Evaluation of Water and Nutrient Balances for the Upper Klamath Lake Basin in Water Years 1992-2010

Prepared For

Klamath Tribes Natural Resources Department

By

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Appendix A
Precipitation and Evaporation Datasets

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Table A1: Meteorological Data Sources and Stations

Precipitation

Source	Station	Code	Period	Region	Primary/Secondary
NCDC	CHILOQUIN 12 NW	351574	1991-2010	North	Primary
Agrimet	Agency Lake	AGKO	2000-2010	North	Secondary
NCDC	KLAMATH FALLS 2 SSW	354506	1991-1998	South	Primary (1991-1998)
NCDC	KLAMATH FALLS INTL AP	94236	2000-2010	South	Primary (1999-2010)
NCDC-GSOD	KFA	94236	1990-2011	South	Secondary
Agrimet	Klamath Falls	KFLO	2000-2011	South	Secondary

Evaporation

Source	Station	Code	Period
OSU Experiment Station	Klamath Falls	--	1991-2003
Agrimet	Klamath Falls	KFLO	2004-2010

Figure A1: Map of Meteorological Stations

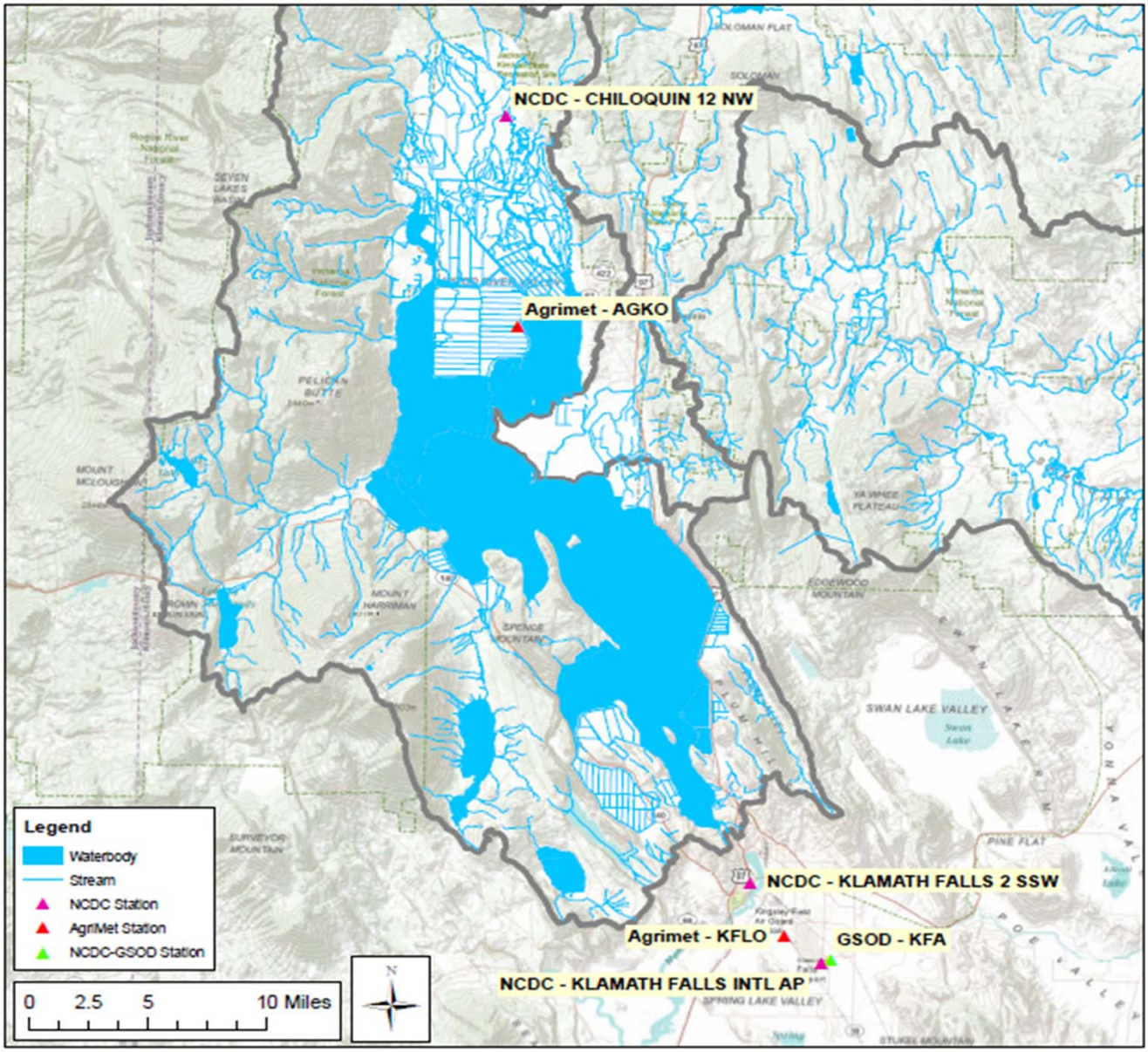


Figure A2: Spatial Distribution of Annual Precipitation (from ODEQ, 2002)

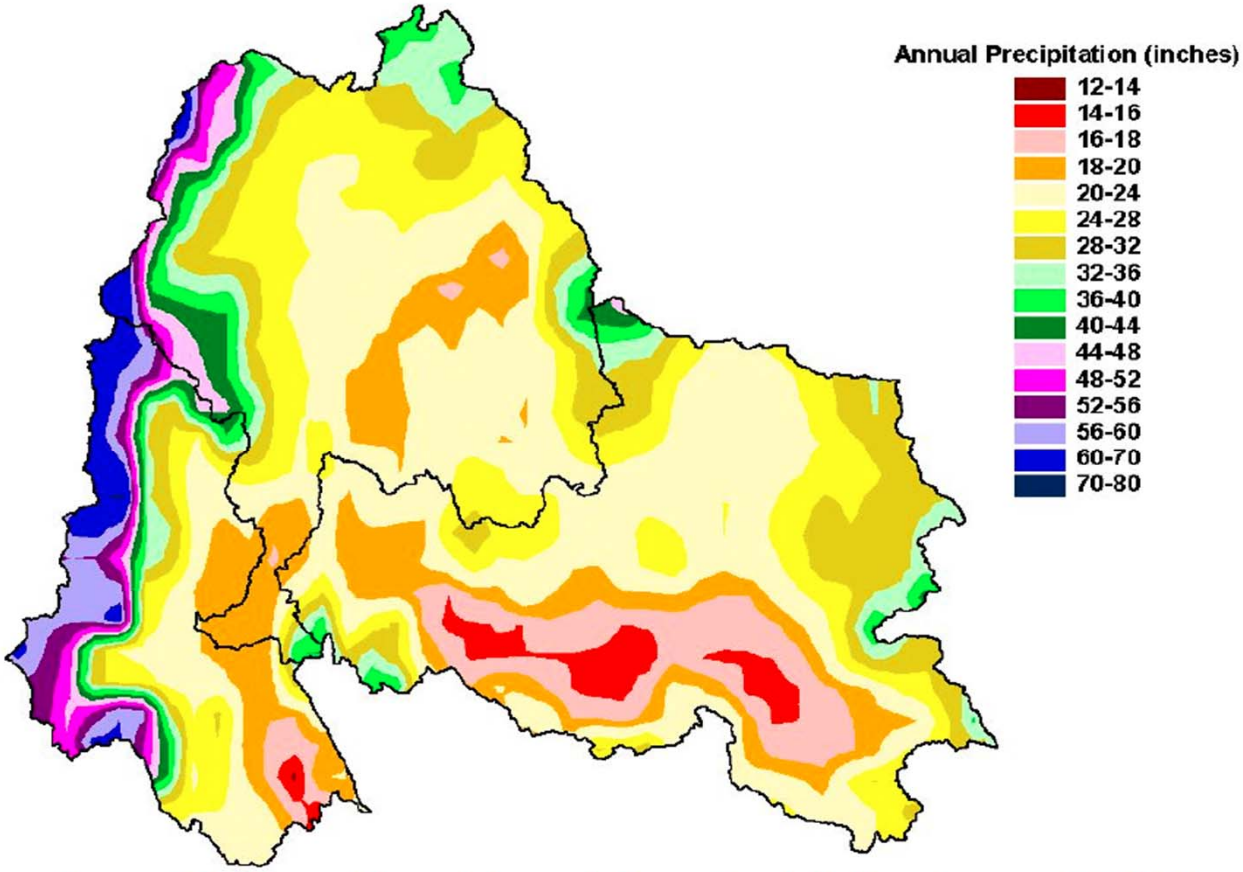
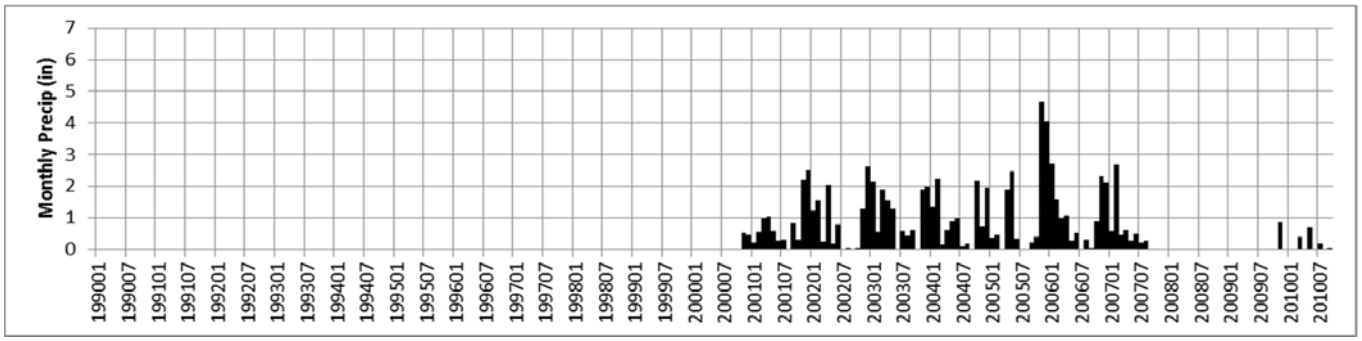


Figure 1-5. Upper Klamath Lake drainage Precipitation (Oregon SSCGIS)

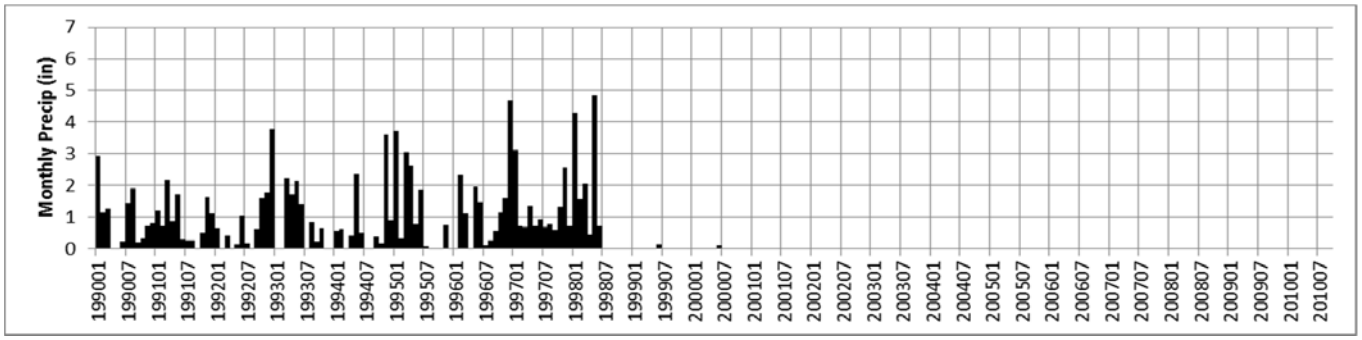
Figure A3: Monthly Precipitation by Station

Southern Stations (near Klamath Falls)

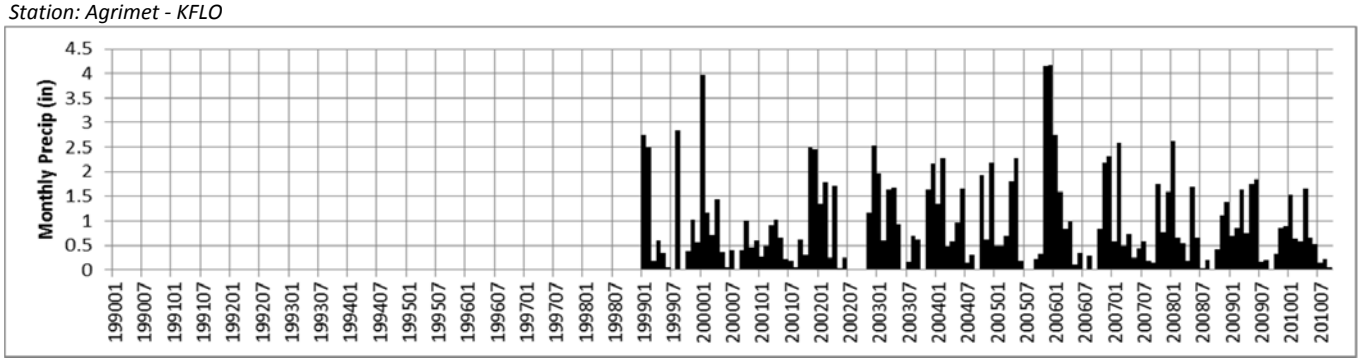
Station: NCDC - KLAMATH FALLS INTL AP



Station: NCDC - KLAMATH FALLS 2 SSW



Station: Agrimet - KFLO



Station: NCDC-GSOD - Klamath Falls Airport

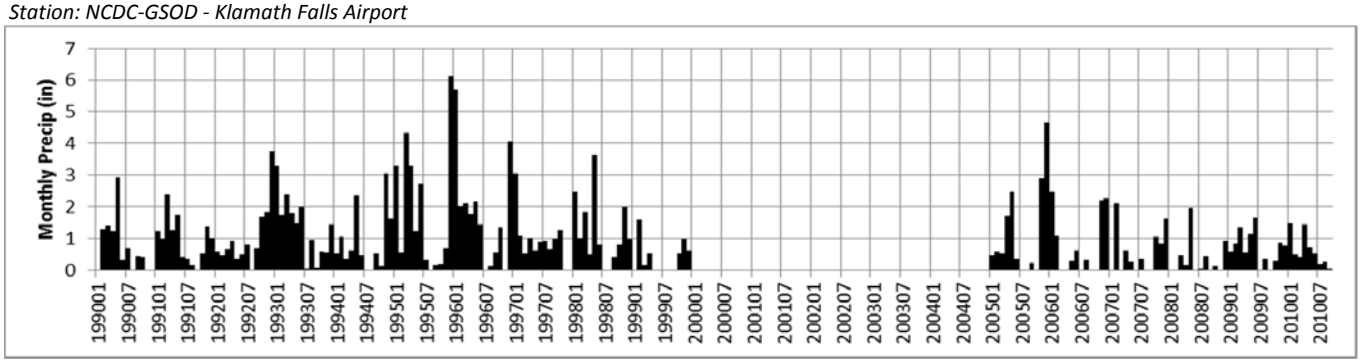
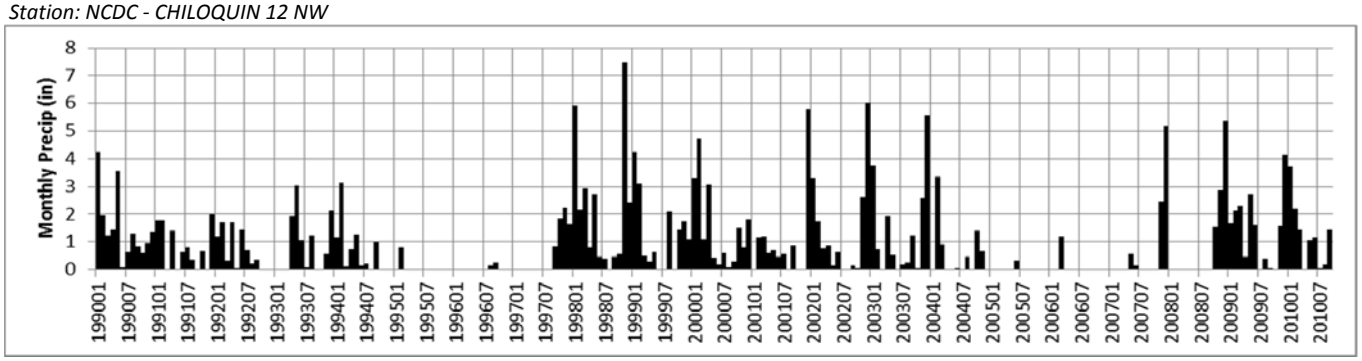


Figure A3: Monthly Precipitation by Station (cont'd)

Northern Stations (near Agency Lake)

Station: NCDC - CHILOQUIN 12 NW



Station: Agrimet - AGKO

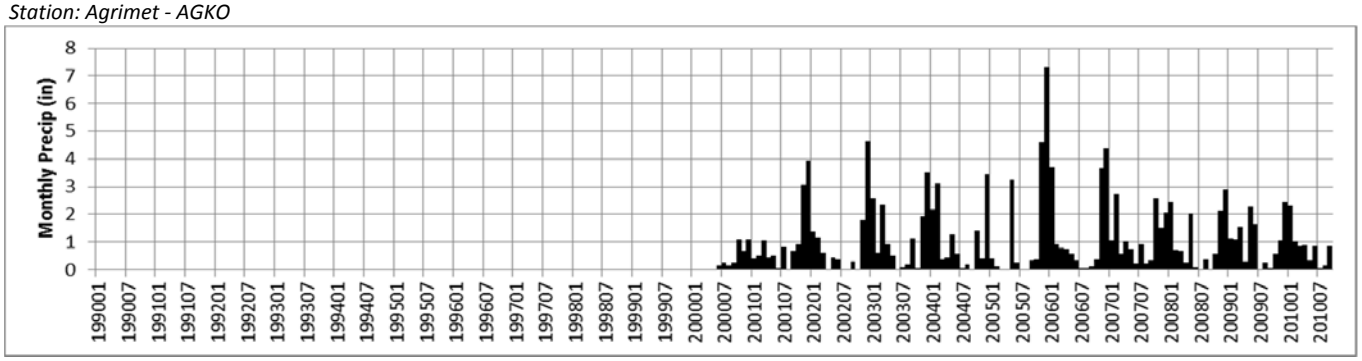
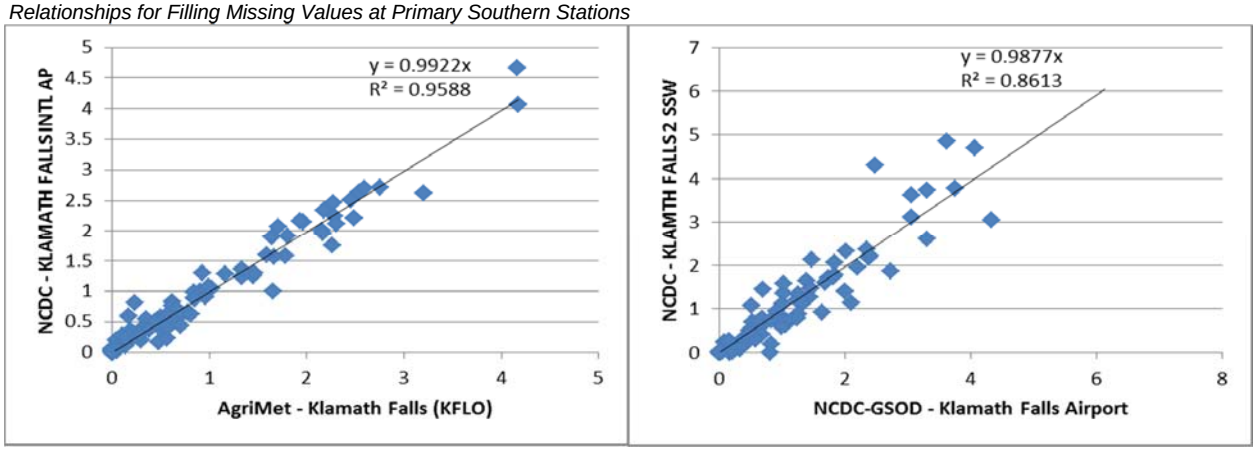
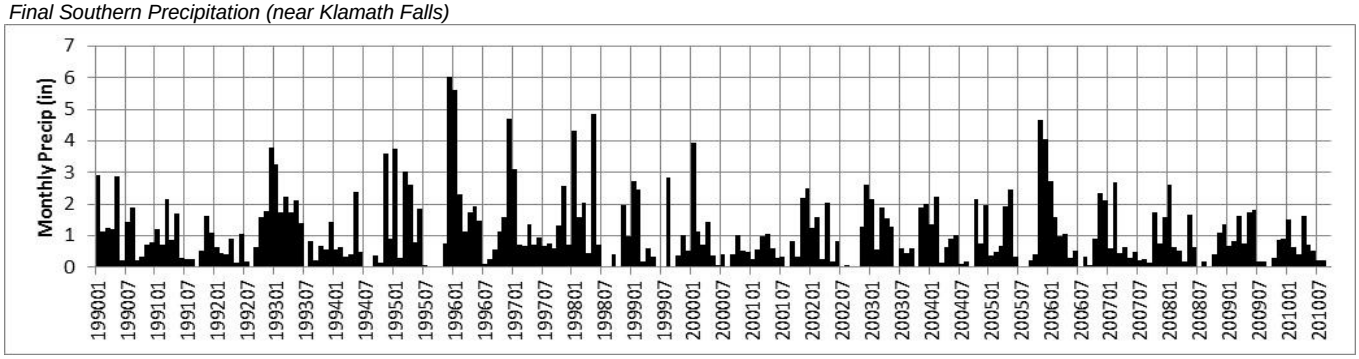


Figure A4: Monthly Precipitation Relationships by Region

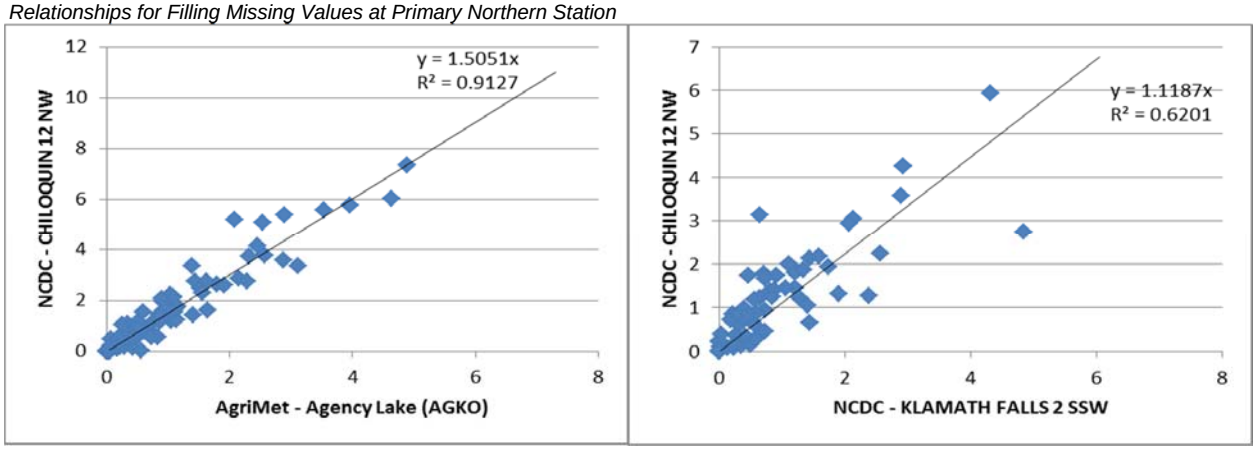
Relationships for Filling Missing Values at Primary Southern Stations



Final Southern Precipitation (near Klamath Falls)



Relationships for Filling Missing Values at Primary Northern Station



Final Northern Precipitation (near Agency Lake)

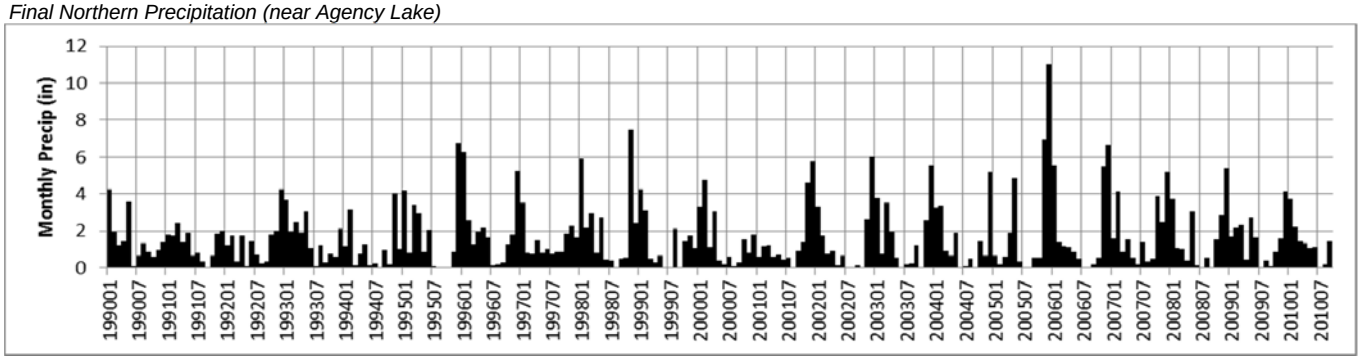
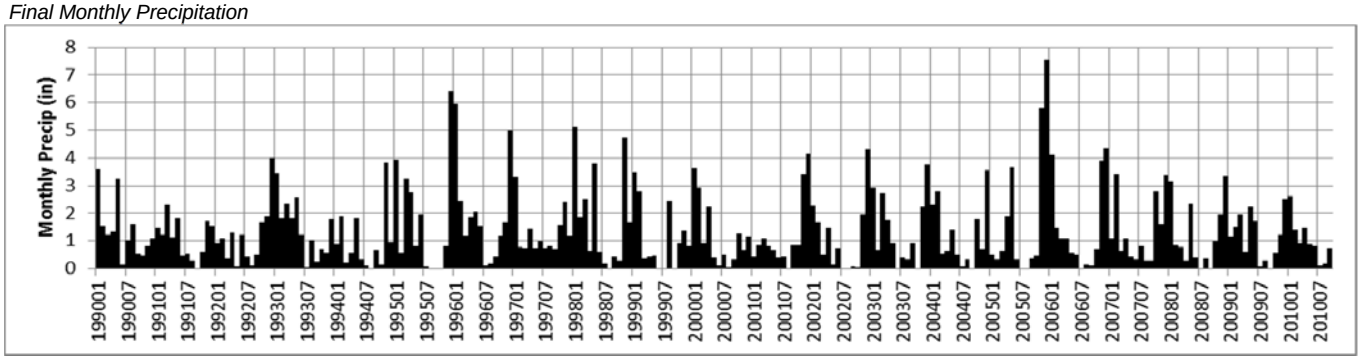


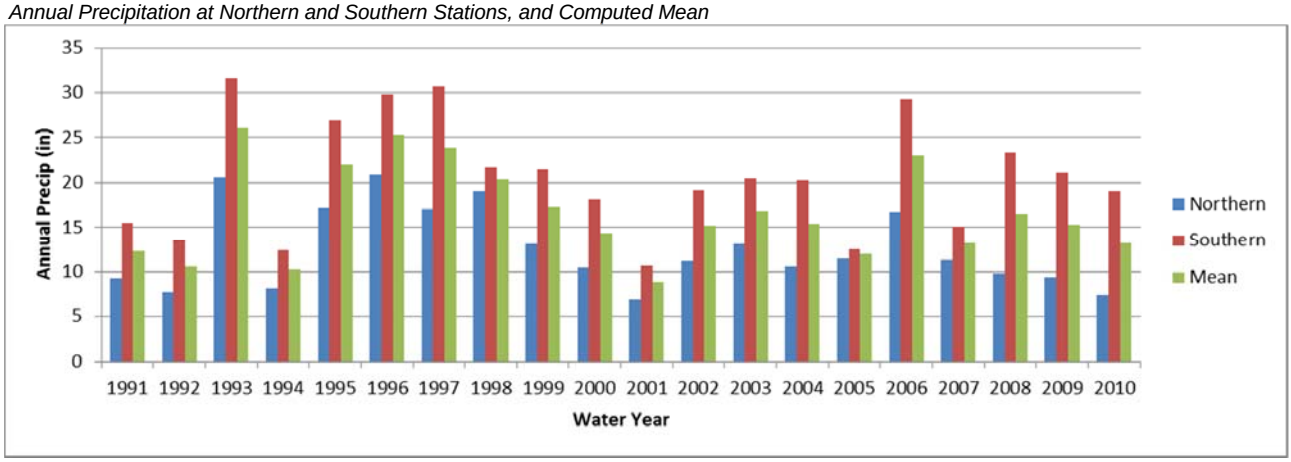
Figure A5: Final Monthly and Annual Precipitation

Final Monthly Precipitation



Notes: computed as mean of final northern and southern precipitation (see Figure A4)

Annual Precipitation at Northern and Southern Stations, and Computed Mean



Comparison of Current Annual Precipitation to Kann & Walker (1999)

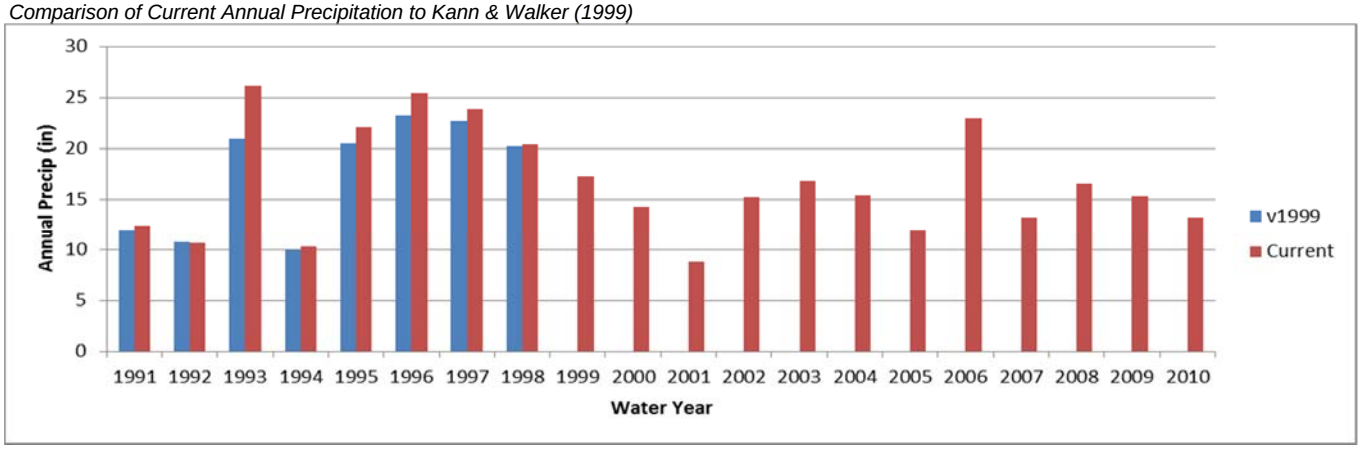
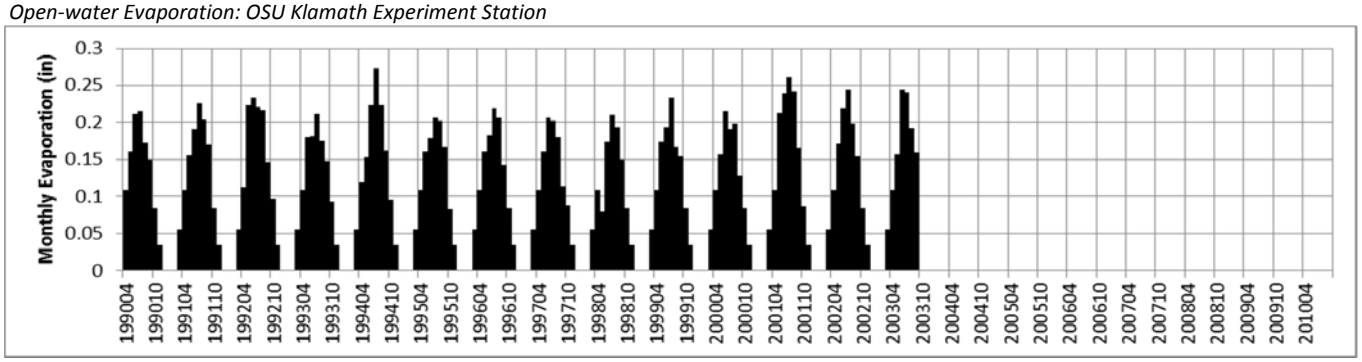


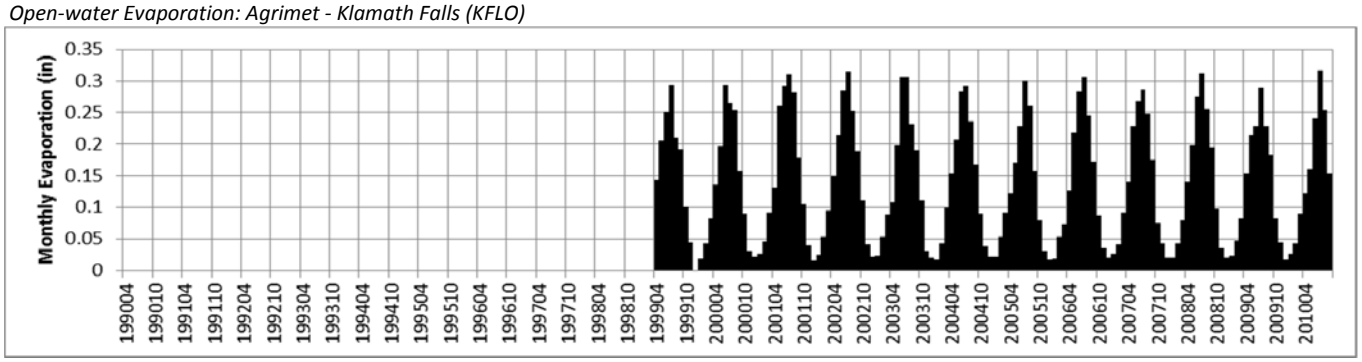
Figure A6: Monthly Evaporation by Station

Open-water Evaporation: OSU Klamath Experiment Station



Notes: computed from pan evaporation measurements using pan coefficient of 0.7

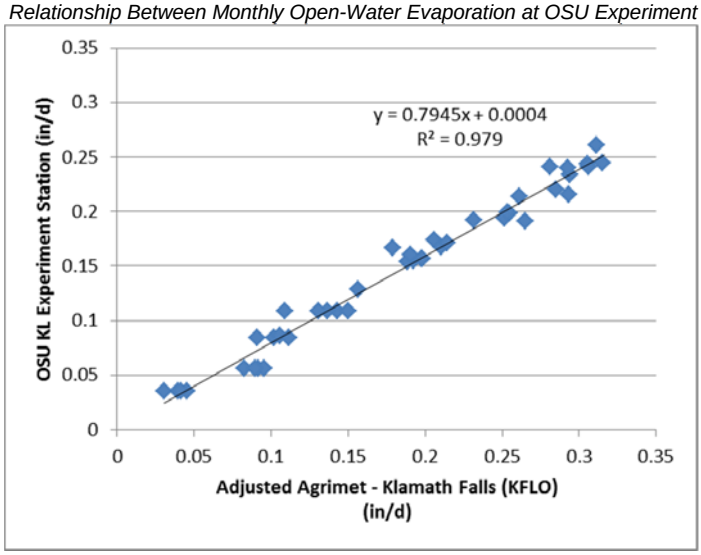
Open-water Evaporation: Agrimet - Klamath Falls (KFLO)



Notes: open-water evaporation computed from PET measurements using Evap=1.27*0.7*PET (Hostetler, 2009)

Figure A7: Monthly Evaporation Relationships

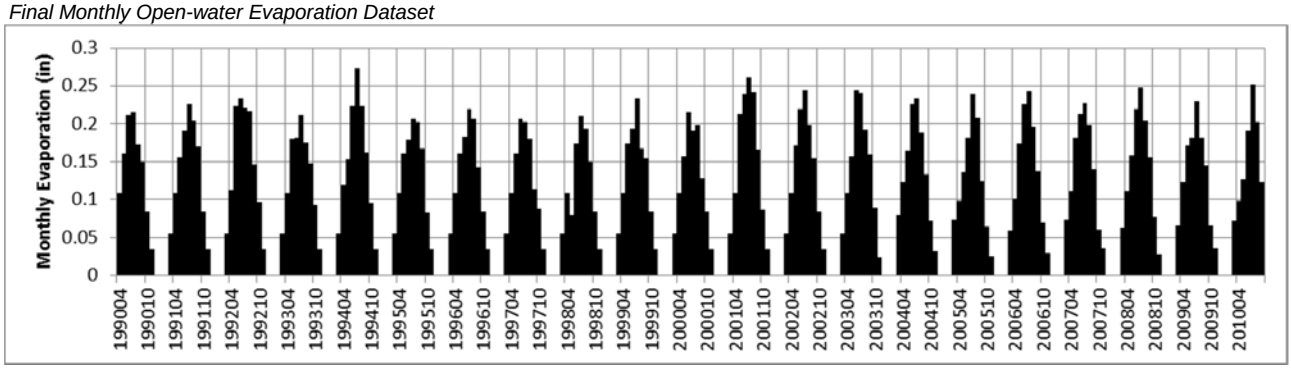
Relationship Between Monthly Open-Water Evaporation at OSU Experiment Station and Agrimet-Klamath Falls (KFLO) Station



Notes: excludes data in December-February

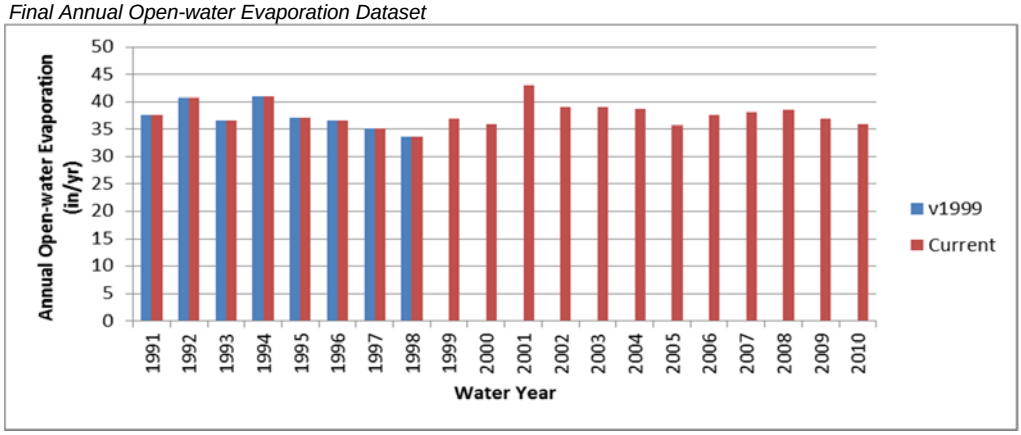
Figure A8: Final Monthly and Annual Evaporation Datasets

Final Monthly Open-water Evaporation Dataset



Notes: For water years 1991-2003, uses estimated open-water evaporation based on pan evaporation at OSU Experiment Station
For water years 2004-2010, uses estimated open-water evaporation based on PET at Agrimet KFLO adjusted by regression
Assumes zero evaporation in December-February

Final Annual Open-water Evaporation Dataset



Notes: Comparison of Annual Evaporation Dataset to Kann & Walker (1999)

Appendix B
Flows & Nutrient Loads from Tributaries

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B1 Algorithm for Estimating Daily Loads using Daily Flow & Biweekly Concentration Data

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B3 Estimation of Missing Flows for Sevenmile Canal @ Dike Road
B4 Monthly Time Series of Estimated Ungauged Inflows
B5 Load Calculation Results by Site & Variable
Sites: Wood_Weed, Wood_Dike, 7Mile_Dike, Williamson, Sprague, Outflow
Variables: TP & TN

Table B1: Algorithm for Estimating Daily Loads using Daily Flow & Biweekly Concentration Data

Computation of Load in Day (T):

LOAD(T) = FLOW(T) x CONC (T)
LN CONC (T) = PREDICTED (T) + RESID (T)
PREDICTED (T) = LN (Concentration Predicted by Regression Model on Day T)
RESID (T) = Regression Residual for Day T Interpolated between Sampling Dates
Residual = LN (Observed / Predicted Concentration on Sampling Dates)

The regression is design to capture seasonality, flow dependence, and long-term trend.
The interpolation captures drift in the model residuals over time; i.e. serial correlation of errors, etc.
The interpolation forces the observed and predicted concentrations to be equal on each sampling date.
The intercept of the regression equation is adjusted to force the observed and predicted mean load across all sampling dates to be equal.
This is necessary to remove negative bias introduced in the log-scale regression.
In computing the seasonal terms, julian day is constrained to a range of 90-300 days to reflect relatively sparse sampling frequencies and and relatively low variance in observed concentrations in the winter months.

Regression Model Terms: Y = LN (Conc)

Term	Description	
Reg_Q Deriv	Natural Log (Q (day) / Q (Day-1)), = 0 if either flow = 0	
Reg_Year^2	year = year + fraction of year = Year + julian Day / 365.25	
Reg_Year	"	
Reg_Cos(2t)	t = 2 x Pi x Julian / 365.25	seasonality
Reg_Sin(2t)	"	"
Reg_Cos(t)	"	"
Reg_Sin(t)	"	"
Reg_Log q3	Natural Log (Q = flow)	flow-dependence
Reg_Log q2	"	"
Reg_Log q	"	"
Reg_Intercept	Regression Intercept, Predict Natural Log of Daily Conc	

Long-Term Average Loads are Compared Using Five Different Algorithms

Method 1	Constant flow-weighted-mean concentration
Method 2	Constant flow-weighted-mean concentration within low and high-flow strata (above and below the mean flow for the entire period)
Method 3	Simple Linear Interpolation of concentrations between sampling dates
Method 4	Regression without residual interpolation
Method 5	Regression with residual interpolation (used to estimate daily loads).

Literature References for Load Estimation Method & Its Precursors:

Walker, W.W. and K.E. Havens (2003). Development and Application of a Phosphorus Mass Balance Model for Lake Istokpoga, Florida. Lake and Reservoir Management 19(1): 79-91. Available online at http://www.wwwalker.net/pdf/istokpoga_2003.pdf

Walker, W.W. (2004). Long-Term Water Quality Database for Onondaga Lake Monitoring Program, prepared for Department of Water Environment Protection, Onondaga County, NY. March 30, 2004. Available online at http://www.wwwalker.net/onondaga

Walker, W.W. (1996). Simplified procedures for eutrophication assessment and prediction: User manual, Chapter 2 FLUX. Prepared for U.S. Army Corp of Engineers, Water Operations Technical Support Program, Instruction Report W-96-2. Available online at http://www.wwwalker.net/bathtub

Walker, W.W. (2002). Long-Term Monitoring of Watersheds: Statistical Models & Examples. Presented at "Science to Support Nutrient-Management Decisions Related to Hypoxia in the Northern Gulf of Mexico in the Mississippi River Basin", St. Louis, October 2002. Available online at http://www.wwwalker.net/pdf/hypoxia_st_louis_oct2002.pdf

Asarian, E., Kann, J., Walker, W.W. (2009). Multi-Year Nutrient Budget Dynamics for Iron Gate and Copco Reservoirs, California. Prepared for Karuk Tribe, Department of Natural Resources, December 2009.

