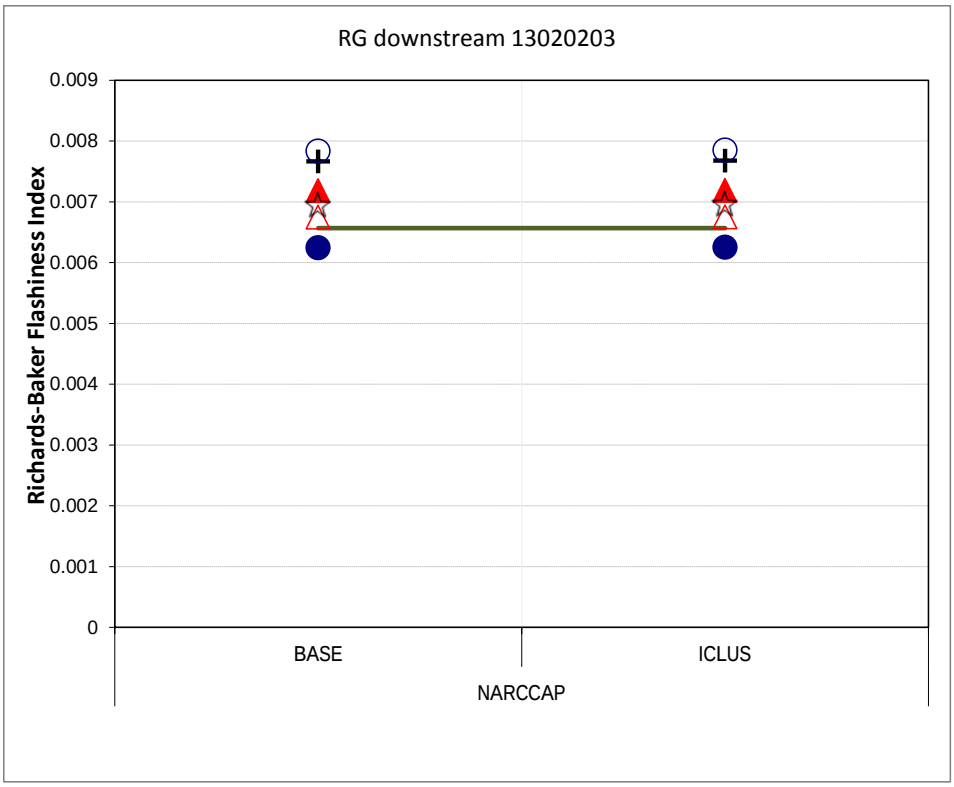


Figure 248. Richards-Baker Flashiness Index, Average Annual 7-day Low Flow (cms), Rio Grande downstream (SWAT)

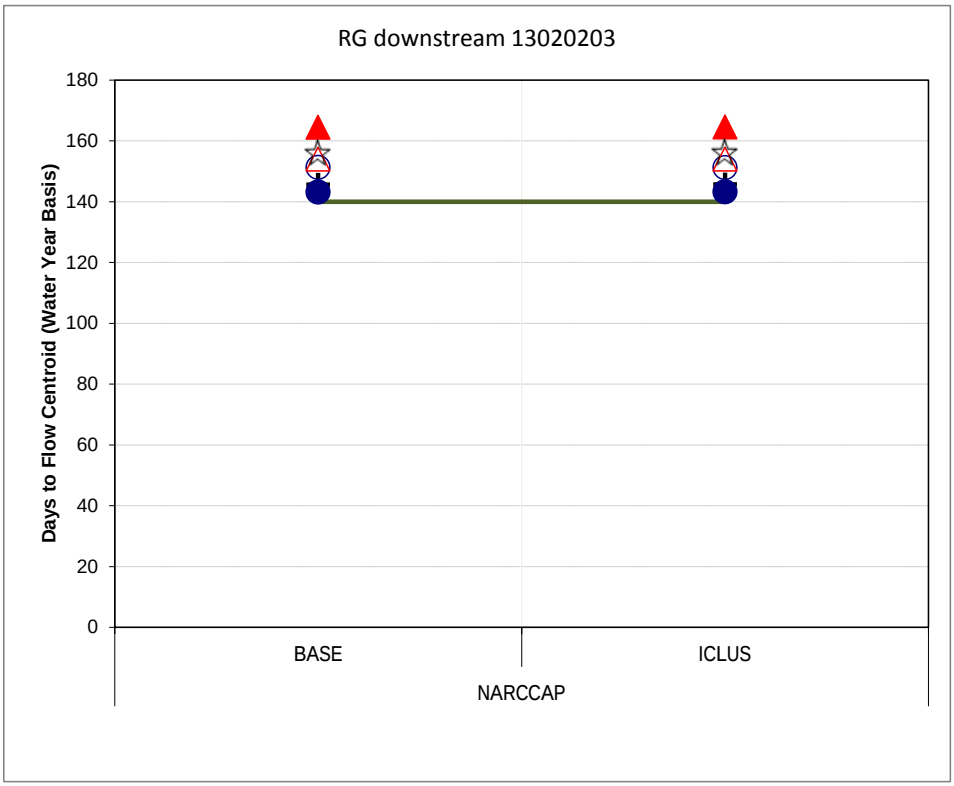


Figure 249. Days to Flow Centroid (Water Year Basis), Rio Grande downstream (SWAT)

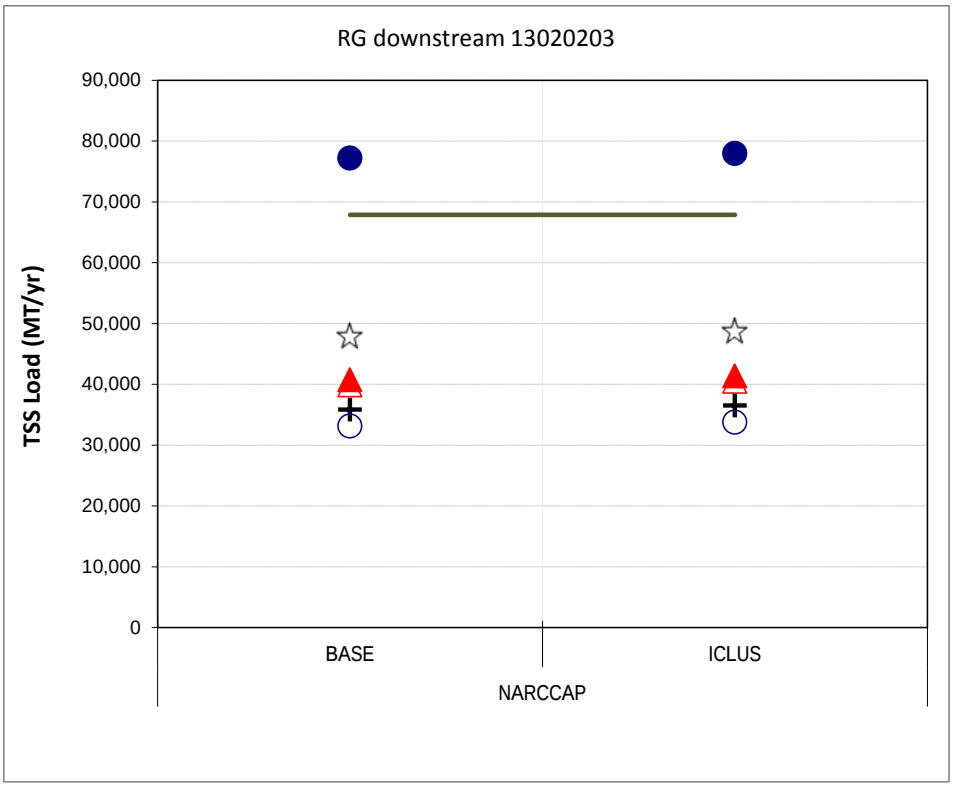


Figure 250. TSS Load (MT/yr), Rio Grande downstream (SWAT)

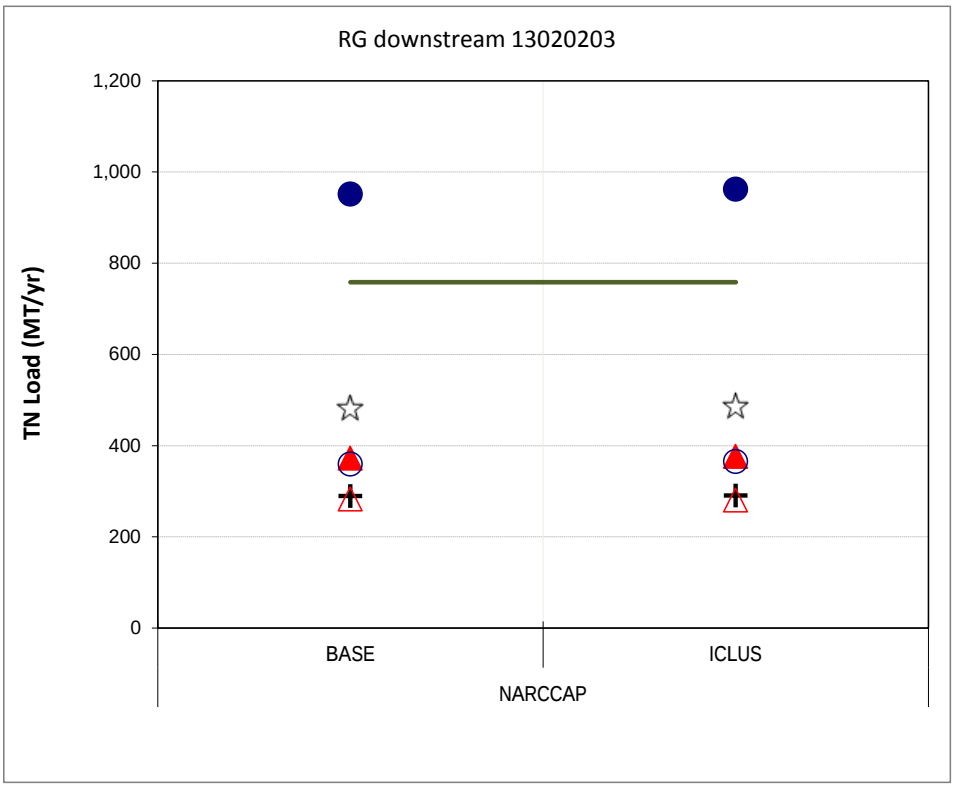


Figure 251. TN Load (MT/yr), Rio Grande downstream (SWAT)

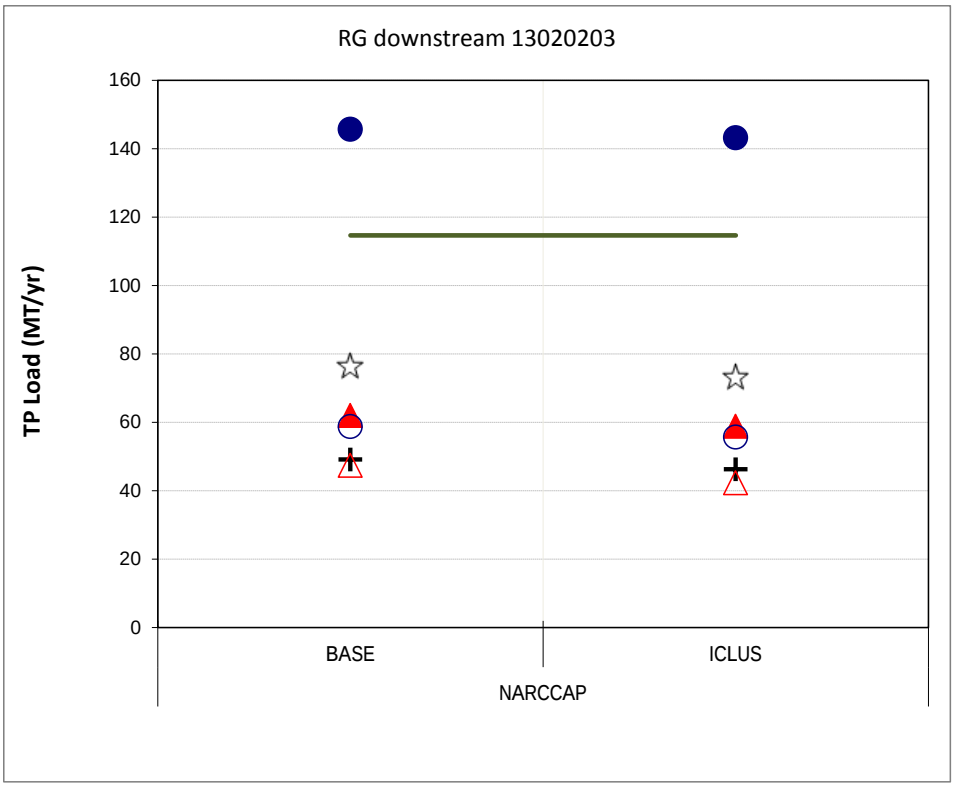


Figure 252. TP Load (MT/yr), Rio Grande downstream (SWAT)

Table 10. Summary of range of change relative to existing conditions for NARCCAP dynamically downscaled scenarios, Rio Grande Valley basin SWAT model

	Results without LU change				Results with LU change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
Rio Grande Headwaters HUC 13010001								
Flow	-41.70%	-35.70%	-29.64%	9.07%	-41.70%	-35.70%	-29.64%	9.07%
TSS	-63.67%	-50.43%	-42.25%	15.46%	-63.66%	-50.43%	-42.25%	15.46%
TN	-41.87%	-29.09%	-24.31%	5.88%	-41.87%	-29.10%	-24.31%	5.88%
TP	-52.61%	-32.42%	-29.60%	5.96%	-52.58%	-32.41%	-29.59%	5.96%
Alamosa-Trinchera HUC 13010002								
Flow	-40.07%	-36.14%	-27.91%	9.87%	-40.07%	-36.15%	-27.91%	9.87%
TSS	-57.38%	-45.99%	-38.83%	12.28%	-57.33%	-45.97%	-38.80%	12.26%
TN	-71.34%	-58.93%	-41.48%	51.02%	-73.16%	-59.77%	-41.57%	55.40%
TP	-61.33%	-50.08%	-34.79%	46.04%	-65.50%	-52.36%	-36.08%	51.65%
Saguache HUC 13010004								
Flow	-42.18%	-36.97%	-29.84%	8.55%	-42.18%	-36.97%	-29.84%	8.55%
TSS	-62.77%	-38.71%	-36.89%	12.34%	-62.69%	-38.67%	-36.86%	12.32%
TN	-34.54%	-21.18%	-19.94%	4.40%	-34.52%	-21.18%	-19.93%	4.40%
TP	-23.33%	-11.96%	-12.07%	4.13%	-23.38%	-12.10%	-12.14%	4.11%
Conejos HUC13010005								
Flow	-45.38%	-34.01%	-27.42%	9.88%	-45.38%	-34.01%	-27.42%	9.87%
TSS	-42.45%	-35.94%	-32.35%	-10.53%	-39.84%	-34.05%	-30.27%	-9.05%
TN	-78.09%	-60.90%	-45.43%	1.30%	-78.04%	-61.06%	-45.56%	0.42%
TP	-70.37%	-46.54%	-37.75%	8.32%	-70.40%	-46.86%	-37.95%	8.49%
Rio Grande at Otowi Br (Upper RG – HUC 13020101)								
Flow	-38.59%	-33.16%	-24.68%	12.64%	-38.60%	-33.17%	-24.69%	12.64%
TSS	-54.20%	-43.49%	-35.54%	14.20%	-54.11%	-43.43%	-35.48%	14.17%
TN	-63.74%	-51.99%	-40.58%	22.83%	-64.49%	-51.84%	-40.21%	25.09%
TP	-55.72%	-44.23%	-34.55%	22.51%	-59.91%	-45.38%	-35.22%	26.21%
Rio Chama HUC13020102								
Flow	-37.82%	-29.36%	-22.58%	19.86%	-37.83%	-29.37%	-22.58%	19.86%
TSS	-25.35%	-18.19%	-12.24%	22.72%	-25.34%	-18.19%	-12.25%	22.65%
TN	-48.02%	-35.10%	-27.69%	16.32%	-47.94%	-35.11%	-27.72%	16.26%
TP	-41.88%	-28.21%	-22.28%	22.51%	-41.81%	-28.20%	-22.29%	22.39%
Rio Grande-Santa Fe HUC 13020201								
Flow	-37.74%	-32.46%	-23.89%	12.53%	-37.76%	-32.48%	-23.90%	12.53%
TSS	-53.44%	-43.76%	-34.99%	14.55%	-53.24%	-43.61%	-34.84%	14.48%
TN	-63.48%	-52.32%	-40.32%	25.45%	-63.86%	-51.88%	-39.80%	27.72%
TP	-58.17%	-47.21%	-36.06%	26.77%	-61.85%	-47.93%	-36.38%	30.85%
Jemez HUC 13020202								
Flow	-31.19%	-15.25%	-13.97%	11.66%	-31.23%	-15.28%	-13.98%	11.68%

TSS	-60.50%	-32.22%	-28.38%	3.78%	-59.73%	-31.87%	-28.05%	3.53%
TN	-10.06%	1.78%	6.61%	45.15%	-12.22%	1.09%	0.21%	6.36%
TP	-19.00%	-0.67%	-4.09%	5.32%	-10.21%	0.50%	-0.76%	5.17%
Rio Grande Albuquerque (downstream) HUC 13020203								
Flow	-34.27%	-29.35%	-21.38%	11.94%	-34.26%	-29.35%	-21.38%	11.92%
TSS	-51.16%	-40.58%	-32.46%	13.77%	-50.78%	-40.32%	-32.21%	13.63%
TN	-62.68%	-51.75%	-39.76%	25.50%	-62.85%	-50.88%	-38.95%	27.46%
TP	-58.63%	-47.32%	-36.02%	27.09%	-61.33%	-47.61%	-35.97%	30.97%
Saguache Creek HUC 13010004								
Flow	-40.98%	-35.20%	-29.12%	7.83%	-40.98%	-35.20%	-29.12%	7.83%
TSS	-70.73%	-47.18%	-43.79%	2.23%	-70.73%	-47.18%	-43.79%	2.23%
TN	-34.66%	-26.24%	-21.98%	3.51%	-34.66%	-26.24%	-21.98%	3.51%
TP	-35.28%	-21.06%	-20.06%	3.34%	-35.28%	-21.06%	-20.06%	3.34%
RG near Lobatos (gage 08251500)								
Flow	-40.04%	-36.01%	-27.86%	9.81%	-40.04%	-36.01%	-27.86%	9.81%
TSS	-57.43%	-45.68%	-38.80%	12.26%	-57.38%	-45.66%	-38.77%	12.25%
TN	-70.93%	-58.84%	-41.24%	51.49%	-72.92%	-59.72%	-41.37%	55.93%
TP	-60.88%	-49.85%	-34.42%	45.97%	-64.89%	-52.14%	-35.75%	51.63%
RG near Taos (gage 08276500)								
Flow	-39.40%	-34.47%	-25.67%	11.72%	-39.40%	-34.47%	-25.67%	11.72%
TSS	-56.65%	-45.24%	-37.43%	13.35%	-56.60%	-45.21%	-37.40%	13.33%
TN	-67.53%	-54.17%	-41.83%	26.31%	-68.66%	-54.18%	-41.63%	28.55%
TP	-57.67%	-45.76%	-35.16%	25.51%	-62.55%	-47.22%	-36.14%	29.20%
RG at Albuquerque (gage 08330000)								
Flow	-36.80%	-31.36%	-22.95%	12.68%	-36.79%	-31.37%	-22.95%	12.66%
TSS	-52.87%	-41.39%	-33.72%	13.67%	-52.56%	-41.18%	-33.52%	13.57%
TN	-61.72%	-51.00%	-39.20%	25.36%	-62.24%	-50.29%	-38.57%	27.44%
TP	-57.89%	-46.82%	-35.70%	26.81%	-61.16%	-47.29%	-35.83%	30.90%

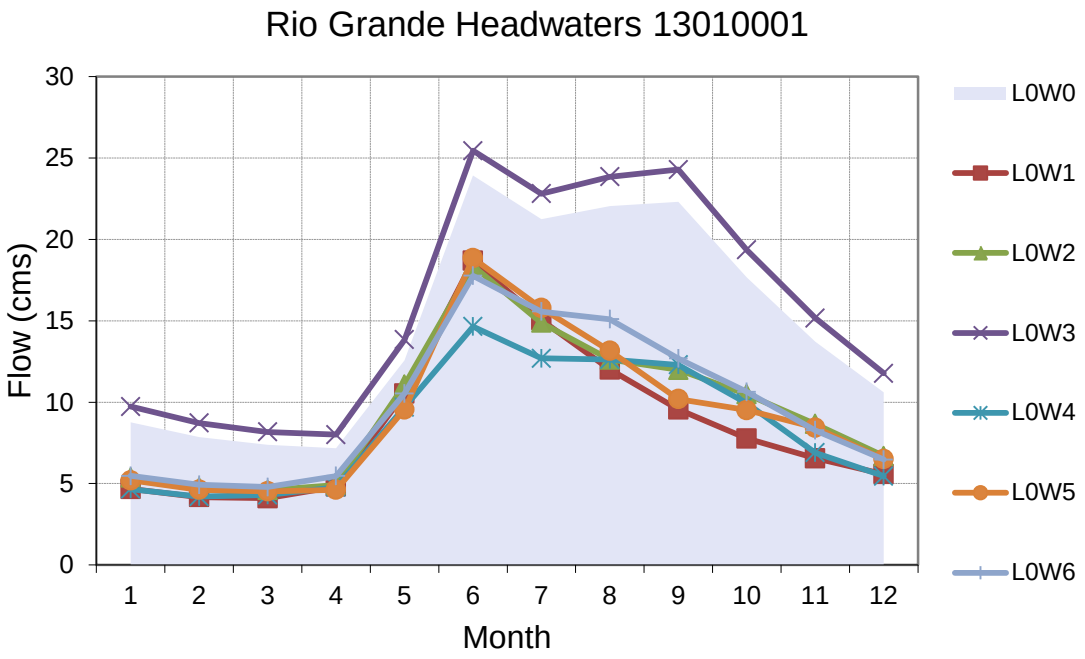


Figure 253. Monthly average flows, Rio Grande Headwaters (SWAT)

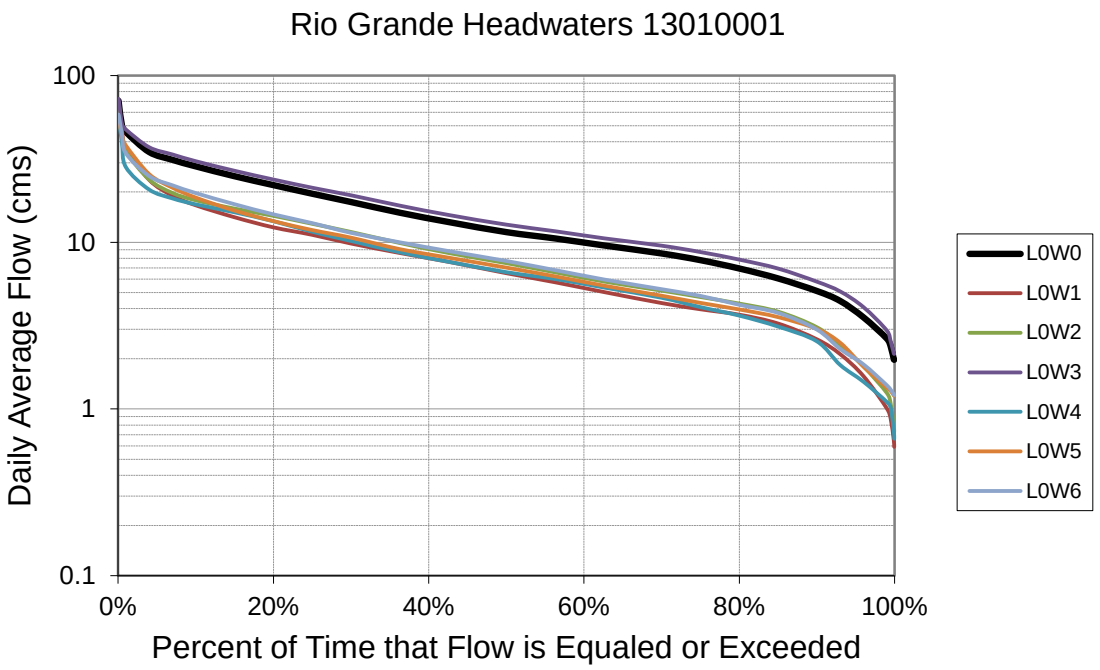


Figure 254. Flow duration, Rio Grande Headwaters (SWAT)

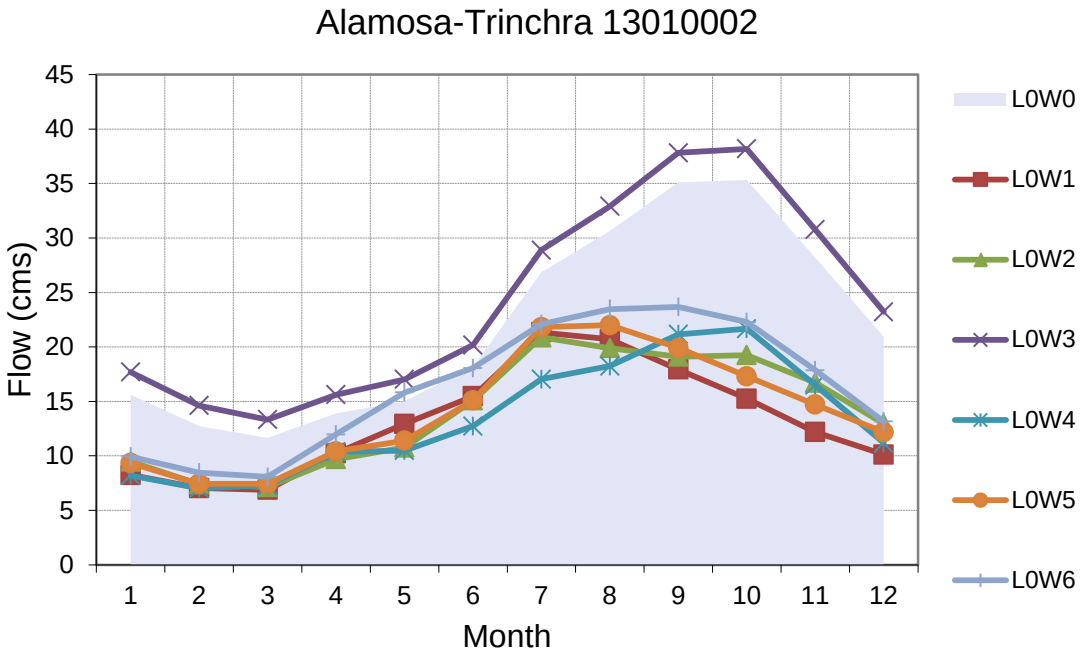


Figure 255. Monthly average flows, Alamosa River (SWAT)

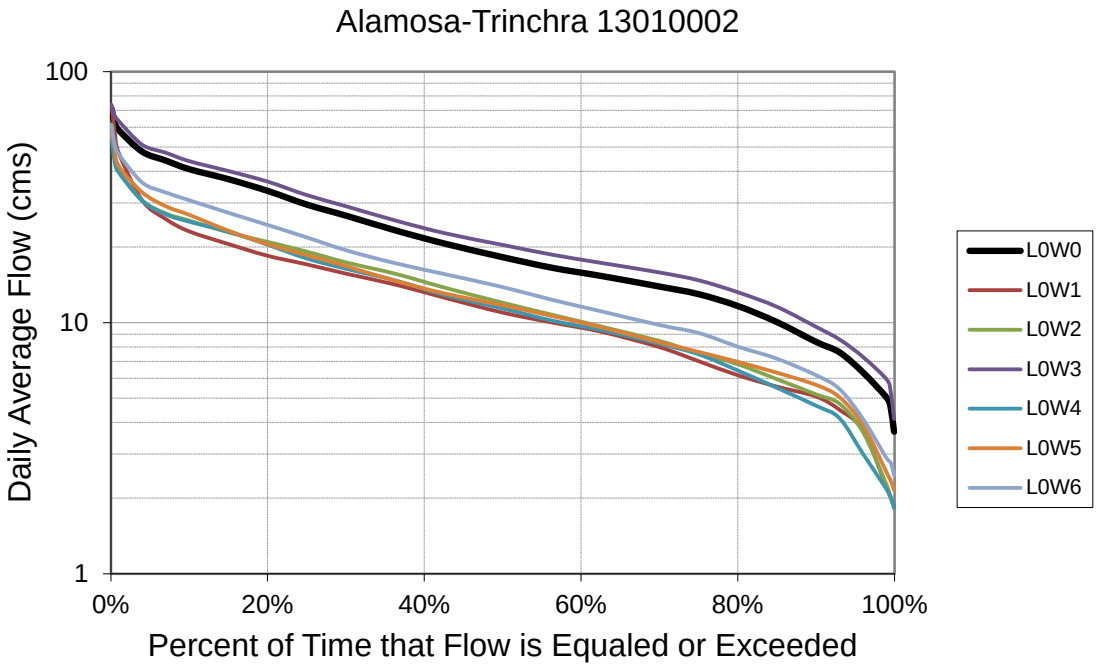


Figure 256. Flow duration, Alamosa River (SWAT)

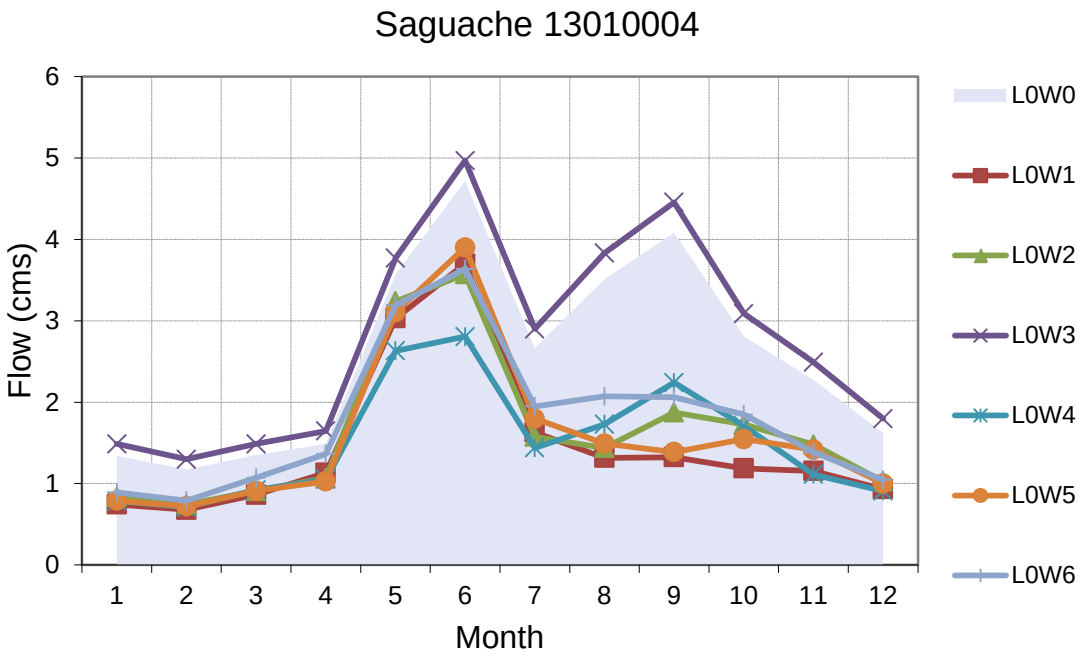


Figure 257. Monthly average flows, Saguache River (SWAT)

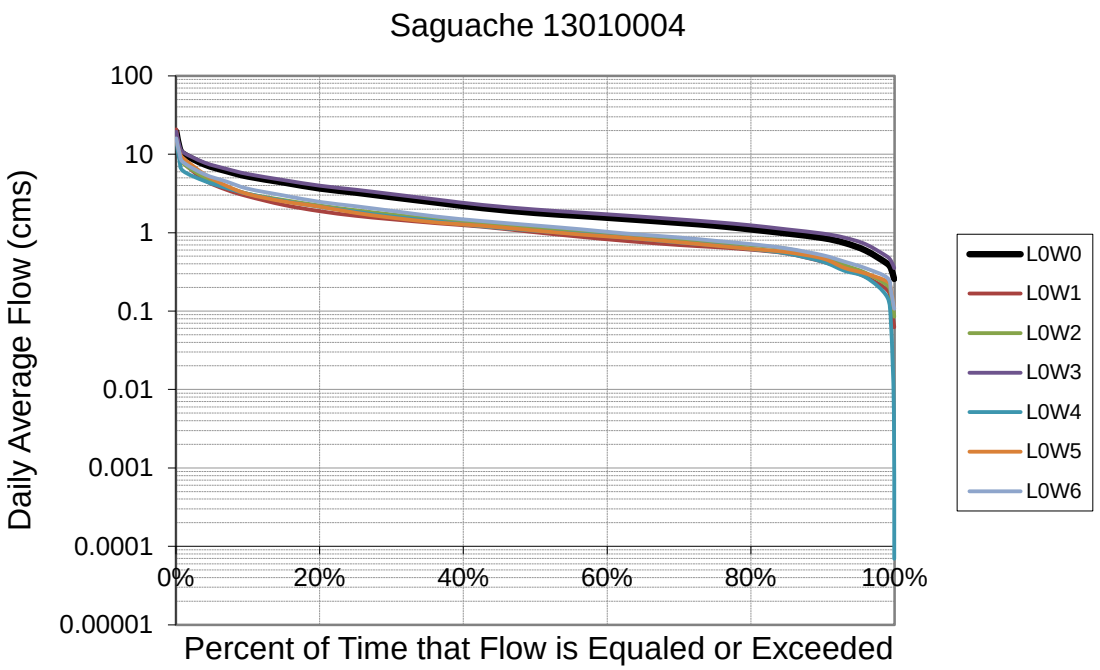


Figure 258. Flow duration, Saguache River (SWAT)

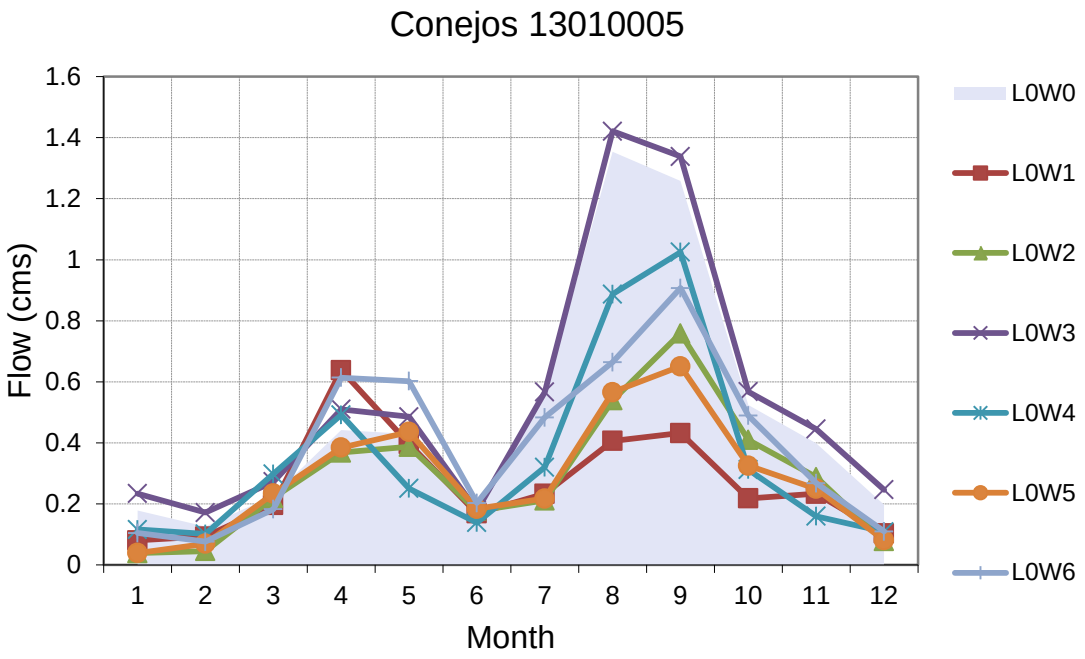


Figure 259. Monthly average flows, Conejos River (SWAT)

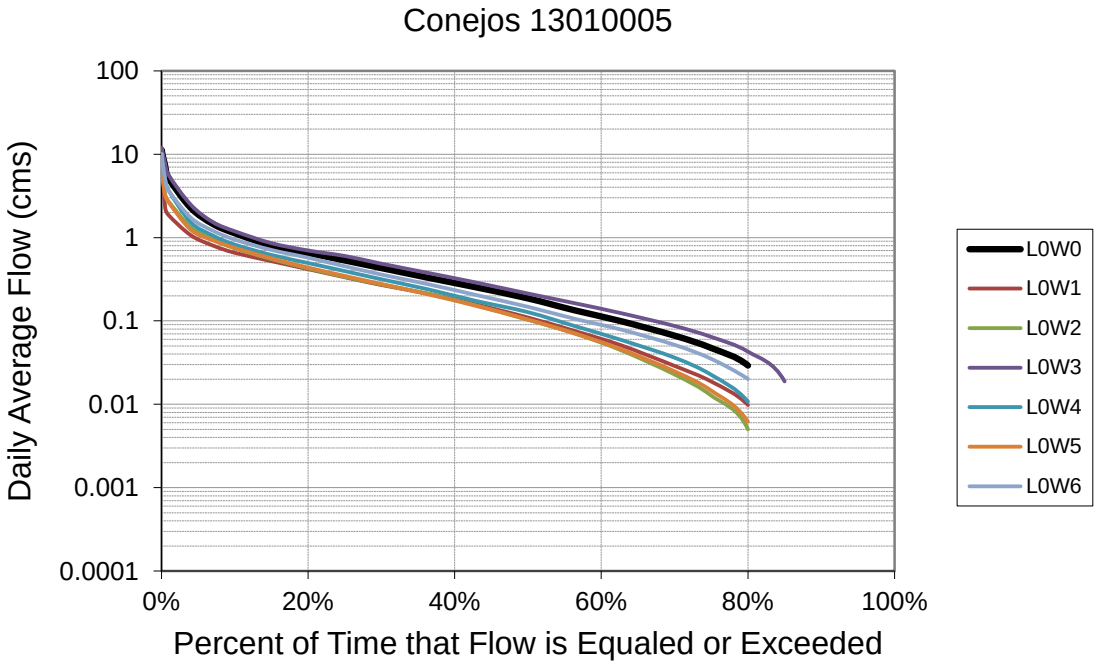


Figure 260. Flow duration, Conejos River (SWAT)

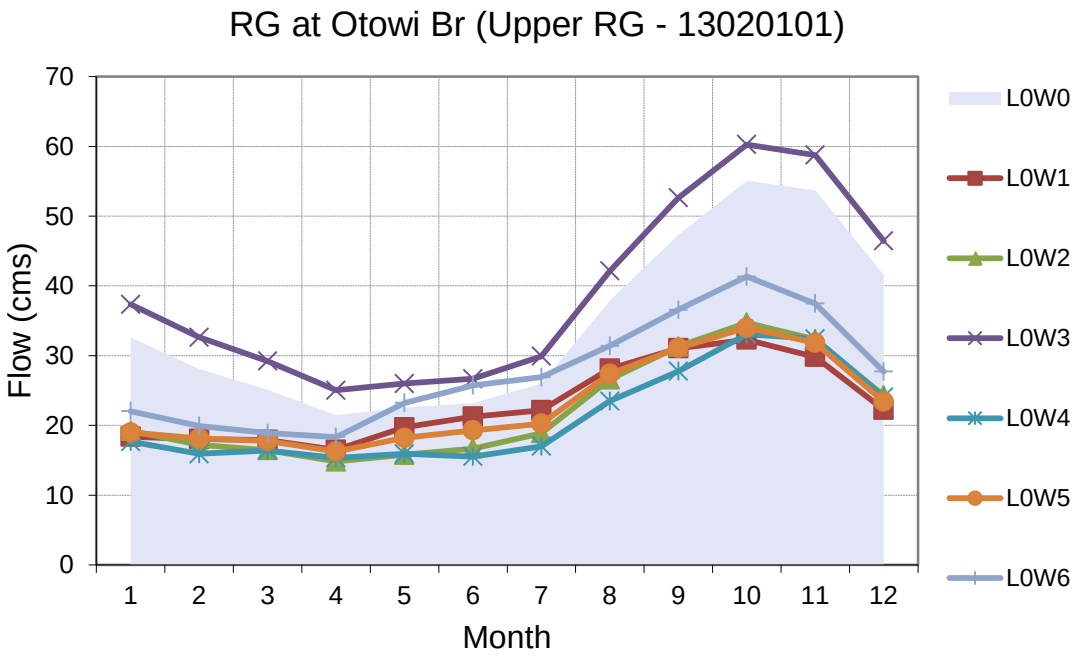


Figure 261. Monthly average flows, Upper Rio Grande at Otowi Bridge (SWAT)

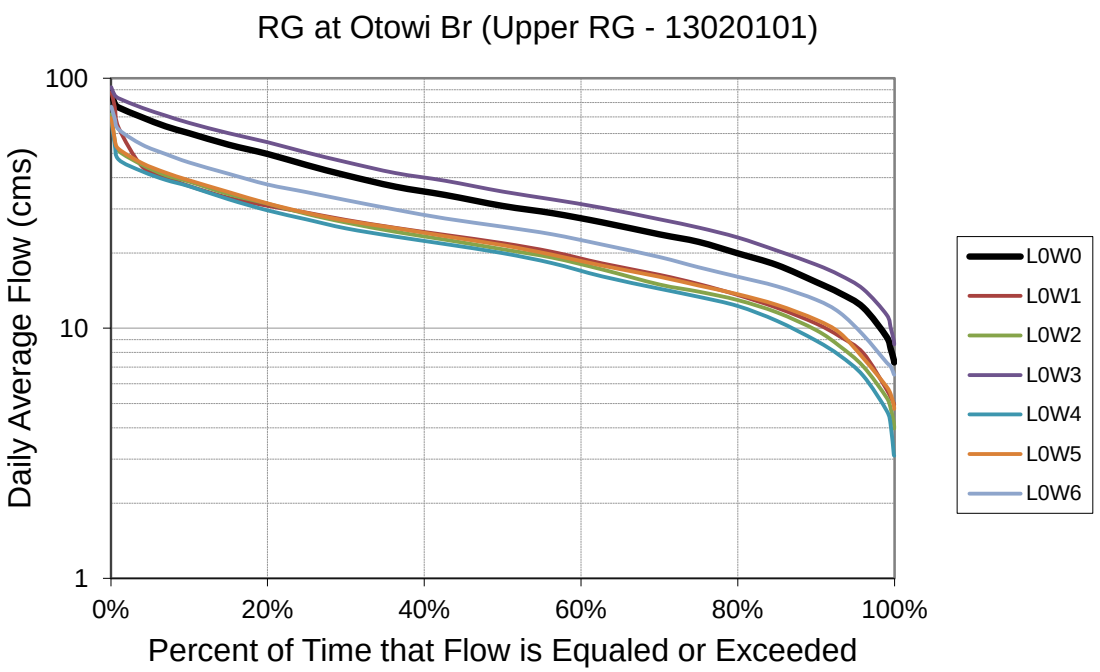


Figure 262. Flow duration, Upper Rio Grande at Otowi Bridge (SWAT)

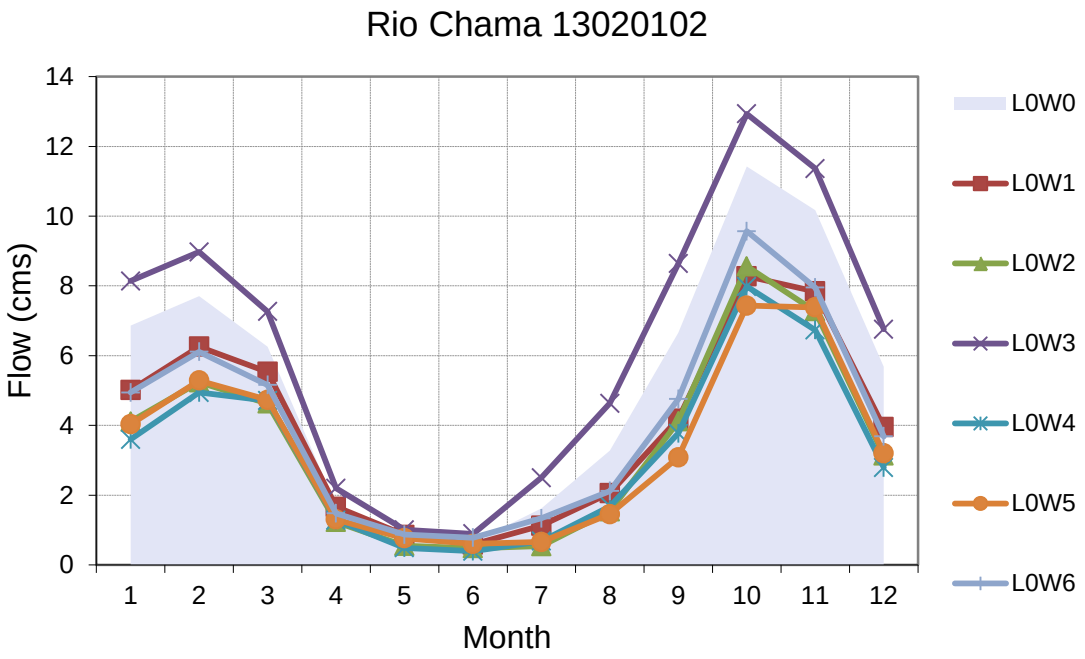


Figure 263. Monthly average flows, Rio Chama (SWAT)

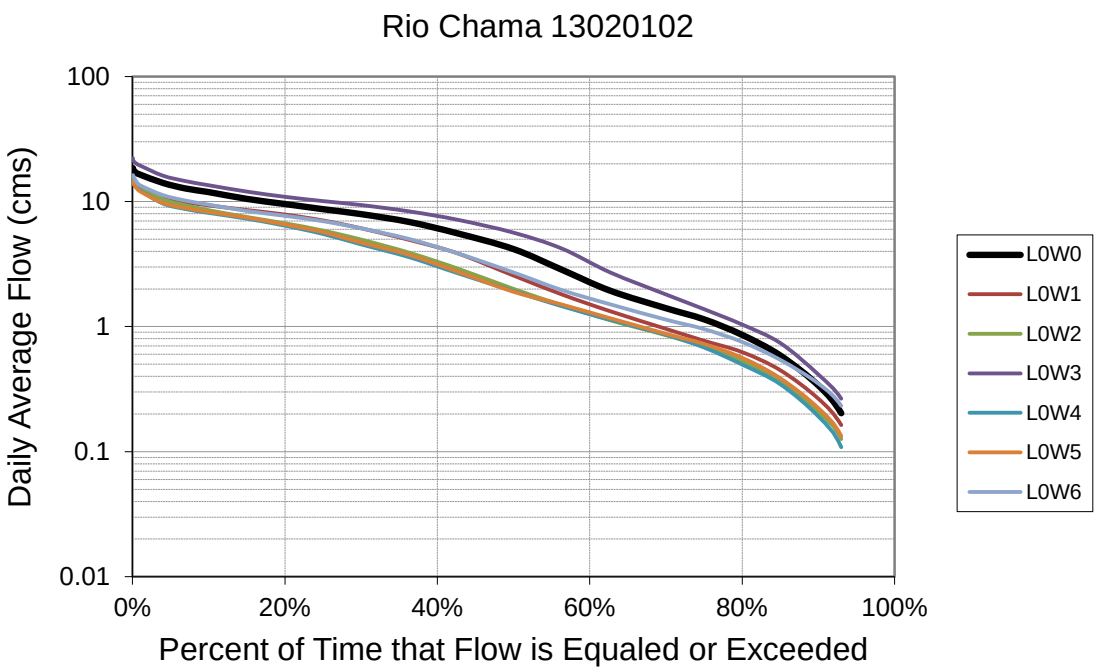


Figure 264. Flow duration, Rio Chama (SWAT)

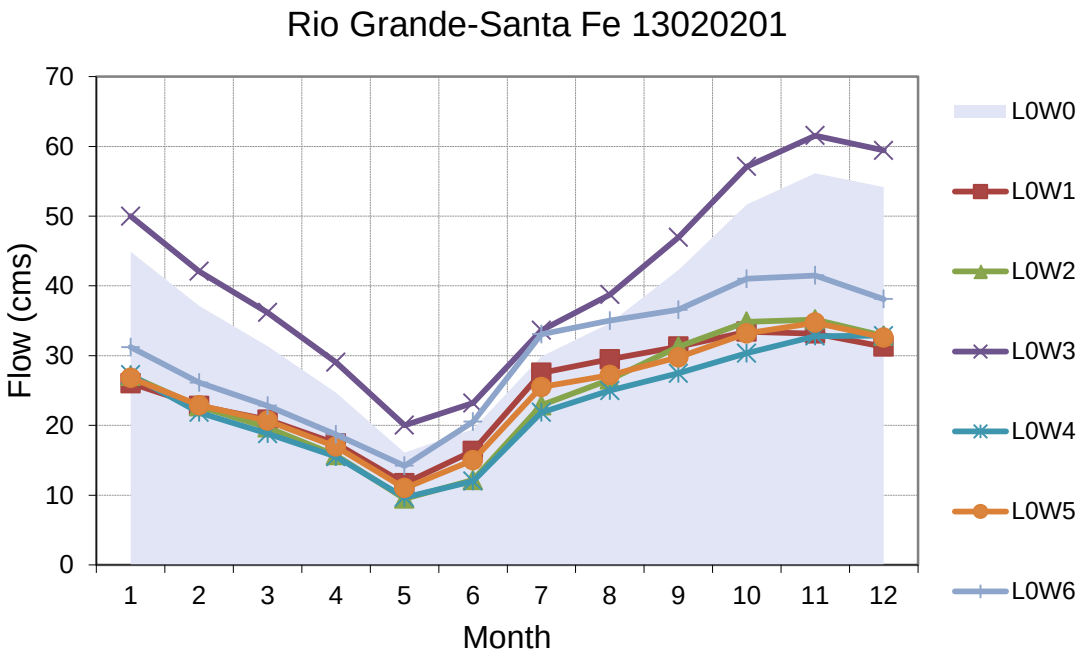


Figure 265. Monthly average flows, Rio Grande at Santa Fe (SWAT)

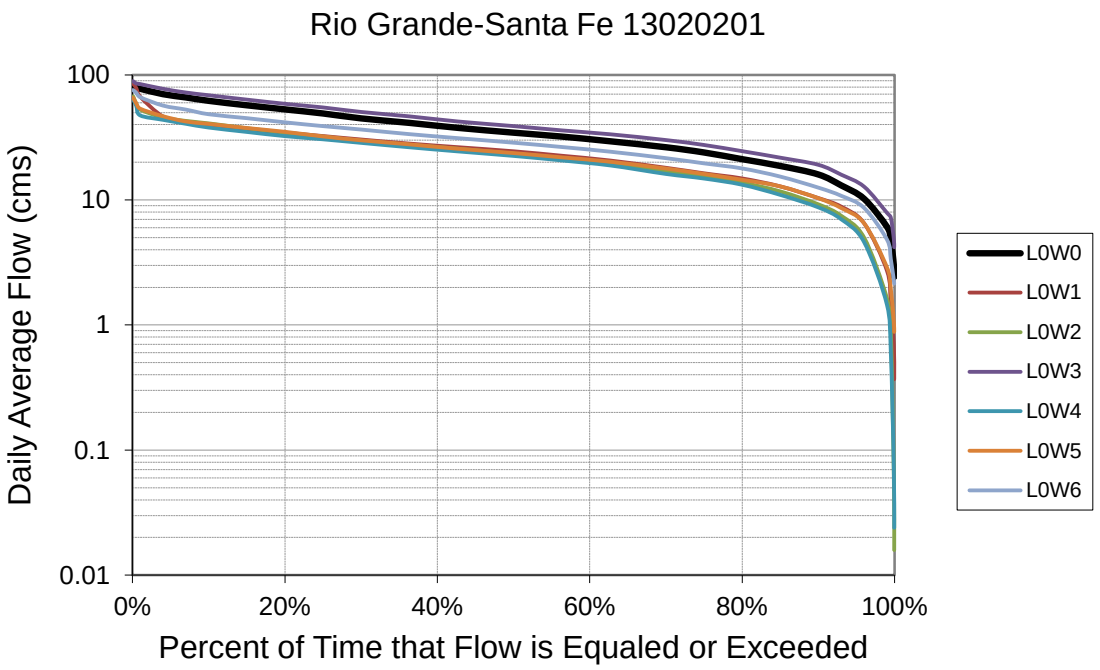


Figure 266. Flow duration, Rio Grande at Santa Fe (SWAT)

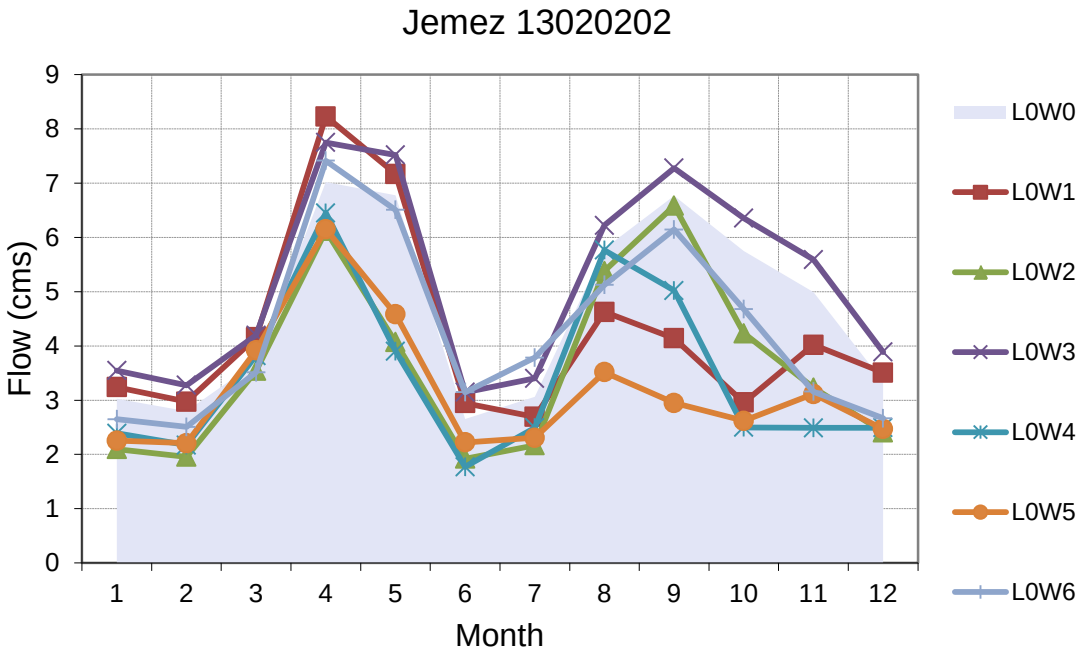


Figure 267. Monthly average flows, Jemez River (SWAT)

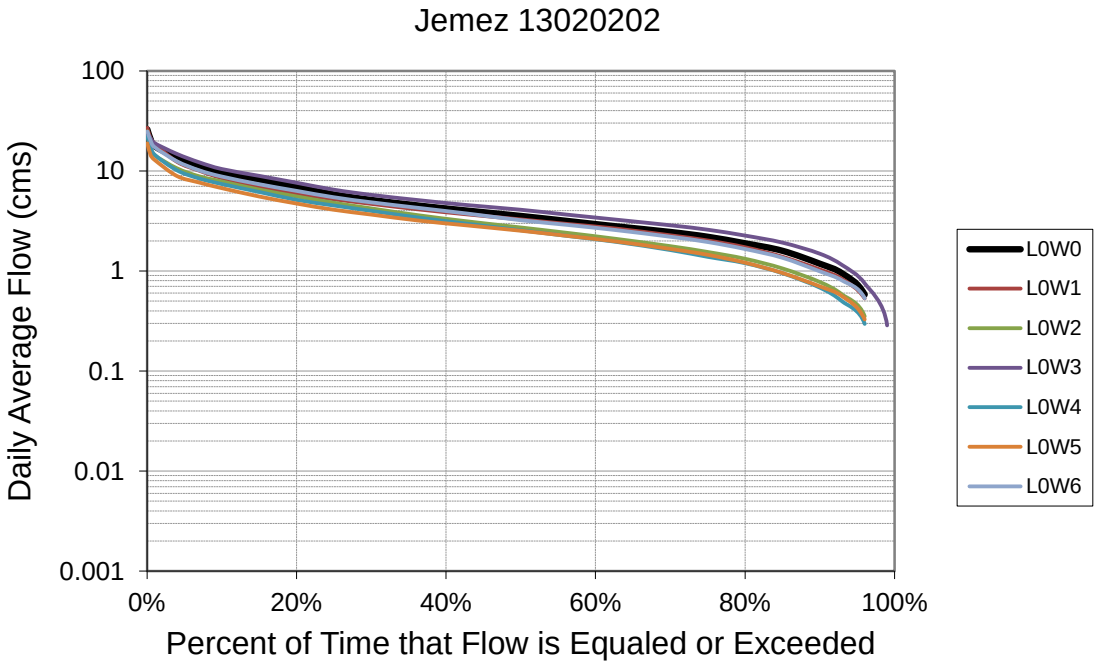


Figure 268. Flow duration, Jemez River (SWAT)

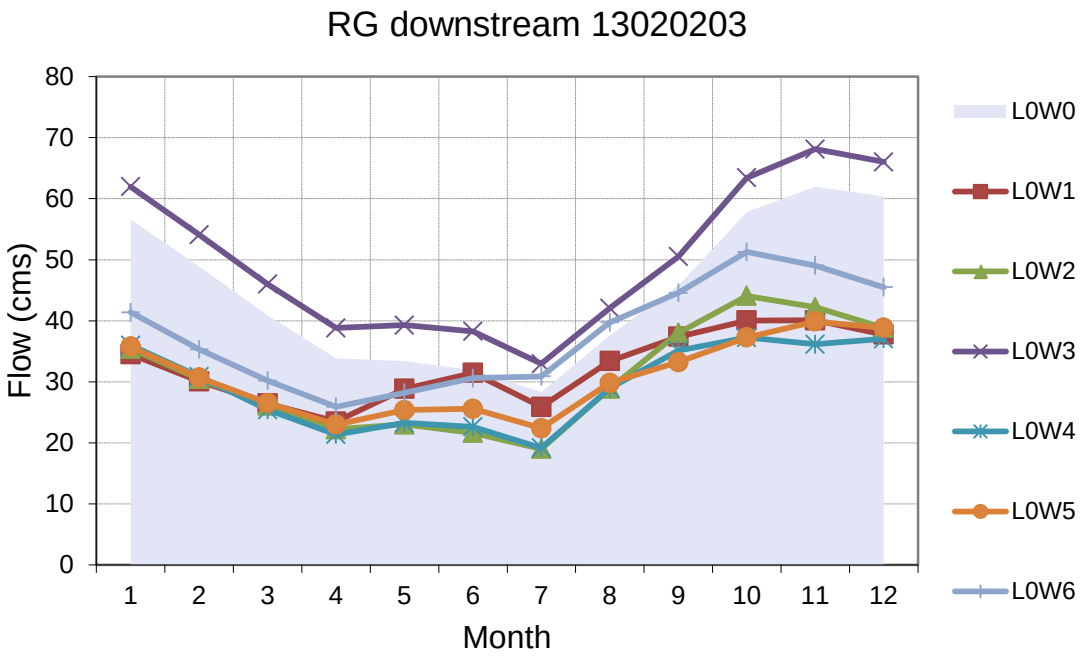


Figure 269. Monthly average flows, Rio Grande downstream (SWAT)

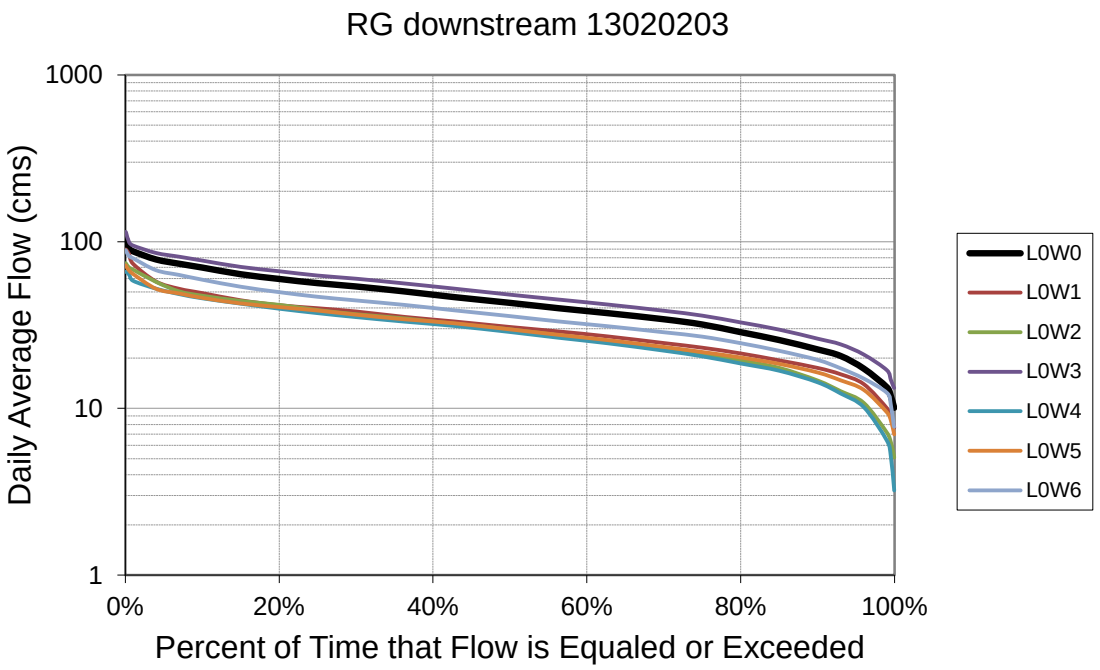


Figure 270. Flow duration, Rio Grande downstream (SWAT)

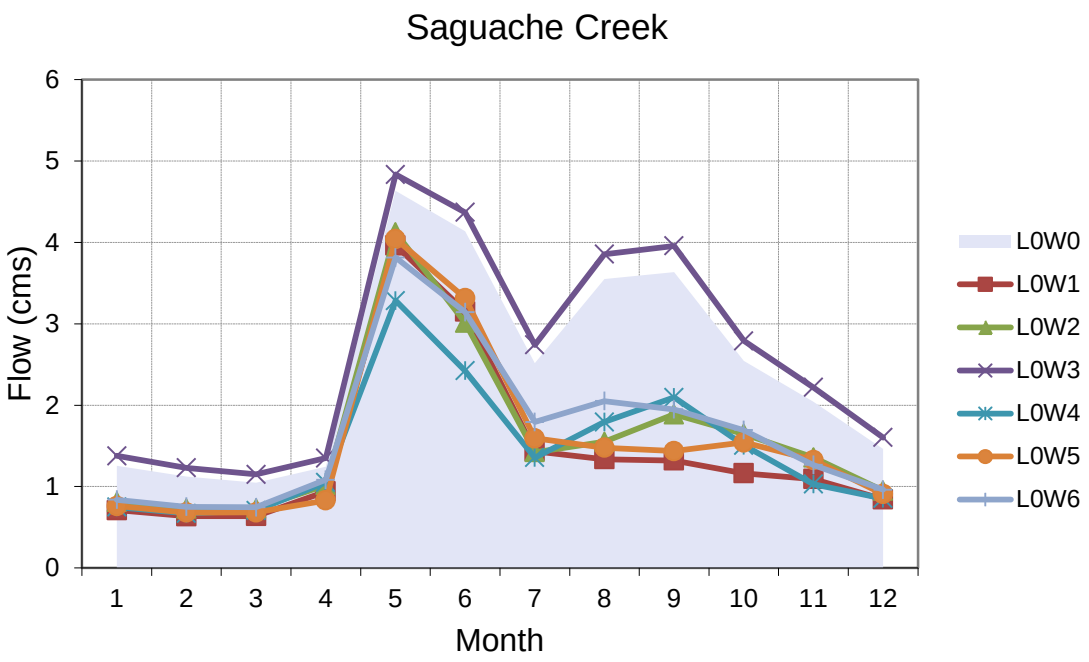


Figure 271. Monthly average flows, Saguache Creek (SWAT)

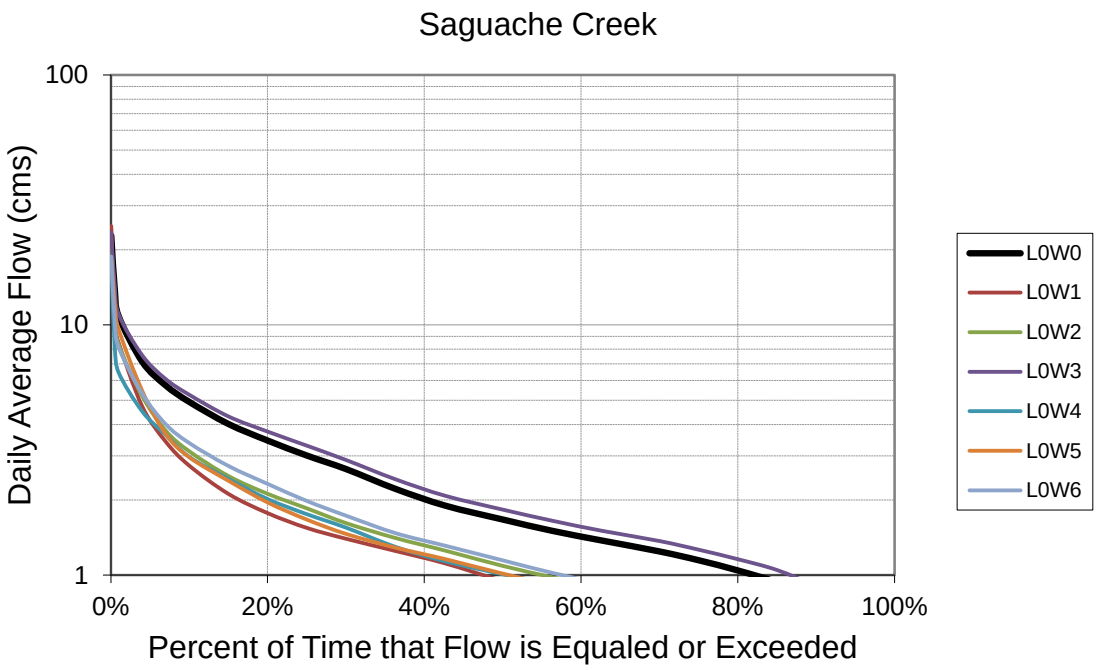


Figure 272. Flow duration, Saguache Creek (SWAT)

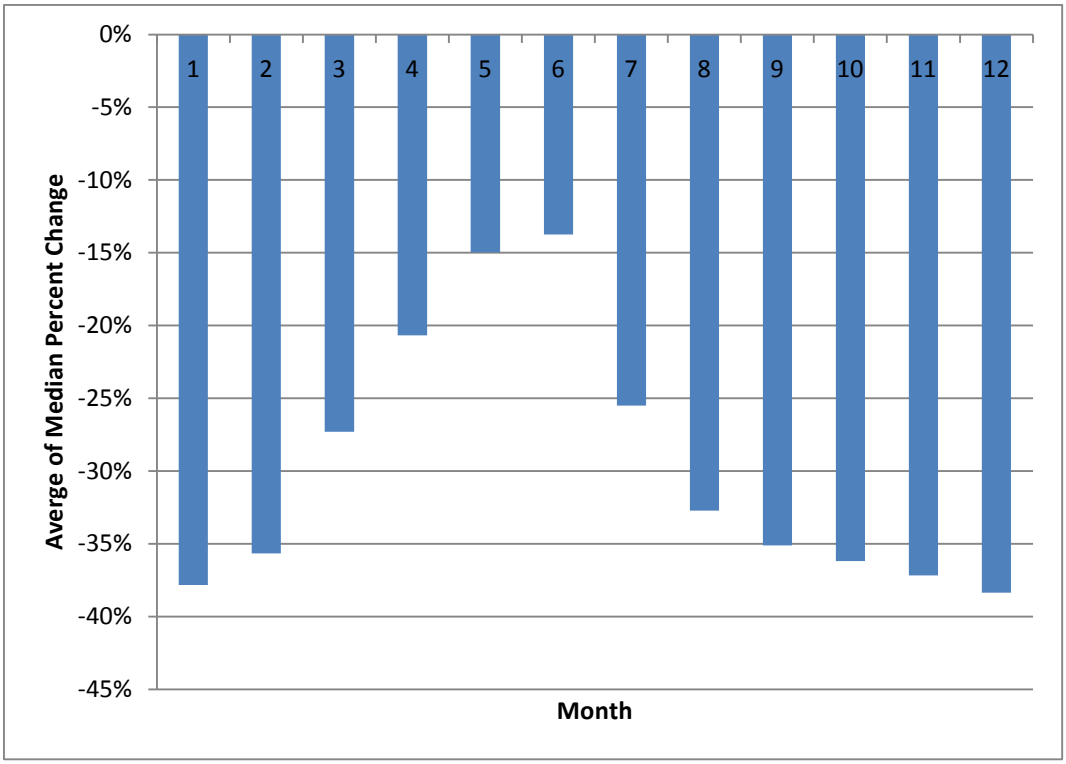


Figure 273. Average of median percent change in flow; NARCCAP Scenarios W1-W6 at all stations, Rio Grande Valley basin (SWAT)

Sacramento River Watershed

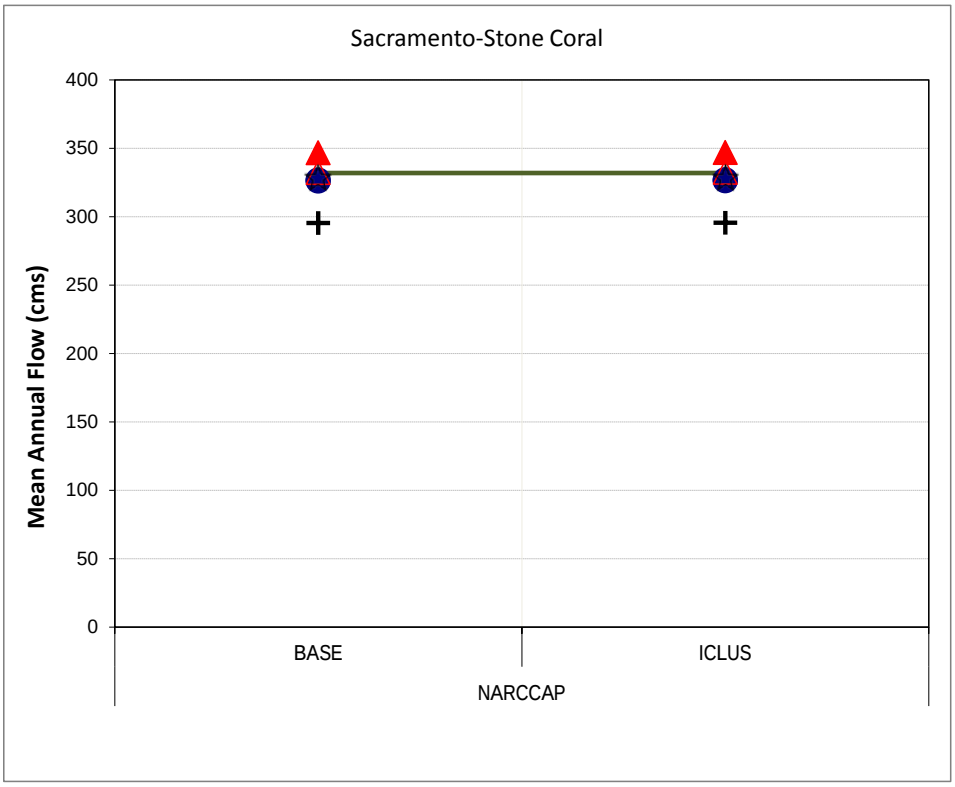


Figure 274. Mean annual flow (cms), Sacramento River at Stone Corral (SWAT)

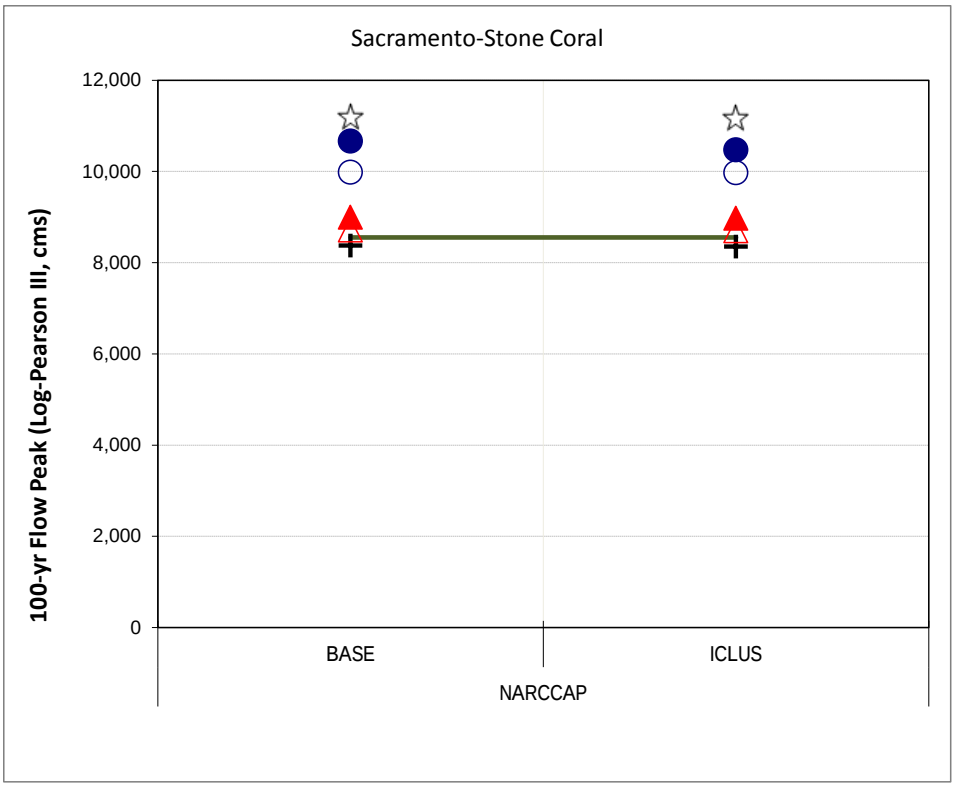


Figure 275. 100-yr Flow Peak (Log-Pearson III, cms), Sacramento River at Stone Corral (SWAT)

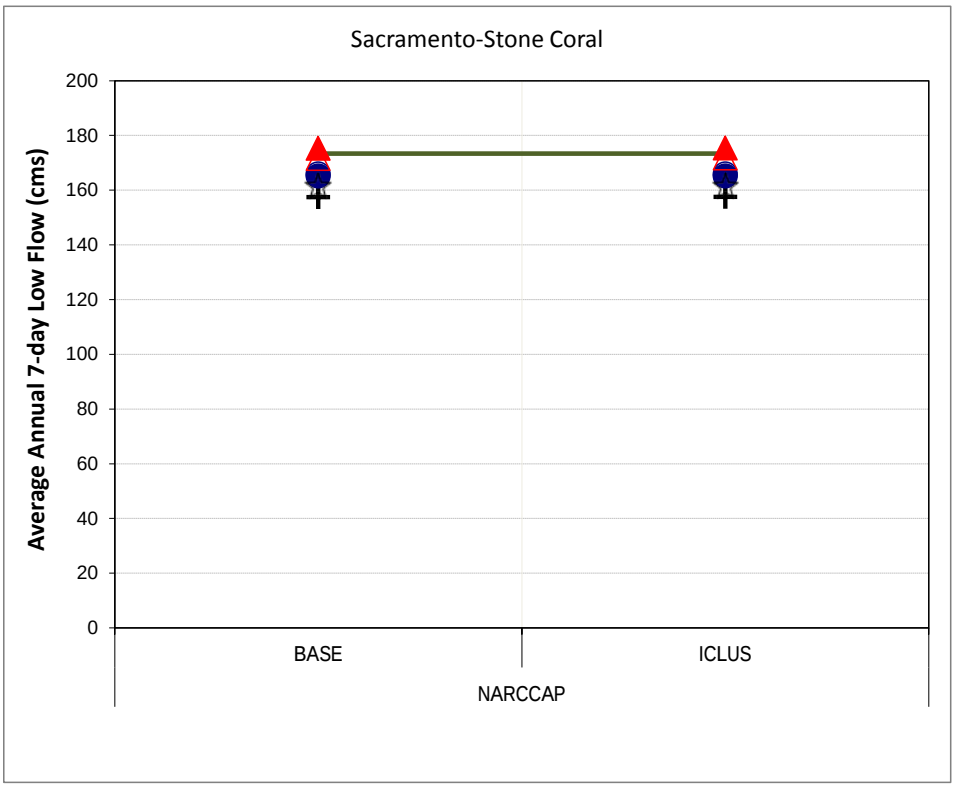


Figure 276. Average Annual 7-day Low Flow (cms), Sacramento River at Stone Corral (SWAT)

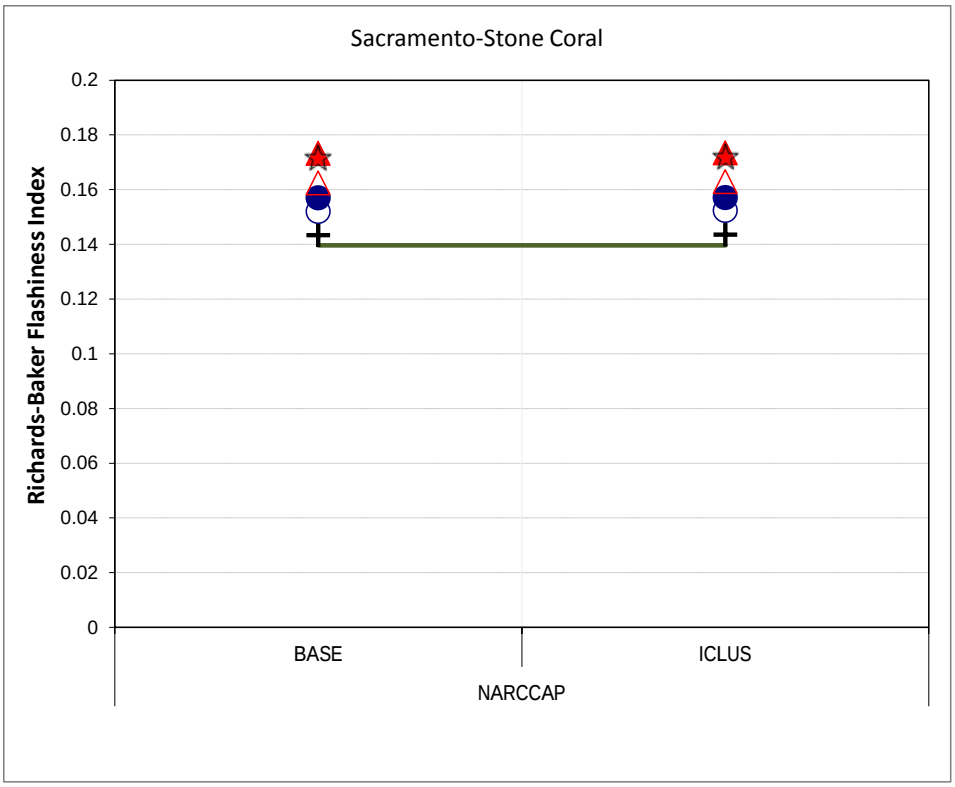


Figure 277. Richards-Baker Flashiness Index, Average Annual 7-day Low Flow (cms), Sacramento River at Stone Corral (SWAT)

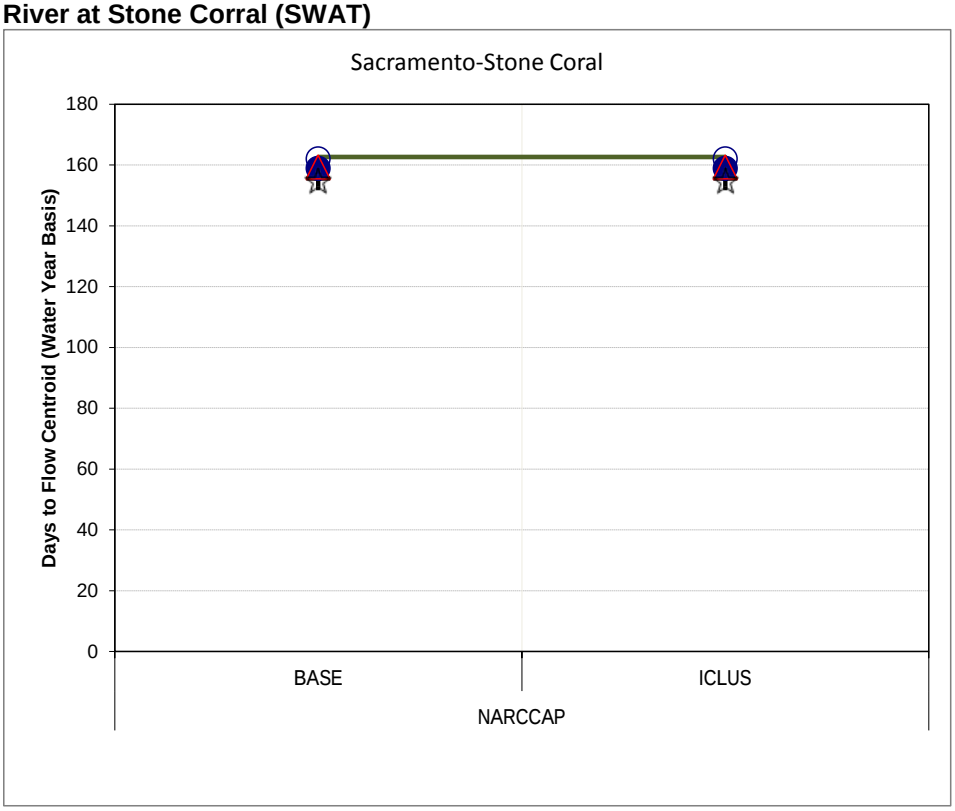


Figure 278. Days to Flow Centroid (Water Year Basis), Sacramento River at Stone Corral (SWAT)

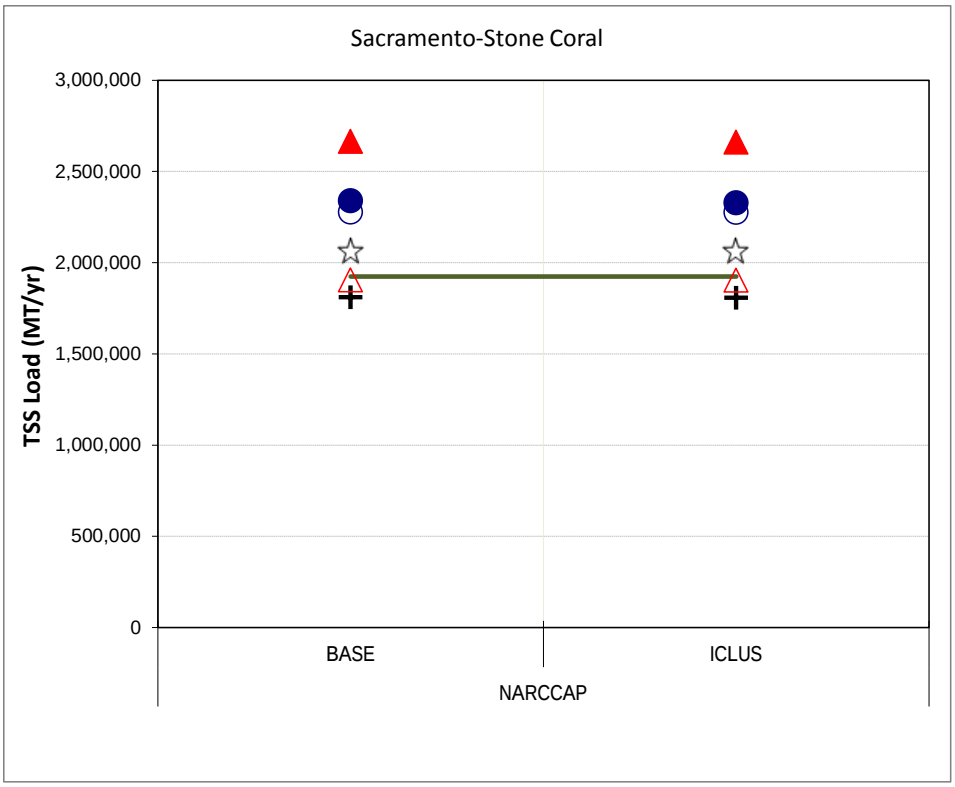


Figure 279. TSS Load (MT/yr), Sacramento River at Stone Corral (SWAT)

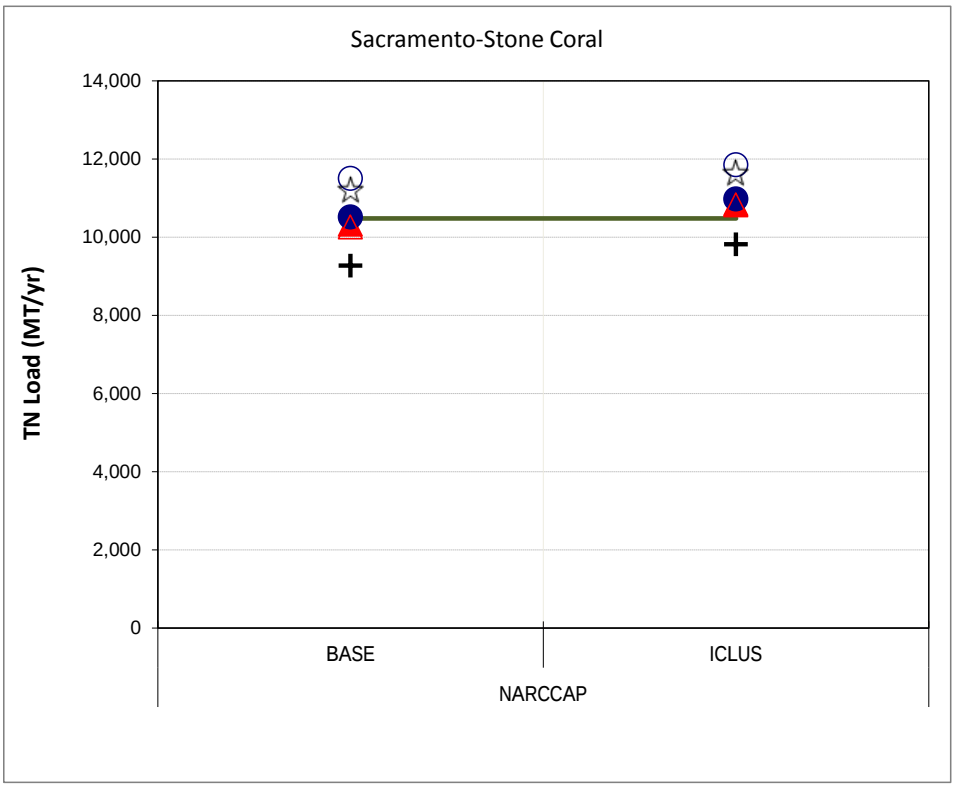


Figure 280. TN Load (MT/yr), Sacramento River at Stone Corral (SWAT)

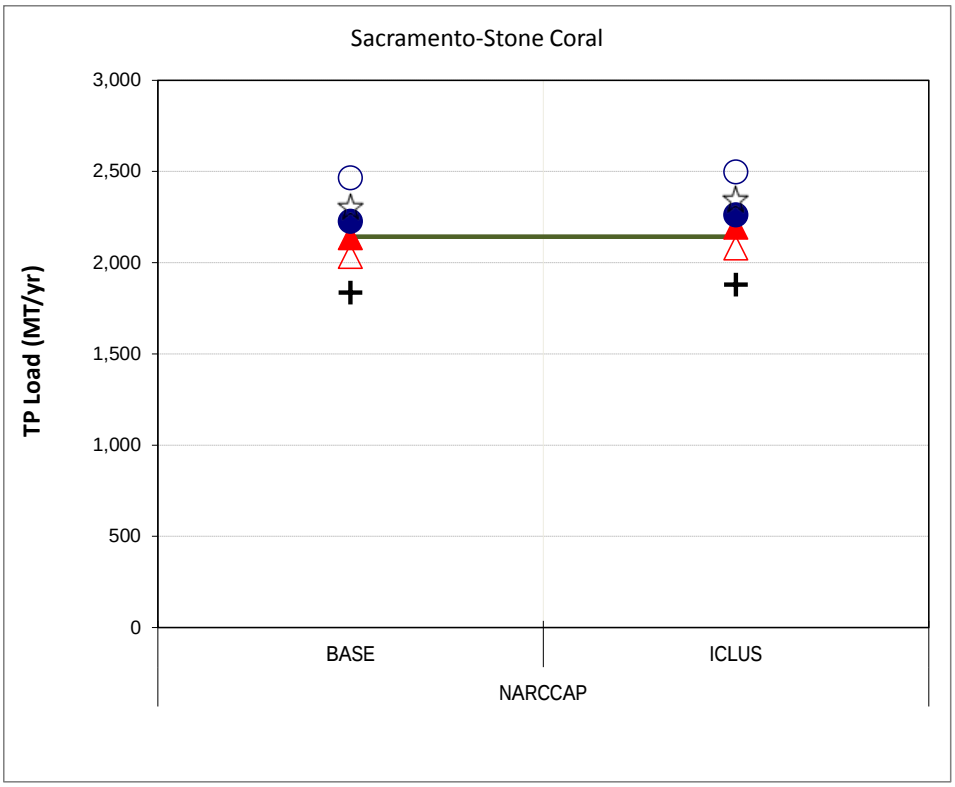


Figure 281. TP Load (MT/yr), Sacramento River at Stone Corral (SWAT)

Table 11. Summary of range of change relative to existing conditions for NARCCAP dynamically downscaled scenarios, Sacramento River watershed SWAT model

	Results without LU change				Results with LU change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
Sacramento-Stone Corral HUC 18020104								
Flow	-11.03%	-1.23%	-1.80%	4.45%	-11.05%	-1.25%	-1.82%	4.41%
TSS	-5.89%	13.09%	13.25%	38.51%	-5.76%	13.33%	13.38%	38.72%
TN	-11.49%	-0.49%	0.42%	9.80%	-10.50%	-0.46%	0.31%	8.08%
TP	-14.30%	1.78%	1.18%	14.99%	-14.08%	1.83%	1.06%	14.14%
Lower Cow HUC 18020101 (Bend Bridge)								
Flow	-5.09%	-0.95%	-1.28%	1.76%	-5.09%	-0.94%	-1.27%	1.76%
TSS	-10.94%	-1.09%	1.53%	20.73%	-10.89%	-0.82%	1.72%	20.78%
TN	3.12%	6.47%	5.95%	9.12%	2.46%	5.85%	5.57%	8.62%
TP	1.00%	7.26%	6.24%	10.78%	0.44%	7.13%	5.97%	10.27%
Lower Cottonwood HUC 18020102								
Flow	-16.68%	-2.01%	-4.01%	5.32%	-16.68%	-2.01%	-4.02%	5.31%
TSS	-15.40%	4.05%	3.22%	18.85%	-15.36%	4.07%	3.22%	18.80%
TN	3.76%	10.14%	12.05%	27.24%	3.62%	10.07%	11.96%	26.97%
TP	-2.35%	7.52%	8.98%	24.84%	-2.20%	7.52%	8.96%	24.61%
Sacramento-Lower Thomes HUC 18020103								
Flow	-10.37%	-1.24%	-1.77%	4.18%	-10.38%	-1.24%	-1.77%	4.16%
TSS	-1.83%	16.40%	16.85%	43.90%	-1.54%	16.67%	17.10%	44.16%
TN	-11.31%	-1.74%	-0.43%	9.19%	-10.33%	-1.68%	-0.43%	7.88%
TP	-14.39%	0.25%	-0.21%	14.44%	-14.27%	0.16%	-0.27%	14.02%
Lower Butte HUC 18020105								
Flow	-20.79%	-1.86%	-3.05%	8.08%	-20.94%	-2.09%	-3.28%	7.80%
TSS	-30.11%	6.33%	3.17%	24.54%	-30.00%	7.06%	3.71%	24.88%
TN	-16.48%	3.62%	2.23%	15.25%	-15.09%	1.49%	1.84%	18.61%
TP	-13.12%	7.94%	6.42%	19.27%	-12.03%	5.69%	5.81%	22.50%
Upper Stony HUC 18020115								
Flow	-14.78%	3.16%	1.86%	10.29%	-14.76%	3.18%	1.88%	10.32%
TSS	-4.98%	47.36%	43.92%	68.51%	-4.98%	47.34%	43.91%	68.49%
TN	5.30%	31.33%	29.96%	48.92%	4.87%	30.64%	29.28%	47.91%
TP	16.29%	58.23%	55.38%	91.07%	15.67%	57.29%	54.50%	89.89%
Upper Cow HUC 18020118								
Flow	-14.84%	-6.38%	-5.66%	3.04%	-14.81%	-6.35%	-5.63%	3.06%
TSS	-35.74%	-17.12%	-11.08%	19.48%	-35.73%	-17.15%	-11.11%	19.44%
TN	-11.70%	-4.16%	-3.37%	5.96%	-14.94%	-9.06%	-8.87%	-2.00%
TP	-18.32%	-9.79%	-9.29%	-1.08%	-19.03%	-11.34%	-10.47%	-2.76%
Sacramento River, Keswick gage								
Flow	-0.31%	-0.09%	-0.11%	0.04%	-0.31%	-0.09%	-0.12%	0.04%

TSS	-14.51%	3.16%	2.19%	14.94%	-14.13%	3.52%	2.56%	15.33%
TN	-0.40%	0.23%	0.19%	0.49%	-0.63%	0.20%	0.07%	0.31%
TP	-0.80%	0.26%	0.18%	0.73%	-1.21%	0.14%	-0.03%	0.39%

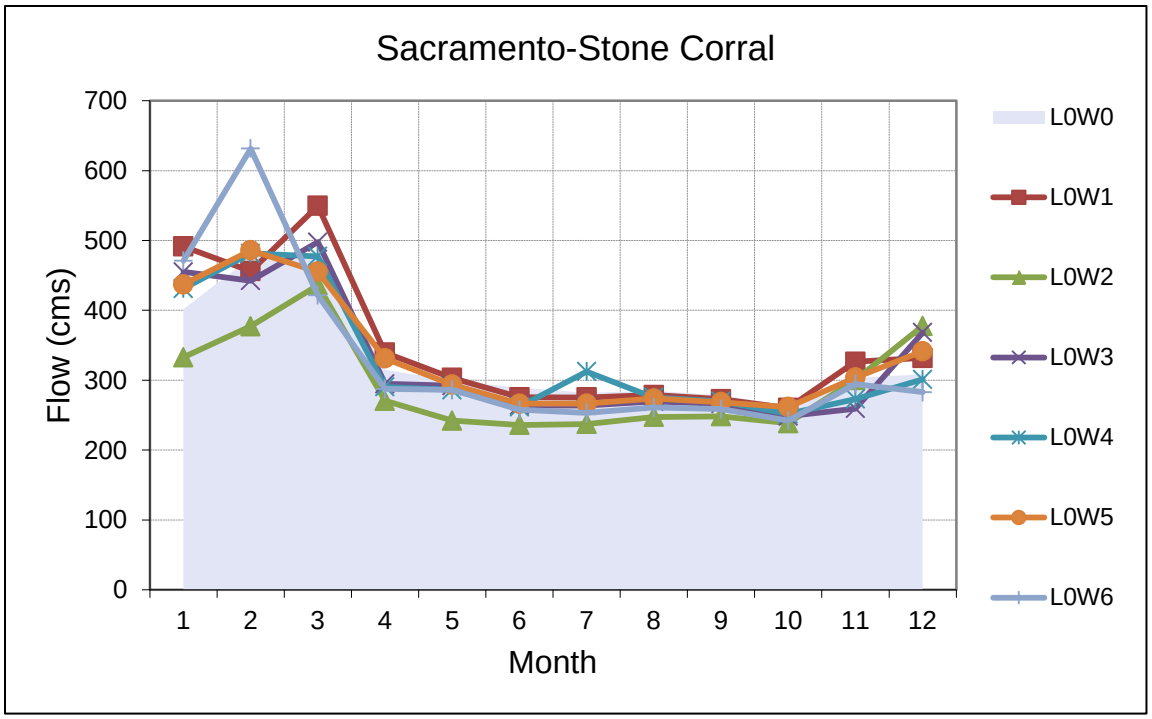


Figure 282. Monthly average flows, Sacramento River at Stone Corral (SWAT)

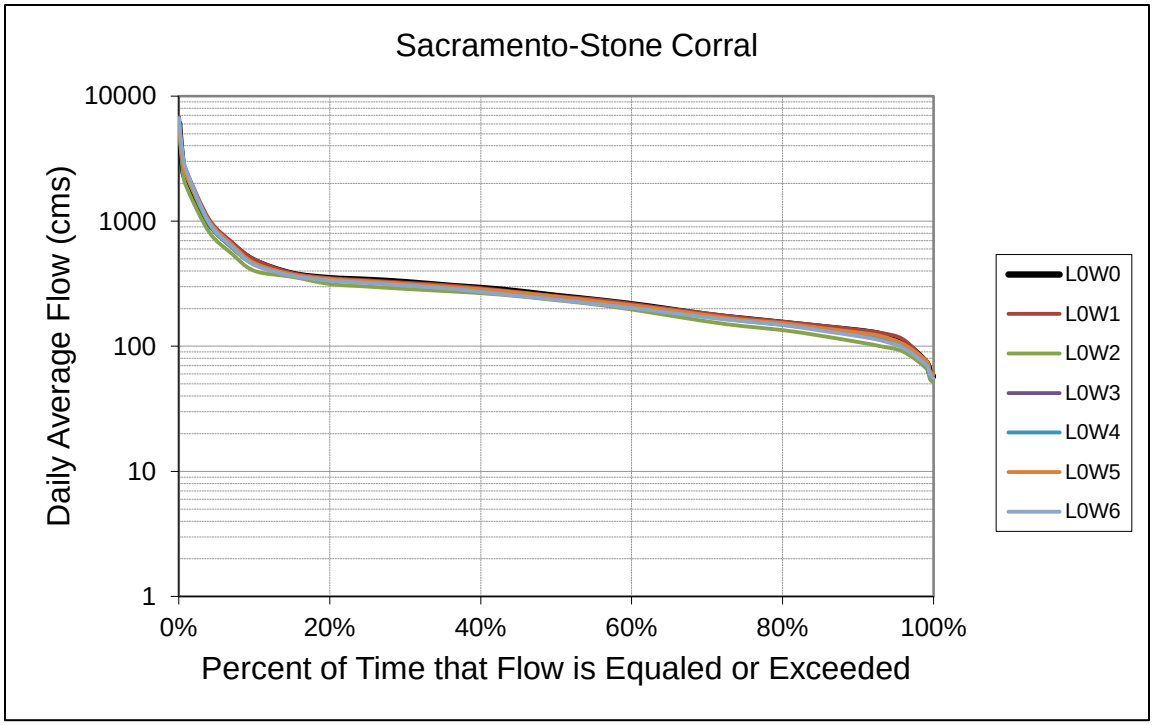


Figure 283. Flow duration, Sacramento River at Stone Corral (SWAT)

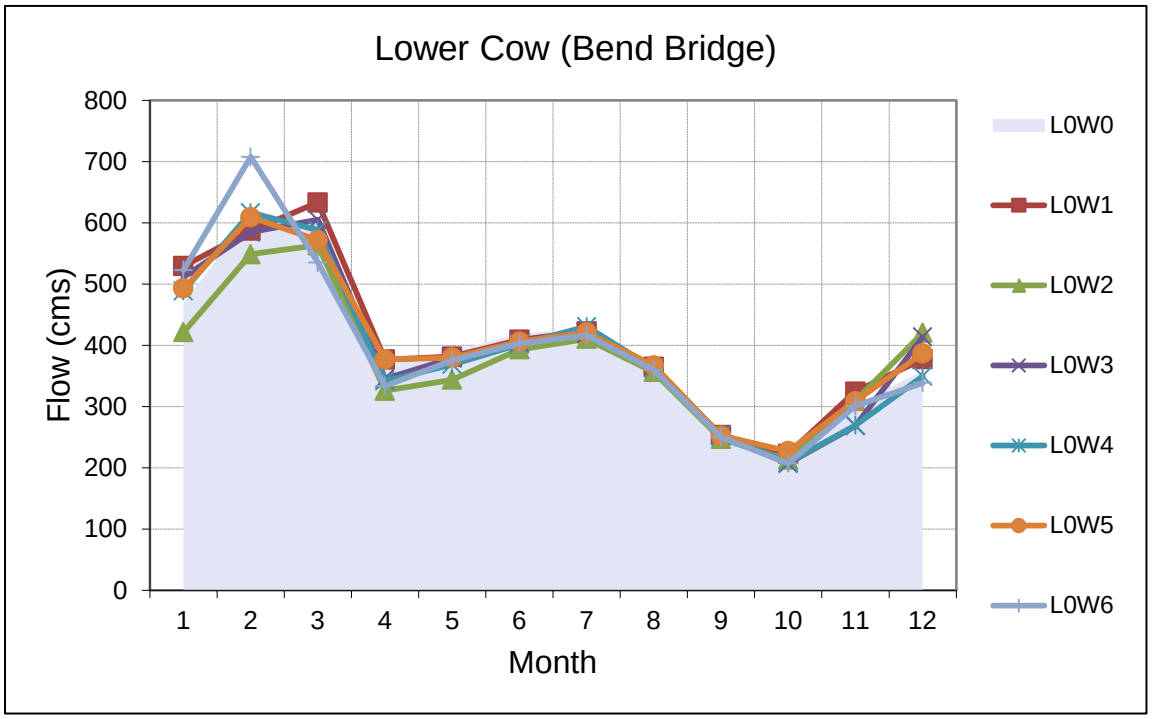


Figure 284. Monthly average flows, Sacramento River at Bend Bridge (SWAT)

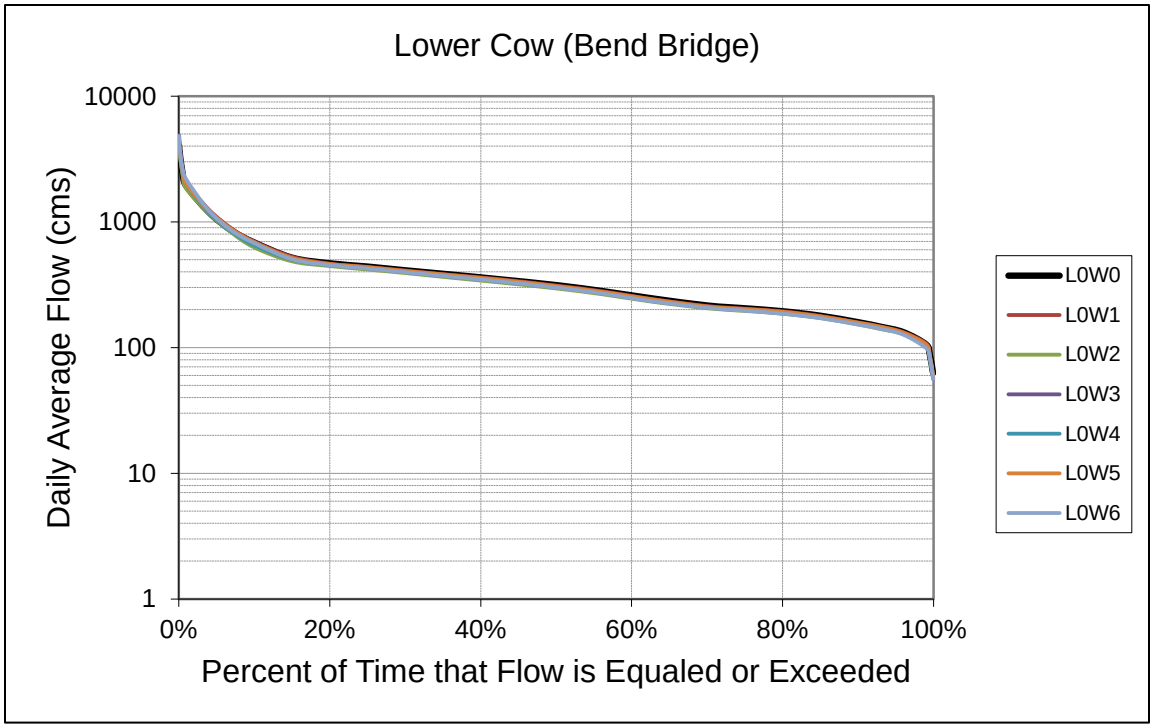


Figure 285. Flow duration, Sacramento River at Bend Bridge (SWAT)

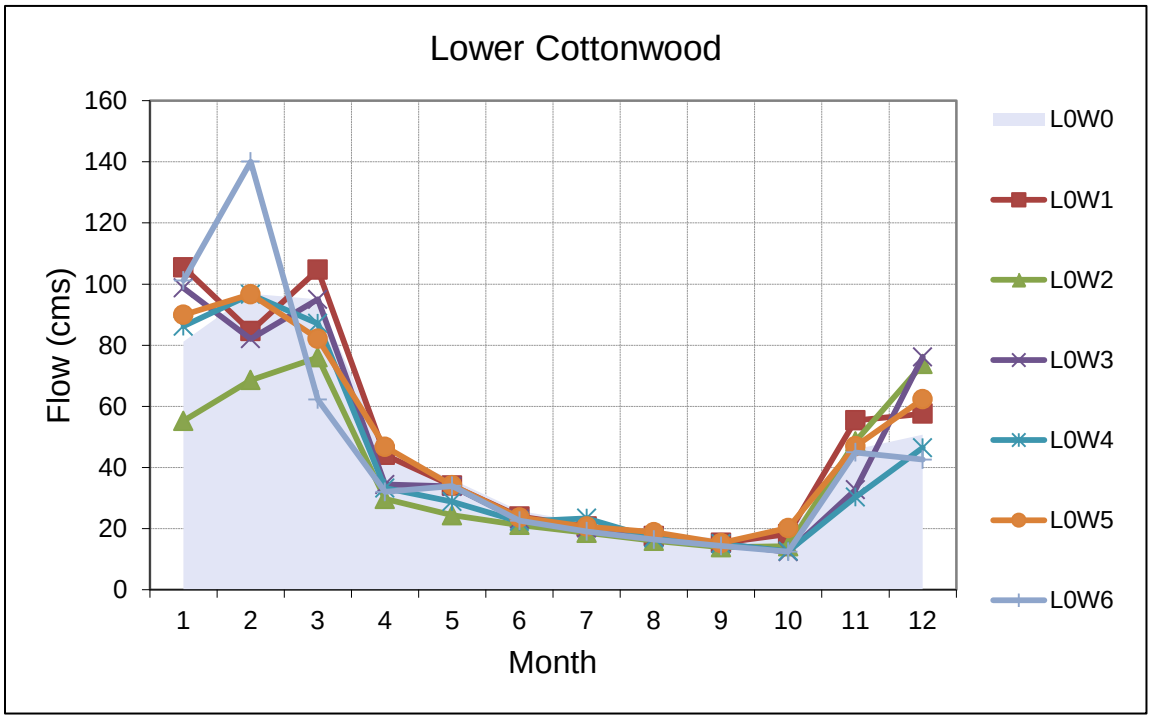


Figure 286. Monthly average flows, Lower Cottonwood (SWAT)

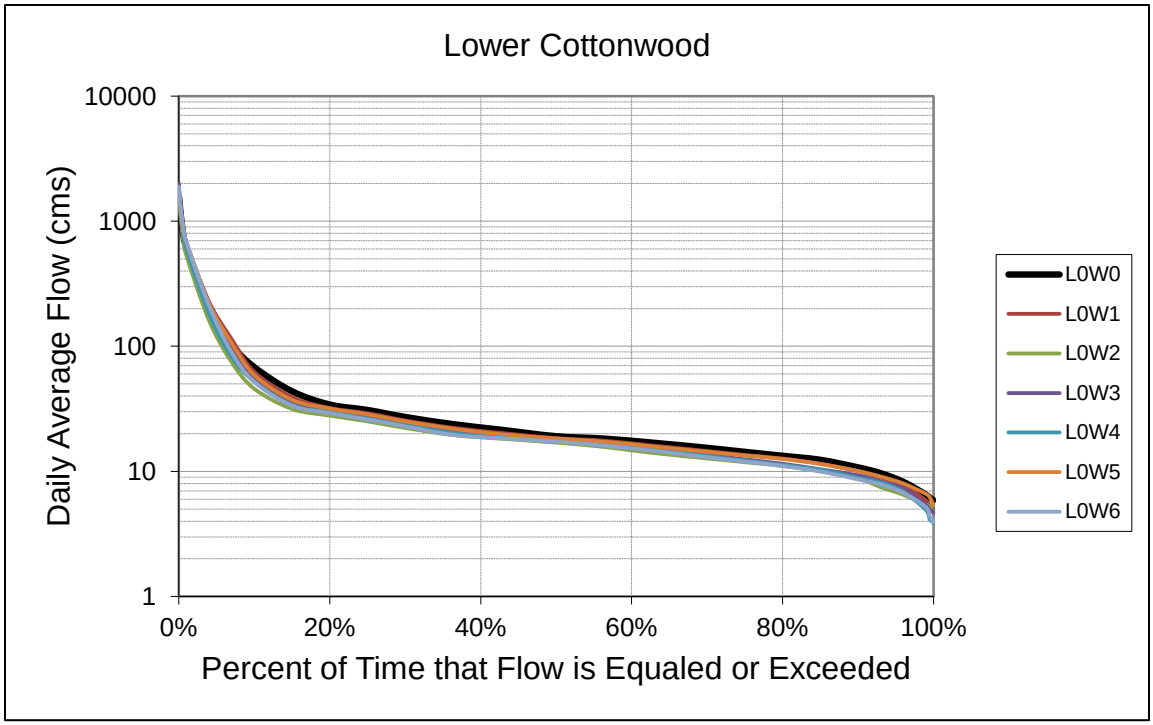


Figure 287. Flow duration, Lower Cottonwood (SWAT)

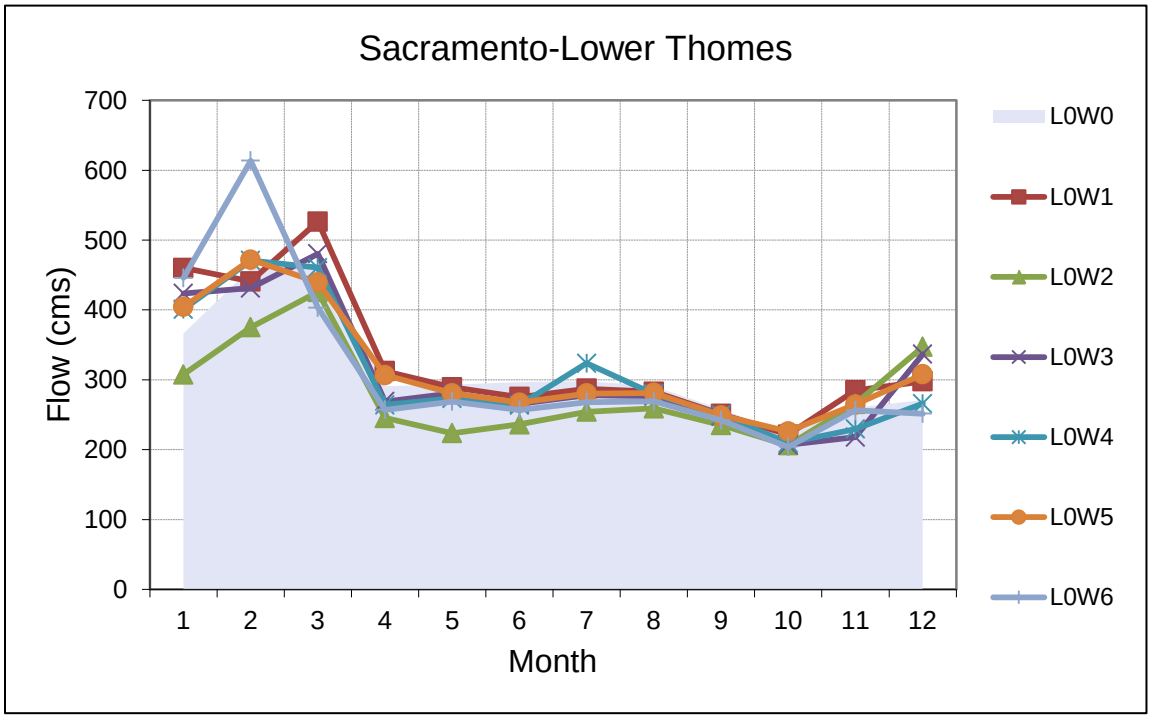


Figure 288. Monthly average flows, Sacramento - Lower Thomes (SWAT)

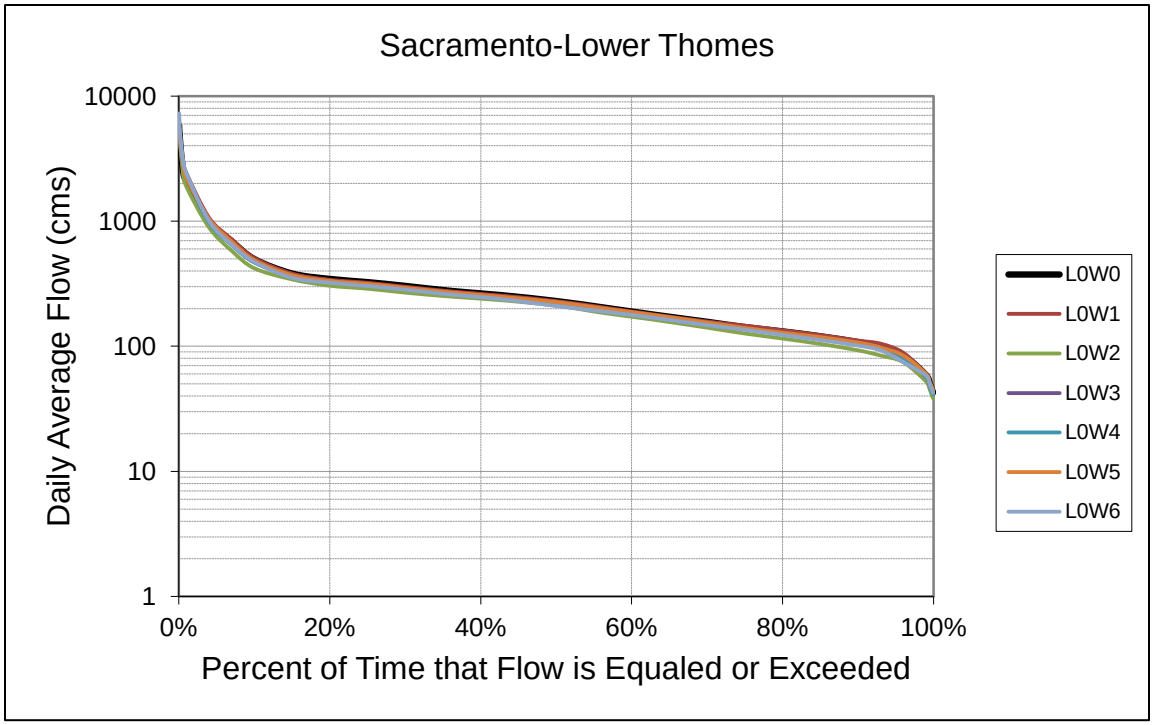


Figure 289. Flow duration, Sacramento -Lower Thomes (SWAT)

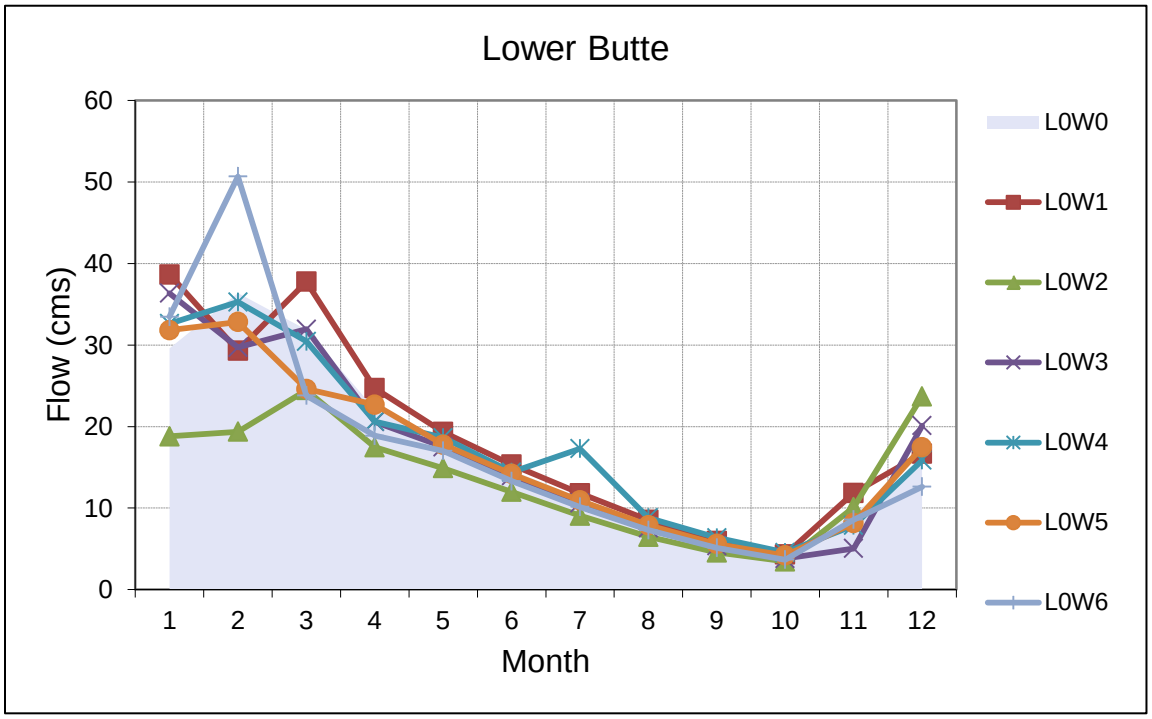


Figure 290. Monthly average flows, Lower Butte (SWAT)