Similar algorithms developed & applied by USGS:

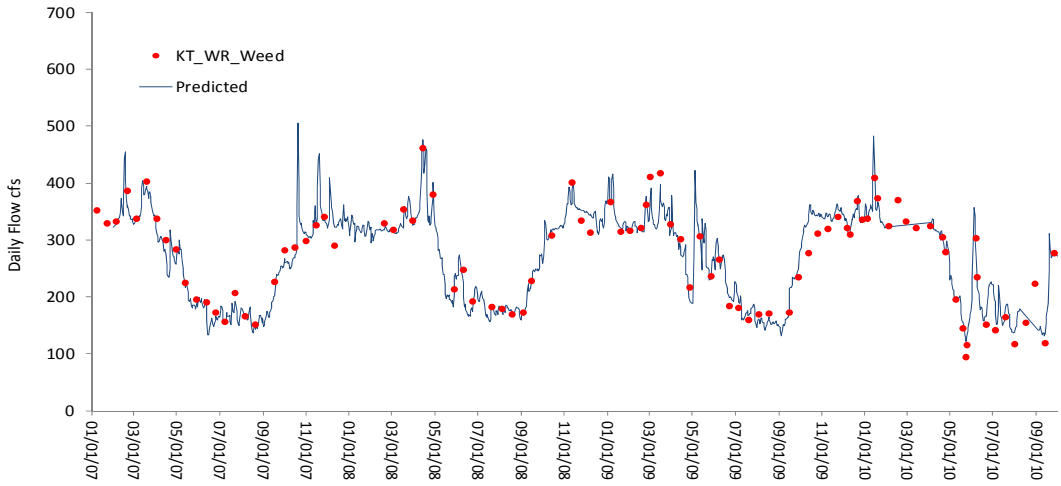
Hirsch, R. (1998). Statistical Methods and Sampling Design for Estimating Step Trends in Surface-Water Quality. Water Resources Bulletin 24(3): 493-503

Goolsby, D.A., Battaglin, W.A., Lawrence, G.B., Artz, R.S., Aulenbach, B.T., Hooper, R.P., Keeney, D.R., and G.J. Stensland (1999). Flux and Sources of Nutrients in the Mississippi–Atchafalaya River Basin, Topic 3 Report for the Integrated Assessmenton Hypoxia in the Gulf of Mexico, National Oceanic and Atmospheric Administration, Coastal Ocean Program. May 1999. Available online at http://oceanservice.noaa.gov/products/hypox_t3final.pdf

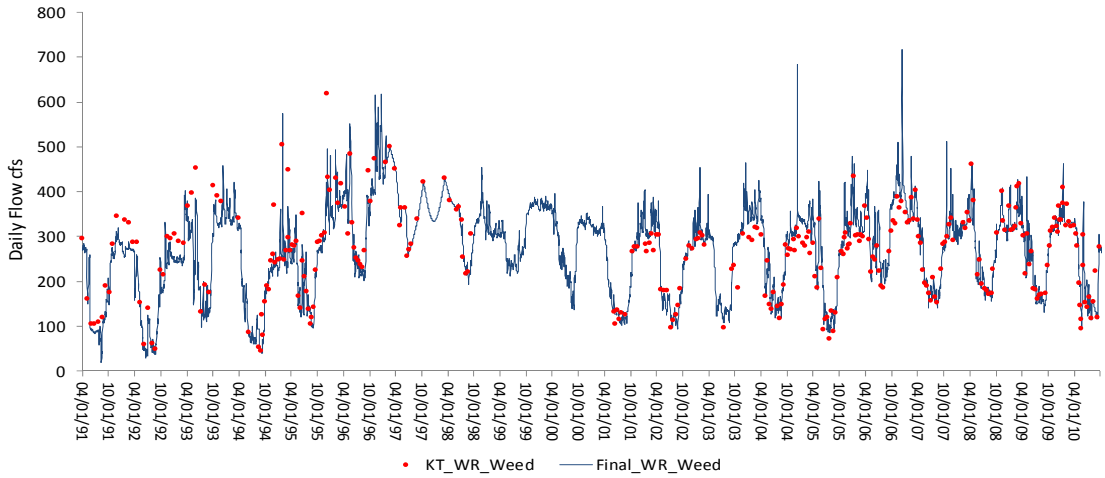
Runklel, R., Crawford, C.G., and T.A. Cohn (2004). Load Estimator (LOADEST): A FORTRAN Program for Estimating Constituent Loads in Streams and Rivers. U.S. Geological Survey, Techniques and Methods Book 4, Chapter A5. Available online at http://pubs.usgs.gov/tm/2005/tm4A5/pdf/508final.pdf

Figure B1: Estimation of Missing Flows for Wood River @ Weed Road

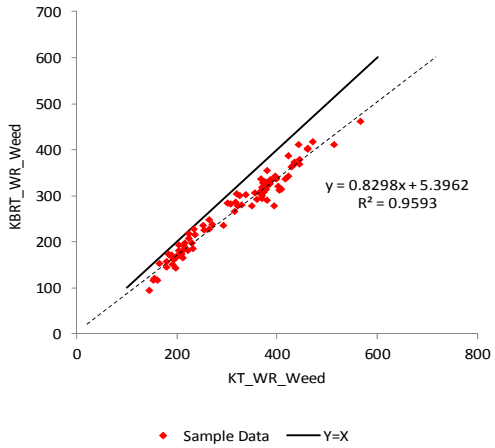
Klamath Tribes Flows at Weed Road Predicted from KBRT Flows at Weed Road, 2007-2010



Weed Road Klamath Tribes Observed & Completed Dataset



KT Weed Road vs. KBRT Weed Road (2007-2010), CFS



Algorithm Used to Create Final Dataset for Weed Road

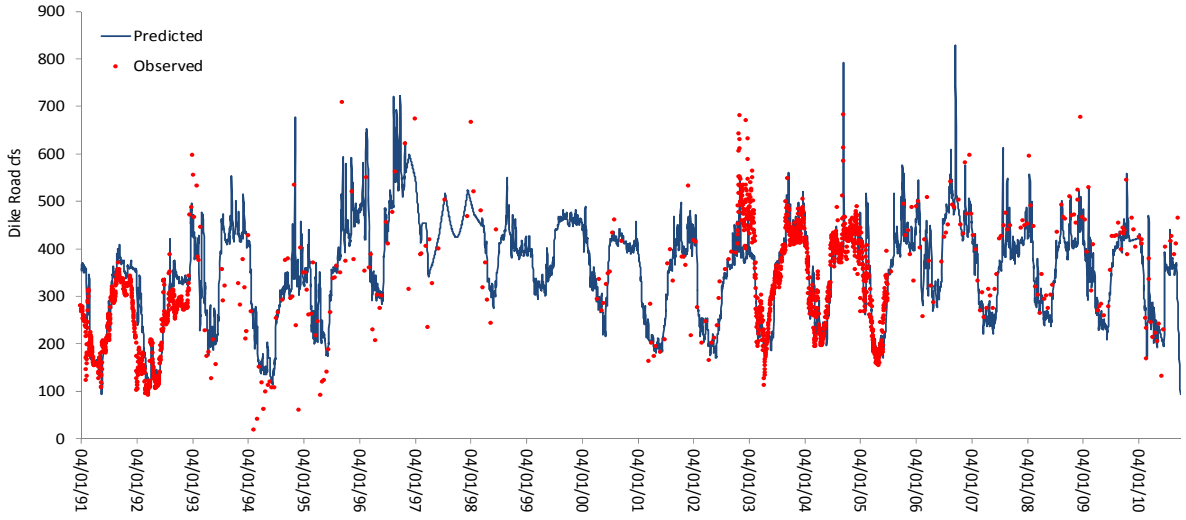
Priority	Source
1	GMA Refined Historical Daily Dataset (1991-2006)
2	Klamath Tribes Biweekly Data (2007-2010)
3	Regress Tribe vs. KBRT Data (2007-2010)
4	Interpolate Residuals Between Days with Data

Regression KT Weed Rd vs. KBRT Weed Rd (2007-2010)

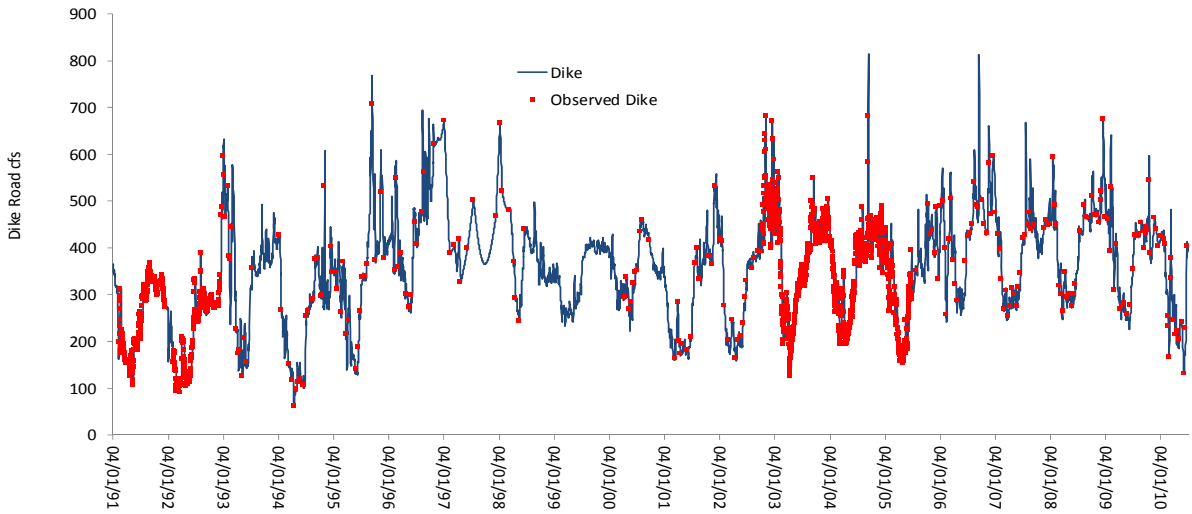
Intercept:	5.40
Slope:	0.830
R2:	0.959

Figure B2: Estimation of Missing Flows for Wood River @ Dike Rd

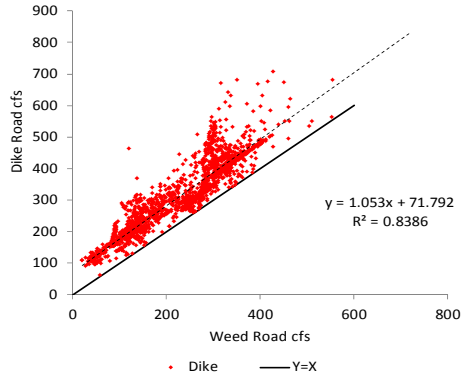
Dike Road Predicted from Weed Road



Observed & Completed Dike Road Dataset



KT Dike vs. KT Weed



Algorithm Used to Create Final Dataset

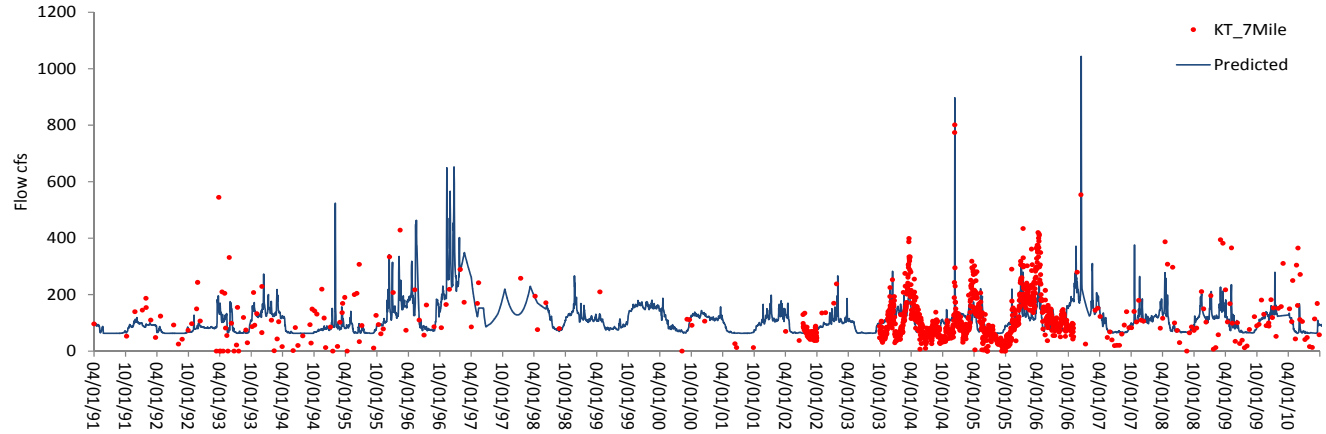
1	Klamath Tribes Observed	Excluding Dates with Dike-Weed < 0
2	Regression Dike vs. Weed Road	
3	Interpolate Residuals	

Regression: KT Dike vs. KT Weed

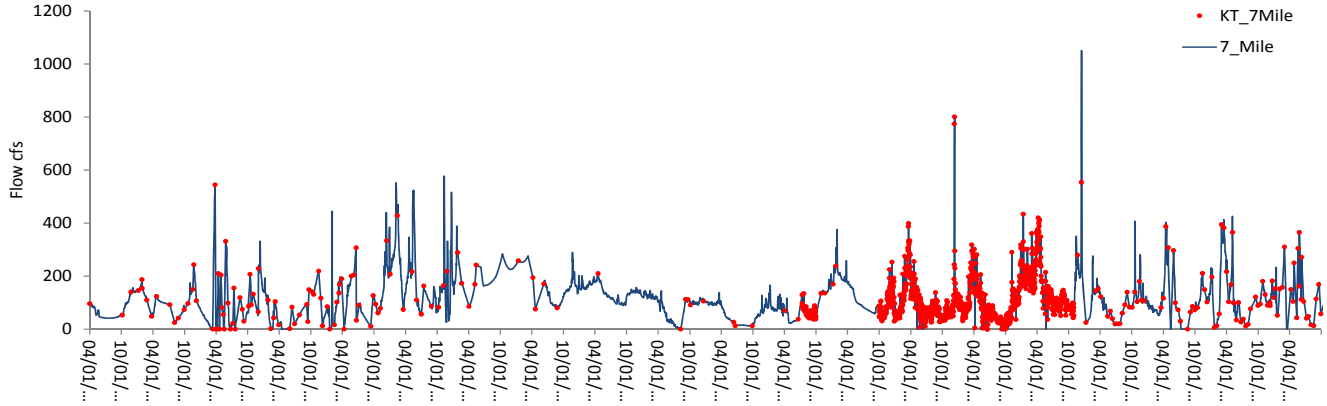
Slope	1.053
Intercept	71.792
R2	0.839

Figure B3: Estimation of Missing Flows for Sevenmile Canal @ Dike Road

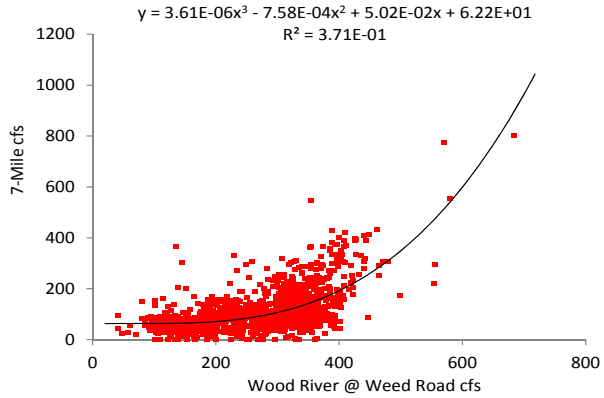
Seven Mile Canal at Dike Road
7-Mile at Dike Predicted from Wood River at Weed Road



7-Mile Canal at Dike - Observed & Completed Dataset



Regression 7-Mile Canal at Dike vs. Wood River at Weed Road



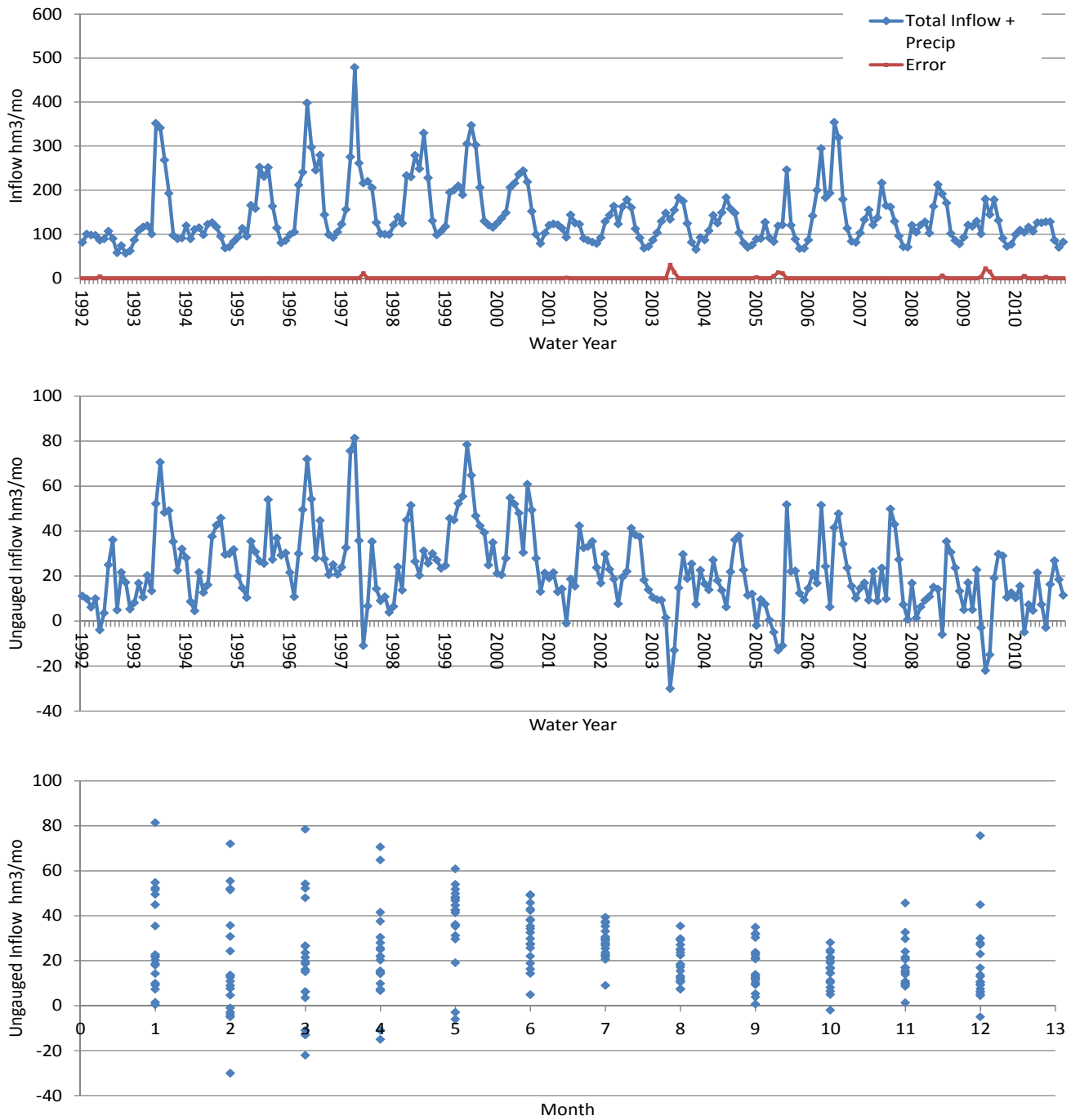
Algorithm Used to Create Final Dataset for 7-Mile Canal

Step	Source
1	Klamath Tribes or USBR Observed
2	Regression Dike vs. Weed Road
3	Interpolate Regression Residuals

Cubic Polynomial Regression Seven Mile vs. Weed Road

Intercept	6.22E+01
Slope1	5.02E-02
Slope2	-7.58E-04
Slope3	3.61E-06
R2	0.371

FIgure B4: Monthly Time Series of Estimated Ungauged Inflows



Ungauged = Total Outflow + Evaporation - Total Gauged Inflows - Estimated Pumped Inflows - Precipitation + Storage Increase
Constrained >=0 in formulating mass balances. This causes an error in the water budget in months when the computed ungauged inflows are negative.
The negative values could reflect errors in the measured or estimated inflow volumes. They tend to occur in the winter months, especially in drier years.
The top figure shows that the error is small relative to the total external inflow.

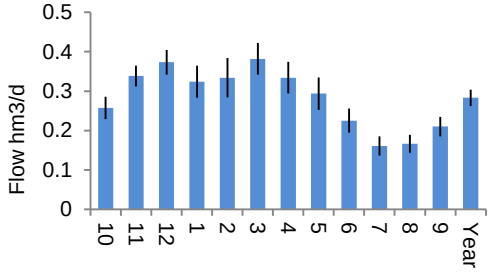
Figure B4: Load Calculation Results by Site & Variable

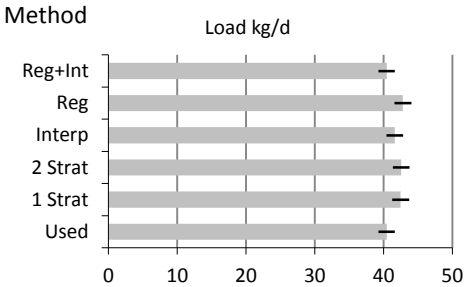
Output Diagnostics from Daily Load Estimation Algorithm at Major Sites

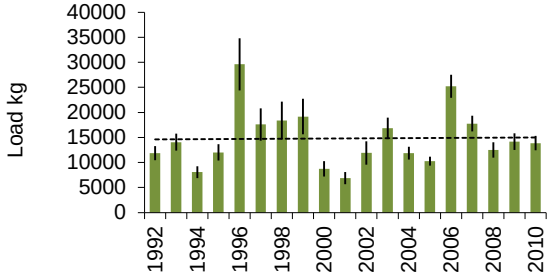
Pages: 12

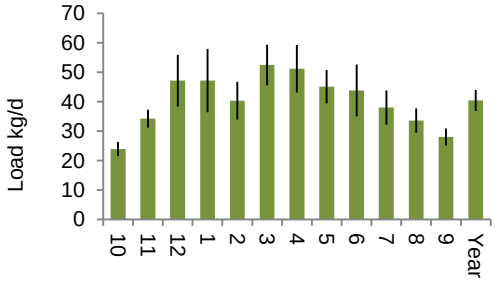
Sites: 7Mile_Dike, Outlet, Sprague, Williamson, Wood_Dike, Wood_Weed
Variables: TP & TN

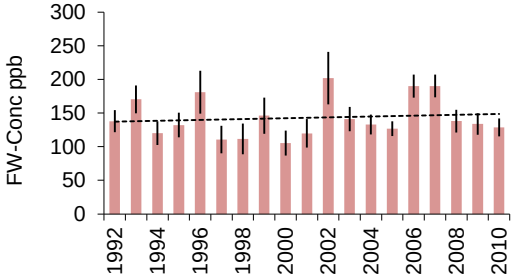
Site:	7Mile_Dike	Sevenmile Canal at Dike Road		Variable:	TP	
Output Period		10/01/91	09/30/10	Mean Daily Flow	0.283	10^6 m3/d
Calibration Period		10/01/91	09/30/10	Mean Daily Load	40.449	kg/d
Sample Dates		10/07/91	09/28/10	Flow-Wtd Conc	142.906	ppb
Samples	408			Relative Std Error	2.9%	
Method:	5 - Regression + Interpolation			Regression R^2	41%	
				Regression SE	0.34	

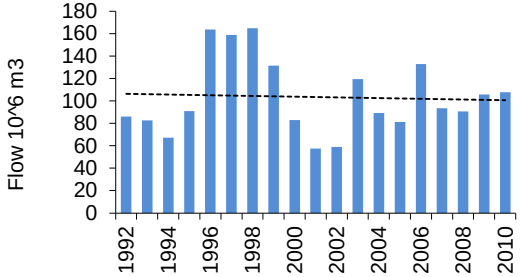


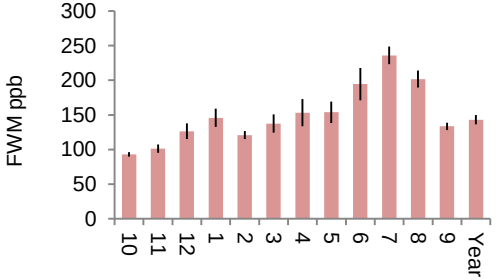


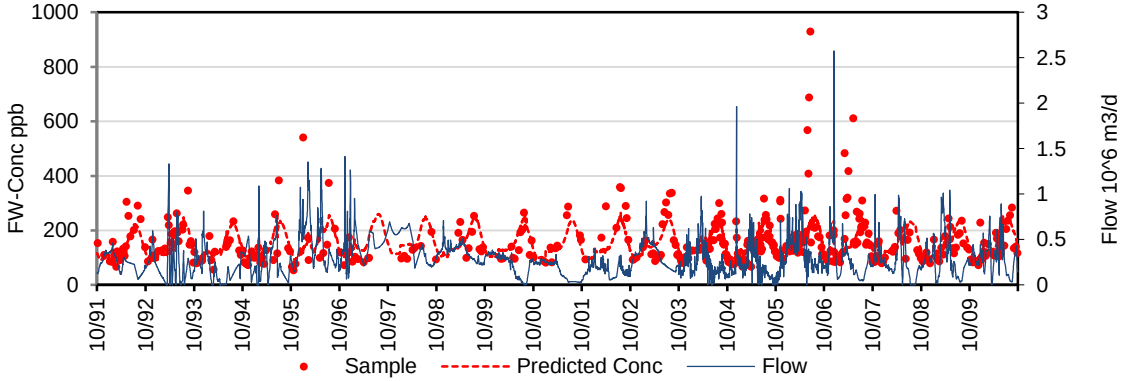


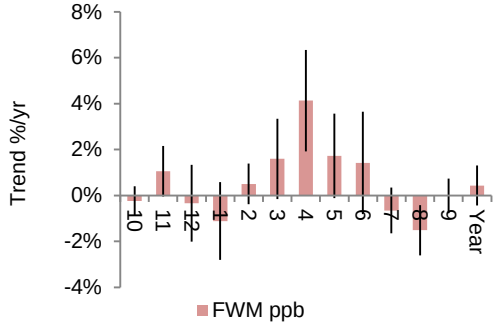






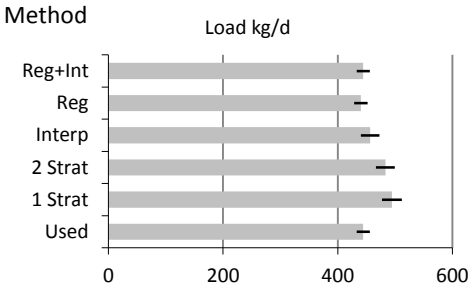


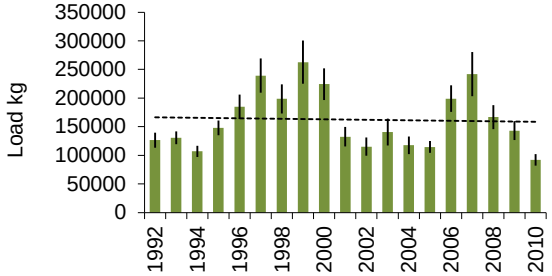


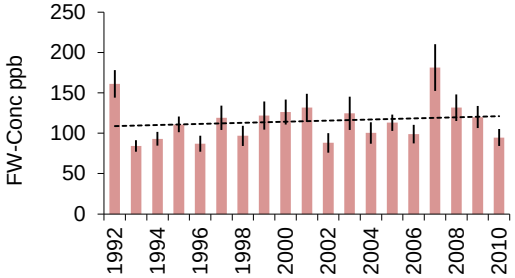


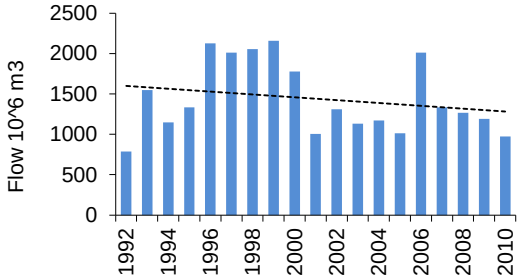
04/11/12

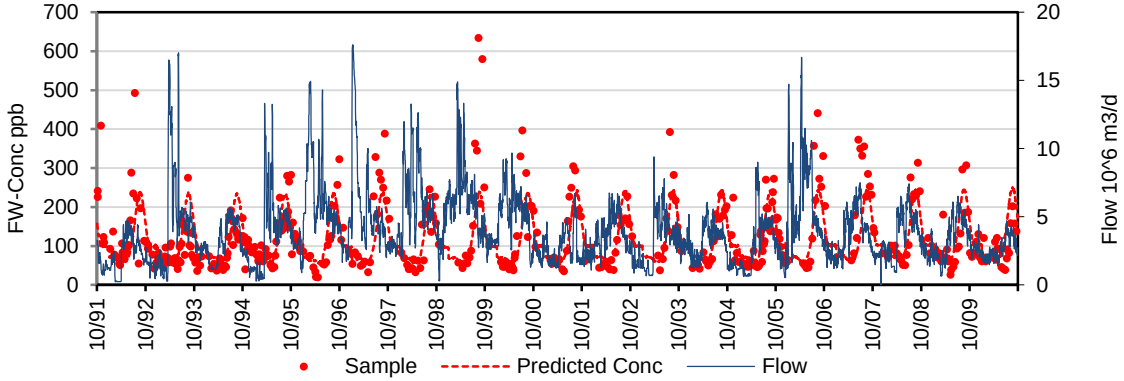
Site:	Outlet	UKL Outlet, PM + FB		Variable:	TP	
Output Period		10/01/91	09/30/10	Mean Daily Flow	3.940	10^6 m3/d
Calibration Period		10/01/91	09/30/10	Mean Daily Load	444.553	kg/d
Sample Dates		10/07/91	09/21/10	Flow-Wtd Conc	112.824	ppb
Samples	480			Relative Std Error	2.6%	
Method:	5 - Regression + Interpolation			Regression R^2	59%	
				Regression SE	0.41	

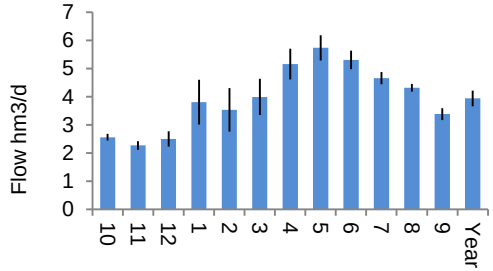


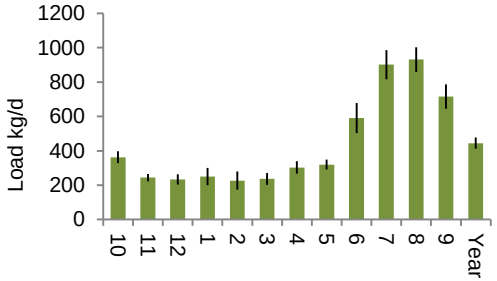


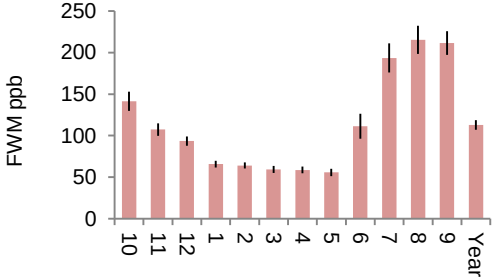


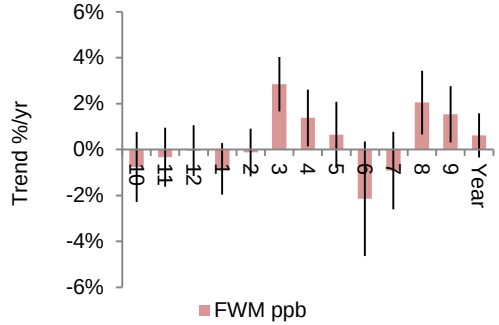






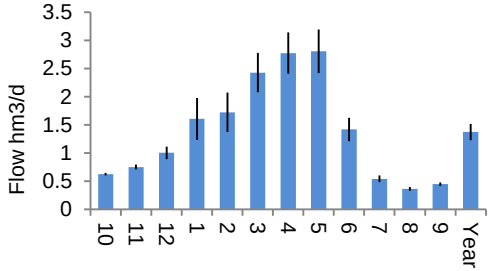


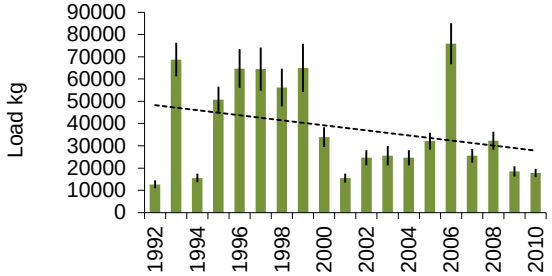


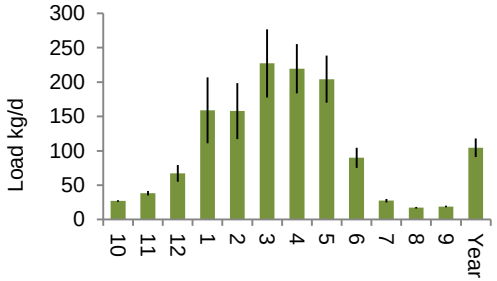


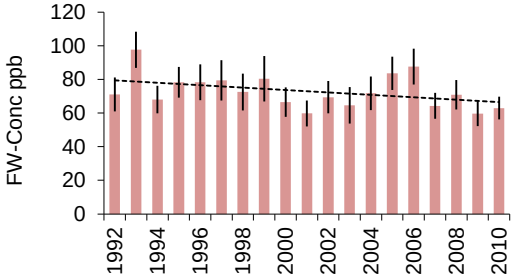
04/18/12

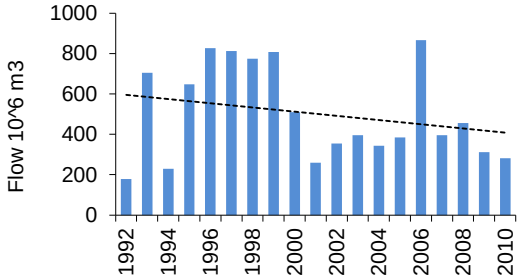
Site:	Sprague	Sprague R. @ Kirchers Bridge		Variable:	TP		
Output Period		10/01/91	09/30/10	Mean Daily Flow	1.374	10^6 m3/d	
Calibration Period		10/01/91	09/30/10	Mean Daily Load	104.322	kg/d	
Sample Dates		11/25/91	09/27/10	Flow-Wtd Conc	75.919	ppb	
Samples	415			Relative Std Error	3.0%		
Method:	5 - Regression + Interpolation			Regression R^2	54%		
				Regression SE	0.27		

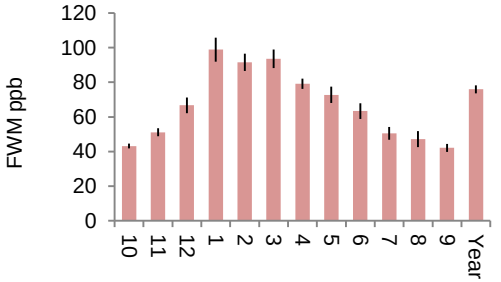


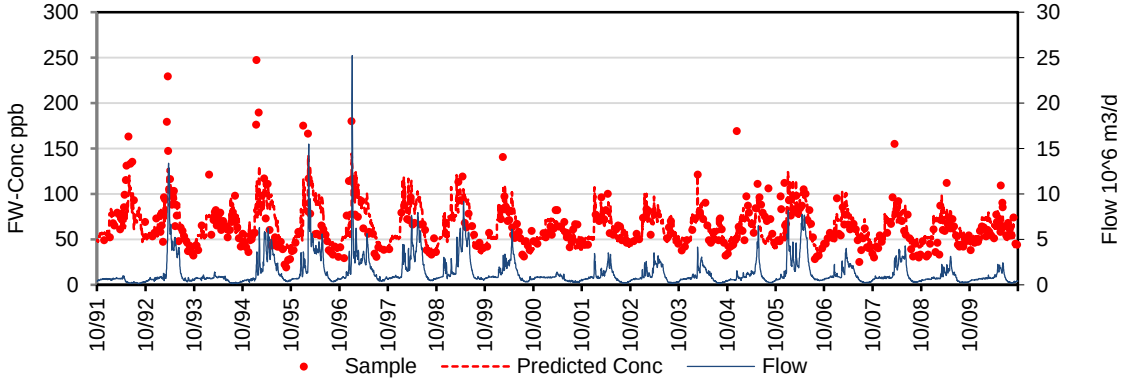


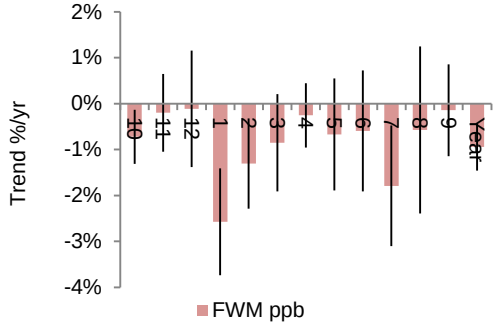






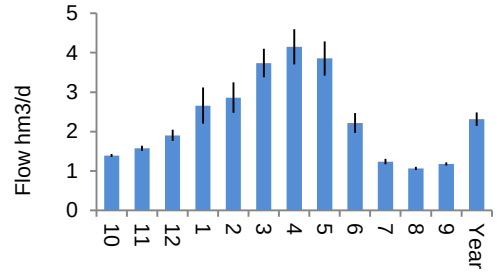


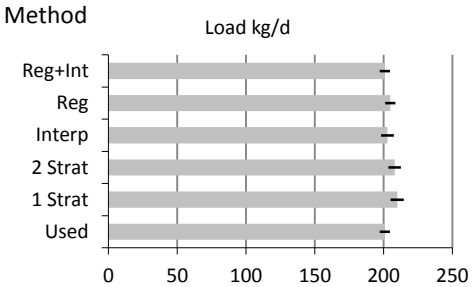


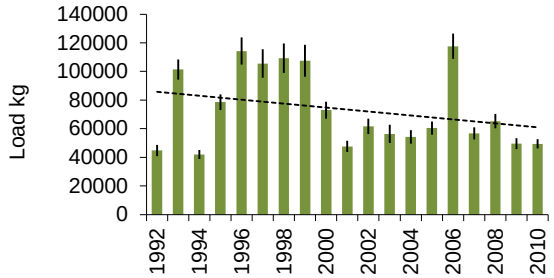


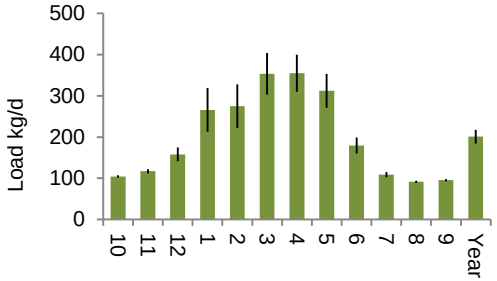
04/11/12

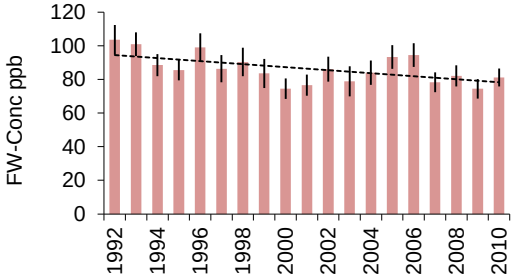
Site:	Williamson	Williamson R @ Modoc Pt. Rd Bridge		Variable:	TP	
Output Period		10/01/91	09/30/10	Mean Daily Flow	2.316	10^6 m3/d
Calibration Period		10/01/91	09/30/10	Mean Daily Load	201.022	kg/d
Sample Dates		10/07/91	09/28/10	Flow-Wtd Conc	86.800	ppb
Samples	410			Relative Std Error	1.9%	
Method:	5 - Regression + Interpolation			Regression R^2	21%	
				Regression SE	0.20	

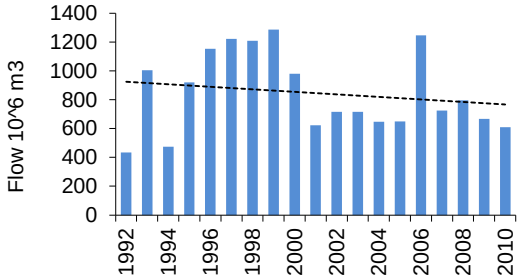


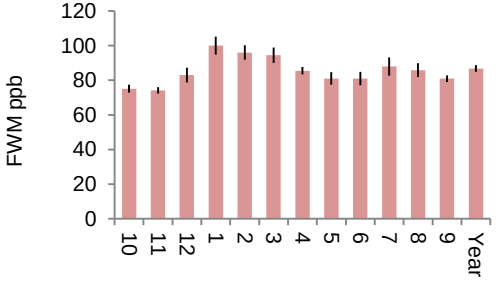


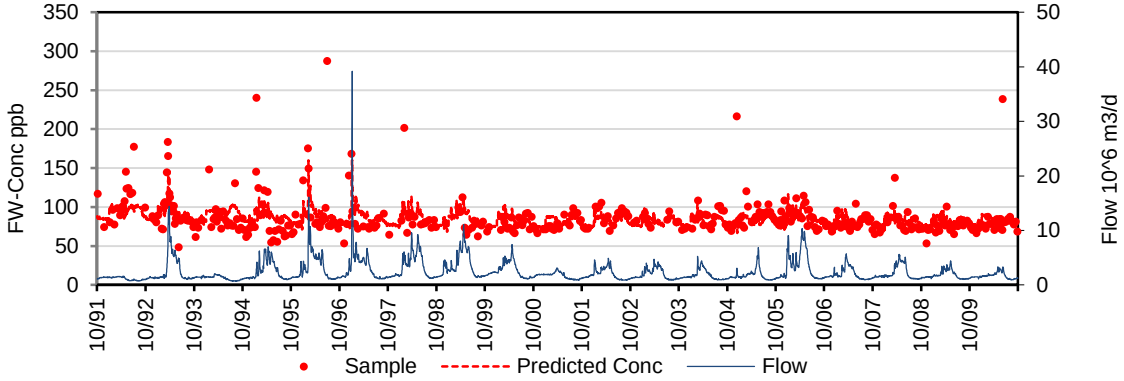


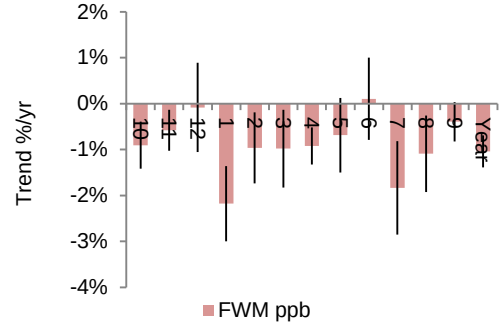






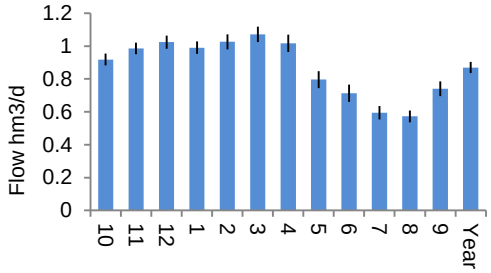


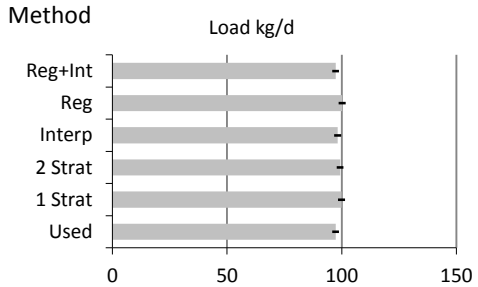


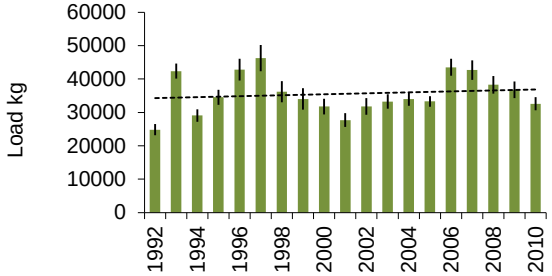


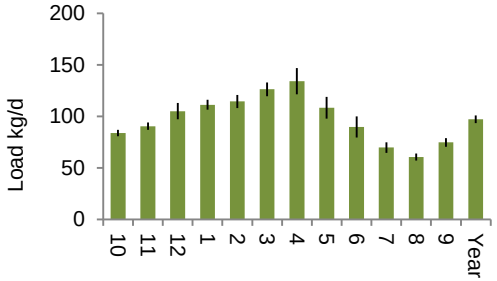
04/11/12

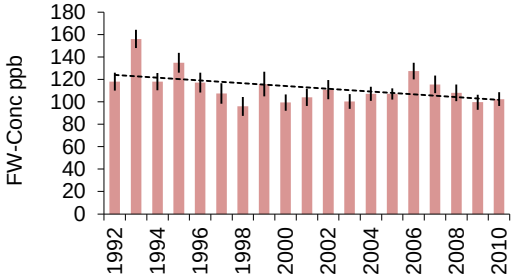
Site:	Wood_Dike	Wood River at Dike Road		Variable:	TP	
Output Period		10/01/91	09/30/10	Mean Daily Flow	0.870	10^6 m3/d
Calibration Period		10/01/91	09/30/10	Mean Daily Load	97.345	kg/d
Sample Dates		10/09/91	09/27/10	Flow-Wtd Conc	111.905	ppb
Samples	500			Relative Std Error	1.5%	
Method:	5 - Regression + Interpolation			Regression R^2	28%	
				Regression SE	0.22	

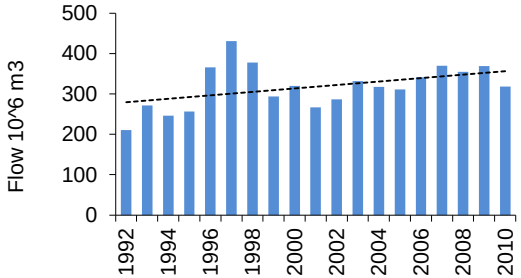


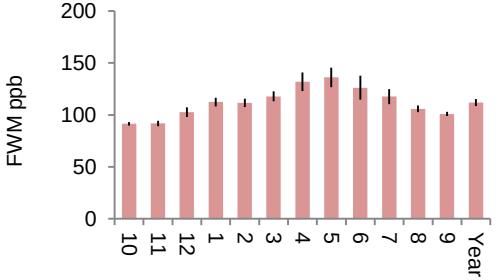


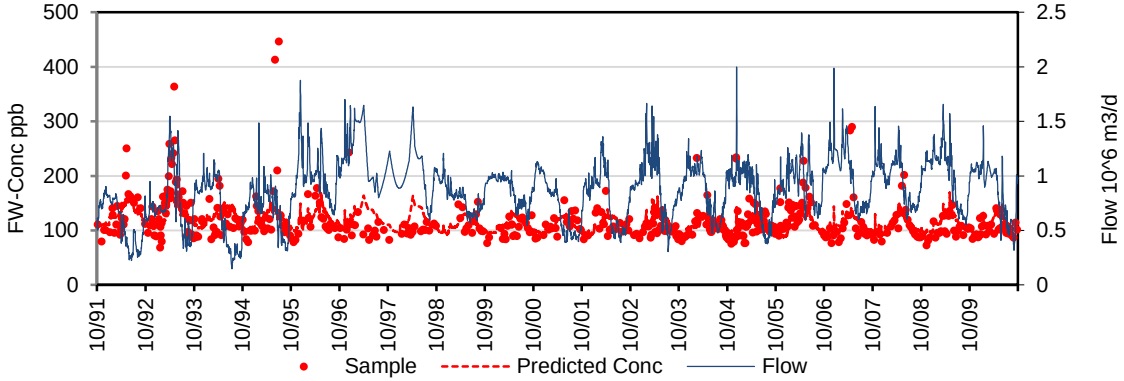


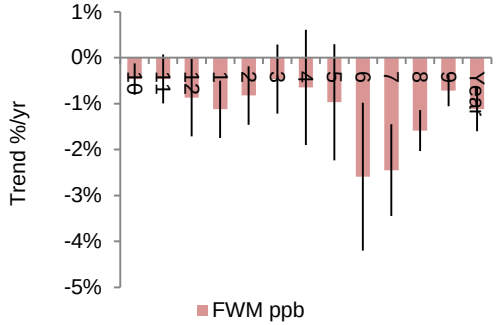






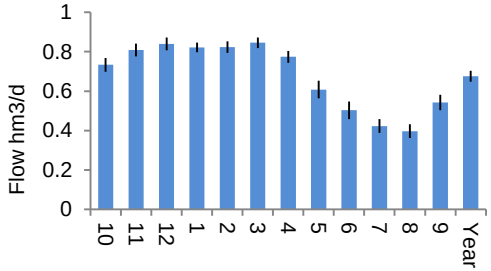


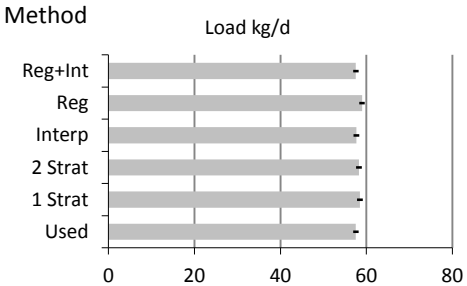


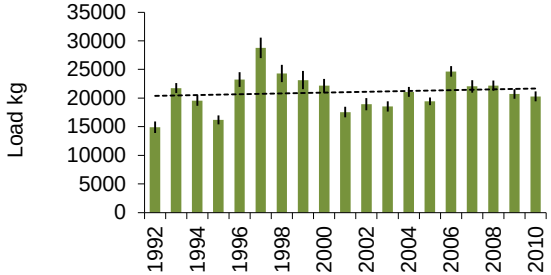


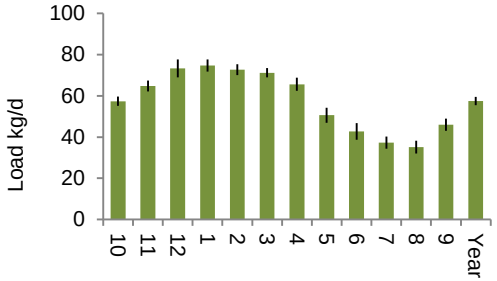
04/11/12

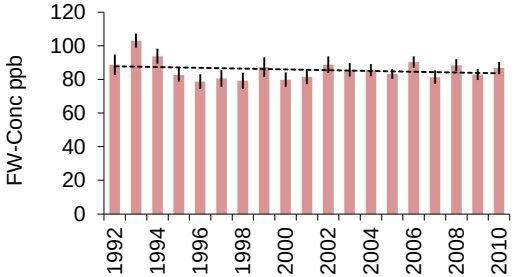
Site:	Wood_Weed	Wood River at Weed Road		Variable:	TP		
Output Period		10/01/91	09/30/10	Mean Daily Flow		0.676	10^6 m3/d
Calibration Period		10/01/91	09/30/10	Mean Daily Load		57.558	kg/d
Sample Dates		10/09/91	09/27/10	Flow-Wtd Conc		85.163	ppb
Samples	520			Relative Std Error		1.1%	
Method:	5 - Regression + Interpolation			Regression R^2		13%	
				Regression SE		0.15	