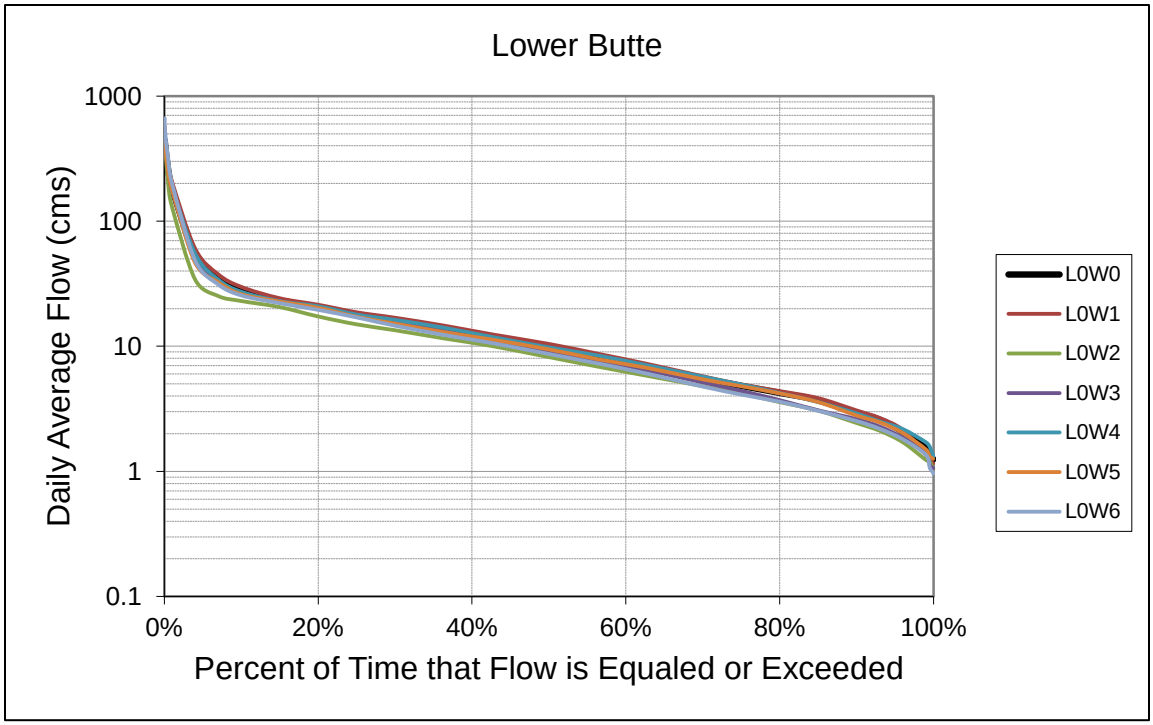


Figure 291. Flow duration, Lower Butte (SWAT)

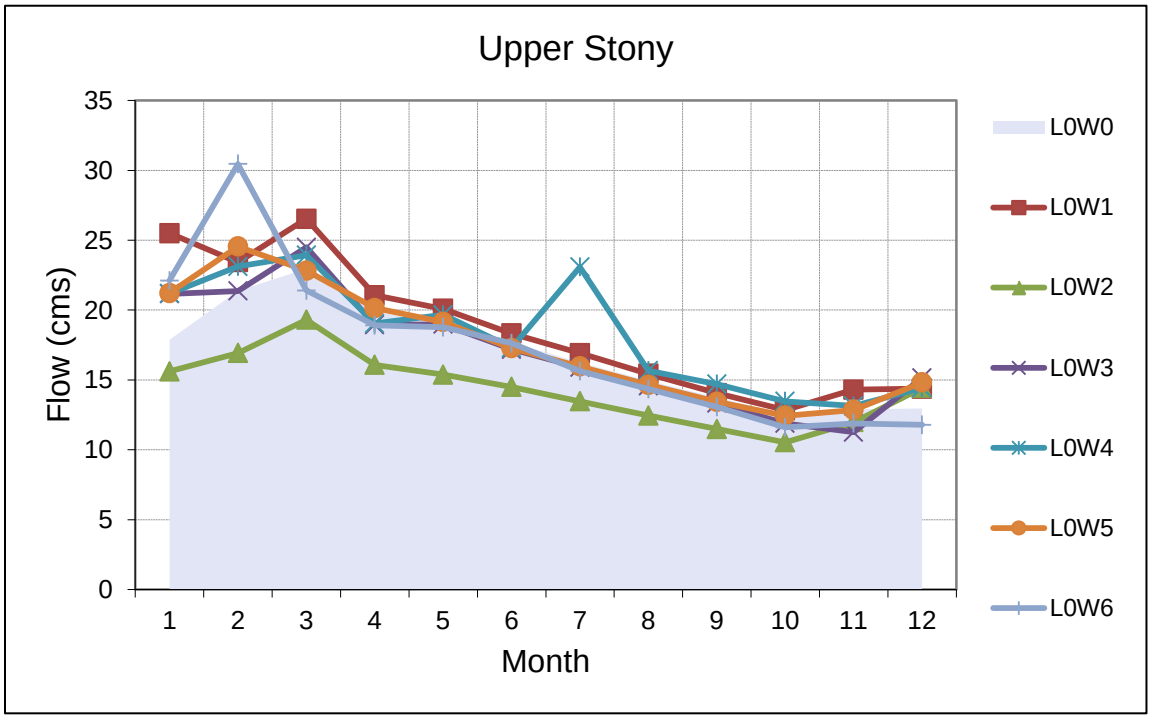


Figure 292. Monthly average flows, Upper Stony (SWAT)

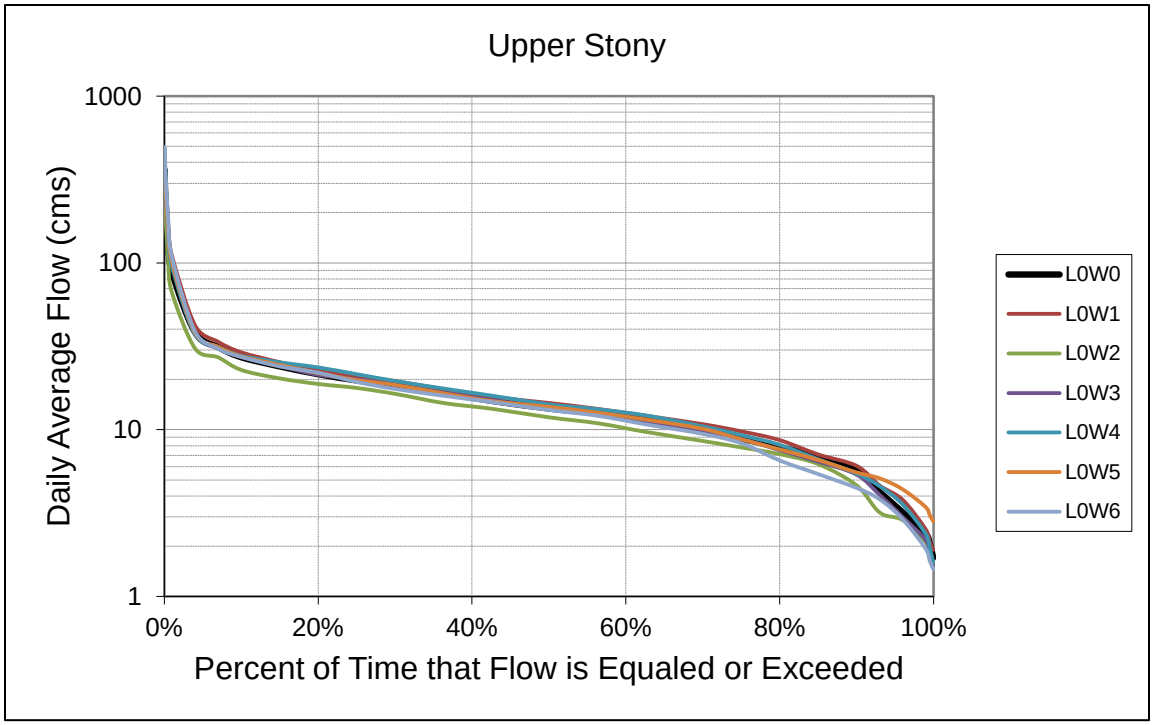


Figure 293. Flow duration, Upper Stony (SWAT)

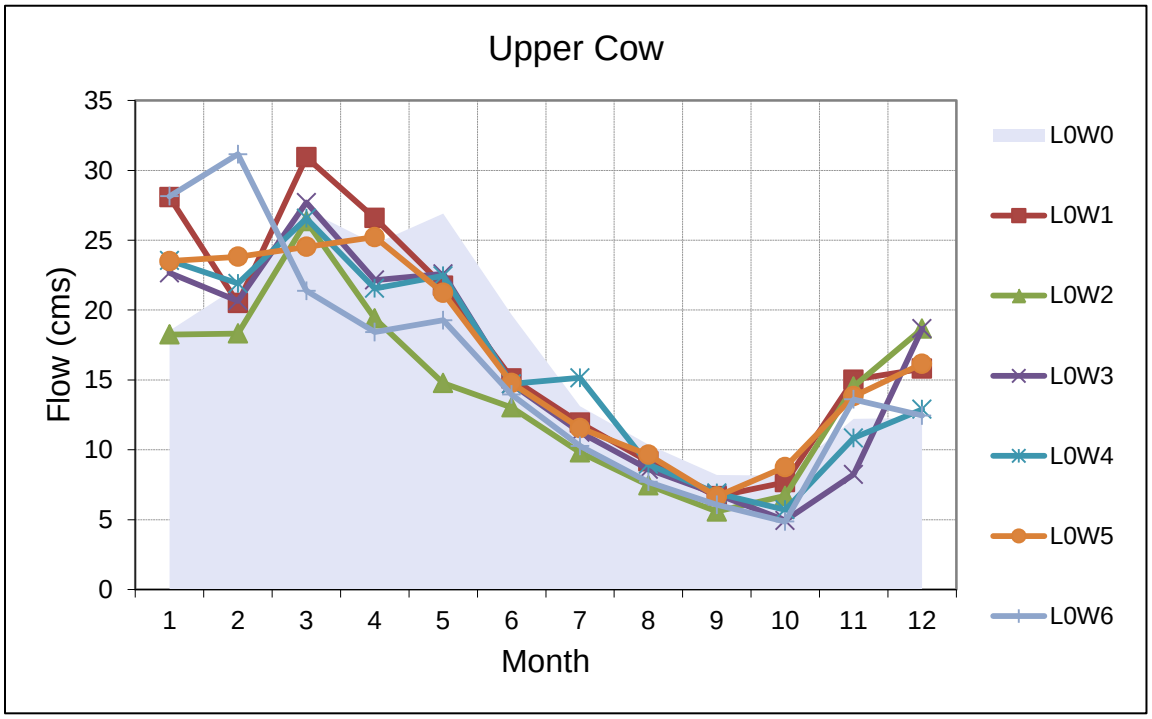


Figure 294. Monthly average flows, Upper Cow (SWAT)

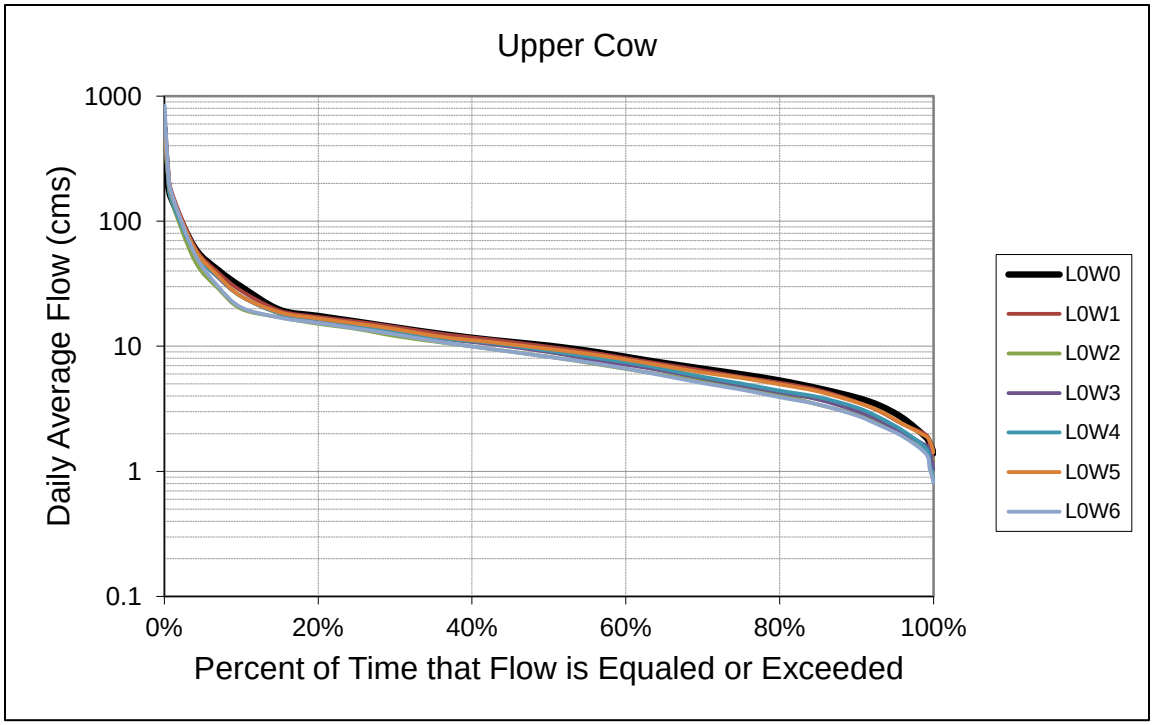


Figure 295. Flow duration, Upper Cow (SWAT)

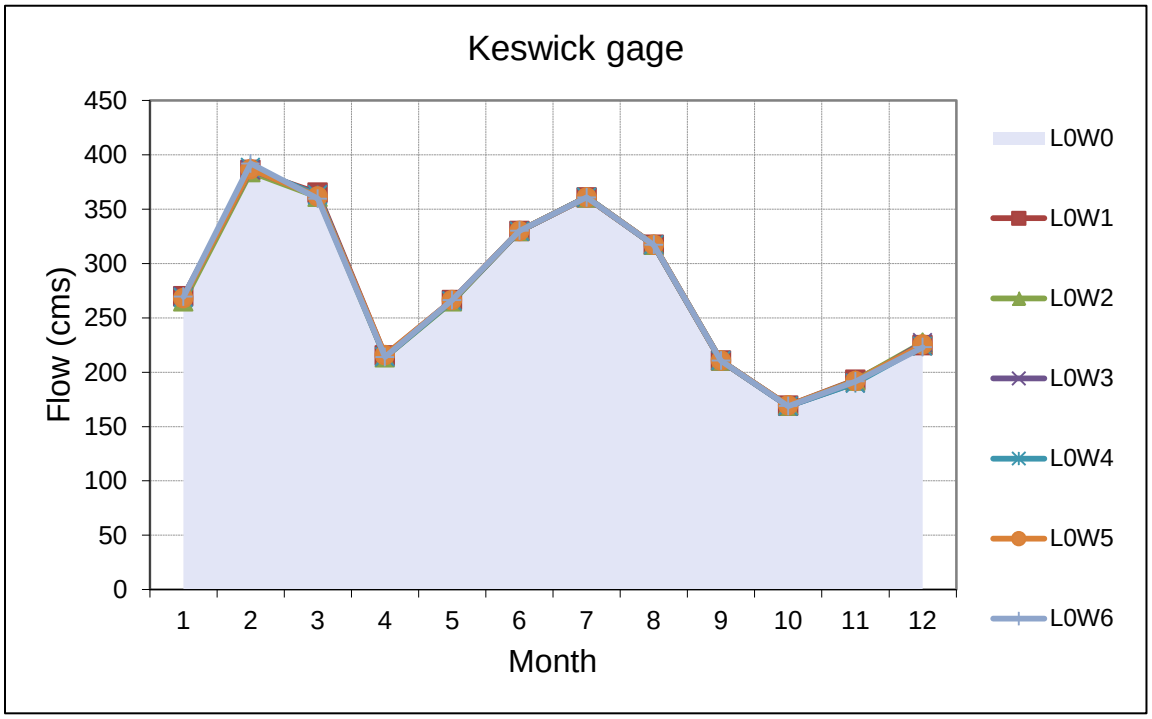


Figure 296. Monthly average flows, Sacramento River at Keswick Gage (SWAT)

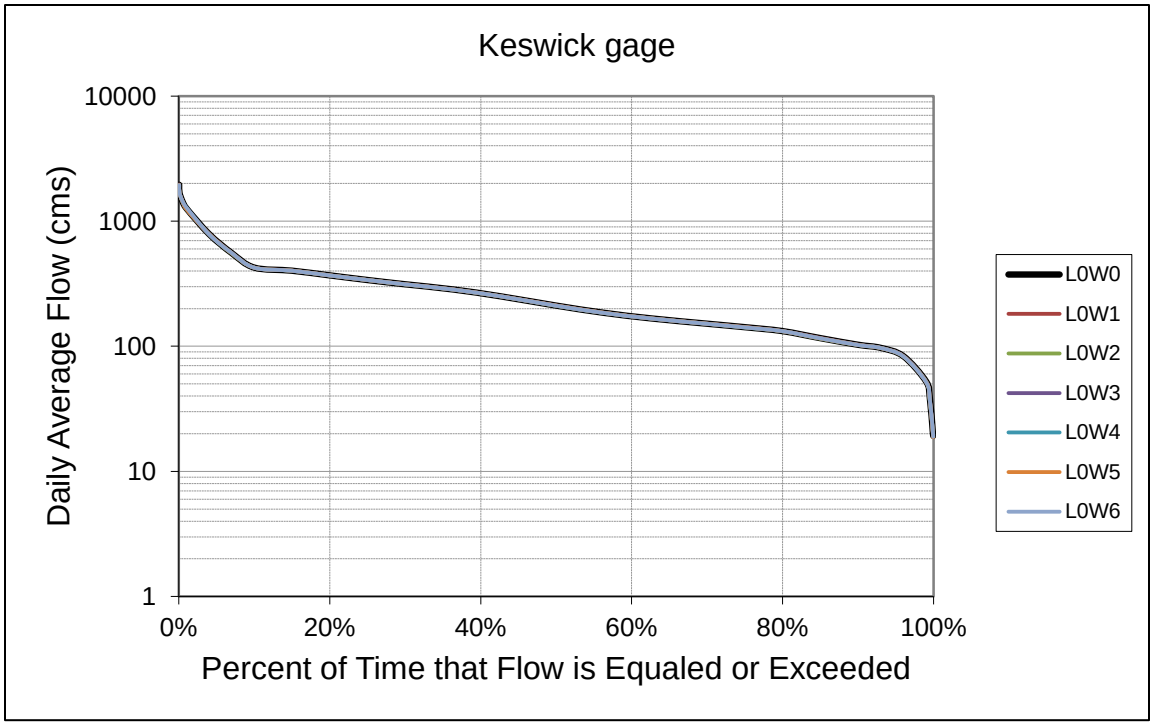


Figure 297. Flow duration, Sacramento River at Keswick Gage (SWAT)

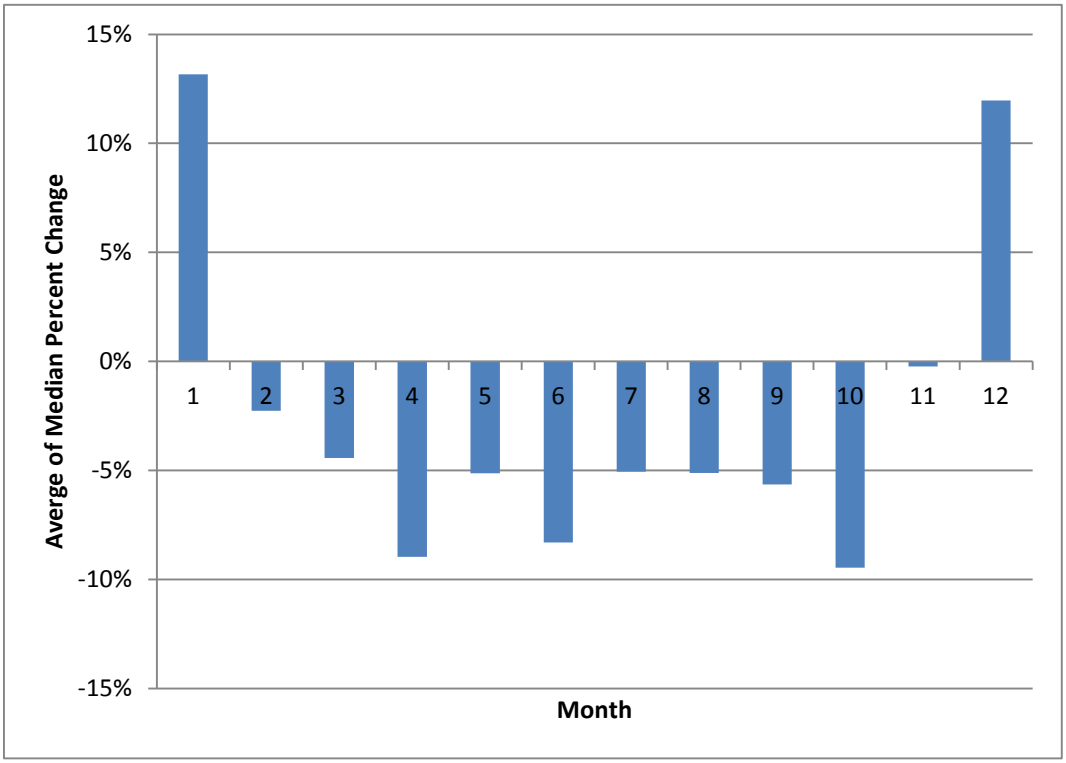


Figure 298. Average of median percent change in flow; NARCCAP Scenarios W1-W6 at all stations, Sacramento River watershed (SWAT)

South Platte Watershed

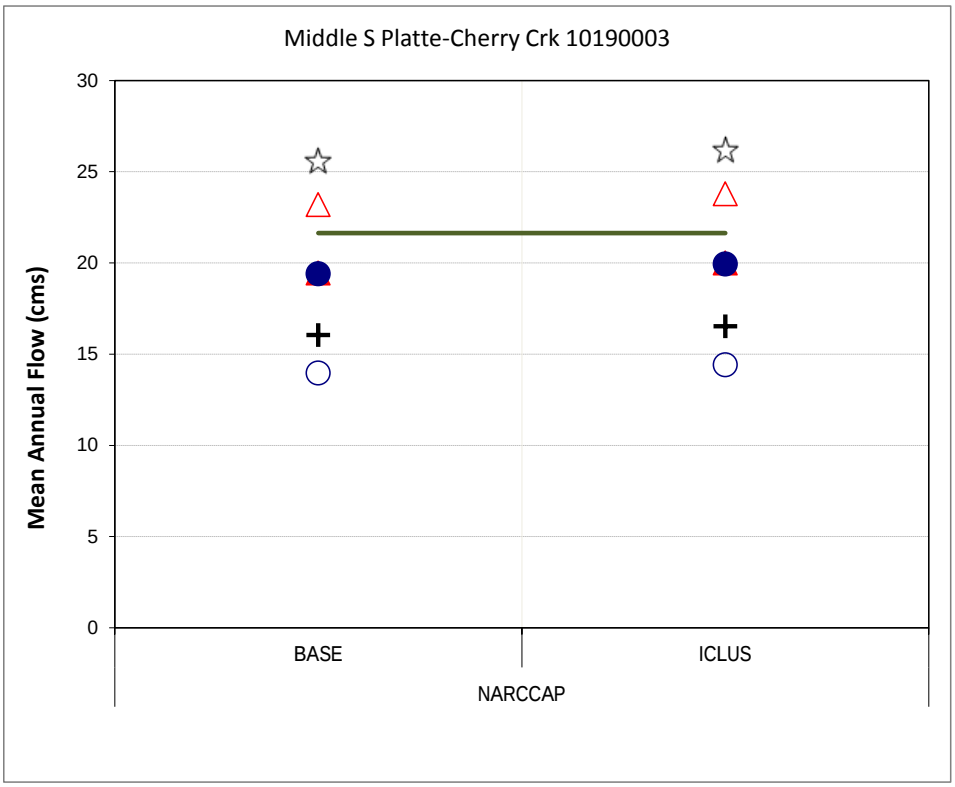


Figure 299. Mean annual flow (cms), Middle South Platte River at Cherry Creek (SWAT)

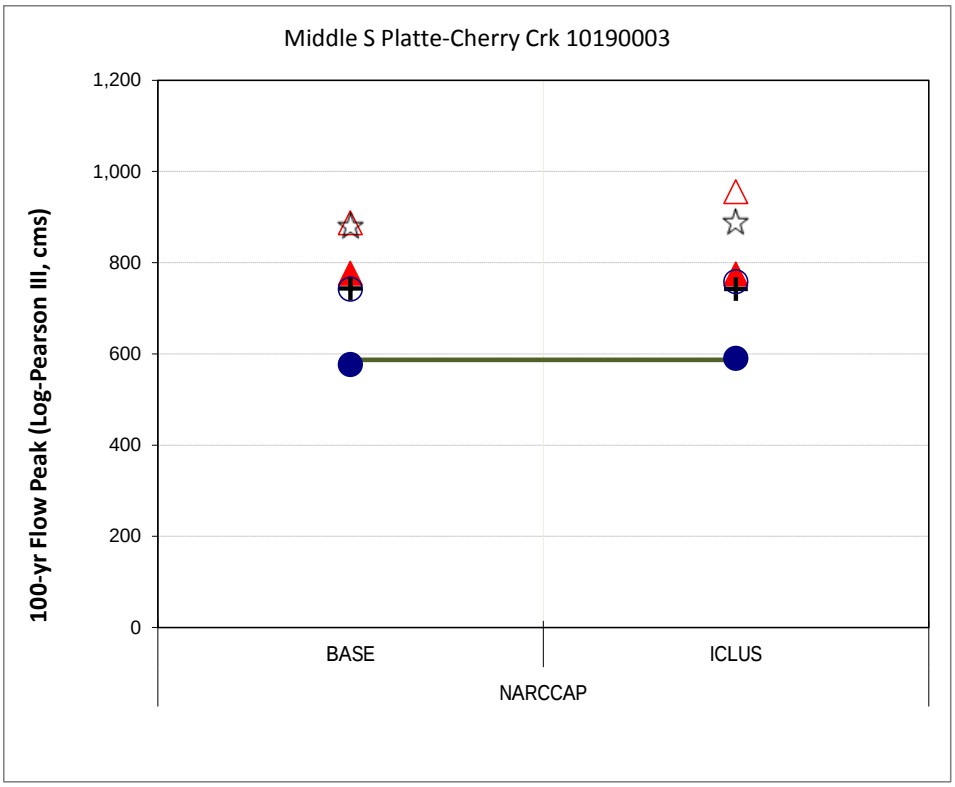


Figure 300. 100-yr Flow Peak (Log-Pearson III, cms), Middle South Platte River at Cherry Creek (SWAT)

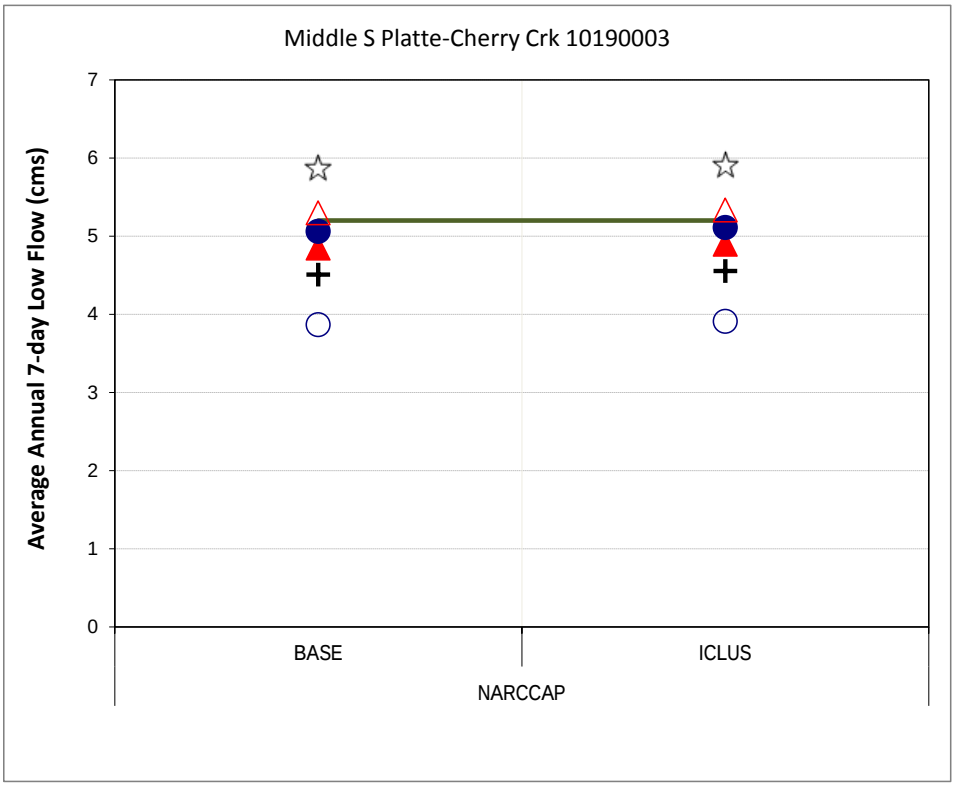


Figure 301. Average Annual 7-day Low Flow (cms), Middle South Platte River at Cherry Creek (SWAT)

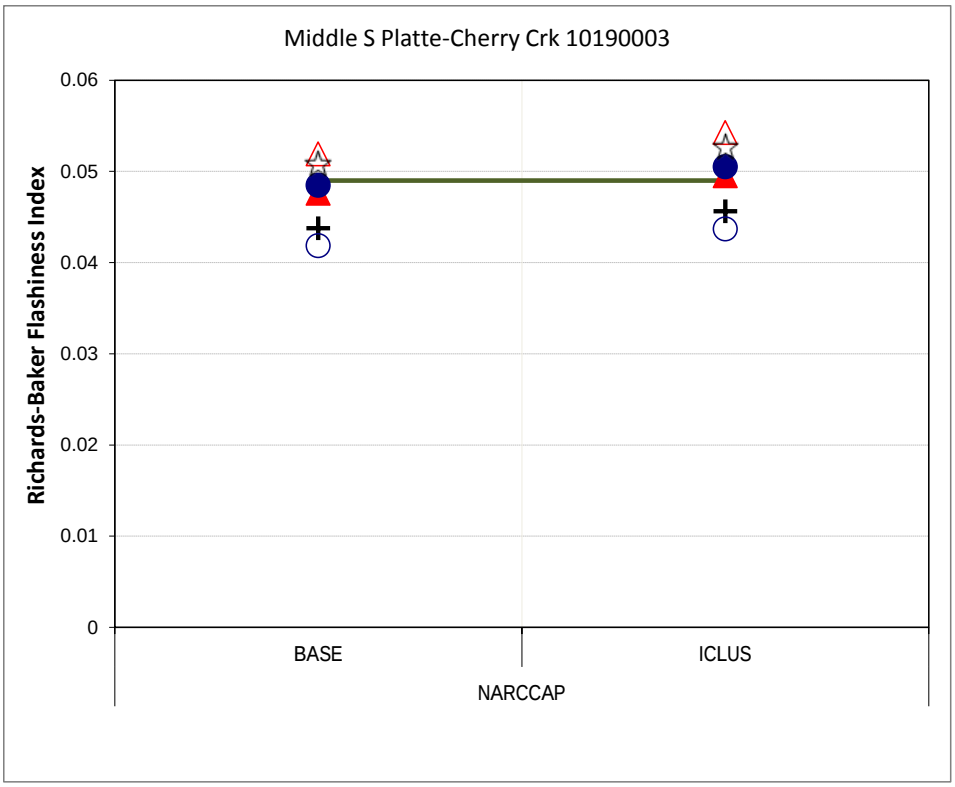


Figure 302. Richards-Baker Flashiness Index, Average Annual 7-day Low Flow (cms), Middle South Platte River at Cherry Creek (SWAT)

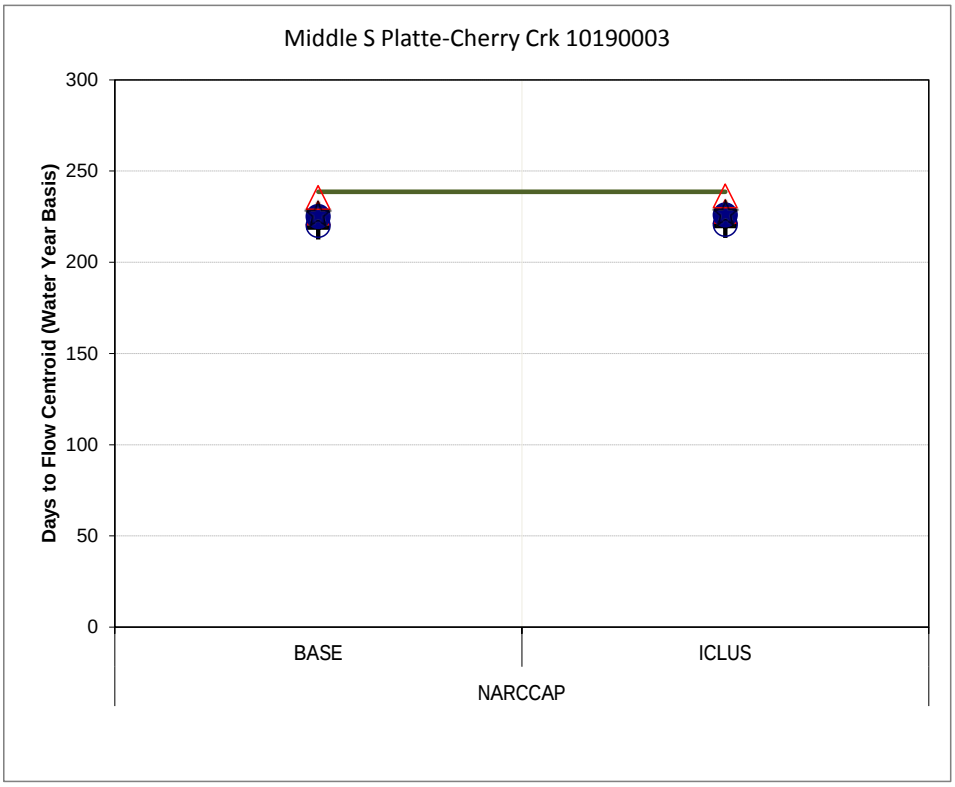


Figure 303. Days to Flow Centroid (Water Year Basis), Middle South Platte River at Cherry Creek (SWAT)

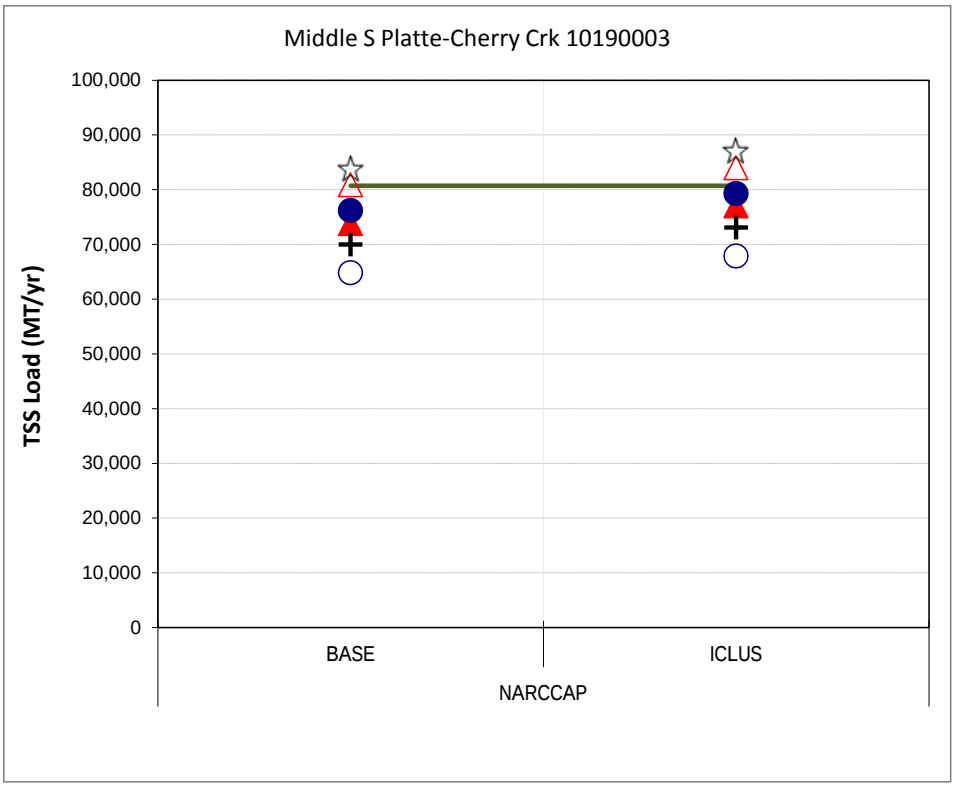


Figure 304. TSS Load (MT/yr), Middle South Platte River at Cherry Creek (SWAT)

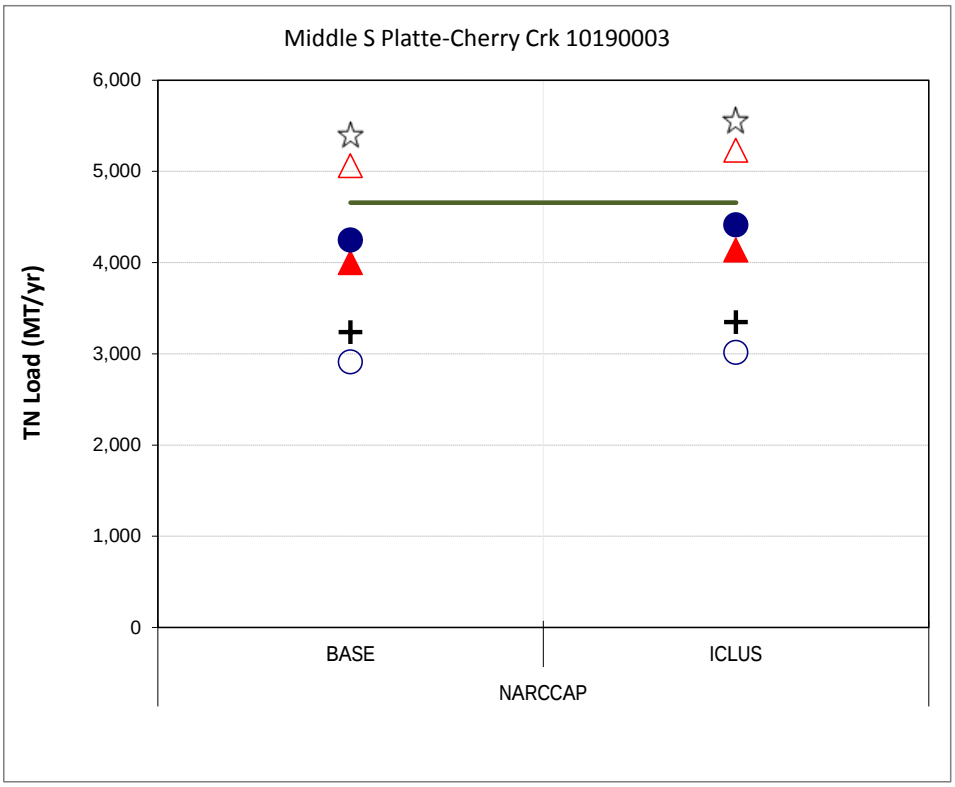


Figure 305. TN Load (MT/yr), Middle South Platte River at Cherry Creek (SWAT)

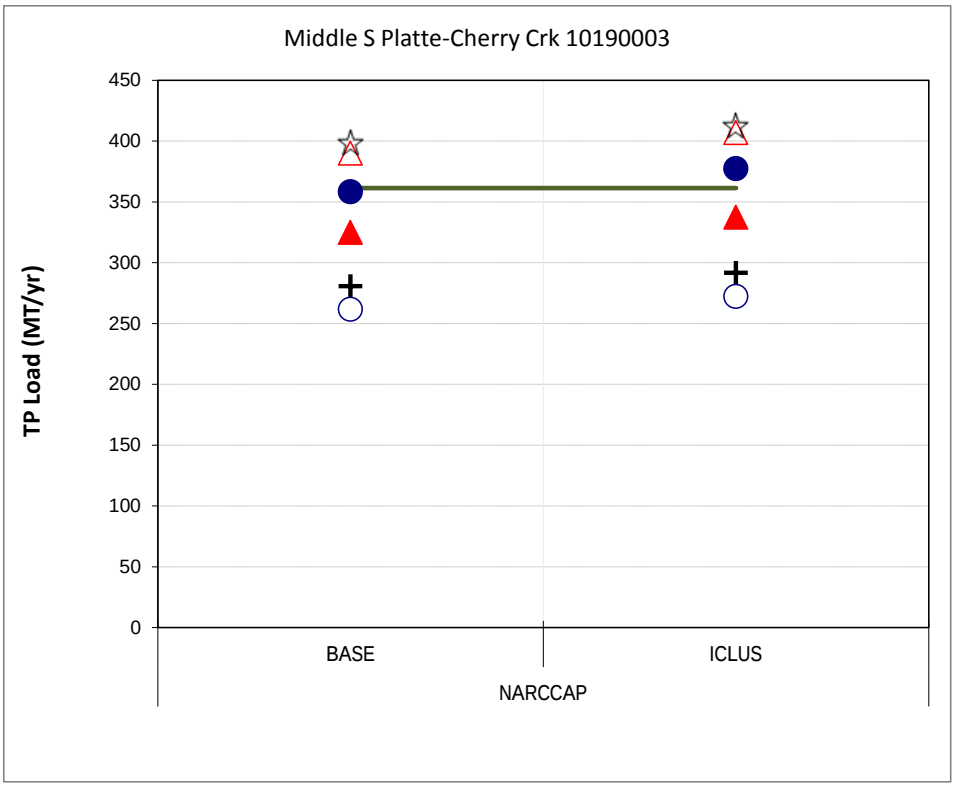


Figure 306. TP Load (MT/yr), Middle South Platte River at Cherry Creek (SWAT)

Table 12. Summary of range of change relative to existing conditions for NARCCAP dynamically downscaled scenarios, South Platte River watershed SWAT model

	Results without LU change				Results with LU change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
S Platte Headwaters HUC 10190001								
Flow	-36.89%	-20.62%	-20.43%	0.84%	-36.93%	-20.69%	-20.51%	0.73%
TSS	-65.57%	-54.01%	-53.01%	-36.33%	-65.71%	-54.51%	-53.56%	-37.43%
TN	-65.33%	-47.10%	-48.90%	-31.36%	-65.35%	-47.33%	-48.97%	-31.43%
TP	-44.99%	-31.42%	-28.35%	-3.42%	-44.93%	-31.00%	-28.14%	-3.24%
Upper S Platte HUC 10190002								
Flow	-35.38%	-13.10%	-15.35%	-0.68%	-35.01%	-13.20%	-15.34%	-1.02%
TSS	-41.89%	-15.38%	-19.00%	-1.21%	-39.28%	-14.59%	-17.98%	-1.77%
TN	-37.36%	-19.15%	-19.82%	-4.91%	-37.33%	-19.33%	-19.67%	-3.59%
TP	-30.52%	-15.11%	-15.22%	-1.63%	-30.26%	-14.82%	-14.66%	0.19%
Middle S Platte-Cherry Crk HUC 10190003								
Flow	-35.48%	-10.22%	-9.34%	18.52%	-35.22%	-10.26%	-9.43%	18.01%
TSS	-19.67%	-7.10%	-7.12%	4.16%	-19.08%	-6.82%	-6.90%	4.06%
TN	-37.48%	-11.45%	-10.98%	16.28%	-37.35%	-11.20%	-10.98%	15.73%
TP	-27.54%	-5.46%	-7.04%	10.56%	-27.59%	-4.92%	-6.92%	10.07%
Clear HUC 10190004								
Flow	-19.59%	-8.28%	-7.78%	6.48%	-19.56%	-8.37%	-7.80%	6.53%
TSS	-68.91%	-57.70%	-58.62%	-49.02%	-68.76%	-57.54%	-58.48%	-48.91%
TN	-19.10%	-10.15%	-8.96%	5.27%	-19.10%	-10.20%	-8.92%	5.48%
TP	-28.01%	-14.79%	-12.76%	9.07%	-27.94%	-14.75%	-12.58%	9.58%
St Vrain HUC 10190005								
Flow	-18.59%	-4.98%	-6.21%	5.80%	-18.69%	-5.10%	-6.34%	5.62%
TSS	-25.25%	-12.08%	-13.12%	-2.27%	-25.27%	-11.94%	-13.16%	-2.75%
TN	-21.67%	-8.97%	-10.09%	0.52%	-21.23%	-8.43%	-9.69%	0.92%
TP	-5.28%	-1.28%	-1.89%	1.15%	-5.39%	-1.19%	-1.86%	1.19%
Big Thompson HUC 10190006								
Flow	-10.44%	-2.98%	-3.31%	3.12%	-10.49%	-2.98%	-3.33%	3.12%
TSS	-25.70%	-19.72%	-19.67%	-14.31%	-25.37%	-19.32%	-19.32%	-13.94%
TN	-11.23%	-4.28%	-3.87%	2.26%	-11.62%	-4.66%	-4.31%	1.92%
TP	-6.65%	-3.26%	-2.64%	1.88%	-6.57%	-3.12%	-2.56%	1.42%
Cache La Poudre HUC 10190007								
Flow	-26.87%	-5.02%	-6.79%	9.01%	-26.28%	-4.89%	-6.59%	9.00%
TSS	-39.12%	-18.89%	-20.53%	-4.98%	-37.64%	-18.03%	-19.68%	-4.65%
TN	-23.68%	-1.27%	-4.69%	15.28%	-21.68%	-0.65%	-3.58%	18.09%
TP	-4.55%	2.79%	3.36%	13.28%	-4.30%	2.41%	3.97%	15.42%
Lone Tree-Owl HUC 10190008								
Flow	-29.85%	-2.46%	1.93%	32.81%	-29.79%	-2.45%	1.92%	32.73%

TSS	-30.31%	-0.91%	5.36%	39.21%	-29.94%	-1.06%	5.04%	38.13%
TN	-31.92%	-7.24%	-3.57%	33.36%	-31.77%	-7.12%	-3.44%	33.46%
TP	-29.46%	-7.93%	-3.07%	30.23%	-29.21%	-7.78%	-3.06%	29.70%
Crow HUC 10190009								
Flow	-53.04%	-27.95%	-16.36%	25.26%	-53.04%	-27.95%	-16.36%	25.26%
TSS	-47.25%	-18.53%	-9.23%	27.06%	-47.16%	-18.49%	-9.21%	27.01%
TN	-35.94%	-17.32%	-8.94%	18.73%	-35.93%	-17.31%	-8.90%	18.93%
TP	-7.34%	-2.93%	-1.72%	4.22%	-7.34%	-2.93%	-1.72%	4.23%
Kiowa HUC 10190010								
Flow	-20.20%	7.02%	13.17%	59.23%	-20.20%	7.02%	13.17%	59.23%
TSS	-17.09%	6.16%	14.66%	60.82%	-17.09%	6.16%	14.65%	60.81%
TN	11.20%	24.69%	26.70%	42.80%	11.20%	24.69%	26.70%	42.80%
TP	-3.07%	2.35%	3.96%	14.21%	-3.07%	2.35%	3.96%	14.21%
Bijou HUC 10190011								
Flow	-44.46%	-5.63%	-6.93%	31.10%	-44.41%	-5.65%	-6.95%	31.01%
TSS	-57.62%	-14.14%	-14.33%	27.79%	-56.46%	-13.94%	-14.20%	27.13%
TN	-59.50%	-40.45%	-38.73%	-22.22%	-59.50%	-40.42%	-38.74%	-22.28%
TP	-43.73%	-8.30%	-9.95%	23.06%	-43.25%	-8.14%	-9.78%	22.76%
S Platte at Henderson (gage 06720500)								
Flow	-26.13%	-7.87%	-10.17%	1.35%	-26.12%	-8.32%	-10.46%	0.66%
TSS	-45.93%	-27.09%	-29.11%	-19.72%	-43.64%	-26.28%	-27.83%	-18.24%
TN	-21.50%	-9.07%	-9.18%	2.21%	-21.73%	-9.19%	-9.02%	3.48%
TP	-16.10%	-6.24%	-6.35%	2.56%	-16.42%	-6.34%	-6.22%	3.71%
Box Elder Creek								
Flow	-60.45%	-11.87%	-16.04%	17.00%	-59.20%	-11.53%	-15.60%	17.00%
TSS	-59.18%	-12.68%	-15.39%	20.95%	-51.55%	-10.83%	-13.45%	17.55%
TN	-45.23%	-34.61%	-32.63%	-19.49%	-45.66%	-34.34%	-32.33%	-19.12%
TP	-46.68%	-7.23%	-10.58%	17.85%	-43.35%	-5.83%	-9.03%	18.07%
S Platte at Denver (gage 06714000)								
Flow	-35.68%	-10.19%	-13.61%	3.07%	-34.68%	-10.75%	-13.81%	1.71%
TSS	-40.75%	-9.77%	-16.06%	1.64%	-37.20%	-10.76%	-14.94%	3.33%
TN	-36.98%	-17.73%	-18.82%	-4.22%	-36.48%	-17.70%	-18.46%	-3.44%
TP	-30.63%	-14.00%	-14.57%	-1.40%	-30.04%	-13.35%	-13.68%	0.43%

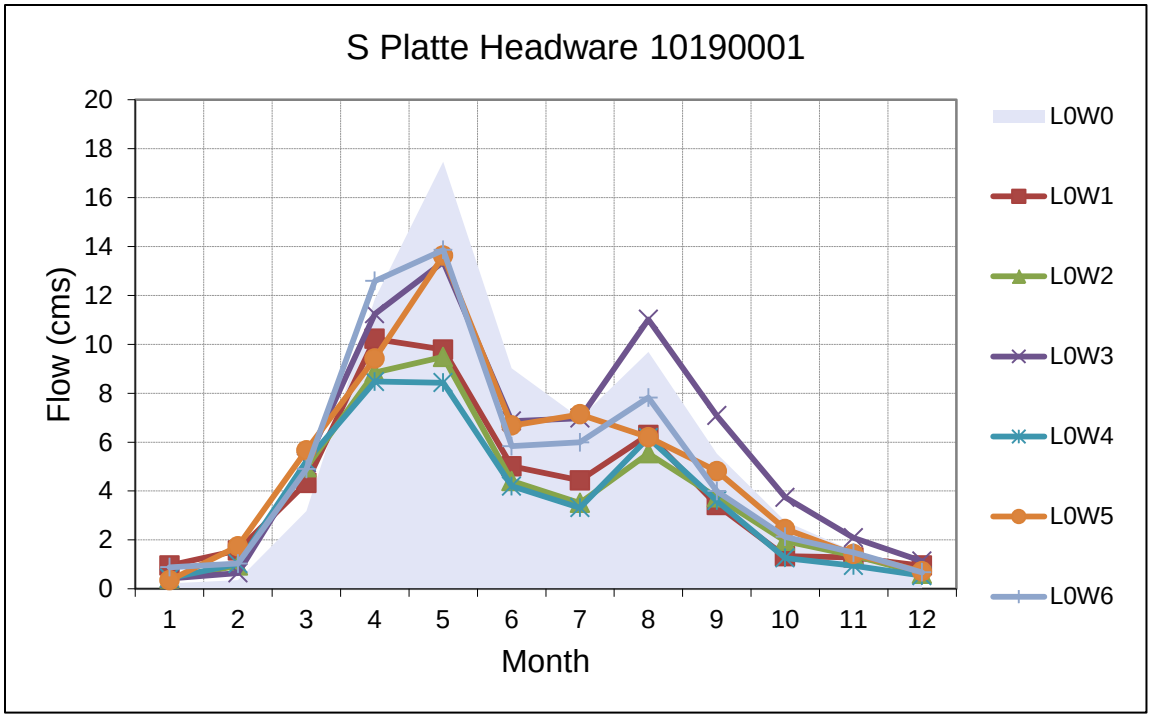


Figure 307. Monthly average flows, South Platte Headwaters (SWAT)

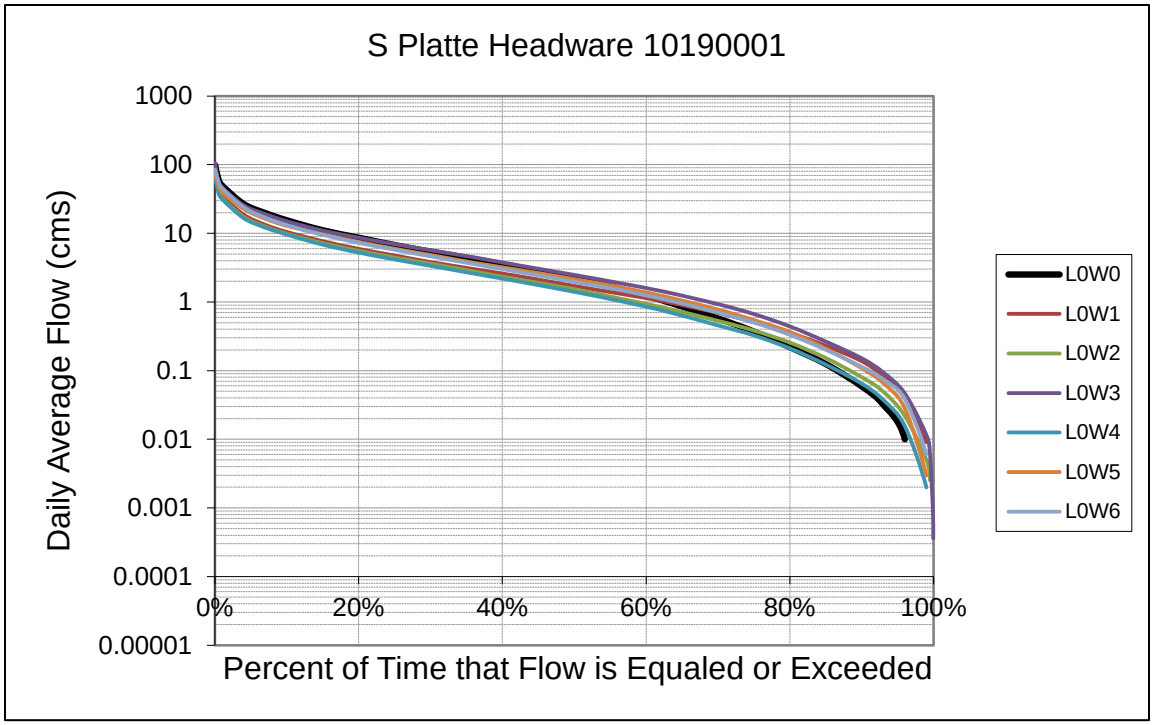


Figure 308. Flow duration, South Platte Headwaters (SWAT)

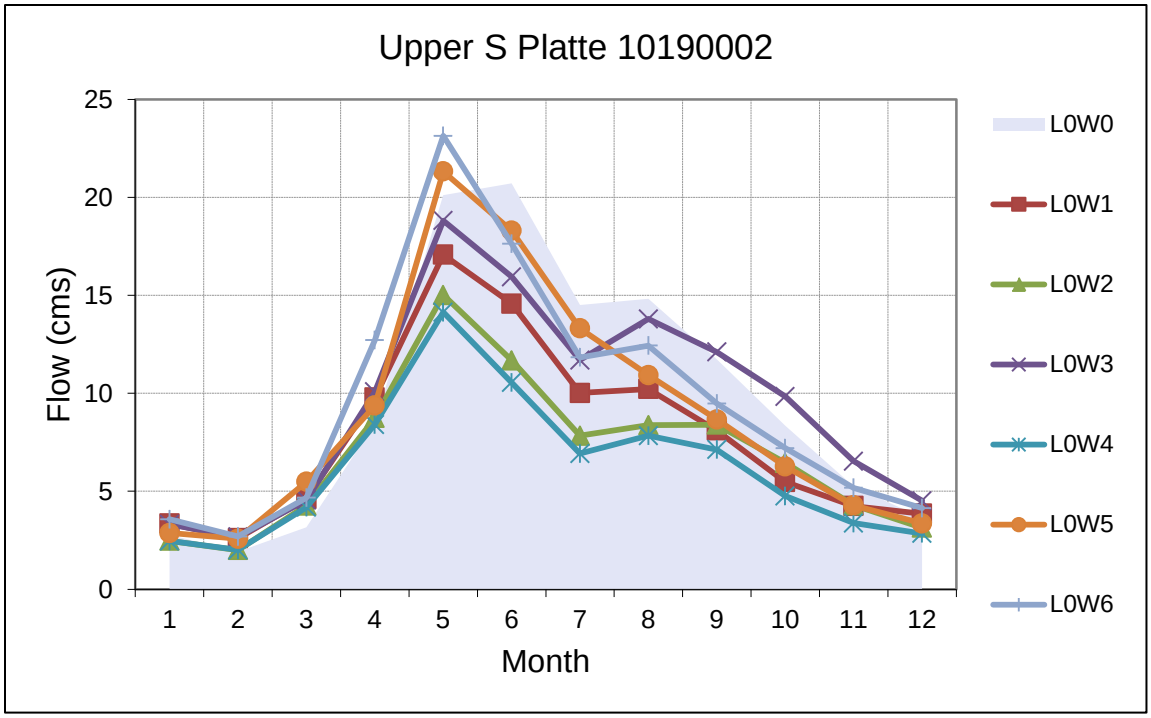


Figure 309. Monthly average flows, Upper South Platte River (SWAT)

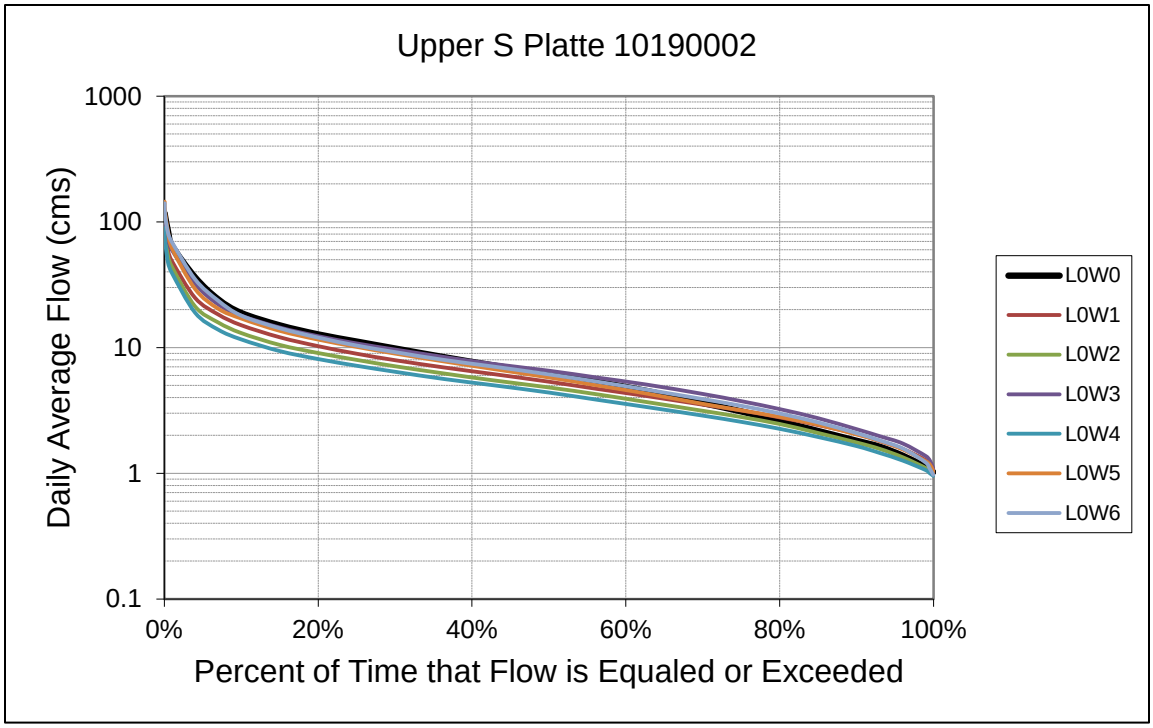


Figure 310. Flow duration, Upper South Platte River (SWAT)

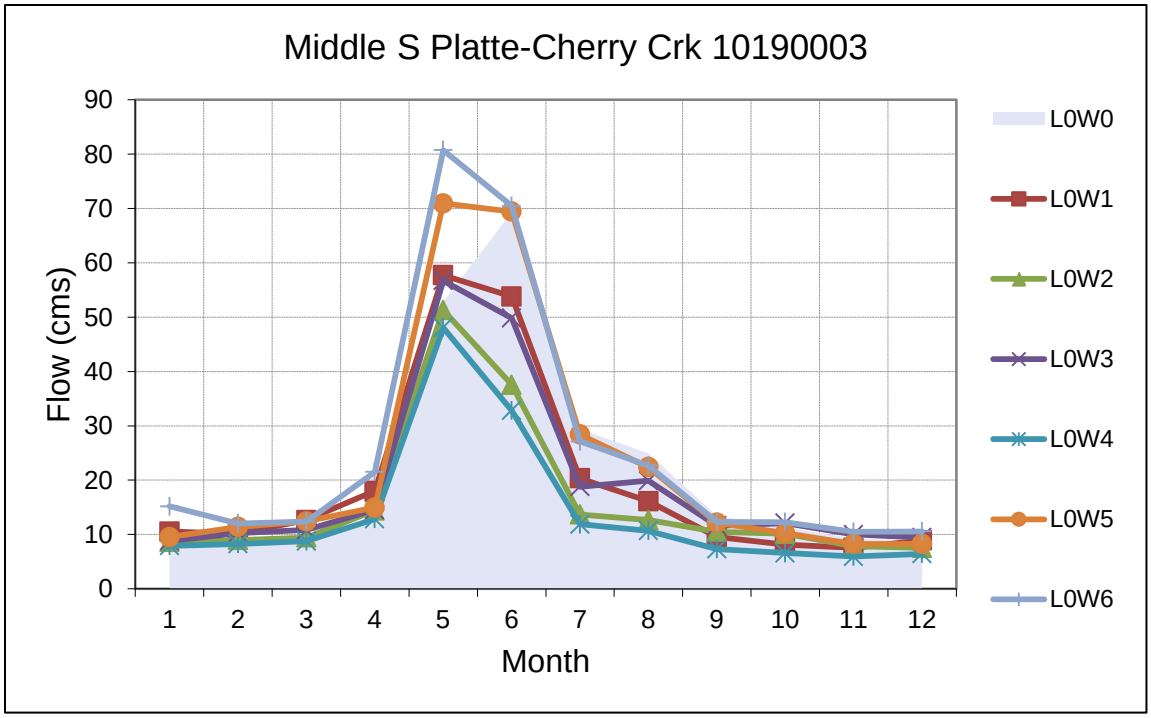


Figure 311. Monthly average flows, Middle South Platte River at Cherry Creek (SWAT)

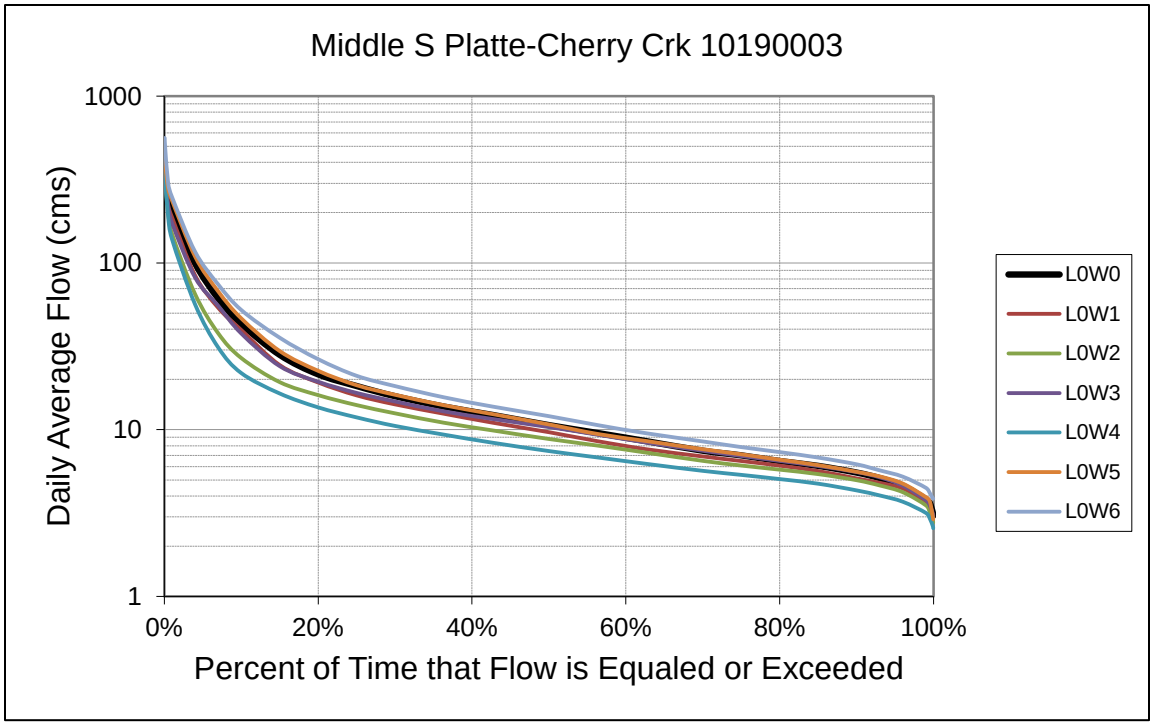


Figure 312. Flow duration, Middle South Platte River at Cherry Creek (SWAT)

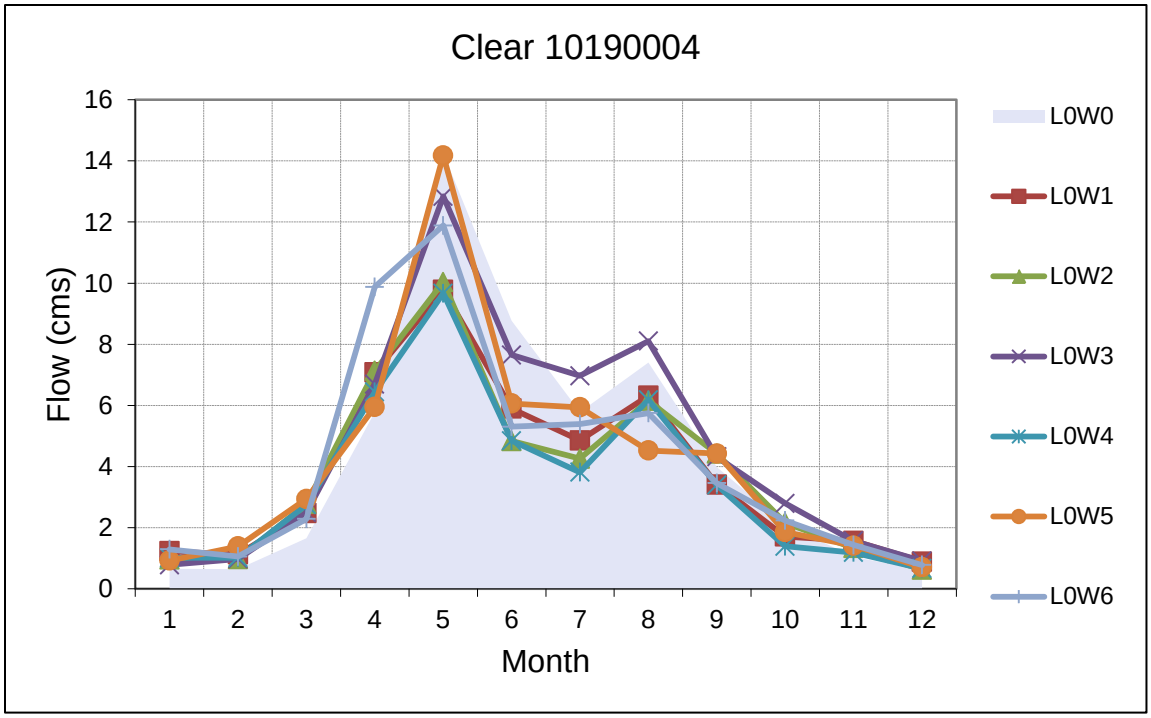


Figure 313. Monthly average flows, Clear Creek (SWAT)

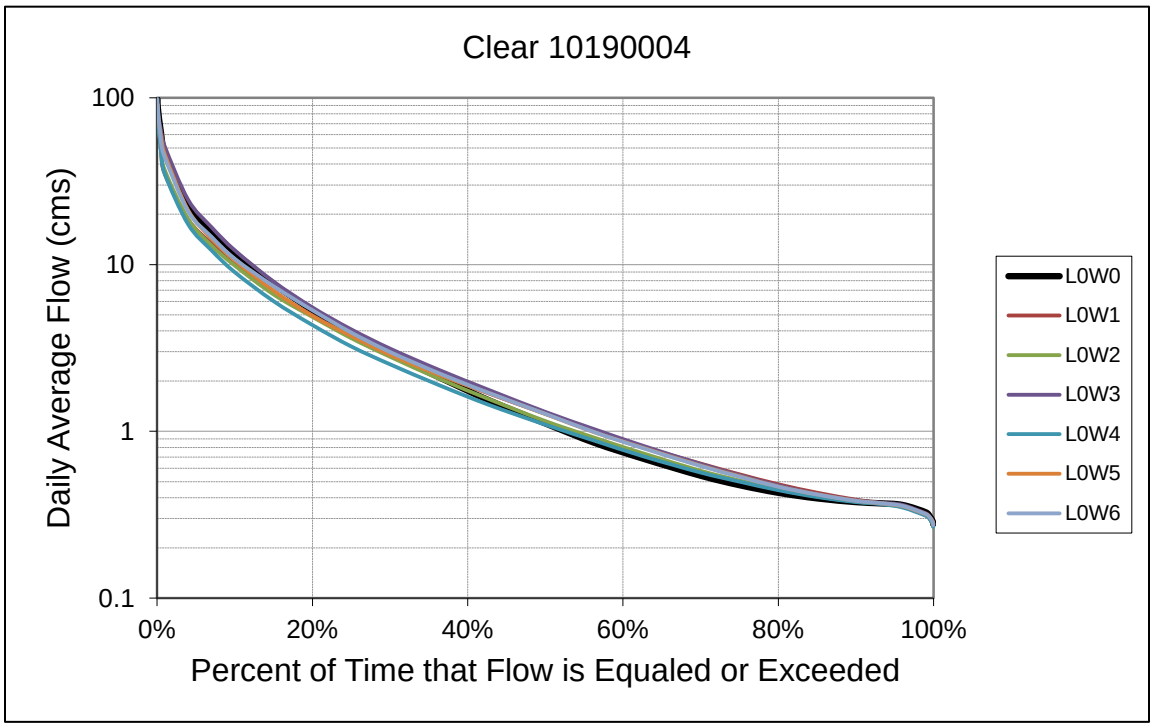


Figure 314. Flow duration, Clear Creek (SWAT)

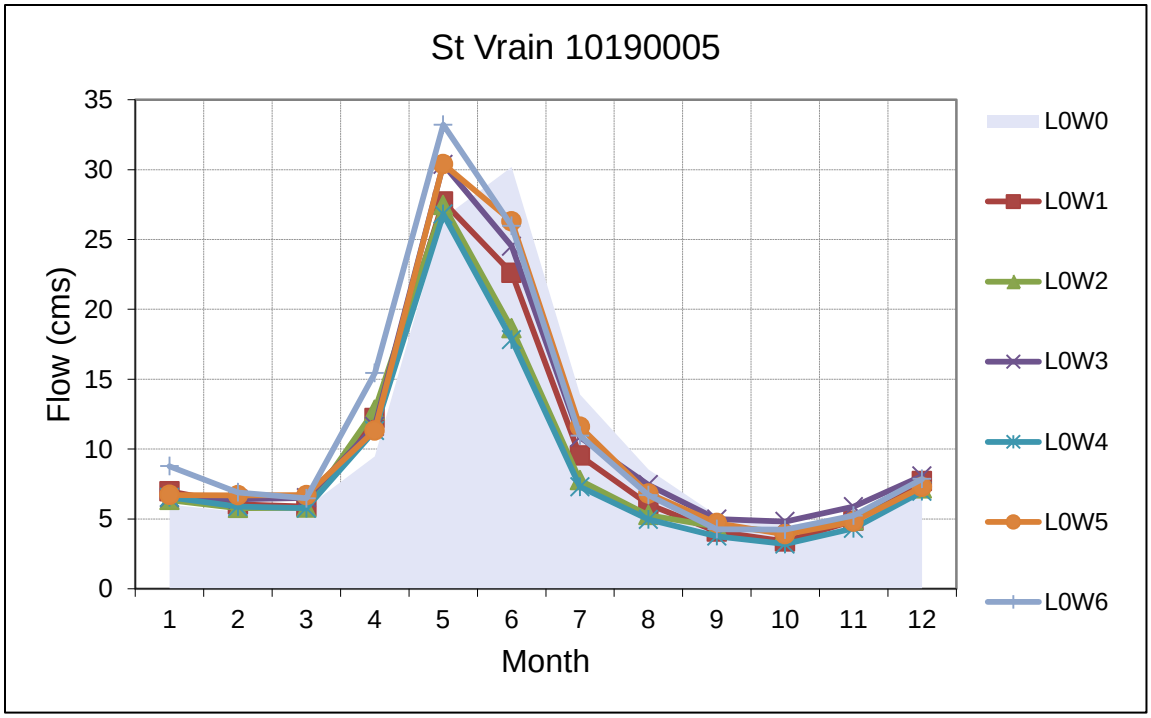


Figure 315. Monthly average flows, St Vrain River (SWAT)

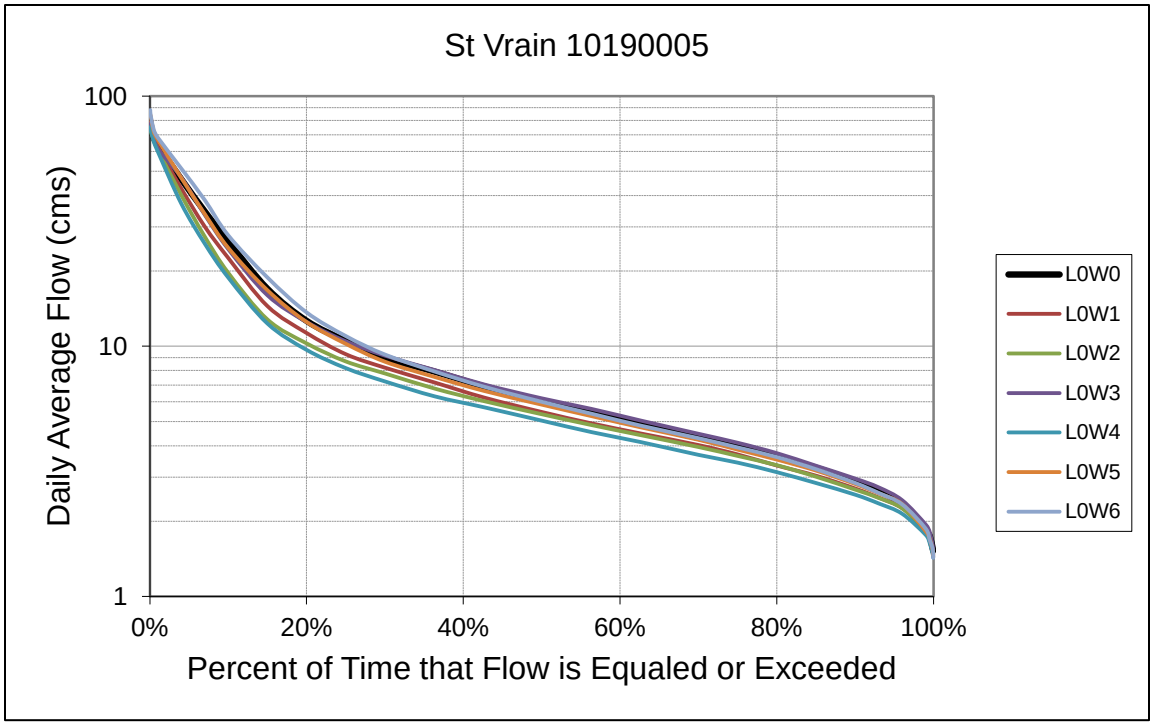


Figure 316. Flow duration, St Vrain River (SWAT)

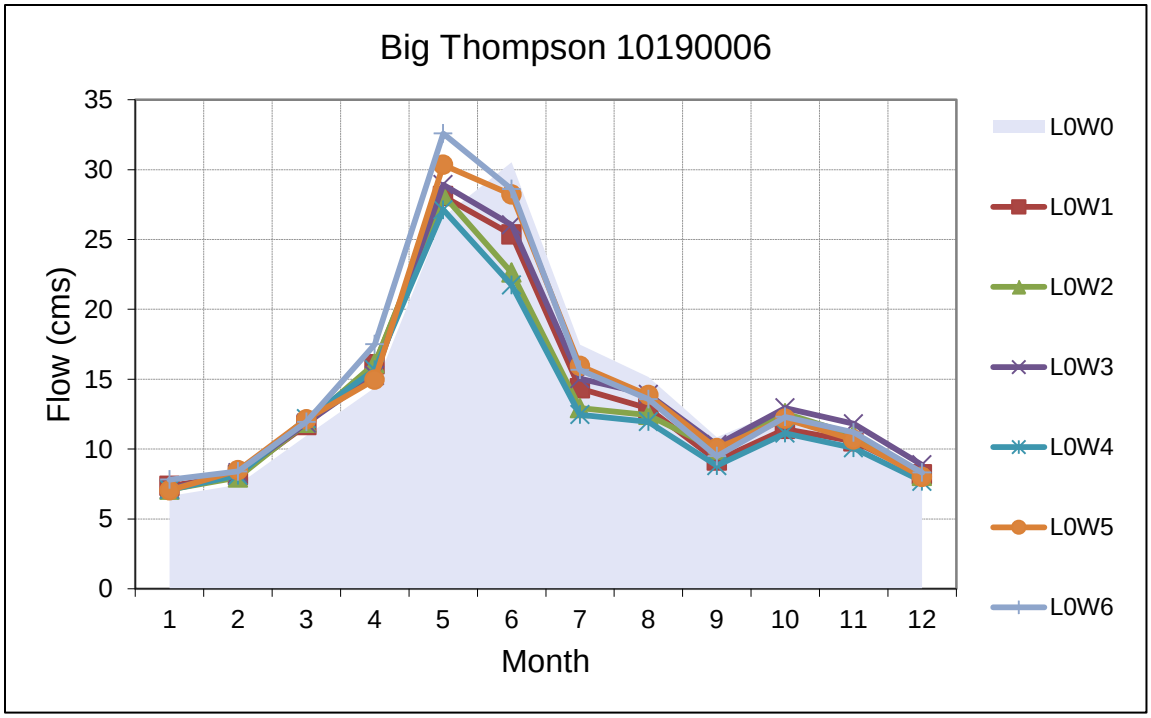


Figure 317. Monthly average flows, Big Thompson River (SWAT)

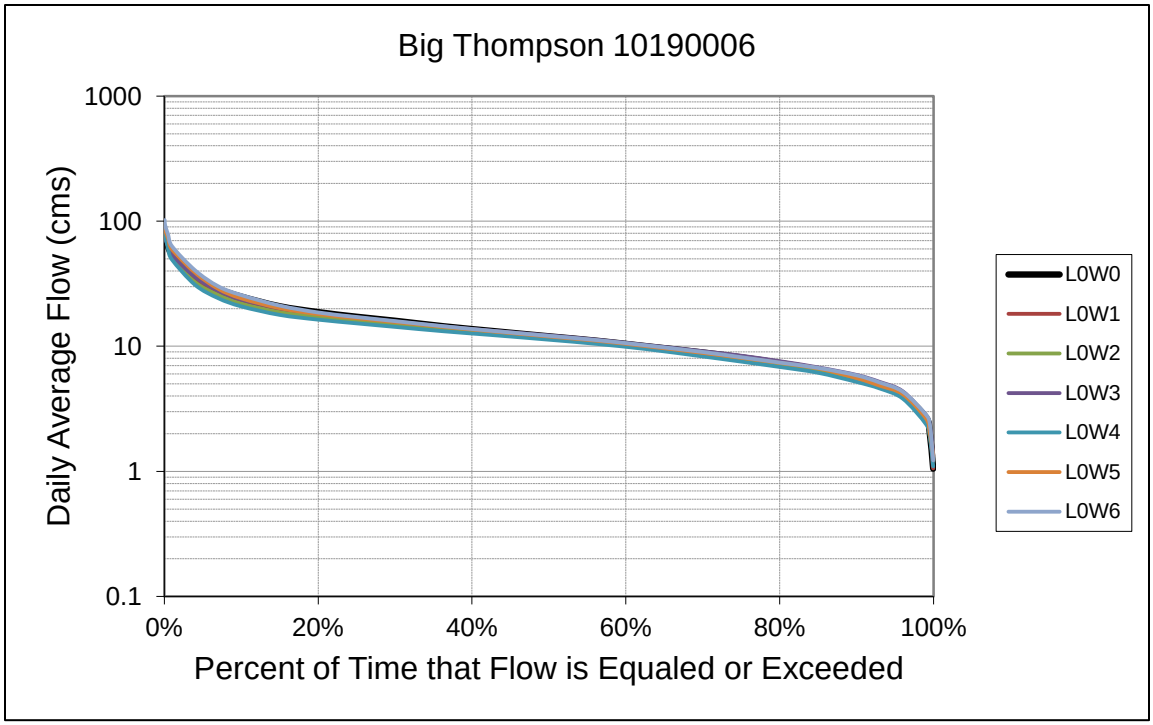


Figure 318. Flow duration, Big Thompson River (SWAT)

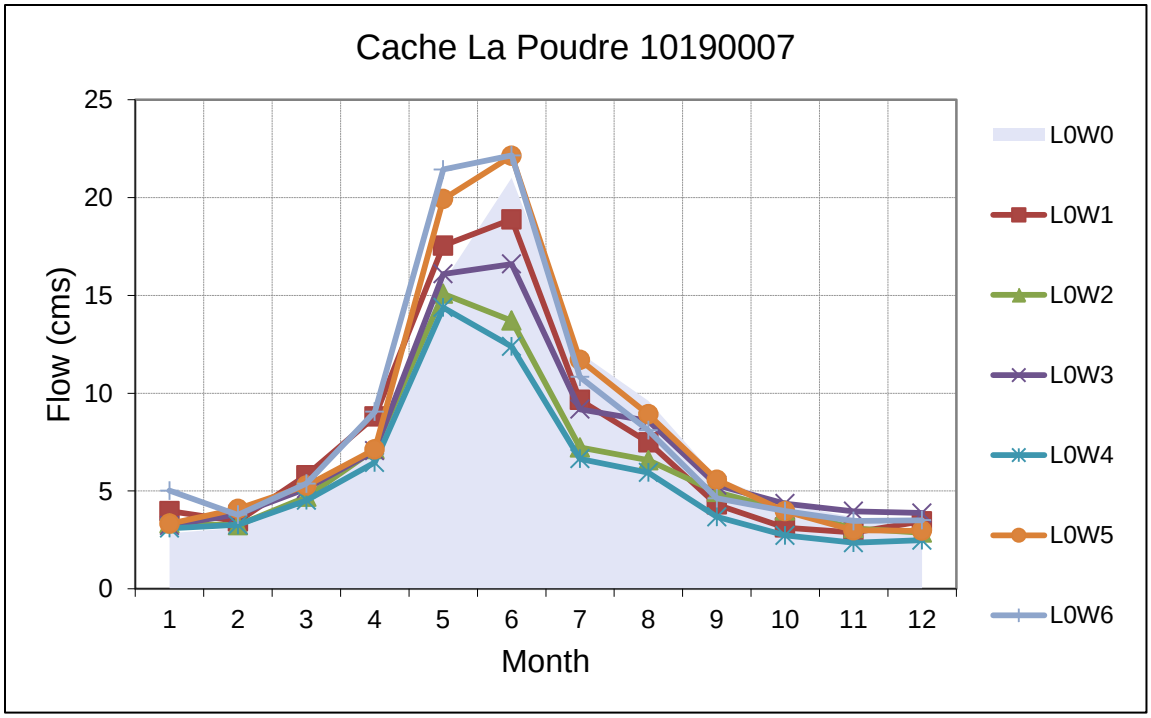


Figure 319. Monthly average flows, Cache La Poudre River (SWAT)

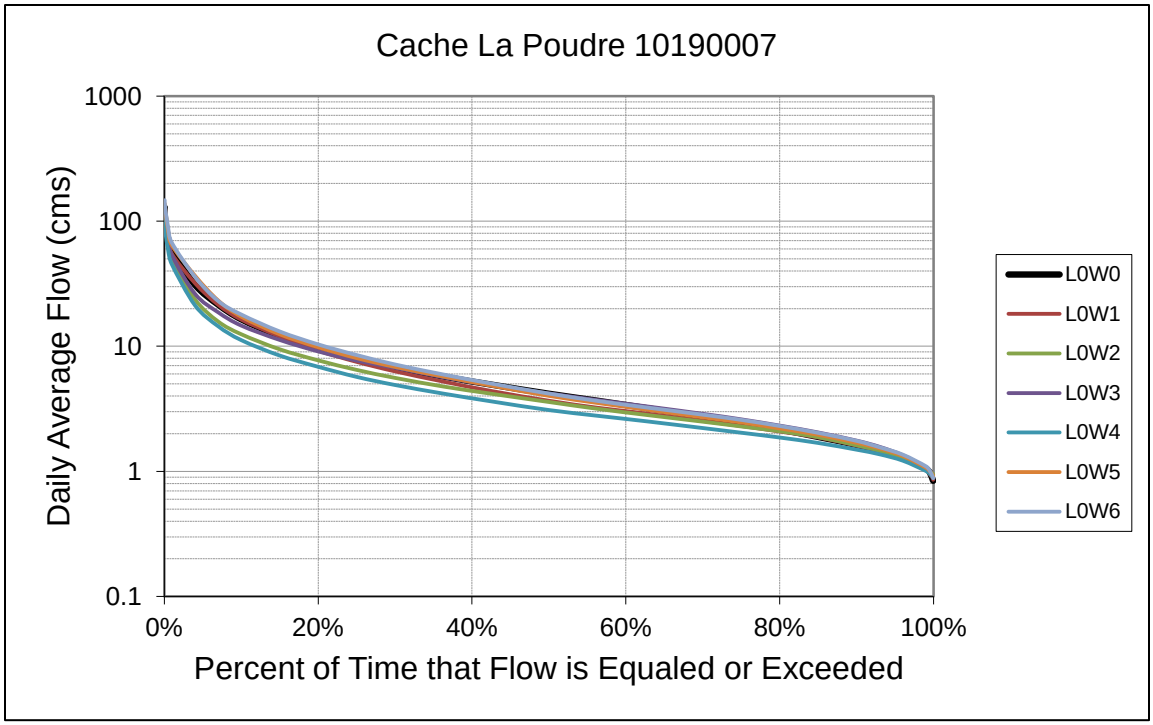


Figure 320. Flow duration, Cache La Poudre River (SWAT)

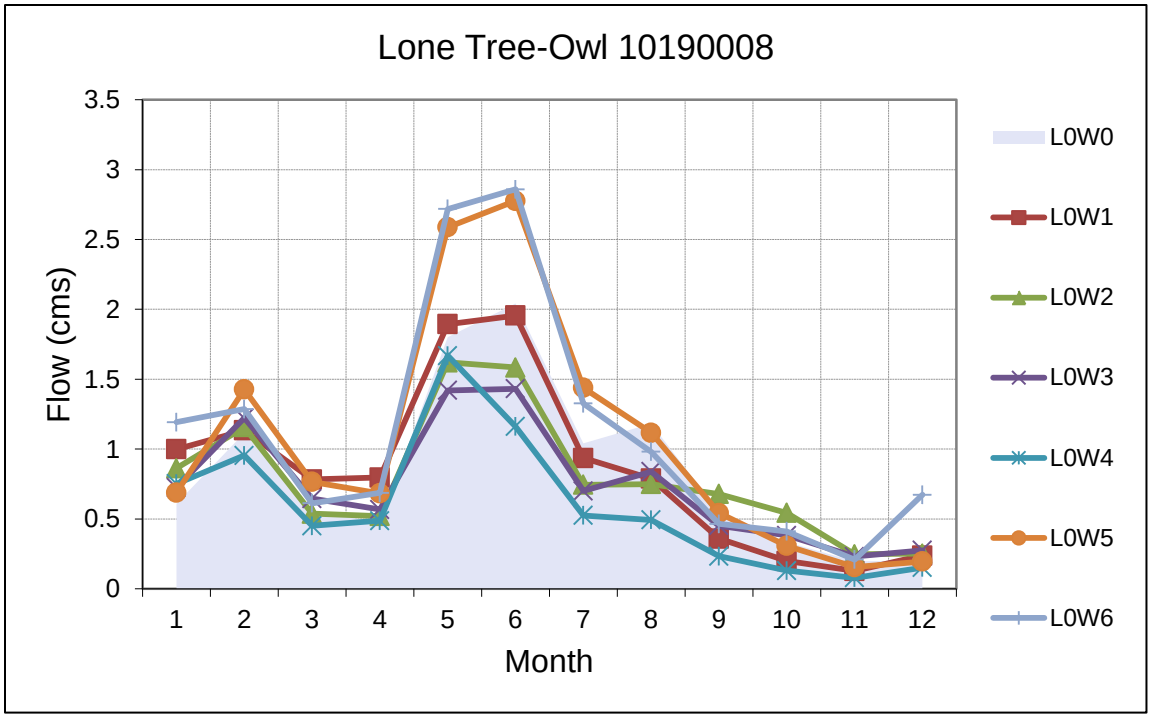


Figure 321. Monthly average flows, Lone Tree - Owl (SWAT)

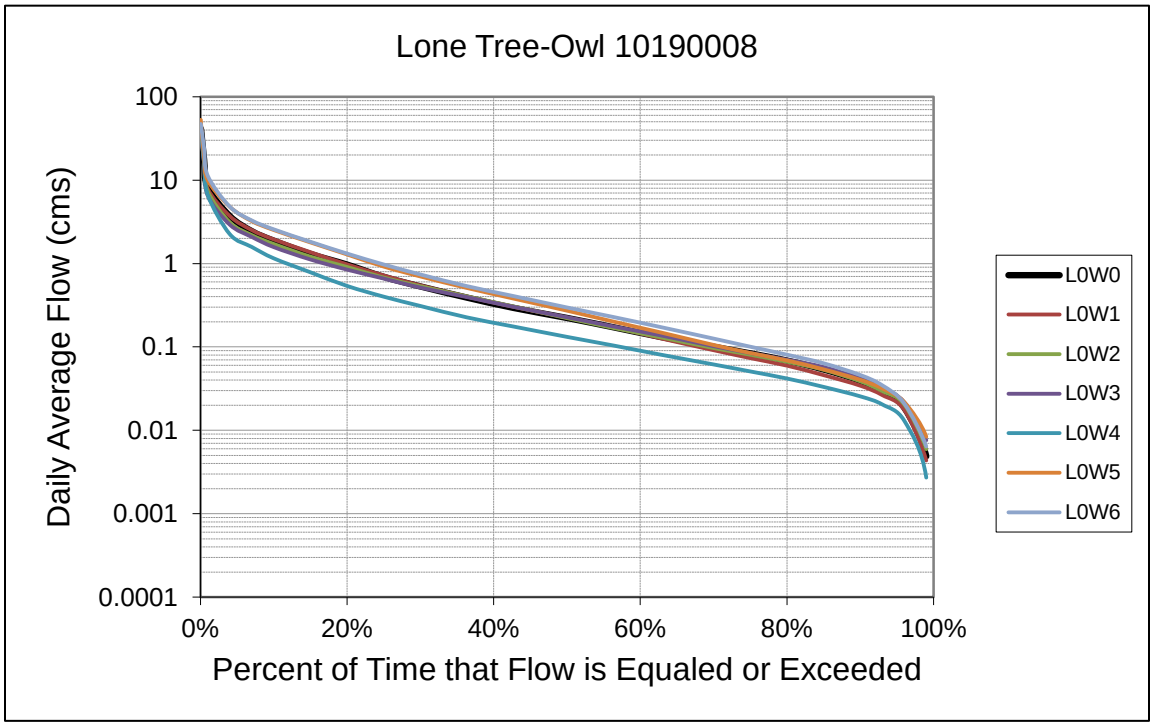


Figure 322. Flow duration, Lone Tree - Owl (SWAT)

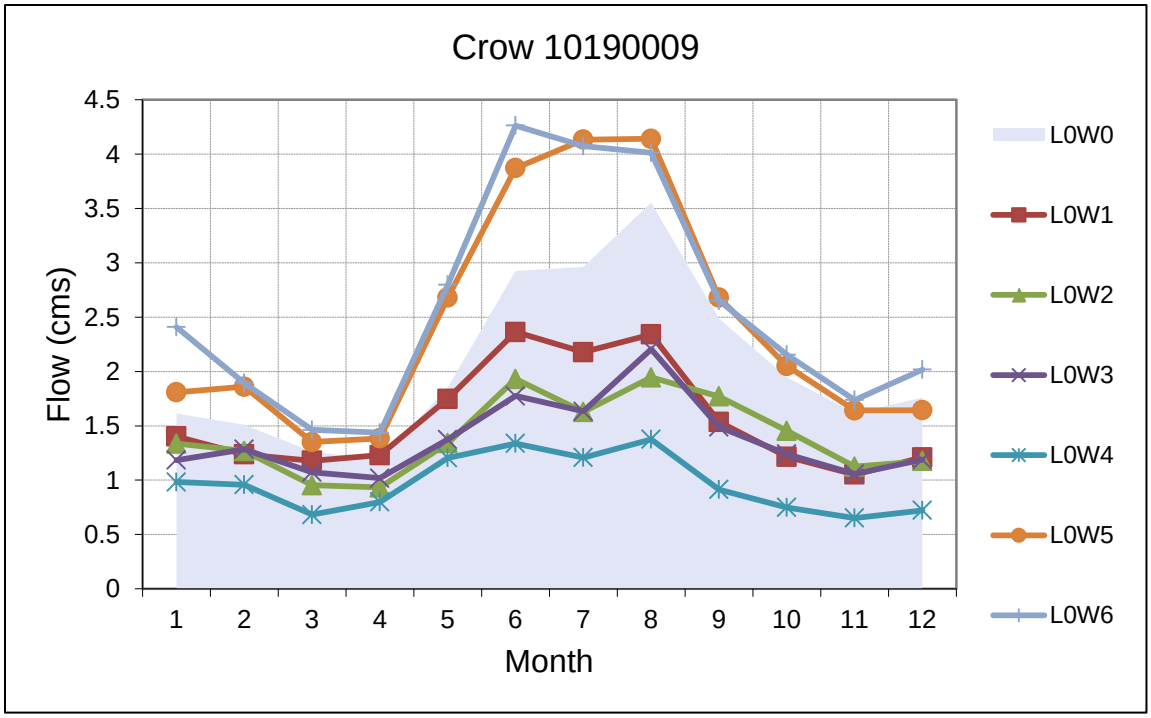


Figure 323. Monthly average flows, Crow River (SWAT)

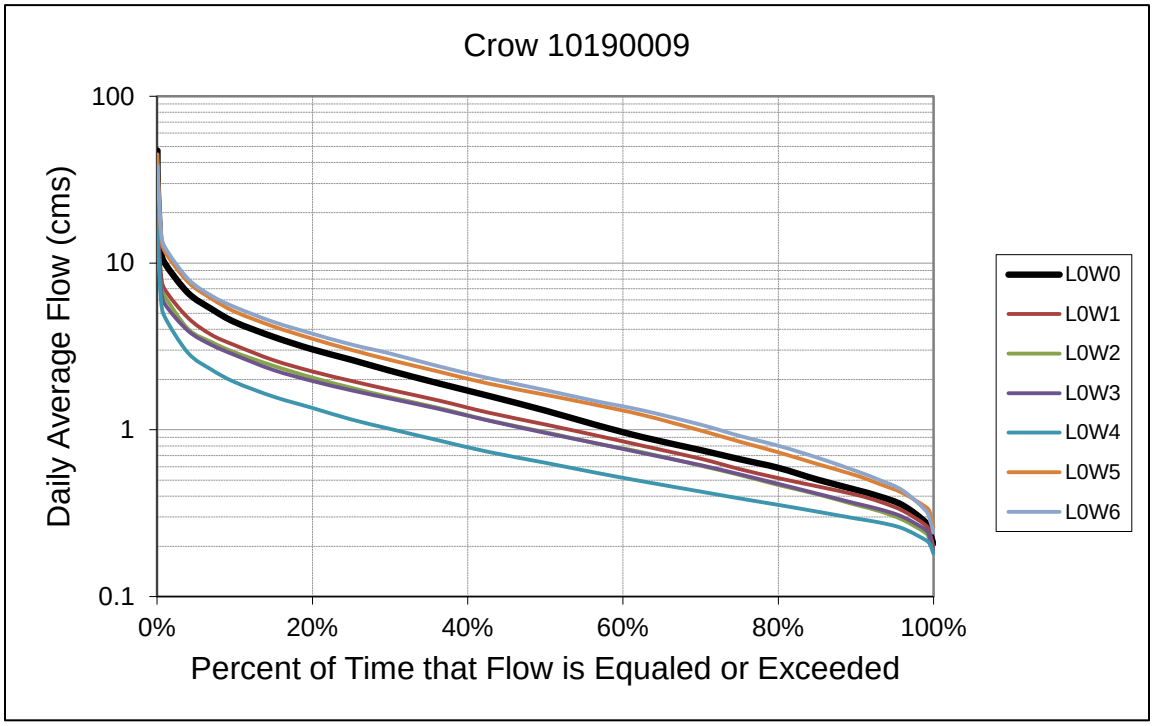


Figure 324. Flow duration, Crow River (SWAT)

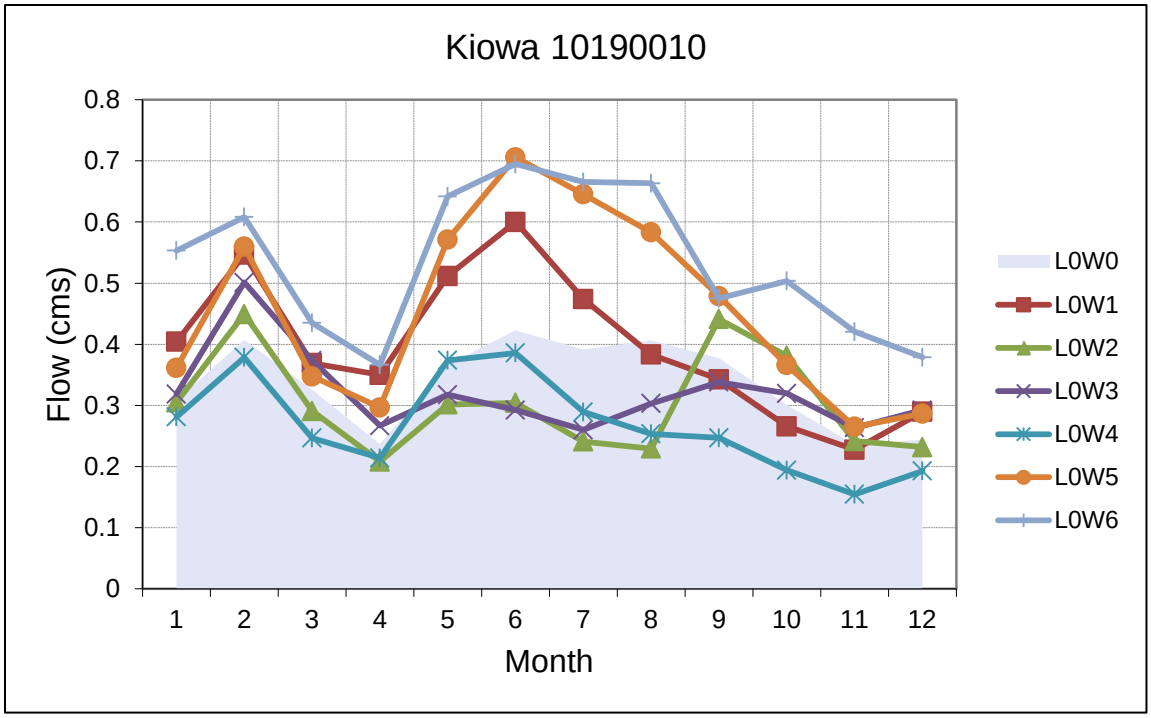


Figure 325. Monthly average flows, Kiowa River (SWAT)

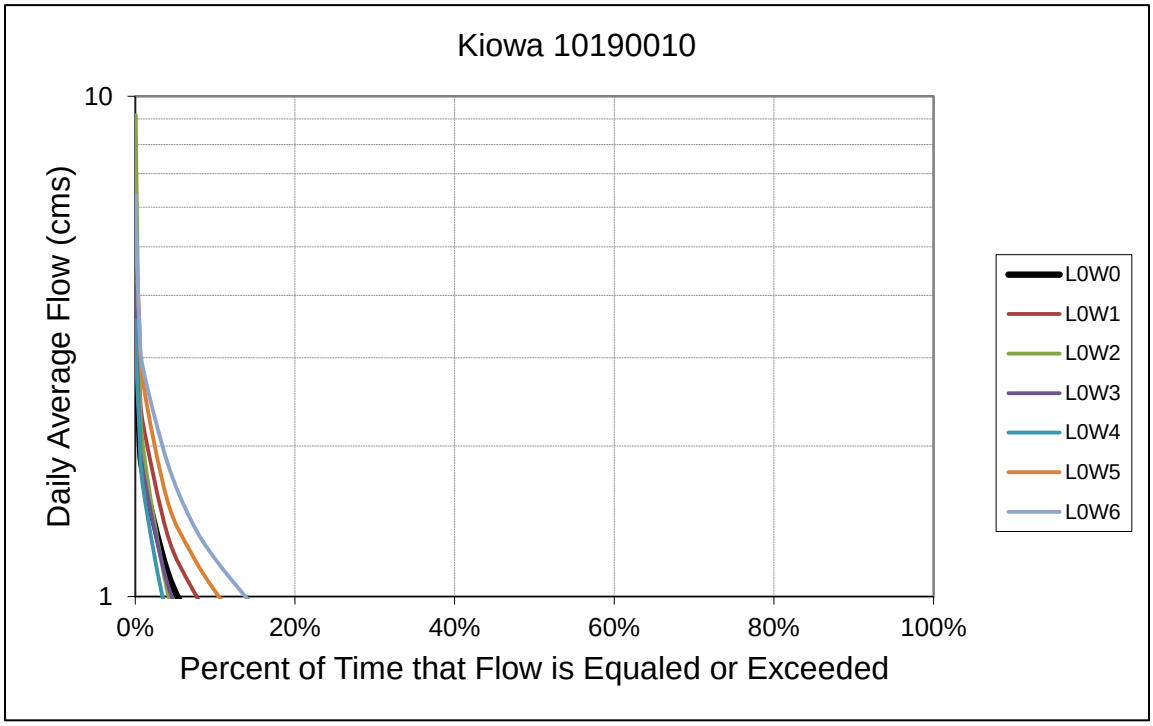


Figure 326. Flow duration, Kiowa River (SWAT)

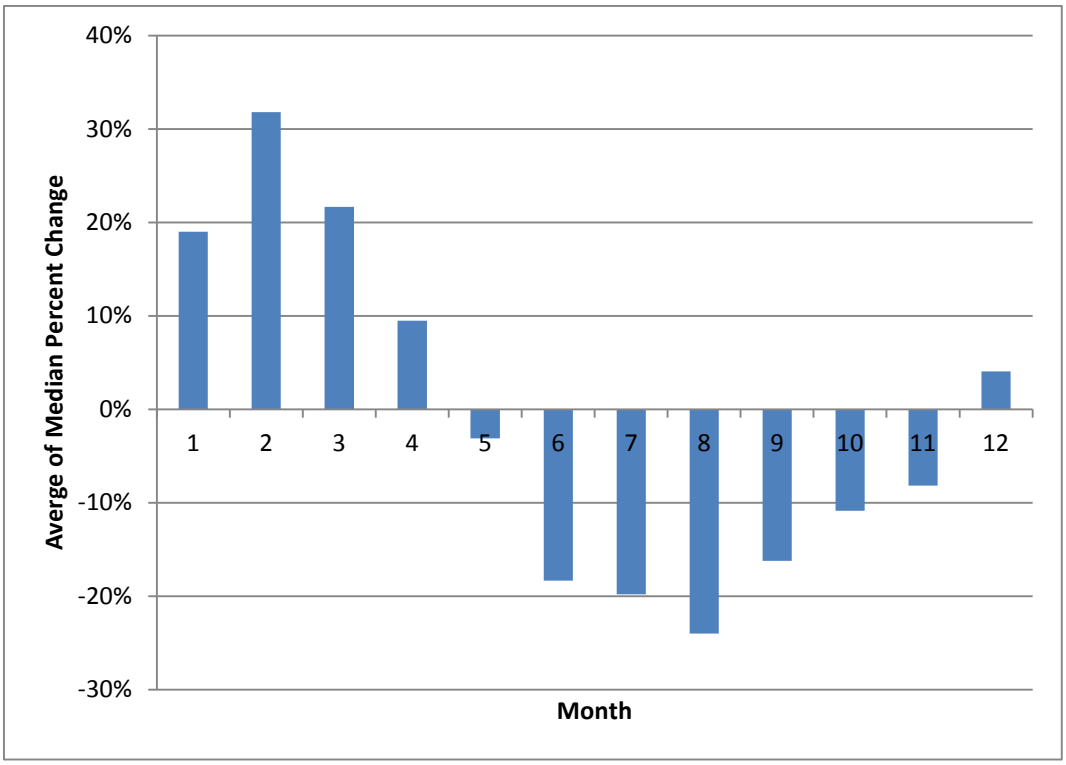


Figure 327. Average of median percent change in flow; NARCCAP Scenarios W1-W6 at all stations, South Platte River watershed (SWAT)

Tongue and Powder Rivers Watershed

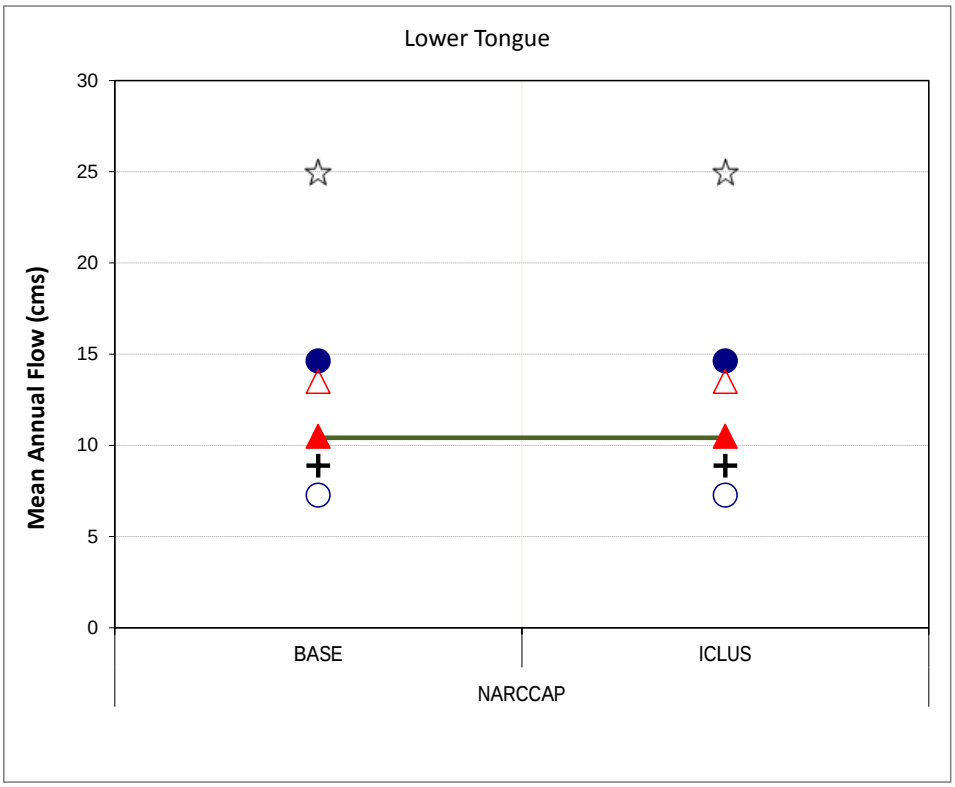


Figure 328. Mean annual flow (cms), Lower Tongue River (SWAT)

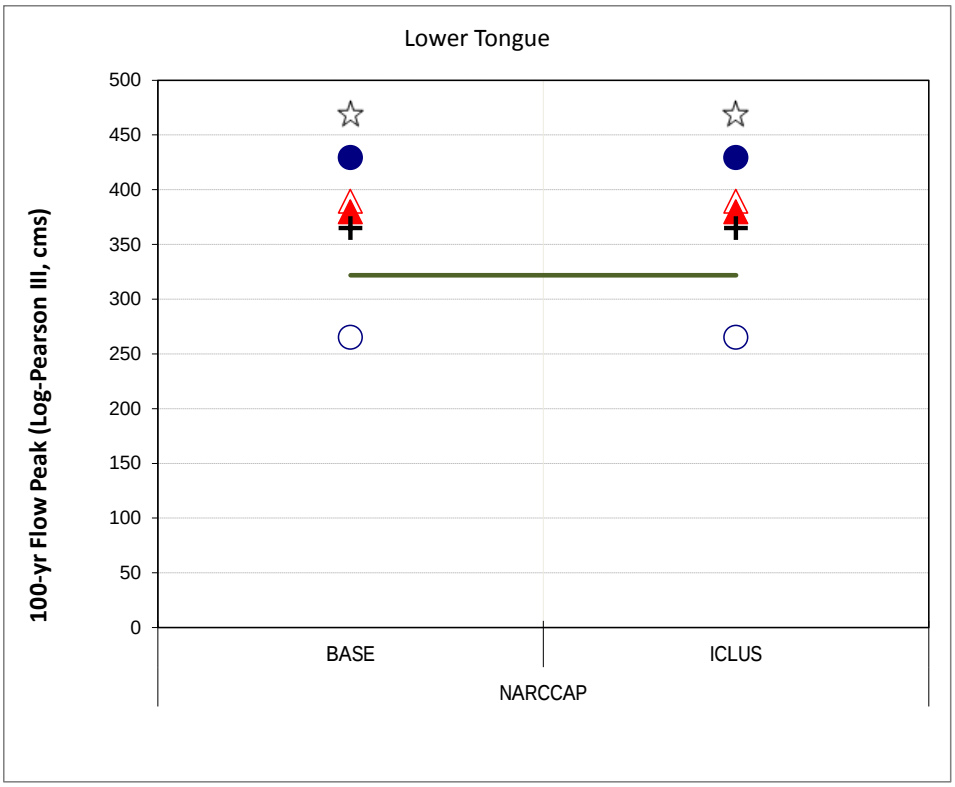


Figure 329. 100-yr Flow Peak (Log-Pearson III, cms), Lower Tongue River (SWAT)

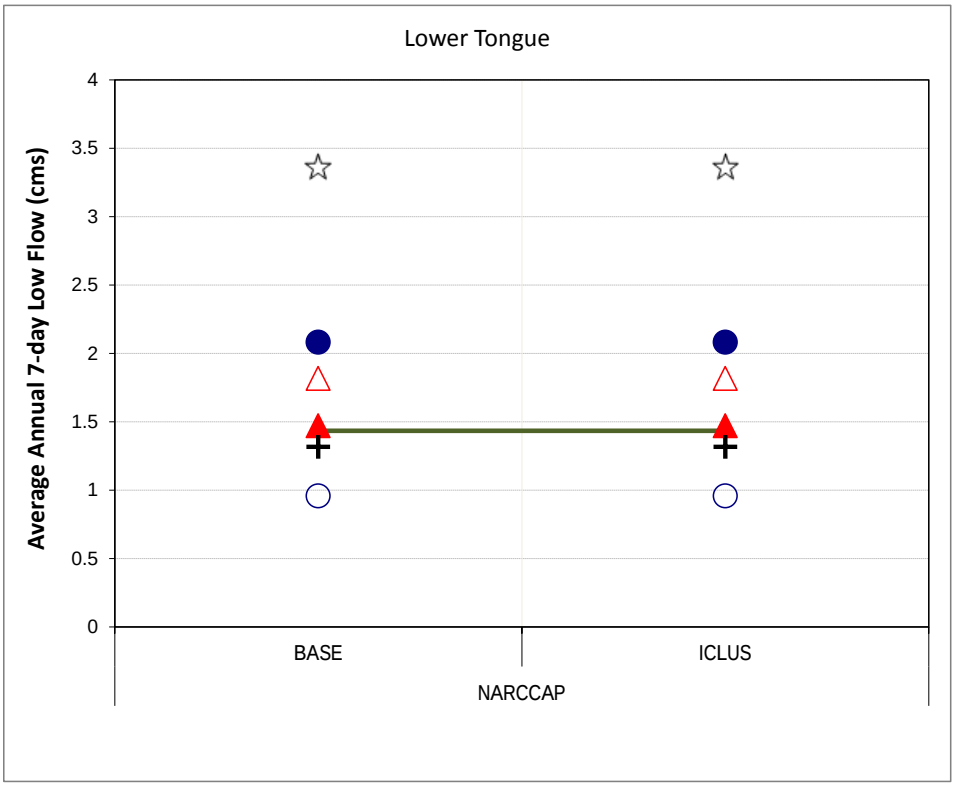


Figure 330. Average Annual 7-day Low Flow (cms), Lower Tongue River (SWAT)

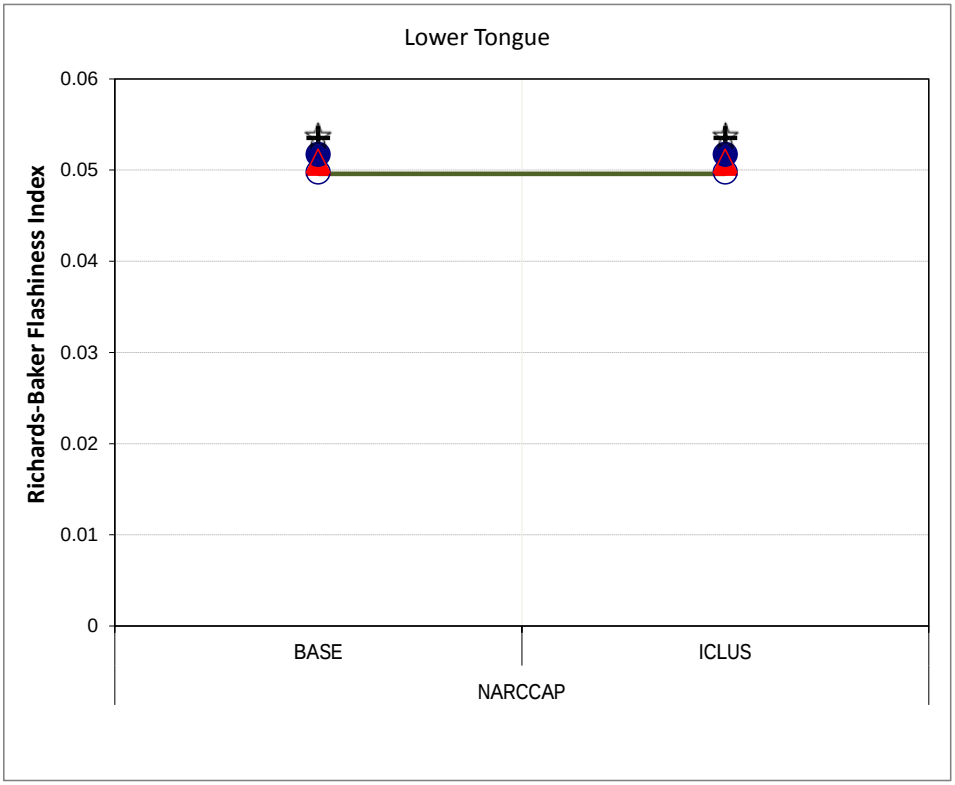


Figure 331. Richards-Baker Flashiness Index, Average Annual 7-day Low Flow (cms), Lower Tongue River (SWAT)