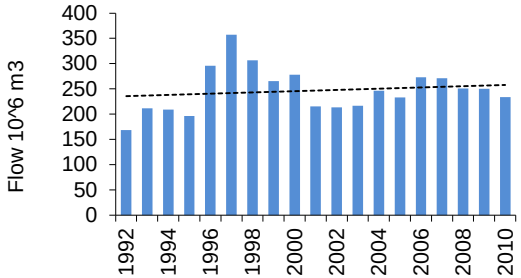


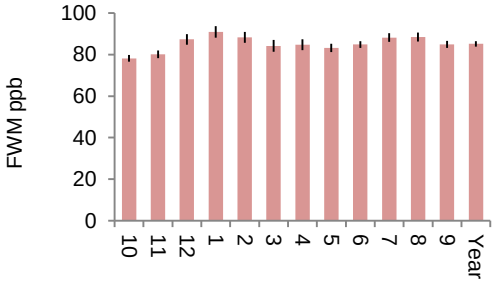


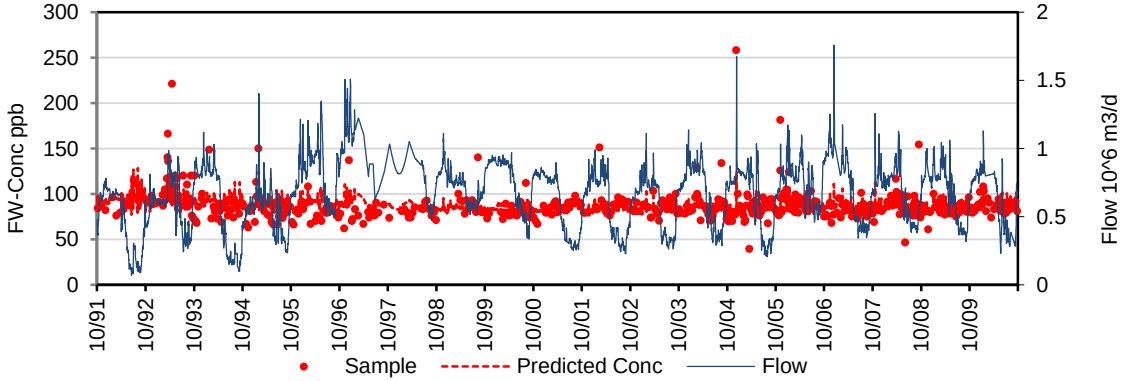


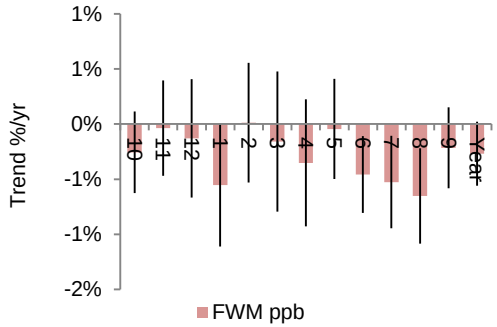






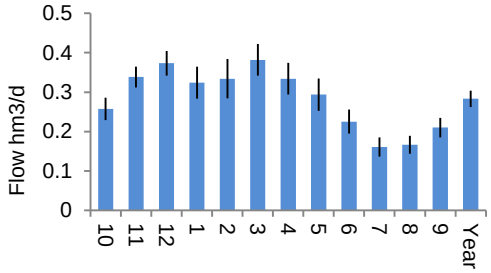


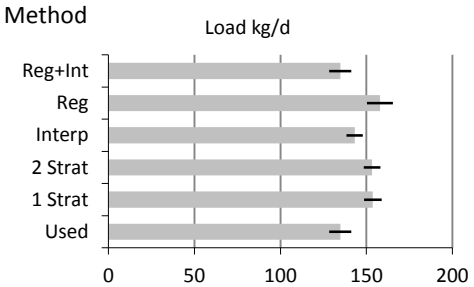


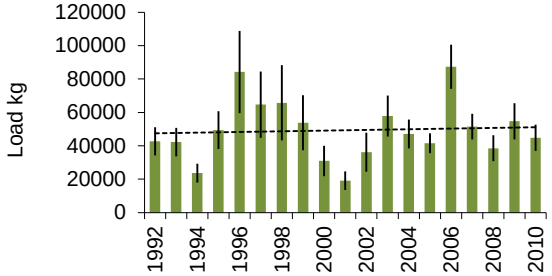


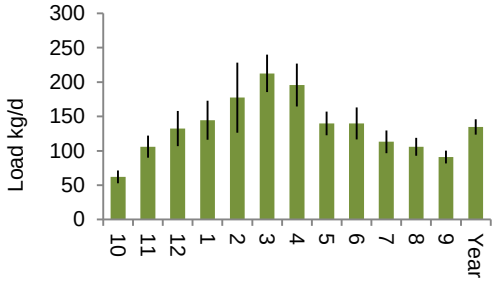
04/11/12

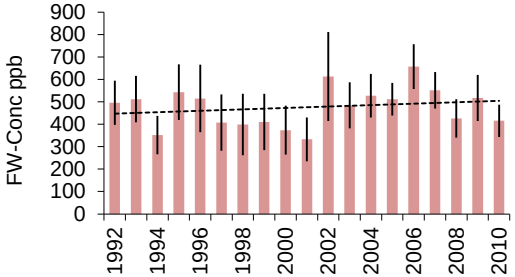
Site:	7Mile_Dike	Sevenmile Canal at Dike Road		Variable:	TN		
Output Period		10/01/91	09/30/10	Mean Daily Flow	0.283	10^6 m3/d	
Calibration Period		10/01/91	09/30/10	Mean Daily Load	134.834	kg/d	
Sample Dates		10/07/91	09/28/10	Flow-Wtd Conc	476.372	ppb	
Samples	408			Relative Std Error	4.8%		
Method:	5 - Regression + Interpolation			Regression R^2	37%		
				Regression SE	0.55		

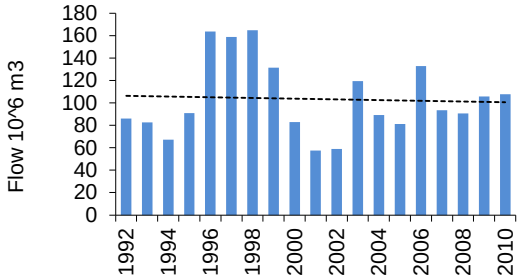


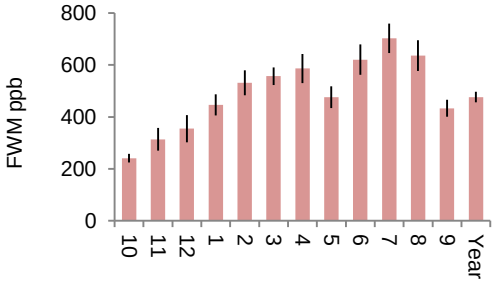


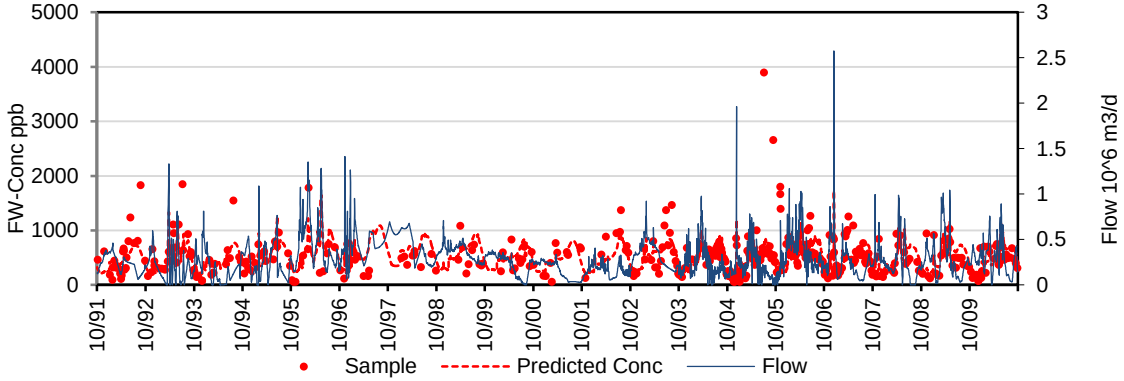


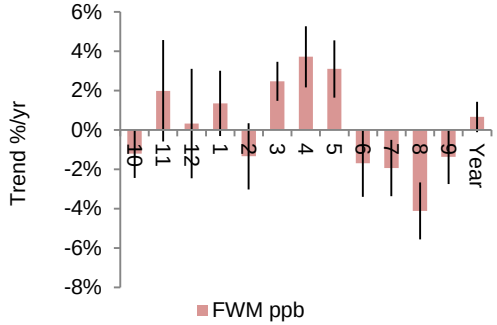






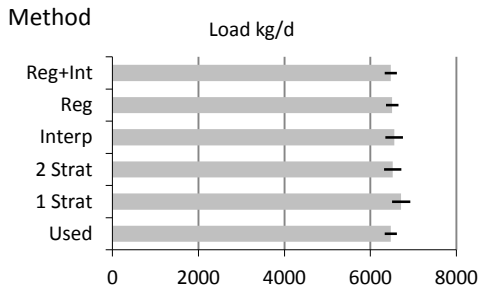


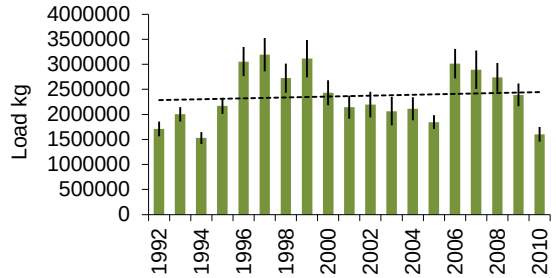


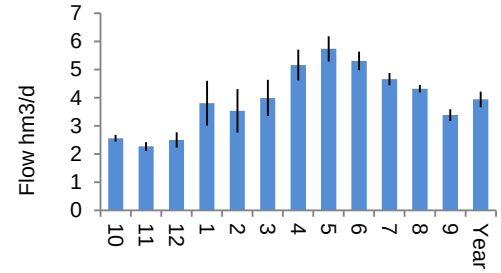


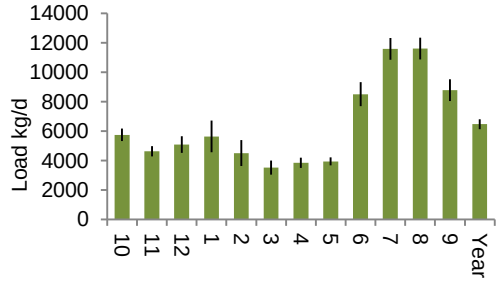
04/11/12

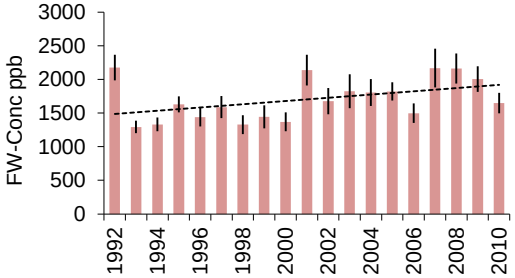
Site:	Outlet	UKL Outlet, PM + FB		Variable:	TN		
Output Period		10/01/91	09/30/10	Mean Daily Flow	3.940	10^6 m3/d	
Calibration Period		10/01/91	09/30/10	Mean Daily Load	6472.846	kg/d	
Sample Dates		10/07/91	09/21/10	Flow-Wtd Conc	1642.752	ppb	
Samples	480			Relative Std Error	2.2%		
Method:	5 - Regression + Interpolation			Regression R^2	62%		
				Regression SE	0.38		

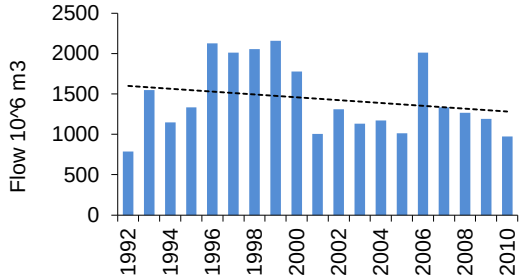


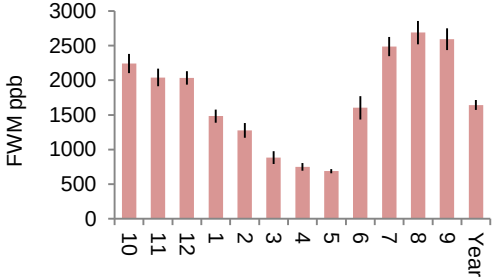


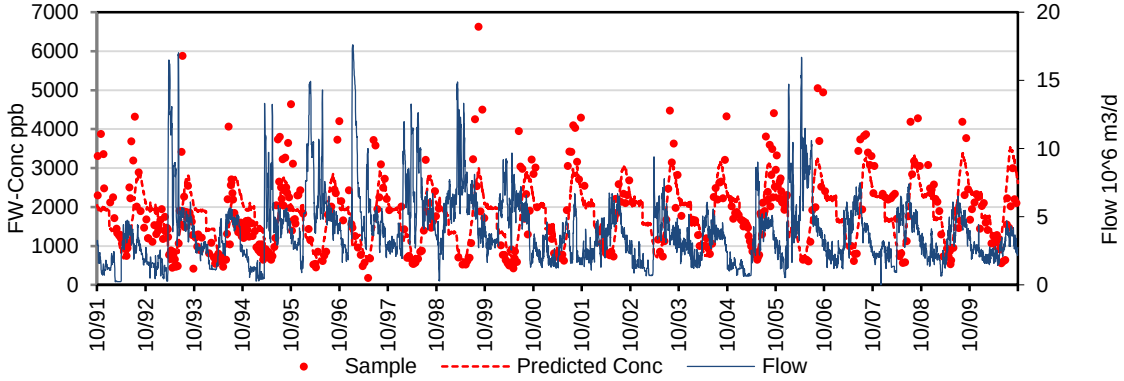


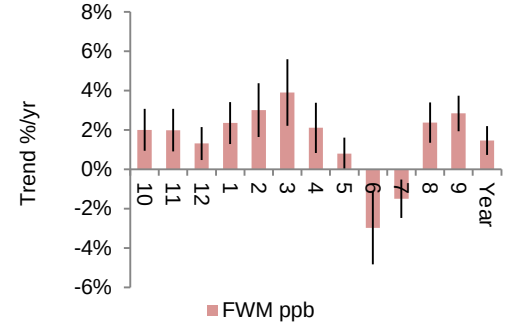






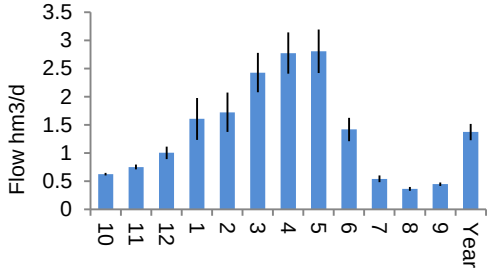


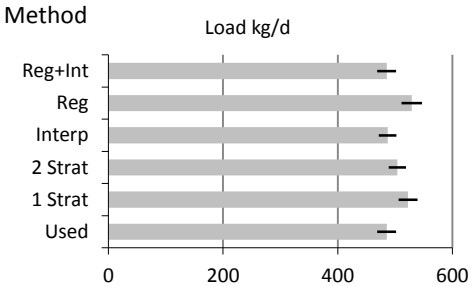


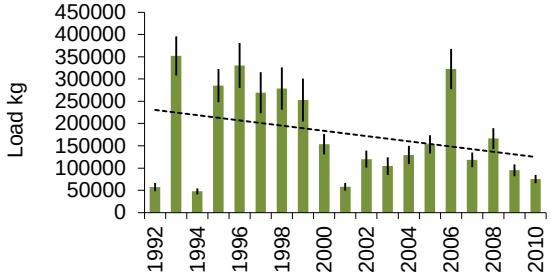


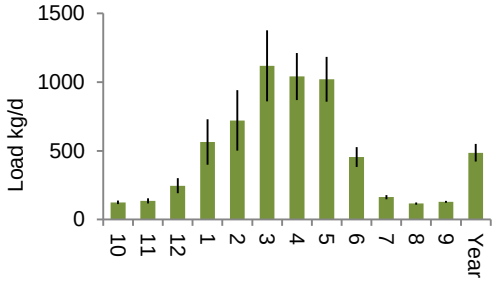
04/11/12

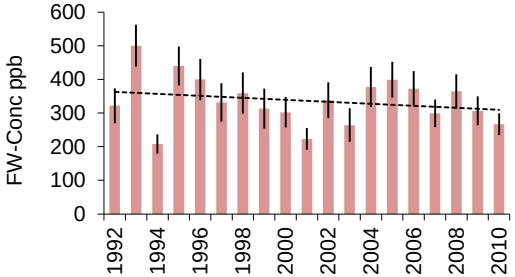
Site:	Sprague	Sprague R. @ Kirchers Bridge		Variable:	TN		
Output Period		10/01/91	09/30/10	Mean Daily Flow	1.374	10^6 m3/d	
Calibration Period		10/01/91	09/30/10	Mean Daily Load	485.494	kg/d	
Sample Dates		11/25/91	09/27/10	Flow-Wtd Conc	353.313	ppb	
Samples	414			Relative Std Error	3.4%		
Method:	5 - Regression + Interpolation			Regression R^2	39%		
				Regression SE	0.42		

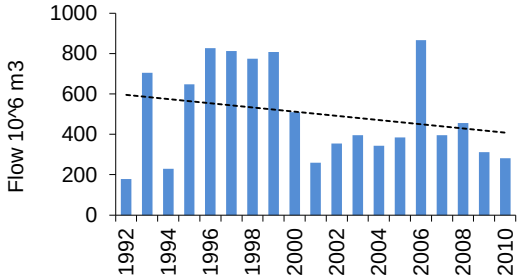


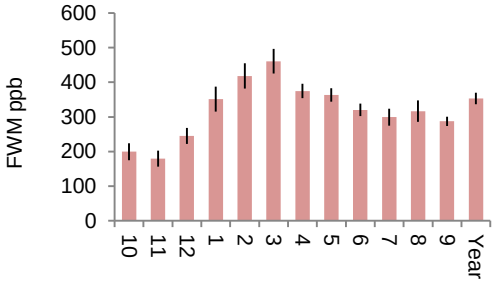


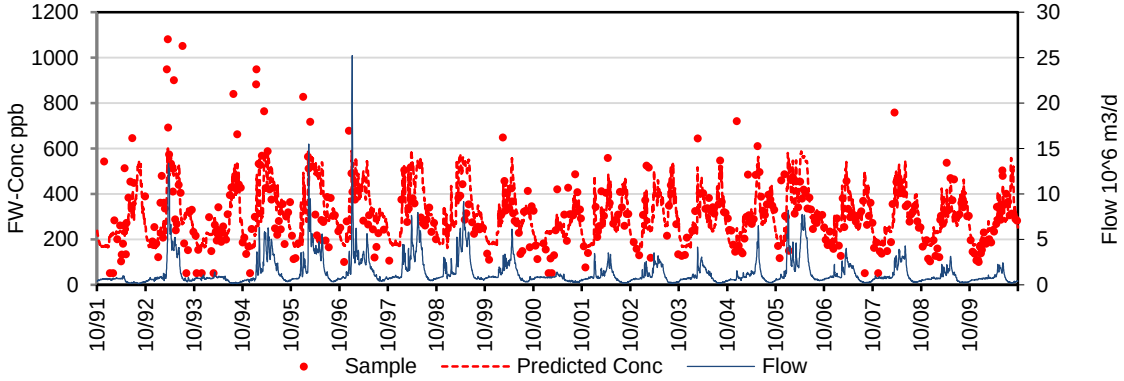


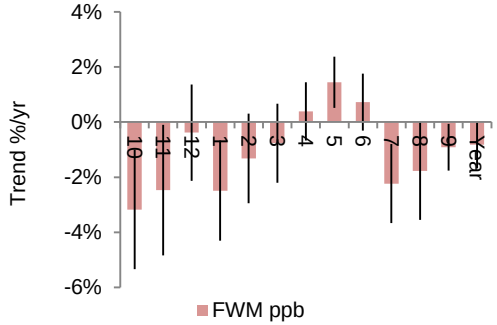






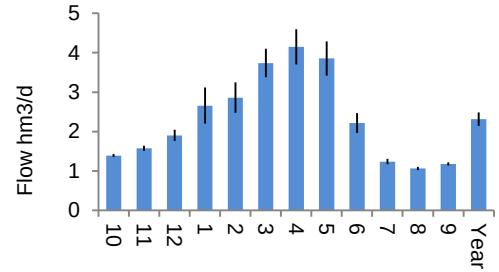


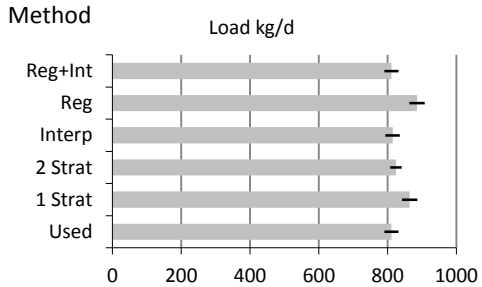


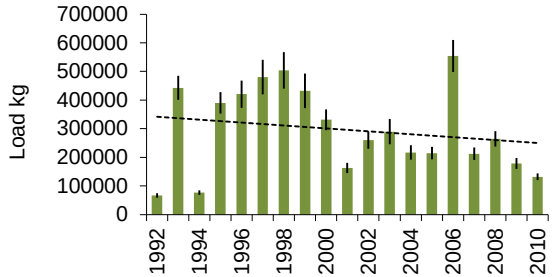


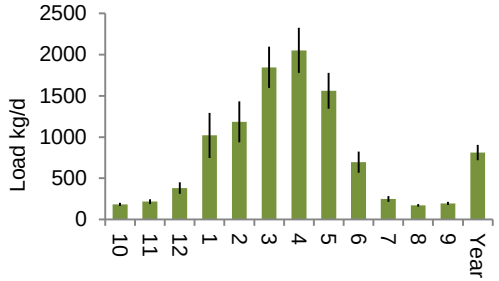
04/11/12

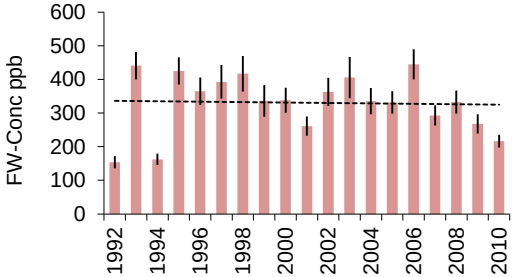
Site:	Williamson	Williamson R @ Modoc Pt. Rd Bridge		Variable:	TN		
Output Period		10/01/91	09/30/10	Mean Daily Flow	2.316	10^6 m3/d	
Calibration Period		10/01/91	09/30/10	Mean Daily Load	811.153	kg/d	
Sample Dates		10/07/91	09/28/10	Flow-Wtd Conc	350.250	ppb	
Samples	410			Relative Std Error	2.5%		
Method:	5 - Regression + Interpolation			Regression R^2	62%		
				Regression SE	0.44		

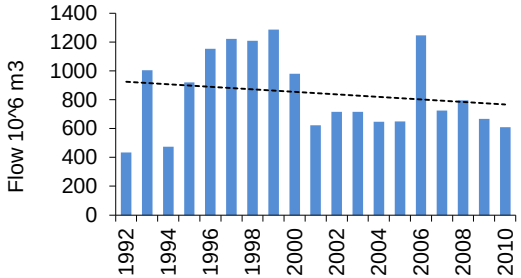


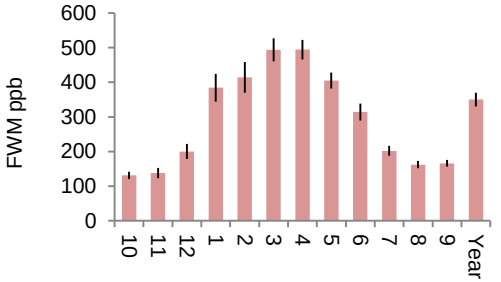


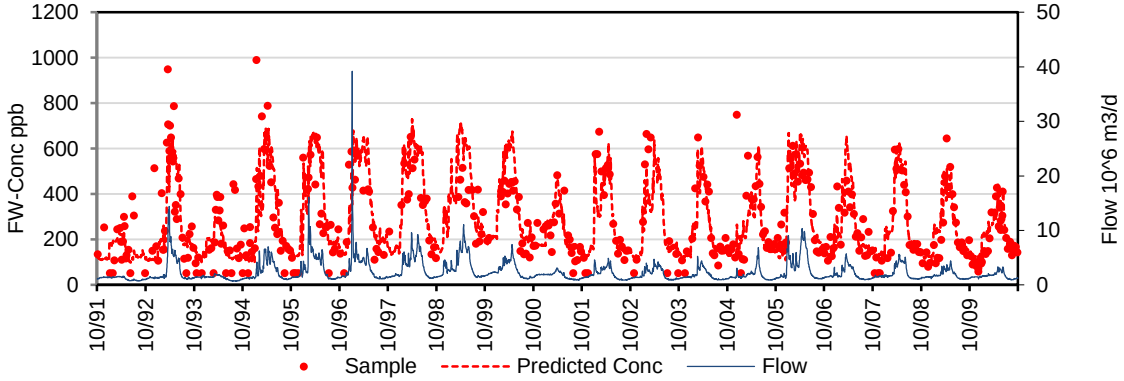


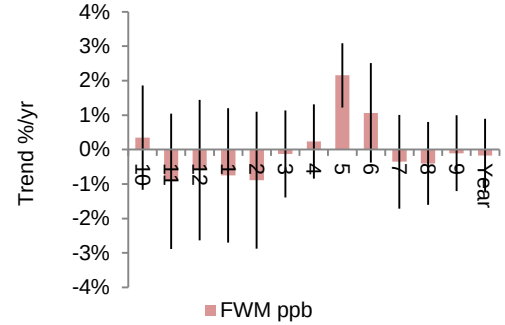






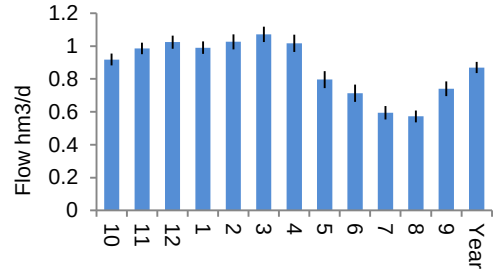


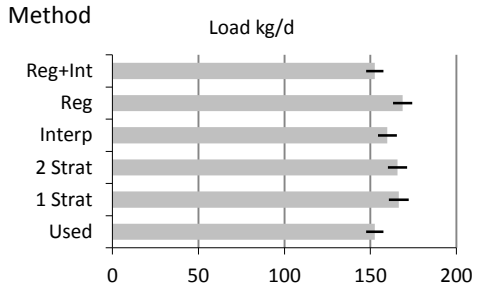


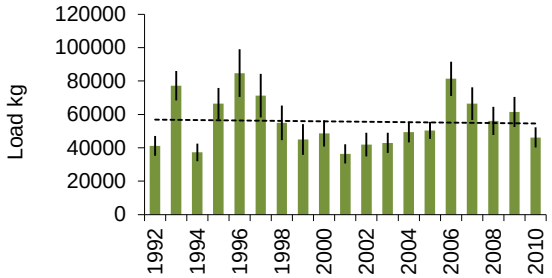


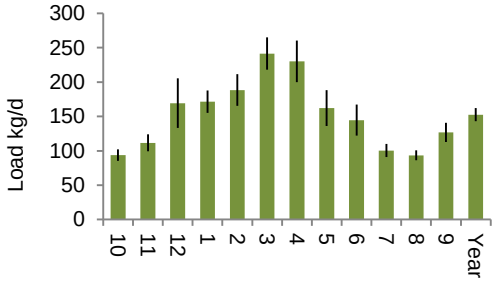
04/11/12

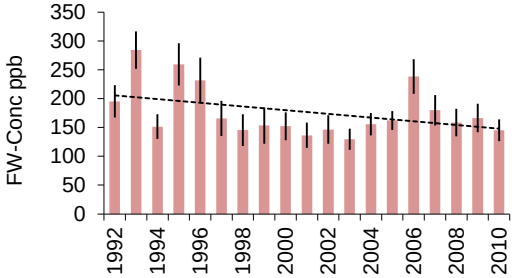
Site:	Wood_Dike	Wood River at Dike Road		Variable:	TN		
Output Period		10/01/91	09/30/10	Mean Daily Flow		0.870	10^6 m3/d
Calibration Period		10/01/91	09/30/10	Mean Daily Load		152.588	kg/d
Sample Dates		10/09/91	09/27/10	Flow-Wtd Conc		175.410	ppb
Samples	499			Relative Std Error		3.3%	
Method:	5 - Regression + Interpolation			Regression R^2		15%	
				Regression SE		0.61	

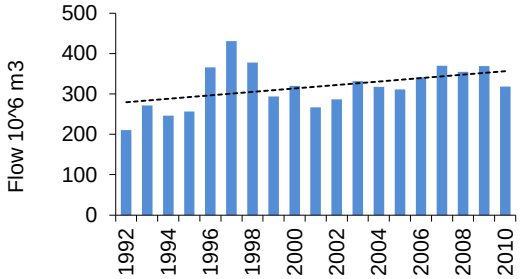


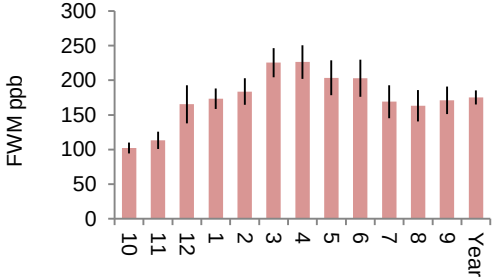


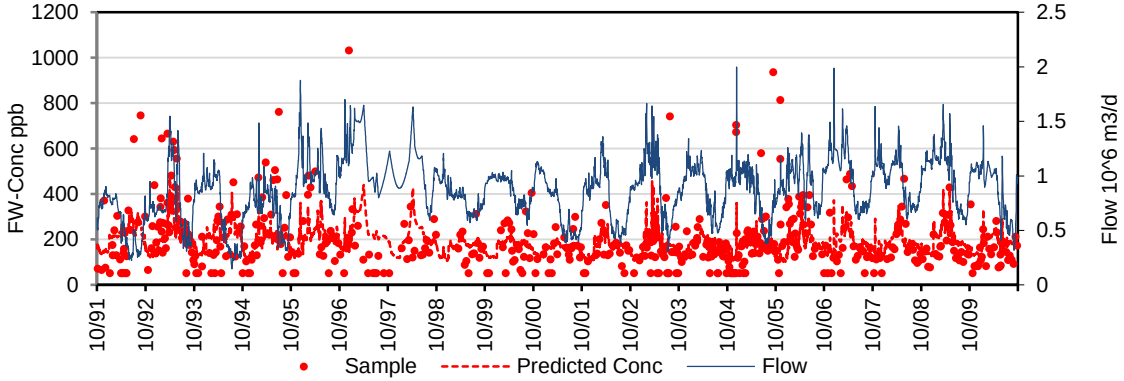


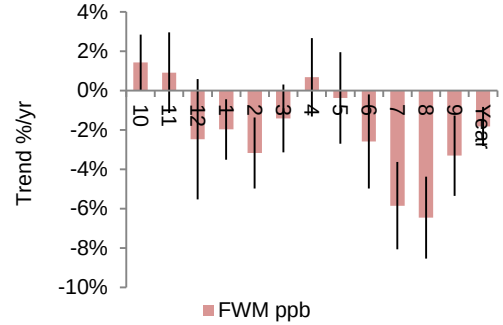






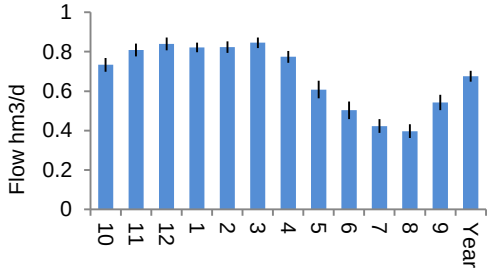


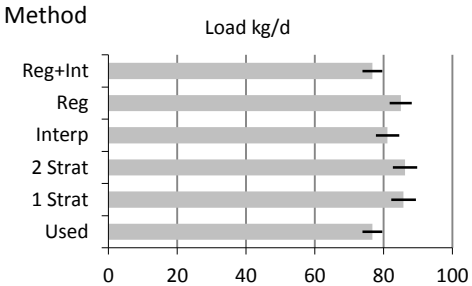


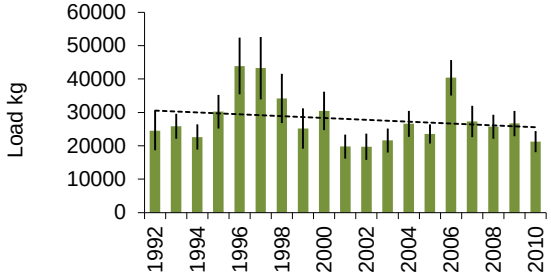


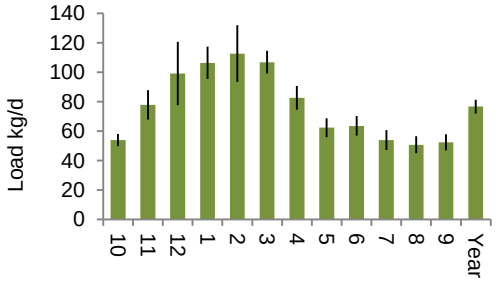
04/11/12

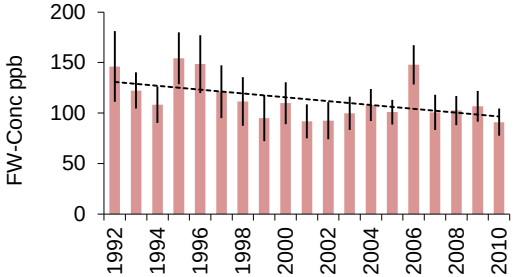
Site:	Wood_Weed	Wood River at Weed Road		Variable:	TN		
Output Period		10/01/91	09/30/10	Mean Daily Flow		0.676	10^6 m3/d
Calibration Period		10/01/91	09/30/10	Mean Daily Load		76.760	kg/d
Sample Dates		10/09/91	09/27/10	Flow-Wtd Conc		113.575	ppb
Samples	519			Relative Std Error		3.8%	
Method:	5 - Regression + Interpolation			Regression R^2		15%	
				Regression SE		0.56	

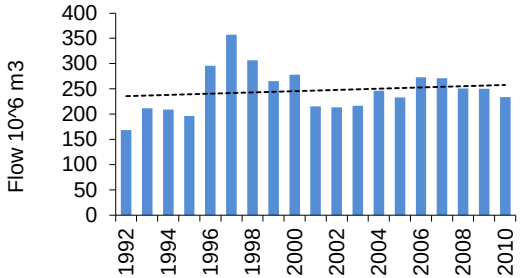


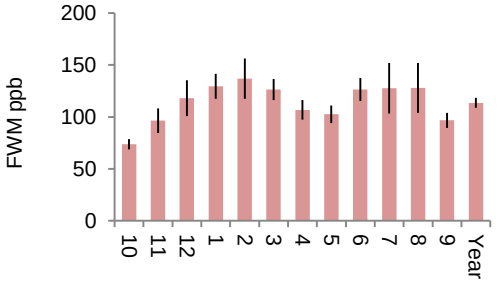


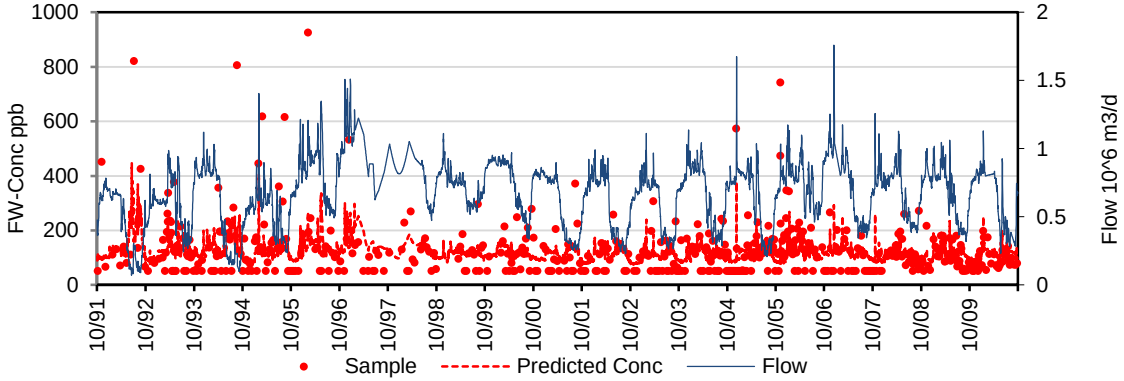


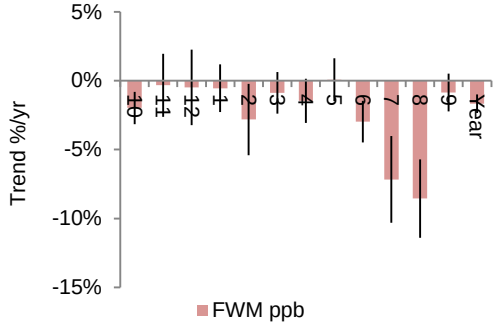












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Appendix C
Flows & Nutrient Loads from Pumped Farmlands and Wetlands

Tables

C1 Estimated Flows & Nutrient Loads from Pumped Agricultural Areas

Figures

C1 Map of Agricultural and Wetland Areas
C2 Annual Flows & Nutrient Loads from Pumped Agricultural Areas
C3 Annual Runoff and FWM Nutrient Concentrations from Pumped Areas

Table C1: Estimated Flows & Nutrient Loads from Pumped Agricultural Areas

Agency Lake Ranch

Water Yr	Area km2	Q hm3	Runoff cm	TP kg	TN kg	TP ppb	TN ppb	Notes
1992	46.4	20.5	44	5561	32655	272	1596	Kann & Walker (1999)
1993	46.4	21.1	45	5726	33624	272	1596	"
1994	46.4	21.5	46	5837	34277	272	1596	"
1995	46.4	20.9	45	5689	33411	272	1596	"
1996	46.4	23.4	50	6355	37321	272	1596	"
1997	46.4	24.8	53	6733	39537	272	1596	"
1998	46.4	22.9	49	6217	36509	272	1596	"
1999	46.4	24.7	53	6703	39360	272	1596	"
2000	46.4	28.7	62	51218	138520	1788	4835	flooded; USBR flow & conc data
2001	46.4	2.2	5	3916	10592	1788	4835	"
2002	46.4	21.7	47	25201	63381	1163	2926	"
2003	46.4	24.8	54	20148	66855	812	2693	"
2004	46.4	12.7	27	7741	36743	611	2901	"
2005	46.4	30.9	67	17124	81280	553	2627	"
2006	46.4	21.7	47	14492	65281	669	3012	"
2007	46.4	25.1	54	11456	78579	457	3133	"
2008	46.4	31.3	68	7793	72418	249	2314	"
2009	46.4	20.8	45	1834	30054	88	1448	"
2010	46.4	0.0	0	0	0			"
92-98	46.4	22.1	48	6017	35333	272	1596	
99-10	46.4	20.4	44	13969	56922	686	2795	
08-10	46.4	17.4	37	3209	34157	185	1969	
92-10	46.4	21.0	45	11039	48968	525	2330	

Williamson River Preserve (Northern Portion, Tulana Farms)

Water Yr	Area km2	Q hm3	Runoff cm	TP kg	TN kg	TP ppb	TN ppb	Notes
1992	14.7	6.47	44	6308	22662	975	3501	Kann & Walker (1999)
1993	14.7	6.67	45	6496	23335	975	3501	"
1994	14.7	6.79	46	6622	23787	975	3501	"
1995	14.7	6.62	45	6454	23186	975	3501	"
1996	14.7	7.40	50	7210	25900	975	3501	"
1997	14.7	7.84	53	7638	27438	975	3501	"
1998	11.0	5.43	49	5290	19002	975	3501	partially closed
1999	7.3	3.90	53	3802	13658	975	3501	"
2000	3.7	1.90	52	1849	6641	975	3501	"
2001	0.0	0.00		0	0			closed
2002	0.0	0.00		0	0			closed
2003	0.0	0.00		0	0			closed
2004	0.0	0.00		0	0			closed
2005	0.0	0.00		0	0			dikes breached
2006	0.0	0.00		0	0			"
2007	0.0	0.00		0	0			"
2008	0.0	0.00		0	0			goose bay
2009	0.0	0.00		0	0			"
2010	0.0	0.00		0	0			"
92-98	14.1	6.7	48	6574	23616	975	3501	
99-10	0.9	0.5	53	471	1692	975	3501	
08-10	0.0	0.0		0	0			
92-10	5.8	2.8	48	2719	9769	975	3501	

Other Areas Pumped to Lake

Water Yr	Area km2	Q hm3	Runoff cm	TP kg	TN kg	TP ppb	TN ppb	Notes
1992	45.6	20.14	44	8314	48129	413	2390	Kann & Walker, 1999
1993	45.6	20.74	45	8561	49557	413	2390	"
1994	45.6	21.14	46	8727	50519	413	2390	"
1995	45.6	20.60	45	8506	49242	413	2390	"
1996	45.6	23.02	50	9502	55006	413	2390	"
1997	45.6	24.38	53	10066	58272	413	2390	"
1998	45.6	22.51	49	9295	53808	413	2390	"
1999	45.6	24.27	53	10021	58011	413	2390	"
2000	45.6	23.61	52	9745	56417	413	2390	"
2001	45.6	20.97	46	8657	50119	413	2390	"
2002	45.6	20.48	45	8456	48954	413	2390	"
2003	45.6	20.56	45	8486	49126	413	2390	"
2004	45.6	20.60	45	8503	49225	413	2390	"
2005	45.6	20.33	45	8394	48592	413	2390	"
2006	45.6	22.27	49	9195	53229	413	2390	Calendoina flooded
2007	45.6	22.06	48	9107	52720	413	2390	"
2008	37.5	17.01	45	7021	40645	413	2390	Goose Bay flooded
2009	37.5	17.03	45	7029	40692	413	2390	"
2010	37.5	16.73	45	6907	39983	413	2390	"
92-98	45.6	21.8	48	8996	52076	413	2390	
99-10	43.6	20.5	47	8460	48976	413	2390	
08-10	37.5	16.9	45	6986	40440	413	2390	
92-10	44.4	21.0	47	8657	50118	413	2390	

Wood River Ranch Total (to Wood River or 7-Mile Canal)

Water Yr	Area km2	Q hm3	Runoff cm	TP kg	TN kg	TP ppb	TN ppb	Notes
1992	12.5	5.88	47	5649	17583	961	2992	USBLM Flow & Conc Data
1993	12.5	5.88	47	5649	17583	961	2992	"
1994	12.5	5.88	47	5649	17583	961	2992	"
1995	12.5	0.92	7	900	2536	980	2762	"
1996	12.5	5.51	44	5307	16343	963	2967	"
1997	12.5	3.86	31	3715	11440	963	2967	"
1998	12.5	0.92	7	790	3287	860	3580	
1999	12.5	0.61	5	526	2192	860	3580	"
2000	12.5	0.43	3	368	1534	860	3580	"
2001	12.5	0.00	0	0	0			"
2002	12.5	0.31	2	263	1096	860	3580	"
2003	12.5	0.00	0	0	0			"
2004	12.5	0.00	0	0	0			"
2005	12.5	0.00	0	0	0			"
2006	12.5	5.58	45	9847	23856	1764	4273	"
2007	12.5	6.51	52	11709	28876	1799	4435	"
2008	12.5	7.14	57	8478	23067	1187	3229	"
2009	12.5	4.54	36	2898	13863	638	3054	"
2010	12.5	2.71	22	2167	8690	799	3203	"
92-98	12.5	4.119	33	3951	12336	959	2995	
99-10	12.5	2.320	19	3022	8598	1303	3706	
08-10	12.5	4.8	38	4515	15207	941	3169	
92-10	12.5	2.983	24	3364	9975	1128	3345	

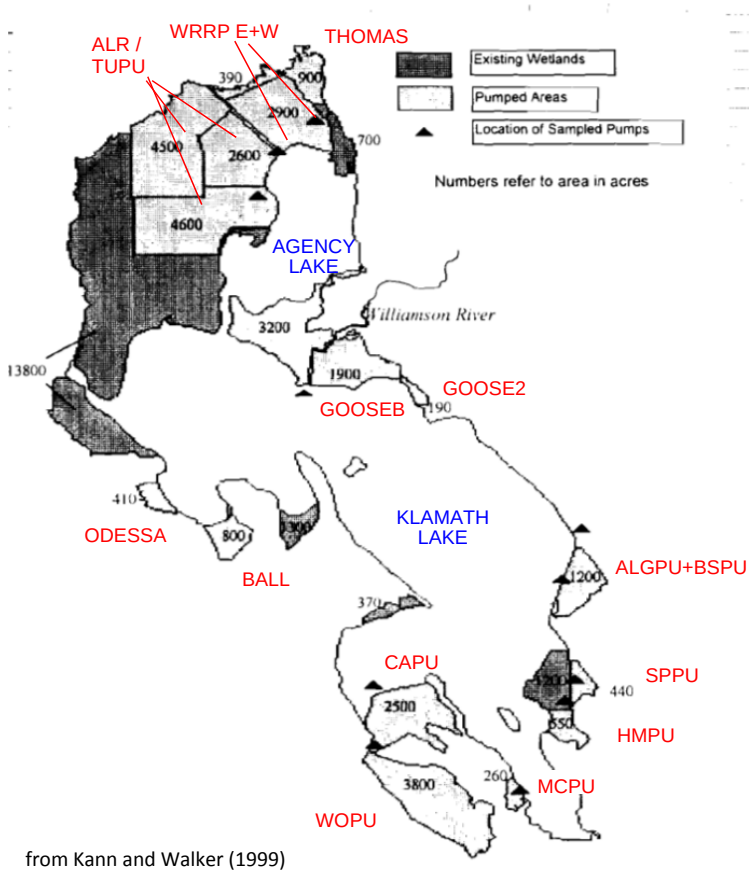
Total to Agency or Klamath Lake = ALR + Williamson RP + Other Pumped (Excluding Wood River Ranch)