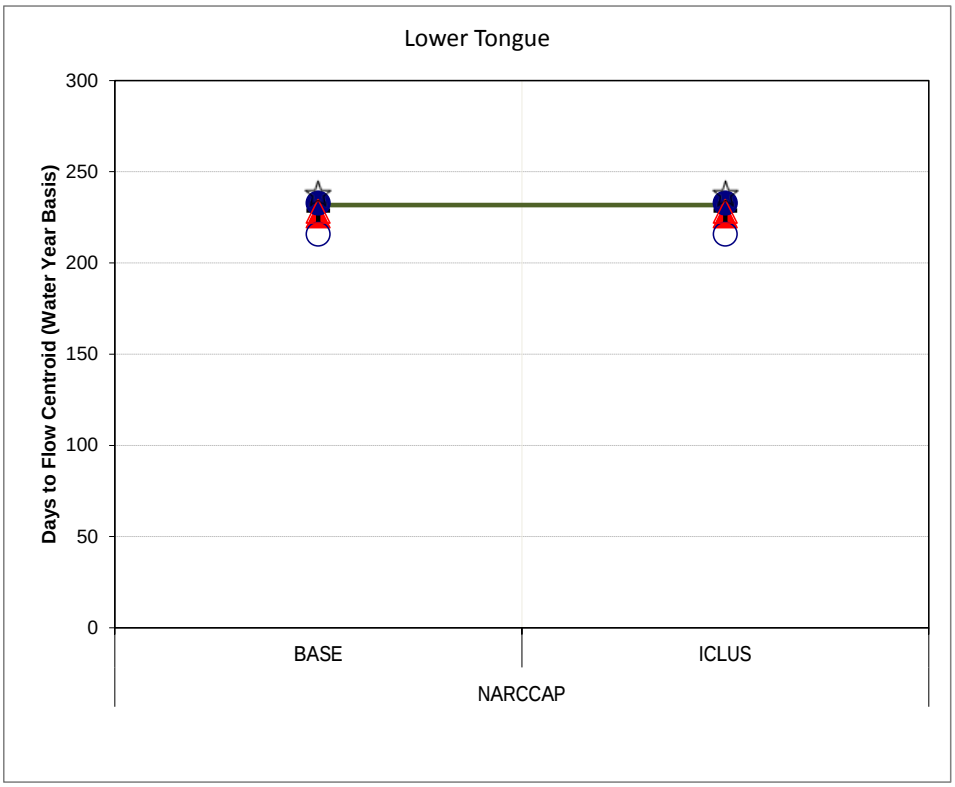


Figure 332. Days to Flow Centroid (Water Year Basis), Lower Tongue River (SWAT)

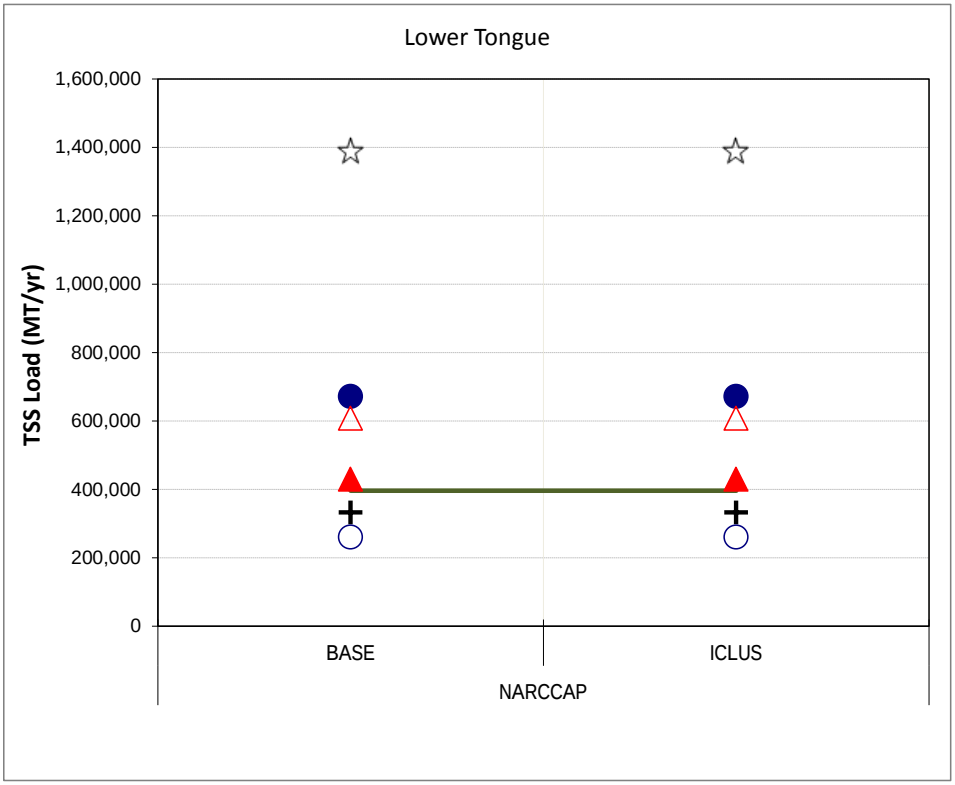


Figure 333. TSS Load (MT/yr), Lower Tongue River (SWAT)

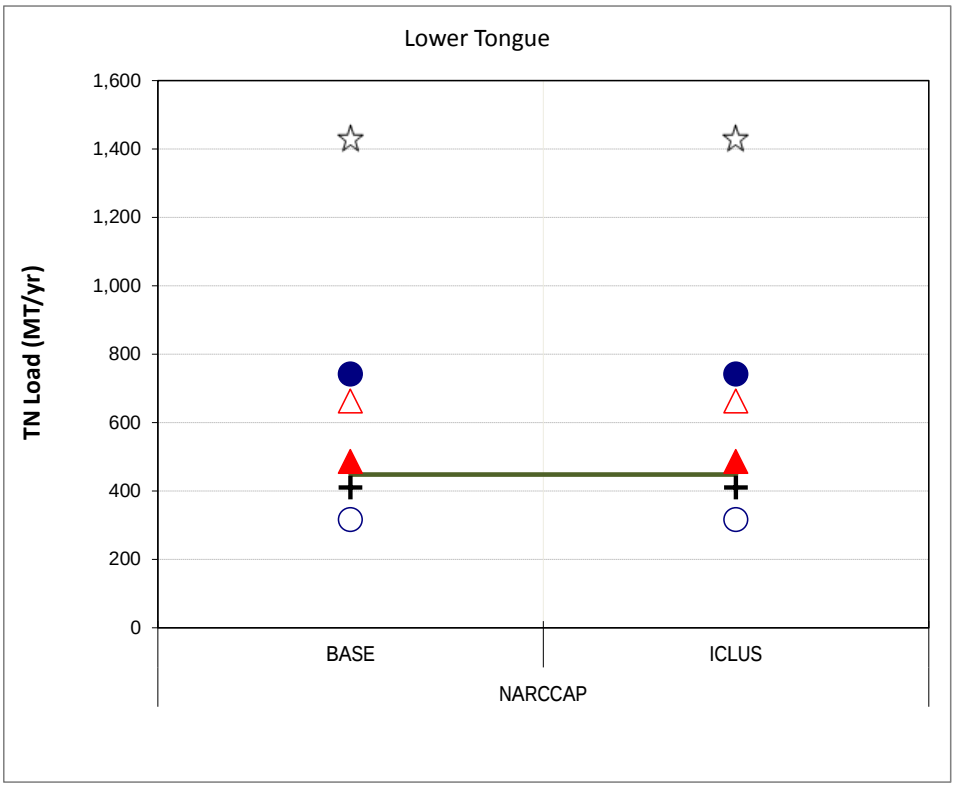


Figure 334. TN Load (MT/yr), Lower Tongue River (SWAT)

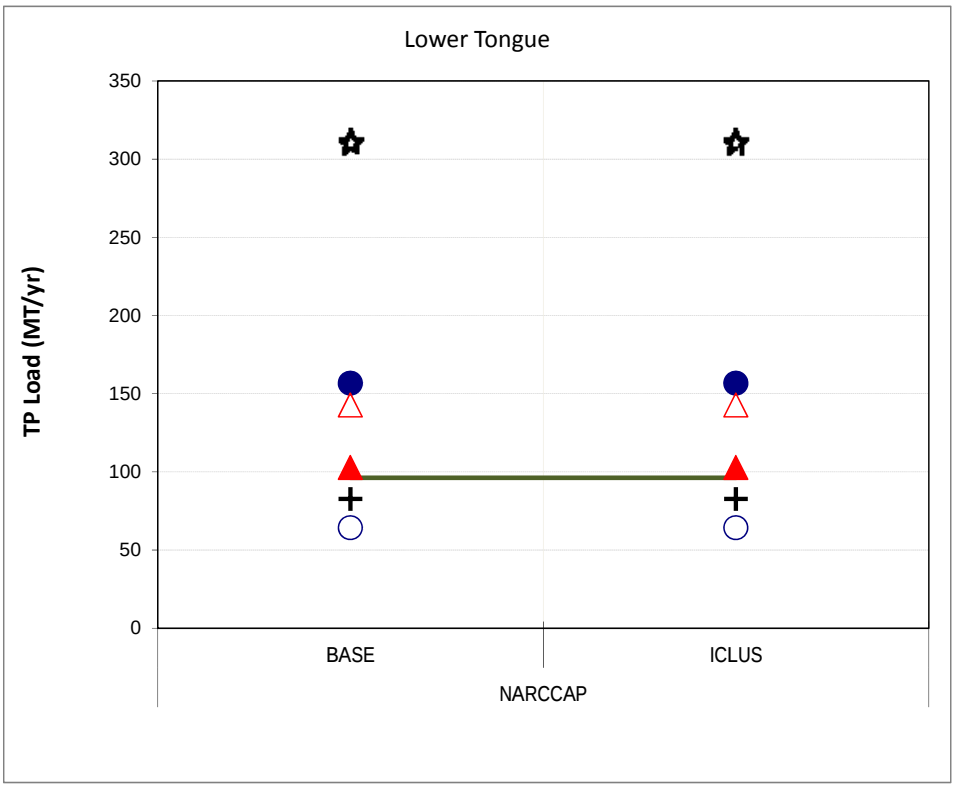


Figure 335. TP Load (MT/yr), Lower Tongue River (SWAT)

Table 13. Summary of range of change relative to existing conditions for NARCCAP dynamically downscaled scenarios, Tongue and Powder Rivers watershed SWAT model

	Results without LU change				Results with LU change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
Lower Powder, Mizpah HUCs 10090209 and 10090210								
Flow	-40.04%	39.41%	54.43%	206.01%	-40.04%	39.41%	54.43%	206.01%
TSS	-59.86%	49.18%	85.32%	334.52%	-59.86%	49.18%	85.32%	334.52%
TN	-56.12%	50.82%	84.84%	330.85%	-56.12%	50.82%	84.84%	330.85%
TP	-56.62%	50.83%	84.75%	330.05%	-56.62%	50.83%	84.75%	330.05%
Clear								
Flow	-19.63%	4.99%	4.82%	29.73%	-19.63%	4.99%	4.82%	29.73%
TSS	-5.88%	12.61%	62.14%	301.52%	-5.88%	12.61%	62.14%	301.52%
TN	11.60%	25.40%	27.42%	48.89%	11.60%	25.40%	27.42%	48.89%
TP	15.41%	35.94%	34.72%	49.70%	15.41%	35.94%	34.72%	49.70%
Little Powder HUC 10090208								
Flow	-42.49%	35.37%	36.98%	126.23%	-42.49%	35.37%	36.98%	126.23%
TSS	78.30%	118.86%	151.59%	256.12%	78.30%	118.86%	151.59%	256.12%
TN	10.22%	60.13%	92.36%	309.15%	10.22%	60.13%	92.36%	309.15%
TP	24.32%	53.31%	76.22%	217.07%	24.32%	53.31%	76.22%	217.07%
Middle Powder HUC 10090207								

Flow	-30.51%	12.35%	16.60%	78.80%	-30.51%	12.35%	16.60%	78.80%
TSS	124.73%	401.48%	476.52%	1109.71%	124.73%	401.48%	476.52%	1109.71%
TN	41.30%	54.59%	72.29%	168.12%	41.30%	54.59%	72.29%	168.12%
TP	47.19%	56.45%	67.49%	122.45%	47.19%	56.45%	67.49%	122.45%
Crazy Woman HUC 10090205								
-28.57%	12.33%	15.34%	72.52%	-28.57%	12.33%	15.34%	72.52%	-28.57%
-34.19%	4.31%	5.63%	49.86%	-34.19%	4.31%	5.63%	49.86%	-34.19%
-19.99%	-11.98%	1.35%	63.51%	-19.99%	-11.98%	1.35%	63.51%	-19.99%
-35.99%	-6.97%	1.35%	59.84%	-35.99%	-6.97%	1.35%	59.84%	-35.99%
Upper Powder HUC 10090202								
Flow	-32.36%	7.45%	10.07%	61.02%	-32.36%	7.45%	10.07%	61.02%
TSS	27.05%	832.76%	1020.30%	2449.84%	27.05%	832.76%	1020.30%	2449.84%
TN	31.22%	59.06%	74.50%	135.51%	31.22%	59.06%	74.50%	135.51%
TP	28.92%	65.83%	68.23%	133.36%	28.92%	65.83%	68.23%	133.36%
Middle Fork Powder HUC 10090201								
Flow	-21.44%	4.03%	2.38%	23.91%	-21.44%	4.03%	2.38%	23.91%
TSS	-48.68%	-32.66%	-31.99%	-9.05%	-48.68%	-32.66%	-31.99%	-9.05%
TN	-17.76%	-4.76%	3.38%	34.70%	-17.76%	-4.76%	3.38%	34.70%
TP	-20.86%	-5.68%	1.39%	38.72%	-20.86%	-5.68%	1.39%	38.72%
S Fork Powder, Salt HUCs 10090203 and 10090204								
Flow	-30.63%	6.62%	7.66%	50.62%	-30.63%	6.62%	7.66%	50.62%
TSS	-20.89%	30.09%	363.91%	2018.84%	-20.89%	30.09%	363.91%	2018.84%
TN	3.98%	39.37%	32.25%	62.00%	3.98%	39.37%	32.25%	62.00%
TP	0.86%	49.86%	37.93%	67.49%	0.86%	49.86%	37.93%	67.49%
Lower Tongue HUC10090102								
Flow	-30.29%	15.13%	27.64%	140.14%	-30.29%	15.13%	27.64%	140.14%
TSS	-34.27%	30.86%	55.34%	251.20%	-34.27%	30.86%	55.34%	251.20%
TN	-29.42%	28.19%	50.61%	219.77%	-29.42%	28.19%	50.61%	219.77%
TP	-33.26%	27.48%	49.13%	224.40%	-33.26%	27.48%	49.13%	224.40%
Upper Tongue HUC 10090101								
Flow	-21.39%	0.45%	1.96%	38.77%	-21.39%	0.45%	1.96%	38.77%
TSS	6.84%	32.12%	43.35%	110.24%	6.84%	32.12%	43.35%	110.24%
TN	-19.96%	-4.64%	3.63%	51.81%	-19.96%	-4.64%	3.63%	51.81%
TP	-15.22%	-1.98%	8.30%	63.19%	-15.22%	-1.98%	8.30%	63.19%
Powder at Moorhead (gage 06324500)								
Flow	-26.90%	6.09%	7.84%	47.48%	-26.90%	6.09%	7.84%	47.48%
TSS	121.64%	375.40%	510.94%	1317.64%	121.64%	375.40%	510.94%	1317.64%
TN	31.50%	46.23%	51.80%	90.53%	31.50%	46.23%	51.80%	90.53%
TP	33.81%	56.51%	53.93%	73.64%	33.81%	56.51%	53.93%	73.64%
Powder at Locate (gage 06326500)								
Flow	-40.81%	36.36%	50.16%	192.44%	-40.81%	36.36%	50.16%	192.44%

TSS	-58.53%	46.17%	79.14%	309.85%	-58.53%	46.17%	79.14%	309.85%
TN	-54.12%	47.52%	78.69%	304.85%	-54.12%	47.52%	78.69%	304.85%
TP	-54.91%	47.42%	78.49%	303.61%	-54.91%	47.42%	78.49%	303.61%
Tongue at State Line (gage 06306300)								
Flow	-19.50%	-4.37%	-3.34%	21.00%	-19.50%	-4.37%	-3.34%	21.00%
TSS	-78.56%	-73.08%	-69.76%	-57.96%	-78.56%	-73.08%	-69.76%	-57.96%
TN	-51.92%	-33.13%	-26.82%	18.82%	-51.92%	-33.13%	-26.82%	18.82%
TP	-47.25%	-28.61%	-20.26%	33.03%	-47.25%	-28.61%	-20.26%	33.03%

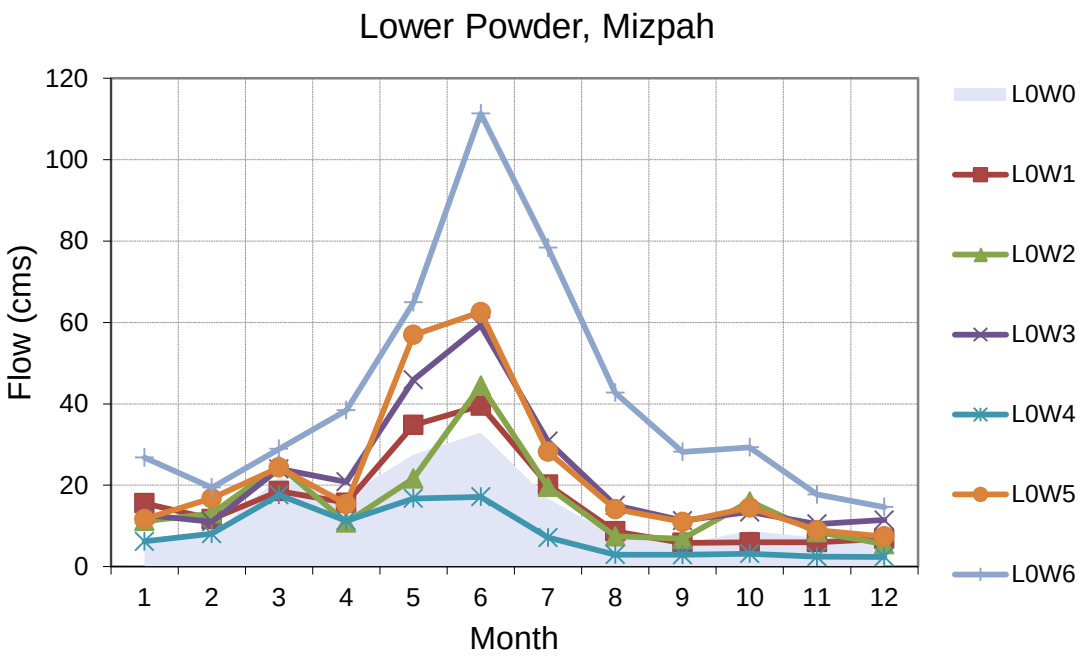


Figure 336. Monthly average flows, Lower Powder River (SWAT)

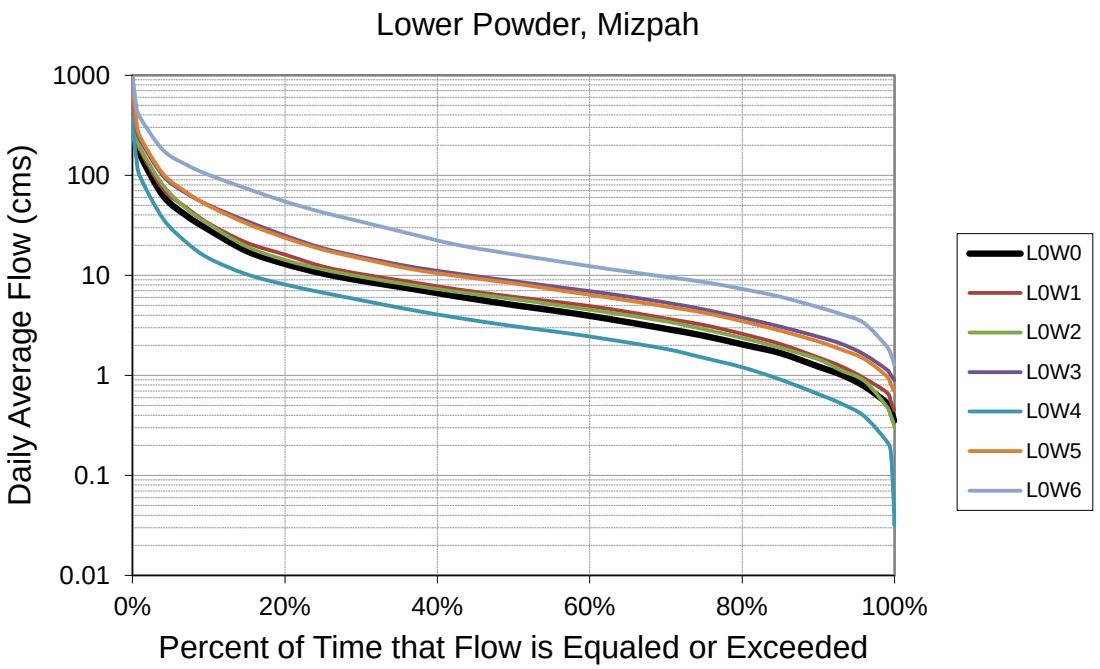


Figure 337. Flow duration, Lower Powder River (SWAT)

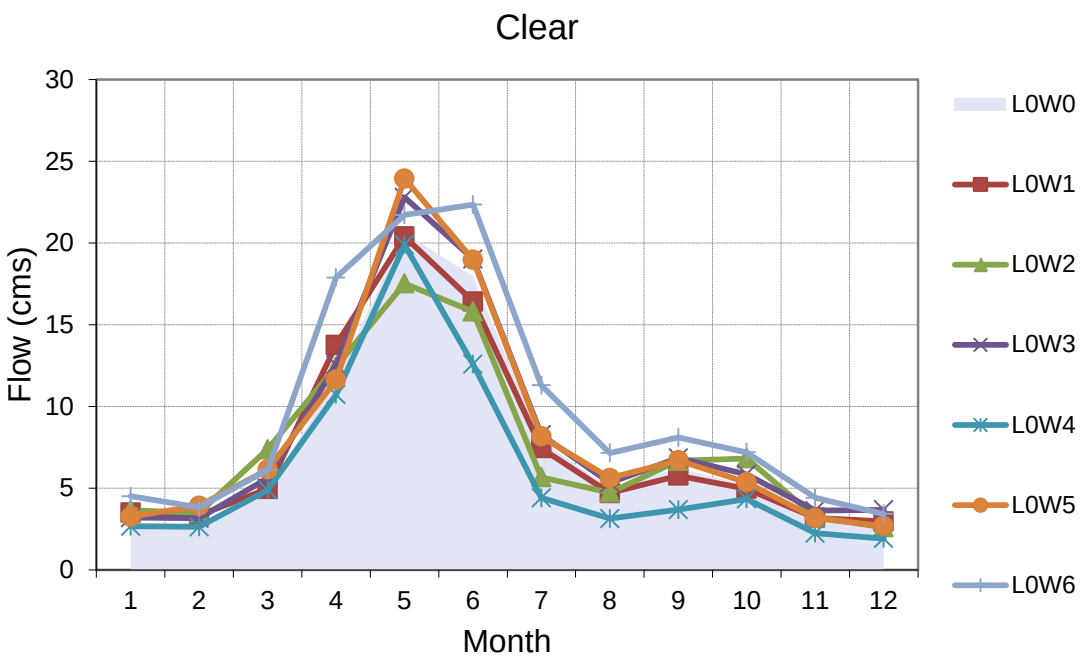


Figure 338. Monthly average flows, Clear Creek (SWAT)

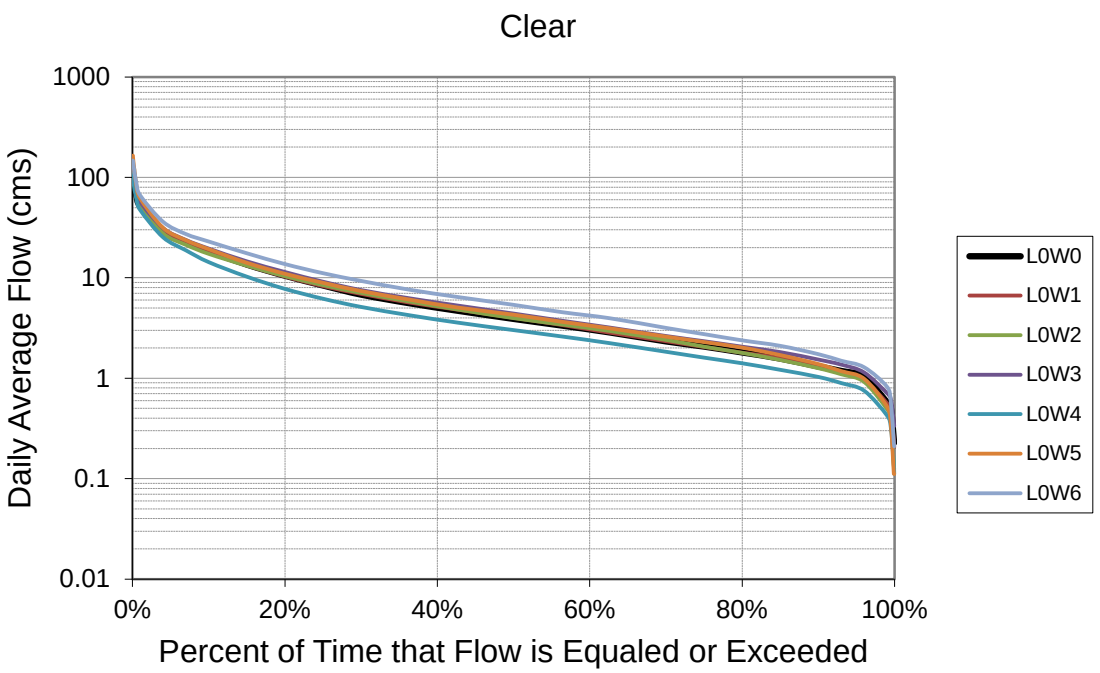


Figure 339. Flow duration, Clear Creek (SWAT)

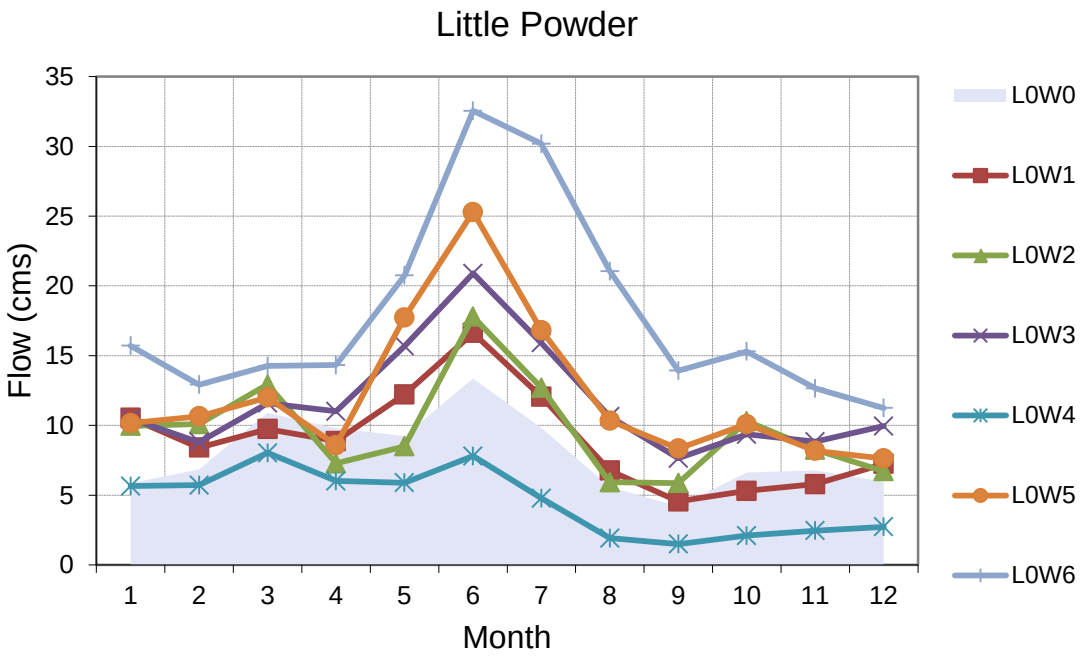


Figure 340. Monthly average flows, Little Powder River (SWAT)

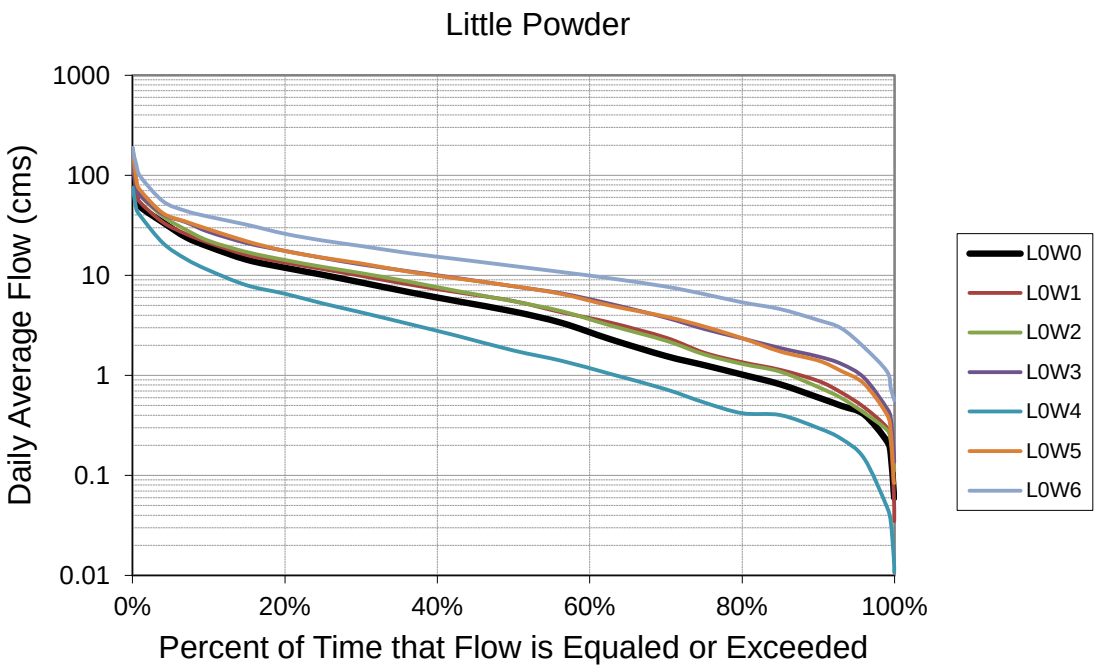


Figure 341. Flow duration, Little Powder River (SWAT)

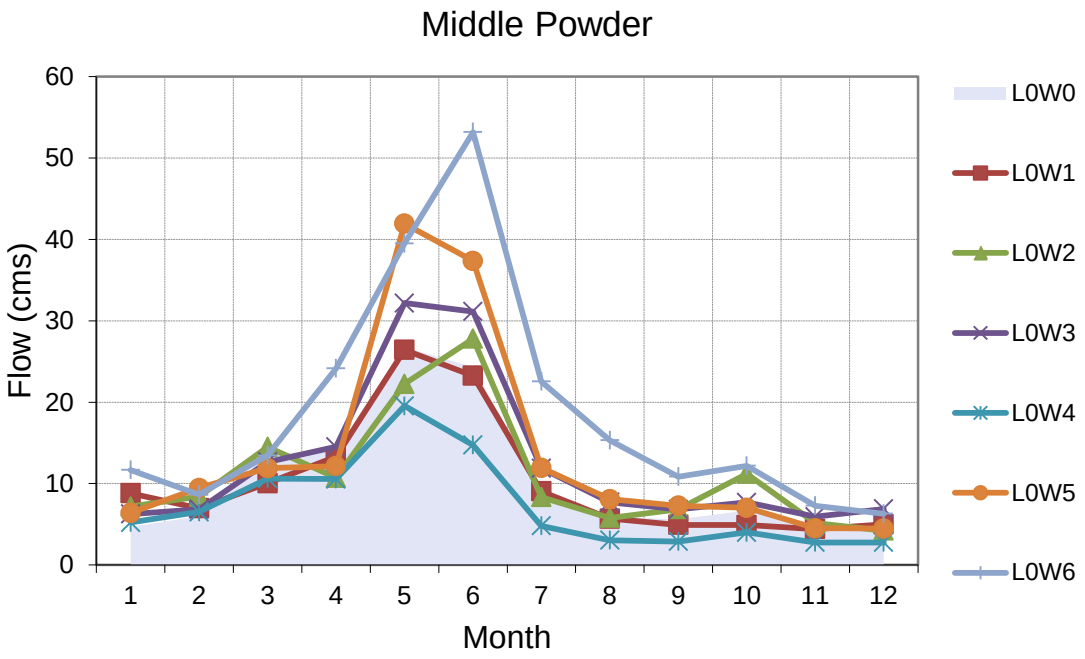


Figure 342. Monthly average flows, Middle Powder River (SWAT)

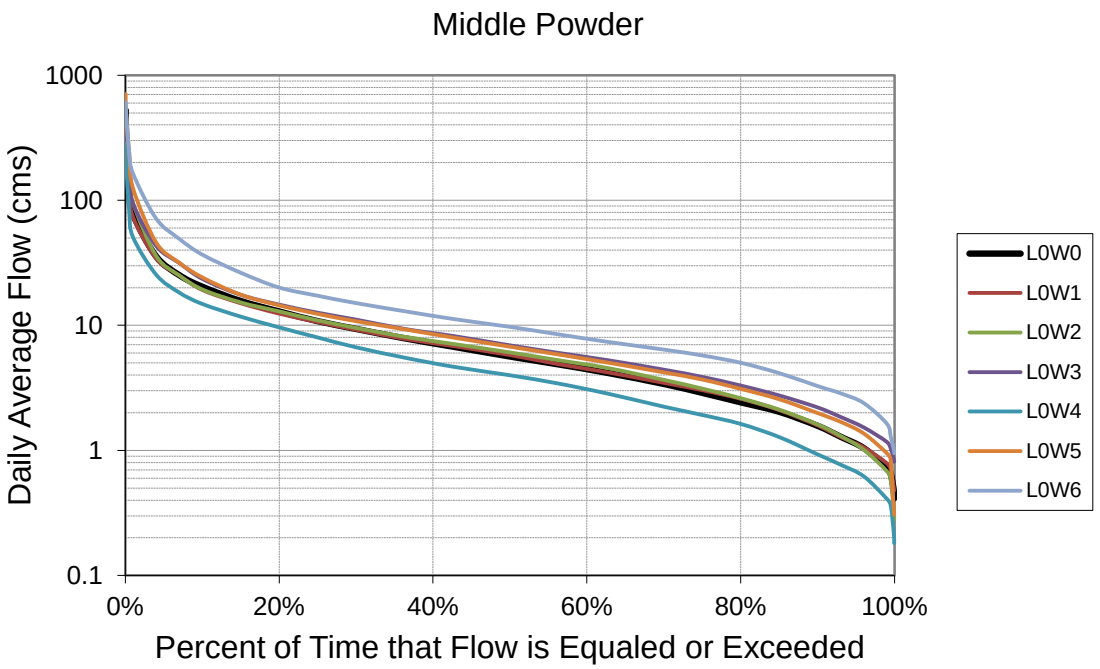


Figure 343. Flow duration, Middle Powder River (SWAT)

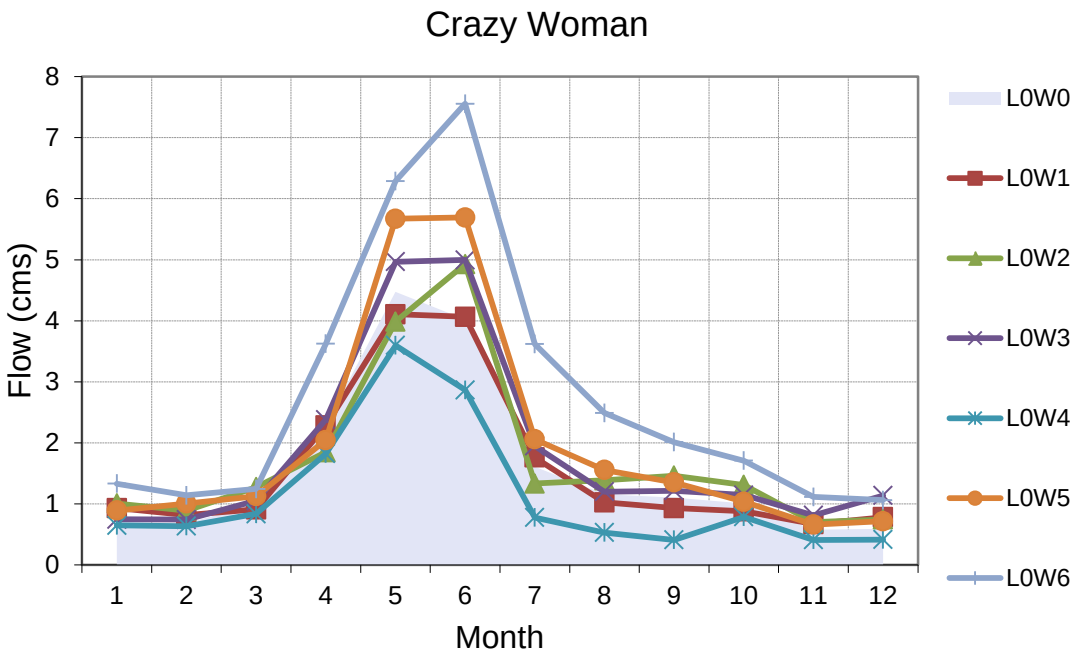


Figure 344. Monthly average flows, Crazy Woman Creek (SWAT)

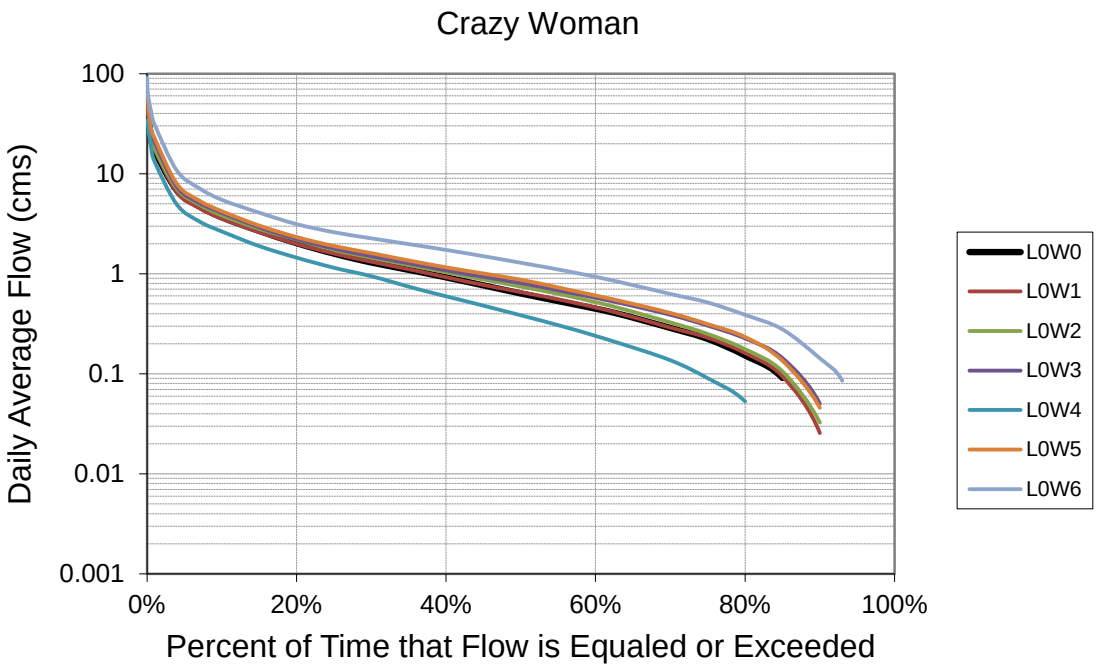


Figure 345. Flow duration, Crazy Woman Creek (SWAT)

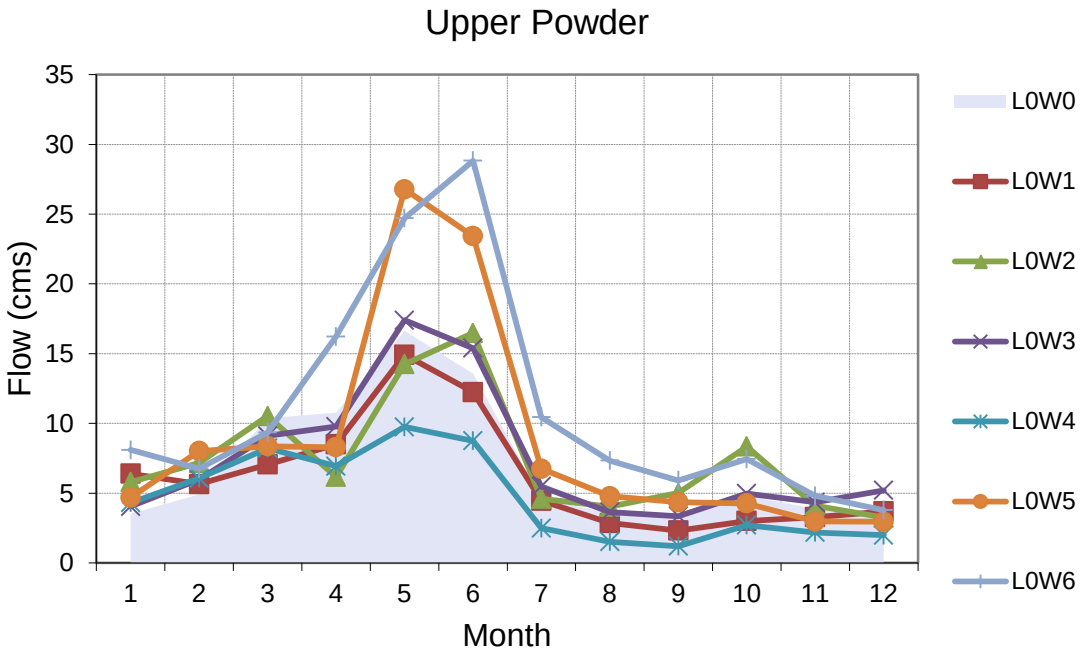


Figure 346. Monthly average flows, Upper Powder River (SWAT)

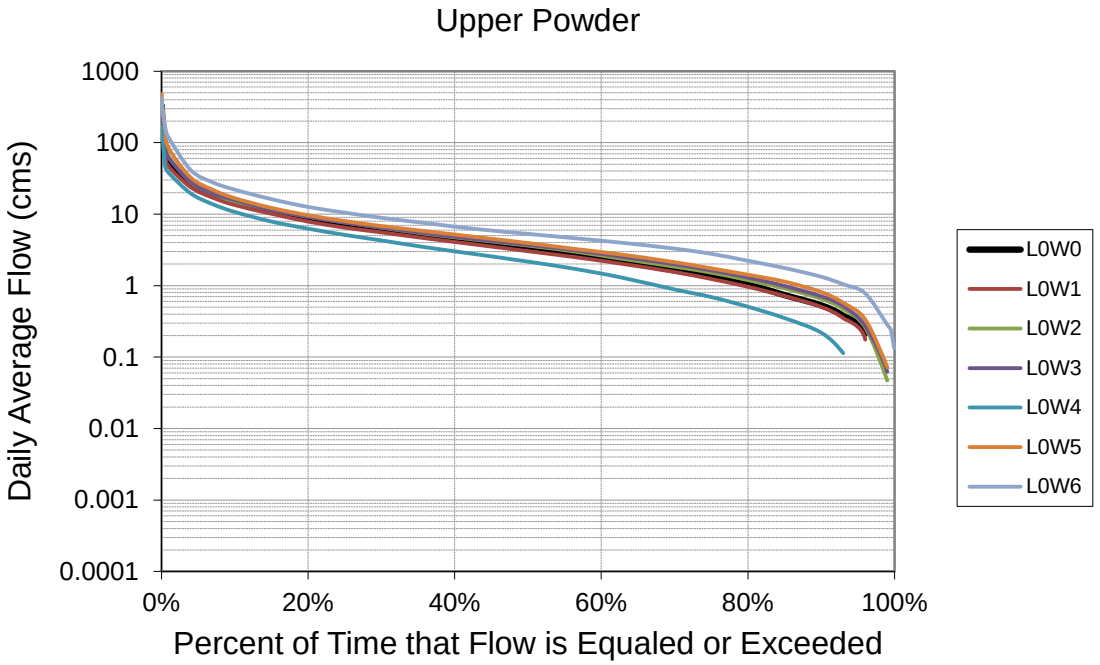


Figure 347. Flow duration, Upper Powder River (SWAT)

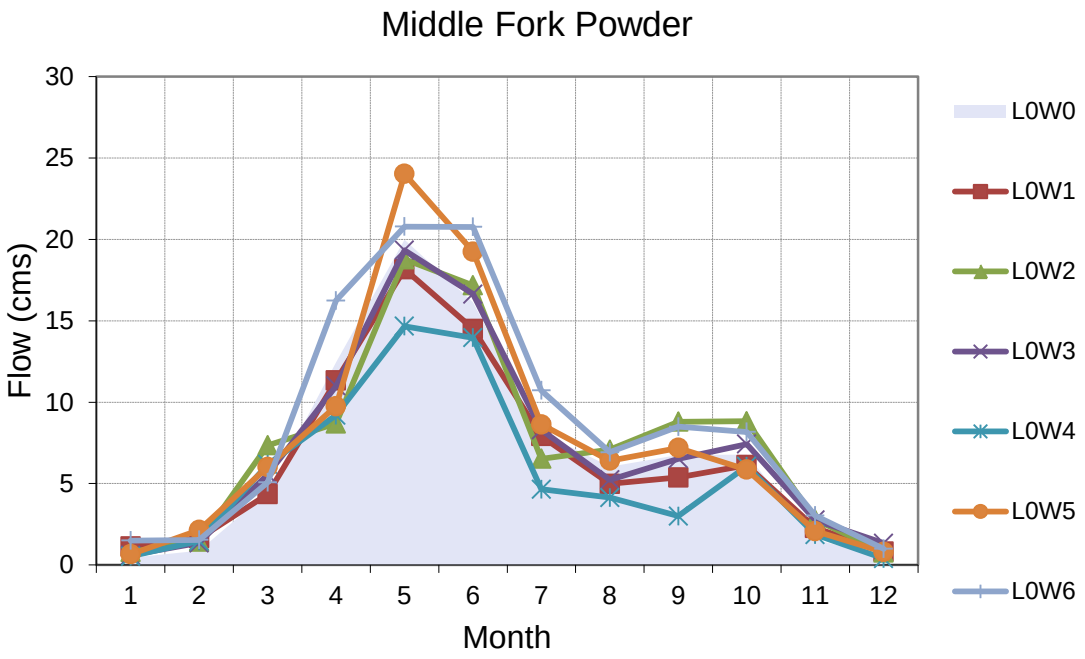


Figure 348. Monthly average flows, Middle Fork Powder River (SWAT)

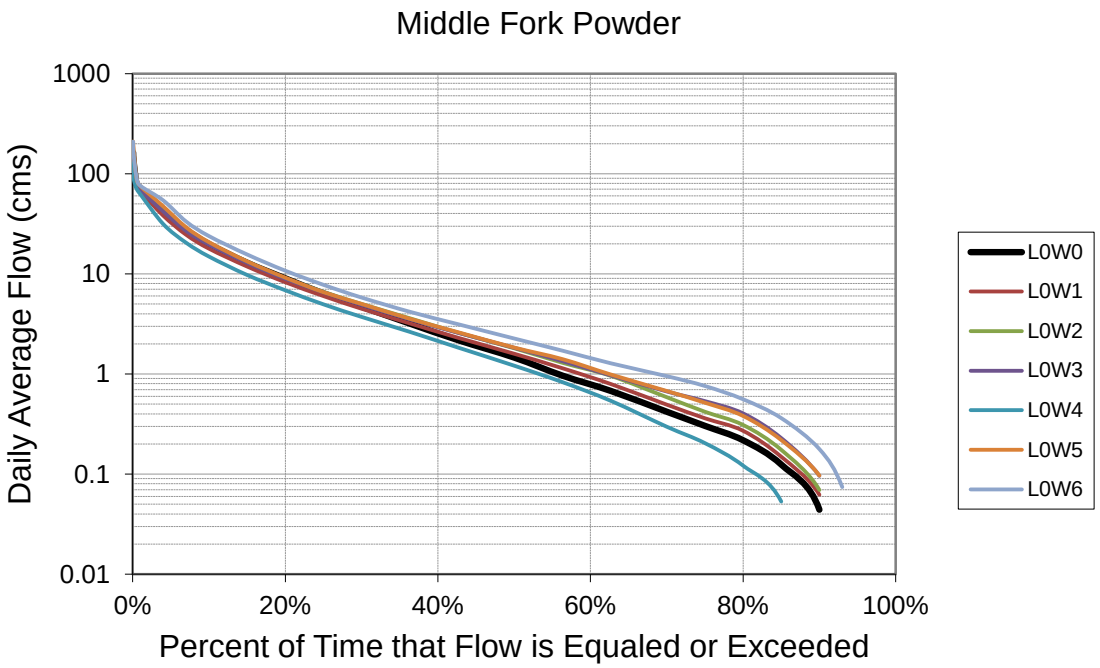


Figure 349. Flow duration, Middle Fork Powder River (SWAT)

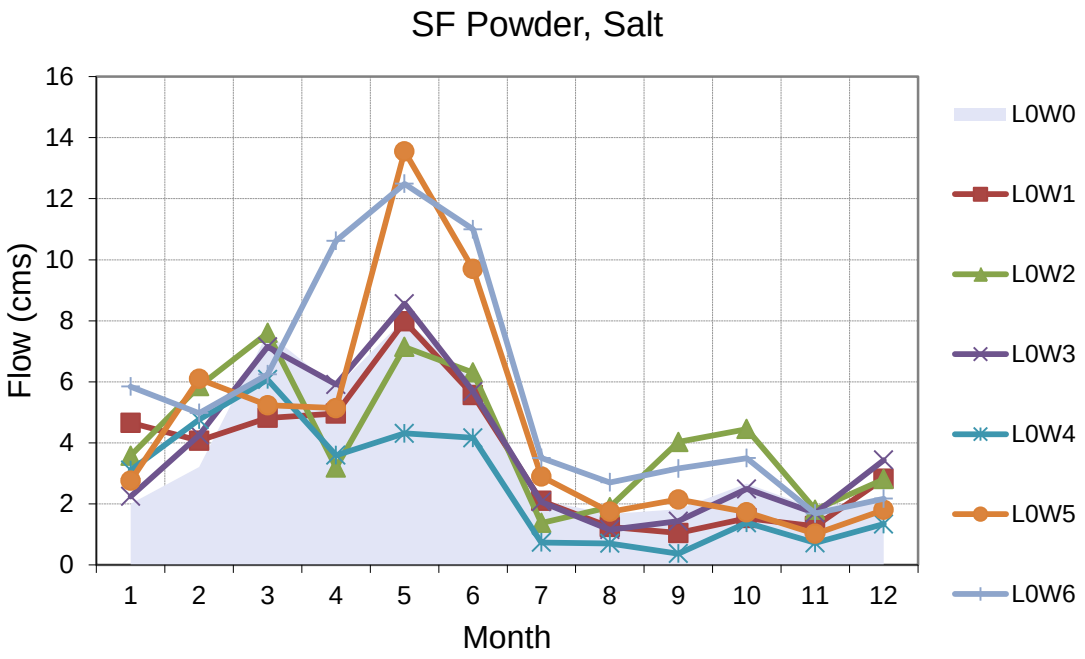


Figure 350. Monthly average flows, South Fork Powder River (SWAT)

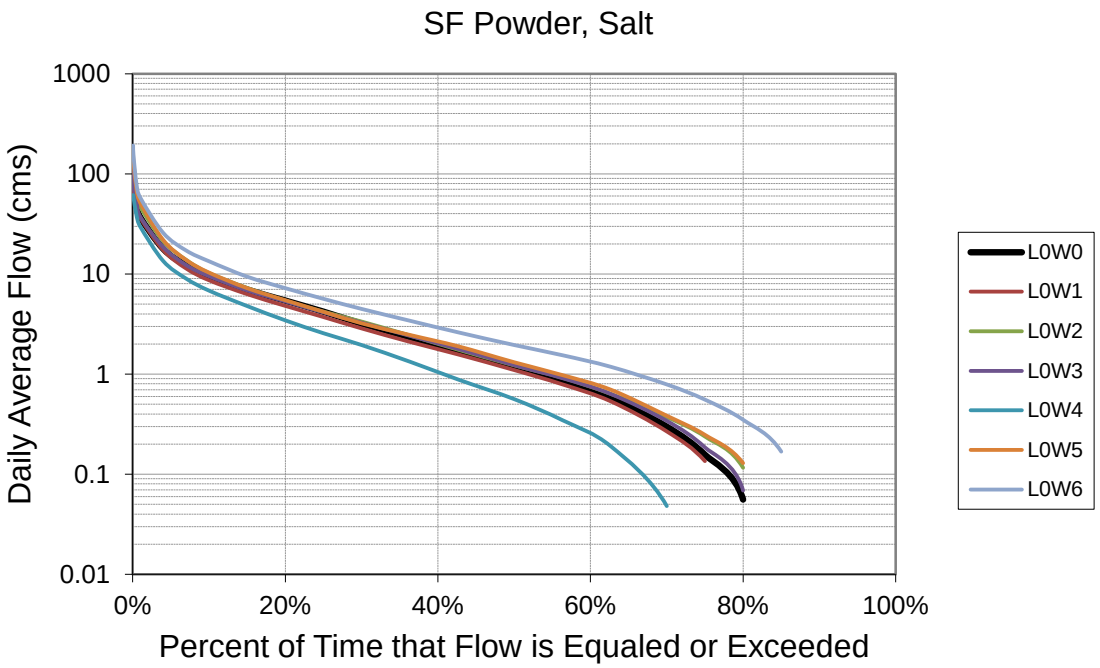


Figure 351. Flow duration, South Fork Powder River (SWAT)

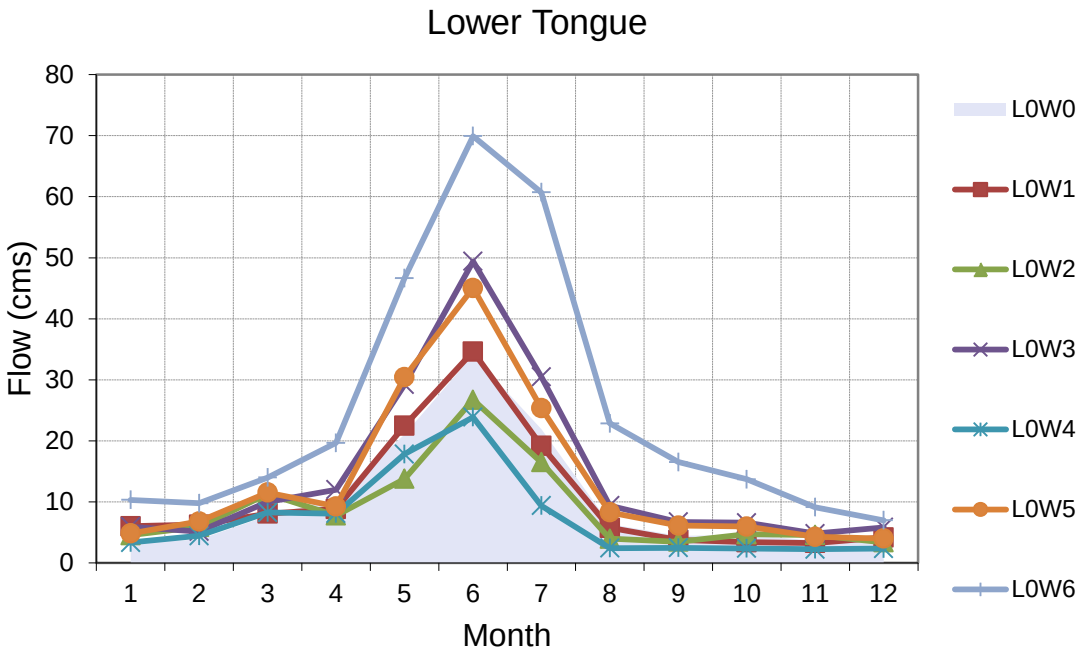


Figure 352. Monthly average flows, Lower Tongue River (SWAT)

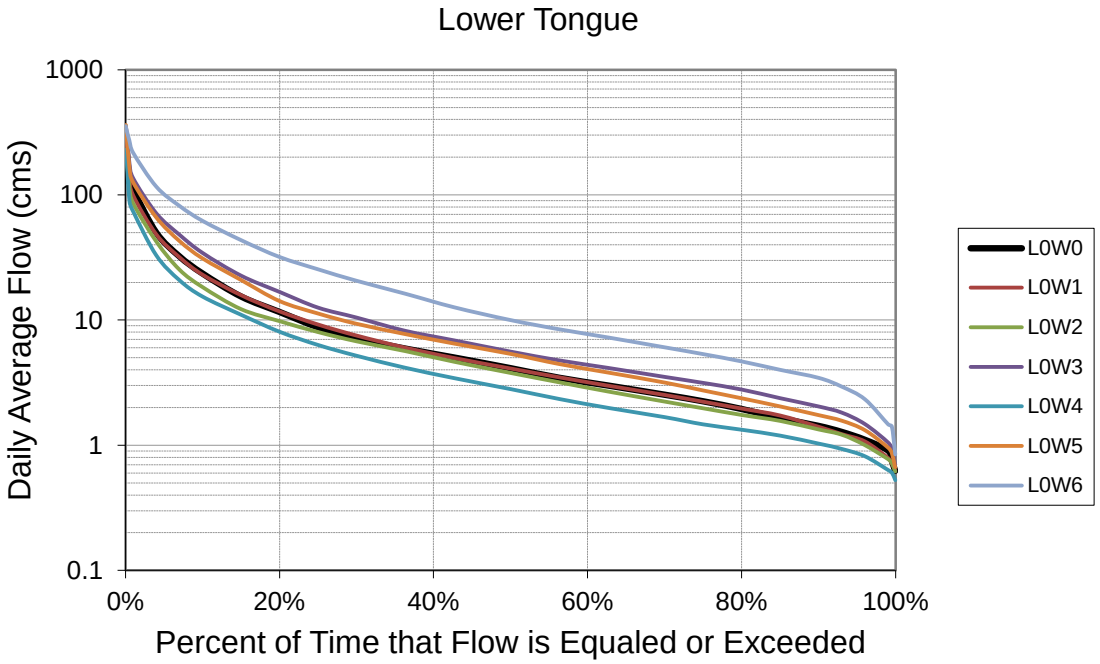


Figure 353. Flow duration, Lower Tongue River (SWAT)