Water Yr	Area km2	Q hm3	Runoff cm	TP kg	TN kg	TP ppb	TN ppb	Notes
1992	106.7	47.1	44	20183	103446	429	2198	computed
1993	106.7	48.5	45	20782	106517	429	2198	"
1994	106.7	49.4	46	21185	108583	429	2198	"
1995	106.7	48.2	45	20650	105839	429	2198	"
1996	106.7	53.8	50	23067	118228	429	2198	"
1997	106.7	57.0	53	24436	125247	429	2198	"
1998	103.0	50.8	49	20801	109320	409	2151	"
1999	99.3	52.8	53	20525	111029	389	2102	"
2000	95.7	54.2	57	62812	201578	1160	3722	"
2001	92.0	23.2	25	12574	60710	543	2621	"
2002	92.0	42.1	46	33657	112335	799	2666	"
2003	92.0	45.4	49	28634	115981	631	2556	"
2004	92.0	33.3	36	16244	85968	488	2585	"
2005	92.0	51.3	56	25518	129872	498	2533	"
2006	92.0	43.9	48	23687	118510	539	2697	"
2007	92.0	47.1	51	20563	131299	436	2785	"
2008	83.8	48.3	58	14814	113062	307	2341	"
2009	83.8	37.8	45	8863	70747	235	1872	"
2010	83.8	16.7	20	6907	39983	413	2390	"
92-98	106.1	50.7	48	21586	111026	426	2191	
99-10	90.9	41.3	45	22900	107589	554	2602	
08-10	83.8	34.3	41	10195	74597	297	2177	
92-10	96.5	44.8	46	22416	108855	501	2431	

Total to Agency or Klamath Lake, Kann & Walker (1999)

Water Yr	Area km2	Q hm3	Runoff cm	TP kg	TN kg	TP ppb	TN ppb	
1992	109.1	48.0	44	18607	112747	388	2351	
1993	109.1	52.8	48	20475	124063	388	2351	
1994	109.1	47.9	44	18589	112637	388	2351	
1995	109.1	51.5	47	19980	121064	388	2351	
1996	109.1	55.8	51	21642	131137	388	2351	
1997	109.1	57.1	52	22167	134316	388	2351	
1998	109.1	56.8	52	22044	133573	388	2351	
92-98	109.1	52.8	48	20501	124219	388	2351	Kann & Walker (1999)
Updated	106.1	50.7		21586	111026	426	2191	updated
Change	-3.0	-2.2		1086	-13194	38	-160	differences due to updated dr. areas
Change %	-3%	-4%		5%	-11%	10%	-7%	

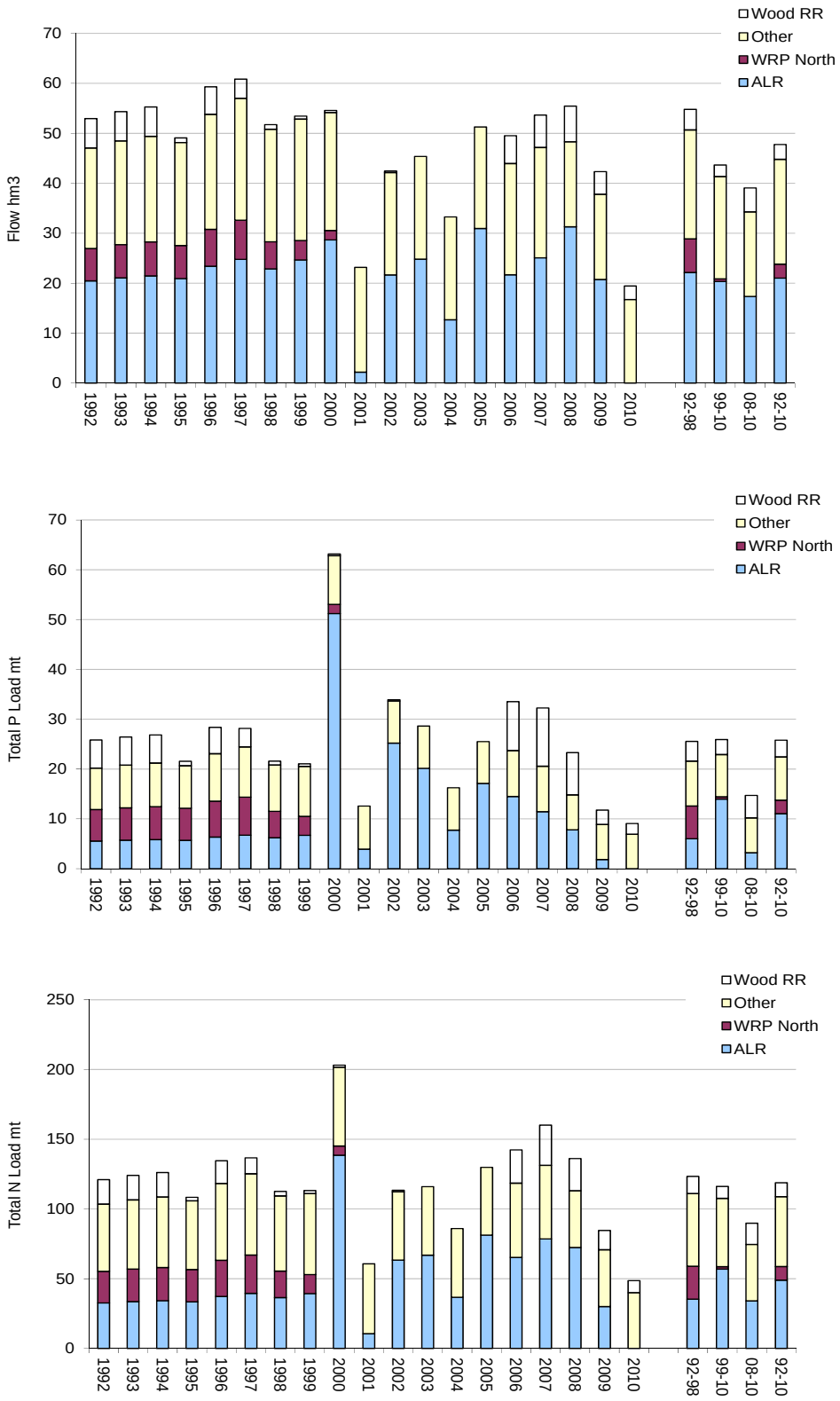
Figure C1: Map of Agricultural and Wetland Areas



from Kann and Walker (1999)

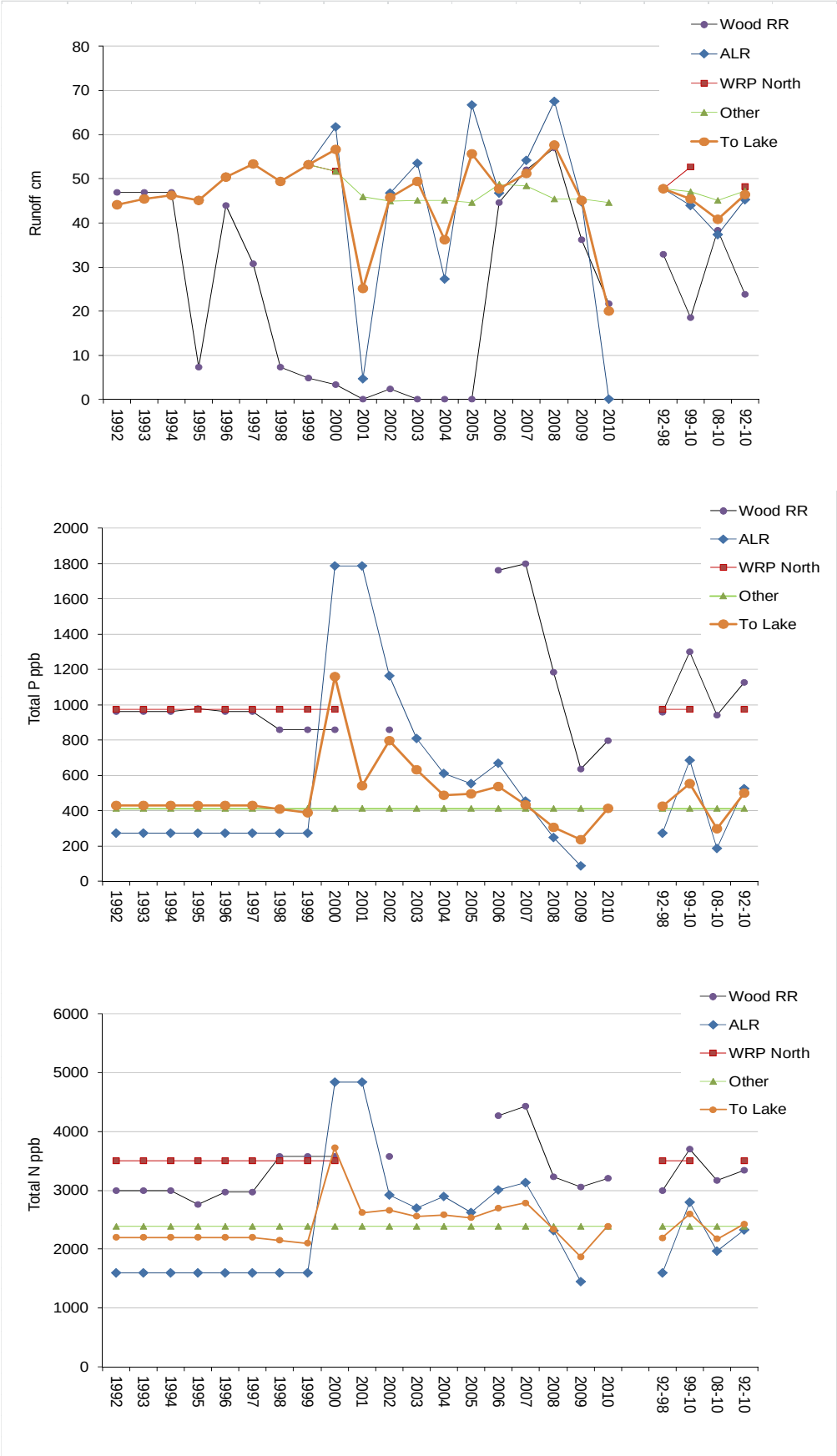
					Klamath Tribes Data (1991-1998)			
		Wetland	**Area**	**Area**	**Sampled**	**Nutrient Conc**		
Area	**Site**	**Restoration**	**Acres**	**km^2**	**km^2**	**TP ppb**	**TN ppb**	**Notes**
Agency Lake Ranch	TUPU	2000-	11,450	46.4	46.4	272	1596	flooded 2000-
Williamson River	WRPU	1998-	3,623	14.7	14.7	975	3501	closed 1998-
Goose Bay	GOOSEB	2007-	1,850	7.5				closed 2007-
Goose Bay 2	GOOSE2	2007-	165	0.7				closed 2007-
Agoma+Barkley	ALG+BSPU		1,168	4.7	4.7	446	2468	
Shady Pine	SPPU		385	1.6	1.6	330	2296	
Hanks	HMPU		348	1.4	1.4	141	678	
McCormack	MCPU		249	1.0	1.0	321	1197	
Caledonia	CAPU		2,136	8.7	8.7	186	1764	flooded 2006
Wocus	WOPU		3,789	15.3	15.3	185	4169	
Ball			783	3.2				
Odessa	ODPU		398	1.6	1.6	79	1627	
Total Draining Directly into Lakes			*26,345*	*107*	*95.3*	*363*	*2356*	area-weighted mean
Wood River Ranch	WRRPW		2,739	11.1	11.1	802	2689	data, 2007-2010
Wood River Ranch	WRRPE		356	1.4	1.4	703	2339	"
Thomas			1,069	4.3				
Total Draining into Wood or Sevenmile Canal			*4,164*	*16.9*	*12.5*	*791*	*2649*	area-weighted mean
Grand Total			**30,509**	**123.5**	**107.9**	**413**	**2390**	area-weighted mean
Walker & Kann (1999)					109.1	388	2351	

Figure C2: Annual Flows & Nutrient Loads from Pumped Agricultural Areas



Wood River Ranch pumps to Wood River & Sevenmile Canal; others pump directly to lake

Figure C3: Annual Runoff and FWM Nutrient Concentrations from Pumped Areas



Appendix D

Spatial Variations in Flow, Nutrient Loads, & Nutrient Concentrations

Tables

D1 Monitoring Station Index

D2 Summary of Paired Concentration & Flow Data by Site and Year, WY 2002-2010

Figures

D1 Klamath Tribes Monitoring Network

D2 Monitoring Network

D3 Monitoring Network - Wood River and Sevenmile Creek Sites

D4 Nutrient Concentrations in Springs & Relatively Unimpacted Watersheds

D5 Spatial Variations in Flow, Nutrient Loads, and FWM Concentrations, Water Year

D6 Spatial Variations in Flow, Nutrient Loads, and FWM Concentrations, October-April

D7 Spatial Variations in Flow, Nutrient Loads, and FWM Concentrations, May-September

D8 Alternative Background TP Concentration Estimates

D9 Alternative Background TN Concentration Estimates

Table D1: Monitoring Station Index

Site	Alt Code	Daily Flow	Description	Category	Latitude	Longitude	Area_SqKm
Major Sites Used in Lake Mass Balance Analysis (1992-2010)							
Wood_Weed	WR3000	Wood_Weed	Wood River at Weed Road	Major	42.6464	-121.9956	333
Wood_Dike	WR4000	Wood_Dike	Wood River at Dike Road	Major	42.5815	-121.9417	394
7Mile_Dike	WR5000	7Mile_Dike	Sevenmile Canal at Dike Road	Major	42.5822	-121.9708	143
Sprague	WR1000	Sprague	Sprague River at Kircher's Bridge	Major	42.5676	-121.8656	4,171
Williamson	WR6000	Williamson	Williamson River at Williamson River Rd. Bridge	Major	42.5144	-121.9166	3,641
Outlet	PM, FRBR	Outlet	Comb. of Fremont Bridge (USBR & KT) & Pelican Marina	Major	42.2386	-121.8061	9,771
Minor Sites Used in Subwatershed Analysis (2002-2010)							
Wood_Dixon	WODX	Sample Dates	Wood River at Dixon Road	Minor	42.7338	-121.9883	4
Annie_Park	WR2000	Sample Dates	Annie Creek at Park Boundary	Minor	42.7686	-122.0606	73
Annie_Wood	ACAW	Sample Dates	Annie Creek above Wood River	Minor	42.7215	-121.9898	168
CC_Agency	CCAA	Sample Dates	Crooked Creek above Agency Creek	Minor	42.6271	-121.9394	8
CC_Ranch	CCBR	Sample Dates	Crooked Creek below Ranch Creek	Minor	42.6084	-121.9414	15
7Mile_FS	SMFS	Sample Dates	Sevenmile Creek at Forest Service Gage	Minor	42.7260	-122.0901	75
7Mile_Seven	SMSR	Sample Dates	Sevenmile Creek at Sevenmile Road	Minor	42.6684	-122.0734	92
West_7Mile	WCAS	Sample Dates	West Canal above Sevenmile Creek	Minor	42.6509	-122.0514	N/A
4Mile_LW	FCLW	Sample Dates	Fourmile Canal at Lower Weir	Minor	42.5716	-122.0517	123
Sprague_NF	SR0040	Sample Dates	NF Sprague @ 3411 Rd	Minor	42.4970	-121.0056	186
Sprague_SF	SR0050	Sample Dates	SF Sprague @ Picnic Area	Minor	42.3761	-120.9694	280
Sprague_Godowa	SR0060	Sample Dates	Sprague R @ Godowa Rd	Minor	42.4604	-121.2699	1,471
Sycan_Sprague	SR0070	Sample Dates	Sycan R @ Drews Rd	Minor	42.4855	-121.2785	1,445
Sprague_Lone	SR0080	Sample Dates	Sprague R @ Lone Pine	Minor	42.5505	-121.6176	3,697
Sprague_Power	SR0090	Sample Dates	Sprague R @ Power Plant	Minor	42.5846	-121.8419	4,120
Sprague_NF_Ivory	SR0140	Sample Dates	N. Fork Sprague R @ Ivory Pine	Minor	42.4560	-121.1094	210
Sprague_SF_Ivory	SR0150	Sample Dates	SF Sprague @ Ivory Pine	Minor	42.4394	-121.0954	755
Spring Sites Used for Estimating Ungauged Loads							
4MSP	4MSP		Fourmile Springs	Spring			
HASP	HASP		Harriman Spring	Spring			
MASP	MASP		Malone Spring	Spring			
MESP	MESP		Mares Egg Springs	Spring			
ODCR	ODCR		Odessa Creek	Spring			
OXSP	OXSP		Ouxy Springs	Spring			
SUSP	SUSP		Sucker Springs	Spring			
TESP	TESP		Tecumseh Springs	Spring			
Agricultural Pumps							
ALGPU	ALGPU		Rattlesnake Point Pump (Algoma Pump)	Pump			
BSPU	BSPU		Barkley Pump	Pump			
CAPU	CAPU		Caledonia Pump - Draining Caledonia marsh	Pump			
HMPU	HMPU		Hanks Marsh Pump (draining ag area below marsh)	Pump			
MCPS	MCPS		McCornack Pump South	Pump			
MCPU	MCPU		McCornack Pump	Pump			
ODPU	ODPU		Odessa Pump	Pump			
RYPU	RYPU		Wocus,Caledonia Canal South Pump (Running Y Pump South)	Pump			
SPPU	SPPU		Shady Pine Pump (discharging into the marsh)	Pump			
TPD	TPD		Thomas Pump Ditch	Pump			
TUPU	TUPU		Tulana Ranch Pump (into Agency L. south of Sevenmile Canal)	Pump			
WRRPE	WRRPE		Wood River Ranch Pump East (into Wood River)	Pump			
WRRPW	WRRPW		Wood River Ranch Pump West (into Sevenmile Canal)	Pump			
Lake & Outlet Sites Used in Mass Balance Calculations							
FRBR	KL0001		Lake Outlet at Freemont Bridge	Outlet			
PM	KL0002		Pelican Marina / Alt Outlet	Lake			
NB	KL0003		North Buck Island	Lake			
WB	KL0004		Wocus Bay	Lake			
ML	KL0005		Mid Lake	Lake			
ER	KL0006		Eagle ridge	Lake			
SB	KL0007		Shoalwater Bay	Lake			
MN	KL0008		Mid North	Lake			
CP	KL0009		Coon Point	Lake			
AS	KL0010		Agency South	Lake			
AN	KL0011		Agency North	Lake			

Table D2: Summary of Paired Concentration & Flow Data by Site and Year, WY 2002-2010

	Water Year >>									
Site	2002	2003	2004	2005	2006	2007	2008	2009	2010	**Total**
Number of Paired Concentration & Flow Measurements										
Annie_Park	8	13	38	25	20	24	22	24	29	203
Annie_Wood	1	15	17							33
Wood_Dixon	2	15	23	14						54
Wood_Weed	19	27	35	51	43	25	38	37	34	309
CC_Agency	3	15	2							20
CC_Ranch			13				13	12	10	48
Wood_Dike	19	27	34	53	34	25	24	25	32	273
7Mile_FS	3	1	13		3	1				21
7Mile_Seven	1	16	18	27	29	26	20	12	14	163
West_7Mile			11	27	28	26	19	12	14	137
7Mile_Dike	9	21	29	46	42	43	27	24	32	273
4Mile_LW			19	25						44
Sycan_Sprague	25	27	18	24	27	22	22	25	23	213
Sprague_SF	19	26	17	20	21	20	18	19	23	183
Sprague_NF	22	29	20	23	21	20	20	23	21	199
Sprague_Godowa	23	29	24	27	27	24	23	27	22	226
Sprague_Lone	23	30	24	26	24	21	22	22	23	215
Sprague_Power	25	30	23	26	26	21	18	31	25	225
Sprague	19	13	19	26	24	25	24	24	32	206
Williamson	19	11	19	25	25	24	24	23	32	202
Mean Flow (cfs)										
Annie_Park	52	45	62	51	63	63	61	55	52	57
Annie_Wood	4	28	29							28
Wood_Dixon	177	178	176	193						181
Wood_Weed	232	229	250	261	322	296	262	262	261	267
CC_Agency	64	64	62							64
CC_Ranch			77				83	86	88	83
Wood_Dike	326	347	326	356	410	405	395	425	354	370
7Mile_FS	18	17	23		22	18				21
7Mile_Seven	24	53	50	69	79	79	68	62	49	66
West_7Mile			61	74	92	103	74	47	50	77
7Mile_Dike	66	121	75	90	164	145	111	128	131	120
4Mile_LW			72	77						75
Sycan_Sprague	95	98	87	76	439	129	155	68	61	139
Sprague_SF	48	55	47	37	117	56	63	47	52	58
Sprague_NF	68	82	66	67	76	88	54	57	70	70
Sprague_Godowa	357	378	329	464	590	348	342	285	270	378
Sprague_Lone	432	499	415	411	1360	590	612	422	327	562
Sprague_Power	391	450	368	451	1182	499	477	428	383	516
Sprague	377	297	372	412	944	420	510	370	363	460
Williamson	788	716	709	722	1367	774	887	786	734	841
Flow-Weighted-Mean TP Conc (ppb)										
Annie_Park	45	43	54	52	58	73	55	57	58	57
Annie_Wood	145	73	66							70
Wood_Dixon	71	70	68	76						71
Wood_Weed	90	85	87	89	94	81	88	83	88	88
CC_Agency	97	104	107							103
CC_Ranch			102				104	106	112	106
Wood_Dike	112	99	112	114	135	117	110	103	104	113
7Mile_FS	70	77	59		61	82				62
7Mile_Seven	88	72	69	82	76	75	74	68	116	78
West_7Mile			149	261	229	230	181	165	148	215
7Mile_Dike	246	148	156	144	200	189	146	143	131	166
4Mile_LW			91	130						114
Sycan_Sprague	56	53	72	65	64	67	50	49	45	60
Sprague_SF	48	45	38	35	50	40	45	43	47	45
Sprague_NF	51	48	46	45	46	46	50	54	51	48
Sprague_Godowa	82	77	124	82	82	94	81	60	59	83
Sprague_Lone	77	84	108	76	90	76	77	62	63	82
Sprague_Power	76	81	94	83	104	89	81	70	66	86
Sprague	72	67	69	83	84	63	72	63	67	73
Williamson	87	83	85	97	93	79	81	76	86	86
Flow-Weighted-Mean TN Conc (ppb)										
Annie_Park	123	92	91	89	69	101	52	73	61	80
Annie_Wood	720	189	160							175
Wood_Dixon	50	57	60	104						71
Wood_Weed	96	102	113	118	186	103	110	110	90	120
CC_Agency	210	119	104							131
CC_Ranch			94				149	82	113	110
Wood_Dike	154	140	156	204	283	188	170	186	151	188
7Mile_FS	117	50	57		71	50				65
7Mile_Seven	410	171	61	111	134	96	65	30	51	99
West_7Mile			516	675	897	701	481	513	465	678
7Mile_Dike	760	527	511	552	746	671	508	626	439	603
4Mile_LW			342	530						452
Sycan_Sprague	515	516	590	610	467	491	466	518	474	496
Sprague_SF	239	191	199	166	196	168	182	219	216	197
Sprague_NF	132	129	128	118	122	136	87	166	152	131
Sprague_Godowa	347	373	400	374	340	353	293	238	226	335
Sprague_Lone	436	439	446	386	430	441	433	387	325	421
Sprague_Power	433	446	428	439	473	448	423	381	320	431
Sprague	349	331	362	396	372	295	378	327	288	348
Williamson	388	396	330	339	443	283	345	298	227	341

Figure D1: **Klamath Tribes Monitoring Network**

Site #	Site Code	Alt Code	Description
1	3MCR		Threemile Creek
2	4MCA		Four Mile Canal
3	4MSP	Spring	Four Mile Spring
4	7MCA	WR5000	Seven Mile Canal
5	ALGOMA BRIDG		Hwy 97 where Alogoma drains to UKL
6	ALGPU	Pump	Rattlesnake Point Pump (Algoma Pump)
7	ANCR		Annie Creek at USFS Bridge near Snow park
8	BSCA		Barkely Canal
9	BSFD		Barkley Field
10	BSPU	Pump	Barkley Pump
11	BSSP	Spring	Barkley Springs @ Hagelstein Park
12	CACA		Caledonia Canal (Lakeside of Hwy 140)
13	CAPU	Pump	Caledonia Pump - Draining Caledonia marsh
14	CC62		Crooked Creek at Hwy 62 Bridge
15	CCLO		Crystal Creek - Lodge Channel
16	CCPA		Crooked Creek at Paiges
17	CHCR		Cherry Creek.
18	FRBR	KL0001	Freemont Bridge at Outlet of Klamath Lake
19	HAFD		Hanks Field
20	HAMA		Hanks Marsh (in marsh east of 97)
21	HASP	Spring	Harriman Spring
22	HMPU	Pump	Hanks Marsh Pump (draining ag area below marsh)
23	MASP	Spring	Malone Spring
24	MCPS	Pump	McCornack Pump South
25	MCPU	Pump	McCornack Pump
26	MESP	Spring	Mares Egg Spring
27	MOCA		Modoc Canal
28	ODCR	Spring	Odessa Creek
29	ODESSA CANAL		Odessa Canal draining to pump
30	ODPU	Pump	Odessa Pump
31	OXSP	Spring	Ouxy Springs
32	ROCR		Rock Creek (Draining to Crystal Creek)
33	RYPU	Pump	Wocus,Caledonia Canal South Pmp (Y Pump South)
34	SPPU	Pump	Shady Pine Pump (discharging into the marsh)
35	SRKB	WR1000	Sprague @ Kirchers
36	SUSP	Spring	Sucker Springs
37	TESP	Spring	Tecumseh SPRINGS
38	TULANA PUMP	Pump	TULANA PUMP (LAKESIDE)
39	TUPU	Pump	Tulana Ranch Pump (into Agency south of 7-Mile Can.)
40	VACR		Varney Creek
41	WODR	WR4000	Wood River @ AGENCY LAKE (Dike Rd.)
42	WOWR	WR3000	Wood River (WEED ROAD)
43	WODX		Wood River Dixon Road
44	WRRPE	Pump	Wood River Ranch PUMP EAST (into Wood R)
45	WRRPW	Pump	Wood River Ranch PUMP WEST (into 7-Mile Canal)
46	WRST	WR6000	Williamsom River @ Store (Bridge on Modoc Pt. Rd.

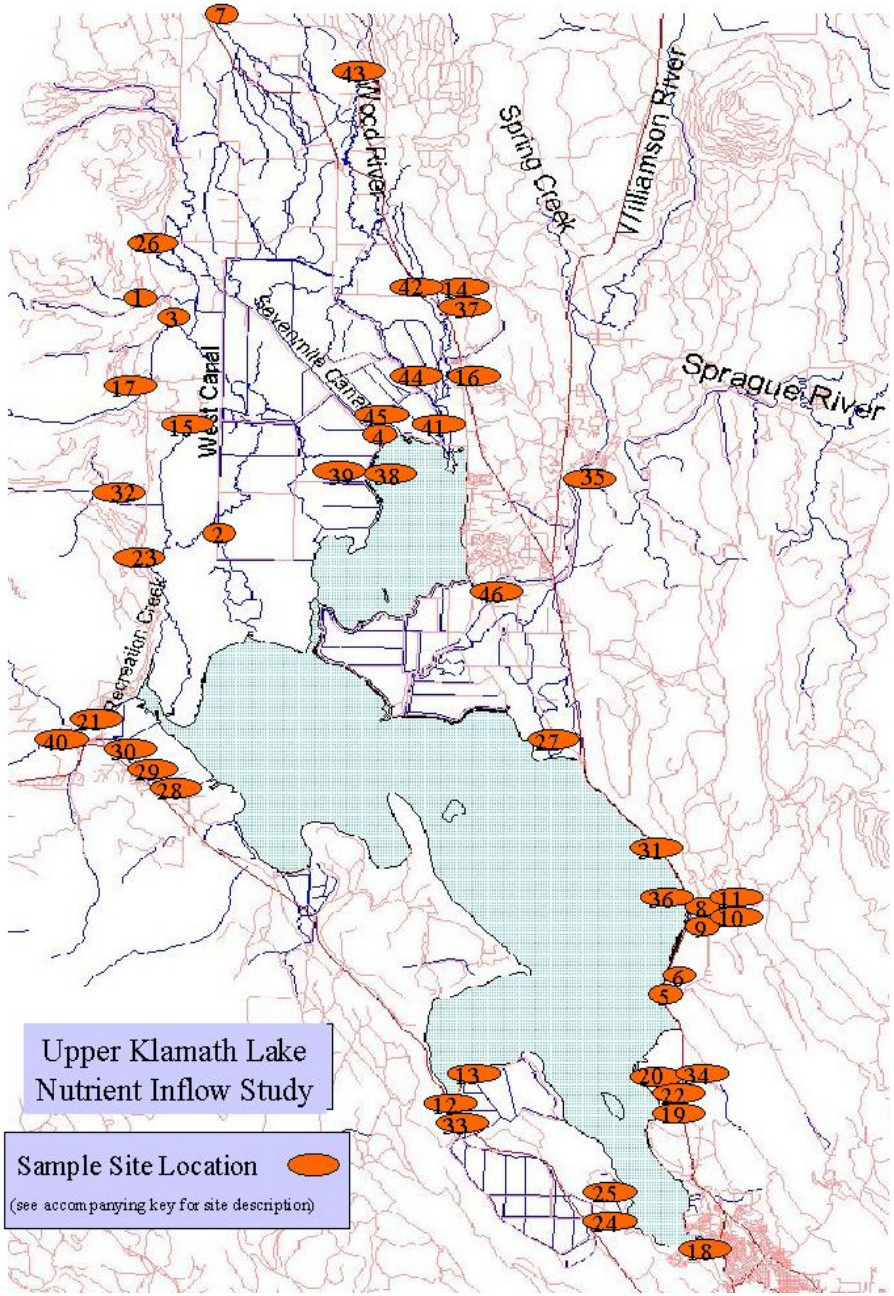


Figure D2: Monitoring Network

Sites Used in Spatial Analysis and Nutrient Budgets

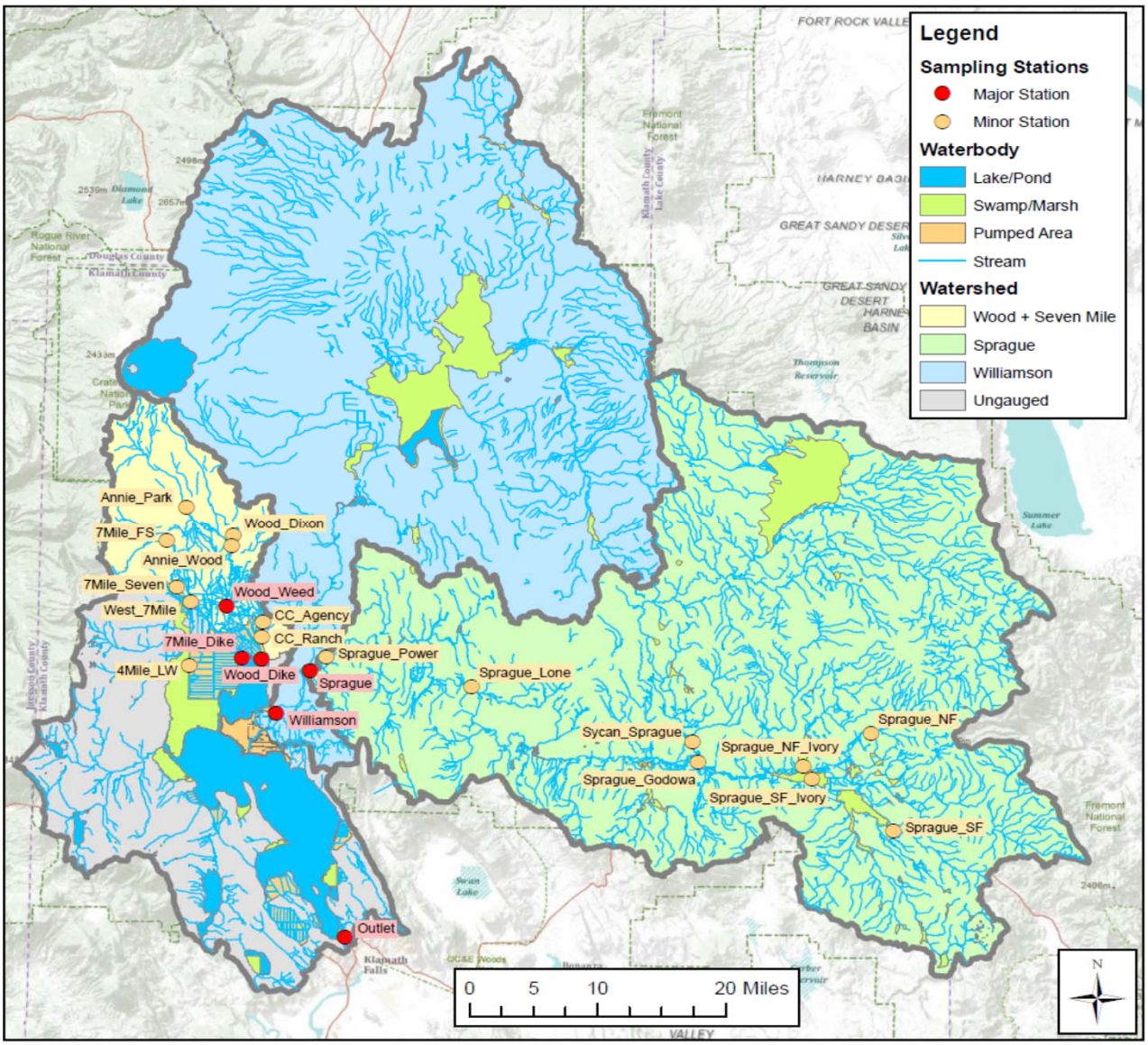


Figure D3: Monitoring Network - Wood River and Sevenmile Creek Sites

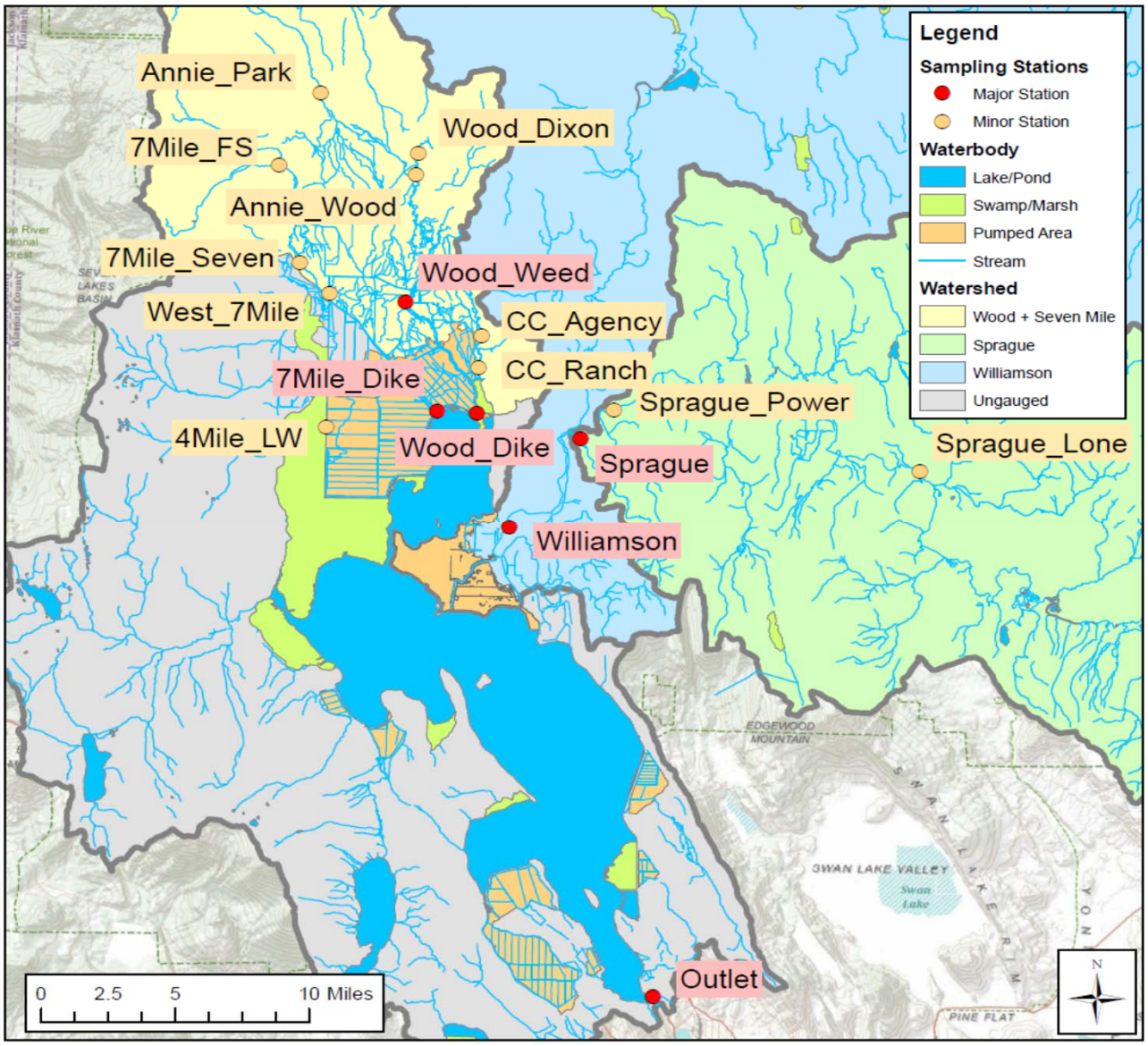
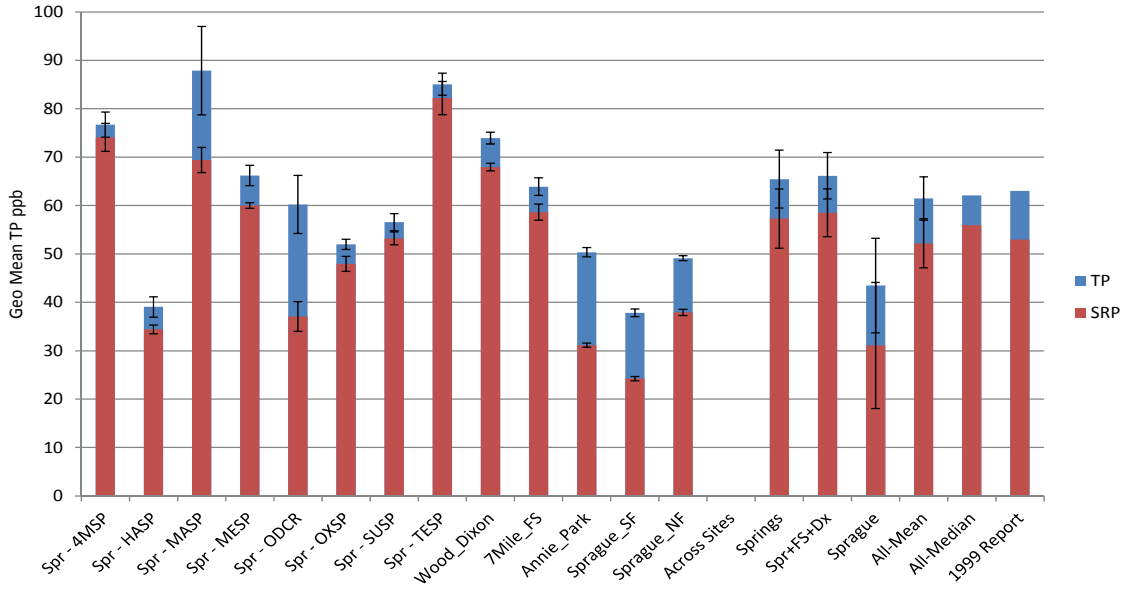


Figure D4: Nutrient Concentrations in Springs & Relatively Unimpacted Watersheds

		Total P			SRP			Total Nitrogen			Inorganic Nitrogen		
Label	Site	Count	Mean	Geo Mn	Count	Mean	Geo Mn	Count	Mean	Geo Mn	Count	Mean	Geo Mn
Spring	4MSP	5	77	77	4	74	74	5	91	78	4	30	29
Spring	HASP	6	39	39	5	34	34	6	85	73	4	62	62
Spring	MASP	6	90	88	5	70	69	6	190	126	4	30	26
Spring	MESP	6	66	66	5	60	60	6	50	50	4	19	18
Spring	ODCR	6	62	60	5	38	37	6	375	196	4	108	53
Spring	OXSP	4	52	52	3	48	48	4	79	67	3	90	88
Spring	SUSP	6	57	57	5	53	53	6	157	107	4	98	95
Spring	TESP	7	85	85	4	82	82	7	126	95	4	28	24
Wood_Dixon	WRDX	92	75	74	91	68	68	92	81	68	91	41	33
7Mile_FS	SMFS	41	65	64	41	60	59	41	61	55	41	15	13
Annie_Park	WR2000	251	54	50	250	32	31	251	84	63	250	23	21
Sprague_SF	SR0050	241	40	38	241	25	24	241	157	130	241	20	17
Sprague_NF	SR0040	252	50	49	252	39	38	252	115	97	252	25	23
Mean Values Across Sites													
Spring Sites	*	46	66	65	36	57	57	46	144	99	31	58	49
Spr+Dix+FS		179	**67**	66	168	**59**	59	179	**130**	92	163	**52**	44
Sprague		493	45	43	493	32	31	493	136	113	493	23	20
All-Mean		923	62	61	911	53	52	923	127	93	906	45	39
All-Median		923	62	62	911	53	56	923	91	75	906	30	28
1999 Report				63			53			119			57

* Values Used to Estimate Concentrations in Ungauged Inflows to Lake



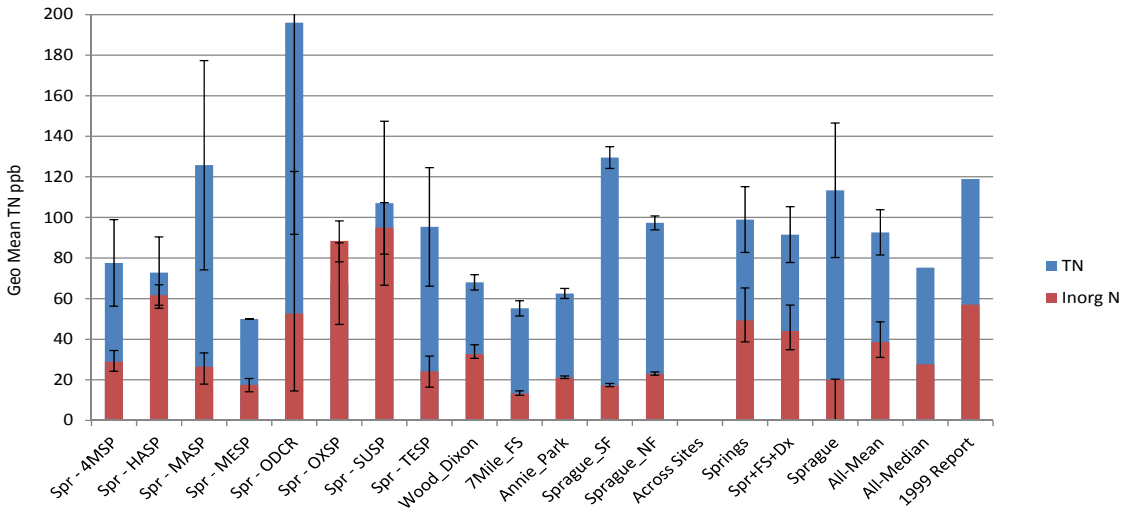


Figure D5: Spatial Variations in Flow, Nutrient Loads, and FWM Concentrations, Water Year

Water Years: 2002 thru 2010 Season: All

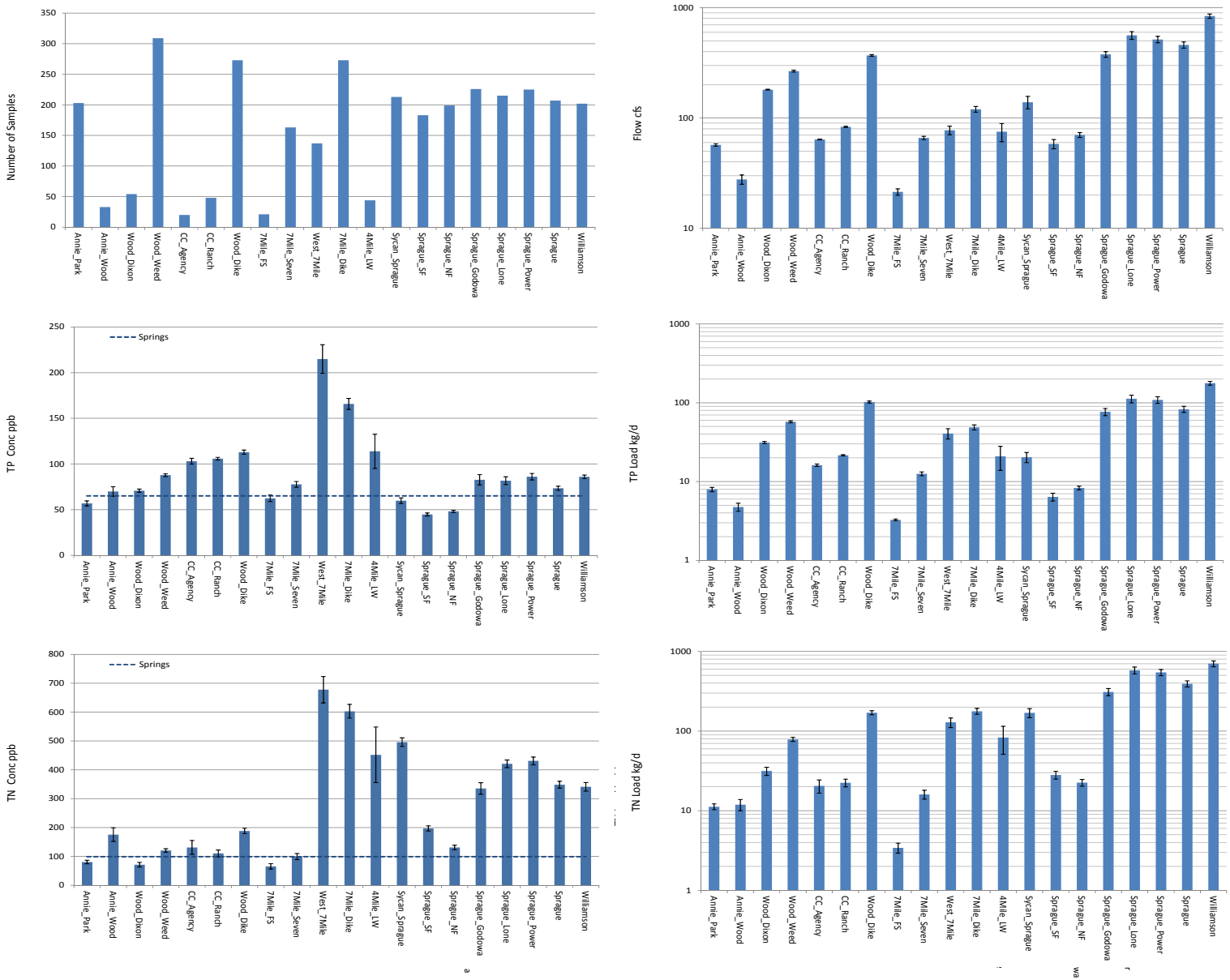


Figure D6: Spatial Variations in Flow, Nutrient Loads, and FWM Concentrations, October-April

Water Years: 2002 thru 2010 Season: Oct-April

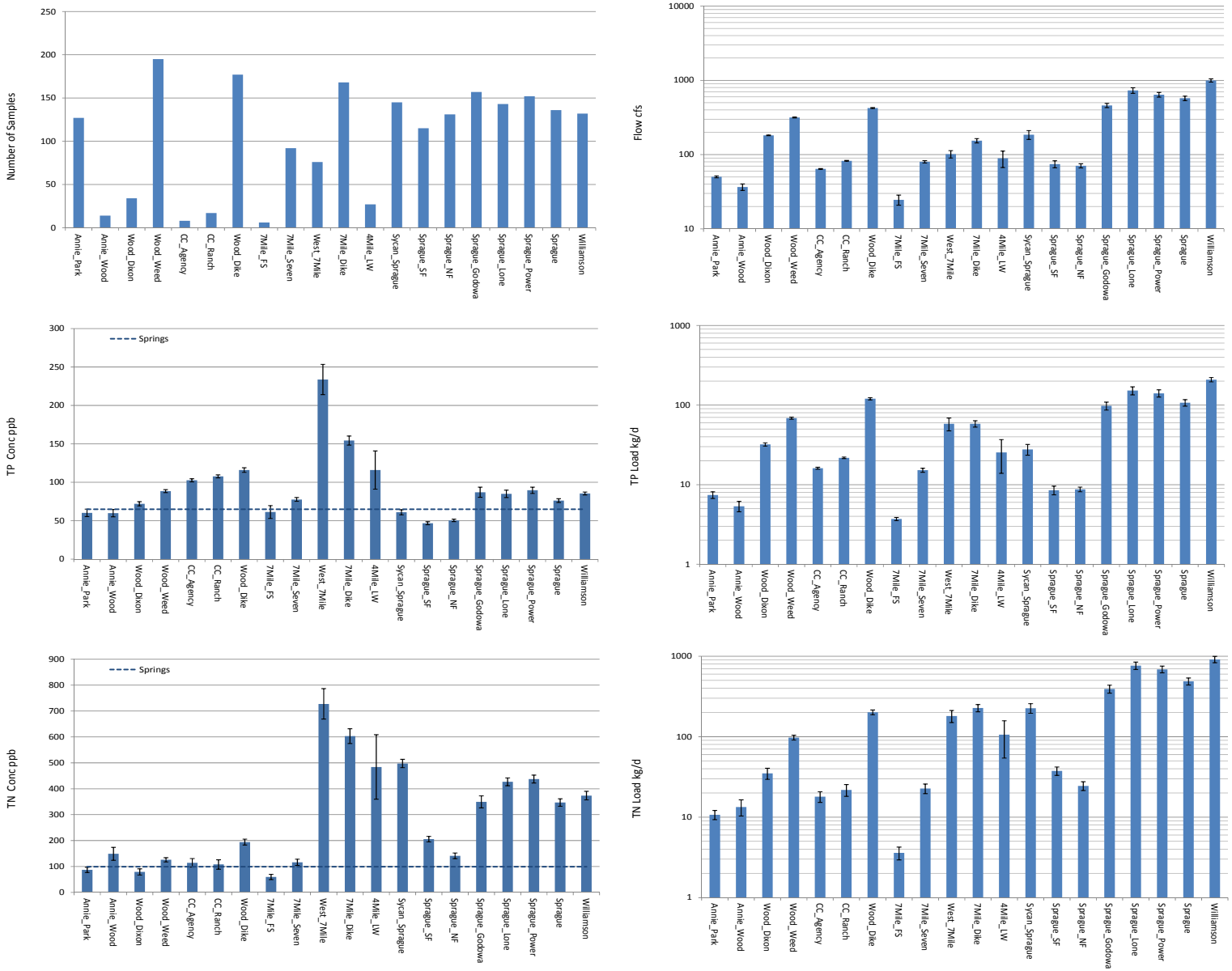


Figure D7: Spatial Variations in Flow, Nutrient Loads, and FWM Concentrations, May-September

Water Years: 2002 thru 2010 Season: May-Sept

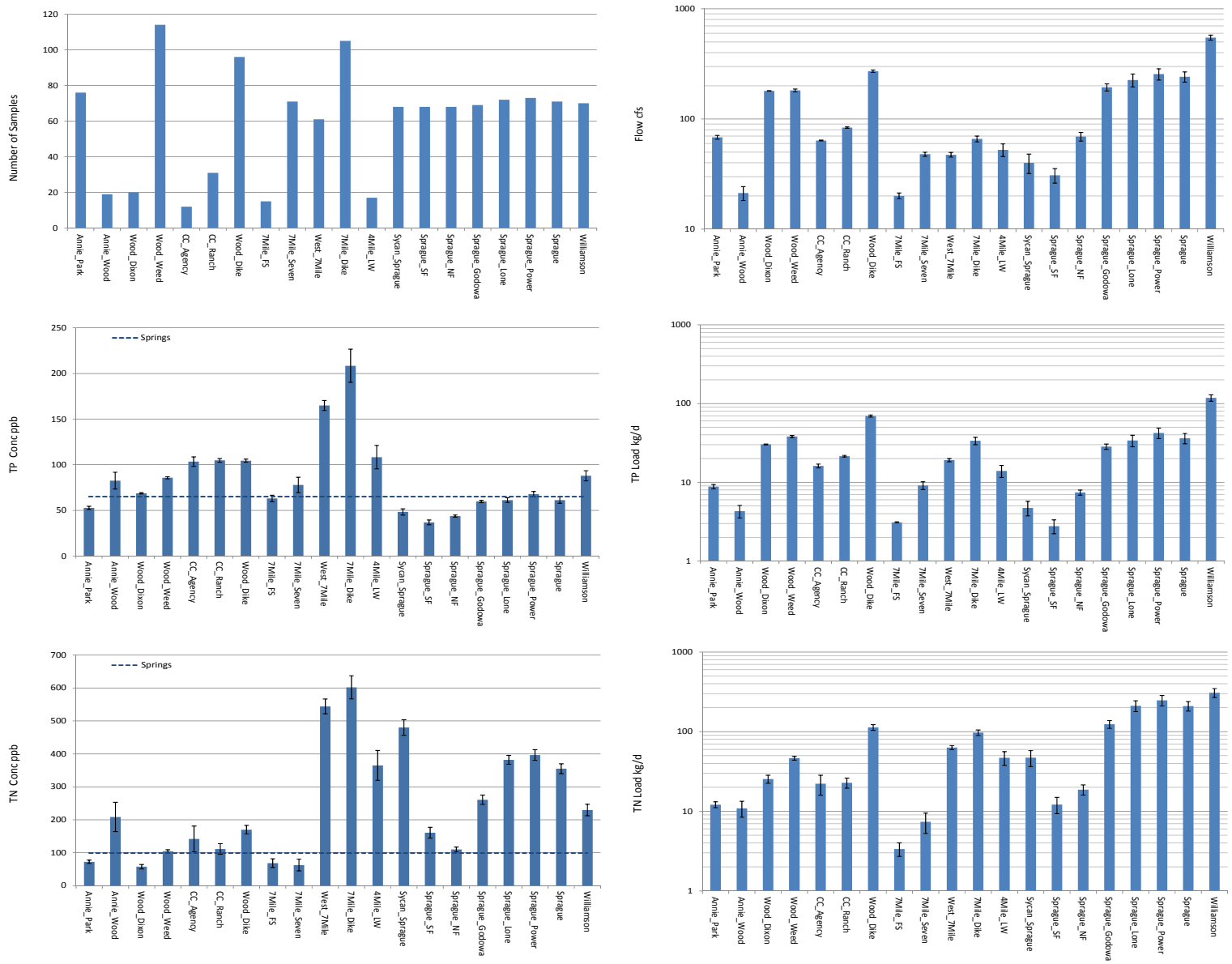
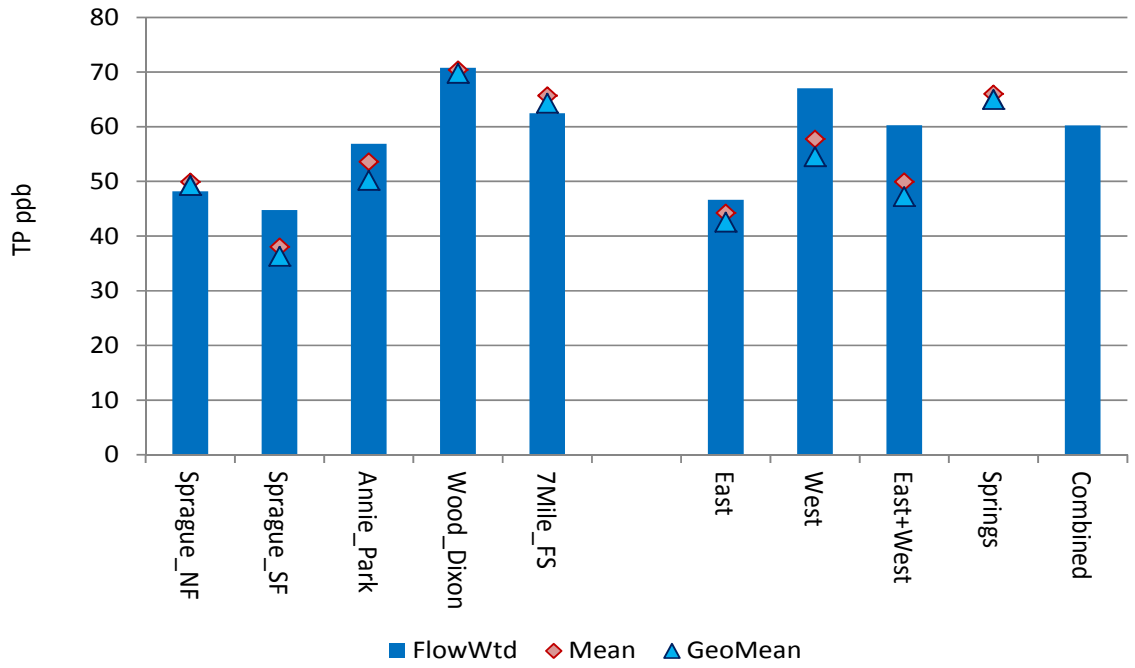


Figure D8: Alternative Background TP Concentration Estimates

Background TP Concentration Estimated from Data Collected at Springs and Tributary Headwater Sites

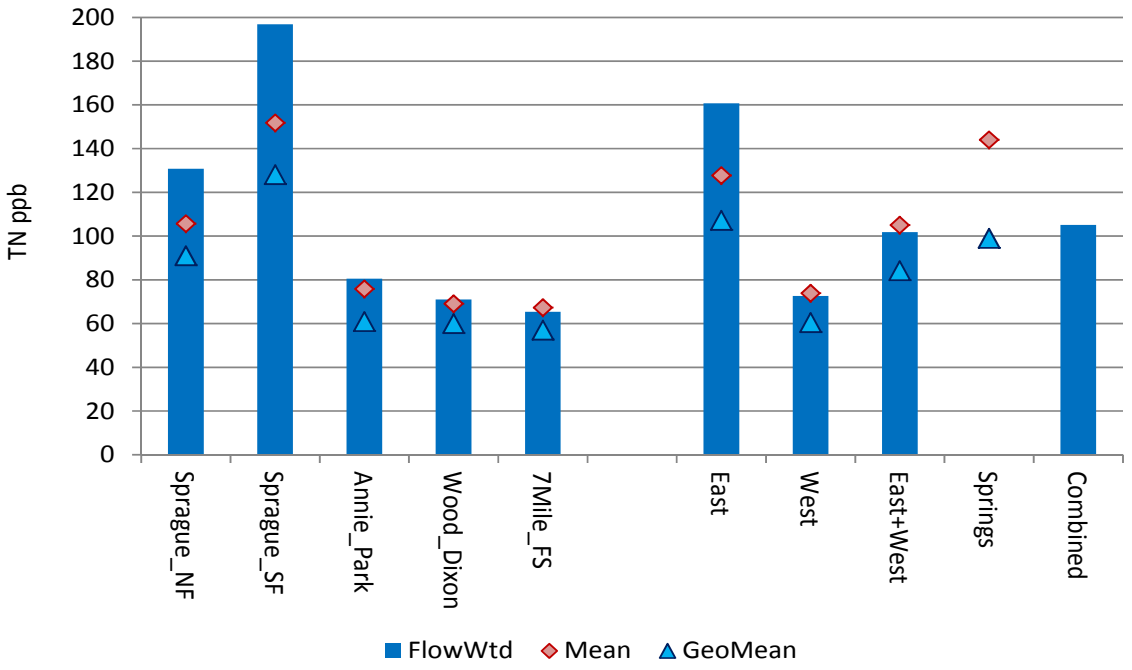


Estimate of Background Concs	Flow	Load	FWM Conc	
Watershed	hm3/yr	mt/yr	ppb	Background Conc Estimate
Sprague Total	502	23	47	East = Sprague N+S Fork
Williamson + Wood + 7 Mile + Pumps	809	54	67	West = An_Pk+Wd_Dix+7Mi_FS
Ungauged	280	18	65	Springs
Total External Inflow to Lake	1591	96	60	Combined FWM
Assumed in Update	1591	103	65	
Walker & Kann (1999)	1653	104	63	
TMDL Goal, ODEQ (2002)	1653	109	66	

Subbasin FWMs computed using flows paired with biweekly samples, WY 2002-2010.
Combined FWM is flow-weighted across basins using WY 1992-2010 mean flows.
Basin mean flows are from updated lake mass balance, WY 1992-2010 .

Figure D9: Alternative Background TN Concentration Estimates

Background TN Concentration Estimated from Data Collected at Springs and Tributary Headwater Sites



Estimate of Background Concs	Flow	Load	FWM Conc	
Watershed	hm3/yr	mt/yr	ppb	Background Conc Estimate
Sprague Total	502	81	161	East = Sprague N+S Fork
Williamson + Wood + 7 Mile + Pumps	809	59	73	West = An_Pk+Wd_Dix+7Mi_FS
Ungauged	280	28	99	Springs
Total External Inflow to Lake	1591	167	105	Combined FWM
Assumed in Update	1591	158	99	
Walker & Kann (1999)	1653	197	119	
TMDL Goal, ODEQ (2002)	1653	#N/A	#N/A	

Subbasin FWMs computed using flows paired with biweekly samples, WY 2002-2010.
Combined FWM is flow-weighted across basins using WY 1992-2010 mean flows.
Basin mean flows are from updated lake mass balance, WY 1992-2010 .

Appendix E
Lake Water & Nutrient Balances

Tables

E1 Annual Mass Balance Summaries

E2 Tabular Output of Mass Balances by Water Year and Season

E3 Tabular Output of Mass Balances by Year Intervals and Season

E4 Tabular Output of Mass Balances by Month and Water Year

E5 Comparison of Updated Mass Balances for WY 1992-1998 vs. Kann & Walker (1999) Results

Figures

E1 Annual Mass Balance Time Series Plots

Upper Klamath Lake Water & Nutrient Balances Water Years: 1992- 1992

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	TN mt/y	Percent of Inflow Flow	TP	TN	Nutrient Concs TP ppb	TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	167.7	14.9	24.5	18%	13%	9%	89	146	333	0.50	45	74
Wood River @ Dike Road	210.0	24.8	41.0	23%	22%	15%	118	195	394	0.53	63	104
7-Mile Canal	85.9	11.8	42.6	9%	11%	16%	138	495	96	0.89	123	441
Sprague River	177.8	12.6	57.2	19%	11%	21%	71	322	4171	0.04	3	14
Williamson River	432.0	44.7	66.4	47%	40%	25%	103	154	7812	0.06	6	9
Klamath L Outlet	783.8	126.3	1706.2	85%	114%	636%	161	2177	9771	0.08	13	175
Agency Lake Inflows												
Wood River above Weed Rd	167.7	14.9	24.5	53%	35%	21%	89	146	333	0.50	45	74
Wood River below Weed Rd	42.2	9.9	16.5	13%	23%	14%	234	391	61	0.69	162	271
7-Mile Canal	85.9	11.8	42.6	27%	28%	37%	138	495	96	0.89	123	441
Agency Lake Ranch	20.4	5.5	32.6	6%	13%	28%	272	1596	46	0.44	120	703
Total Agency Inflow	316.3	42.2	116.2	100%	100%	100%	133	367	537	0.59	79	216
Klamath Lake Inflows												
Sprague River	177.8	12.6	57.2	39%	21%	42%	71	322	4171	0.04	3	14
Williamson - Sprague	254.2	32.1	9.3	55%	54%	7%	126	36	3641	0.07	9	3
Pumped Inflows to KL	26.6	14.6	70.6	6%	25%	52%	549	2660	60	0.44	242	1171
Total Klamath Inflow	458.6	59.3	137.1	100%	100%	100%	129	299	7872	0.06	8	17
Overall Balance												
Total Tributaries	727.9	81.3	150.0	79%	73%	56%	112	206	8302	0.09	10	18
Total Pumped to Lake	47.0	20.1	103.2	5%	18%	39%	429	2198	107	0.44	189	968
Ungauged Inflows	150.2	9.8	14.9	16%	9%	6%	65	99	1099	0.14	9	14
Total External Inflows	925.1	111.2	268.1	100%	100%	100%	120	290	9508	0.10	12	28
Precipitation	71.3	3.9	23.1	8%	3%	9%	54	324	263	0.27	15	88
Evaporation	270.5			29%					263	1.03		
Net Inflow	725.9	115.1	291.2	78%	103%	109%	159	401	9771	0.07	12	30
Lake Outflow	783.8	126.3	1706.2	85%	114%	636%	161	2177	9771	0.08	13	175
Storage Increase	-61.5	-52.2	-528.0	-7%	-47%	-197%						
Retention	4.0	41.0	-887.0	0%	37%	-331%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	925.1	60.1	91.6	100%	54%	34%	65	99	9508	0.10	6	10
Anthropogenic	925.1	51.1	176.5	0%	46%	66%	55	191			5	19

Morphometry	Mean	Min	Max
Volume (hm^3)	445.9	269.0	620.8
Area (km^2)	263.1	239.7	269.3
Elevation (ft)	4139.7	4137.4	4141.8
Mean Depth (meters)	1.7	1.1	2.3

Phosphorus Model Parameters		
Hydraulic Residence Time	0.61	years
Net Water Load	3.52	m/yr
Areal Total P Load	0.42	g/m^2-yr
Total P Retention Coefficient	37%	

6/25/2012

Upper Klamath Lake Water & Nutrient Balances Water Years: 1993- 1993

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	Nutrient Loads TN mt/y	Percent of Inflow Flow	Percent of Inflow TP	Percent of Inflow TN	Nutrient Concs TP ppb	Nutrient Concs TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	211.4	21.8	25.9	12%	11%	4%	103	122	333	0.63	65	78
Wood River @ Dike Road	271.7	42.4	77.2	15%	21%	11%	156	284	394	0.69	108	196
7-Mile Canal	82.6	14.1	42.2	5%	7%	6%	170	512	96	0.86	146	438
Sprague River	704.6	68.7	352.3	39%	34%	50%	98	500	4171	0.17	16	84
Williamson River	1005.2	101.5	443.1	56%	50%	63%	101	441	7812	0.13	13	57
Klamath L Outlet	1550.3	130.5	2003.0	87%	64%	283%	84	1292	9771	0.16	13	205
Agency Lake Inflows												
Wood River above Weed Rd	211.4	21.8	25.9	56%	35%	17%	103	122	333	0.63	65	78
Wood River below Weed Rd	60.3	20.6	51.3	16%	33%	34%	342	851	61	0.99	339	844
7-Mile Canal	82.6	14.1	42.2	22%	23%	28%	170	512	96	0.86	146	438
Agency Lake Ranch	21.1	5.7	33.6	6%	9%	22%	272	1596	46	0.45	124	726
Total Agency Inflow	375.4	62.2	153.1	100%	100%	100%	166	408	537	0.70	116	285
Klamath Lake Inflows												
Sprague River	704.6	68.7	352.3	68%	59%	68%	98	500	4171	0.17	16	84
Williamson - Sprague	300.6	32.7	90.9	29%	28%	18%	109	302	3641	0.08	9	25
Pumped Inflows to KL	27.4	15.1	72.9	3%	13%	14%	549	2660	60	0.45	250	1209
Total Klamath Inflow	1032.6	116.5	516.1	100%	100%	100%	113	500	7872	0.13	15	66
Overall Balance												
Total Tributaries	1359.5	157.9	562.5	76%	78%	80%	116	414	8302	0.16	19	68
Total Pumped to Lake	48.5	20.8	106.6	3%	10%	15%	429	2198	107	0.45	195	999
Ungauged Inflows	379.1	24.6	37.5	21%	12%	5%	65	99	1097	0.35	22	34
Total External Inflows	1787.1	203.4	706.7	100%	100%	100%	114	395	9506	0.19	21	74
Precipitation	175.1	6.1	36.2	10%	3%	5%	35	207	265	0.66	23	137
Evaporation	247.3			14%					265	0.93		
Net Inflow	1714.9	209.4	742.9	96%	103%	105%	122	433	9771	0.18	21	76
Lake Outflow	1550.3	130.5	2003.0	87%	64%	283%	84	1292	9771	0.16	13	205
Storage Increase	164.6	4.2	199.8	9%	2%	28%						
Retention	0.0	74.7	-1459.9	0%	37%	-207%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	1787.1	116.2	176.9	100%	57%	25%	65	99	9506	0.19	12	19
Anthropogenic	1787.1	87.2	529.7	0%	43%	75%	49	296			9	56

Morphometry	Mean	Min	Max
Volume (hm^3)	526.8	264.6	743.5
Area (km^2)	264.8	238.1	270.9
Elevation (ft)	4140.6	4137.4	4143.3
Mean Depth (meters)	2.0	1.1	2.7

Phosphorus Model Parameters		
Hydraulic Residence Time	0.31	years
Net Water Load	6.75	m/yr
Areal Total P Load	0.77	g/m^2-yr
Total P Retention Coefficient	37%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 1994- 1994

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	Nutrient Loads TN mt/y	Percent of Inflow Flow	Percent of Inflow TP	Percent of Inflow TN	Nutrient Concs TP ppb	Nutrient Concs TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	208.9	19.6	22.6	18%	16%	8%	94	108	333	0.63	59	68
Wood River @ Dike Road	246.5	29.1	37.3	22%	24%	13%	118	151	394	0.63	74	95
7-Mile Canal	67.1	8.1	23.6	6%	7%	9%	120	352	96	0.70	84	245
Sprague River	228.8	15.6	47.6	20%	13%	17%	68	208	4171	0.05	4	11
Williamson River	474.4	42.0	77.1	41%	35%	28%	88	163	7812	0.06	5	10
Klamath L Outlet	1149.8	107.0	1529.0	100%	89%	551%	93	1330	9771	0.12	11	156
Agency Lake Inflows												
Wood River above Weed Rd	208.9	19.6	22.6	62%	46%	24%	94	108	333	0.63	59	68
Wood River below Weed Rd	37.7	9.5	14.6	11%	22%	15%	252	389	61	0.62	156	241
7-Mile Canal	67.1	8.1	23.6	20%	19%	25%	120	352	96	0.70	84	245
Agency Lake Ranch	21.5	5.8	34.3	6%	14%	36%	272	1596	46	0.46	126	740
Total Agency Inflow	335.1	43.0	95.2	100%	100%	100%	128	284	537	0.62	80	177
Klamath Lake Inflows												
Sprague River	228.8	15.6	47.6	46%	27%	31%	68	208	4171	0.05	4	11
Williamson - Sprague	245.6	26.4	29.5	49%	46%	19%	108	120	3641	0.07	7	8
Pumped Inflows to KL	28.0	15.4	74.4	6%	27%	49%	549	2660	60	0.46	255	1233
Total Klamath Inflow	502.4	57.3	151.5	100%	100%	100%	114	302	7872	0.06	7	19
Overall Balance												
Total Tributaries	788.0	79.1	138.1	69%	66%	50%	100	175	8302	0.09	10	17
Total Pumped to Lake	49.4	21.2	108.7	4%	18%	39%	429	2198	107	0.46	199	1019
Ungauged Inflows	308.7	20.1	30.6	27%	17%	11%	65	99	1098	0.28	18	28
Total External Inflows	1146.1	120.4	277.3	100%	100%	100%	105	242	9507	0.12	13	29
Precipitation	69.4	3.8	22.9	6%	3%	8%	55	330	264	0.26	15	87
Evaporation	271.9			24%					264	1.03		
Net Inflow	943.7	124.2	300.2	82%	103%	108%	132	318	9771	0.10	13	31
Lake Outflow	1149.8	107.0	1529.0	100%	89%	551%	93	1330	9771	0.12	11	156
Storage Increase	-206.1	-6.6	-273.6	-18%	-5%	-99%						
Retention	0.0	23.8	-955.1	0%	20%	-344%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	1146.1	74.5	113.5	100%	62%	41%	65	99	9507	0.12	8	12
Anthropogenic	1146.1	45.9	163.8	0%	38%	59%	40	143			5	17

Morphometry	Mean	Min	Max
Volume (hm^3)	493.8	227.5	661.0
Area (km^2)	263.8	219.9	269.7
Elevation (ft)	4140.2	4136.8	4142.3
Mean Depth (meters)	1.9	1.0	2.5

Phosphorus Model Parameters		
Hydraulic Residence Time	0.52	years
Net Water Load	4.34	m/yr
Areal Total P Load	0.46	g/m^2-yr
Total P Retention Coefficient	20%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 1995- 1995

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	Nutrient Loads TN mt/y	Percent of Inflow Flow	Percent of Inflow TP	Percent of Inflow TN	Nutrient Concs TP ppb	Nutrient Concs TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	196.1	16.2	30.2	12%	10%	5%	83	154	333	0.59	49	91
Wood River @ Dike Road	256.5	34.6	66.5	15%	21%	10%	135	259	394	0.65	88	169
7-Mile Canal	91.0	12.0	49.5	5%	7%	8%	132	543	96	0.94	125	513
Sprague River	648.0	50.7	285.2	39%	30%	44%	78	440	4171	0.16	12	68
Williamson River	919.3	78.6	390.6	55%	47%	60%	85	425	7812	0.12	10	50
Klamath L Outlet	1333.8	148.0	2171.4	81%	88%	336%	111	1628	9771	0.14	15	222
Agency Lake Inflows												
Wood River above Weed Rd	196.1	16.2	30.2	53%	31%	20%	83	154	333	0.59	49	91
Wood River below Weed Rd	60.5	18.4	36.3	16%	35%	24%	304	601	61	0.99	302	597
7-Mile Canal	91.0	12.0	49.5	25%	23%	33%	132	543	96	0.94	125	513
Agency Lake Ranch	20.9	5.7	33.4	6%	11%	22%	272	1596	46	0.45	123	721
Total Agency Inflow	368.5	52.3	149.4	100%	100%	100%	142	406	537	0.69	97	278
Klamath Lake Inflows												
Sprague River	648.0	50.7	285.2	68%	54%	62%	78	440	4171	0.16	12	68
Williamson - Sprague	271.3	27.8	105.4	29%	30%	23%	103	388	3641	0.07	8	29
Pumped Inflows to KL	27.2	15.0	72.5	3%	16%	16%	549	2660	60	0.45	248	1202
Total Klamath Inflow	946.6	93.6	463.1	100%	100%	100%	99	489	7872	0.12	12	59
Overall Balance												
Total Tributaries	1266.9	125.2	506.6	76%	74%	78%	99	400	8302	0.15	15	61
Total Pumped to Lake	48.2	20.7	105.9	3%	12%	16%	429	2198	107	0.45	194	993
Ungauged Inflows	341.5	22.2	33.8	21%	13%	5%	65	99	1101	0.31	20	31
Total External Inflows	1656.6	168.0	646.3	100%	100%	100%	101	390	9509	0.17	18	68
Precipitation	146.5	5.4	32.4	9%	3%	5%	37	221	261	0.56	21	124
Evaporation	249.4			15%					261	0.95		
Net Inflow	1553.7	173.5	678.7	94%	103%	105%	112	437	9771	0.16	18	69
Lake Outflow	1333.8	148.0	2171.4	81%	88%	336%	111	1628	9771	0.14	15	222
Storage Increase	219.9	69.7	787.7	13%	41%	122%						
Retention	0.0	-44.2	-2280.3	0%	-26%	-353%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	1656.6	107.7	164.0	100%	64%	25%	65	99	9509	0.17	11	17
Anthropogenic	1656.6	60.4	482.3	0%	36%	75%	36	291			6	51

Morphometry	Mean	Min	Max
Volume (hm^3)	536.8	224.2	741.0
Area (km^2)	261.3	217.4	270.9
Elevation (ft)	4140.8	4136.8	4143.3
Mean Depth (meters)	2.1	1.0	2.7

Phosphorus Model Parameters		
Hydraulic Residence Time	0.35	years
Net Water Load	6.34	m/yr
Areal Total P Load	0.64	g/m^2-yr
Total P Retention Coefficient	-26%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 1996- 1996

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	Nutrient Loads TN mt/y	Percent of Inflow Flow	Percent of Inflow TP	Percent of Inflow TN	Nutrient Concs TP ppb	Nutrient Concs TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	294.9	23.2	43.8	14%	10%	6%	79	148	333	0.89	70	131
Wood River @ Dike Road	364.7	42.7	84.5	17%	18%	11%	117	232	394	0.93	108	215
7-Mile Canal	163.3	29.5	84.1	8%	13%	11%	181	515	96	1.69	306	871
Sprague River	825.1	64.6	329.7	39%	27%	44%	78	400	4171	0.20	15	79
Williamson River	1151.3	114.0	419.9	54%	48%	56%	99	365	7812	0.15	15	54
Klamath L Outlet	2120.8	184.3	3047.9	99%	78%	408%	87	1437	9771	0.22	19	312
Agency Lake Inflows												
Wood River above Weed Rd	294.9	23.2	43.8	53%	30%	21%	79	148	333	0.89	70	131
Wood River below Weed Rd	69.8	19.5	40.8	13%	25%	20%	280	584	61	1.15	321	670
7-Mile Canal	163.3	29.5	84.1	30%	38%	41%	181	515	96	1.69	306	871
Agency Lake Ranch	23.3	6.3	37.2	4%	8%	18%	272	1596	46	0.50	137	803
Total Agency Inflow	551.3	78.6	205.8	100%	100%	100%	143	373	537	1.03	146	383
Klamath Lake Inflows												
Sprague River	825.1	64.6	329.7	70%	49%	66%	78	400	4171	0.20	15	79
Williamson - Sprague	326.2	49.5	90.2	28%	38%	18%	152	276	3641	0.09	14	25
Pumped Inflows to KL	30.4	16.7	80.7	3%	13%	16%	549	2660	60	0.50	277	1339
Total Klamath Inflow	1181.6	130.7	500.6	100%	100%	100%	111	424	7872	0.15	17	64
Overall Balance												
Total Tributaries	1679.2	186.3	588.5	79%	79%	79%	111	350	8302	0.20	22	71
Total Pumped to Lake	53.7	23.0	118.0	3%	10%	16%	429	2198	107	0.50	216	1106
Ungauged Inflows	403.7	26.2	40.0	19%	11%	5%	65	99	1093	0.37	24	37
Total External Inflows	2136.6	235.5	746.4	100%	100%	100%	110	349	9502	0.22	25	79
Precipitation	173.0	6.1	36.1	8%	3%	5%	35	209	269	0.64	23	134
Evaporation	248.8			12%					269	0.93		
Net Inflow	2060.9	241.6	782.6	96%	103%	105%	117	380	9771	0.21	25	80
Lake Outflow	2120.8	184.3	3047.9	99%	78%	408%	87	1437	9771	0.22	19	312
Storage Increase	-59.9	-29.9	-202.7	-3%	-13%	-27%						
Retention	0.0	87.1	-2062.7	0%	37%	-276%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	2136.6	138.9	211.5	100%	59%	28%	65	99	9502	0.22	15	22
Anthropogenic	2136.6	96.7	534.9	0%	41%	72%	45	250			10	56

Morphometry	Mean	Min	Max
Volume (hm^3)	577.4	387.2	743.5
Area (km^2)	268.7	264.4	270.9
Elevation (ft)	4141.3	4139.0	4143.3
Mean Depth (meters)	2.1	1.5	2.7

Phosphorus Model Parameters		
Hydraulic Residence Time	0.28	years
Net Water Load	7.95	m/yr
Areal Total P Load	0.88	g/m^2-yr
Total P Retention Coefficient	37%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 1997- 1997

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	Nutrient Loads TN mt/y	Percent of Inflow Flow	Percent of Inflow TP	Percent of Inflow TN	Nutrient Concs TP ppb	Nutrient Concs TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	357.3	28.8	43.3	16%	13%	6%	81	121	333	1.07	86	130
Wood River @ Dike Road	430.7	46.3	71.3	20%	21%	9%	107	166	394	1.09	117	181
7-Mile Canal	158.9	17.6	64.7	7%	8%	8%	111	407	96	1.65	182	671
Sprague River	812.2	64.5	269.3	37%	30%	35%	79	332	4171	0.19	15	65
Williamson River	1223.4	105.6	480.5	56%	49%	62%	86	393	7812	0.16	14	62
Klamath L Outlet	2011.9	239.5	3194.6	91%	111%	413%	119	1588	9771	0.21	25	327
Agency Lake Inflows												
Wood River above Weed Rd	357.3	28.8	43.3	58%	41%	25%	81	121	333	1.07	86	130
Wood River below Weed Rd	73.4	17.5	28.0	12%	25%	16%	238	381	61	1.21	288	460
7-Mile Canal	158.9	17.6	64.7	26%	25%	37%	111	407	96	1.65	182	671
Agency Lake Ranch	24.8	6.7	39.6	4%	10%	23%	272	1596	46	0.53	145	853
Total Agency Inflow	614.4	70.6	175.6	100%	100%	100%	115	286	537	1.14	132	327
Klamath Lake Inflows												
Sprague River	812.2	64.5	269.3	65%	52%	48%	79	332	4171	0.19	15	65
Williamson - Sprague	411.2	41.1	211.2	33%	33%	37%	100	514	3641	0.11	11	58
Pumped Inflows to KL	32.2	17.7	85.8	3%	14%	15%	549	2660	60	0.53	294	1422
Total Klamath Inflow	1255.7	123.4	566.2	100%	100%	100%	98	451	7872	0.16	16	72
Overall Balance												
Total Tributaries	1813.0	169.5	616.5	82%	79%	80%	93	340	8302	0.22	20	74
Total Pumped to Lake	57.0	24.5	125.3	3%	11%	16%	429	2198	107	0.53	229	1175
Ungauged Inflows	329.2	21.4	32.6	15%	10%	4%	65	99	1094	0.30	20	30
Total External Inflows	2199.2	215.4	774.4	100%	100%	100%	98	352	9502	0.23	23	81
Precipitation	162.8	5.8	34.9	7%	3%	5%	36	214	269	0.61	22	130
Evaporation	239.9			11%					269	0.89		
Net Inflow	2122.1	221.2	809.3	96%	103%	105%	104	381	9771	0.22	23	83
Lake Outflow	2011.9	239.5	3194.6	91%	111%	413%	119	1588	9771	0.21	25	327
Storage Increase	99.3	14.9	116.0	5%	7%	15%						
Retention	11.0	-33.2	-2501.3	1%	-15%	-323%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	2199.2	142.9	217.7	100%	66%	28%	65	99	9502	0.23	15	23
Anthropogenic	2199.2	72.4	556.7	0%	34%	72%	33	253			8	59

Morphometry	Mean	Min	Max
Volume (hm^3)	583.8	368.7	727.0
Area (km^2)	268.6	262.8	270.5
Elevation (ft)	4141.4	4138.7	4143.1
Mean Depth (meters)	2.2	1.4	2.7

Phosphorus Model Parameters		
Hydraulic Residence Time	0.28	years
Net Water Load	8.19	m/yr
Areal Total P Load	0.80	g/m^2-yr
Total P Retention Coefficient	-15%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 1998- 1998

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	Nutrient Loads TN mt/y	Percent of Inflow Flow	Percent of Inflow TP	Percent of Inflow TN	Nutrient Concs TP ppb	Nutrient Concs TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	306.9	24.3	34.2	14%	12%	4%	79	111	333	0.92	73	103
Wood River @ Dike Road	377.8	36.2	55.0	18%	18%	7%	96	145	394	0.96	92	139
7-Mile Canal	164.8	18.4	65.8	8%	9%	9%	112	399	96	1.71	191	682
Sprague River	775.5	56.2	278.8	36%	27%	36%	73	359	4171	0.19	13	67
Williamson River	1210.1	109.3	504.1	57%	53%	66%	90	417	7812	0.15	14	65
Klamath L Outlet	2054.7	198.8	2726.8	97%	97%	356%	97	1327	9771	0.21	20	279
Agency Lake Inflows												
Wood River above Weed Rd	306.9	24.3	34.2	54%	40%	22%	79	111	333	0.92	73	103
Wood River below Weed Rd	70.8	11.9	20.8	13%	20%	13%	168	293	61	1.16	196	341
7-Mile Canal	164.8	18.4	65.8	29%	30%	42%	112	399	96	1.71	191	682
Agency Lake Ranch	22.9	6.2	36.5	4%	10%	23%	272	1596	46	0.49	134	788
Total Agency Inflow	565.5	60.8	157.3	100%	100%	100%	108	278	537	1.05	113	293
Klamath Lake Inflows												
Sprague River	775.5	56.2	278.8	63%	45%	48%	73	359	4171	0.19	13	67
Williamson - Sprague	434.6	53.0	225.3	35%	43%	39%	122	519	3641	0.12	15	62
Pumped Inflows to KL	28.0	14.6	72.9	2%	12%	13%	522	2606	57	0.49	258	1286
Total Klamath Inflow	1238.1	123.9	577.0	100%	100%	100%	100	466	7868	0.16	16	73
Overall Balance												
Total Tributaries	1752.7	163.9	624.8	82%	80%	82%	94	357	8302	0.21	20	75
Total Pumped to Lake	50.8	20.8	109.4	2%	10%	14%	409	2151	103	0.49	202	1062
Ungauged Inflows	324.7	21.1	32.1	15%	10%	4%	65	99	1097	0.30	19	29
Total External Inflows	2128.2	205.8	766.4	100%	100%	100%	97	360	9501	0.22	22	81
Precipitation	139.7	5.4	32.0	7%	3%	4%	38	229	269	0.52	20	119
Evaporation	229.4			11%					269	0.85		
Net Inflow	2038.4	211.2	798.4	96%	103%	104%	104	392	9771	0.21	22	82
Lake Outflow	2054.7	198.8	2726.8	97%	97%	356%	97	1327	9771	0.21	20	279
Storage Increase	-16.3	-9.1	-200.1	-1%	-4%	-26%						
Retention	0.0	21.5	-1728.3	0%	10%	-226%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	2128.2	138.3	210.7	100%	67%	27%	65	99	9501	0.22	15	22
Anthropogenic	2128.2	67.5	555.7	0%	33%	73%	32	261			7	58

Morphometry	Mean	Min	Max
Volume (hm^3)	616.1	470.1	731.1
Area (km^2)	269.3	267.6	270.5
Elevation (ft)	4141.8	4140.0	4143.2
Mean Depth (meters)	2.3	1.8	2.7

Phosphorus Model Parameters		
Hydraulic Residence Time	0.30	years
Net Water Load	7.90	m/yr
Areal Total P Load	0.76	g/m^2-yr
Total P Retention Coefficient	10%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 1999- 1999

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	TN mt/y	Percent of Inflow Flow	TP	TN	Nutrient Concs TP ppb	TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	265.5	23.2	25.2	11%	11%	4%	87	95	333	0.80	70	76
Wood River @ Dike Road	294.1	34.1	45.0	13%	16%	6%	116	153	394	0.75	86	114
7-Mile Canal	131.4	19.2	53.9	6%	9%	8%	146	410	96	1.36	199	558
Sprague River	808.7	65.0	253.1	35%	30%	36%	80	313	4171	0.19	16	61
Williamson River	1287.8	107.5	432.8	55%	49%	62%	84	336	7812	0.16	14	55
Klamath L Outlet	2158.3	263.0	3115.5	93%	121%	447%	122	1444	9771	0.22	27	319
Agency Lake Inflows												
Wood River above Weed Rd	265.5	23.2	25.2	59%	39%	18%	87	95	333	0.80	70	76
Wood River below Weed Rd	28.6	10.9	19.8	6%	18%	14%	381	694	61	0.47	179	326
7-Mile Canal	131.4	19.2	53.9	29%	32%	39%	146	410	96	1.36	199	558
Agency Lake Ranch	24.7	6.7	39.4	5%	11%	28%	272	1596	46	0.53	145	850
Total Agency Inflow	450.1	59.9	138.3	100%	100%	100%	133	307	537	0.84	112	258
Klamath Lake Inflows												
Sprague River	808.7	65.0	253.1	61%	54%	50%	80	313	4171	0.19	16	61
Williamson - Sprague	479.1	42.5	179.7	36%	35%	36%	89	375	3641	0.13	12	49
Pumped Inflows to KL	28.2	13.8	71.7	2%	11%	14%	491	2544	53	0.53	261	1354
Total Klamath Inflow	1316.0	121.4	504.5	100%	100%	100%	92	383	7864	0.17	15	64
Overall Balance												
Total Tributaries	1713.2	160.8	531.7	74%	74%	76%	94	310	8302	0.21	19	64
Total Pumped to Lake	52.9	20.5	111.1	2%	9%	16%	389	2102	99	0.53	207	1118
Ungauged Inflows	554.3	36.0	54.9	24%	17%	8%	65	99	1100	0.50	33	50
Total External Inflows	2320.4	217.3	697.7	100%	100%	100%	94	301	9502	0.24	23	73
Precipitation	118.2	4.9	29.3	5%	2%	4%	41	248	269	0.44	18	109
Evaporation	252.6			11%					269	0.94		
Net Inflow	2186.0	222.2	727.0	94%	102%	104%	102	333	9771	0.22	23	74
Lake Outflow	2158.3	263.0	3115.5	93%	121%	447%	122	1444	9771	0.22	27	319
Storage Increase	27.8	5.9	73.8	1%	3%	11%						
Retention	0.0	-46.6	-2462.3	0%	-21%	-353%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	2320.4	150.8	229.7	100%	69%	33%	65	99	9502	0.24	16	24
Anthropogenic	2320.4	66.5	467.9	0%	31%	67%	29	202			7	49

Morphometry	Mean	Min	Max
Volume (hm^3)	595.2	463.6	720.4
Area (km^2)	269.1	267.6	270.5
Elevation (ft)	4141.5	4139.9	4143.0
Mean Depth (meters)	2.2	1.7	2.7

Phosphorus Model Parameters		
Hydraulic Residence Time	0.27	years
Net Water Load	8.62	m/yr
Areal Total P Load	0.81	g/m^2-yr
Total P Retention Coefficient	-21%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 2000- 2000

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	Nutrient Loads TN mt/y	Percent of Inflow Flow	Percent of Inflow TP	Percent of Inflow TN	Nutrient Concs TP ppb	Nutrient Concs TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	277.2	22.1	30.4	15%	11%	5%	80	110	333	0.83	66	91
Wood River @ Dike Road	319.3	31.7	48.5	17%	16%	7%	99	152	394	0.81	80	123
7-Mile Canal	82.7	8.7	30.8	4%	4%	5%	105	373	96	0.86	90	320
Sprague River	508.1	33.8	153.5	27%	17%	23%	66	302	4171	0.12	8	37
Williamson River	978.4	72.8	330.7	53%	36%	51%	74	338	7812	0.13	9	42
Klamath L Outlet	1771.8	223.9	2426.5	95%	110%	371%	126	1370	9771	0.18	23	248
Agency Lake Inflows												
Wood River above Weed Rd	277.2	22.1	30.4	64%	24%	14%	80	110	333	0.83	66	91
Wood River below Weed Rd	42.1	9.6	18.1	10%	10%	8%	228	430	61	0.69	158	298
7-Mile Canal	82.7	8.7	30.8	19%	10%	14%	105	373	96	0.86	90	320
Agency Lake Ranch	28.6	51.1	138.2	7%	56%	64%	1788	4835	46	0.62	1103	2982
Total Agency Inflow	430.5	91.5	217.6	100%	100%	100%	213	505	537	0.80	171	405
Klamath Lake Inflows												
Sprague River	508.1	33.8	153.5	51%	40%	39%	66	302	4171	0.12	8	37
Williamson - Sprague	470.3	39.1	177.2	47%	46%	45%	83	377	3641	0.13	11	49
Pumped Inflows to KL	25.5	11.6	62.9	3%	14%	16%	455	2473	49	0.52	235	1276
Total Klamath Inflow	1003.9	84.4	393.6	100%	100%	100%	84	392	7861	0.13	11	50
Overall Balance												
Total Tributaries	1380.4	113.3	410.1	74%	56%	63%	82	297	8302	0.17	14	49
Total Pumped to Lake	54.0	62.7	201.2	3%	31%	31%	1160	3722	96	0.56	655	2103
Ungauged Inflows	426.0	27.7	42.2	23%	14%	6%	65	99	1104	0.39	25	38
Total External Inflows	1860.4	203.6	653.4	100%	100%	100%	109	351	9502	0.20	21	69
Precipitation	97.5	4.5	26.7	5%	2%	4%	46	274	269	0.36	17	99
Evaporation	244.7			13%					269	0.91		
Net Inflow	1713.2	208.1	680.2	92%	102%	104%	121	397	9771	0.18	21	70
Lake Outflow	1771.8	223.9	2426.5	95%	110%	371%	126	1370	9771	0.18	23	248
Storage Increase	-58.6	-1.8	76.9	-3%	-1%	12%						
Retention	0.0	-14.0	-1823.2	0%	-7%	-279%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	1860.4	120.9	184.2	100%	59%	28%	65	99	9502	0.20	13	19
Anthropogenic	1860.4	82.7	469.3	0%	41%	72%	44	252			9	49

Morphometry	Mean	Min	Max
Volume (hm^3)	594.4	417.2	734.4
Area (km^2)	269.0	266.4	270.5
Elevation (ft)	4141.5	4139.3	4143.2
Mean Depth (meters)	2.2	1.6	2.7

Phosphorus Model Parameters		
Hydraulic Residence Time	0.35	years
Net Water Load	6.92	m/yr
Areal Total P Load	0.76	g/m^2-yr
Total P Retention Coefficient	-7%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 2001- 2001