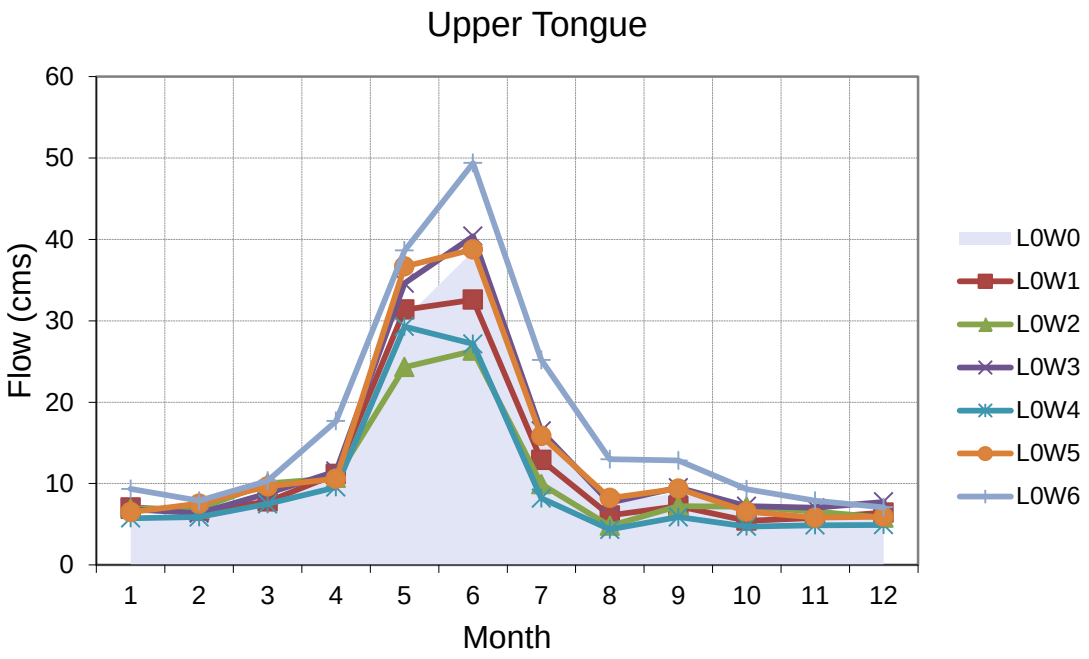


Figure 354. Monthly average flows, Upper Tongue River (SWAT)

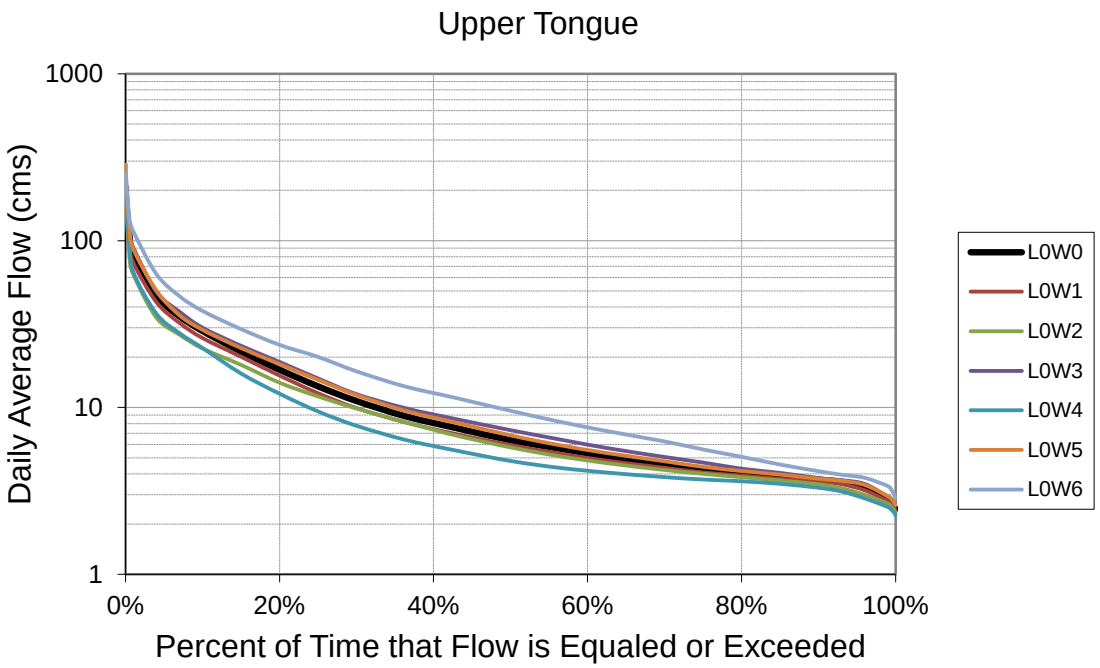


Figure 355. Flow duration, Upper Tongue River (SWAT)

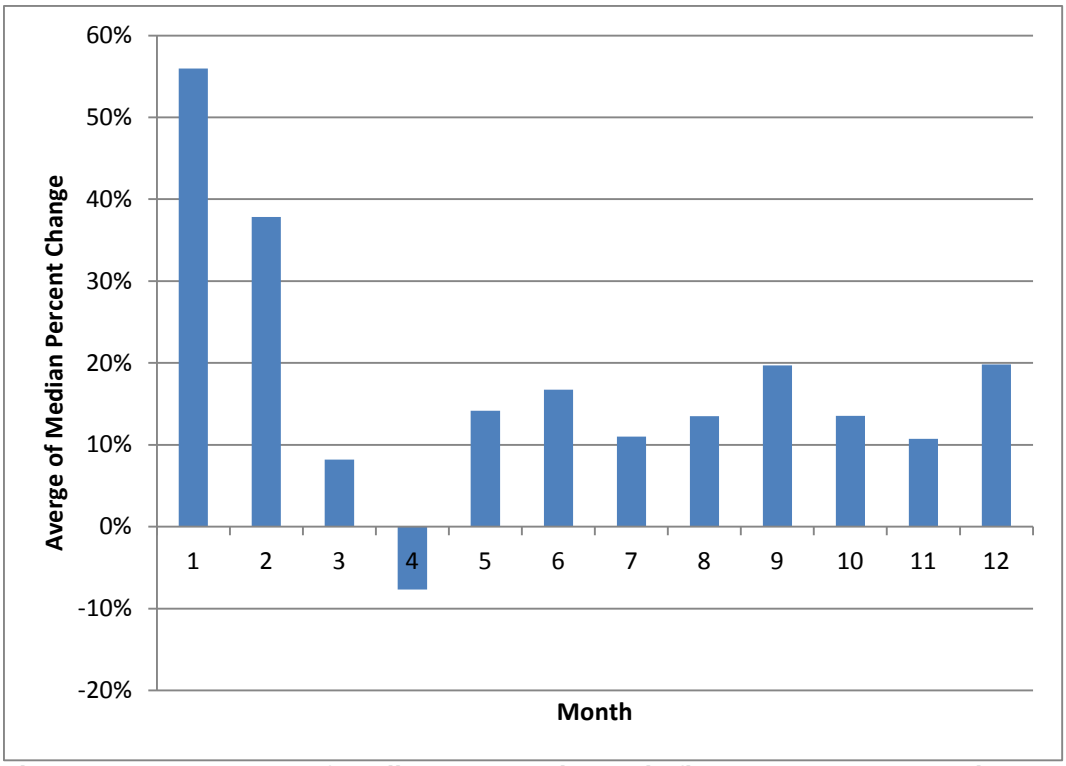


Figure 356. Average of median percent change in flow; NARCCAP Scenarios W1-W6 at all stations, Tongue and Powder Rivers watershed (SWAT)

Trinity River Watershed

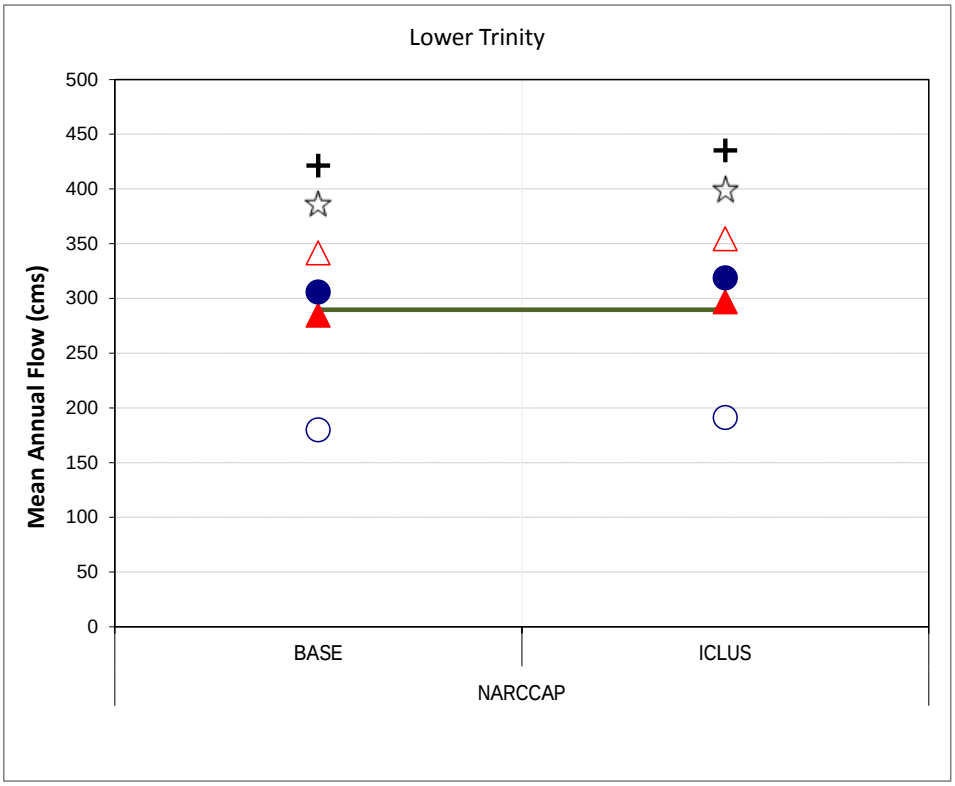


Figure 357. Mean annual flow (cms), Lower Trinity River (SWAT)

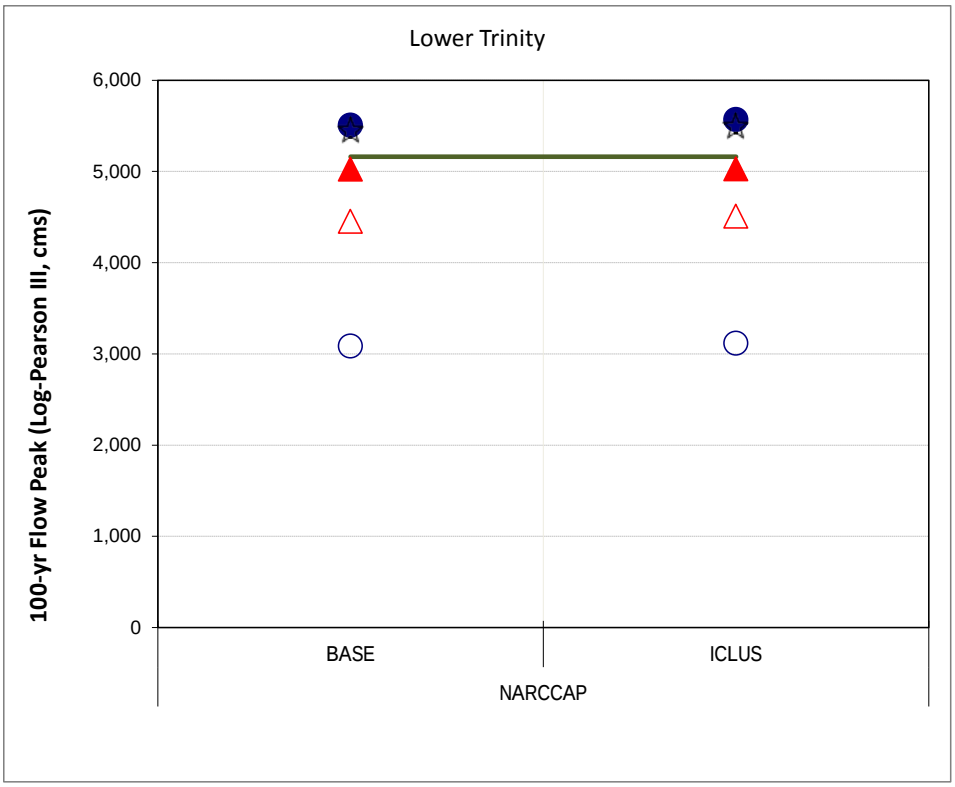


Figure 358. 100-yr Flow Peak (Log-Pearson III, cms), Lower Trinity River (SWAT)

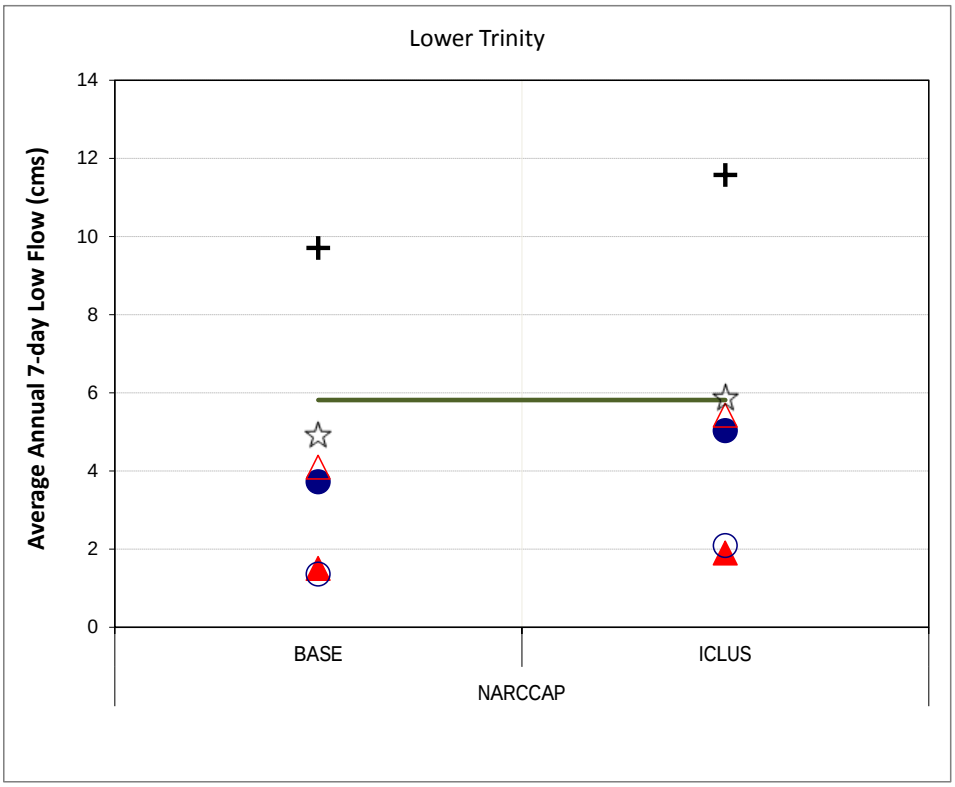


Figure 359. Average Annual 7-day Low Flow (cms), Lower Trinity River (SWAT)

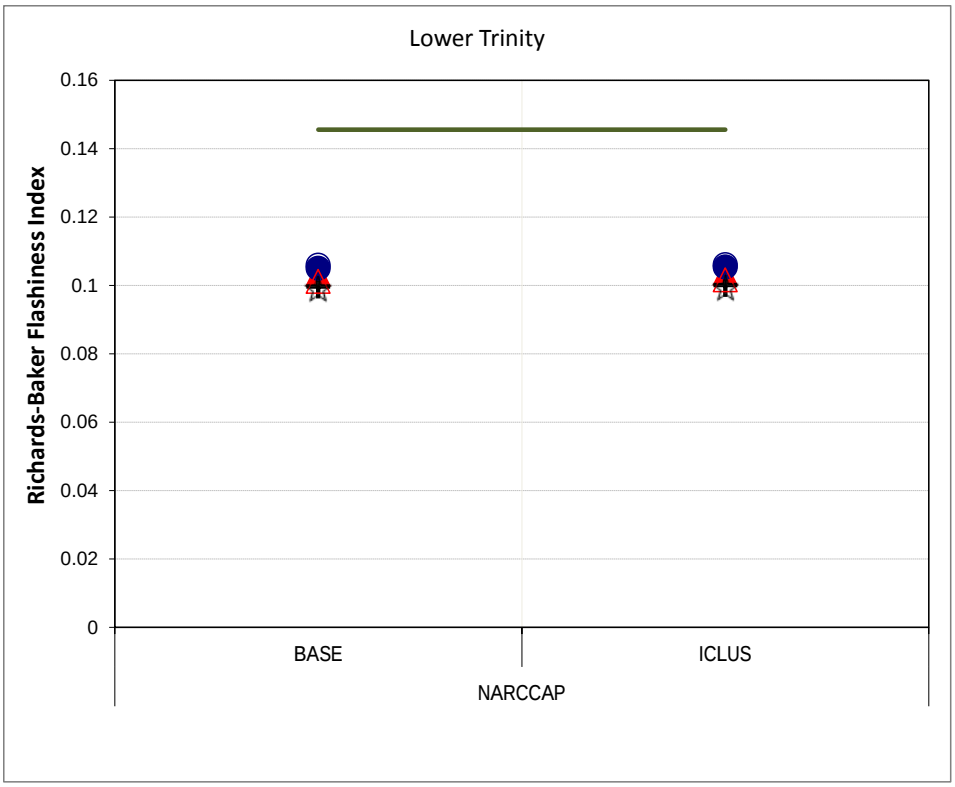


Figure 360. Richards-Baker Flashiness Index, Average Annual 7-day Low Flow (cms), Lower Trinity River (SWAT)

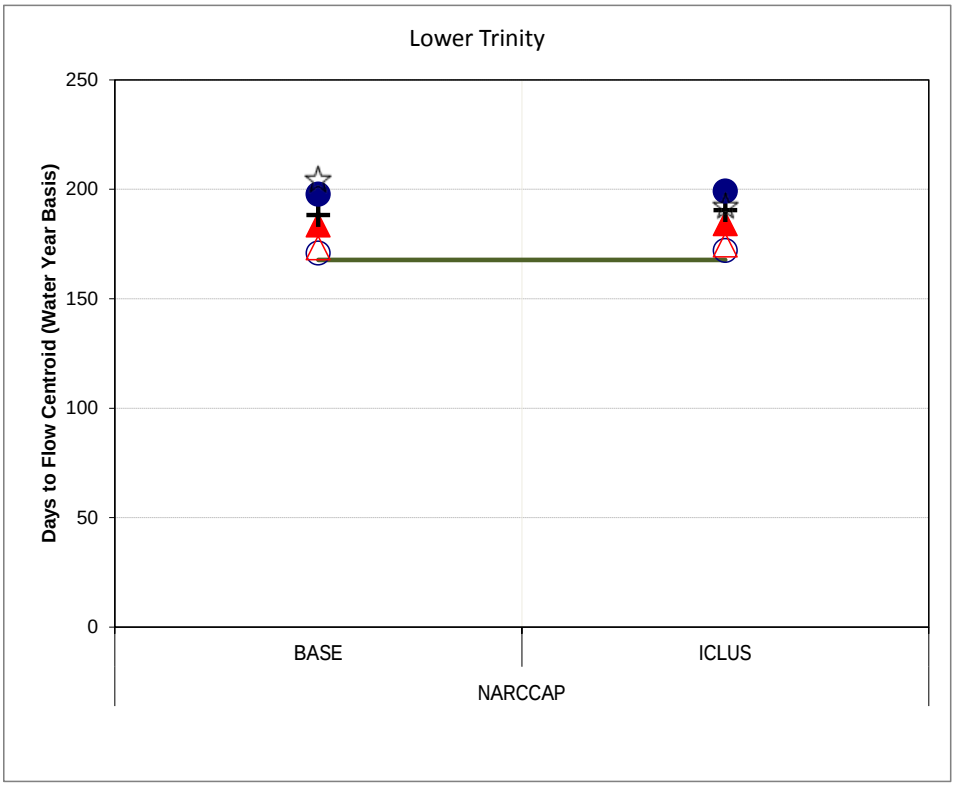


Figure 361. Days to Flow Centroid (Water Year Basis), Lower Trinity River (SWAT)

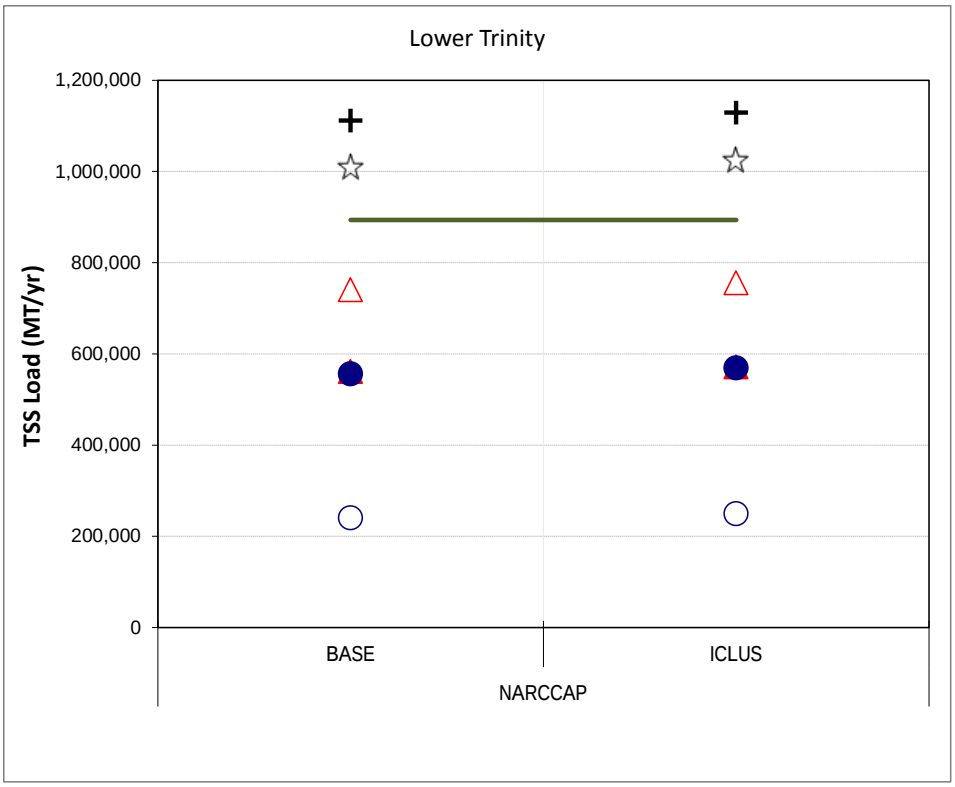


Figure 362. TSS Load (MT/yr), Lower Trinity River (SWAT)

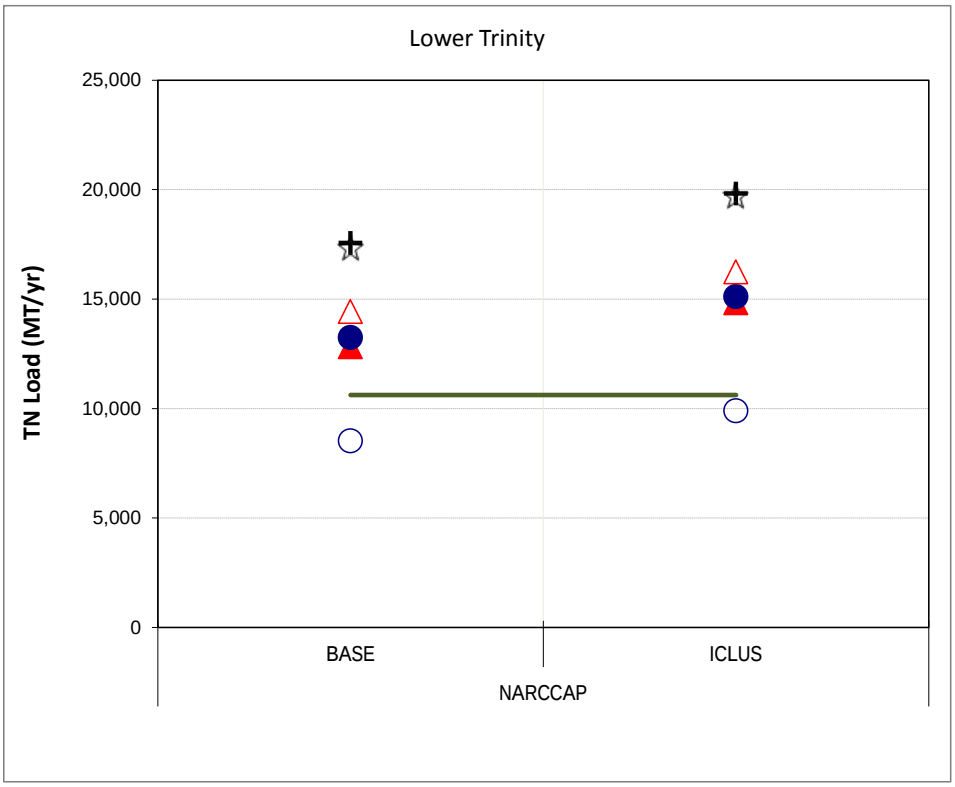


Figure 363. TN Load (MT/yr), Lower Trinity River (SWAT)

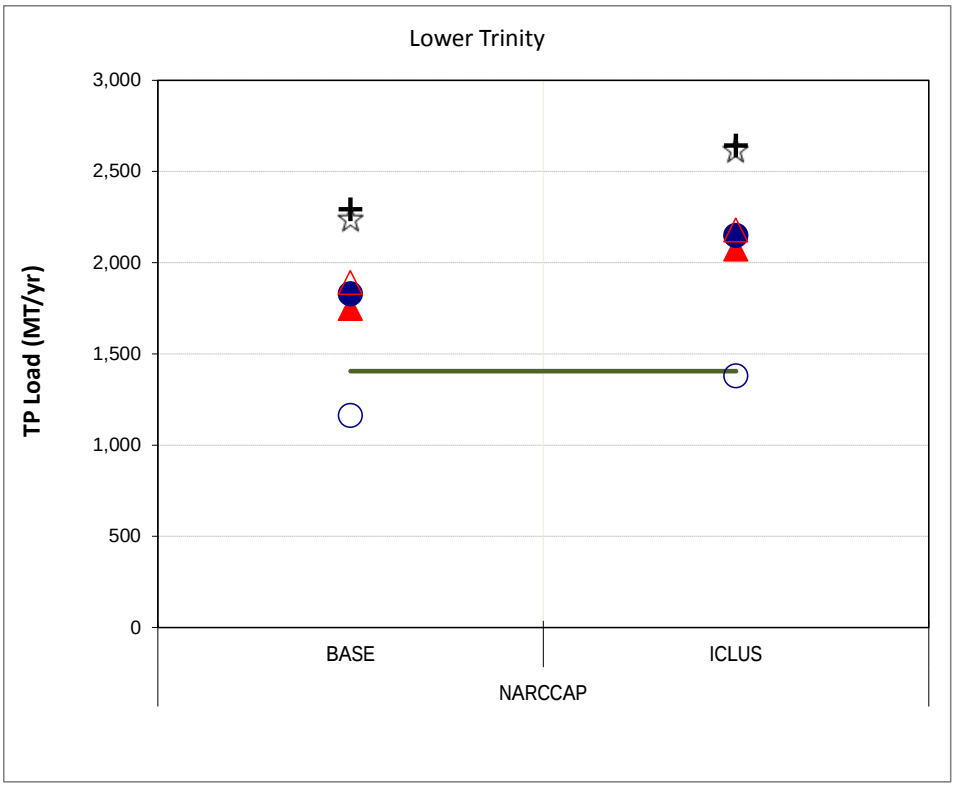


Figure 364. TP Load (MT/yr), Lower Trinity River (SWAT)

Table 14. Summary of range of change relative to existing conditions for NARCCAP dynamically downscaled scenarios, Neuse-Tar watershed SWAT model

	Results without LU change				Results with LU change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
Upper WF Trinity HUC12030101								
Flow	-60.57%	27.48%	38.78%	125.65%	-61.73%	9.22%	17.28%	84.08%
TSS	-70.32%	-5.70%	8.70%	93.85%	-61.87%	16.81%	34.02%	136.66%
TN	-45.92%	77.86%	128.00%	350.37%	-48.06%	54.80%	79.90%	235.62%
TP	-46.01%	50.23%	87.80%	255.66%	-43.74%	46.22%	67.76%	203.40%
Lower W. Fk Trinity River HUC 12030102								
Flow	-48.48%	7.94%	12.11%	59.28%	-45.86%	7.22%	10.72%	53.80%
TSS	-69.49%	-9.50%	-0.92%	61.32%	-58.95%	15.37%	25.41%	100.51%
TN	3.18%	35.04%	30.56%	45.98%	6.44%	41.92%	37.42%	57.61%
TP	0.13%	23.81%	20.82%	33.52%	1.34%	27.54%	24.49%	38.39%
Elm Fork Trinity HUC 12030103								
Flow	-52.26%	9.17%	8.56%	51.00%	-48.83%	6.67%	5.96%	43.74%
TSS	-55.37%	10.34%	9.74%	57.00%	-52.17%	7.82%	7.25%	50.47%
TN	-26.19%	45.35%	51.60%	136.69%	-18.99%	50.11%	56.27%	139.44%
TP	-29.16%	47.68%	55.43%	151.86%	-24.85%	49.68%	56.59%	149.99%
Denton HUC 12030104								
Flow	-50.19%	15.40%	16.70%	64.10%	-48.72%	8.72%	9.88%	50.85%
TSS	-52.29%	14.44%	16.07%	65.77%	-50.30%	9.58%	11.07%	55.79%
TN	-26.26%	68.20%	57.38%	102.85%	-31.30%	70.11%	56.69%	118.52%
TP	-28.75%	57.76%	50.63%	98.07%	-33.30%	57.86%	49.04%	111.53%
Upper Trinity HUC 12030105								
Flow	-43.89%	6.25%	8.45%	43.88%	-41.40%	5.10%	7.19%	39.68%
TSS	-65.26%	-13.20%	-9.53%	34.16%	-53.88%	10.22%	15.09%	69.42%
TN	-13.18%	12.31%	13.12%	35.69%	-7.31%	20.08%	20.89%	44.30%
TP	-13.87%	8.86%	9.82%	29.72%	-10.00%	14.56%	15.78%	36.11%
East Fork Trinity HUC 12030106								
Flow	-41.81%	3.94%	6.03%	40.43%	-38.87%	4.89%	6.63%	38.77%
TSS	-60.79%	-2.11%	0.38%	47.87%	-54.02%	8.76%	11.36%	62.36%
TN	-6.13%	10.22%	11.36%	27.67%	-1.96%	16.18%	17.14%	34.34%
TP	-6.82%	6.94%	7.87%	21.76%	-4.36%	10.46%	11.54%	26.38%
Cedar HUC 12030107								
Flow	-38.90%	13.92%	16.65%	51.89%	-40.35%	7.41%	9.92%	41.82%
TSS	-60.77%	-17.57%	-14.89%	16.22%	-48.05%	7.30%	10.90%	50.55%
TN	-2.97%	18.60%	17.67%	32.43%	-0.38%	23.77%	22.29%	38.59%
TP	-3.75%	13.31%	12.57%	24.60%	-2.66%	16.78%	15.64%	28.27%
Richland HUC 12030108								
Flow	-42.84%	21.39%	26.82%	86.52%	-46.58%	11.32%	16.22%	70.02%

TSS	-59.43%	-15.89%	-9.71%	37.07%	-46.56%	10.09%	18.00%	78.52%
TN	-32.71%	30.99%	31.84%	80.39%	-26.36%	46.01%	45.48%	94.84%
TP	-30.63%	33.38%	34.04%	81.94%	-24.58%	47.05%	46.47%	94.70%
Chambers HUC 12030109								
Flow	-41.69%	21.72%	27.12%	84.62%	-44.71%	11.62%	16.42%	67.47%
TSS	-59.45%	-16.76%	-10.10%	37.50%	-44.92%	11.87%	20.66%	83.60%
TN	-32.92%	30.34%	30.34%	68.18%	-20.65%	56.62%	55.72%	100.53%
TP	-30.47%	31.72%	32.13%	70.61%	-19.05%	55.36%	54.92%	99.28%
Lower Trinity-Tehuacana HUC 12030201								
Flow	-44.39%	7.60%	10.82%	51.69%	-43.33%	5.00%	8.03%	45.99%
TSS	-69.01%	-20.17%	-15.73%	24.85%	-54.89%	12.46%	18.79%	75.04%
TN	-15.65%	14.82%	17.33%	42.46%	-9.75%	22.50%	24.90%	50.98%
TP	-15.88%	10.31%	12.50%	33.51%	-11.88%	15.68%	18.07%	39.58%
Lower Trinity-Kickapoo HUC 12030202								
Flow	-40.67%	10.74%	10.86%	47.61%	-40.54%	8.09%	8.11%	42.79%
TSS	-69.05%	-20.58%	-16.24%	25.93%	-54.16%	14.74%	21.02%	81.13%
TN	-24.79%	25.51%	27.06%	64.32%	-19.76%	30.19%	32.84%	71.60%
TP	-26.83%	24.45%	24.40%	60.68%	-24.03%	25.86%	26.87%	64.21%
Lower Trinity (at mouth) HUC 12030203								
Flow	-37.90%	11.73%	10.53%	45.51%	-37.98%	9.23%	8.01%	41.24%
TSS	-73.07%	-27.12%	-21.23%	24.42%	-54.90%	19.88%	29.60%	103.95%
TN	-19.77%	30.25%	31.77%	65.38%	-12.28%	39.02%	41.39%	75.79%
TP	-17.32%	32.30%	32.42%	63.07%	-10.76%	39.98%	40.71%	70.90%
Clear Creek nr Sanger (gage 05317000)								
Flow	-38.27%	14.86%	17.51%	61.53%	-39.47%	5.66%	7.64%	44.03%
TSS	-59.35%	-17.40%	-15.83%	22.09%	-46.40%	8.19%	10.18%	58.96%
TN	-1.43%	30.94%	48.37%	118.20%	-13.68%	21.07%	33.83%	119.75%
TP	-8.77%	24.70%	40.07%	103.05%	-15.96%	20.54%	32.24%	112.33%

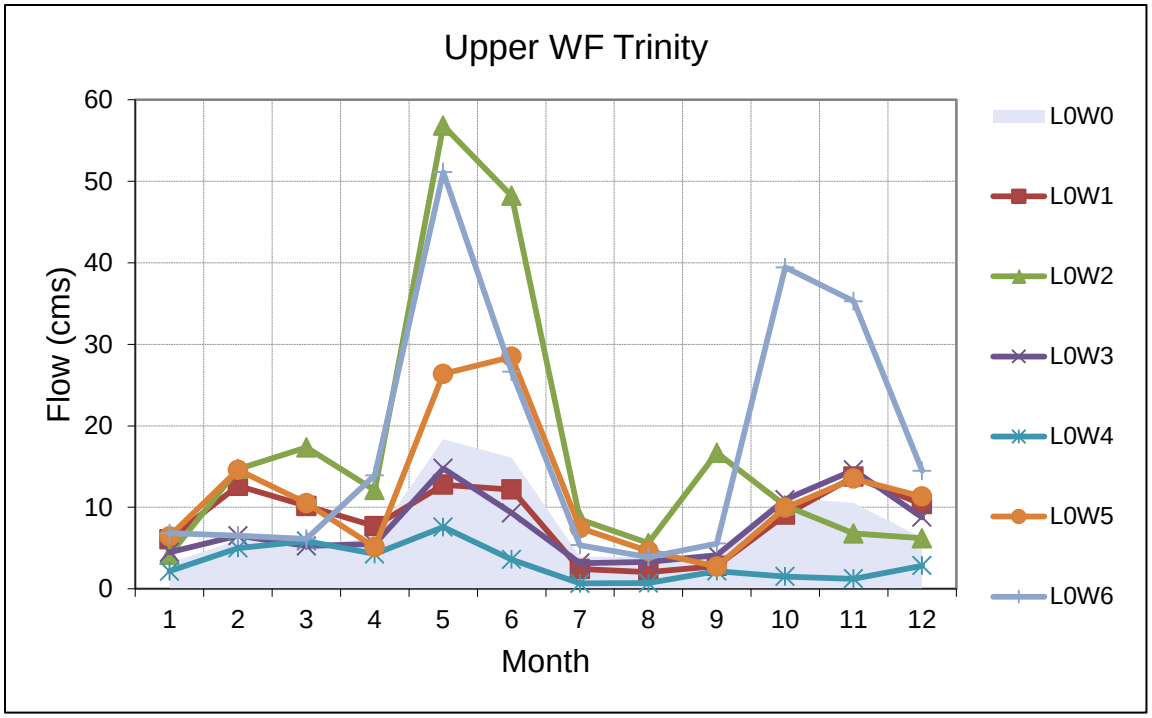


Figure 365. Monthly average flows, Upper WF Trinity River (SWAT)

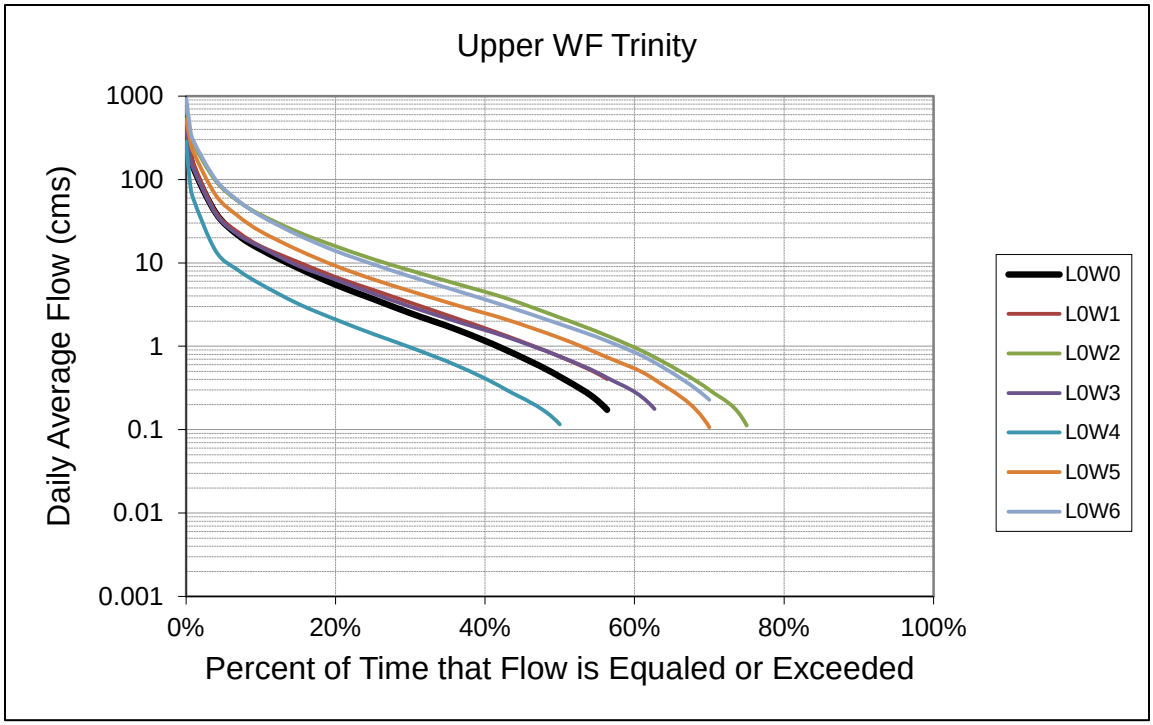


Figure 366. Flow duration, Upper WF Trinity River (SWAT)

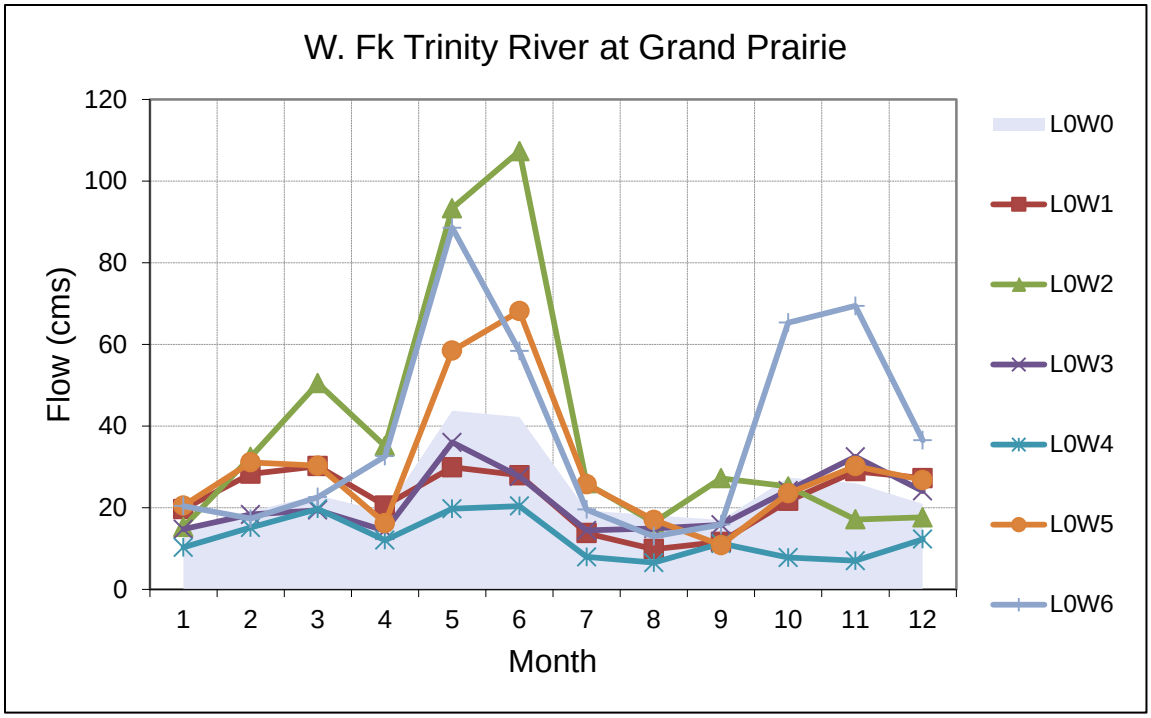


Figure 367. Monthly average flows, Lower West Fork Trinity River at Grand Prairie (SWAT)

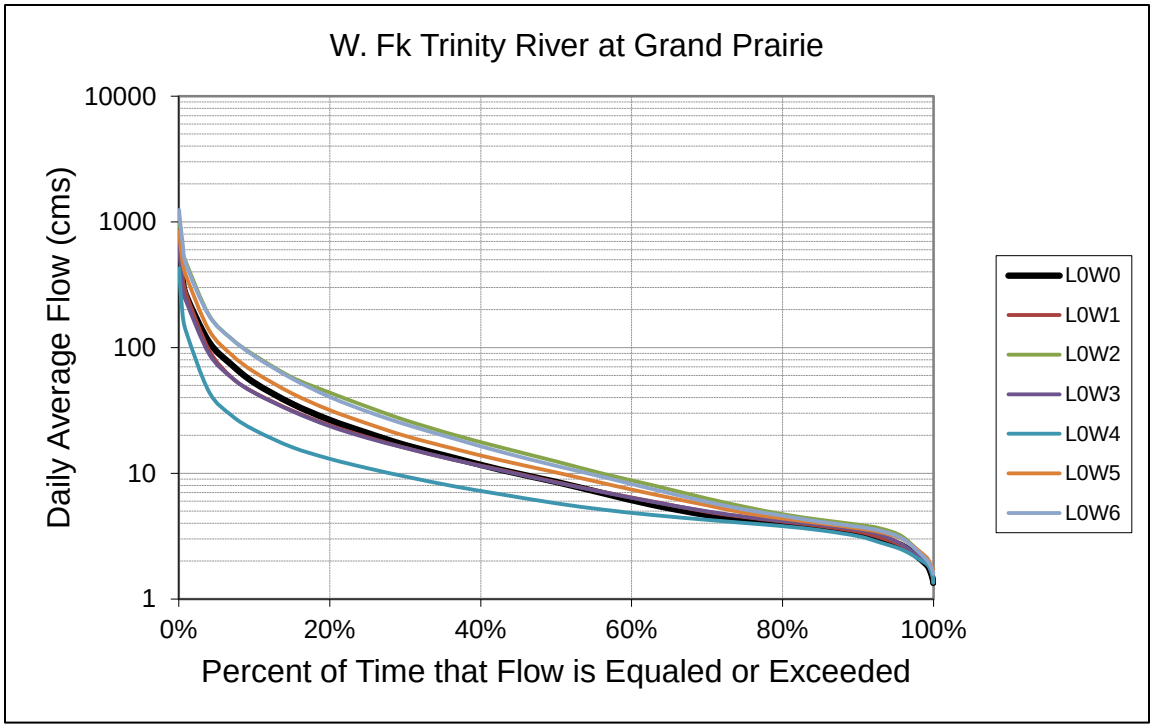


Figure 368. Flow duration, Lower West Fork Trinity River at Grand Prairie (SWAT)

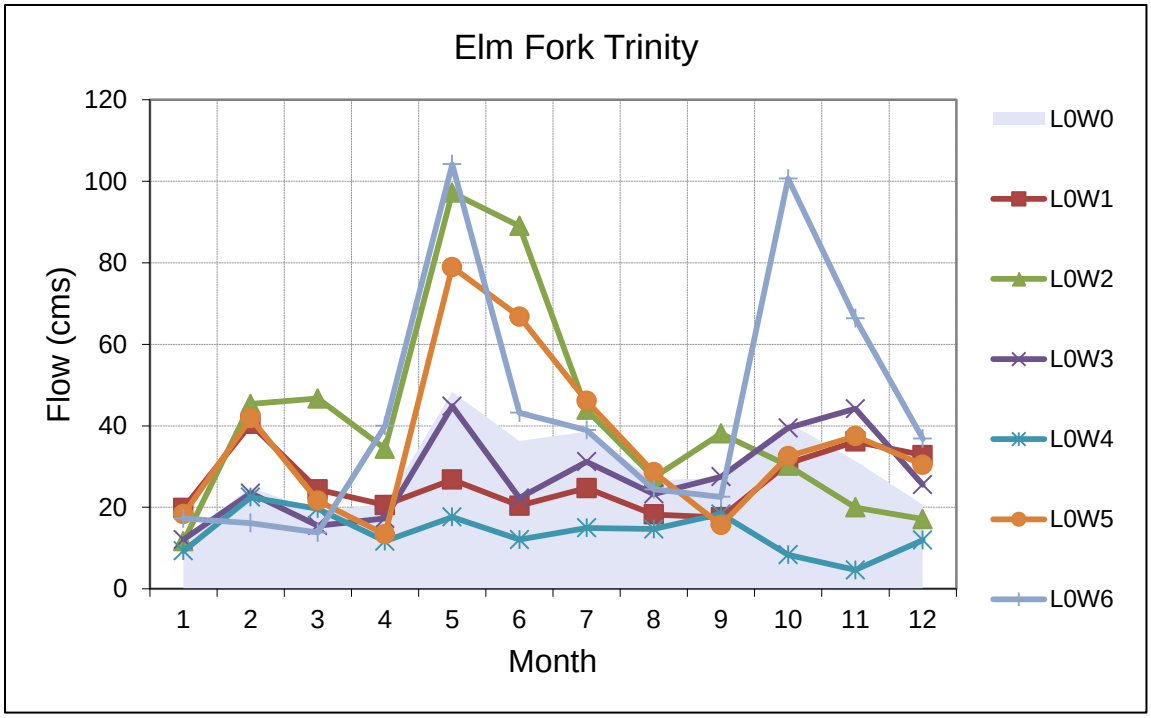


Figure 369. Monthly average flows, Elm Fork Trinity River (SWAT)

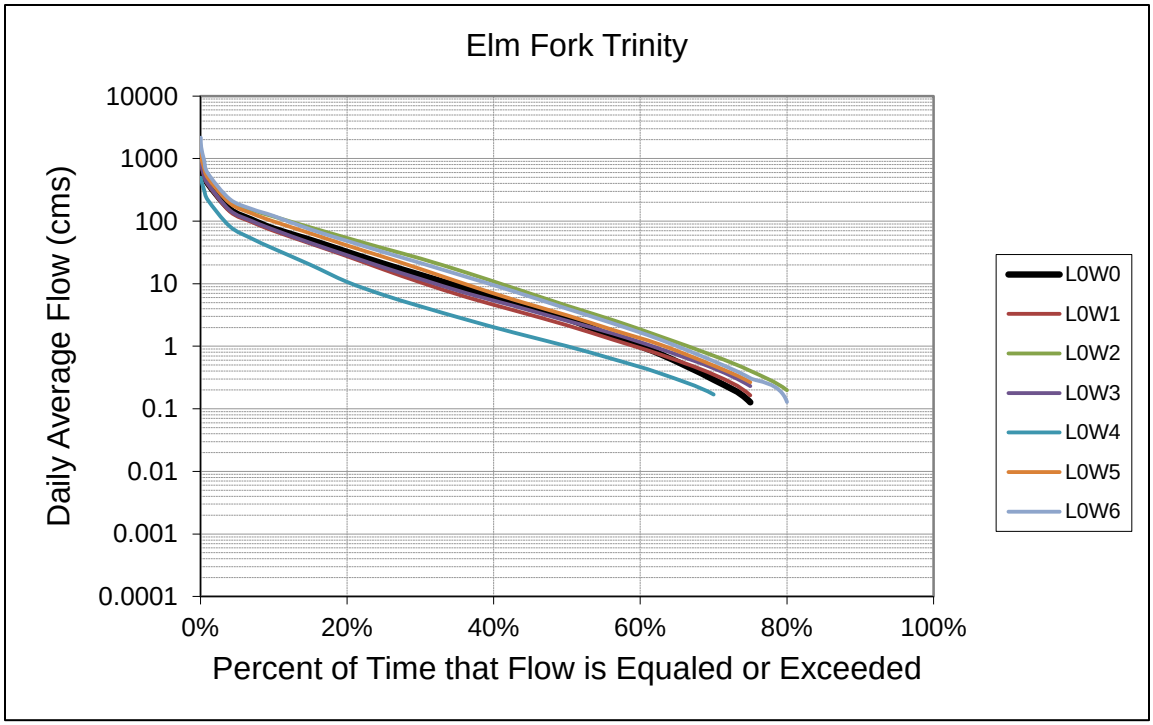


Figure 370. Flow duration, Elm Fork Trinity River (SWAT)

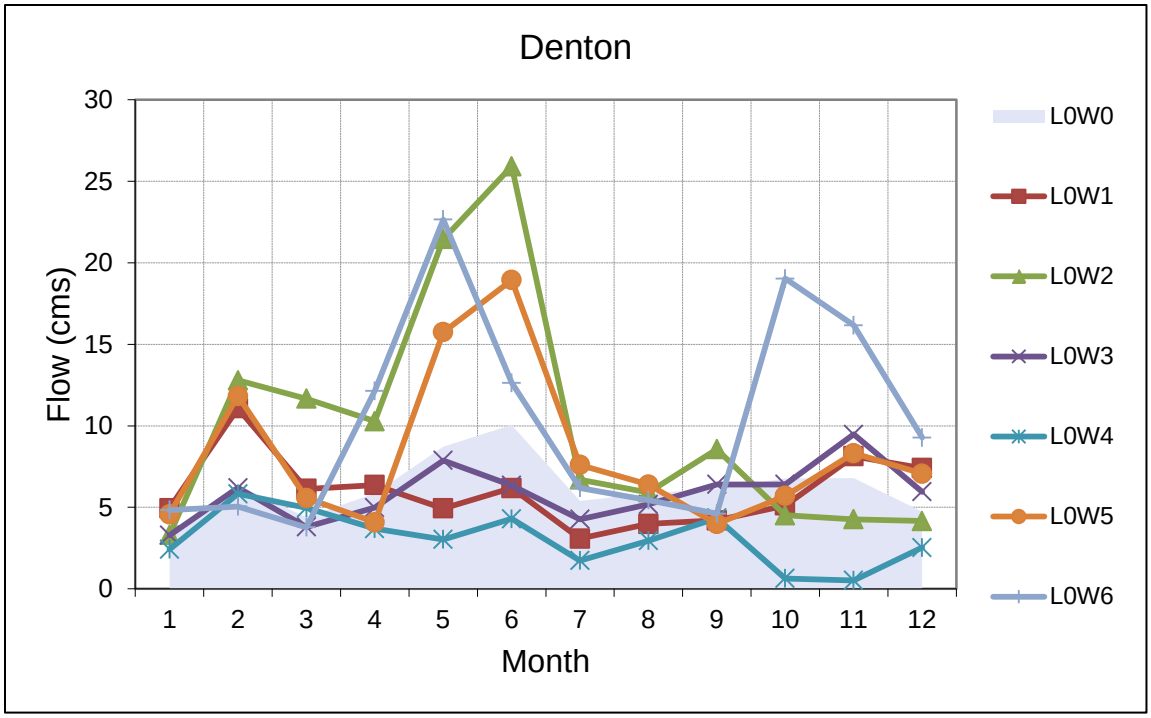


Figure 371. Monthly average flows, Denton River (SWAT)

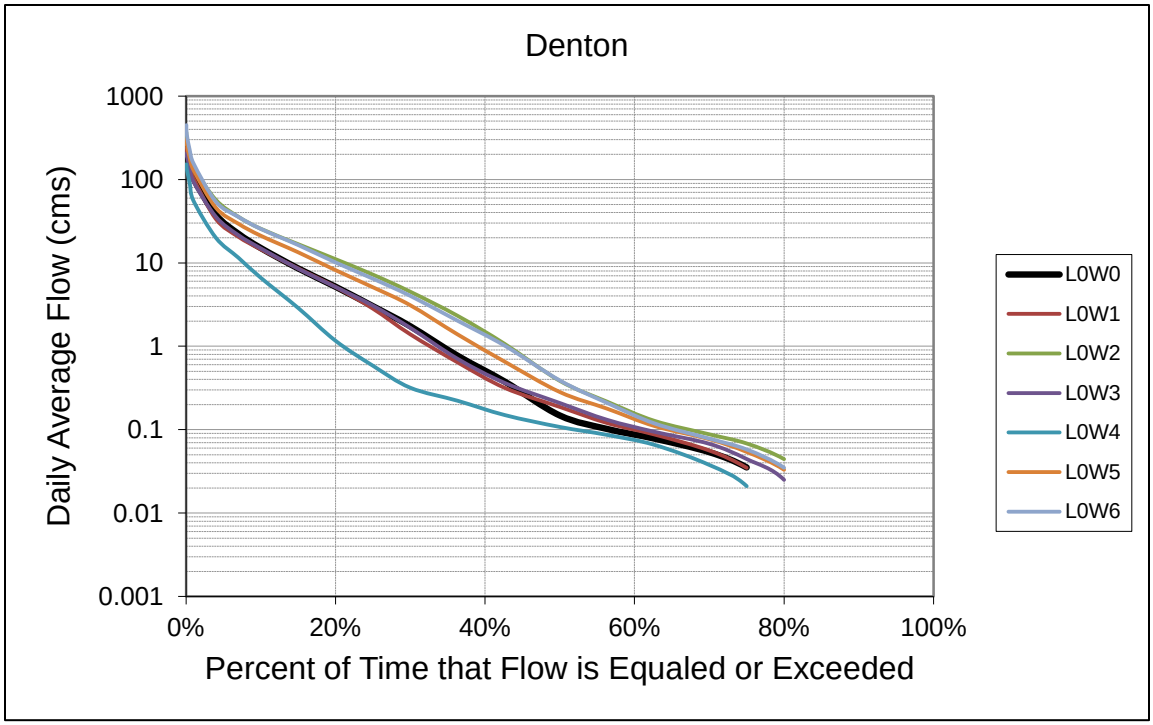


Figure 372. Flow duration, Denton River (SWAT)

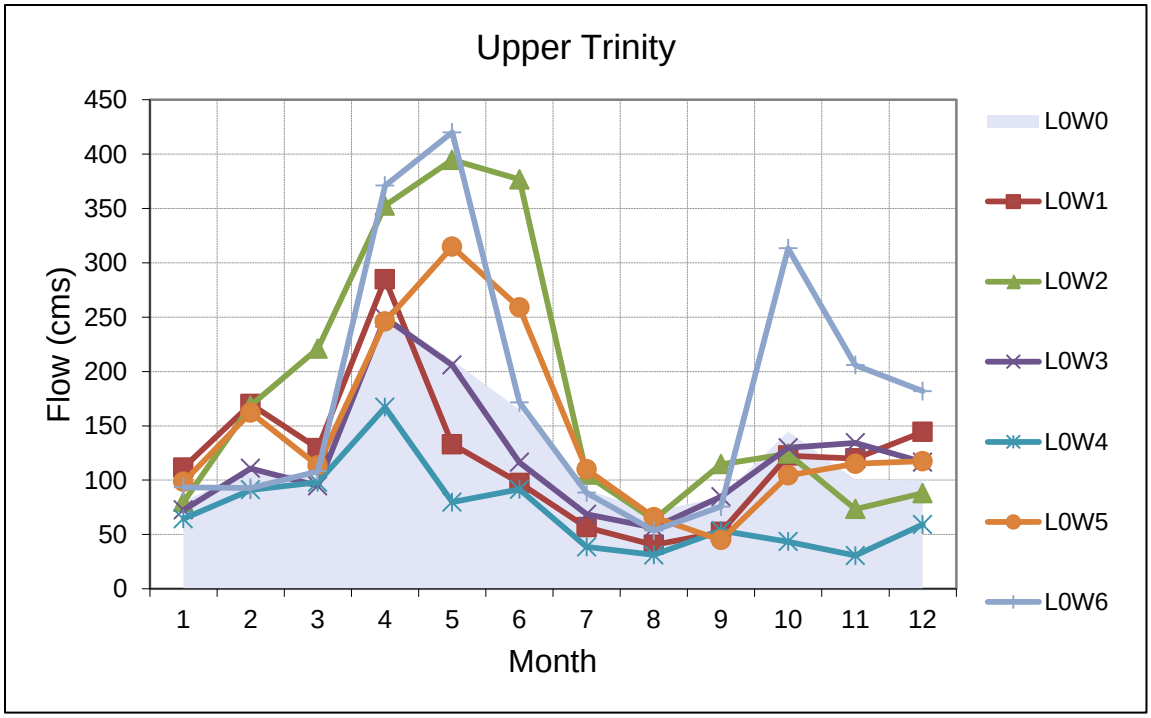


Figure 373. Monthly average flows, Upper Trinity River (SWAT)

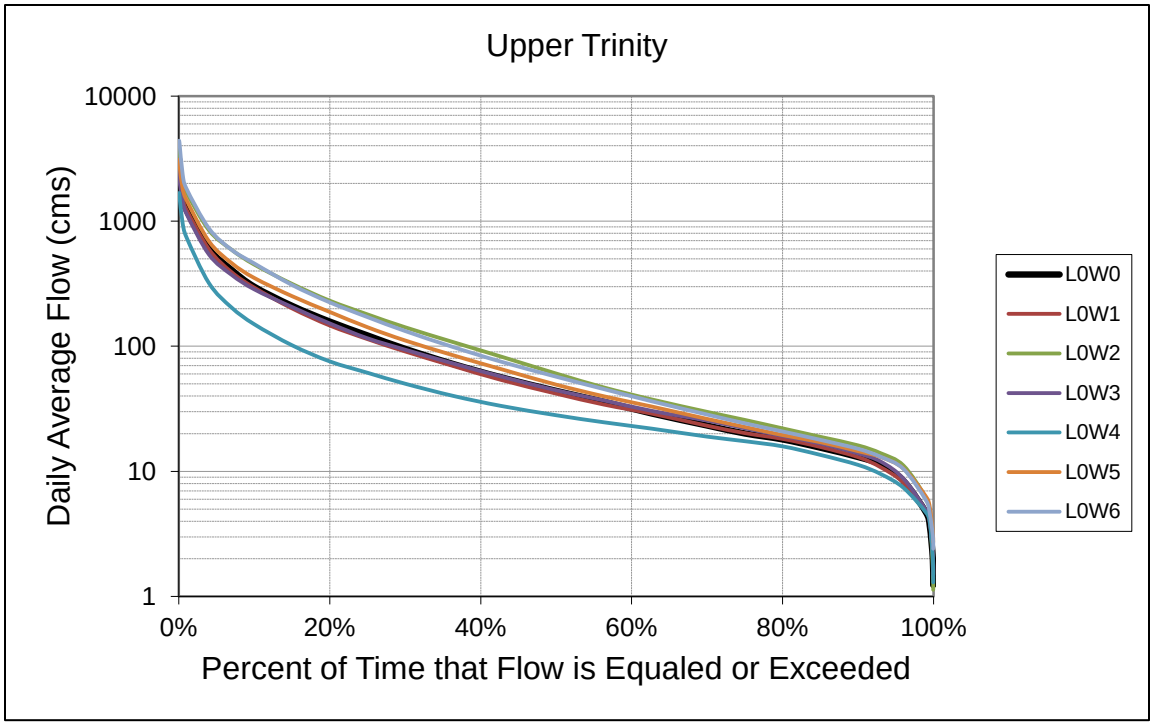


Figure 374. Flow duration, Upper Trinity River (SWAT)

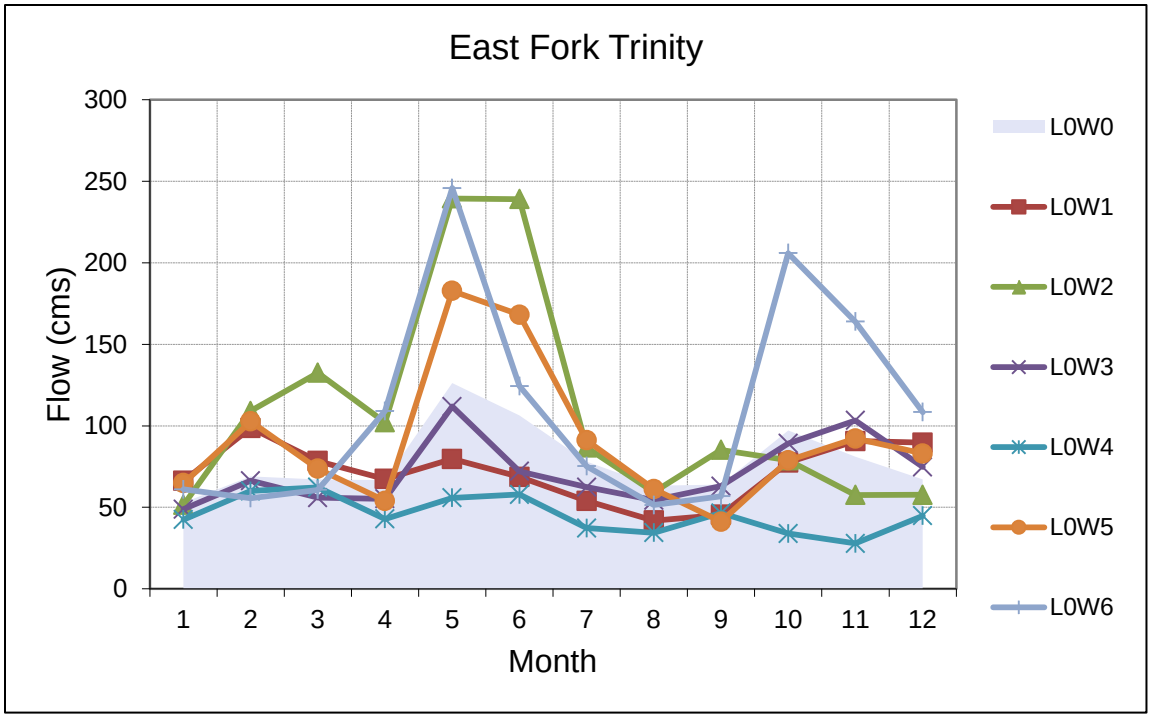


Figure 375. Monthly average flows, East Fork Trinity River (SWAT)

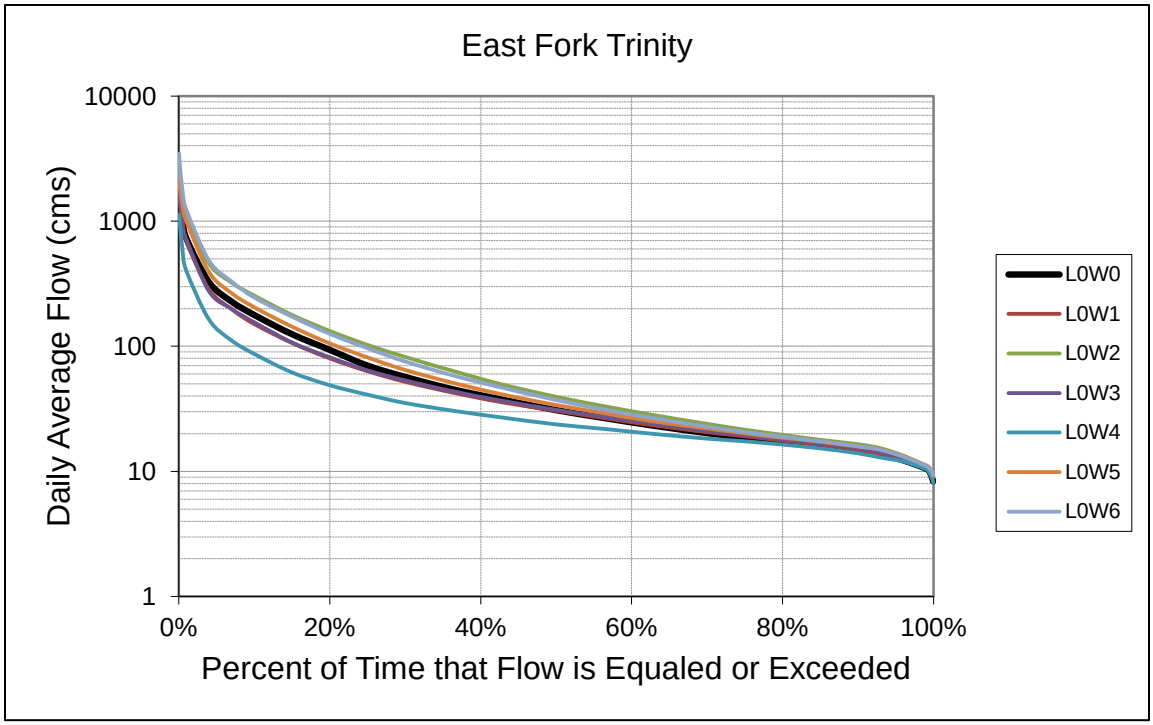


Figure 376. Flow duration, East Fork Trinity River (SWAT)

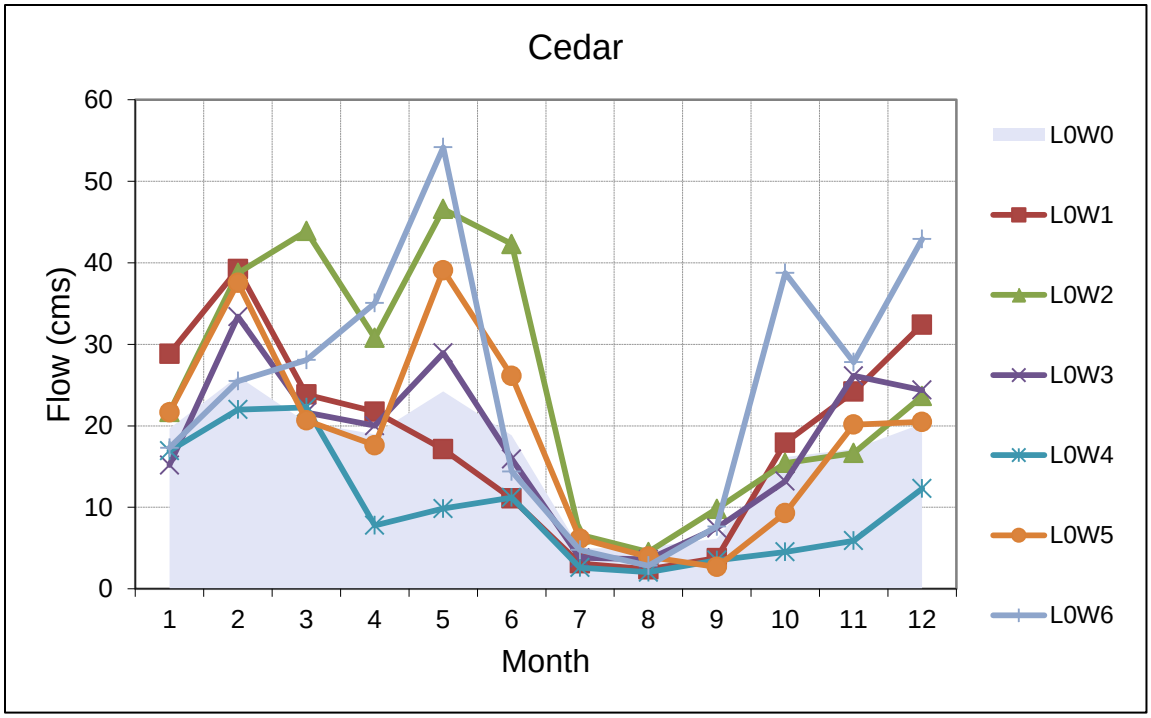


Figure 377. Monthly average flows, Cedarr (SWAT)

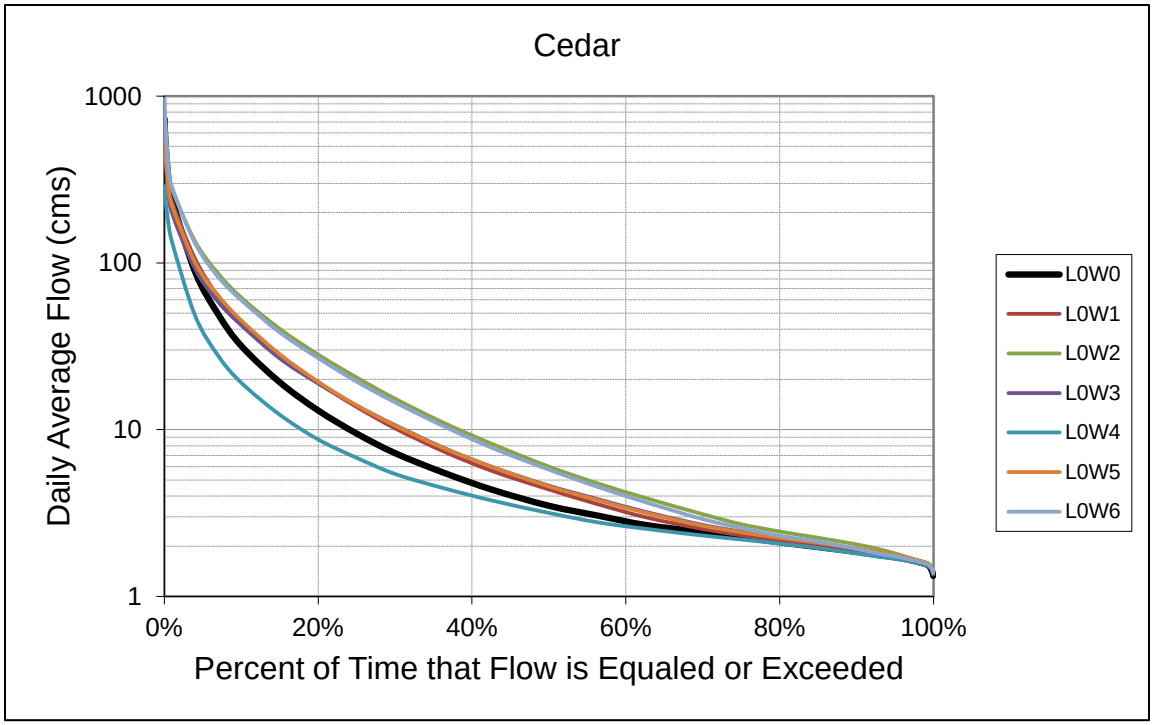


Figure 378. Flow duration, Cedar River (SWAT)

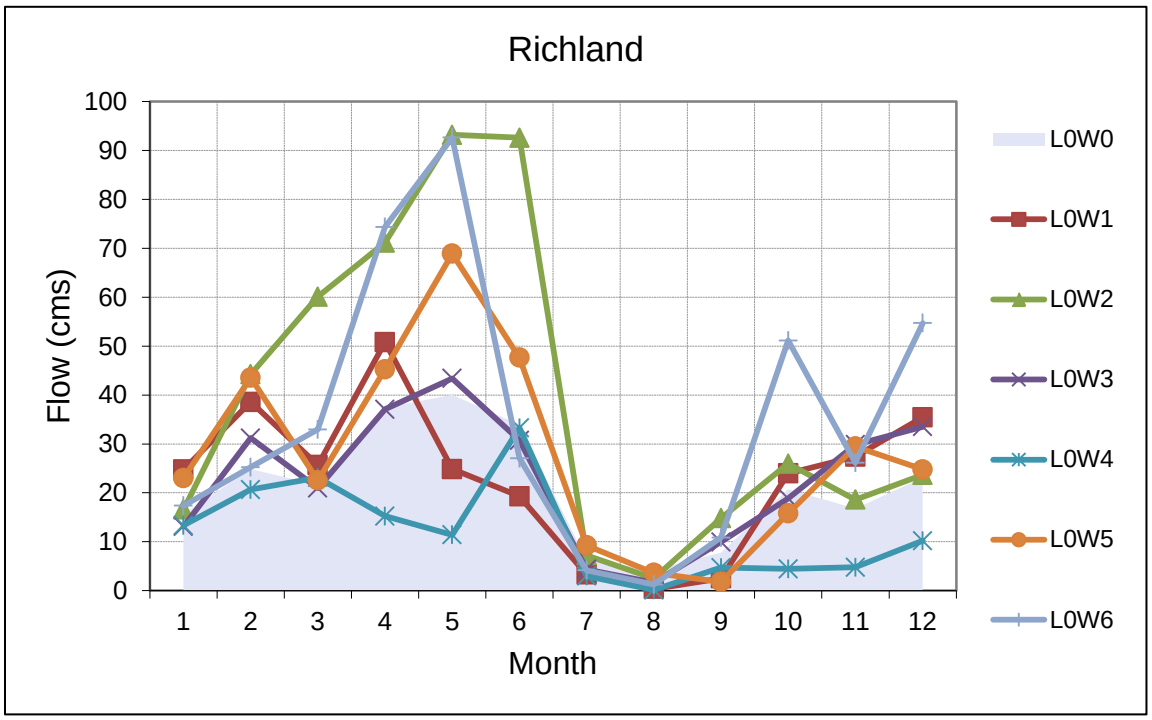


Figure 379. Monthly average flows, Richland (SWAT)

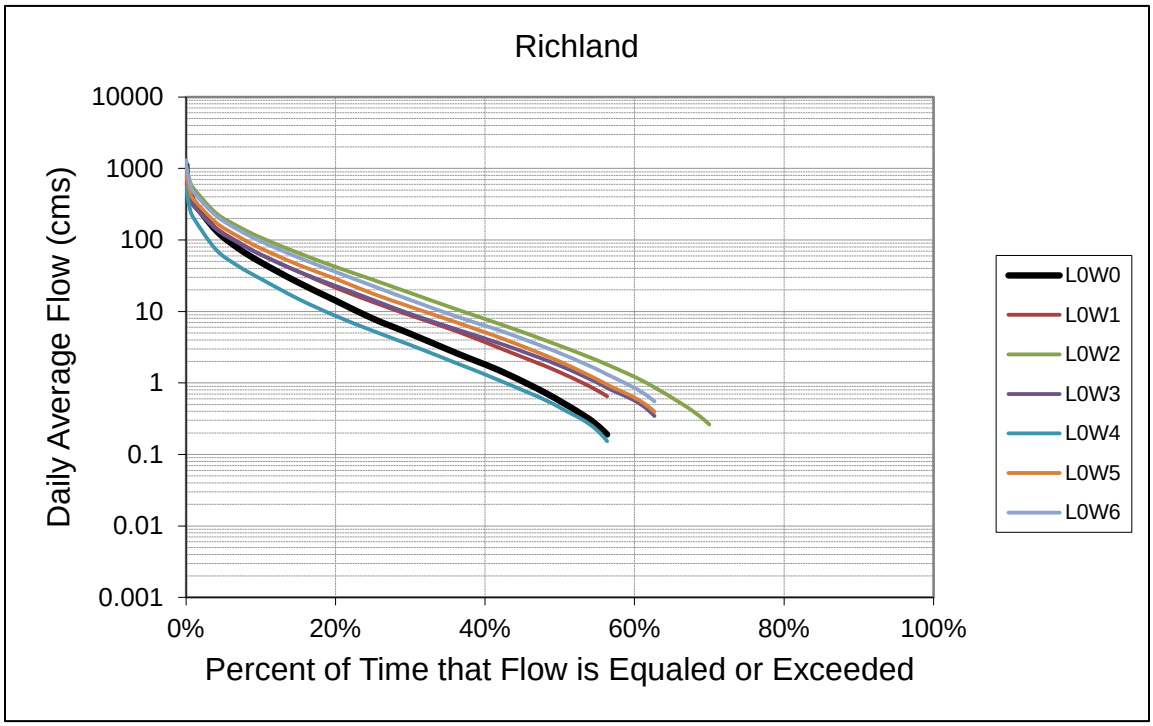


Figure 380. Flow duration, Richland (SWAT)

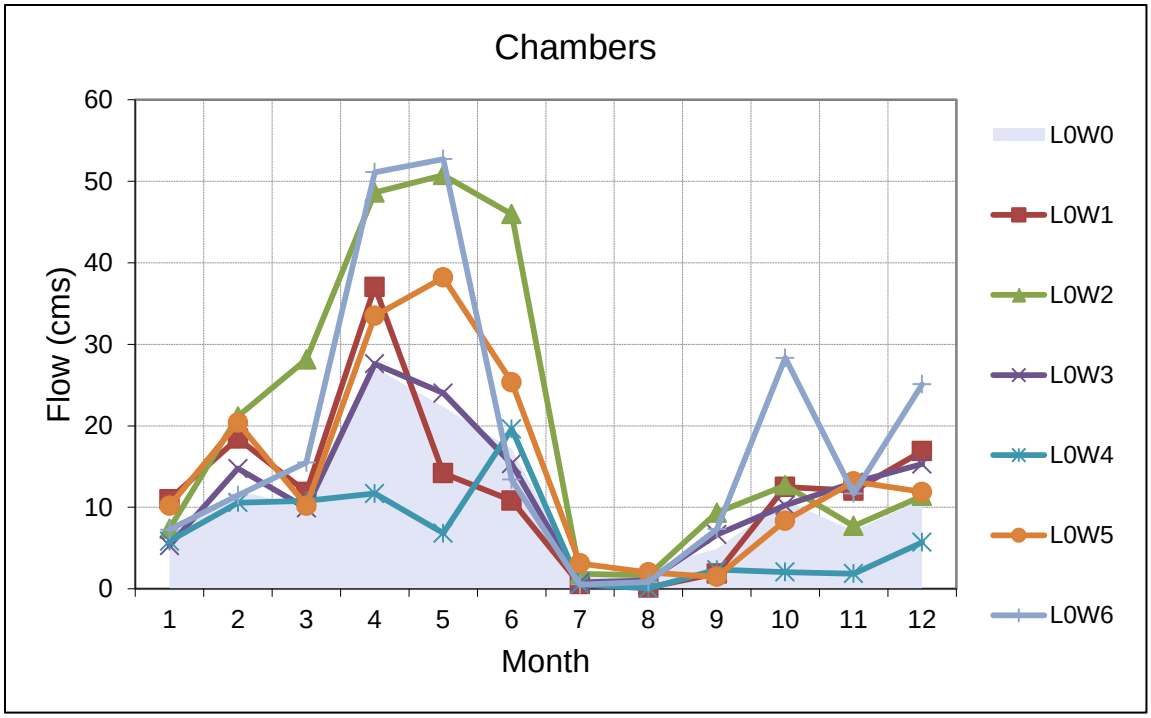


Figure 381. Monthly average flows, Chambers (SWAT)

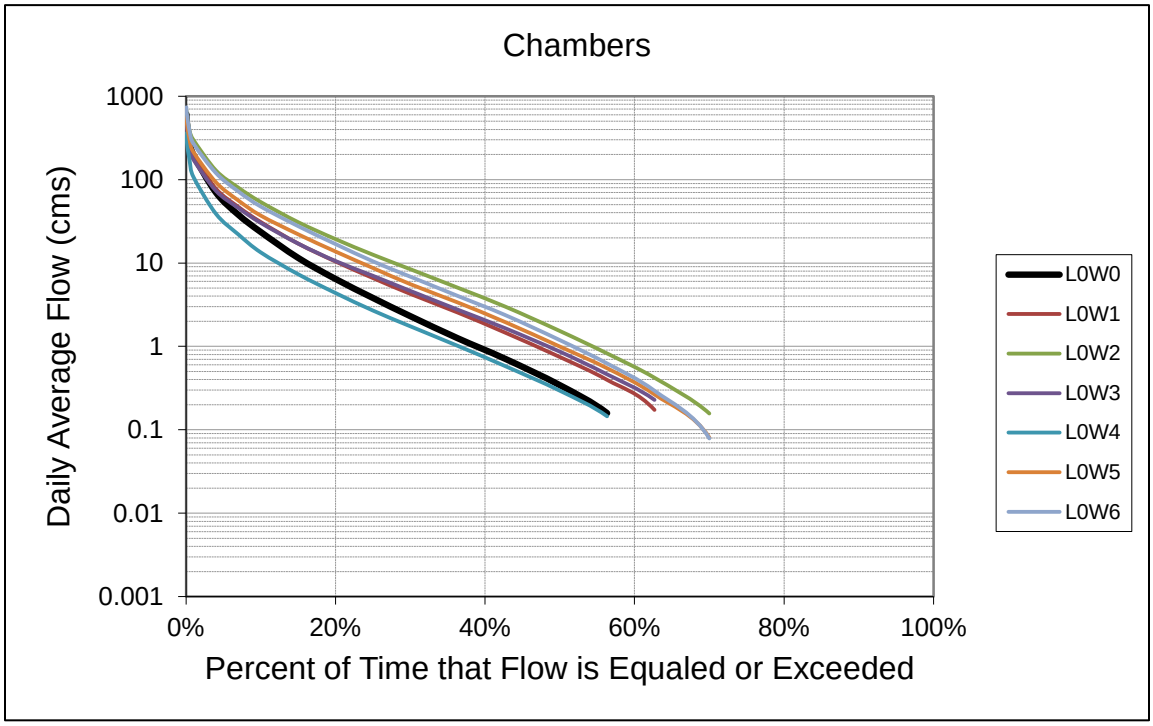


Figure 382. Flow duration, Chambers (SWAT)

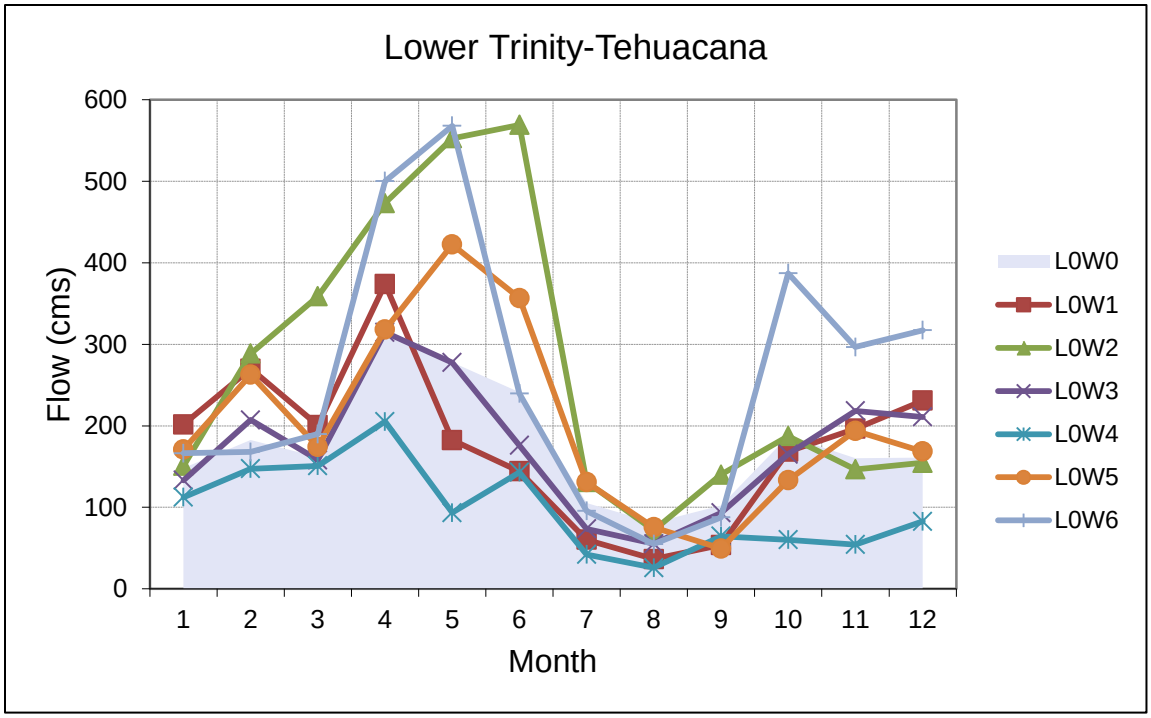


Figure 383. Monthly average flows, Lower Trinity River - Tehuacana (SWAT)

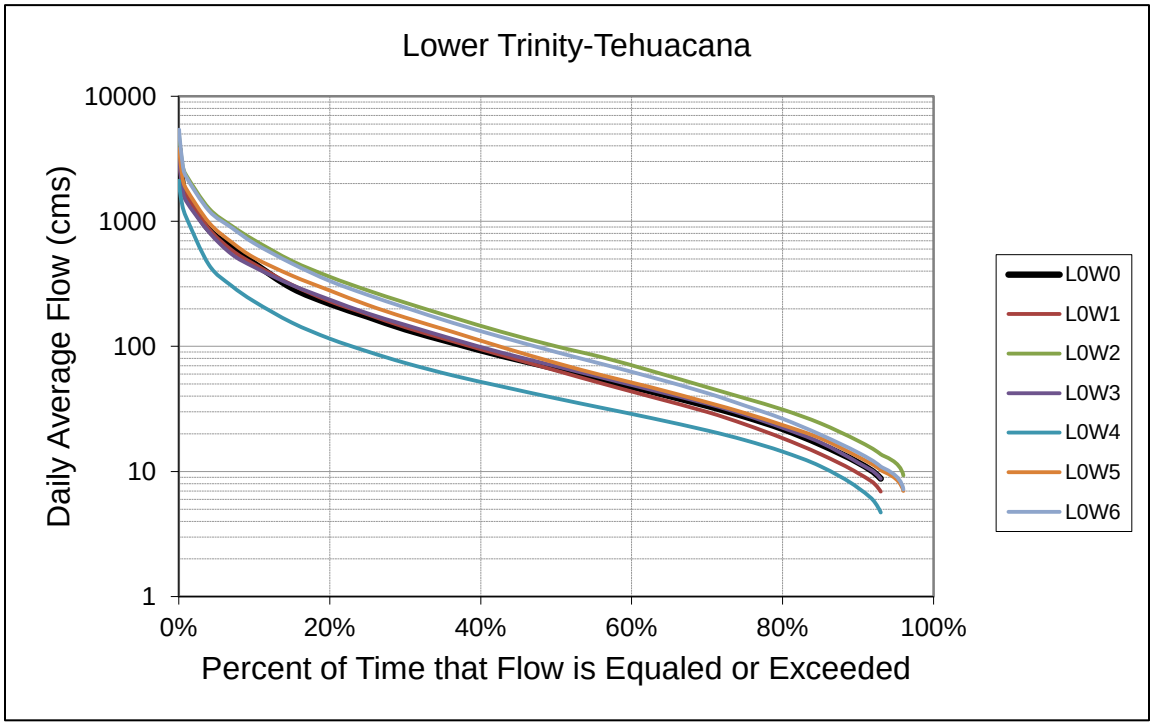


Figure 384. Flow duration, Lower Trinity River - Tehuacana (SWAT)

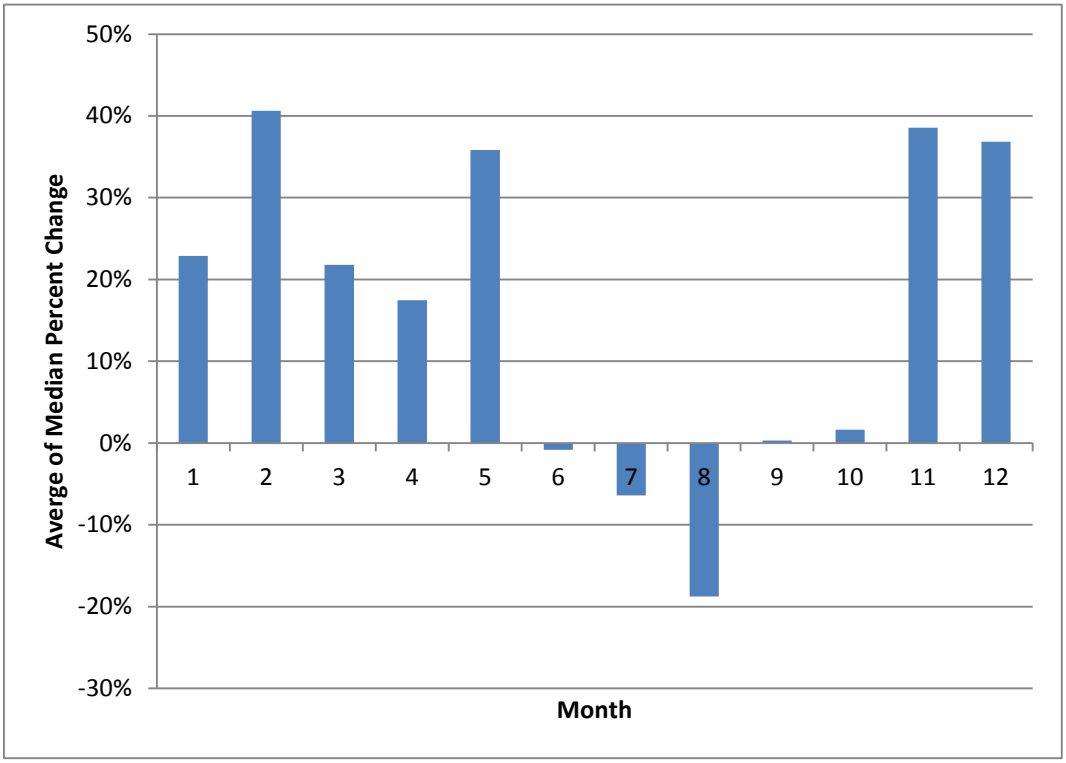


Figure 385. Average of median percent change in flow; NARCCAP Scenarios W1-W6 at all stations, Trinity River watershed (SWAT)

Upper Colorado River Watershed

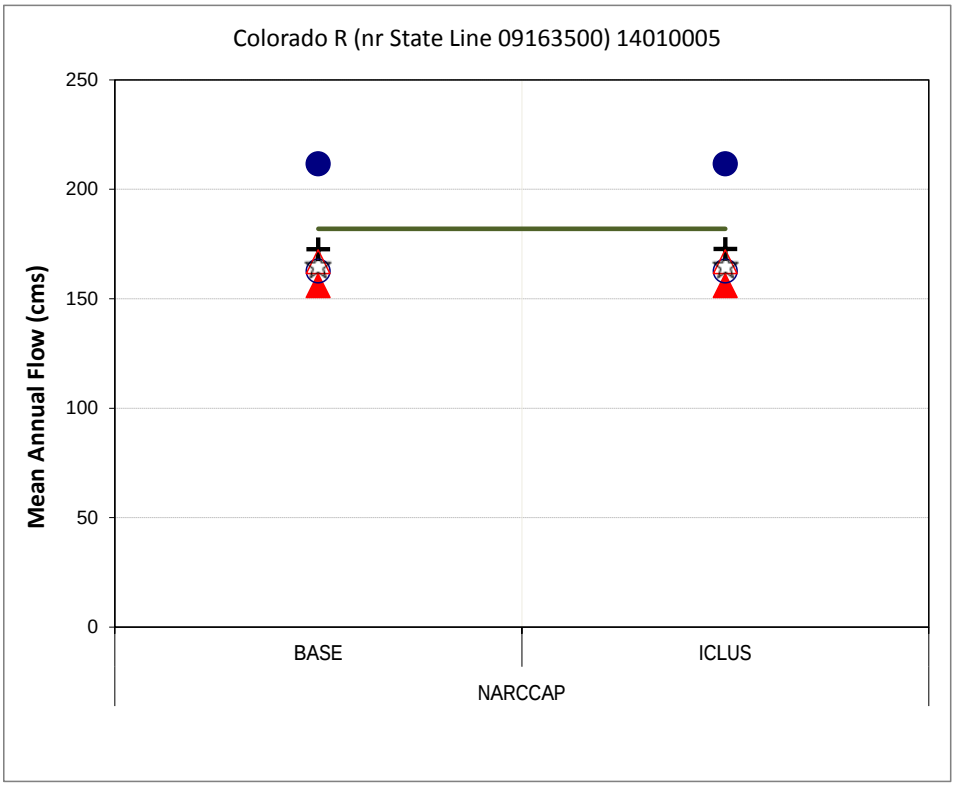


Figure 386. Mean annual flow (cms), Colorado River near State Line (SWAT)

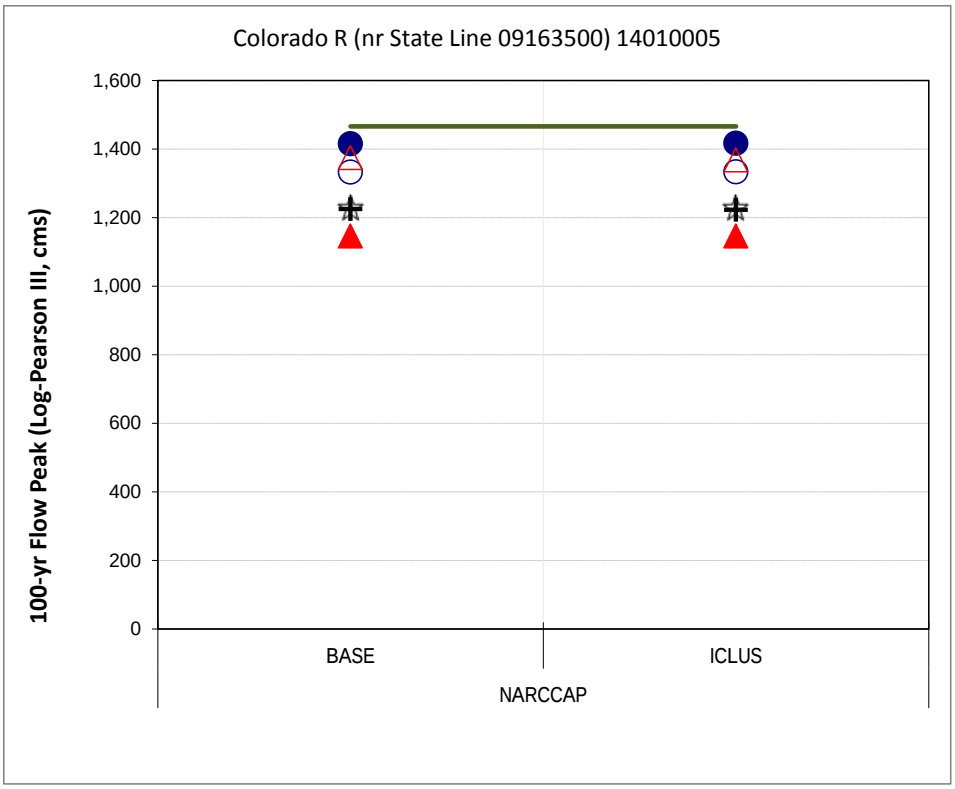


Figure 387. 100-yr Flow Peak (Log-Pearson III, cms), Colorado River near State Line (SWAT)

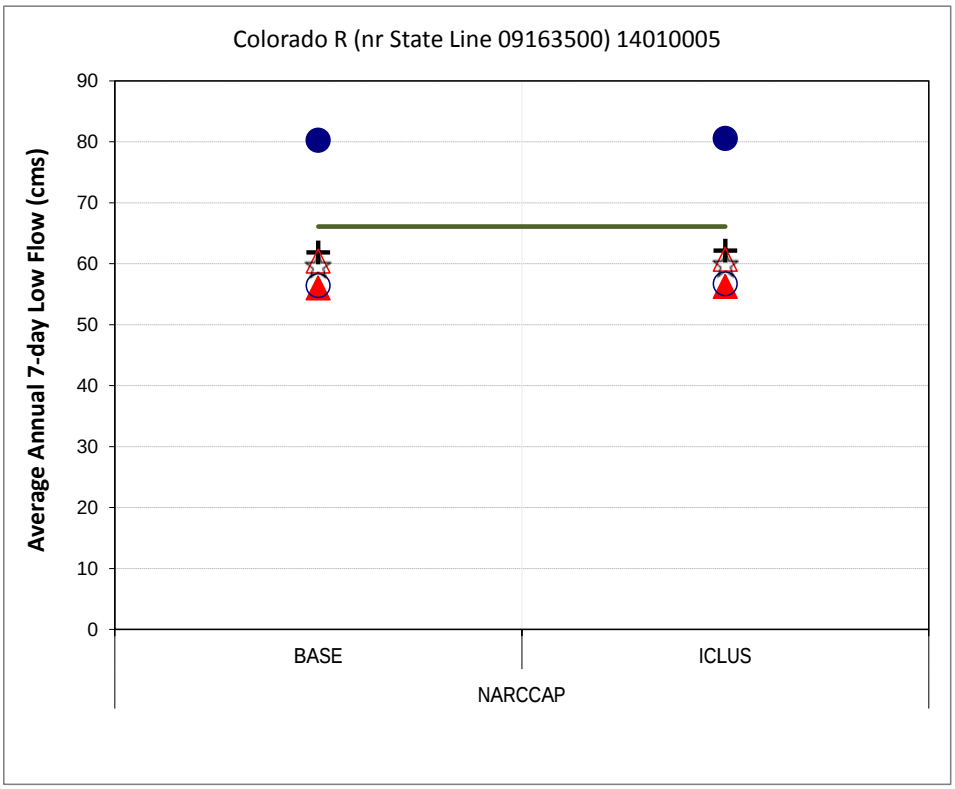


Figure 388. Average Annual 7-day Low Flow (cms), Colorado River near State Line (SWAT)

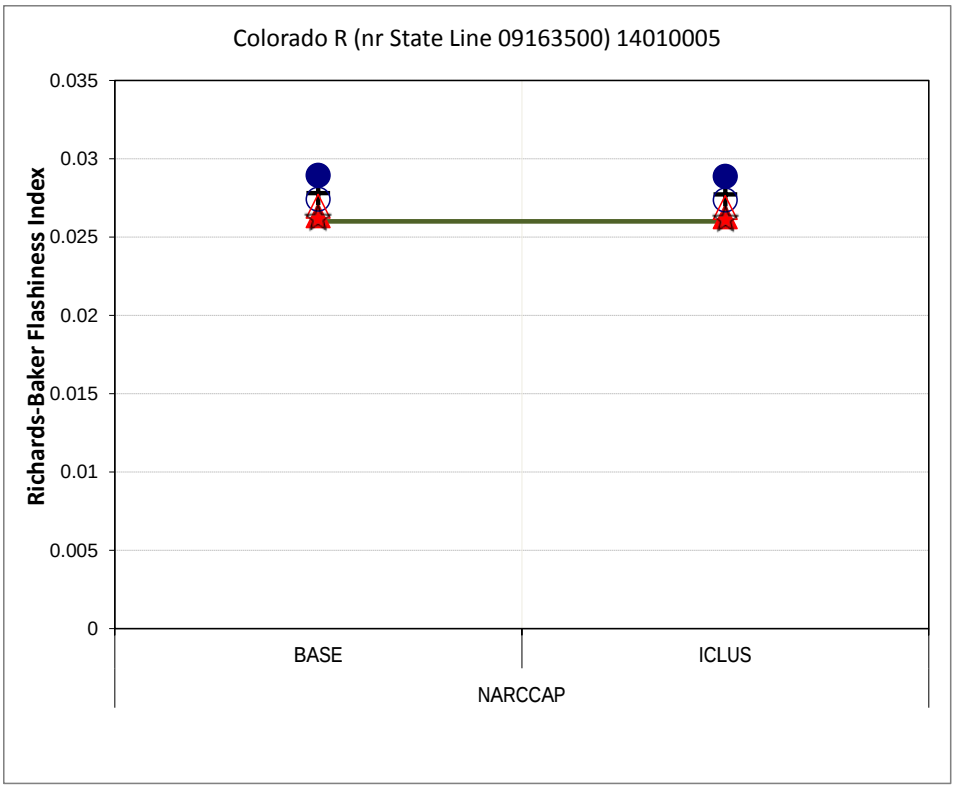


Figure 389. Richards-Baker Flashiness Index, Average Annual 7-day Low Flow (cms), Colorado River near State Line (SWAT)

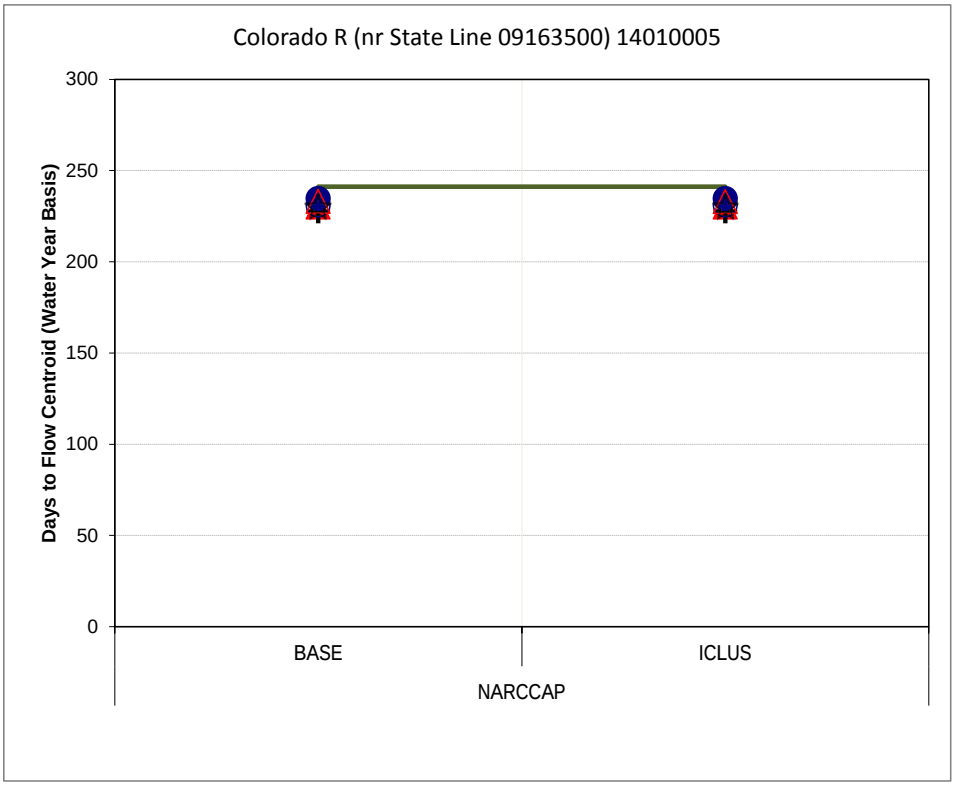


Figure 390. Days to Flow Centroid (Water Year Basis), Colorado River near State Line (SWAT)

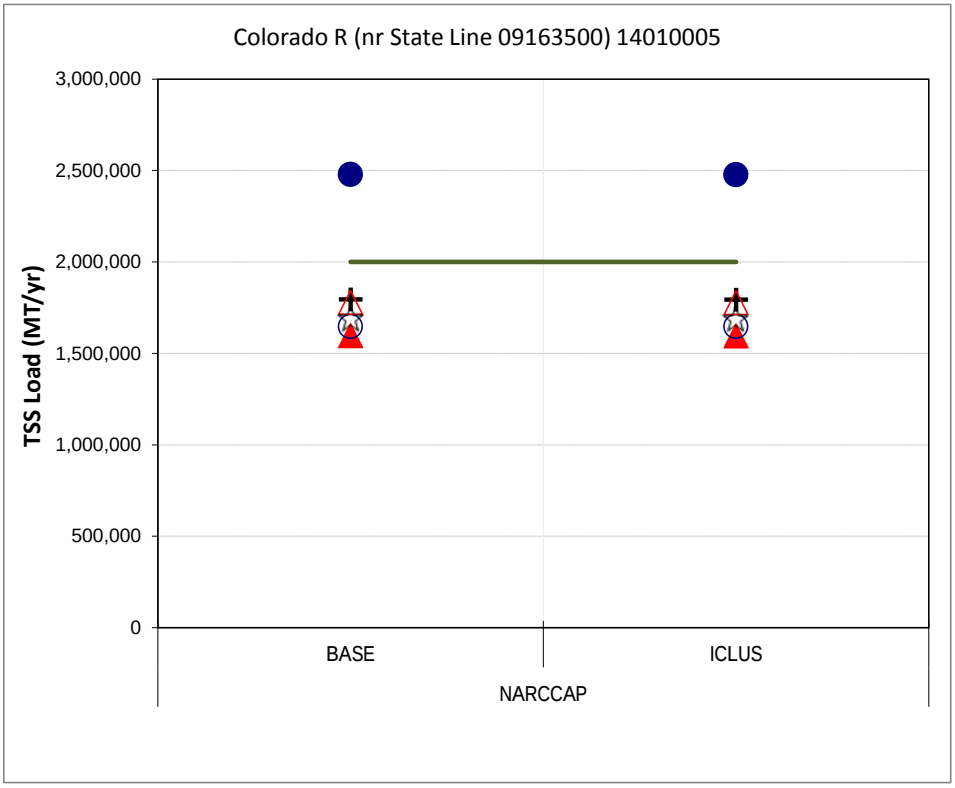


Figure 391. TSS Load (MT/yr), Colorado River near State Line (SWAT)

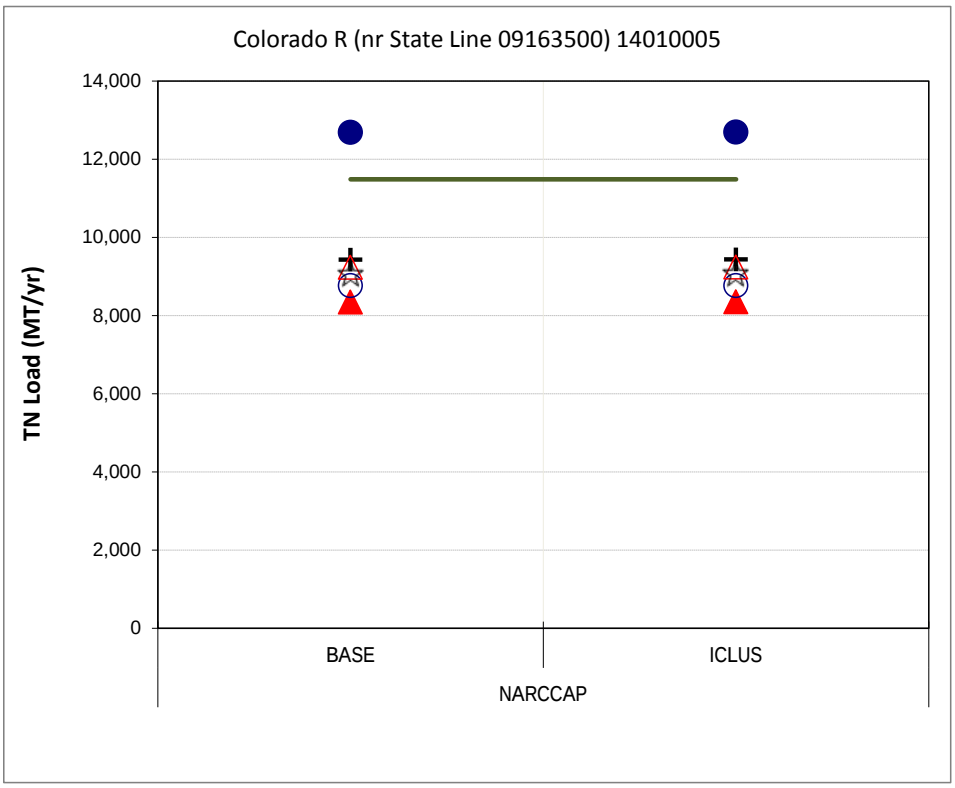


Figure 392. TN Load (MT/yr), Colorado River near State Line (SWAT)

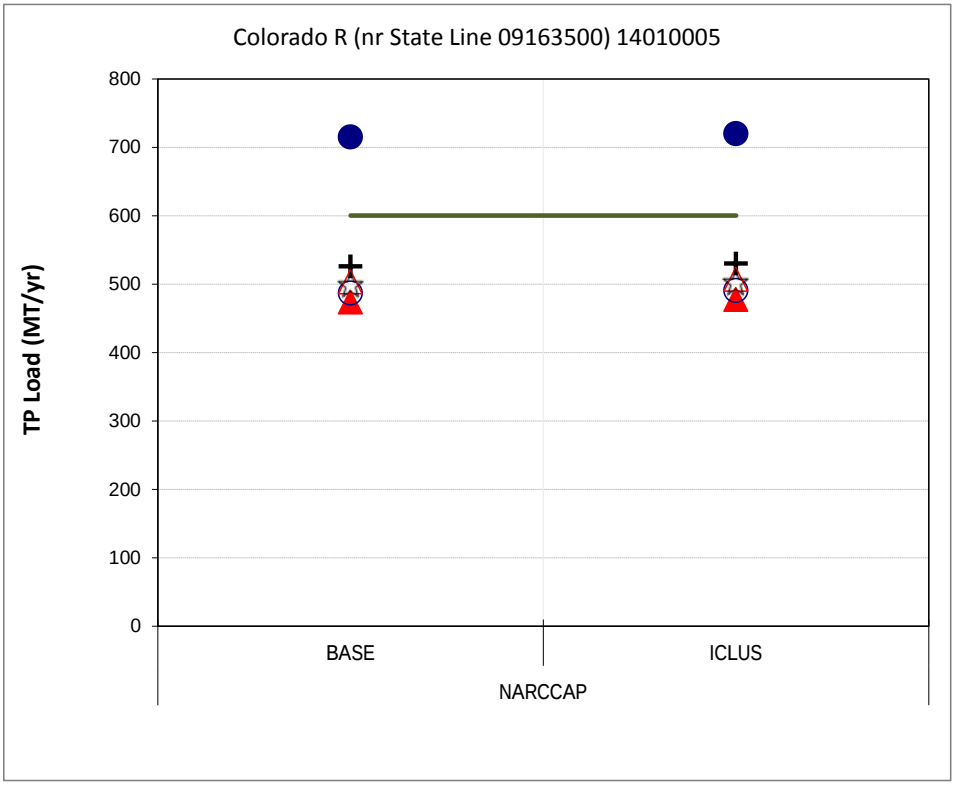


Figure 393. TP Load (MT/yr), Colorado River near State Line (SWAT)

Table 15. Summary of range of change relative to existing conditions for NARCCAP dynamically downscaled scenarios, Upper Colorado River watershed SWAT model

	Results without LU change				Results with LU change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
Colorado Headwaters HUC 14010001								
Flow	-11.21%	-5.12%	-3.76%	9.05%	-11.33%	-5.23%	-3.87%	8.95%
TSS	-17.71%	-11.15%	-8.49%	8.20%	-17.84%	-11.27%	-8.60%	8.08%
TN	-33.36%	-31.12%	-30.12%	-24.81%	-33.56%	-31.36%	-30.34%	-24.89%
TP	-17.27%	-11.84%	-10.16%	1.22%	-17.73%	-12.40%	-10.64%	0.91%
Blue HUC 14010002								
Flow	-13.20%	-9.03%	-6.90%	5.58%	-13.41%	-9.25%	-7.10%	5.42%
TSS	-20.76%	-14.55%	-11.22%	8.17%	-21.03%	-14.84%	-11.49%	7.94%
TN	-38.27%	-29.63%	-29.88%	-22.73%	-39.68%	-30.50%	-30.91%	-23.50%
TP	-58.02%	-46.02%	-44.24%	-23.75%	-56.95%	-45.27%	-43.54%	-23.53%
Eagle HUC 14010003								
Flow	-13.35%	-5.88%	-4.09%	10.95%	-13.64%	-6.16%	-4.36%	10.66%
TSS	-19.38%	-12.82%	-9.29%	10.22%	-19.69%	-13.02%	-9.53%	9.91%
TN	-40.80%	-39.56%	-38.81%	-35.18%	-40.80%	-39.52%	-38.72%	-34.87%
TP	-1.23%	4.70%	4.27%	10.10%	-2.39%	3.69%	3.31%	9.62%
Roaring Fork (at Glenwood Sps, gage 09085000) HUC 14010004								
Flow	-15.92%	-8.48%	-6.20%	9.98%	-15.99%	-8.53%	-6.28%	9.88%
TSS	-21.86%	-13.97%	-10.93%	11.56%	-21.95%	-14.01%	-11.01%	11.43%
TN	-48.72%	-43.87%	-43.00%	-35.69%	-48.71%	-43.92%	-43.05%	-35.79%
TP	-26.80%	-18.36%	-17.13%	-0.78%	-26.65%	-18.13%	-16.99%	-0.77%
Colorado R (nr State Line gage 09163500) HUC 14010005								
Flow	-14.31%	-8.68%	-5.19%	16.29%	-14.36%	-8.74%	-5.25%	16.23%
TSS	-20.13%	-13.07%	-8.36%	23.96%	-20.21%	-13.13%	-8.42%	23.90%
TN	-27.32%	-20.18%	-16.46%	10.47%	-27.39%	-20.25%	-16.54%	10.37%
TP	-21.03%	-16.41%	-11.00%	19.13%	-21.07%	-16.45%	-11.06%	18.95%
East-Taylor HUC 14020001								
Flow	-12.05%	-6.00%	-4.71%	11.13%	-12.05%	-6.00%	-4.71%	11.13%
TSS	-96.05%	-95.62%	-95.27%	-93.33%	-96.05%	-95.62%	-95.27%	-93.33%
TN	-61.79%	-57.01%	-57.31%	-53.71%	-61.79%	-57.01%	-57.31%	-53.71%
TP	-21.02%	-14.28%	-13.31%	1.00%	-21.02%	-14.28%	-13.31%	1.00%
Upper Gunnison HUC 14020002								
Flow	-19.75%	-11.28%	-7.83%	20.26%	-19.75%	-11.28%	-7.83%	20.26%
TSS	-27.09%	-16.35%	-11.04%	31.07%	-27.09%	-16.35%	-11.04%	31.07%
TN	-37.82%	-29.31%	-25.21%	6.29%	-37.82%	-29.31%	-25.21%	6.29%
TP	-28.38%	-18.48%	-14.75%	17.46%	-28.38%	-18.48%	-14.75%	17.46%
Tomichi Cr (at Gunnison gage 09119000) HUC 14020003								
Flow	-20.21%	-10.45%	-7.52%	11.50%	-20.21%	-10.45%	-7.52%	11.50%