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	Nutrient Loads TN mt/y	Percent of Inflow Flow	Percent of Inflow TP	Percent of Inflow TN	Nutrient Concs TP ppb	Nutrient Concs TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	215.5	17.6	19.8	17%	16%	6%	81	92	333	0.65	53	59
Wood River @ Dike Road	266.7	27.7	36.4	22%	25%	12%	104	136	394	0.68	70	92
7-Mile Canal	57.5	6.9	19.1	5%	6%	6%	120	332	96	0.60	71	198
Sprague River	259.9	15.5	58.0	21%	14%	19%	60	223	4171	0.06	4	14
Williamson River	623.3	47.7	162.7	50%	42%	53%	77	261	7812	0.08	6	21
Klamath L Outlet	1005.6	132.6	2147.6	81%	118%	703%	132	2136	9771	0.10	14	220
Agency Lake Inflows												
Wood River above Weed Rd	215.5	17.6	19.8	66%	46%	30%	81	92	333	0.65	53	59
Wood River below Weed Rd	51.2	10.2	16.6	16%	26%	25%	198	324	61	0.84	167	273
7-Mile Canal	57.5	6.9	19.1	18%	18%	29%	120	332	96	0.60	71	198
Agency Lake Ranch	2.2	3.9	10.6	1%	10%	16%	1788	4835	46	0.05	85	229
Total Agency Inflow	326.4	38.5	66.1	100%	100%	100%	118	202	537	0.61	72	123
Klamath Lake Inflows												
Sprague River	259.9	15.5	58.0	40%	28%	27%	60	223	4171	0.06	4	14
Williamson - Sprague	363.4	32.2	104.7	56%	57%	49%	88	288	3641	0.10	9	29
Pumped Inflows to KL	21.0	8.7	50.2	3%	15%	24%	413	2390	46	0.46	190	1099
Total Klamath Inflow	644.3	56.4	212.9	100%	100%	100%	87	330	7857	0.08	7	27
Overall Balance												
Total Tributaries	947.5	82.3	218.2	76%	73%	71%	87	230	8302	0.11	10	26
Total Pumped to Lake	23.2	12.6	60.8	2%	11%	20%	543	2621	92	0.25	137	660
Ungauged Inflows	269.3	17.5	26.7	22%	16%	9%	65	99	1108	0.24	16	24
Total External Inflows	1239.9	112.4	305.6	100%	100%	100%	91	246	9502	0.13	12	32
Precipitation	60.0	3.7	22.0	5%	3%	7%	61	367	269	0.22	14	82
Evaporation	293.9			24%					269	1.09		
Net Inflow	1006.0	116.1	327.6	81%	103%	107%	115	326	9771	0.10	12	34
Lake Outflow	1005.6	132.6	2147.6	81%	118%	703%	132	2136	9771	0.10	14	220
Storage Increase	-0.8	-20.4	313.7	0%	-18%	103%						
Retention	1.0	3.9	-2133.7	0%	3%	-698%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	1239.9	80.6	122.8	100%	72%	40%	65	99	9502	0.13	8	13
Anthropogenic	1239.9	31.8	182.8	0%	28%	60%	26	147			3	19

Morphometry	Mean	Min	Max
Volume (hm^3)	571.5	432.6	727.0
Area (km^2)	268.7	266.8	270.5
Elevation (ft)	4141.2	4139.5	4143.1
Mean Depth (meters)	2.1	1.6	2.7

Phosphorus Model Parameters		
Hydraulic Residence Time	0.57	years
Net Water Load	4.61	m/yr
Areal Total P Load	0.42	g/m^2-yr
Total P Retention Coefficient	3%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 2002- 2002

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	Nutrient Loads TN mt/y	Percent of Inflow Flow	Percent of Inflow TP	Percent of Inflow TN	Nutrient Concs TP ppb	Nutrient Concs TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	213.7	19.0	19.8	15%	12%	4%	89	92	333	0.64	57	59
Wood River @ Dike Road	287.0	31.8	42.0	21%	20%	9%	111	146	394	0.73	81	107
7-Mile Canal	59.0	11.9	36.2	4%	8%	8%	202	613	96	0.61	123	375
Sprague River	355.3	24.6	120.1	26%	16%	25%	69	338	4171	0.09	6	29
Williamson River	716.2	61.7	259.9	51%	39%	54%	86	363	7812	0.09	8	33
Klamath L Outlet	1310.1	115.3	2197.8	94%	73%	459%	88	1678	9771	0.13	12	225
Agency Lake Inflows												
Wood River above Weed Rd	213.7	19.0	19.8	58%	28%	14%	89	92	333	0.64	57	59
Wood River below Weed Rd	73.3	12.8	22.3	20%	19%	16%	175	304	61	1.21	211	366
7-Mile Canal	59.0	11.9	36.2	16%	17%	26%	202	613	96	0.61	123	375
Agency Lake Ranch	21.7	25.2	63.4	6%	37%	45%	1163	2926	46	0.47	544	1368
Total Agency Inflow	367.6	68.9	141.6	100%	100%	100%	187	385	537	0.68	128	264
Klamath Lake Inflows												
Sprague River	355.3	24.6	120.1	48%	35%	39%	69	338	4171	0.09	6	29
Williamson - Sprague	360.9	37.0	139.8	49%	53%	45%	103	387	3641	0.10	10	38
Pumped Inflows to KL	20.5	8.5	49.0	3%	12%	16%	413	2390	46	0.45	185	1073
Total Klamath Inflow	736.7	70.1	308.9	100%	100%	100%	95	419	7857	0.09	9	39
Overall Balance												
Total Tributaries	1062.1	105.4	338.1	76%	67%	71%	99	318	8302	0.13	13	41
Total Pumped to Lake	42.2	33.7	112.4	3%	21%	23%	799	2666	92	0.46	366	1222
Ungauged Inflows	286.7	18.6	28.4	21%	12%	6%	65	99	1108	0.26	17	26
Total External Inflows	1391.0	157.7	478.9	100%	100%	100%	113	344	9502	0.15	17	50
Precipitation	103.8	4.6	27.5	7%	3%	6%	44	265	268	0.39	17	102
Evaporation	265.5			19%					268	0.99		
Net Inflow	1229.3	162.3	506.3	88%	103%	106%	132	412	9771	0.13	17	52
Lake Outflow	1310.1	115.3	2197.8	94%	73%	459%	88	1678	9771	0.13	12	225
Storage Increase	-80.8	16.0	-330.3	-6%	10%	-69%						
Retention	0.0	31.0	-1361.1	0%	20%	-284%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	1391.0	90.4	137.7	100%	57%	29%	65	99	9502	0.15	10	14
Anthropogenic	1391.0	67.3	341.1	0%	43%	71%	48	245			7	36

Morphometry	Mean	Min	Max
Volume (hm^3)	565.7	357.6	730.3
Area (km^2)	268.4	261.6	270.5
Elevation (ft)	4141.1	4138.6	4143.1
Mean Depth (meters)	2.1	1.4	2.7

Phosphorus Model Parameters		
Hydraulic Residence Time	0.46	years
Net Water Load	5.18	m/yr
Areal Total P Load	0.59	g/m^2-yr
Total P Retention Coefficient	20%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 2002- 2010

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	Nutrient Loads TN mt/y	Percent of Inflow Flow	Percent of Inflow TP	Percent of Inflow TN	Nutrient Concs TP ppb	Nutrient Concs TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	243.2	20.9	25.9	17%	14%	5%	86	106	333	0.73	63	78
Wood River @ Dike Road	333.2	36.2	55.1	23%	25%	11%	109	165	394	0.85	92	140
7-Mile Canal	97.7	14.9	51.0	7%	10%	11%	153	523	96	1.01	155	529
Sprague River	420.9	30.7	142.8	30%	21%	29%	73	339	4171	0.10	7	34
Williamson River	751.9	63.5	258.0	53%	43%	53%	84	343	7812	0.10	8	33
Klamath L Outlet	1267.1	147.9	2316.8	89%	100%	477%	117	1829	9771	0.13	15	237
Agency Lake Inflows												
Wood River above Weed Rd	243.2	20.9	25.9	54%	33%	16%	86	106	333	0.73	63	78
Wood River below Weed Rd	90.0	15.4	29.3	20%	24%	18%	171	325	61	1.48	252	481
7-Mile Canal	97.7	14.9	51.0	22%	24%	32%	153	523	96	1.01	155	529
Agency Lake Ranch	21.0	11.8	55.0	5%	19%	34%	560	2618	46	0.45	254	1185
Total Agency Inflow	451.9	62.9	161.1	100%	100%	100%	139	357	537	0.84	117	300
Klamath Lake Inflows												
Sprague River	420.9	30.7	142.8	55%	43%	47%	73	339	4171	0.10	7	34
Williamson - Sprague	331.0	32.7	115.2	43%	46%	38%	99	348	3641	0.09	9	32
Pumped Inflows to KL	19.7	8.1	47.0	3%	11%	15%	413	2390	43	0.46	189	1096
Total Klamath Inflow	771.6	71.6	305.0	100%	100%	100%	93	395	7854	0.10	9	39
Overall Balance												
Total Tributaries	1182.8	114.6	364.1	83%	78%	75%	97	308	8302	0.14	14	44
Total Pumped to Lake	40.7	19.9	102.0	3%	13%	21%	489	2508	89	0.46	223	1142
Ungauged Inflows	201.7	13.1	20.0	14%	9%	4%	65	99	1112	0.18	12	18
Total External Inflows	1425.2	147.6	486.1	100%	100%	100%	104	341	9503	0.15	16	51
Precipitation	106.3	4.6	27.7	7%	3%	6%	44	261	268	0.40	17	104
Evaporation	256.5			18%					268	0.96		
Net Inflow	1274.9	152.3	513.8	89%	103%	106%	119	403	9771	0.13	16	53
Lake Outflow	1267.1	147.9	2316.8	89%	100%	477%	117	1829	9771	0.13	15	237
Storage Increase	-6.4	0.9	-40.0	0%	1%	-8%						
Retention	14.2	3.4	-1763.0	1%	2%	-363%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	1425.2	92.6	141.1	100%	63%	29%	65	99	9503	0.15	10	15
Anthropogenic	1425.2	55.0	345.0	0%	37%	71%	39	242			6	36

Morphometry	Mean	Min	Max
Volume (hm^3)	537.1	298.8	742.6
Area (km^2)	267.6	249.4	270.9
Elevation (ft)	4140.8	4137.8	4143.3
Mean Depth (meters)	2.0	1.2	2.7

Phosphorus Model Parameters		
Hydraulic Residence Time	0.42	years
Net Water Load	5.33	m/yr
Areal Total P Load	0.55	g/m^2-yr
Total P Retention Coefficient	2%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 2003- 2003

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	Nutrient Loads TN mt/y	Percent of Inflow Flow	Percent of Inflow TP	Percent of Inflow TN	Nutrient Concs TP ppb	Nutrient Concs TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	216.6	18.6	21.6	16%	13%	4%	86	100	333	0.65	56	65
Wood River @ Dike Road	331.6	33.3	42.9	24%	23%	8%	100	129	394	0.84	84	109
7-Mile Canal	119.5	16.8	57.9	9%	12%	11%	141	485	96	1.24	175	600
Sprague River	395.4	25.5	104.5	29%	18%	20%	65	264	4171	0.09	6	25
Williamson River	715.5	56.4	289.9	53%	39%	56%	79	405	7812	0.09	7	37
Klamath L Outlet	1131.8	140.9	2063.4	83%	97%	396%	125	1823	9771	0.12	14	211
Agency Lake Inflows												
Wood River above Weed Rd	216.6	18.6	21.6	46%	26%	13%	86	100	333	0.65	56	65
Wood River below Weed Rd	115.1	14.7	21.3	24%	21%	13%	128	185	61	1.89	242	351
7-Mile Canal	119.5	16.8	57.9	25%	24%	35%	141	485	96	1.24	175	600
Agency Lake Ranch	24.8	20.2	66.9	5%	29%	40%	812	2693	46	0.54	435	1443
Total Agency Inflow	475.9	70.3	167.7	100%	100%	100%	148	352	537	0.89	131	312
Klamath Lake Inflows												
Sprague River	395.4	25.5	104.5	54%	39%	31%	65	264	4171	0.09	6	25
Williamson - Sprague	320.0	30.9	185.4	43%	48%	55%	96	579	3641	0.09	8	51
Pumped Inflows to KL	20.6	8.5	49.2	3%	13%	14%	413	2390	46	0.45	186	1077
Total Klamath Inflow	736.0	64.9	339.1	100%	100%	100%	88	461	7857	0.09	8	43
Overall Balance												
Total Tributaries	1166.6	106.5	390.8	86%	74%	75%	91	335	8302	0.14	13	47
Total Pumped to Lake	45.4	28.7	116.1	3%	20%	22%	631	2556	92	0.49	311	1262
Ungauged Inflows	149.6	9.7	14.8	11%	7%	3%	65	99	1109	0.13	9	13
Total External Inflows	1361.5	144.9	521.6	100%	100%	100%	106	383	9503	0.14	15	55
Precipitation	114.5	4.8	28.8	8%	3%	6%	42	251	268	0.43	18	107
Evaporation	266.2			20%					268	0.99		
Net Inflow	1209.9	149.7	550.4	89%	103%	106%	124	455	9771	0.12	15	56
Lake Outflow	1131.8	140.9	2063.4	83%	97%	396%	125	1823	9771	0.12	14	211
Storage Increase	34.5	15.2	165.6	3%	10%	32%						
Retention	43.0	-6.4	-1678.6	3%	-4%	-322%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	1361.5	88.5	134.8	100%	61%	26%	65	99	9503	0.14	9	14
Anthropogenic	1361.5	56.4	386.8	0%	39%	74%	41	284			6	41

Morphometry	Mean	Min	Max
Volume (hm^3)	555.6	350.4	739.3
Area (km^2)	267.9	260.8	270.9
Elevation (ft)	4141.0	4138.5	4143.3
Mean Depth (meters)	2.1	1.3	2.7

Phosphorus Model Parameters		
Hydraulic Residence Time	0.46	years
Net Water Load	5.08	m/yr
Areal Total P Load	0.54	g/m^2-yr
Total P Retention Coefficient	-4%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 2004- 2004

Term	Flow	Nutrient Loads		Percent of Inflow			Nutrient Concs		Dr. Area	Runoff	P Export	N Export
	hm^3/yr	TP mt/y	TN mt/y	Flow	TP	TN	TP ppb	TN ppb	km^2	m/yr	kg/km^2	kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	246.0	21.0	26.5	19%	16%	6%	86	108	333	0.74	63	80
Wood River @ Dike Road	316.6	33.9	49.3	24%	26%	12%	107	156	394	0.80	86	125
7-Mile Canal	89.1	11.8	47.0	7%	9%	11%	133	527	96	0.92	123	487
Sprague River	342.4	24.6	129.2	26%	19%	31%	72	377	4171	0.08	6	31
Williamson River	645.2	54.2	216.4	49%	41%	51%	84	335	7812	0.08	7	28
Klamath L Outlet	1168.3	117.3	2107.9	88%	89%	500%	100	1804	9771	0.12	12	216
Agency Lake Inflows												
Wood River above Weed Rd	246.0	21.0	26.5	59%	39%	20%	86	108	333	0.74	63	80
Wood River below Weed Rd	70.6	12.8	22.7	17%	24%	17%	182	322	61	1.16	211	374
7-Mile Canal	89.1	11.8	47.0	21%	22%	35%	133	527	96	0.92	123	487
Agency Lake Ranch	12.6	7.7	36.7	3%	14%	28%	611	2901	46	0.27	167	791
Total Agency Inflow	418.3	53.4	132.9	100%	100%	100%	128	318	537	0.78	100	248
Klamath Lake Inflows												
Sprague River	342.4	24.6	129.2	51%	39%	49%	72	377	4171	0.08	6	31
Williamson - Sprague	302.9	29.6	87.2	45%	47%	33%	98	288	3641	0.08	8	24
Pumped Inflows to KL	20.6	8.5	49.1	3%	14%	19%	413	2390	46	0.45	186	1076
Total Klamath Inflow	665.8	62.7	265.5	100%	100%	100%	94	399	7857	0.08	8	34
Overall Balance												
Total Tributaries	1050.9	99.9	312.7	80%	76%	74%	95	298	8302	0.13	12	38
Total Pumped to Lake	33.2	16.2	85.8	3%	12%	20%	488	2585	92	0.36	176	933
Ungauged Inflows	236.8	15.4	23.4	18%	12%	6%	65	99	1109	0.21	14	21
Total External Inflows	1320.9	131.5	421.9	100%	100%	100%	100	319	9503	0.14	14	44
Precipitation	104.5	4.6	27.5	8%	3%	7%	44	263	267	0.39	17	103
Evaporation	262.7			20%					267	0.98		
Net Inflow	1162.6	136.1	449.4	88%	103%	107%	117	387	9771	0.12	14	46
Lake Outflow	1168.3	117.3	2107.9	88%	89%	500%	100	1804	9771	0.12	12	216
Storage Increase	-5.6	-46.1	-301.4	0%	-35%	-71%						
Retention	0.0	64.8	-1357.2	0%	49%	-322%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	1320.9	85.9	130.8	100%	65%	31%	65	99	9503	0.14	9	14
Anthropogenic	1320.9	45.7	291.1	0%	35%	69%	35	220			5	31

Morphometry	Mean	Min	Max
Volume (hm^3)	522.4	369.5	695.6
Area (km^2)	267.5	262.8	270.1
Elevation (ft)	4140.6	4138.7	4142.7
Mean Depth (meters)	2.0	1.4	2.6

Phosphorus Model Parameters		
Hydraulic Residence Time	0.45	years
Net Water Load	4.94	m/yr
Areal Total P Load	0.49	g/m^2-yr
Total P Retention Coefficient	49%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 2005- 2005

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	Nutrient Loads TN mt/y	Percent of Inflow Flow	Percent of Inflow TP	Percent of Inflow TN	Nutrient Concs TP ppb	Nutrient Concs TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	233.5	19.4	23.6	19%	14%	5%	83	101	333	0.70	58	71
Wood River @ Dike Road	311.2	33.3	50.5	25%	24%	11%	107	162	394	0.79	85	128
7-Mile Canal	81.1	10.3	41.5	7%	7%	9%	127	512	96	0.84	107	430
Sprague River	384.4	32.1	153.3	31%	23%	34%	84	399	4171	0.09	8	37
Williamson River	648.6	60.5	214.9	53%	44%	48%	93	331	7812	0.08	8	28
Klamath L Outlet	1015.2	114.7	1847.4	83%	83%	410%	113	1820	9771	0.10	12	189
Agency Lake Inflows												
Wood River above Weed Rd	233.5	19.4	23.6	55%	32%	14%	83	101	333	0.70	58	71
Wood River below Weed Rd	77.7	13.9	26.9	18%	23%	16%	178	346	61	1.28	228	442
7-Mile Canal	81.1	10.3	41.5	19%	17%	24%	127	512	96	0.84	107	430
Agency Lake Ranch	31.0	17.1	81.3	7%	28%	47%	553	2627	46	0.67	370	1754
Total Agency Inflow	423.3	60.7	173.3	100%	100%	100%	143	409	537	0.79	113	323
Klamath Lake Inflows												
Sprague River	384.4	32.1	153.3	57%	47%	58%	84	399	4171	0.09	8	37
Williamson - Sprague	264.2	28.4	61.5	39%	41%	23%	107	233	3641	0.07	8	17
Pumped Inflows to KL	20.3	8.4	48.6	3%	12%	18%	413	2390	46	0.45	184	1065
Total Klamath Inflow	669.0	68.9	263.5	100%	100%	100%	103	394	7857	0.09	9	34
Overall Balance												
Total Tributaries	1040.9	104.1	306.8	85%	75%	68%	100	295	8302	0.13	13	37
Total Pumped to Lake	51.3	25.5	130.0	4%	18%	29%	498	2533	92	0.56	278	1413
Ungauged Inflows	135.3	8.8	13.4	11%	6%	3%	65	99	1108	0.12	8	12
Total External Inflows	1227.5	138.4	450.2	100%	100%	100%	113	367	9502	0.13	15	47
Precipitation	81.9	4.1	24.8	7%	3%	5%	51	302	269	0.30	15	92
Evaporation	243.8			20%					269	0.91		
Net Inflow	1065.6	142.6	474.9	87%	103%	105%	134	446	9771	0.11	15	49
Lake Outflow	1015.2	114.7	1847.4	83%	83%	410%	113	1820	9771	0.10	12	189
Storage Increase	19.4	15.6	134.8	2%	11%	30%						
Retention	31.0	12.3	-1507.3	3%	9%	-335%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	1227.5	79.8	121.5	100%	58%	27%	65	99	9502	0.13	8	13
Anthropogenic	1227.5	58.6	328.6	0%	42%	73%	48	268			6	35

Morphometry	Mean	Min	Max
Volume (hm^3)	583.4	377.6	736.9
Area (km^2)	268.7	263.6	270.9
Elevation (ft)	4141.4	4138.8	4143.2
Mean Depth (meters)	2.2	1.4	2.7

Phosphorus Model Parameters		
Hydraulic Residence Time	0.55	years
Net Water Load	4.57	m/yr
Areal Total P Load	0.52	g/m^2-yr
Total P Retention Coefficient	9%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 2006- 2006

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	Nutrient Loads TN mt/y	Percent of Inflow Flow	Percent of Inflow TP	Percent of Inflow TN	Nutrient Concs TP ppb	Nutrient Concs TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	273.4	24.7	40.4	13%	11%	5%	90	148	333	0.82	74	121
Wood River @ Dike Road	341.5	43.5	81.4	16%	19%	9%	127	238	394	0.87	111	207
7-Mile Canal	132.9	25.2	87.3	6%	11%	10%	190	657	96	1.38	262	905
Sprague River	866.0	75.9	322.8	42%	33%	37%	88	373	4171	0.21	18	77
Williamson River	1247.2	117.7	554.3	60%	51%	64%	94	444	7812	0.16	15	71
Klamath L Outlet	2013.5	199.1	3015.9	97%	87%	346%	99	1498	9771	0.21	20	309
Agency Lake Inflows												
Wood River above Weed Rd	273.4	24.7	40.4	55%	30%	17%	90	148	333	0.82	74	121
Wood River below Weed Rd	68.1	18.9	41.0	14%	23%	18%	277	601	61	1.12	310	674
7-Mile Canal	132.9	25.2	87.3	27%	30%	37%	190	657	96	1.38	262	905
Agency Lake Ranch	21.7	14.5	65.3	4%	17%	28%	669	3012	46	0.47	313	1409
Total Agency Inflow	496.1	83.3	234.0	100%	100%	100%	168	472	537	0.92	155	436
Klamath Lake Inflows												
Sprague River	866.0	75.9	322.8	68%	60%	53%	88	373	4171	0.21	18	77
Williamson - Sprague	381.1	41.9	231.4	30%	33%	38%	110	607	3641	0.10	11	64
Pumped Inflows to KL	22.3	9.2	53.3	2%	7%	9%	413	2390	46	0.49	202	1167
Total Klamath Inflow	1269.5	126.9	607.5	100%	100%	100%	100	479	7857	0.16	16	77
Overall Balance												
Total Tributaries	1721.6	186.5	722.9	83%	81%	83%	108	420	8302	0.21	22	87
Total Pumped to Lake	44.0	23.7	118.6	2%	10%	14%	539	2697	92	0.48	258	1289
Ungauged Inflows	307.6	20.0	30.5	15%	9%	3%	65	99	1108	0.28	18	27
Total External Inflows	2073.2	230.2	872.0	100%	100%	100%	111	421	9502	0.22	24	92
Precipitation	156.8	5.7	34.1	8%	2%	4%	36	217	268	0.58	21	127
Evaporation	256.0			12%					268	0.95		
Net Inflow	1974.0	235.9	906.1	95%	102%	104%	120	459	9771	0.20	24	93
Lake Outflow	2013.5	199.1	3015.9	97%	87%	346%	99	1498	9771	0.21	20	309
Storage Increase	-39.5	37.5	179.7	-2%	16%	21%						
Retention	0.0	-0.8	-2289.5	0%	0%	-263%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	2073.2	134.8	205.2	100%	59%	24%	65	99	9502	0.22	14	22
Anthropogenic	2073.2	95.4	666.7	0%	41%	76%	46	322			10	70

Morphometry	Mean	Min	Max
Volume (hm^3)	571.3	366.3	742.6
Area (km^2)	268.4	262.4	270.9
Elevation (ft)	4141.2	4138.7	4143.3
Mean Depth (meters)	2.1	1.4	2.7

Phosphorus Model Parameters		
Hydraulic Residence Time	0.29	years
Net Water Load	7.72	m/yr
Areal Total P Load	0.86	g/m^2-yr
Total P Retention Coefficient	0%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 2006- 2010

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	Nutrient Loads TN mt/y	Percent of Inflow Flow	Percent of Inflow TP	Percent of Inflow TN	Nutrient Concs TP ppb	Nutrient Concs TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	255.8	22.0	28.3	17%	15%	6%	86	110	333	0.77	66	85
Wood River @ Dike Road	350.5	38.8	62.3	23%	26%	12%	111	178	394	0.89	98	158
7-Mile Canal	106.1	16.7	55.4	7%	11%	11%	157	522	96	1.10	173	574
Sprague River	462.1	34.0	155.5	31%	22%	31%	74	337	4171	0.11	8	37
Williamson River	808.4	67.7	268.1	54%	45%	54%	84	332	7812	0.10	9	34
Klamath L Outlet	1355.6	168.6	2527.0	90%	111%	505%	124	1864	9771	0.14	17	259
Agency Lake Inflows												
Wood River above Weed Rd	255.8	22.0	28.3	54%	35%	17%	86	110	333	0.77	66	85
Wood River below Weed Rd	94.7	16.8	34.0	20%	27%	20%	177	360	61	1.56	276	560
7-Mile Canal	106.1	16.7	55.4	22%	27%	33%	157	522	96	1.10	173	574
Agency Lake Ranch	19.8	7.1	49.3	4%	11%	30%	360	2493	46	0.43	153	1063
Total Agency Inflow	476.4	62.6	166.9	100%	100%	100%	131	350	537	0.89	117	311
Klamath Lake Inflows												
Sprague River	462.1	34.0	155.5	56%	45%	50%	74	337	4171	0.11	8	37
Williamson - Sprague	346.3	33.7	112.6	42%	45%	36%	97	325	3641	0.10	9	31
Pumped Inflows to KL	19.0	7.9	45.5	2%	10%	14%	413	2390	41	0.47	193	1116
Total Klamath Inflow	827.4	75.6	313.6	100%	100%	100%	91	379	7852	0.11	10	40
Overall Balance												
Total Tributaries	1265.0	123.2	385.8	84%	81%	77%	97	305	8302	0.15	15	46
Total Pumped to Lake	38.8	15.0	94.7	3%	10%	19%	386	2443	87	0.45	172	1088
Ungauged Inflows	201.4	13.1	19.9	13%	9%	4%	65	99	1115	0.18	12	18
Total External Inflows	1505.2	151.2	500.5	100%	100%	100%	100	333	9504	0.16	16	53
Precipitation	110.3	4.7	28.2	7%	3%	6%	43	256	267	0.41	18	106
Evaporation	254.1			17%					267	0.95		
Net Inflow	1361.4	156.0	528.7	90%	103%	106%	115	388	9771	0.14	16	54
Lake Outflow	1355.6	168.6	2527.0	90%	111%	505%	124	1864	9771	0.14	17	259
Storage Increase	-5.0	1.6	-5.7	0%	1%	-1%						
Retention	10.8	-14.2	-1992.7	1%	-9%	-398%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	1505.2	97.8	149.0	100%	65%	30%	65	99	9504	0.16	10	16
Anthropogenic	1505.2	53.4	351.5	0%	35%	70%	35	234			6	37

Morphometry	Mean	Min	Max
Volume (hm^3)	521.4	298.8	742.6
Area (km^2)	267.1	249.4	270.9
Elevation (ft)	4140.6	4137.8	4143.3
Mean Depth (meters)	2.0	1.2	2.7

Phosphorus Model Parameters		
Hydraulic Residence Time	0.38	years
Net Water Load	5.64	m/yr
Areal Total P Load	0.57	g/m^2-yr
Total P Retention Coefficient	-9%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 2007- 2007

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	Nutrient Loads TN mt/y	Percent of Inflow Flow	Percent of Inflow TP	Percent of Inflow TN	Nutrient Concs TP ppb	Nutrient Concs TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	271.1	22.1	27.3	18%	14%	6%	81	101	333	0.81	66	82
Wood River @ Dike Road	369.9	42.7	66.5	25%	28%	14%	115	180	394	0.94	108	169
7-Mile Canal	93.5	17.8	51.5	6%	12%	11%	190	552	96	0.97	184	534
Sprague River	396.5	25.5	118.4	27%	17%	24%	64	299	4171	0.10	6	28
Williamson River	724.9	56.7	212.3	49%	37%	44%	78	293	7812	0.09	7	27
Klamath L Outlet	1334.3	242.1	2892.2	91%	158%	596%	181	2168	9771	0.14	25	296
Agency Lake Inflows												
Wood River above Weed Rd	271.1	22.1	27.3	56%	31%	14%	81	101	333	0.81	66	82
Wood River below Weed Rd	98.8	20.7	39.2	20%	29%	20%	209	397	61	1.62	340	645
7-Mile Canal	93.5	17.8	51.5	19%	25%	26%	190	552	96	0.97	184	534
Agency Lake Ranch	25.1	11.5	78.6	5%	16%	40%	457	3133	46	0.54	247	1696
Total Agency Inflow	488.5	71.9	196.7	100%	100%	100%	147	403	537	0.91	134	366
Klamath Lake Inflows												
Sprague River	396.5	25.5	118.4	53%	39%	45%	64	299	4171	0.10	6	28
Williamson - Sprague	328.4	31.3	93.9	44%	47%	35%	95	286	3641	0.09	9	26
Pumped Inflows to KL	22.1	9.1	52.8	3%	14%	20%	413	2390	46	0.48	200	1156
Total Klamath Inflow	747.0	65.9	265.1	100%	100%	100%	88	355	7857	0.10	8	34
Overall Balance												
Total Tributaries	1188.3	117.2	330.4	81%	77%	68%	99	278	8302	0.14	14	40
Total Pumped to Lake	47.2	20.6	131.4	3%	13%	27%	436	2785	92	0.51	224	1428
Ungauged Inflows	233.3	15.2	23.1	16%	10%	5%	65	99	1109	0.21	14	21
Total External Inflows	1468.8	153.0	484.9	100%	100%	100%	104	330	9503	0.15	16	51
Precipitation	89.9	4.3	25.7	6%	3%	5%	48	286	267	0.34	16	96
Evaporation	259.3			18%					267	0.97		
Net Inflow	1299.3	157.3	510.6	88%	103%	105%	121	393	9771	0.13	16	52
Lake Outflow	1334.3	242.1	2892.2	91%	158%	596%	181	2168	9771	0.14	25	296
Storage Increase	-35.0	-32.0	-233.9	-2%	-21%	-48%						
Retention	0.0	-52.9	-2147.8	0%	-35%	-443%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	1468.8	95.5	145.4	100%	62%	30%	65	99	9503	0.15	10	15
Anthropogenic	1468.8	57.5	339.5	0%	38%	70%	39	231			6	36

Morphometry	Mean	Min	Max
Volume (hm^3)	542.7	331.4	742.6
Area (km^2)	267.5	258.3	270.9
Elevation (ft)	4140.9	4138.3	4143.3
Mean Depth (meters)	2.0	1.3	2.7

Phosphorus Model Parameters		
Hydraulic Residence Time	0.42	years
Net Water Load	5.49	m/yr
Areal Total P Load	0.57	g/m^2-yr
Total P Retention Coefficient	-35%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 2008- 2008

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	TN mt/y	Percent of Inflow Flow	TP	TN	Nutrient Concs TP ppb	TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	250.5	22.1	25.7	17%	16%	5%	88	103	333	0.75	66	77
Wood River @ Dike Road	353.6	38.2	56.0	24%	27%	11%	108	158	394	0.90	97	142
7-Mile Canal	90.4	12.5	38.5	6%	9%	8%	138	426	96	0.94	129	399
Sprague River	454.8	32.3	165.8	31%	23%	34%	71	365	4171	0.11	8	40
Williamson River	794.1	65.1	264.0	54%	46%	54%	82	332	7812	0.10	8	34
Klamath L Outlet	1264.6	166.5	2733.3	86%	117%	559%	132	2161	9771	0.13	17	280
Agency Lake Inflows												
Wood River above Weed Rd	250.5	22.1	25.7	53%	38%	15%	88	103	333	0.75	66	77
Wood River below Weed Rd	103.1	16.1	30.3	22%	27%	18%	156	294	61	1.70	264	498
7-Mile Canal	90.4	12.5	38.5	19%	21%	23%	138	426	96	0.94	129	399
Agency Lake Ranch	31.2	7.8	72.3	7%	13%	43%	249	2314	46	0.67	168	1559
Total Agency Inflow	475.1	58.4	166.7	100%	100%	100%	123	351	537	0.89	109	311
Klamath Lake Inflows												
Sprague River	454.8	32.3	165.8	56%	45%	54%	71	365	4171	0.11	8	40
Williamson - Sprague	339.3	32.9	98.1	42%	46%	32%	97	289	3641	0.09	9	27
Pumped Inflows to KL	17.0	7.0	40.6	2%	10%	13%	413	2390	37	0.45	187	1082
Total Klamath Inflow	811.1	72.1	304.5	100%	100%	100%	89	375	7849	0.10	9	39
Overall Balance												
Total Tributaries	1238.0	115.8	358.4	85%	82%	73%	94	289	8302	0.15	14	43
Total Pumped to Lake	48.2	14.8	112.8	3%	10%	23%	307	2341	84	0.57	176	1346
Ungauged Inflows	176.2	11.5	17.4	12%	8%	4%	65	99	1118	0.16	10	16
Total External Inflows	1462.4	142.0	488.7	100%	100%	100%	97	334	9503	0.15	15	51
Precipitation	111.8	4.8	28.4	8%	3%	6%	43	254	267	0.42	18	106
Evaporation	261.4			18%					267	0.98		
Net Inflow	1312.8	146.8	517.1	90%	103%	106%	112	394	9771	0.13	15	53
Lake Outflow	1264.6	166.5	2733.3	86%	117%	559%	132	2161	9771	0.13	17	280
Storage Increase	42.1	15.3	101.4	3%	11%	21%						
Retention	6.0	-35.0	-2317.6	0%	-25%	-474%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	1462.4	95.1	144.8	100%	67%	30%	65	99	9503	0.15	10	15
Anthropogenic	1462.4	47.0	343.9	0%	33%	70%	32	235			5	36

Morphometry	Mean	Min	Max
Volume (hm^3)	526.1	329.0	719.5
Area (km^2)	267.4	257.9	270.5
Elevation (ft)	4140.6	4138.2	4143.0
Mean Depth (meters)	2.0	1.3	2.7

Phosphorus Model Parameters		
Hydraulic Residence Time	0.40	years
Net Water Load	5.47	m/yr
Areal Total P Load	0.53	g/m^2-yr
Total P Retention Coefficient	-25%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 2008- 2010

Term	Flow	Nutrient Loads		Percent of Inflow			Nutrient Concs		Dr. Area	Runoff	P Export	N Export
	hm^3/yr	TP mt/y	TN mt/y	Flow	TP	TN	TP ppb	TN ppb	km^2	m/yr	kg/km^2	kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	244.9	21.1	24.5	18%	17%	6%	86	100	333	0.74	63	74
Wood River @ Dike Road	347.1	35.9	54.5	26%	29%	14%	103	157	394	0.88	91	138
7-Mile Canal	101.4	13.5	46.0	8%	11%	12%	133	454	96	1.05	140	477
Sprague River	349.4	22.9	112.2	26%	18%	29%	65	321	4171	0.08	5	27
Williamson River	690.0	54.7	191.4	52%	44%	50%	79	277	7812	0.09	7	25
Klamath L Outlet	1143.6	134.0	2242.6	86%	108%	587%	117	1961	9771	0.12	14	230
Agency Lake Inflows												
Wood River above Weed Rd	244.9	21.1	24.5	53%	40%	18%	86	100	333	0.74	63	74
Wood River below Weed Rd	102.2	14.8	30.0	22%	28%	22%	145	294	61	1.68	243	493
7-Mile Canal	101.4	13.5	46.0	22%	26%	34%	133	454	96	1.05	140	477
Agency Lake Ranch	17.3	3.2	34.1	4%	6%	25%	185	1969	46	0.37	69	737
Total Agency Inflow	465.8	52.6	134.7	100%	100%	100%	113	289	537	0.87	98	251
Klamath Lake Inflows												
Sprague River	349.4	22.9	112.2	49%	37%	48%	65	321	4171	0.08	5	27
Williamson - Sprague	340.6	31.9	79.2	48%	52%	34%	94	233	3641	0.09	9	22
Pumped Inflows to KL	16.9	7.0	40.4	2%	11%	17%	413	2390	37	0.45	186	1079
Total Klamath Inflow	706.9	61.7	231.9	100%	100%	100%	87	328	7849	0.09	8	30
Overall Balance												
Total Tributaries	1138.4	104.1	292.0	86%	84%	76%	91	256	8302	0.14	13	35
Total Pumped to Lake	34.3	10.2	74.6	3%	8%	20%	297	2177	84	0.41	122	890
Ungauged Inflows	155.5	10.1	15.4	12%	8%	4%	65	99	1118	0.14	9	14
Total External Inflows	1328.2	124.4	382.0	100%	100%	100%	94	288	9504	0.14	13	40
Precipitation	101.6	4.5	27.1	8%	4%	7%	45	267	267	0.38	17	102
Evaporation	251.7			19%					267	0.94		
Net Inflow	1178.1	128.9	409.1	89%	104%	107%	109	347	9771	0.12	13	42
Lake Outflow	1143.6	134.0	2242.6	86%	108%	587%	117	1961	9771	0.12	14	230
Storage Increase	16.5	0.8	8.6	1%	1%	2%						
Retention	18.0	-5.8	-1842.1	1%	-5%	-482%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	1328.2	86.3	131.5	100%	69%	34%	65	99	9504	0.14	9	14
Anthropogenic	1328.2	38.0	250.5	0%	31%	66%	29	189			4	26

Morphometry	Mean	Min	Max
Volume (hm^3)	497.7	298.8	719.5
Area (km^2)	266.5	249.4	270.5
Elevation (ft)	4140.3	4137.8	4143.0
Mean Depth (meters)	1.9	1.2	2.7

Phosphorus Model Parameters		
Hydraulic Residence Time	0.42	years
Net Water Load	4.98	m/yr
Areal Total P Load	0.47	g/m^2-yr
Total P Retention Coefficient	-5%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 2009- 2009

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	Nutrient Loads TN mt/y	Percent of Inflow Flow	Percent of Inflow TP	Percent of Inflow TN	Nutrient Concs TP ppb	Nutrient Concs TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	250.3	20.7	26.7	19%	17%	7%	83	107	333	0.75	62	80
Wood River @ Dike Road	369.3	36.8	61.5	28%	31%	16%	100	166	394	0.94	93	156
7-Mile Canal	105.8	14.2	54.7	8%	12%	14%	134	517	96	1.10	147	567
Sprague River	311.1	18.5	95.3	23%	16%	25%	60	306	4171	0.07	4	23
Williamson River	666.4	49.6	178.4	50%	42%	47%	74	268	7812	0.09	6	23
Klamath L Outlet	1193.1	143.2	2390.8	90%	120%	629%	120	2004	9771	0.12	15	245
Agency Lake Inflows												
Wood River above Weed Rd	250.3	20.7	26.7	50%	39%	18%	83	107	333	0.75	62	80
Wood River below Weed Rd	119.1	16.0	34.8	24%	30%	24%	135	292	61	1.96	264	572
7-Mile Canal	105.8	14.2	54.7	21%	27%	37%	134	517	96	1.10	147	567
Agency Lake Ranch	20.8	1.8	30.1	4%	3%	21%	88	1448	46	0.45	40	649
Total Agency Inflow	495.9	52.8	146.3	100%	100%	100%	106	295	537	0.92	98	272
Klamath Lake Inflows												
Sprague River	311.1	18.5	95.3	46%	33%	43%	60	306	4171	0.07	4	23
Williamson - Sprague	355.3	31.1	83.1	52%	55%	38%	87	234	3641	0.10	9	23
Pumped Inflows to KL	17.0	7.0	40.7	2%	12%	19%	413	2390	37	0.45	188	1086
Total Klamath Inflow	683.4	56.6	219.1	100%	100%	100%	83	321	7849	0.09	7	28
Overall Balance												
Total Tributaries	1141.5	100.5	294.6	86%	84%	77%	88	258	8302	0.14	12	35
Total Pumped to Lake	37.8	8.9	70.8	3%	7%	19%	235	1872	84	0.45	106	844
Ungauged Inflows	150.6	9.8	14.9	11%	8%	4%	65	99	1118	0.13	9	13
Total External Inflows	1330.0	119.2	380.3	100%	100%	100%	90	286	9504	0.14	13	40
Precipitation	104.1	4.6	27.4	8%	4%	7%	44	264	267	0.39	17	103
Evaporation	251.1			19%					267	0.94		
Net Inflow	1182.9	123.8	407.7	89%	104%	107%	105	345	9771	0.12	13	42
Lake Outflow	1193.1	143.2	2390.8	90%	120%	629%	120	2004	9771	0.12	15	245
Storage Increase	-50.1	-26.1	-188.0	-4%	-22%	-49%						
Retention	40.0	6.7	-1795.1	3%	6%	-472%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	1330.0	86.4	131.7	100%	73%	35%	65	99	9504	0.14	9	14
Anthropogenic	1330.0	32.7	248.6	0%	27%	65%	25	187			3	26

Morphometry	Mean	Min	Max
Volume (hm^3)	517.6	323.5	699.7
Area (km^2)	267.2	256.3	270.5
Elevation (ft)	4140.5	4138.2	4142.8
Mean Depth (meters)	1.9	1.3	2.6

Phosphorus Model Parameters		
Hydraulic Residence Time	0.44	years
Net Water Load	4.98	m/yr
Areal Total P Load	0.45	g/m^2-yr
Total P Retention Coefficient	6%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 2010- 2010

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	TN mt/y	Percent of Inflow Flow	TP	TN	Nutrient Concs TP ppb	TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	234.0	20.3	21.3	20%	18%	8%	87	91	333	0.70	61	64
Wood River @ Dike Road	318.4	32.6	46.2	27%	29%	17%	102	145	394	0.81	83	117
7-Mile Canal	107.9	13.9	44.8	9%	12%	16%	129	415	96	1.12	144	465
Sprague River	282.0	17.7	75.3	24%	16%	27%	63	267	4171	0.07	4	18
Williamson River	609.2	49.4	131.8	51%	44%	48%	81	216	7812	0.08	6	17
Klamath L Outlet	972.8	92.1	1602.3	82%	82%	579%	95	1647	9771	0.10	9	164
Agency Lake Inflows												
Wood River above Weed Rd	234.0	20.3	21.3	55%	44%	23%	87	91	333	0.70	61	64
Wood River below Weed Rd	84.3	12.3	24.9	20%	26%	27%	146	296	61	1.39	202	410
7-Mile Canal	107.9	13.9	44.8	25%	30%	49%	129	415	96	1.12	144	465
Agency Lake Ranch	0.0	0.0	0.0	0%	0%	0%			46	0.00	0	0
Total Agency Inflow	426.3	46.5	91.1	100%	100%	100%	109	214	537	0.79	87	170
Klamath Lake Inflows												
Sprague River	282.0	17.7	75.3	45%	32%	44%	63	267	4171	0.07	4	18
Williamson - Sprague	327.2	31.7	56.4	52%	56%	33%	97	173	3641	0.09	9	16
Pumped Inflows to KL	16.7	6.9	40.0	3%	12%	23%	413	2390	37	0.45	184	1068
Total Klamath Inflow	626.0	56.3	171.8	100%	100%	100%	90	274	7849	0.08	7	22
Overall Balance												
Total Tributaries	1035.5	95.9	222.8	87%	86%	81%	93	215	8302	0.12	12	27
Total Pumped to Lake	16.7	6.9	40.0	1%	6%	14%	413	2390	84	0.20	82	477
Ungauged Inflows	139.6	9.1	13.8	12%	8%	5%	65	99	1120	0.12	8	12
Total External Inflows	1191.8	111.9	276.7	100%	100%	100%	94	232	9506	0.13	12	29
Precipitation	88.9	4.3	25.4	7%	4%	9%	48	286	265	0.34	16	96
Evaporation	242.6			20%					265	0.92		
Net Inflow	1038.1	116.1	302.1	87%	104%	109%	112	291	9771	0.11	12	31
Lake Outflow	972.8	92.1	1602.3	82%	82%	579%	95	1647	9771	0.10	9	164
Storage Increase	57.3	13.0	112.3	5%	12%	41%						
Retention	8.0	11.0	-1412.5	1%	10%	-511%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	1191.8	77.5	118.0	100%	69%	43%	65	99	9506	0.13	8	12
Anthropogenic	1191.8	34.4	158.7	0%	31%	57%	29	133			4	17

Morphometry	Mean	Min	Max
Volume (hm^3)	449.5	298.8	601.1
Area (km^2)	265.0	249.4	269.3
Elevation (ft)	4139.7	4137.8	4141.6
Mean Depth (meters)	1.7	1.2	2.2

Phosphorus Model Parameters		
Hydraulic Residence Time	0.43	years
Net Water Load	4.50	m/yr
Areal Total P Load	0.42	g/m^2-yr
Total P Retention Coefficient	10%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 1992- 1998

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	Nutrient Loads TN mt/y	Percent of Inflow Flow	Percent of Inflow TP	Percent of Inflow TN	Nutrient Concs TP ppb	Nutrient Concs TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	249.0	21.2	32.1	15%	12%	5%	85	129	333	0.75	64	96
Wood River @ Dike Road	308.3	36.6	61.8	18%	20%	10%	119	201	394	0.78	93	157
7-Mile Canal	116.2	15.9	53.2	7%	9%	9%	137	458	96	1.20	165	552
Sprague River	595.9	47.6	231.4	35%	26%	39%	80	388	4171	0.14	11	55
Williamson River	916.4	85.1	340.2	54%	47%	57%	93	371	7812	0.12	11	44
Klamath L Outlet	1572.1	162.1	2339.9	92%	90%	391%	103	1488	9771	0.16	17	239
Agency Lake Inflows												
Wood River above Weed Rd	249.0	21.2	32.1	56%	36%	21%	85	129	333	0.75	64	96
Wood River below Weed Rd	59.2	15.3	29.8	13%	26%	20%	259	502	61	0.97	252	489
7-Mile Canal	116.2	15.9	53.2	26%	27%	35%	137	458	96	1.20	165	552
Agency Lake Ranch	22.1	6.0	35.3	5%	10%	23%	272	1596	46	0.48	130	762
Total Agency Inflow	446.6	58.5	150.4	100%	100%	100%	131	337	537	0.83	109	280
Klamath Lake Inflows												
Sprague River	595.9	47.6	231.4	63%	47%	56%	80	388	4171	0.14	11	55
Williamson - Sprague	320.5	37.5	108.8	34%	37%	26%	117	339	3641	0.09	10	30
Pumped Inflows to KL	28.5	15.6	75.7	3%	15%	18%	546	2653	60	0.48	260	1266
Total Klamath Inflow	945.0	100.7	415.9	100%	100%	100%	107	440	7871	0.12	13	53
Overall Balance												
Total Tributaries	1340.9	137.6	455.2	78%	76%	76%	103	339	8302	0.16	17	55
Total Pumped to Lake	50.7	21.6	111.0	3%	12%	19%	426	2191	106	0.48	203	1046
Ungauged Inflows	319.5	20.8	31.6	19%	12%	5%	65	99	1097	0.29	19	29
Total External Inflows	1711.1	180.0	597.9	100%	100%	100%	105	349	9505	0.18	19	63
Precipitation	134.0	5.2	31.1	8%	3%	5%	39	232	266	0.50	20	117
Evaporation	251.0			15%					266	0.94		
Net Inflow	1594.1	185.2	629.0	93%	103%	105%	116	395	9771	0.16	19	64
Lake Outflow	1572.1	162.1	2339.9	92%	90%	391%	103	1488	9771	0.16	17	239
Storage Increase	19.9	-1.3	-14.7	1%	-1%	-2%						
Retention	2.0	24.4	-1696.2	0%	14%	-284%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	1711.1	111.2	169.4	100%	62%	28%	65	99	9505	0.18	12	18
Anthropogenic	1711.1	68.7	428.5	0%	38%	72%	40	250			7	45