	Results without LU change				Results with LU change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
TSS	-41.56%	-26.71%	-24.85%	-5.57%	-41.56%	-26.70%	-24.84%	-5.57%
TN	-86.43%	-76.90%	-78.26%	-71.70%	-86.43%	-76.90%	-78.26%	-71.70%
TP	-37.34%	-20.21%	-18.35%	6.59%	-37.33%	-20.21%	-18.35%	6.59%
N Fork Gunnison HUC 14020004								
Flow	-11.63%	-10.02%	-3.15%	22.93%	-11.63%	-10.02%	-3.15%	22.93%
TSS	-19.14%	-17.67%	-8.98%	24.86%	-19.14%	-17.67%	-8.98%	24.85%
TN	-28.19%	-25.74%	-18.51%	10.54%	-28.19%	-25.74%	-18.51%	10.54%
TP	-33.29%	-30.86%	-23.76%	5.35%	-33.28%	-30.86%	-23.75%	5.35%
Lower Gunnison HUC 1402000								
Flow	-18.22%	-12.13%	-7.15%	22.10%	-18.21%	-12.13%	-7.15%	22.10%
TSS	-25.82%	-18.37%	-11.08%	34.02%	-25.82%	-18.37%	-11.08%	34.02%
TN	-31.05%	-23.11%	-18.04%	16.64%	-31.05%	-23.11%	-18.04%	16.64%
TP	-25.82%	-18.81%	-14.10%	17.91%	-25.82%	-18.81%	-14.10%	17.91%
Uncompahgre HUC 14020006								
Flow	-14.92%	-10.82%	-5.51%	20.62%	-14.92%	-10.82%	-5.51%	20.62%
TSS	-21.21%	-16.35%	-9.45%	27.31%	-21.21%	-16.35%	-9.45%	27.32%
TN	-22.65%	-18.37%	-11.12%	25.59%	-22.65%	-18.37%	-11.11%	25.59%
TP	-12.34%	-7.34%	-2.57%	27.48%	-12.35%	-7.36%	-2.58%	27.45%
Gunnison R nr Gunnison (gage 09114500)								
Flow	-13.60%	-6.85%	-5.47%	11.45%	-13.60%	-6.85%	-5.47%	11.45%
TSS	-84.04%	-82.63%	-81.80%	-76.18%	-84.03%	-82.63%	-81.80%	-76.18%
TN	-63.22%	-58.80%	-59.06%	-55.93%	-63.22%	-58.80%	-59.06%	-55.93%
TP	-20.21%	-12.47%	-11.32%	4.71%	-20.21%	-12.47%	-11.32%	4.71%
Colorado R nr Cameo (gage 09095500)								
Flow	-11.74%	-5.96%	-3.89%	11.57%	-11.84%	-6.05%	-3.98%	11.47%
TSS	-15.94%	-9.86%	-6.37%	14.89%	-16.05%	-9.96%	-6.47%	14.77%
TN	-30.28%	-25.67%	-23.62%	-10.87%	-30.44%	-25.87%	-23.81%	-11.06%
TP	-12.74%	-9.90%	-5.57%	18.60%	-13.00%	-10.14%	-5.89%	18.10%

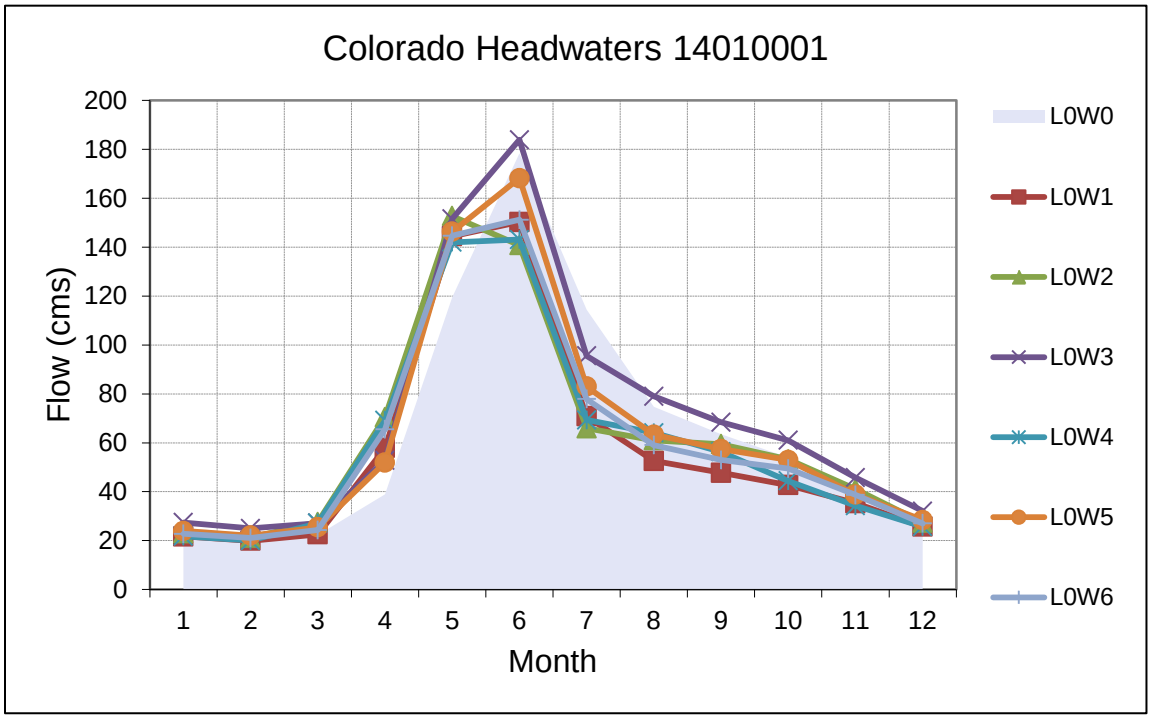


Figure 394. Monthly average flows, Colorado River Headwaters (SWAT)

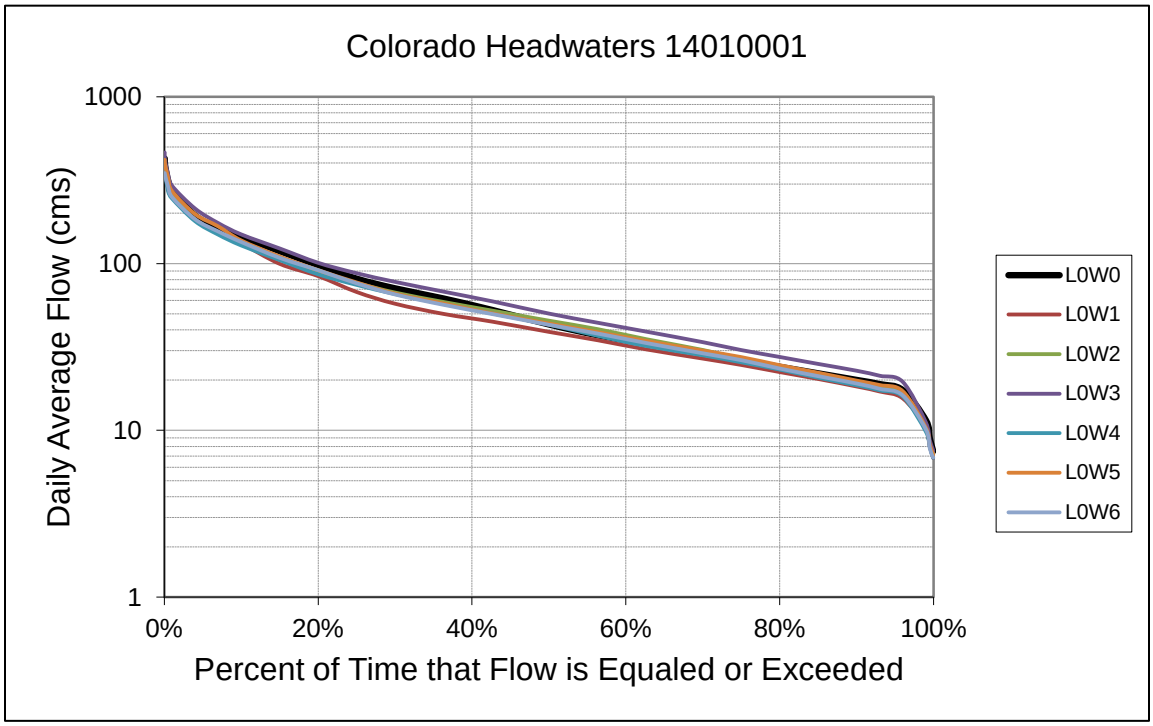


Figure 395. Flow duration, Colorado River Headwaters (SWAT)

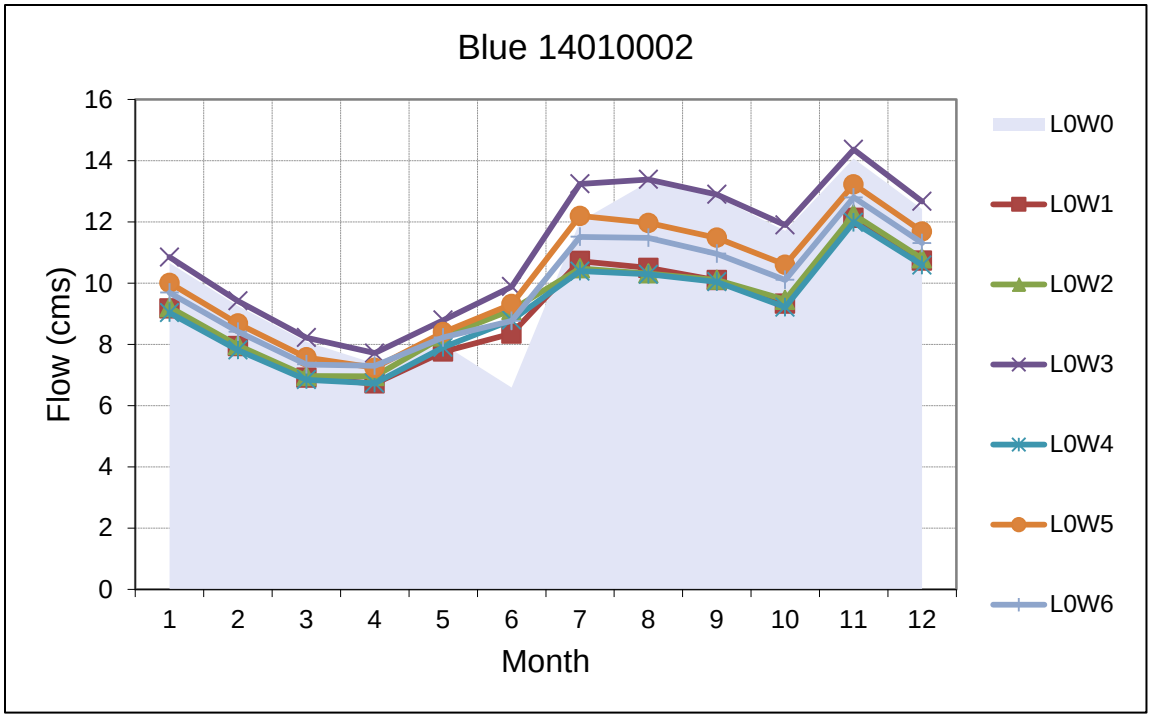


Figure 396. Monthly average flows, Blue River (SWAT)

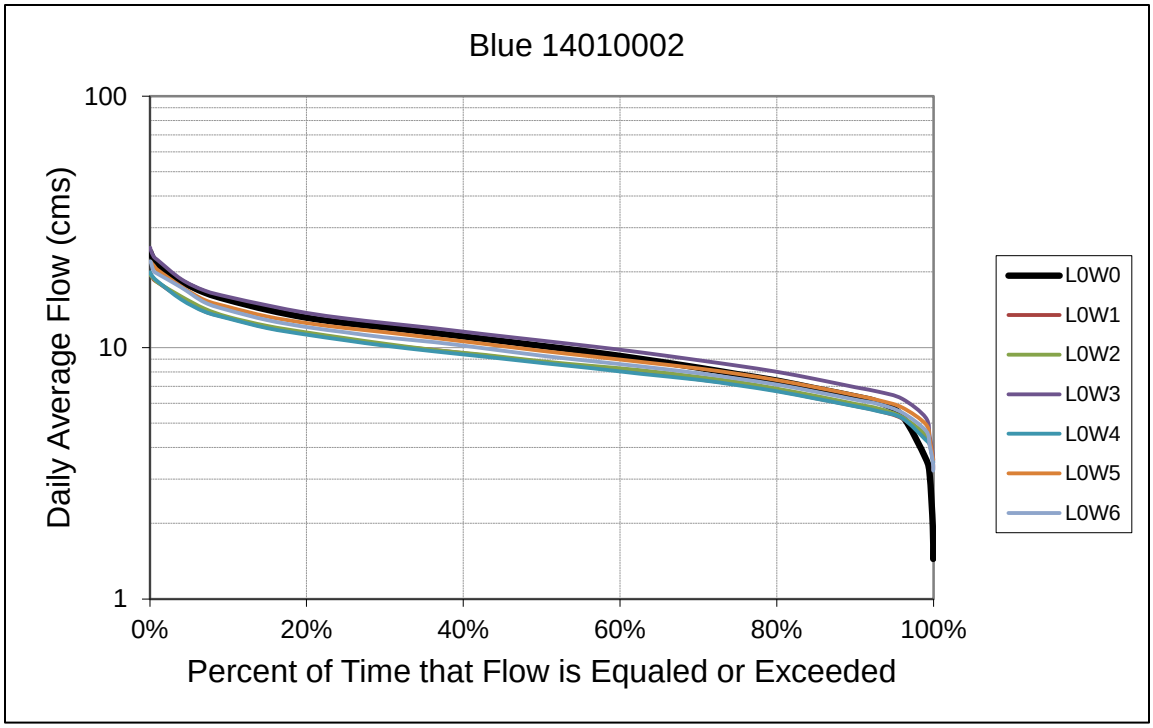


Figure 397. Flow duration, Blue River (SWAT)

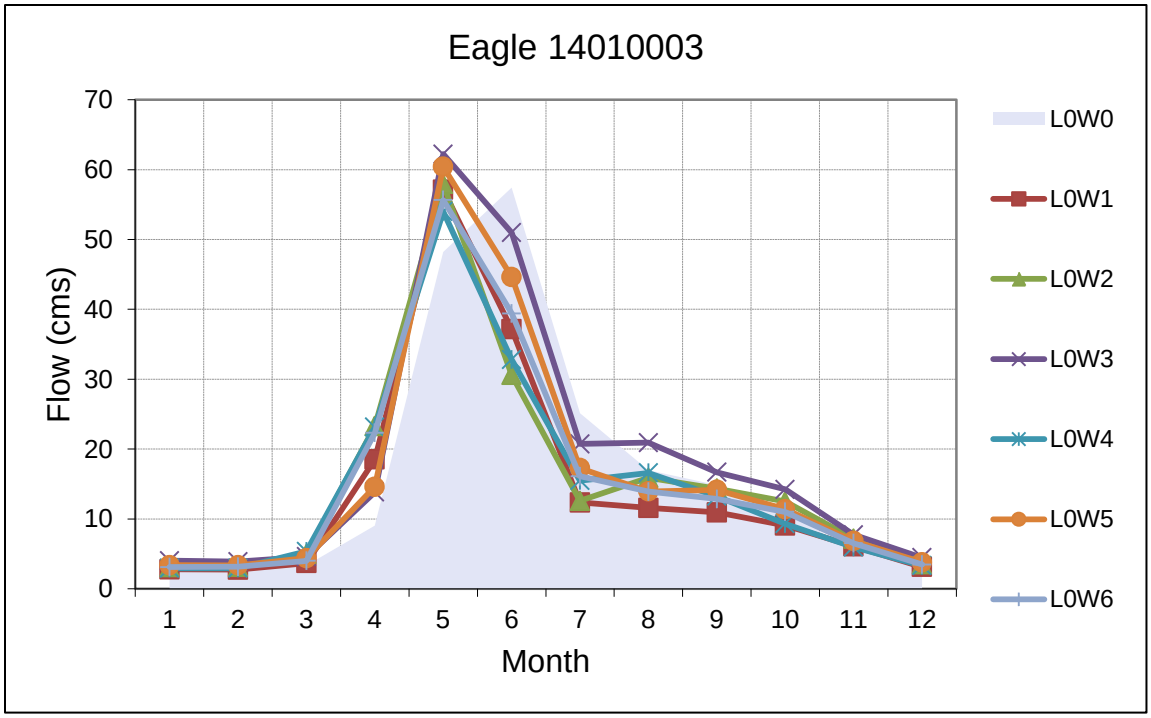


Figure 398. Monthly average flows, Eagle River (SWAT)

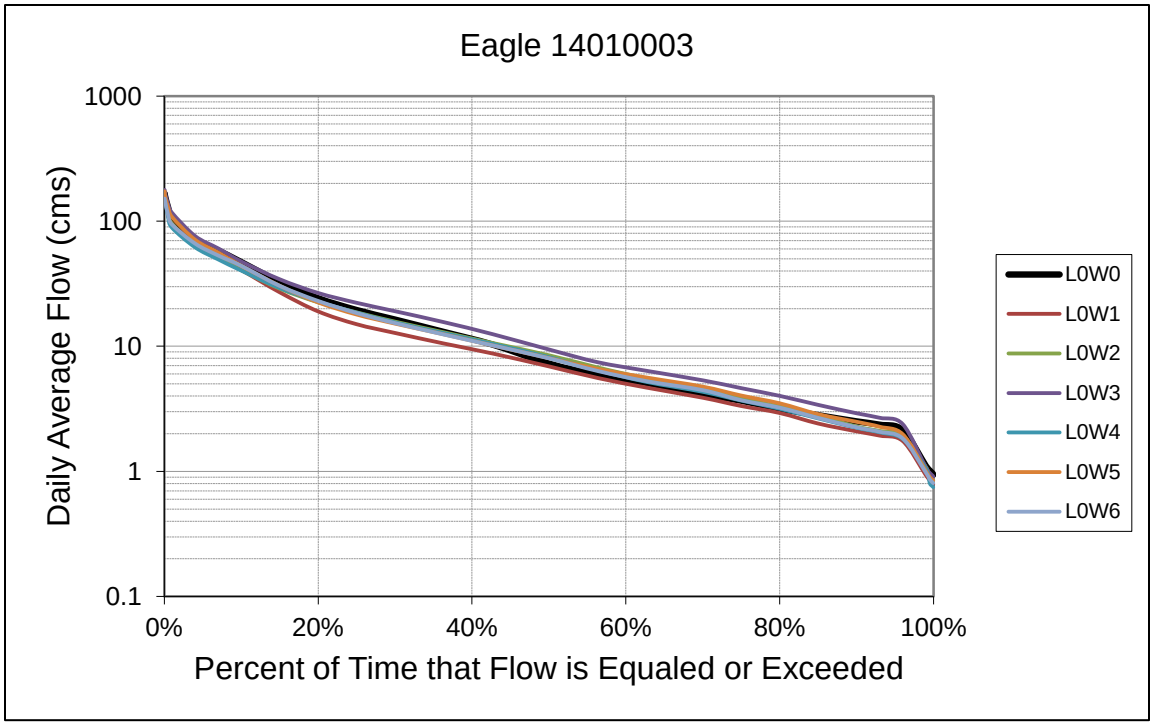


Figure 399. Flow duration, Eagle River (SWAT)

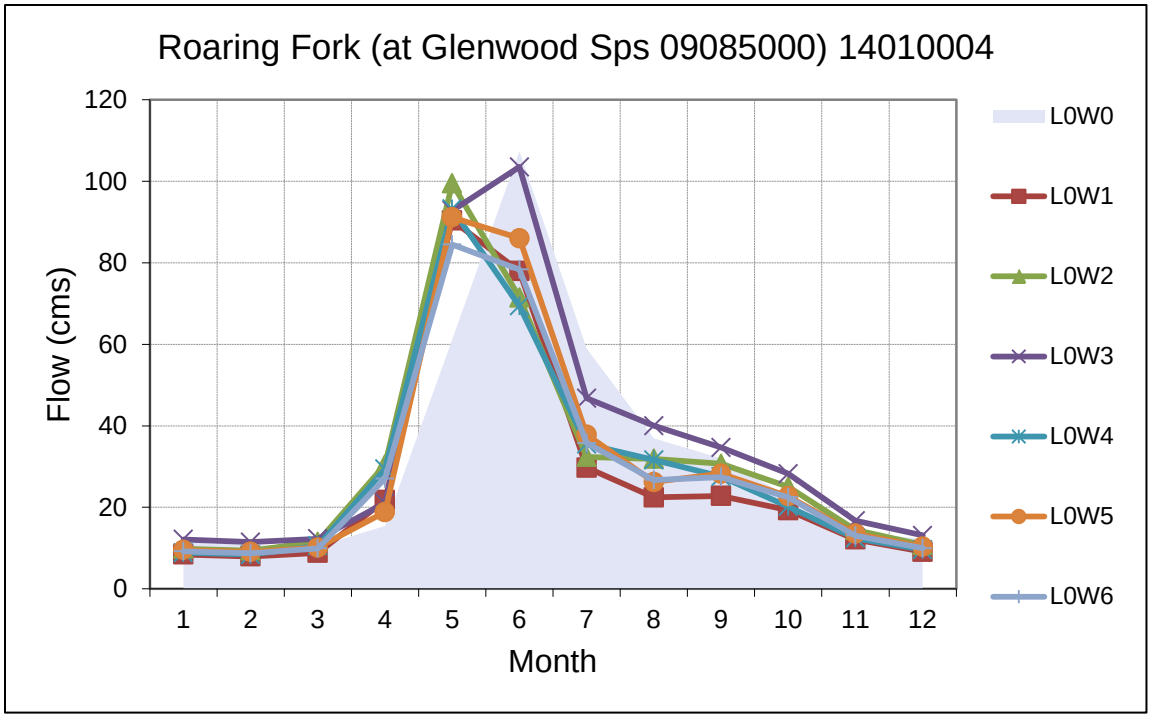


Figure 400. Monthly average flows, Roaring Fork at Glenwood Springs (SWAT)

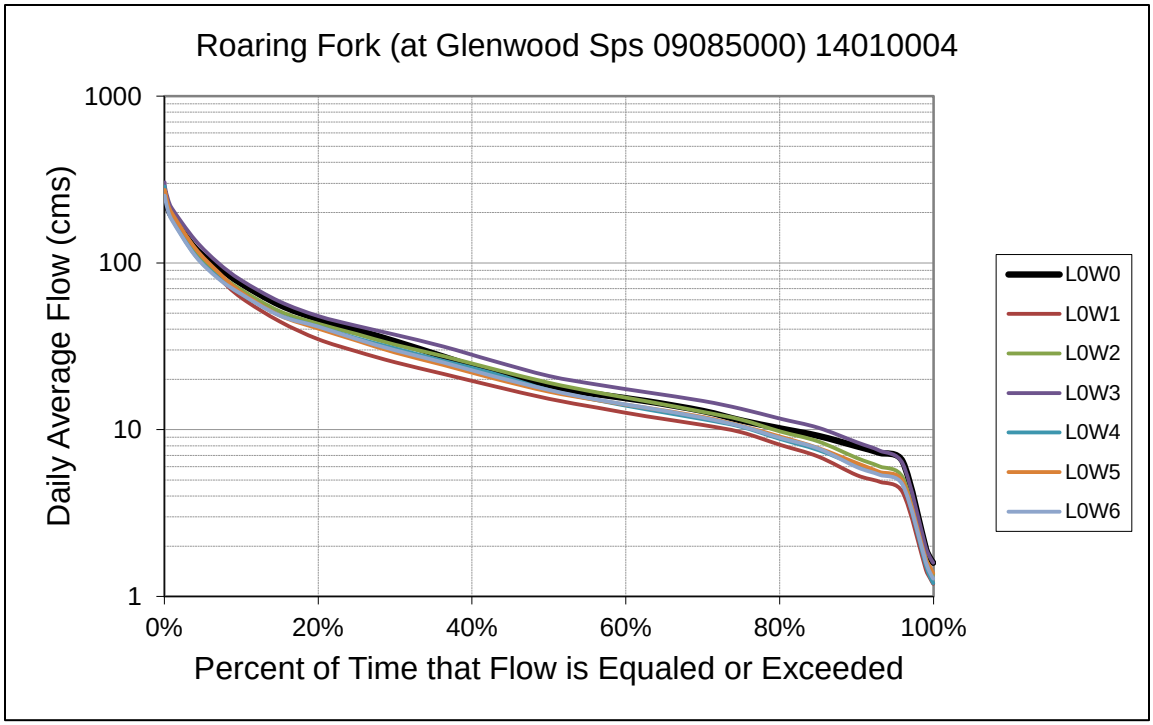


Figure 401. Flow duration, Roaring Fork at Glenwood Springs (SWAT)

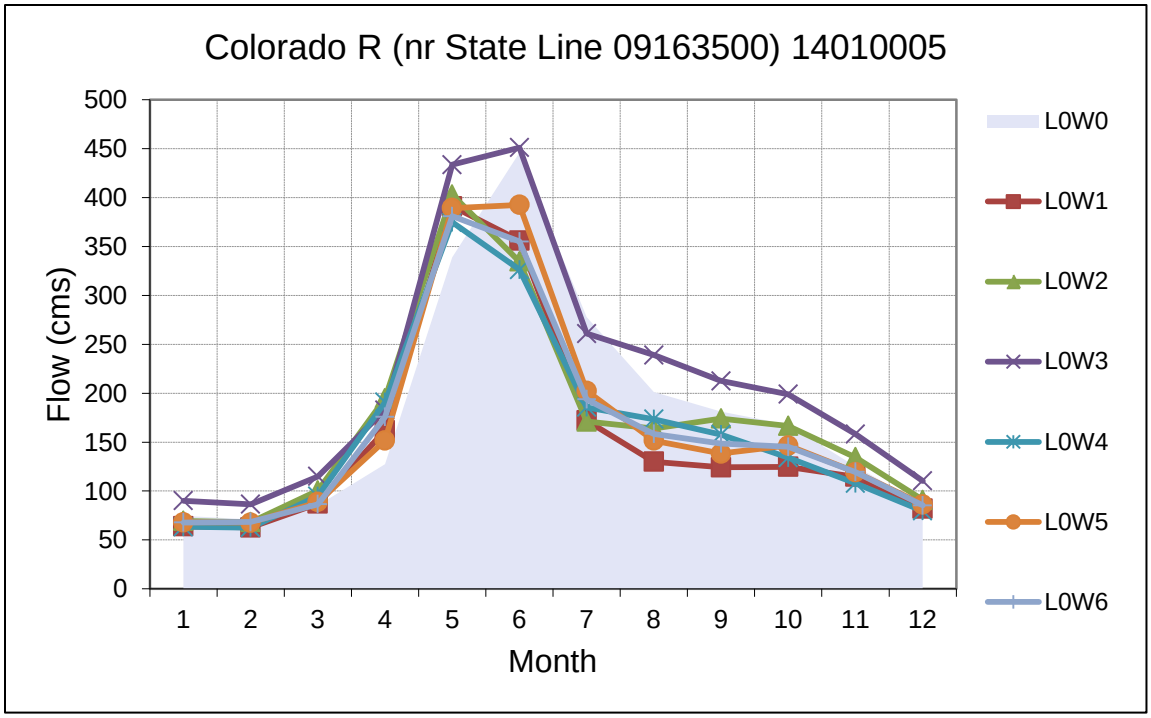


Figure 402. Monthly average flows, Colorado River near State Line (SWAT)

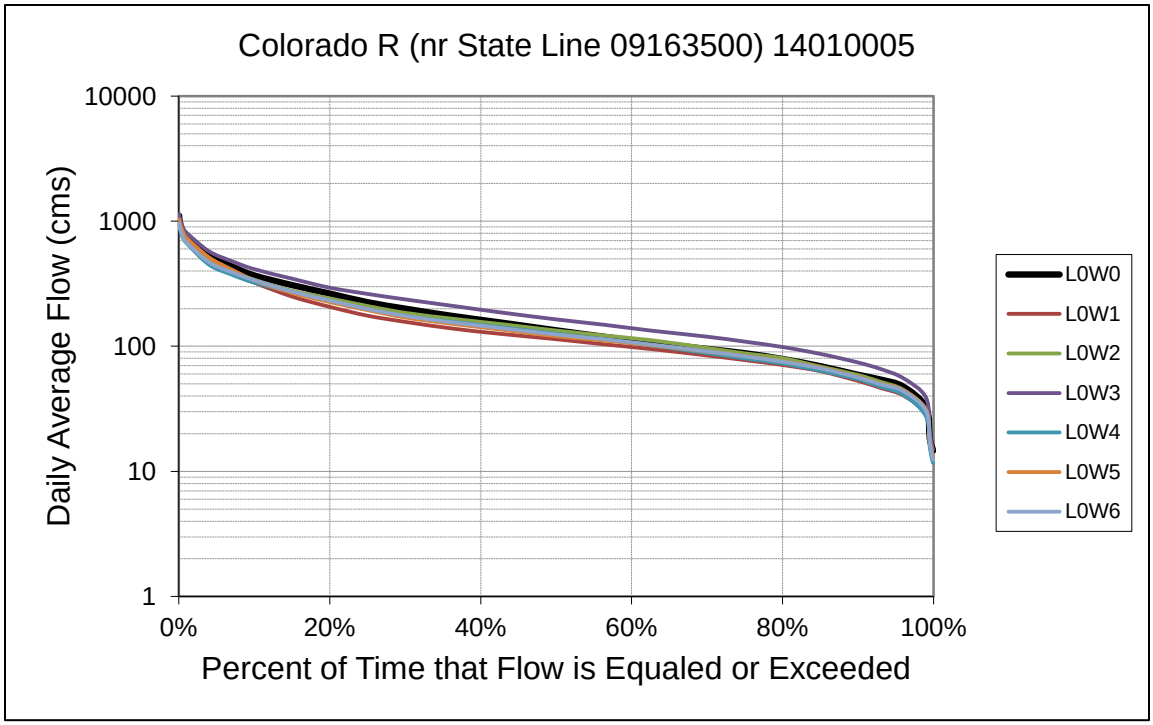


Figure 403. Flow duration, Colorado River near State Line (SWAT)

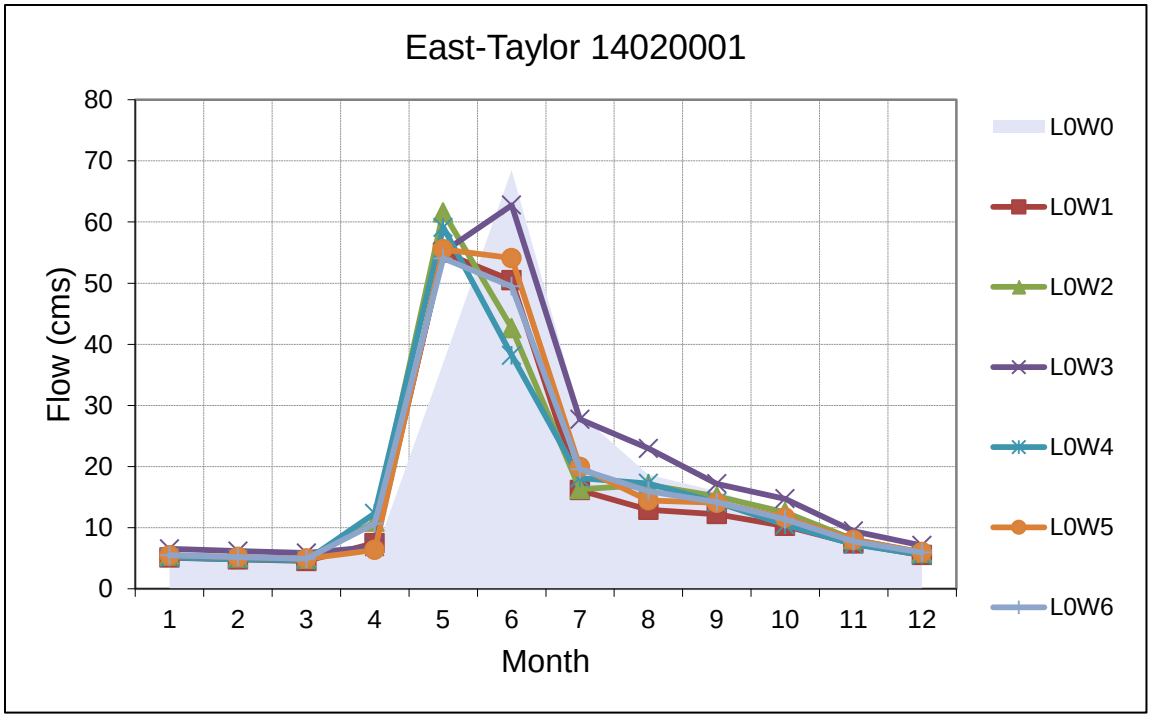


Figure 404. Monthly average flows, East - Taylor (SWAT)

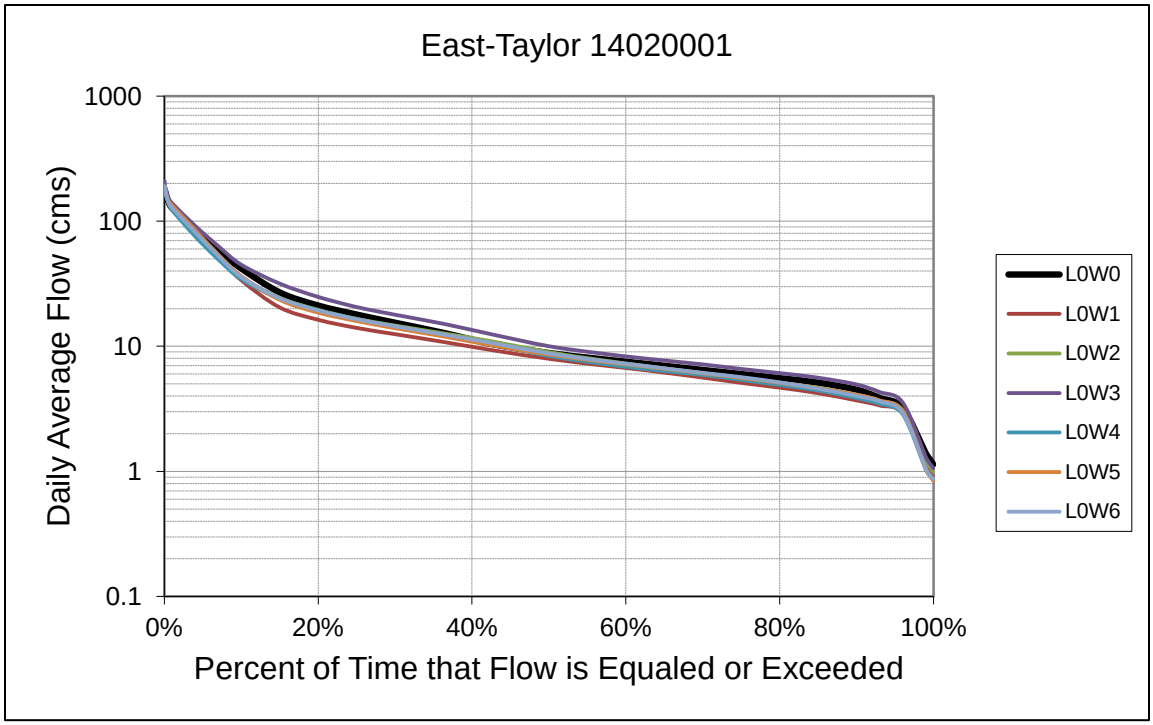


Figure 405. Flow duration, East - Taylor (SWAT)

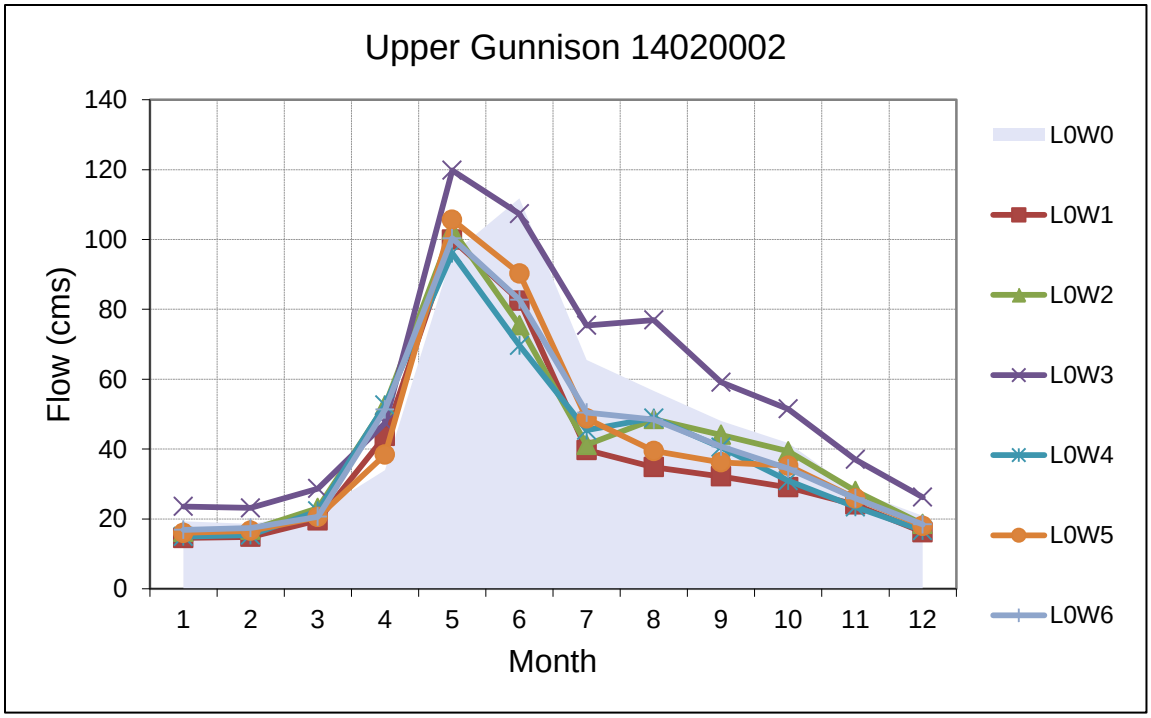


Figure 406. Monthly average flows, Upper Gunnison River (SWAT)

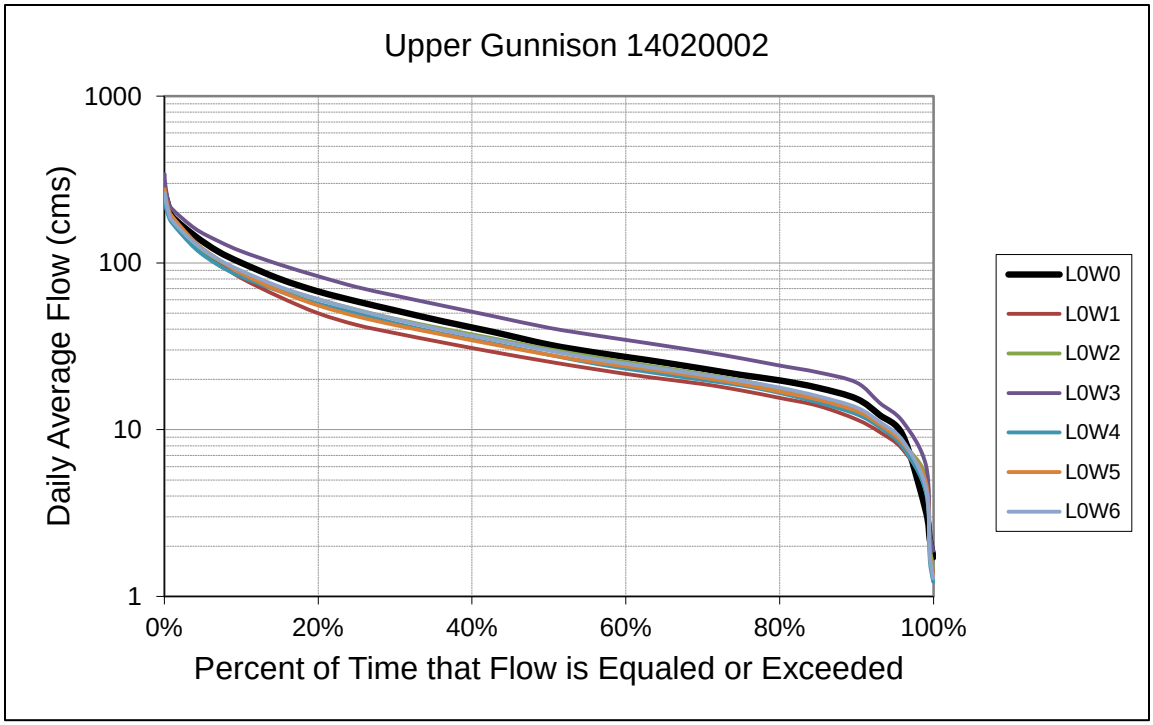


Figure 407. Flow duration, Upper Gunnison River (SWAT)

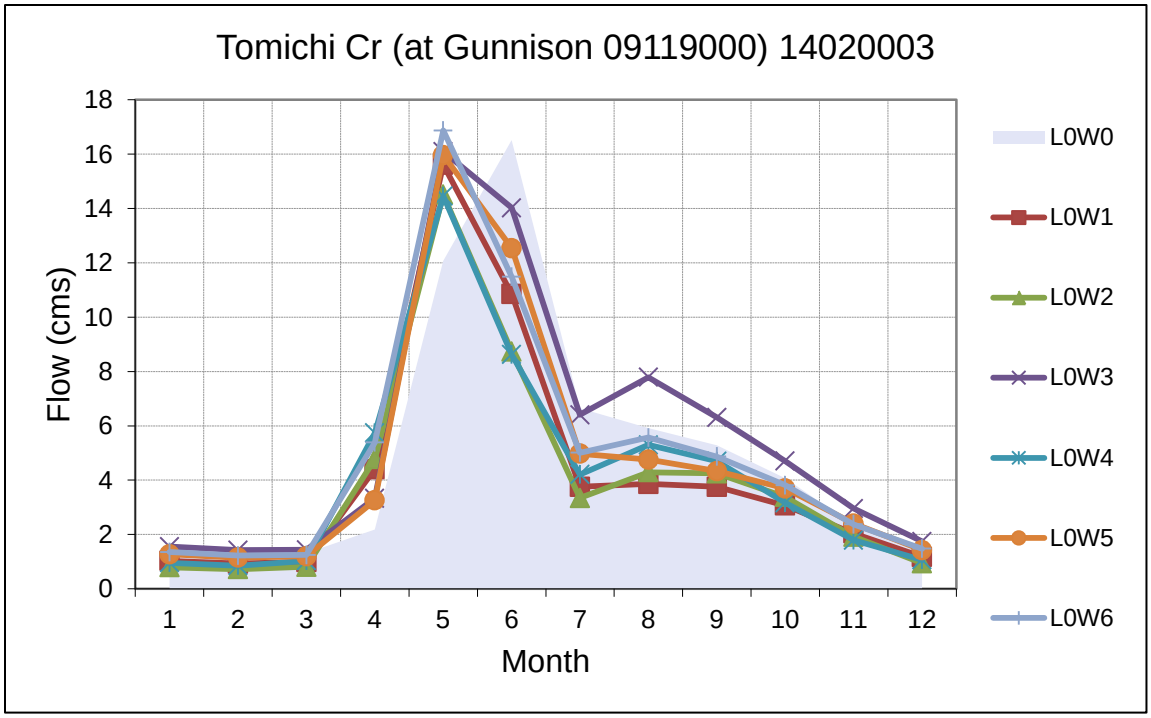


Figure 408. Monthly average flows, Tomichi Creek at Gunnison (SWAT)

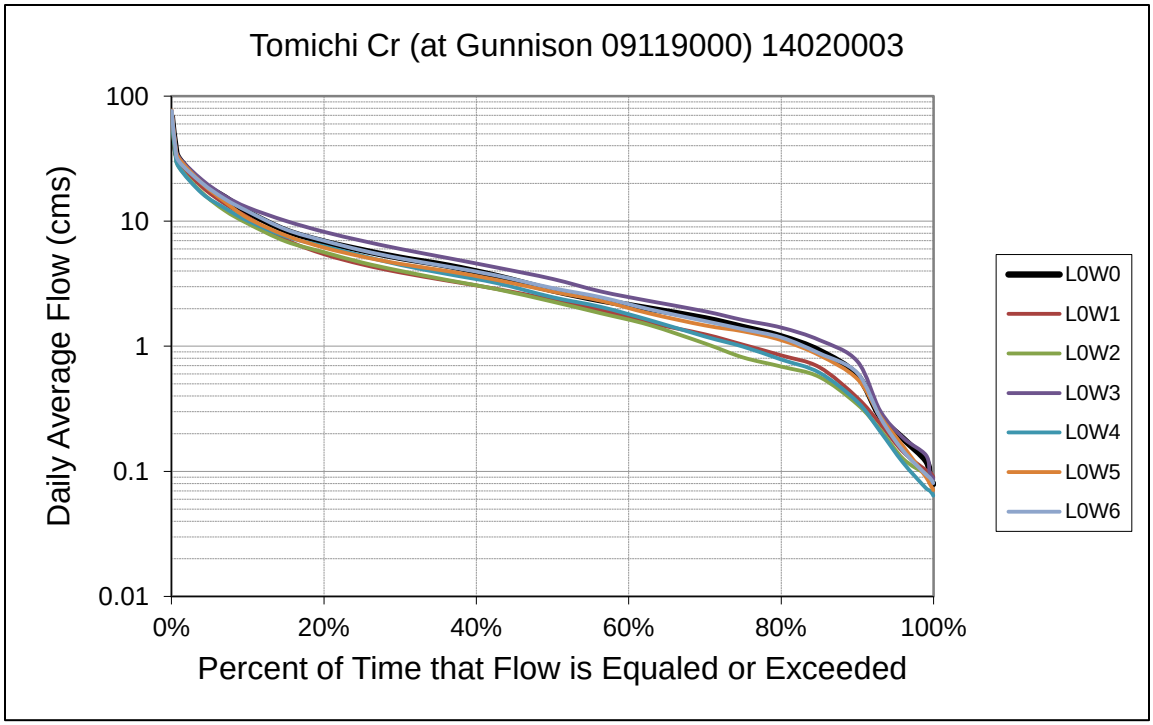


Figure 409. Flow duration, Tomichi Creek at Gunnison (SWAT)

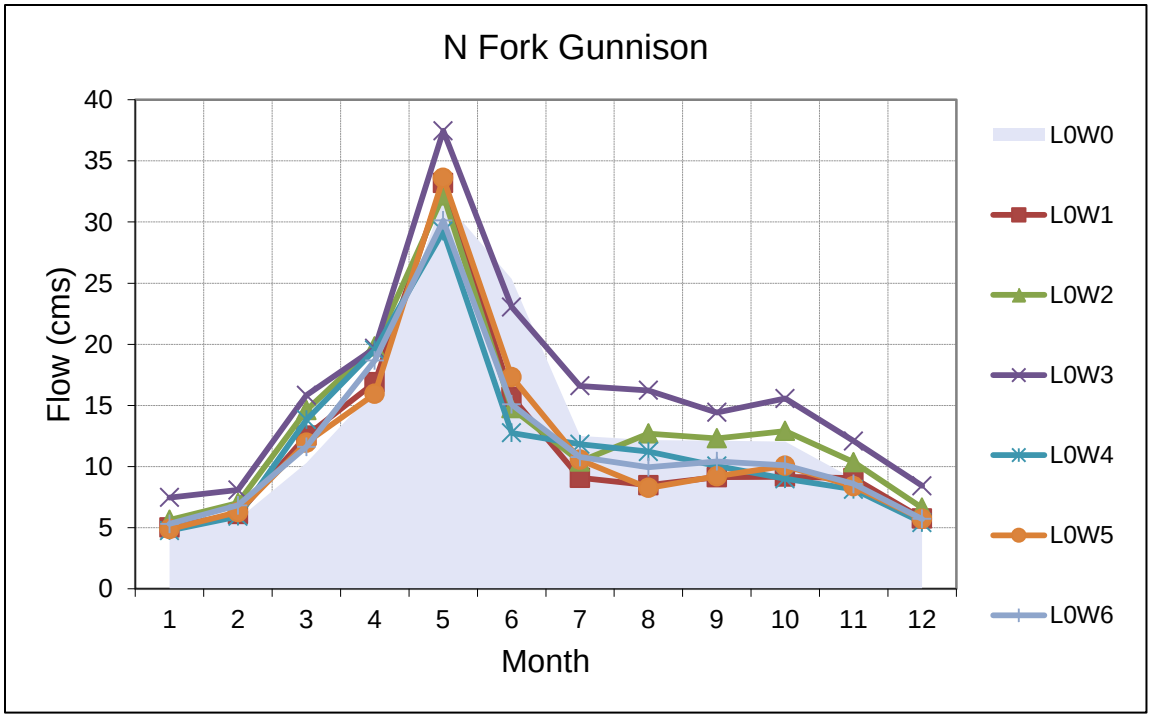


Figure 410. Monthly average flows, North Fork Gunnison River (SWAT)

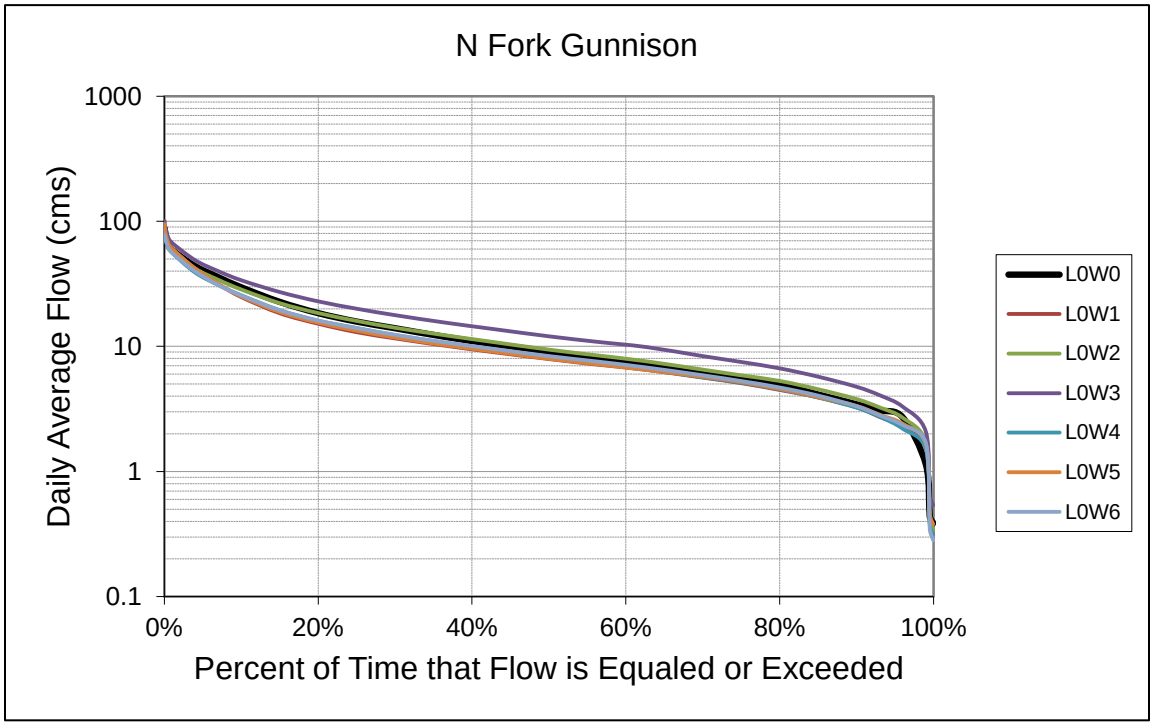


Figure 411. Flow duration, North Fork Gunnison River (SWAT)

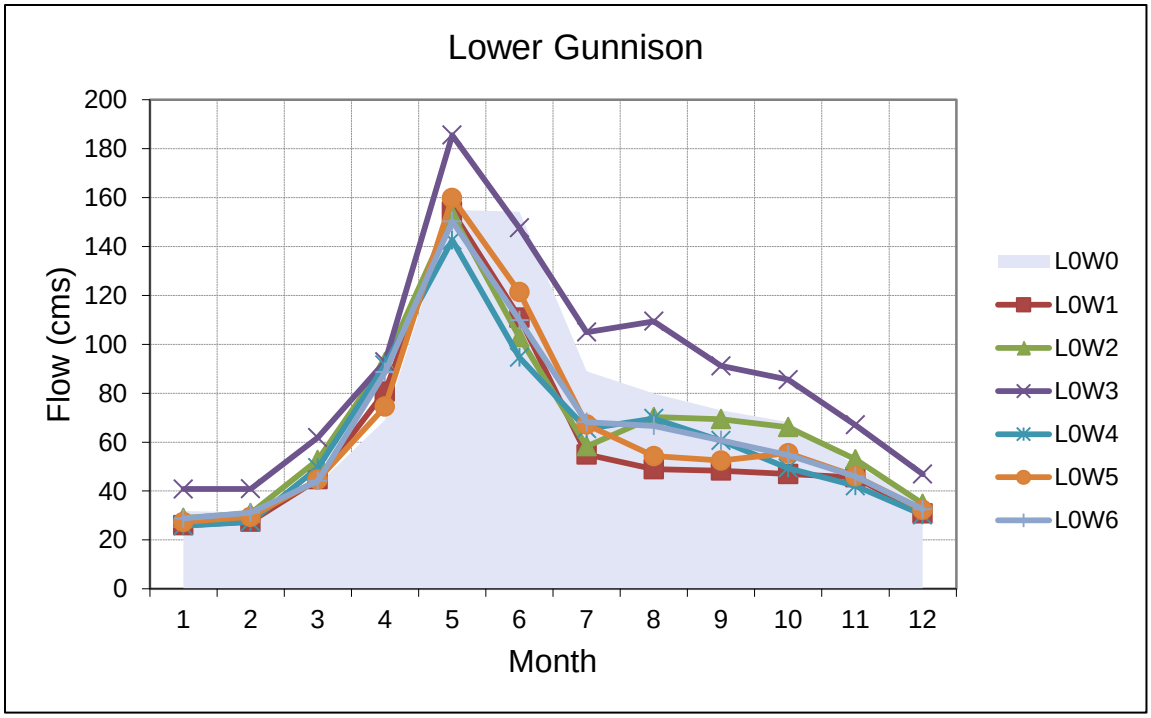


Figure 412. Monthly average flows, Lower Gunnison River (SWAT)

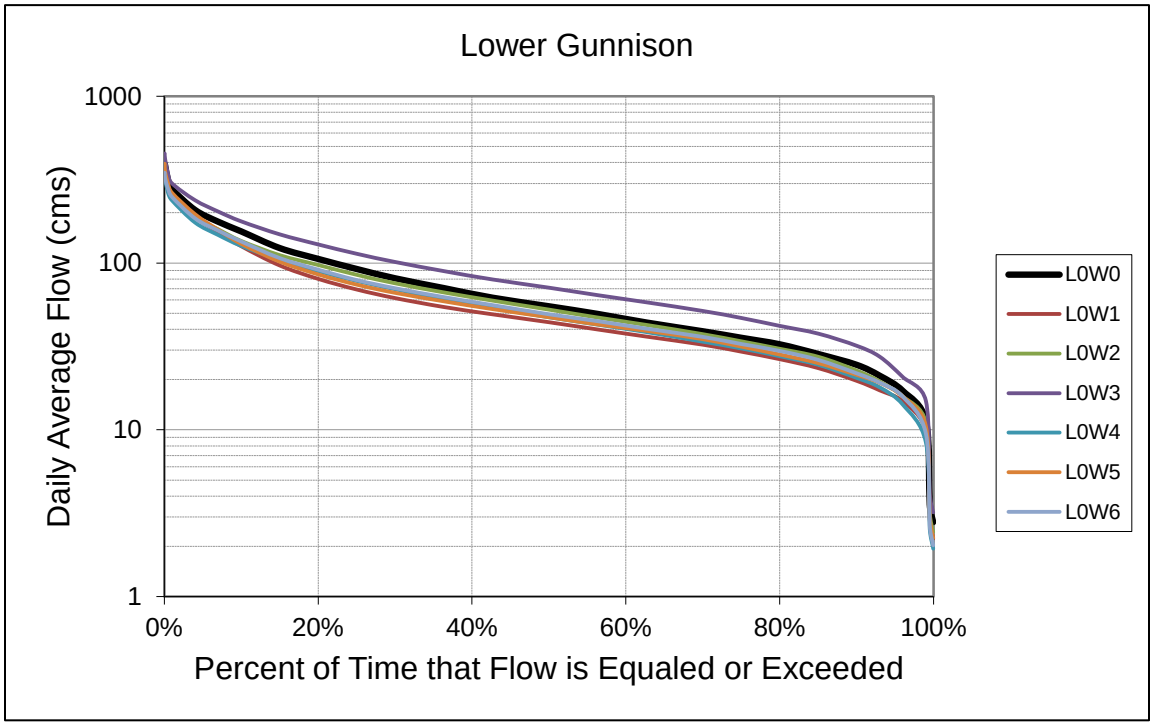


Figure 413. Flow duration, Lower Gunnison River (SWAT)

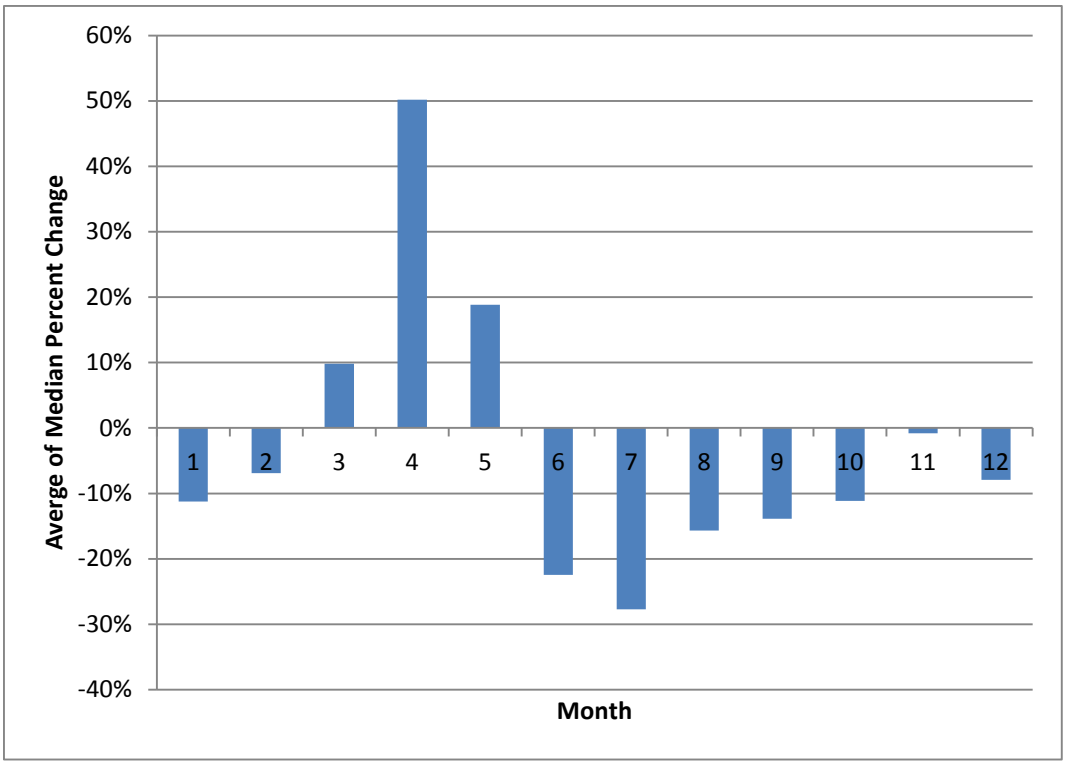


Figure 414. Average of median percent change in flow; NARCCAP Scenarios W1-W6 at all stations, Upper Colorado River watershed (SWAT)