Morphometry	Mean	Min	Max
Volume (hm^3)	540.0	224.2	743.5
Area (km^2)	265.7	217.4	270.9
Elevation (ft)	4140.8	4136.8	4143.3
Mean Depth (meters)	2.0	1.0	2.7

Phosphorus Model Parameters		
Hydraulic Residence Time	0.34	years
Net Water Load	6.44	m/yr
Areal Total P Load	0.68	g/m^2-yr
Total P Retention Coefficient	14%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 1999- 2010

Term	Flow	Nutrient Loads		Percent of Inflow			Nutrient Concs		Dr. Area	Runoff	P Export	N Export
	hm^3/yr	TP mt/y	TN mt/y	Flow	TP	TN	TP ppb	TN ppb	km^2	m/yr	kg/km^2	kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	245.6	20.9	25.7	16%	13%	5%	85	105	333	0.74	63	77
Wood River @ Dike Road	323.3	35.0	52.2	21%	23%	10%	108	161	394	0.82	89	132
7-Mile Canal	95.9	14.1	46.9	6%	9%	9%	147	489	96	0.99	146	486
Sprague River	447.0	32.6	145.8	29%	21%	29%	73	326	4171	0.11	8	35
Williamson River	804.7	66.6	270.7	53%	43%	54%	83	336	7812	0.10	9	35
Klamath L Outlet	1361.6	162.6	2378.4	90%	105%	473%	119	1747	9771	0.14	17	243
Agency Lake Inflows												
Wood River above Weed Rd	245.6	20.9	25.7	56%	33%	16%	85	105	333	0.74	63	77
Wood River below Weed Rd	77.7	14.1	26.5	18%	22%	17%	181	341	61	1.28	231	436
7-Mile Canal	95.9	14.1	46.9	22%	22%	30%	147	489	96	0.99	146	486
Agency Lake Ranch	20.4	14.0	56.9	5%	22%	36%	686	2795	46	0.44	301	1228
Total Agency Inflow	439.5	63.0	156.0	100%	100%	100%	143	355	537	0.82	117	291
Klamath Lake Inflows												
Sprague River	447.0	32.6	145.8	54%	43%	45%	73	326	4171	0.11	8	35
Williamson - Sprague	357.7	34.0	124.9	43%	45%	39%	95	349	3641	0.10	9	34
Pumped Inflows to KL	21.0	8.9	50.7	3%	12%	16%	426	2416	45	0.47	201	1138
Total Klamath Inflow	825.7	75.5	321.3	100%	100%	100%	91	389	7856	0.11	10	41
Overall Balance												
Total Tributaries	1223.9	115.7	369.8	80%	75%	74%	95	302	8302	0.15	14	45
Total Pumped to Lake	41.3	22.9	107.6	3%	15%	21%	554	2602	91	0.45	252	1184
Ungauged Inflows	255.4	16.6	25.3	17%	11%	5%	65	99	1110	0.23	15	23
Total External Inflows	1520.7	155.2	502.7	100%	100%	100%	102	331	9503	0.16	16	53
Precipitation	102.7	4.6	27.3	7%	3%	5%	44	266	268	0.38	17	102
Evaporation	258.3			17%					268	0.96		
Net Inflow	1365.0	159.7	530.0	90%	103%	105%	117	388	9771	0.14	16	54
Lake Outflow	1361.6	162.6	2378.4	90%	105%	473%	119	1747	9771	0.14	17	243
Storage Increase	-7.4	-0.6	8.7	0%	0%	2%						
Retention	10.8	-2.2	-1857.1	1%	-1%	-369%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	1520.7	98.8	150.5	100%	64%	30%	65	99	9503	0.16	10	16
Anthropogenic	1520.7	56.3	352.1	0%	36%	70%	37	232			6	37

Morphometry	Mean	Min	Max
Volume (hm^3)	549.6	298.8	742.6
Area (km^2)	267.9	249.4	270.9
Elevation (ft)	4140.9	4137.8	4143.3
Mean Depth (meters)	2.1	1.2	2.7

Phosphorus Model Parameters		
Hydraulic Residence Time	0.40	years
Net Water Load	5.68	m/yr
Areal Total P Load	0.58	g/m^2-yr
Total P Retention Coefficient	-1%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 1992- 1994

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	Nutrient Loads TN mt/y	Percent of Inflow Flow	Percent of Inflow TP	Percent of Inflow TN	Nutrient Concs TP ppb	Nutrient Concs TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	196.0	18.7	24.3	15%	13%	6%	96	124	333	0.59	56	73
Wood River @ Dike Road	242.7	32.1	51.8	19%	22%	12%	132	213	394	0.62	81	132
7-Mile Canal	78.5	11.3	36.2	6%	8%	9%	144	460	96	0.81	117	375
Sprague River	370.2	32.3	152.3	29%	22%	36%	87	411	4171	0.09	8	37
Williamson River	637.0	62.7	195.4	50%	43%	47%	98	307	7812	0.08	8	25
Klamath L Outlet	1160.9	121.3	1746.0	90%	84%	418%	104	1504	9771	0.12	12	179
Agency Lake Inflows												
Wood River above Weed Rd	196.0	18.7	24.3	57%	38%	20%	96	124	333	0.59	56	73
Wood River below Weed Rd	46.7	13.3	27.5	14%	27%	23%	285	588	61	0.77	219	452
7-Mile Canal	78.5	11.3	36.2	23%	23%	30%	144	460	96	0.81	117	375
Agency Lake Ranch	21.0	5.7	33.5	6%	12%	28%	272	1596	46	0.45	123	723
Total Agency Inflow	342.2	49.1	121.5	100%	100%	100%	143	355	537	0.64	91	226
Klamath Lake Inflows												
Sprague River	370.2	32.3	152.3	56%	42%	57%	87	411	4171	0.09	8	37
Williamson - Sprague	266.8	30.4	43.2	40%	39%	16%	114	162	3641	0.07	8	12
Pumped Inflows to KL	27.3	15.0	72.6	4%	19%	27%	549	2660	60	0.45	249	1205
Total Klamath Inflow	664.3	77.7	268.1	100%	100%	100%	117	404	7872	0.08	10	34
Overall Balance												
Total Tributaries	958.3	106.1	283.4	75%	73%	68%	111	296	8302	0.12	13	34
Total Pumped to Lake	48.3	20.7	106.2	4%	14%	25%	429	2198	107	0.45	194	995
Ungauged Inflows	279.2	18.1	27.6	22%	13%	7%	65	99	1098	0.25	17	25
Total External Inflows	1285.8	144.9	417.2	100%	100%	100%	113	324	9507	0.14	15	44
Precipitation	105.2	4.6	27.4	8%	3%	7%	44	260	264	0.40	17	104
Evaporation	263.2			20%					264	1.00		
Net Inflow	1127.8	149.5	444.6	88%	103%	107%	133	394	9771	0.12	15	46
Lake Outflow	1160.9	121.3	1746.0	90%	84%	418%	104	1504	9771	0.12	12	179
Storage Increase	-34.3	-18.2	-200.9	-3%	-13%	-48%						
Retention	1.3	46.5	-1100.5	0%	32%	-264%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	1285.8	83.6	127.3	100%	58%	31%	65	99	9507	0.14	9	13
Anthropogenic	1285.8	61.4	289.9	0%	42%	69%	48	225			6	30

Morphometry	Mean	Min	Max
Volume (hm^3)	488.8	227.5	743.5
Area (km^2)	263.9	219.9	270.9
Elevation (ft)	4140.2	4136.8	4143.3
Mean Depth (meters)	1.9	1.0	2.7

Phosphorus Model Parameters		
Hydraulic Residence Time	0.43	years
Net Water Load	4.87	m/yr
Areal Total P Load	0.55	g/m^2-yr
Total P Retention Coefficient	32%	

6/25/2012

Upper Klamath Lake Water & Nutrient Balances Water Years: 1992- 2010

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	Nutrient Loads TN mt/y	Percent of Inflow Flow	Percent of Inflow TP	Percent of Inflow TN	Nutrient Concs TP ppb	Nutrient Concs TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	246.9	21.0	28.0	16%	13%	5%	85	114	333	0.74	63	84
Wood River @ Dike Road	317.7	35.6	55.7	20%	22%	10%	112	175	394	0.81	90	141
7-Mile Canal	103.4	14.8	49.2	6%	9%	9%	143	476	96	1.07	153	510
Sprague River	501.9	38.1	177.3	32%	23%	33%	76	353	4171	0.12	9	43
Williamson River	845.9	73.4	296.3	53%	45%	55%	87	350	7812	0.11	9	38
Klamath L Outlet	1439.2	162.4	2364.2	90%	99%	440%	113	1643	9771	0.15	17	242
Agency Lake Inflows												
Wood River above Weed Rd	246.9	21.0	28.0	56%	34%	18%	85	114	333	0.74	63	84
Wood River below Weed Rd	70.9	14.5	27.7	16%	24%	18%	205	391	61	1.17	239	455
7-Mile Canal	103.4	14.8	49.2	23%	24%	32%	143	476	96	1.07	153	510
Agency Lake Ranch	21.0	11.0	49.0	5%	18%	32%	525	2330	46	0.45	238	1056
Total Agency Inflow	442.1	61.4	153.9	100%	100%	100%	139	348	537	0.82	114	287
Klamath Lake Inflows												
Sprague River	501.9	38.1	177.3	58%	45%	50%	76	353	4171	0.12	9	43
Williamson - Sprague	344.0	35.3	118.9	40%	42%	33%	103	346	3641	0.09	10	33
Pumped Inflows to KL	23.8	11.4	59.9	3%	13%	17%	479	2520	50	0.47	227	1194
Total Klamath Inflow	869.7	84.8	356.2	100%	100%	100%	98	410	7862	0.11	11	45
Overall Balance												
Total Tributaries	1267.0	123.8	401.3	80%	75%	75%	98	317	8302	0.15	15	48
Total Pumped to Lake	44.8	22.4	108.9	3%	14%	20%	501	2431	97	0.46	232	1128
Ungauged Inflows	279.1	18.1	27.6	18%	11%	5%	65	99	1105	0.25	16	25
Total External Inflows	1590.8	164.3	537.7	100%	100%	100%	103	338	9504	0.17	17	57
Precipitation	114.2	4.8	28.7	7%	3%	5%	42	251	267	0.43	18	107
Evaporation	255.6			16%					267	0.96		
Net Inflow	1449.4	169.1	566.4	91%	103%	105%	117	391	9771	0.15	17	58
Lake Outflow	1439.2	162.4	2364.2	90%	99%	440%	113	1643	9771	0.15	17	242
Storage Increase	2.6	-0.9	0.1	0%	-1%	0%						
Retention	7.6	7.6	-1797.8	0%	5%	-334%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	1590.8	103.4	157.5	100%	63%	29%	65	99	9504	0.17	11	17
Anthropogenic	1590.8	60.9	380.2	0%	37%	71%	38	239			6	40

Morphometry	Mean	Min	Max
Volume (hm^3)	546.1	224.2	743.5
Area (km^2)	267.1	217.4	270.9
Elevation (ft)	4140.9	4136.8	4143.3
Mean Depth (meters)	2.0	1.0	2.7

Phosphorus Model Parameters		
Hydraulic Residence Time	0.38	years
Net Water Load	5.96	m/yr
Areal Total P Load	0.62	g/m^2-yr
Total P Retention Coefficient	5%	

6/25/2012

Upper Klamath Lake Water & Nutrient Balances Water Years: 1992-2010 October-April

Term	Flow hm3/yr	Nutrient Loads TP mt/y	Nutrient Loads TN mt/y	Percent of Inflow Flow	Percent of Inflow TP	Percent of Inflow TN	Nutrient Concs TP ppb	Nutrient Concs TN ppb	Dr. Area km2	Runoff m/yr	P Export kg/km2	N Export kg/km2
Major Gauged Sites												
Wood River @ Weed Road	171.2	14.5	19.4	17%	14%	6%	85	113	333	0.51	44	58
Wood River @ Dike Road	213.3	23.2	36.6	21%	23%	11%	109	171	394	0.54	59	93
7-Mile Canal	71.1	9.0	31.2	7%	9%	9%	127	439	96	0.74	93	323
Sprague River	330.6	27.1	119.5	33%	27%	35%	82	362	4171	0.08	7	29
Williamson River	553.2	49.3	208.0	55%	49%	61%	89	376	7812	0.07	6	27
Klamath L Outlet	722.2	56.4	1003.6	72%	56%	294%	78	1390	9771	0.07	6	103
Agency Lake Inflows												
Wood River above Weed Rd	171.2	14.5	19.4	17%	14%	6%	85	113	333	0.51	44	58
Wood River below Weed Rd	42.0	8.7	17.2	4%	9%	5%	206	409	61	0.69	142	282
7-Mile Canal	71.1	9.0	31.2	7%	9%	9%	127	439	96	0.74	93	323
Agency Lake Ranch	7.9	2.3	13.3	1%	2%	4%	298	1692	46	0.17	51	287
Total Agency Inflow	292.2	34.5	81.0	29%	34%	24%	118	277	537	0.54	64	151
Klamath Lake Inflows												
Sprague River	330.6	27.1	119.5	33%	27%	35%	82	362	4171	0.08	7	29
Williamson R below Sprague	222.7	22.2	88.5	22%	22%	26%	100	397	3641	0.06	6	24
Pumped Inflows to KL	14.9	7.1	37.4	1%	7%	11%	479	2520	50	0.30	142	746
Total Klamath Inflow	568.1	56.4	245.4	56%	56%	72%	99	432	7862	0.07	7	31
Overall Balance												
Total Tributaries	837.6	81.5	275.8	83%	81%	81%	97	329	8302	0.10	10	33
Total Pumped to Lake	22.7	9.5	50.7	2%	9%	15%	416	2233	97	0.24	98	526
Ungauged Inflows	145.8	9.5	14.4	14%	9%	4%	65	99	1105	0.13	9	13
Total External Inflows	1006.0	100.4	340.9	100%	100%	100%	100	339	9504	0.11	11	36
Precipitation	93.2	3.4	20.0	9%	3%	6%	36	215	267	0.35	13	75
Evaporation	58.8			6%	0%	0%			267	0.22		
Net Inflow	1040.4	103.8	360.9	103%	103%	106%	100	347	9771	0.11	11	37
Lake Outflow	722.2	56.4	1003.6	72%	56%	294%	78	1390	9771	0.07	6	103
Storage Increase	311.1	-25.5	-366.0	31%	-25%	-107%						
Retention	7.1	72.9	-276.6	1%	73%	-81%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	1006.0	65.4	99.6	100%	65%	29%	65	99	9504	0.11	7	10
Anthropogenic	1006.0	35.0	241.3	100%	35%	71%	35	240		0.11	4	25

Morphometry	Mean	Min	Max
Volume (hm3)	564.8	241.8	738.3
Area (km2)	268.8	227.5	270.9
Elevation (ft)	4141.1	4137.0	4143.2
Mean Depth (meters)	2.1	1.1	2.7

Phosphorus Model Parameters		
Hydraulic Residence Time	0.93	years
Net Water Load	2.26	m/yr
Areal Total P Load	0.39	g/m2-yr
Total P Retention Coefficient	73%	

Upper Klamath Lake Water & Nutrient Balances Water Years: 1992-2010 May-September

Term	Flow hm3/yr	Nutrient Loads TP mt/y	Nutrient Loads TN mt/y	Percent of Inflow Flow	Percent of Inflow TP	Percent of Inflow TN	Nutrient Concs TP ppb	Nutrient Concs TN ppb	Dr. Area km2	Runoff m/yr	P Export kg/km2	N Export kg/km2
Major Gauged Sites												
Wood River @ Weed Road	75.6	6.5	8.7	13%	10%	4%	86	115	333	0.23	19	26
Wood River @ Dike Road	104.5	12.3	19.2	18%	19%	10%	118	184	394	0.27	31	49
7-Mile Canal	32.3	5.8	18.0	6%	9%	9%	179	558	96	0.33	60	187
Sprague River	171.4	11.0	57.8	29%	17%	29%	64	337	4171	0.04	3	14
Williamson River	292.7	24.1	88.3	50%	38%	45%	82	302	7812	0.04	3	11
Klamath L Outlet	717.1	105.9	1360.7	123%	166%	691%	148	1898	9771	0.07	11	139
Agency Lake Inflows												
Wood River above Weed Rd	75.6	6.5	8.7	13%	10%	4%	86	115	333	0.23	19	26
Wood River below Weed Rd	28.8	5.9	10.5	5%	9%	5%	204	365	61	0.47	97	173
7-Mile Canal	32.3	5.8	18.0	6%	9%	9%	179	558	96	0.33	60	187
Agency Lake Ranch	13.2	8.7	35.7	2%	14%	18%	661	2711	46	0.28	188	770
Total Agency Inflow	150.0	26.8	72.9	26%	42%	37%	179	486	537	0.28	50	136
Klamath Lake Inflows												
Sprague River	171.4	11.0	57.8	29%	17%	29%	64	337	4171	0.04	3	14
Williamson R below Sprague	121.3	13.2	30.5	21%	21%	15%	108	251	3641	0.03	4	8
Pumped Inflows to KL	8.9	4.3	22.5	2%	7%	11%	479	2521	50	0.18	85	448
Total Klamath Inflow	301.6	28.4	110.7	52%	44%	56%	94	367	7862	0.04	4	14
Overall Balance												
Total Tributaries	429.5	42.3	125.5	73%	66%	64%	98	292	8302	0.05	5	15
Total Pumped to Lake	22.1	13.0	58.1	4%	20%	30%	588	2634	97	0.23	134	602
Ungauged Inflows	133.3	8.7	13.2	23%	14%	7%	65	99	1105	0.12	8	12
Total External Inflows	584.9	63.9	196.8	100%	100%	100%	109	337	9504	0.06	7	21
Precipitation	21.0	1.5	8.7	4%	2%	4%	69	413	267	0.08	5	33
Evaporation	196.8			34%	0%	0%			267	0.74		
Net Inflow	409.1	65.3	205.5	70%	102%	104%	160	502	9771	0.04	7	21
Lake Outflow	717.1	105.9	1360.7	123%	166%	691%	148	1898	9771	0.07	11	139
Storage Increase	-308.5	24.6	366.1	-53%	39%	186%						
Retention	0.5	-65.2	-1521.3	0%	-102%	-773%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	584.9	38.0	57.9	100%	60%	29%	65	99	9504	0.06	4	6
Anthropogenic	584.9	25.9	138.9	100%	40%	71%	44	238		0.06	3	15

Morphometry	Mean	Min	Max
Volume (hm3)	564.8	241.8	738.3
Area (km2)	268.8	227.5	270.9
Elevation (ft)	4141.1	4137.0	4143.2
Mean Depth (meters)	2.1	1.1	2.7

Phosphorus Model Parameters		
Hydraulic Residence Time	3.31	years
Net Water Load	0.63	m/yr
Areal Total P Load	0.24	g/m2-yr
Total P Retention Coefficient	-102%	

Table E5: Comparison of Updated Mass Balances for WY 1992-1998 vs. Kann & Walker (1999) Results

	Original (Kann & Walker, 1999)			Updated			Updated - Original			Percent Difference			
	Flow	TP	TN	Flow	TP	TN	Flow	TP	TN	Flow	TP	TN	
	hm3/yr	kg/yr	kg/yr	hm3/yr	kg/yr	kg/yr	hm3/yr	kg/yr	kg/yr	%	%	%	Notes
Gauged Values													
Wood River @ Weed Road	253	21674	35872	249	21245	32077	-4	-429	-3794	-2%	-2%	-11%	a,b
Wood River @ Dike Road	294	35163	72185	308	36575	61833	14	1412	-10353	5%	4%	-14%	a,b
7Mile Creek	117	16534	57004	116	15938	53222	0	-595	-3782	0%	-4%	-7%	b
Sprague + Sycan River	596	48675	237272	596	47566	231419	0	-1109	-5854	0%	-2%	-2%	b
Williamson River	917	86439	348601	917	85099	340207	0	-1341	-8394	0%	-2%	-2%	b
Klamath Lake Outlet	1525	159756	2296706	1572	162066	2340091	47	2310	43385	3%	1%	2%	a,b
Lake Mass Balance													
Wood River above Weed Rd	253	21674	35872	249	21245	32077	-4	-429	-3794	-2%	-2%	-11%	a,b
Wood River below Weed Rd	41	13489	36314	59	15329	29756	19	1840	-6558	46%	14%	-18%	a,b
SevenMile Crk @ Gauge	117	16534	57004	116	15938	53222	0	-595	-3782	0%	-4%	-7%	b
Sprague River @ Gauge	596	48675	237272	596	47566	231419	0	-1109	-5854	0%	-2%	-2%	b
Williamson - Sprague	321	37765	111329	321	37533	108788	0	-232	-2541	0%	-1%	-2%	b
Agric Pump	53	20521	124256	51	21586	111026	-2	1065	-13230	-4%	5%	-11%	c
Ungauged	288	18073	34289	320	20772	31638	31	2699	-2651	11%	15%	-8%	g,d
Total	1668	176731	636337	1711	179970	597926	43	3240	-38411	3%	2%	-6%	g
Precipitation	126	4878	27103	134	5205	31096	8	326	3993	6%	7%	15%	e
Evaporation	249			251			2			1%			e
Net Inflow	1545	181609	663440	1594	185175	629022	50	3566	-34418	3%	2%	-5%	g
Lake Outflow	1525	159756	2296706	1572	162066	2340091	47	2310	43385	3%	1%	2%	a,b
Retention	0	25445	-1596526	2	24432	-1696368	2	-1013	-99841		-4%	6%	f

Notes

a flow data revisions

b change in load calculation algorithm (regression with interpolation vs. simple interpolation)

c revisions to pumped drainage areas & concentrations

d update of spring concentration estimates

e update of precipitation & evaporation estimates

f net result of changes in individual terms

Upper Klamath Lake Water & Nutrient Balances Water Years: 1992- 1992

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	TN mt/y	Percent of Inflow Flow	TP	TN	Nutrient Concs TP ppb	TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	167.7	14.9	24.5	18%	13%	9%	89	146	333	0.50	45	74
Wood River @ Dike Road	210.0	24.8	41.0	23%	22%	15%	118	195	394	0.53	63	104
7-Mile Canal	85.9	11.8	42.6	9%	11%	16%	138	495	96	0.89	123	441
Sprague River	177.8	12.6	57.2	19%	11%	21%	71	322	4171	0.04	3	14
Williamson River	432.0	44.7	66.4	47%	40%	25%	103	154	7812	0.06	6	9
Klamath L Outlet	783.8	126.3	1706.2	85%	114%	636%	161	2177	9771	0.08	13	175
Agency Lake Inflows												
Wood River above Weed Rd	167.7	14.9	24.5	53%	35%	21%	89	146	333	0.50	45	74
Wood River below Weed Rd	42.2	9.9	16.5	13%	23%	14%	234	391	61	0.69	162	271
7-Mile Canal	85.9	11.8	42.6	27%	28%	37%	138	495	96	0.89	123	441
Agency Lake Ranch	20.4	5.5	32.6	6%	13%	28%	272	1596	46	0.44	120	703
Total Agency Inflow	316.3	42.2	116.2	100%	100%	100%	133	367	537	0.59	79	216
Klamath Lake Inflows												
Sprague River	177.8	12.6	57.2	39%	21%	42%	71	322	4171	0.04	3	14
Williamson R below Sprague	254.2	32.1	9.3	55%	54%	7%	126	36	3641	0.07	9	3
Pumped Inflows to KL	26.6	14.6	70.6	6%	25%	52%	549	2660	60	0.44	242	1171
Total Klamath Inflow	458.6	59.3	137.1	100%	100%	100%	129	299	7872	0.06	8	17
Overall Balance												
Total Tributaries	727.9	81.3	150.0	79%	73%	56%	112	206	8302	0.09	10	18
Total Pumped to Lake	47.0	20.1	103.2	5%	18%	39%	429	2198	107	0.44	189	968
Ungauged Inflows	150.2	9.8	14.9	16%	9%	6%	65	99	1099	0.14	9	14
Total External Inflows	925.1	111.2	268.1	100%	100%	100%	120	290	9508	0.10	12	28
Precipitation	71.3	3.9	23.1	8%	3%	9%	54	324	263	0.27	15	88
Evaporation	270.5			29%					263	1.03		
Net Inflow	725.9	115.1	291.2	78%	103%	109%	159	401	9771	0.07	12	30
Lake Outflow	783.8	126.3	1706.2	85%	114%	636%	161	2177	9771	0.08	13	175
Storage Increase	-61.5	-52.2	-528.0	-7%	-47%	-197%						
Retention	4.0	41.0	-887.0	0%	37%	-331%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	925.1	60.1	91.6	100%	54%	34%	65	99	9508	0.10	6	10
Anthropogenic	925.1	51.1	176.5	0%	46%	66%	55	191			5	19

Morphometry	Mean	Min	Max
Volume (hm^3)	445.9	269.0	620.8
Area (km^2)	263.1	239.7	269.3
Elevation (ft)	4139.7	4137.4	4141.8
Mean Depth (meters)	1.7	1.1	2.3

Phosphorus Model Parameters		
Hydraulic Residence Time	0.61	years
Net Water Load	3.52	m/yr
Areal Total P Load	0.42	g/m^2-yr
Total P Retention Coefficient	37%	

6/22/2012

Upper Klamath Lake Water & Nutrient Balances Water Years: 1992- 1994

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	Nutrient Loads TN mt/y	Percent of Inflow Flow	Percent of Inflow TP	Percent of Inflow TN	Nutrient Concs TP ppb	Nutrient Concs TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	196.0	18.7	24.3	15%	13%	6%	96	124	333	0.59	56	73
Wood River @ Dike Road	242.7	32.1	51.8	19%	22%	12%	132	213	394	0.62	81	132
7-Mile Canal	78.5	11.3	36.2	6%	8%	9%	144	460	96	0.81	117	375
Sprague River	370.2	32.3	152.3	29%	22%	36%	87	411	4171	0.09	8	37
Williamson River	637.0	62.7	195.4	50%	43%	47%	98	307	7812	0.08	8	25
Klamath L Outlet	1160.9	121.3	1746.0	90%	84%	418%	104	1504	9771	0.12	12	179
Agency Lake Inflows												
Wood River above Weed Rd	196.0	18.7	24.3	57%	38%	20%	96	124	333	0.59	56	73
Wood River below Weed Rd	46.7	13.3	27.5	14%	27%	23%	285	588	61	0.77	219	452
7-Mile Canal	78.5	11.3	36.2	23%	23%	30%	144	460	96	0.81	117	375
Agency Lake Ranch	21.0	5.7	33.5	6%	12%	28%	272	1596	46	0.45	123	723
Total Agency Inflow	342.2	49.1	121.5	100%	100%	100%	143	355	537	0.64	91	226
Klamath Lake Inflows												
Sprague River	370.2	32.3	152.3	56%	42%	57%	87	411	4171	0.09	8	37
Williamson R below Sprague	266.8	30.4	43.2	40%	39%	16%	114	162	3641	0.07	8	12
Pumped Inflows to KL	27.3	15.0	72.6	4%	19%	27%	549	2660	60	0.45	249	1205
Total Klamath Inflow	664.3	77.7	268.1	100%	100%	100%	117	404	7872	0.08	10	34
Overall Balance												
Total Tributaries	958.3	106.1	283.4	75%	73%	68%	111	296	8302	0.12	13	34
Total Pumped to Lake	48.3	20.7	106.2	4%	14%	25%	429	2198	107	0.45	194	995
Ungauged Inflows	279.2	18.1	27.6	22%	13%	7%	65	99	1098	0.25	17	25
Total External Inflows	1285.8	144.9	417.2	100%	100%	100%	113	324	9507	0.14	15	44
Precipitation	105.2	4.6	27.4	8%	3%	7%	44	260	264	0.40	17	104
Evaporation	263.2			20%					264	1.00		
Net Inflow	1127.8	149.5	444.6	88%	103%	107%	133	394	9771	0.12	15	46
Lake Outflow	1160.9	121.3	1746.0	90%	84%	418%	104	1504	9771	0.12	12	179
Storage Increase	-34.3	-18.2	-200.9	-3%	-13%	-48%						
Retention	1.3	46.5	-1100.5	0%	32%	-264%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	1285.8	83.6	127.3	100%	58%	31%	65	99	9507	0.14	9	13
Anthropogenic	1285.8	61.4	289.9	0%	42%	69%	48	225			6	30

Morphometry	Mean	Min	Max
Volume (hm^3)	488.8	227.5	743.5
Area (km^2)	263.9	219.9	270.9
Elevation (ft)	4140.2	4136.8	4143.3
Mean Depth (meters)	1.9	1.0	2.7

Phosphorus Model Parameters		
Hydraulic Residence Time	0.43	years
Net Water Load	4.87	m/yr
Areal Total P Load	0.55	g/m^2-yr
Total P Retention Coefficient	32%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 1993- 1993

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	Nutrient Loads TN mt/y	Percent of Inflow Flow	Percent of Inflow TP	Percent of Inflow TN	Nutrient Concs TP ppb	Nutrient Concs TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	211.4	21.8	25.9	12%	11%	4%	103	122	333	0.63	65	78
Wood River @ Dike Road	271.7	42.4	77.2	15%	21%	11%	156	284	394	0.69	108	196
7-Mile Canal	82.6	14.1	42.2	5%	7%	6%	170	512	96	0.86	146	438
Sprague River	704.6	68.7	352.3	39%	34%	50%	98	500	4171	0.17	16	84
Williamson River	1005.2	101.5	443.1	56%	50%	63%	101	441	7812	0.13	13	57
Klamath L Outlet	1550.3	130.5	2003.0	87%	64%	283%	84	1292	9771	0.16	13	205
Agency Lake Inflows												
Wood River above Weed Rd	211.4	21.8	25.9	56%	35%	17%	103	122	333	0.63	65	78
Wood River below Weed Rd	60.3	20.6	51.3	16%	33%	34%	342	851	61	0.99	339	844
7-Mile Canal	82.6	14.1	42.2	22%	23%	28%	170	512	96	0.86	146	438
Agency Lake Ranch	21.1	5.7	33.6	6%	9%	22%	272	1596	46	0.45	124	726
Total Agency Inflow	375.4	62.2	153.1	100%	100%	100%	166	408	537	0.70	116	285
Klamath Lake Inflows												
Sprague River	704.6	68.7	352.3	68%	59%	68%	98	500	4171	0.17	16	84
Williamson R below Sprague	300.6	32.7	90.9	29%	28%	18%	109	302	3641	0.08	9	25
Pumped Inflows to KL	27.4	15.1	72.9	3%	13%	14%	549	2660	60	0.45	250	1209
Total Klamath Inflow	1032.6	116.5	516.1	100%	100%	100%	113	500	7872	0.13	15	66
Overall Balance												
Total Tributaries	1359.5	157.9	562.5	76%	78%	80%	116	414	8302	0.16	19	68
Total Pumped to Lake	48.5	20.8	106.6	3%	10%	15%	429	2198	107	0.45	195	999
Ungauged Inflows	379.1	24.6	37.5	21%	12%	5%	65	99	1097	0.35	22	34
Total External Inflows	1787.1	203.4	706.7	100%	100%	100%	114	395	9506	0.19	21	74
Precipitation	175.1	6.1	36.2	10%	3%	5%	35	207	265	0.66	23	137
Evaporation	247.3			14%					265	0.93		
Net Inflow	1714.9	209.4	742.9	96%	103%	105%	122	433	9771	0.18	21	76
Lake Outflow	1550.3	130.5	2003.0	87%	64%	283%	84	1292	9771	0.16	13	205
Storage Increase	164.6	4.2	199.8	9%	2%	28%						
Retention	0.0	74.7	-1459.9	0%	37%	-207%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	1787.1	116.2	176.9	100%	57%	25%	65	99	9506	0.19	12	19
Anthropogenic	1787.1	87.2	529.7	0%	43%	75%	49	296			9	56

Morphometry	Mean	Min	Max
Volume (hm^3)	526.8	264.6	743.5
Area (km^2)	264.8	238.1	270.9
Elevation (ft)	4140.6	4137.4	4143.3
Mean Depth (meters)	2.0	1.1	2.7

Phosphorus Model Parameters		
Hydraulic Residence Time	0.31	years
Net Water Load	6.75	m/yr
Areal Total P Load	0.77	g/m^2-yr
Total P Retention Coefficient	37%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 1994- 1994

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	Nutrient Loads TN mt/y	Percent of Inflow Flow	Percent of Inflow TP	Percent of Inflow TN	Nutrient Concs TP ppb	Nutrient Concs TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	208.9	19.6	22.6	18%	16%	8%	94	108	333	0.63	59	68
Wood River @ Dike Road	246.5	29.1	37.3	22%	24%	13%	118	151	394	0.63	74	95
7-Mile Canal	67.1	8.1	23.6	6%	7%	9%	120	352	96	0.70	84	245
Sprague River	228.8	15.6	47.6	20%	13%	17%	68	208	4171	0.05	4	11
Williamson River	474.4	42.0	77.1	41%	35%	28%	88	163	7812	0.06	5	10
Klamath L Outlet	1149.8	107.0	1529.0	100%	89%	551%	93	1330	9771	0.12	11	156
Agency Lake Inflows												
Wood River above Weed Rd	208.9	19.6	22.6	62%	46%	24%	94	108	333	0.63	59	68
Wood River below Weed Rd	37.7	9.5	14.6	11%	22%	15%	252	389	61	0.62	156	241
7-Mile Canal	67.1	8.1	23.6	20%	19%	25%	120	352	96	0.70	84	245
Agency Lake Ranch	21.5	5.8	34.3	6%	14%	36%	272	1596	46	0.46	126	740
Total Agency Inflow	335.1	43.0	95.2	100%	100%	100%	128	284	537	0.62	80	177
Klamath Lake Inflows												
Sprague River	228.8	15.6	47.6	46%	27%	31%	68	208	4171	0.05	4	11
Williamson R below Sprague	245.6	26.4	29.5	49%	46%	19%	108	120	3641	0.07	7	8
Pumped Inflows to KL	28.0	15.4	74.4	6%	27%	49%	549	2660	60	0.46	255	1233
Total Klamath Inflow	502.4	57.3	151.5	100%	100%	100%	114	302	7872	0.06	7	19
Overall Balance												
Total Tributaries	788.0	79.1	138.1	69%	66%	50%	100	175	8302	0.09	10	17
Total Pumped to Lake	49.4	21.2	108.7	4%	18%	39%	429	2198	107	0.46	199	1019
Ungauged Inflows	308.7	20.1	30.6	27%	17%	11%	65	99	1098	0.28	18	28
Total External Inflows	1146.1	120.4	277.3	100%	100%	100%	105	242	9507	0.12	13	29
Precipitation	69.4	3.8	22.9	6%	3%	8%	55	330	264	0.26	15	87
Evaporation	271.9			24%					264	1.03		
Net Inflow	943.7	124.2	300.2	82%	103%	108%	132	318	9771	0.10	13	31
Lake Outflow	1149.8	107.0	1529.0	100%	89%	551%	93	1330	9771	0.12	11	156
Storage Increase	-206.1	-6.6	-273.6	-18%	-5%	-99%						
Retention	0.0	23.8	-955.1	0%	20%	-344%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	1146.1	74.5	113.5	100%	62%	41%	65	99	9507	0.12	8	12
Anthropogenic	1146.1	45.9	163.8	0%	38%	59%	40	143			5	17

Morphometry	Mean	Min	Max
Volume (hm^3)	493.8	227.5	661.0
Area (km^2)	263.8	219.9	269.7
Elevation (ft)	4140.2	4136.8	4142.3
Mean Depth (meters)	1.9	1.0	2.5

Phosphorus Model Parameters		
Hydraulic Residence Time	0.52	years
Net Water Load	4.34	m/yr
Areal Total P Load	0.46	g/m^2-yr
Total P Retention Coefficient	20%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 1995- 1995

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	Nutrient Loads TN mt/y	Percent of Inflow Flow	Percent of Inflow TP	Percent of Inflow TN	Nutrient Concs TP ppb	Nutrient Concs TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	196.1	16.2	30.2	12%	10%	5%	83	154	333	0.59	49	91
Wood River @ Dike Road	256.5	34.6	66.5	15%	21%	10%	135	259	394	0.65	88	169
7-Mile Canal	91.0	12.0	49.5	5%	7%	8%	132	543	96	0.94	125	513
Sprague River	648.0	50.7	285.2	39%	30%	44%	78	440	4171	0.16	12	68
Williamson River	919.3	78.6	390.6	55%	47%	60%	85	425	7812	0.12	10	50
Klamath L Outlet	1333.8	148.0	2171.4	81%	88%	336%	111	1628	9771	0.14	15	222
Agency Lake Inflows												
Wood River above Weed Rd	196.1	16.2	30.2	53%	31%	20%	83	154	333	0.59	49	91
Wood River below Weed Rd	60.5	18.4	36.3	16%	35%	24%	304	601	61	0.99	302	597
7-Mile Canal	91.0	12.0	49.5	25%	23%	33%	132	543	96	0.94	125	513
Agency Lake Ranch	20.9	5.7	33.4	6%	11%	22%	272	1596	46	0.45	123	721
Total Agency Inflow	368.5	52.3	149.4	100%	100%	100%	142	406	537	0.69	97	278
Klamath Lake Inflows												
Sprague River	648.0	50.7	285.2	68%	54%	62%	78	440	4171	0.16	12	68
Williamson R below Sprague	271.3	27.8	105.4	29%	30%	23%	103	388	3641	0.07	8	29
Pumped Inflows to KL	27.2	15.0	72.5	3%	16%	16%	549	2660	60	0.45	248	1202
Total Klamath Inflow	946.6	93.6	463.1	100%	100%	100%	99	489	7872	0.12	12	59
Overall Balance												
Total Tributaries	1266.9	125.2	506.6	76%	74%	78%	99	400	8302	0.15	15	61
Total Pumped to Lake	48.2	20.7	105.9	3%	12%	16%	429	2198	107	0.45	194	993
Ungauged Inflows	341.5	22.2	33.8	21%	13%	5%	65	99	1101	0.31	20	31
Total External Inflows	1656.6	168.0	646.3	100%	100%	100%	101	390	9509	0.17	18	68
Precipitation	146.5	5.4	32.4	9%	3%	5%	37	221	261	0.56	21	124
Evaporation	249.4			15%					261	0.95		
Net Inflow	1553.7	173.5	678.7	94%	103%	105%	112	437	9771	0.16	18	69
Lake Outflow	1333.8	148.0	2171.4	81%	88%	336%	111	1628	9771	0.14	15	222
Storage Increase	219.9	69.7	787.7	13%	41%	122%						
Retention	0.0	-44.2	-2280.3	0%	-26%	-353%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	1656.6	107.7	164.0	100%	64%	25%	65	99	9509	0.17	11	17
Anthropogenic	1656.6	60.4	482.3	0%	36%	75%	36	291			6	51

Morphometry	Mean	Min	Max
Volume (hm^3)	536.8	224.2	741.0
Area (km^2)	261.3	217.4	270.9
Elevation (ft)	4140.8	4136.8	4143.3
Mean Depth (meters)	2.1	1.0	2.7

Phosphorus Model Parameters		
Hydraulic Residence Time	0.35	years
Net Water Load	6.34	m/yr
Areal Total P Load	0.64	g/m^2-yr
Total P Retention Coefficient	-26%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 1996- 1996

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	Nutrient Loads TN mt/y	Percent of Inflow Flow	Percent of Inflow TP	Percent of Inflow TN	Nutrient Concs TP ppb	Nutrient Concs TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	294.9	23.2	43.8	14%	10%	6%	79	148	333	0.89	70	131
Wood River @ Dike Road	364.7	42.7	84.5	17%	18%	11%	117	232	394	0.93	108	215
7-Mile Canal	163.3	29.5	84.1	8%	13%	11%	181	515	96	1.69	306	871
Sprague River	825.1	64.6	329.7	39%	27%	44%	78	400	4171	0.20	15	79
Williamson River	1151.3	114.0	419.9	54%	48%	56%	99	365	7812	0.15	15	54
Klamath L Outlet	2120.8	184.3	3047.9	99%	78%	408%	87	1437	9771	0.22	19	312
Agency Lake Inflows												
Wood River above Weed Rd	294.9	23.2	43.8	53%	30%	21%	79	148	333	0.89	70	131
Wood River below Weed Rd	69.8	19.5	40.8	13%	25%	20%	280	584	61	1.15	321	670
7-Mile Canal	163.3	29.5	84.1	30%	38%	41%	181	515	96	1.69	306	871
Agency Lake Ranch	23.3	6.3	37.2	4%	8%	18%	272	1596	46	0.50	137	803
Total Agency Inflow	551.3	78.6	205.8	100%	100%	100%	143	373	537	1.03	146	383
Klamath Lake Inflows												
Sprague River	825.1	64.6	329.7	70%	49%	66%	78	400	4171	0.20	15	79
Williamson R below Sprague	326.2	49.5	90.2	28%	38%	18%	152	276	3641	0.09	14	25
Pumped Inflows to KL	30.4	16.7	80.7	3%	13%	16%	549	2660	60	0.50	277	1339
Total Klamath Inflow	1181.6	130.7	500.6	100%	100%	100%	111	424	7872	0.15	17	64
Overall Balance												
Total Tributaries	1679.2	186.3	588.5	79%	79%	79%	111	350	8302	0.20	22	71
Total Pumped to Lake	53.7	23.0	118.0	3%	10%	16%	429	2198	107	0.50	216	1106
Ungauged Inflows	403.7	26.2	40.0	19%	11%	5%	65	99	1093	0.37	24	37
Total External Inflows	2136.6	235.5	746.4	100%	100%	100%	110	349	9502	0.22	25	79
Precipitation	173.0	6.1	36.1	8%	3%	5%	35	209	269	0.64	23	134
Evaporation	248.8			12%					269	0.93		
Net Inflow	2060.9	241.6	782.6	96%	103%	105%	117	380	9771	0.21	25	80
Lake Outflow	2120.8	184.3	3047.9	99%	78%	408%	87	1437	9771	0.22	19	312
Storage Increase	-59.9	-29.9	-202.7	-3%	-13%	-27%						
Retention	0.0	87.1	-2062.7	0%	37%	-276%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	2136.6	138.9	211.5	100%	59%	28%	65	99	9502	0.22	15	22
Anthropogenic	2136.6	96.7	534.9	0%	41%	72%	45	250			10	56

Morphometry	Mean	Min	Max
Volume (hm^3)	577.4	387.2	743.5
Area (km^2)	268.7	264.4	270.9
Elevation (ft)	4141.3	4139.0	4143.3
Mean Depth (meters)	2.1	1.5	2.7

Phosphorus Model Parameters		
Hydraulic Residence Time	0.28	years
Net Water Load	7.95	m/yr
Areal Total P Load	0.88	g/m^2-yr
Total P Retention Coefficient	37%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 1997- 1997

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	Nutrient Loads TN mt/y	Percent of Inflow Flow	Percent of Inflow TP	Percent of Inflow TN	Nutrient Concs TP ppb	Nutrient Concs TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	357.3	28.8	43.3	16%	13%	6%	81	121	333	1.07	86	130
Wood River @ Dike Road	430.7	46.3	71.3	20%	21%	9%	107	166	394	1.09	117	181
7-Mile Canal	158.9	17.6	64.7	7%	8%	8%	111	407	96	1.65	182	671
Sprague River	812.2	64.5	269.3	37%	30%	35%	79	332	4171	0.19	15	65
Williamson River	1223.4	105.6	480.5	56%	49%	62%	86	393	7812	0.16	14	62
Klamath L Outlet	2011.9	239.5	3194.6	91%	111%	413%	119	1588	9771	0.21	25	327
Agency Lake Inflows												
Wood River above Weed Rd	357.3	28.8	43.3	58%	41%	25%	81	121	333	1.07	86	130
Wood River below Weed Rd	73.4	17.5	28.0	12%	25%	16%	238	381	61	1.21	288	460
7-Mile Canal	158.9	17.6	64.7	26%	25%	37%	111	407	96	1.65	182	671
Agency Lake Ranch	24.8	6.7	39.6	4%	10%	23%	272	1596	46	0.53	145	853
Total Agency Inflow	614.4	70.6	175.6	100%	100%	100%	115	286	537	1.14	132	327
Klamath Lake Inflows												
Sprague River	812.2	64.5	269.3	65%	52%	48%	79	332	4171	0.19	15	65
Williamson R below Sprague	411.2	41.1	211.2	33%	33%	37%	100	514	3641	0.11	11	58
Pumped Inflows to KL	32.2	17.7	85.8	3%	14%	15%	549	2660	60	0.53	294	1422
Total Klamath Inflow	1255.7	123.4	566.2	100%	100%	100%	98	451	7872	0.16	16	72
Overall Balance												
Total Tributaries	1813.0	169.5	616.5	82%	79%	80%	93	340	8302	0.22	20	74
Total Pumped to Lake	57.0	24.5	125.3	3%	11%	16%	429	2198	107	0.53	229	1175
Ungauged Inflows	329.2	21.4	32.6	15%	10%	4%	65	99	1094	0.30	20	30
Total External Inflows	2199.2	215.4	774.4	100%	100%	100%	98	352	9502	0.23	23	81
Precipitation	162.8	5.8	34.9	7%	3%	5%	36	214	269	0.61	22	130
Evaporation	239.9			11%					269	0.89		
Net Inflow	2122.1	221.2	809.3	96%	103%	105%	104	381	9771	0.22	23	83
Lake Outflow	2011.9	239.5	3194.6	91%	111%	413%	119	1588	9771	0.21	25	327
Storage Increase	99.3	14.9	116.0	5%	7%	15%						
Retention	11.0	-33.2	-2501.3	1%	-15%	-323%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	2199.2	142.9	217.7	100%	66%	28%	65	99	9502	0.23	15	23
Anthropogenic	2199.2	72.4	556.7	0%	34%	72%	33	253			8	59

Morphometry	Mean	Min	Max
Volume (hm^3)	583.8	368.7	727.0
Area (km^2)	268.6	262.8	270.5
Elevation (ft)	4141.4	4138.7	4143.1
Mean Depth (meters)	2.2	1.4	2.7

Phosphorus Model Parameters		
Hydraulic Residence Time	0.28	years
Net Water Load	8.19	m/yr
Areal Total P Load	0.80	g/m^2-yr
Total P Retention Coefficient	-15%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 1998- 1998

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	Nutrient Loads TN mt/y	Percent of Inflow Flow	Percent of Inflow TP	Percent of Inflow TN	Nutrient Concs TP ppb	Nutrient Concs TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	306.9	24.3	34.2	14%	12%	4%	79	111	333	0.92	73	103
Wood River @ Dike Road	377.8	36.2	55.0	18%	18%	7%	96	145	394	0.96	92	139
7-Mile Canal	164.8	18.4	65.8	8%	9%	9%	112	399	96	1.71	191	682
Sprague River	775.5	56.2	278.8	36%	27%	36%	73	359	4171	0.19	13	67
Williamson River	1210.1	109.3	504.1	57%	53%	66%	90	417	7812	0.15	14	65
Klamath L Outlet	2054.7	198.8	2726.8	97%	97%	356%	97	1327	9771	0.21	20	279
Agency Lake Inflows												
Wood River above Weed Rd	306.9	24.3	34.2	54%	40%	22%	79	111	333	0.92	73	103
Wood River below Weed Rd	70.8	11.9	20.8	13%	20%	13%	168	293	61	1.16	196	341
7-Mile Canal	164.8	18.4	65.8	29%	30%	42%	112	399	96	1.71	191	682
Agency Lake Ranch	22.9	6.2	36.5	4%	10%	23%	272	1596	46	0.49	134	788
Total Agency Inflow	565.5	60.8	157.3	100%	100%	100%	108	278	537	1.05	113	293
Klamath Lake Inflows												
Sprague River	775.5	56.2	278.8	63%	45%	48%	73	359	4171	0.19	13	67
Williamson R below Sprague	434.6	53.0	225.3	35%	43%	39%	122	519	3641	0.12	15	62
Pumped Inflows to KL	28.0	14.6	72.9	2%	12%	13%	522	2606	57	0.49	258	1286
Total Klamath Inflow	1238.1	123.9	577.0	100%	100%	100%	100	466	7868	0.16	16	73
Overall Balance												
Total Tributaries	1752.7	163.9	624.8	82%	80%	82%	94	357	8302	0.21	20	75
Total Pumped to Lake	50.8	20.8	109.4	2%	10%	14%	409	2151	103	0.49	202	1062
Ungauged Inflows	324.7	21.1	32.1	15%	10%	4%	65	99	1097	0.30	19	29
Total External Inflows	2128.2	205.8	766.4	100%	100%	100%	97	360	9501	0.22	22	81
Precipitation	139.7	5.4	32.0	7%	3%	4%	38	229	269	0.52	20	119
Evaporation	229.4			11%					269	0.85		
Net Inflow	2038.4	211.2	798.4	96%	103%	104%	104	392	9771	0.21	22	82
Lake Outflow	2054.7	198.8	2726.8	97%	97%	356%	97	1327	9771	0.21	20	279
Storage Increase	-16.3	-9.1	-200.1	-1%	-4%	-26%						
Retention	0.0	21.5	-1728.3	0%	10%	-226%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	2128.2	138.3	210.7	100%	67%	27%	65	99	9501	0.22	15	22
Anthropogenic	2128.2	67.5	555.7	0%	33%	73%	32	261			7	58

Morphometry	Mean	Min	Max
Volume (hm^3)	616.1	470.1	731.1
Area (km^2)	269.3	267.6	270.5
Elevation (ft)	4141.8	4140.0	4143.2
Mean Depth (meters)	2.3	1.8	2.7

Phosphorus Model Parameters		
Hydraulic Residence Time	0.30	years
Net Water Load	7.90	m/yr
Areal Total P Load	0.76	g/m^2-yr
Total P Retention Coefficient	10%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 1999- 1999

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	Nutrient Loads TN mt/y	Percent of Inflow Flow	Percent of Inflow TP	Percent of Inflow TN	Nutrient Concs TP ppb	Nutrient Concs TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	265.5	23.2	25.2	11%	11%	4%	87	95	333	0.80	70	76
Wood River @ Dike Road	294.1	34.1	45.0	13%	16%	6%	116	153	394	0.75	86	114
7-Mile Canal	131.4	19.2	53.9	6%	9%	8%	146	410	96	1.36	199	558
Sprague River	808.7	65.0	253.1	35%	30%	36%	80	313	4171	0.19	16	61
Williamson River	1287.8	107.5	432.8	55%	49%	62%	84	336	7812	0.16	14	55
Klamath L Outlet	2158.3	263.0	3115.5	93%	121%	447%	122	1444	9771	0.22	27	319
Agency Lake Inflows												
Wood River above Weed Rd	265.5	23.2	25.2	59%	39%	18%	87	95	333	0.80	70	76
Wood River below Weed Rd	28.6	10.9	19.8	6%	18%	14%	381	694	61	0.47	179	326
7-Mile Canal	131.4	19.2	53.9	29%	32%	39%	146	410	96	1.36	199	558
Agency Lake Ranch	24.7	6.7	39.4	5%	11%	28%	272	1596	46	0.53	145	850
Total Agency Inflow	450.1	59.9	138.3	100%	100%	100%	133	307	537	0.84	112	258
Klamath Lake Inflows												
Sprague River	808.7	65.0	253.1	61%	54%	50%	80	313	4171	0.19	16	61
Williamson R below Sprague	479.1	42.5	179.7	36%	35%	36%	89	375	3641	0.13	12	49
Pumped Inflows to KL	28.2	13.8	71.7	2%	11%	14%	491	2544	53	0.53	261	1354
Total Klamath Inflow	1316.0	121.4	504.5	100%	100%	100%	92	383	7864	0.17	15	64
Overall Balance												
Total Tributaries	1713.2	160.8	531.7	74%	74%	76%	94	310	8302	0.21	19	64
Total Pumped to Lake	52.9	20.5	111.1	2%	9%	16%	389	2102	99	0.53	207	1118
Ungauged Inflows	554.3	36.0	54.9	24%	17%	8%	65	99	1100	0.50	33	50
Total External Inflows	2320.4	217.3	697.7	100%	100%	100%	94	301	9502	0.24	23	73
Precipitation	118.2	4.9	29.3	5%	2%	4%	41	248	269	0.44	18	109
Evaporation	252.6			11%					269	0.94		
Net Inflow	2186.0	222.2	727.0	94%	102%	104%	102	333	9771	0.22	23	74
Lake Outflow	2158.3	263.0	3115.5	93%	121%	447%	122	1444	9771	0.22	27	319
Storage Increase	27.8	5.9	73.8	1%	3%	11%						
Retention	0.0	-46.6	-2462.3	0%	-21%	-353%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	2320.4	150.8	229.7	100%	69%	33%	65	99	9502	0.24	16	24
Anthropogenic	2320.4	66.5	467.9	0%	31%	67%	29	202			7	49

Morphometry	Mean	Min	Max
Volume (hm^3)	595.2	463.6	720.4
Area (km^2)	269.1	267.6	270.5
Elevation (ft)	4141.5	4139.9	4143.0
Mean Depth (meters)	2.2	1.7	2.7

Phosphorus Model Parameters		
Hydraulic Residence Time	0.27	years
Net Water Load	8.62	m/yr
Areal Total P Load	0.81	g/m^2-yr
Total P Retention Coefficient	-21%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 2000- 2000

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	Nutrient Loads TN mt/y	Percent of Inflow Flow	Percent of Inflow TP	Percent of Inflow TN	Nutrient Concs TP ppb	Nutrient Concs TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	277.2	22.1	30.4	15%	11%	5%	80	110	333	0.83	66	91
Wood River @ Dike Road	319.3	31.7	48.5	17%	16%	7%	99	152	394	0.81	80	123
7-Mile Canal	82.7	8.7	30.8	4%	4%	5%	105	373	96	0.86	90	320
Sprague River	508.1	33.8	153.5	27%	17%	23%	66	302	4171	0.12	8	37
Williamson River	978.4	72.8	330.7	53%	36%	51%	74	338	7812	0.13	9	42
Klamath L Outlet	1771.8	223.9	2426.5	95%	110%	371%	126	1370	9771	0.18	23	248
Agency Lake Inflows												
Wood River above Weed Rd	277.2	22.1	30.4	64%	24%	14%	80	110	333	0.83	66	91
Wood River below Weed Rd	42.1	9.6	18.1	10%	10%	8%	228	430	61	0.69	158	298
7-Mile Canal	82.7	8.7	30.8	19%	10%	14%	105	373	96	0.86	90	320
Agency Lake Ranch	28.6	51.1	138.2	7%	56%	64%	1788	4835	46	0.62	1103	2982
Total Agency Inflow	430.5	91.5	217.6	100%	100%	100%	213	505	537	0.80	171	405
Klamath Lake Inflows												
Sprague River	508.1	33.8	153.5	51%	40%	39%	66	302	4171	0.12	8	37
Williamson R below Sprague	470.3	39.1	177.2	47%	46%	45%	83	377	3641	0.13	11	49
Pumped Inflows to KL	25.5	11.6	62.9	3%	14%	16%	455	2473	49	0.52	235	1276
Total Klamath Inflow	1003.9	84.4	393.6	100%	100%	100%	84	392	7861	0.13	11	50
Overall Balance												
Total Tributaries	1380.4	113.3	410.1	74%	56%	63%	82	297	8302	0.17	14	49
Total Pumped to Lake	54.0	62.7	201.2	3%	31%	31%	1160	3722	96	0.56	655	2103
Ungauged Inflows	426.0	27.7	42.2	23%	14%	6%	65	99	1104	0.39	25	38
Total External Inflows	1860.4	203.6	653.4	100%	100%	100%	109	351	9502	0.20	21	69
Precipitation	97.5	4.5	26.7	5%	2%	4%	46	274	269	0.36	17	99
Evaporation	244.7			13%					269	0.91		
Net Inflow	1713.2	208.1	680.2	92%	102%	104%	121	397	9771	0.18	21	70
Lake Outflow	1771.8	223.9	2426.5	95%	110%	371%	126	1370	9771	0.18	23	248
Storage Increase	-58.6	-1.8	76.9	-3%	-1%	12%						
Retention	0.0	-14.0	-1823.2	0%	-7%	-279%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	1860.4	120.9	184.2	100%	59%	28%	65	99	9502	0.20	13	19
Anthropogenic	1860.4	82.7	469.3	0%	41%	72%	44	252			9	49

Morphometry	Mean	Min	Max
Volume (hm^3)	594.4	417.2	734.4
Area (km^2)	269.0	266.4	270.5
Elevation (ft)	4141.5	4139.3	4143.2
Mean Depth (meters)	2.2	1.6	2.7

Phosphorus Model Parameters		
Hydraulic Residence Time	0.35	years
Net Water Load	6.92	m/yr
Areal Total P Load	0.76	g/m^2-yr
Total P Retention Coefficient	-7%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 2001- 2001

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	Nutrient Loads TN mt/y	Percent of Inflow Flow	Percent of Inflow TP	Percent of Inflow TN	Nutrient Concs TP ppb	Nutrient Concs TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	215.5	17.6	19.8	17%	16%	6%	81	92	333	0.65	53	59
Wood River @ Dike Road	266.7	27.7	36.4	22%	25%	12%	104	136	394	0.68	70	92
7-Mile Canal	57.5	6.9	19.1	5%	6%	6%	120	332	96	0.60	71	198
Sprague River	259.9	15.5	58.0	21%	14%	19%	60	223	4171	0.06	4	14
Williamson River	623.3	47.7	162.7	50%	42%	53%	77	261	7812	0.08	6	21
Klamath L Outlet	1005.6	132.6	2147.6	81%	118%	703%	132	2136	9771	0.10	14	220
Agency Lake Inflows												
Wood River above Weed Rd	215.5	17.6	19.8	66%	46%	30%	81	92	333	0.65	53	59
Wood River below Weed Rd	51.2	10.2	16.6	16%	26%	25%	198	324	61	0.84	167	273
7-Mile Canal	57.5	6.9	19.1	18%	18%	29%	120	332	96	0.60	71	198
Agency Lake Ranch	2.2	3.9	10.6	1%	10%	16%	1788	4835	46	0.05	85	229
Total Agency Inflow	326.4	38.5	66.1	100%	100%	100%	118	202	537	0.61	72	123
Klamath Lake Inflows												
Sprague River	259.9	15.5	58.0	40%	28%	27%	60	223	4171	0.06	4	14
Williamson R below Sprague	363.4	32.2	104.7	56%	57%	49%	88	288	3641	0.10	9	29
Pumped Inflows to KL	21.0	8.7	50.2	3%	15%	24%	413	2390	46	0.46	190	1099
Total Klamath Inflow	644.3	56.4	212.9	100%	100%	100%	87	330	7857	0.08	7	27
Overall Balance												
Total Tributaries	947.5	82.3	218.2	76%	73%	71%	87	230	8302	0.11	10	26
Total Pumped to Lake	23.2	12.6	60.8	2%	11%	20%	543	2621	92	0.25	137	660
Ungauged Inflows	269.3	17.5	26.7	22%	16%	9%	65	99	1108	0.24	16	24
Total External Inflows	1239.9	112.4	305.6	100%	100%	100%	91	246	9502	0.13	12	32
Precipitation	60.0	3.7	22.0	5%	3%	7%	61	367	269	0.22	14	82
Evaporation	293.9			24%					269	1.09		
Net Inflow	1006.0	116.1	327.6	81%	103%	107%	115	326	9771	0.10	12	34
Lake Outflow	1005.6	132.6	2147.6	81%	118%	703%	132	2136	9771	0.10	14	220
Storage Increase	-0.8	-20.4	313.7	0%	-18%	103%						
Retention	1.0	3.9	-2133.7	0%	3%	-698%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	1239.9	80.6	122.8	100%	72%	40%	65	99	9502	0.13	8	13
Anthropogenic	1239.9	31.8	182.8	0%	28%	60%	26	147			3	19

Morphometry	Mean	Min	Max
Volume (hm^3)	571.5	432.6	727.0
Area (km^2)	268.7	266.8	270.5
Elevation (ft)	4141.2	4139.5	4143.1
Mean Depth (meters)	2.1	1.6	2.7

Phosphorus Model Parameters		
Hydraulic Residence Time	0.57	years
Net Water Load	4.61	m/yr
Areal Total P Load	0.42	g/m^2-yr
Total P Retention Coefficient	3%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 2002- 2002

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	Nutrient Loads TN mt/y	Percent of Inflow Flow	Percent of Inflow TP	Percent of Inflow TN	Nutrient Concs TP ppb	Nutrient Concs TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	213.7	19.0	19.8	15%	12%	4%	89	92	333	0.64	57	59
Wood River @ Dike Road	287.0	31.8	42.0	21%	20%	9%	111	146	394	0.73	81	107
7-Mile Canal	59.0	11.9	36.2	4%	8%	8%	202	613	96	0.61	123	375
Sprague River	355.3	24.6	120.1	26%	16%	25%	69	338	4171	0.09	6	29
Williamson River	716.2	61.7	259.9	51%	39%	54%	86	363	7812	0.09	8	33
Klamath L Outlet	1310.1	115.3	2197.8	94%	73%	459%	88	1678	9771	0.13	12	225
Agency Lake Inflows												
Wood River above Weed Rd	213.7	19.0	19.8	58%	28%	14%	89	92	333	0.64	57	59
Wood River below Weed Rd	73.3	12.8	22.3	20%	19%	16%	175	304	61	1.21	211	366
7-Mile Canal	59.0	11.9	36.2	16%	17%	26%	202	613	96	0.61	123	375
Agency Lake Ranch	21.7	25.2	63.4	6%	37%	45%	1163	2926	46	0.47	544	1368
Total Agency Inflow	367.6	68.9	141.6	100%	100%	100%	187	385	537	0.68	128	264
Klamath Lake Inflows												
Sprague River	355.3	24.6	120.1	48%	35%	39%	69	338	4171	0.09	6	29
Williamson R below Sprague	360.9	37.0	139.8	49%	53%	45%	103	387	3641	0.10	10	38
Pumped Inflows to KL	20.5	8.5	49.0	3%	12%	16%	413	2390	46	0.45	185	1073
Total Klamath Inflow	736.7	70.1	308.9	100%	100%	100%	95	419	7857	0.09	9	39
Overall Balance												
Total Tributaries	1062.1	105.4	338.1	76%	67%	71%	99	318	8302	0.13	13	41
Total Pumped to Lake	42.2	33.7	112.4	3%	21%	23%	799	2666	92	0.46	366	1222
Ungauged Inflows	286.7	18.6	28.4	21%	12%	6%	65	99	1108	0.26	17	26
Total External Inflows	1391.0	157.7	478.9	100%	100%	100%	113	344	9502	0.15	17	50
Precipitation	103.8	4.6	27.5	7%	3%	6%	44	265	268	0.39	17	102
Evaporation	265.5			19%					268	0.99		
Net Inflow	1229.3	162.3	506.3	88%	103%	106%	132	412	9771	0.13	17	52
Lake Outflow	1310.1	115.3	2197.8	94%	73%	459%	88	1678	9771	0.13	12	225
Storage Increase	-80.8	16.0	-330.3	-6%	10%	-69%						
Retention	0.0	31.0	-1361.1	0%	20%	-284%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	1391.0	90.4	137.7	100%	57%	29%	65	99	9502	0.15	10	14
Anthropogenic	1391.0	67.3	341.1	0%	43%	71%	48	245			7	36

Morphometry	Mean	Min	Max
Volume (hm^3)	565.7	357.6	730.3
Area (km^2)	268.4	261.6	270.5
Elevation (ft)	4141.1	4138.6	4143.1
Mean Depth (meters)	2.1	1.4	2.7

Phosphorus Model Parameters		
Hydraulic Residence Time	0.46	years
Net Water Load	5.18	m/yr
Areal Total P Load	0.59	g/m^2-yr
Total P Retention Coefficient	20%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 2003- 2003

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	Nutrient Loads TN mt/y	Percent of Inflow Flow	Percent of Inflow TP	Percent of Inflow TN	Nutrient Concs TP ppb	Nutrient Concs TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	216.6	18.6	21.6	16%	13%	4%	86	100	333	0.65	56	65
Wood River @ Dike Road	331.6	33.3	42.9	24%	23%	8%	100	129	394	0.84	84	109
7-Mile Canal	119.5	16.8	57.9	9%	12%	11%	141	485	96	1.24	175	600
Sprague River	395.4	25.5	104.5	29%	18%	20%	65	264	4171	0.09	6	25
Williamson River	715.5	56.4	289.9	53%	39%	56%	79	405	7812	0.09	7	37
Klamath L Outlet	1131.8	140.9	2063.4	83%	97%	396%	125	1823	9771	0.12	14	211
Agency Lake Inflows												
Wood River above Weed Rd	216.6	18.6	21.6	46%	26%	13%	86	100	333	0.65	56	65
Wood River below Weed Rd	115.1	14.7	21.3	24%	21%	13%	128	185	61	1.89	242	351
7-Mile Canal	119.5	16.8	57.9	25%	24%	35%	141	485	96	1.24	175	600
Agency Lake Ranch	24.8	20.2	66.9	5%	29%	40%	812	2693	46	0.54	435	1443
Total Agency Inflow	475.9	70.3	167.7	100%	100%	100%	148	352	537	0.89	131	312
Klamath Lake Inflows												
Sprague River	395.4	25.5	104.5	54%	39%	31%	65	264	4171	0.09	6	25
Williamson R below Sprague	320.0	30.9	185.4	43%	48%	55%	96	579	3641	0.09	8	51
Pumped Inflows to KL	20.6	8.5	49.2	3%	13%	14%	413	2390	46	0.45	186	1077
Total Klamath Inflow	736.0	64.9	339.1	100%	100%	100%	88	461	7857	0.09	8	43
Overall Balance												
Total Tributaries	1166.6	106.5	390.8	86%	74%	75%	91	335	8302	0.14	13	47
Total Pumped to Lake	45.4	28.7	116.1	3%	20%	22%	631	2556	92	0.49	311	1262
Ungauged Inflows	149.6	9.7	14.8	11%	7%	3%	65	99	1109	0.13	9	13
Total External Inflows	1361.5	144.9	521.6	100%	100%	100%	106	383	9503	0.14	15	55
Precipitation	114.5	4.8	28.8	8%	3%	6%	42	251	268	0.43	18	107
Evaporation	266.2			20%					268	0.99		
Net Inflow	1209.9	149.7	550.4	89%	103%	106%	124	455	9771	0.12	15	56
Lake Outflow	1131.8	140.9	2063.4	83%	97%	396%	125	1823	9771	0.12	14	211
Storage Increase	34.5	15.2	165.6	3%	10%	32%						
Retention	43.0	-6.4	-1678.6	3%	-4%	-322%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	1361.5	88.5	134.8	100%	61%	26%	65	99	9503	0.14	9	14
Anthropogenic	1361.5	56.4	386.8	0%	39%	74%	41	284			6	41

Morphometry	Mean	Min	Max
Volume (hm^3)	555.6	350.4	739.3
Area (km^2)	267.9	260.8	270.9
Elevation (ft)	4141.0	4138.5	4143.3
Mean Depth (meters)	2.1	1.3	2.7

Phosphorus Model Parameters		
Hydraulic Residence Time	0.46	years
Net Water Load	5.08	m/yr
Areal Total P Load	0.54	g/m^2-yr
Total P Retention Coefficient	-4%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 2004- 2004

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	Nutrient Loads TN mt/y	Percent of Inflow Flow	Percent of Inflow TP	Percent of Inflow TN	Nutrient Concs TP ppb	Nutrient Concs TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	246.0	21.0	26.5	19%	16%	6%	86	108	333	0.74	63	80
Wood River @ Dike Road	316.6	33.9	49.3	24%	26%	12%	107	156	394	0.80	86	125
7-Mile Canal	89.1	11.8	47.0	7%	9%	11%	133	527	96	0.92	123	487
Sprague River	342.4	24.6	129.2	26%	19%	31%	72	377	4171	0.08	6	31
Williamson River	645.2	54.2	216.4	49%	41%	51%	84	335	7812	0.08	7	28
Klamath L Outlet	1168.3	117.3	2107.9	88%	89%	500%	100	1804	9771	0.12	12	216
Agency Lake Inflows												
Wood River above Weed Rd	246.0	21.0	26.5	59%	39%	20%	86	108	333	0.74	63	80
Wood River below Weed Rd	70.6	12.8	22.7	17%	24%	17%	182	322	61	1.16	211	374
7-Mile Canal	89.1	11.8	47.0	21%	22%	35%	133	527	96	0.92	123	487
Agency Lake Ranch	12.6	7.7	36.7	3%	14%	28%	611	2901	46	0.27	167	791
Total Agency Inflow	418.3	53.4	132.9	100%	100%	100%	128	318	537	0.78	100	248
Klamath Lake Inflows												
Sprague River	342.4	24.6	129.2	51%	39%	49%	72	377	4171	0.08	6	31
Williamson R below Sprague	302.9	29.6	87.2	45%	47%	33%	98	288	3641	0.08	8	24
Pumped Inflows to KL	20.6	8.5	49.1	3%	14%	19%	413	2390	46	0.45	186	1076
Total Klamath Inflow	665.8	62.7	265.5	100%	100%	100%	94	399	7857	0.08	8	34
Overall Balance												
Total Tributaries	1050.9	99.9	312.7	80%	76%	74%	95	298	8302	0.13	12	38
Total Pumped to Lake	33.2	16.2	85.8	3%	12%	20%	488	2585	92	0.36	176	933
Ungauged Inflows	236.8	15.4	23.4	18%	12%	6%	65	99	1109	0.21	14	21
Total External Inflows	1320.9	131.5	421.9	100%	100%	100%	100	319	9503	0.14	14	44
Precipitation	104.5	4.6	27.5	8%	3%	7%	44	263	267	0.39	17	103
Evaporation	262.7			20%					267	0.98		
Net Inflow	1162.6	136.1	449.4	88%	103%	107%	117	387	9771	0.12	14	46
Lake Outflow	1168.3	117.3	2107.9	88%	89%	500%	100	1804	9771	0.12	12	216
Storage Increase	-5.6	-46.1	-301.4	0%	-35%	-71%						
Retention	0.0	64.8	-1357.2	0%	49%	-322%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	1320.9	85.9	130.8	100%	65%	31%	65	99	9503	0.14	9	14
Anthropogenic	1320.9	45.7	291.1	0%	35%	69%	35	220			5	31

Morphometry	Mean	Min	Max
Volume (hm^3)	522.4	369.5	695.6
Area (km^2)	267.5	262.8	270.1
Elevation (ft)	4140.6	4138.7	4142.7
Mean Depth (meters)	2.0	1.4	2.6

Phosphorus Model Parameters		
Hydraulic Residence Time	0.45	years
Net Water Load	4.94	m/yr
Areal Total P Load	0.49	g/m^2-yr
Total P Retention Coefficient	49%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 2005- 2005

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	Nutrient Loads TN mt/y	Percent of Inflow Flow	Percent of Inflow TP	Percent of Inflow TN	Nutrient Concs TP ppb	Nutrient Concs TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	233.5	19.4	23.6	19%	14%	5%	83	101	333	0.70	58	71
Wood River @ Dike Road	311.2	33.3	50.5	25%	24%	11%	107	162	394	0.79	85	128
7-Mile Canal	81.1	10.3	41.5	7%	7%	9%	127	512	96	0.84	107	430
Sprague River	384.4	32.1	153.3	31%	23%	34%	84	399	4171	0.09	8	37
Williamson River	648.6	60.5	214.9	53%	44%	48%	93	331	7812	0.08	8	28
Klamath L Outlet	1015.2	114.7	1847.4	83%	83%	410%	113	1820	9771	0.10	12	189
Agency Lake Inflows												
Wood River above Weed Rd	233.5	19.4	23.6	55%	32%	14%	83	101	333	0.70	58	71
Wood River below Weed Rd	77.7	13.9	26.9	18%	23%	16%	178	346	61	1.28	228	442
7-Mile Canal	81.1	10.3	41.5	19%	17%	24%	127	512	96	0.84	107	430
Agency Lake Ranch	31.0	17.1	81.3	7%	28%	47%	553	2627	46	0.67	370	1754
Total Agency Inflow	423.3	60.7	173.3	100%	100%	100%	143	409	537	0.79	113	323
Klamath Lake Inflows												
Sprague River	384.4	32.1	153.3	57%	47%	58%	84	399	4171	0.09	8	37
Williamson R below Sprague	264.2	28.4	61.5	39%	41%	23%	107	233	3641	0.07	8	17
Pumped Inflows to KL	20.3	8.4	48.6	3%	12%	18%	413	2390	46	0.45	184	1065
Total Klamath Inflow	669.0	68.9	263.5	100%	100%	100%	103	394	7857	0.09	9	34
Overall Balance												
Total Tributaries	1040.9	104.1	306.8	85%	75%	68%	100	295	8302	0.13	13	37
Total Pumped to Lake	51.3	25.5	130.0	4%	18%	29%	498	2533	92	0.56	278	1413
Ungauged Inflows	135.3	8.8	13.4	11%	6%	3%	65	99	1108	0.12	8	12
Total External Inflows	1227.5	138.4	450.2	100%	100%	100%	113	367	9502	0.13	15	47
Precipitation	81.9	4.1	24.8	7%	3%	5%	51	302	269	0.30	15	92
Evaporation	243.8			20%					269	0.91		
Net Inflow	1065.6	142.6	474.9	87%	103%	105%	134	446	9771	0.11	15	49
Lake Outflow	1015.2	114.7	1847.4	83%	83%	410%	113	1820	9771	0.10	12	189
Storage Increase	19.4	15.6	134.8	2%	11%	30%						
Retention	31.0	12.3	-1507.3	3%	9%	-335%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	1227.5	79.8	121.5	100%	58%	27%	65	99	9502	0.13	8	13
Anthropogenic	1227.5	58.6	328.6	0%	42%	73%	48	268			6	35

Morphometry	Mean	Min	Max
Volume (hm^3)	583.4	377.6	736.9
Area (km^2)	268.7	263.6	270.9
Elevation (ft)	4141.4	4138.8	4143.2
Mean Depth (meters)	2.2	1.4	2.7

Phosphorus Model Parameters		
Hydraulic Residence Time	0.55	years
Net Water Load	4.57	m/yr
Areal Total P Load	0.52	g/m^2-yr
Total P Retention Coefficient	9%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 2006- 2006

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	Nutrient Loads TN mt/y	Percent of Inflow Flow	Percent of Inflow TP	Percent of Inflow TN	Nutrient Concs TP ppb	Nutrient Concs TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	273.4	24.7	40.4	13%	11%	5%	90	148	333	0.82	74	121
Wood River @ Dike Road	341.5	43.5	81.4	16%	19%	9%	127	238	394	0.87	111	207
7-Mile Canal	132.9	25.2	87.3	6%	11%	10%	190	657	96	1.38	262	905
Sprague River	866.0	75.9	322.8	42%	33%	37%	88	373	4171	0.21	18	77
Williamson River	1247.2	117.7	554.3	60%	51%	64%	94	444	7812	0.16	15	71
Klamath L Outlet	2013.5	199.1	3015.9	97%	87%	346%	99	1498	9771	0.21	20	309
Agency Lake Inflows												
Wood River above Weed Rd	273.4	24.7	40.4	55%	30%	17%	90	148	333	0.82	74	121
Wood River below Weed Rd	68.1	18.9	41.0	14%	23%	18%	277	601	61	1.12	310	674
7-Mile Canal	132.9	25.2	87.3	27%	30%	37%	190	657	96	1.38	262	905
Agency Lake Ranch	21.7	14.5	65.3	4%	17%	28%	669	3012	46	0.47	313	1409
Total Agency Inflow	496.1	83.3	234.0	100%	100%	100%	168	472	537	0.92	155	436
Klamath Lake Inflows												
Sprague River	866.0	75.9	322.8	68%	60%	53%	88	373	4171	0.21	18	77
Williamson R below Sprague	381.1	41.9	231.4	30%	33%	38%	110	607	3641	0.10	11	64
Pumped Inflows to KL	22.3	9.2	53.3	2%	7%	9%	413	2390	46	0.49	202	1167
Total Klamath Inflow	1269.5	126.9	607.5	100%	100%	100%	100	479	7857	0.16	16	77
Overall Balance												
Total Tributaries	1721.6	186.5	722.9	83%	81%	83%	108	420	8302	0.21	22	87
Total Pumped to Lake	44.0	23.7	118.6	2%	10%	14%	539	2697	92	0.48	258	1289
Ungauged Inflows	307.6	20.0	30.5	15%	9%	3%	65	99	1108	0.28	18	27
Total External Inflows	2073.2	230.2	872.0	100%	100%	100%	111	421	9502	0.22	24	92
Precipitation	156.8	5.7	34.1	8%	2%	4%	36	217	268	0.58	21	127
Evaporation	256.0			12%					268	0.95		
Net Inflow	1974.0	235.9	906.1	95%	102%	104%	120	459	9771	0.20	24	93
Lake Outflow	2013.5	199.1	3015.9	97%	87%	346%	99	1498	9771	0.21	20	309
Storage Increase	-39.5	37.5	179.7	-2%	16%	21%						
Retention	0.0	-0.8	-2289.5	0%	0%	-263%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	2073.2	134.8	205.2	100%	59%	24%	65	99	9502	0.22	14	22
Anthropogenic	2073.2	95.4	666.7	0%	41%	76%	46	322			10	70

Morphometry	Mean	Min	Max
Volume (hm^3)	571.3	366.3	742.6
Area (km^2)	268.4	262.4	270.9
Elevation (ft)	4141.2	4138.7	4143.3
Mean Depth (meters)	2.1	1.4	2.7

Phosphorus Model Parameters		
Hydraulic Residence Time	0.29	years
Net Water Load	7.72	m/yr
Areal Total P Load	0.86	g/m^2-yr
Total P Retention Coefficient	0%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 2007- 2007

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	Nutrient Loads TN mt/y	Percent of Inflow Flow	Percent of Inflow TP	Percent of Inflow TN	Nutrient Concs TP ppb	Nutrient Concs TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	271.1	22.1	27.3	18%	14%	6%	81	101	333	0.81	66	82
Wood River @ Dike Road	369.9	42.7	66.5	25%	28%	14%	115	180	394	0.94	108	169
7-Mile Canal	93.5	17.8	51.5	6%	12%	11%	190	552	96	0.97	184	534
Sprague River	396.5	25.5	118.4	27%	17%	24%	64	299	4171	0.10	6	28
Williamson River	724.9	56.7	212.3	49%	37%	44%	78	293	7812	0.09	7	27
Klamath L Outlet	1334.3	242.1	2892.2	91%	158%	596%	181	2168	9771	0.14	25	296
Agency Lake Inflows												
Wood River above Weed Rd	271.1	22.1	27.3	56%	31%	14%	81	101	333	0.81	66	82
Wood River below Weed Rd	98.8	20.7	39.2	20%	29%	20%	209	397	61	1.62	340	645
7-Mile Canal	93.5	17.8	51.5	19%	25%	26%	190	552	96	0.97	184	534
Agency Lake Ranch	25.1	11.5	78.6	5%	16%	40%	457	3133	46	0.54	247	1696
Total Agency Inflow	488.5	71.9	196.7	100%	100%	100%	147	403	537	0.91	134	366
Klamath Lake Inflows												
Sprague River	396.5	25.5	118.4	53%	39%	45%	64	299	4171	0.10	6	28
Williamson R below Sprague	328.4	31.3	93.9	44%	47%	35%	95	286	3641	0.09	9	26
Pumped Inflows to KL	22.1	9.1	52.8	3%	14%	20%	413	2390	46	0.48	200	1156
Total Klamath Inflow	747.0	65.9	265.1	100%	100%	100%	88	355	7857	0.10	8	34
Overall Balance												
Total Tributaries	1188.3	117.2	330.4	81%	77%	68%	99	278	8302	0.14	14	40
Total Pumped to Lake	47.2	20.6	131.4	3%	13%	27%	436	2785	92	0.51	224	1428
Ungauged Inflows	233.3	15.2	23.1	16%	10%	5%	65	99	1109	0.21	14	21
Total External Inflows	1468.8	153.0	484.9	100%	100%	100%	104	330	9503	0.15	16	51
Precipitation	89.9	4.3	25.7	6%	3%	5%	48	286	267	0.34	16	96
Evaporation	259.3			18%					267	0.97		
Net Inflow	1299.3	157.3	510.6	88%	103%	105%	121	393	9771	0.13	16	52
Lake Outflow	1334.3	242.1	2892.2	91%	158%	596%	181	2168	9771	0.14	25	296
Storage Increase	-35.0	-32.0	-233.9	-2%	-21%	-48%						
Retention	0.0	-52.9	-2147.8	0%	-35%	-443%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	1468.8	95.5	145.4	100%	62%	30%	65	99	9503	0.15	10	15
Anthropogenic	1468.8	57.5	339.5	0%	38%	70%	39	231			6	36

Morphometry	Mean	Min	Max
Volume (hm^3)	542.7	331.4	742.6
Area (km^2)	267.5	258.3	270.9
Elevation (ft)	4140.9	4138.3	4143.3
Mean Depth (meters)	2.0	1.3	2.7

Phosphorus Model Parameters		
Hydraulic Residence Time	0.42	years
Net Water Load	5.49	m/yr
Areal Total P Load	0.57	g/m^2-yr
Total P Retention Coefficient	-35%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 2008- 2008

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	Nutrient Loads TN mt/y	Percent of Inflow Flow	Percent of Inflow TP	Percent of Inflow TN	Nutrient Concs TP ppb	Nutrient Concs TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	250.5	22.1	25.7	17%	16%	5%	88	103	333	0.75	66	77
Wood River @ Dike Road	353.6	38.2	56.0	24%	27%	11%	108	158	394	0.90	97	142
7-Mile Canal	90.4	12.5	38.5	6%	9%	8%	138	426	96	0.94	129	399
Sprague River	454.8	32.3	165.8	31%	23%	34%	71	365	4171	0.11	8	40
Williamson River	794.1	65.1	264.0	54%	46%	54%	82	332	7812	0.10	8	34
Klamath L Outlet	1264.6	166.5	2733.3	86%	117%	559%	132	2161	9771	0.13	17	280
Agency Lake Inflows												
Wood River above Weed Rd	250.5	22.1	25.7	53%	38%	15%	88	103	333	0.75	66	77
Wood River below Weed Rd	103.1	16.1	30.3	22%	27%	18%	156	294	61	1.70	264	498
7-Mile Canal	90.4	12.5	38.5	19%	21%	23%	138	426	96	0.94	129	399
Agency Lake Ranch	31.2	7.8	72.3	7%	13%	43%	249	2314	46	0.67	168	1559
Total Agency Inflow	475.1	58.4	166.7	100%	100%	100%	123	351	537	0.89	109	311
Klamath Lake Inflows												
Sprague River	454.8	32.3	165.8	56%	45%	54%	71	365	4171	0.11	8	40
Williamson R below Sprague	339.3	32.9	98.1	42%	46%	32%	97	289	3641	0.09	9	27
Pumped Inflows to KL	17.0	7.0	40.6	2%	10%	13%	413	2390	37	0.45	187	1082
Total Klamath Inflow	811.1	72.1	304.5	100%	100%	100%	89	375	7849	0.10	9	39
Overall Balance												
Total Tributaries	1238.0	115.8	358.4	85%	82%	73%	94	289	8302	0.15	14	43
Total Pumped to Lake	48.2	14.8	112.8	3%	10%	23%	307	2341	84	0.57	176	1346
Ungauged Inflows	176.2	11.5	17.4	12%	8%	4%	65	99	1118	0.16	10	16
Total External Inflows	1462.4	142.0	488.7	100%	100%	100%	97	334	9503	0.15	15	51
Precipitation	111.8	4.8	28.4	8%	3%	6%	43	254	267	0.42	18	106
Evaporation	261.4			18%					267	0.98		
Net Inflow	1312.8	146.8	517.1	90%	103%	106%	112	394	9771	0.13	15	53
Lake Outflow	1264.6	166.5	2733.3	86%	117%	559%	132	2161	9771	0.13	17	280
Storage Increase	42.1	15.3	101.4	3%	11%	21%						
Retention	6.0	-35.0	-2317.6	0%	-25%	-474%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	1462.4	95.1	144.8	100%	67%	30%	65	99	9503	0.15	10	15
Anthropogenic	1462.4	47.0	343.9	0%	33%	70%	32	235			5	36

Morphometry	Mean	Min	Max
Volume (hm^3)	526.1	329.0	719.5
Area (km^2)	267.4	257.9	270.5
Elevation (ft)	4140.6	4138.2	4143.0
Mean Depth (meters)	2.0	1.3	2.7

Phosphorus Model Parameters		
Hydraulic Residence Time	0.40	years
Net Water Load	5.47	m/yr
Areal Total P Load	0.53	g/m^2-yr
Total P Retention Coefficient	-25%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 2009- 2009

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	Nutrient Loads TN mt/y	Percent of Inflow Flow	Percent of Inflow TP	Percent of Inflow TN	Nutrient Concs TP ppb	Nutrient Concs TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	250.3	20.7	26.7	19%	17%	7%	83	107	333	0.75	62	80
Wood River @ Dike Road	369.3	36.8	61.5	28%	31%	16%	100	166	394	0.94	93	156
7-Mile Canal	105.8	14.2	54.7	8%	12%	14%	134	517	96	1.10	147	567
Sprague River	311.1	18.5	95.3	23%	16%	25%	60	306	4171	0.07	4	23
Williamson River	666.4	49.6	178.4	50%	42%	47%	74	268	7812	0.09	6	23
Klamath L Outlet	1193.1	143.2	2390.8	90%	120%	629%	120	2004	9771	0.12	15	245
Agency Lake Inflows												
Wood River above Weed Rd	250.3	20.7	26.7	50%	39%	18%	83	107	333	0.75	62	80
Wood River below Weed Rd	119.1	16.0	34.8	24%	30%	24%	135	292	61	1.96	264	572
7-Mile Canal	105.8	14.2	54.7	21%	27%	37%	134	517	96	1.10	147	567
Agency Lake Ranch	20.8	1.8	30.1	4%	3%	21%	88	1448	46	0.45	40	649
Total Agency Inflow	495.9	52.8	146.3	100%	100%	100%	106	295	537	0.92	98	272
Klamath Lake Inflows												
Sprague River	311.1	18.5	95.3	46%	33%	43%	60	306	4171	0.07	4	23
Williamson R below Sprague	355.3	31.1	83.1	52%	55%	38%	87	234	3641	0.10	9	23
Pumped Inflows to KL	17.0	7.0	40.7	2%	12%	19%	413	2390	37	0.45	188	1086
Total Klamath Inflow	683.4	56.6	219.1	100%	100%	100%	83	321	7849	0.09	7	28
Overall Balance												
Total Tributaries	1141.5	100.5	294.6	86%	84%	77%	88	258	8302	0.14	12	35
Total Pumped to Lake	37.8	8.9	70.8	3%	7%	19%	235	1872	84	0.45	106	844
Ungauged Inflows	150.6	9.8	14.9	11%	8%	4%	65	99	1118	0.13	9	13
Total External Inflows	1330.0	119.2	380.3	100%	100%	100%	90	286	9504	0.14	13	40
Precipitation	104.1	4.6	27.4	8%	4%	7%	44	264	267	0.39	17	103
Evaporation	251.1			19%					267	0.94		
Net Inflow	1182.9	123.8	407.7	89%	104%	107%	105	345	9771	0.12	13	42
Lake Outflow	1193.1	143.2	2390.8	90%	120%	629%	120	2004	9771	0.12	15	245
Storage Increase	-50.1	-26.1	-188.0	-4%	-22%	-49%						
Retention	40.0	6.7	-1795.1	3%	6%	-472%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	1330.0	86.4	131.7	100%	73%	35%	65	99	9504	0.14	9	14
Anthropogenic	1330.0	32.7	248.6	0%	27%	65%	25	187			3	26

Morphometry	Mean	Min	Max
Volume (hm^3)	517.6	323.5	699.7
Area (km^2)	267.2	256.3	270.5
Elevation (ft)	4140.5	4138.2	4142.8
Mean Depth (meters)	1.9	1.3	2.6

Phosphorus Model Parameters		
Hydraulic Residence Time	0.44	years
Net Water Load	4.98	m/yr
Areal Total P Load	0.45	g/m^2-yr
Total P Retention Coefficient	6%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 2010- 2010

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	TN mt/y	Percent of Inflow Flow	TP	TN	Nutrient Concs TP ppb	TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	234.0	20.3	21.3	20%	18%	8%	87	91	333	0.70	61	64
Wood River @ Dike Road	318.4	32.6	46.2	27%	29%	17%	102	145	394	0.81	83	117
7-Mile Canal	107.9	13.9	44.8	9%	12%	16%	129	415	96	1.12	144	465
Sprague River	282.0	17.7	75.3	24%	16%	27%	63	267	4171	0.07	4	18
Williamson River	609.2	49.4	131.8	51%	44%	48%	81	216	7812	0.08	6	17
Klamath L Outlet	972.8	92.1	1602.3	82%	82%	579%	95	1647	9771	0.10	9	164
Agency Lake Inflows												
Wood River above Weed Rd	234.0	20.3	21.3	55%	44%	23%	87	91	333	0.70	61	64
Wood River below Weed Rd	84.3	12.3	24.9	20%	26%	27%	146	296	61	1.39	202	410
7-Mile Canal	107.9	13.9	44.8	25%	30%	49%	129	415	96	1.12	144	465
Agency Lake Ranch	0.0	0.0	0.0	0%	0%	0%			46	0.00	0	0
Total Agency Inflow	426.3	46.5	91.1	100%	100%	100%	109	214	537	0.79	87	170
Klamath Lake Inflows												
Sprague River	282.0	17.7	75.3	45%	32%	44%	63	267	4171	0.07	4	18
Williamson R below Sprague	327.2	31.7	56.4	52%	56%	33%	97	173	3641	0.09	9	16
Pumped Inflows to KL	16.7	6.9	40.0	3%	12%	23%	413	2390	37	0.45	184	1068
Total Klamath Inflow	626.0	56.3	171.8	100%	100%	100%	90	274	7849	0.08	7	22
Overall Balance												
Total Tributaries	1035.5	95.9	222.8	87%	86%	81%	93	215	8302	0.12	12	27
Total Pumped to Lake	16.7	6.9	40.0	1%	6%	14%	413	2390	84	0.20	82	477
Ungauged Inflows	139.6	9.1	13.8	12%	8%	5%	65	99	1120	0.12	8	12
Total External Inflows	1191.8	111.9	276.7	100%	100%	100%	94	232	9506	0.13	12	29
Precipitation	88.9	4.3	25.4	7%	4%	9%	48	286	265	0.34	16	96
Evaporation	242.6			20%					265	0.92		
Net Inflow	1038.1	116.1	302.1	87%	104%	109%	112	291	9771	0.11	12	31
Lake Outflow	972.8	92.1	1602.3	82%	82%	579%	95	1647	9771	0.10	9	164
Storage Increase	57.3	13.0	112.3	5%	12%	41%						
Retention	8.0	11.0	-1412.5	1%	10%	-511%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	1191.8	77.5	118.0	100%	69%	43%	65	99	9506	0.13	8	12
Anthropogenic	1191.8	34.4	158.7	0%	31%	57%	29	133			4	17

Morphometry	Mean	Min	Max
Volume (hm^3)	449.5	298.8	601.1
Area (km^2)	265.0	249.4	269.3
Elevation (ft)	4139.7	4137.8	4141.6
Mean Depth (meters)	1.7	1.2	2.2

Phosphorus Model Parameters		
Hydraulic Residence Time	0.43	years
Net Water Load	4.50	m/yr
Areal Total P Load	0.42	g/m^2-yr
Total P Retention Coefficient	10%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 1992- 1998

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	Nutrient Loads TN mt/y	Percent of Inflow Flow	Percent of Inflow TP	Percent of Inflow TN	Nutrient Concs TP ppb	Nutrient Concs TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	249.0	21.2	32.1	15%	12%	5%	85	129	333	0.75	64	96
Wood River @ Dike Road	308.3	36.6	61.8	18%	20%	10%	119	201	394	0.78	93	157
7-Mile Canal	116.2	15.9	53.2	7%	9%	9%	137	458	96	1.20	165	552
Sprague River	595.9	47.6	231.4	35%	26%	39%	80	388	4171	0.14	11	55
Williamson River	916.4	85.1	340.2	54%	47%	57%	93	371	7812	0.12	11	44
Klamath L Outlet	1572.1	162.1	2339.9	92%	90%	391%	103	1488	9771	0.16	17	239
Agency Lake Inflows												
Wood River above Weed Rd	249.0	21.2	32.1	56%	36%	21%	85	129	333	0.75	64	96
Wood River below Weed Rd	59.2	15.3	29.8	13%	26%	20%	259	502	61	0.97	252	489
7-Mile Canal	116.2	15.9	53.2	26%	27%	35%	137	458	96	1.20	165	552
Agency Lake Ranch	22.1	6.0	35.3	5%	10%	23%	272	1596	46	0.48	130	762
Total Agency Inflow	446.6	58.5	150.4	100%	100%	100%	131	337	537	0.83	109	280
Klamath Lake Inflows												
Sprague River	595.9	47.6	231.4	63%	47%	56%	80	388	4171	0.14	11	55
Williamson R below Sprague	320.5	37.5	108.8	34%	37%	26%	117	339	3641	0.09	10	30
Pumped Inflows to KL	28.5	15.6	75.7	3%	15%	18%	546	2653	60	0.48	260	1266
Total Klamath Inflow	945.0	100.7	415.9	100%	100%	100%	107	440	7871	0.12	13	53
Overall Balance												
Total Tributaries	1340.9	137.6	455.2	78%	76%	76%	103	339	8302	0.16	17	55
Total Pumped to Lake	50.7	21.6	111.0	3%	12%	19%	426	2191	106	0.48	203	1046
Ungauged Inflows	319.5	20.8	31.6	19%	12%	5%	65	99	1097	0.29	19	29
Total External Inflows	1711.1	180.0	597.9	100%	100%	100%	105	349	9505	0.18	19	63
Precipitation	134.0	5.2	31.1	8%	3%	5%	39	232	266	0.50	20	117
Evaporation	251.0			15%					266	0.94		
Net Inflow	1594.1	185.2	629.0	93%	103%	105%	116	395	9771	0.16	19	64
Lake Outflow	1572.1	162.1	2339.9	92%	90%	391%	103	1488	9771	0.16	17	239
Storage Increase	19.9	-1.3	-14.7	1%	-1%	-2%						
Retention	2.0	24.4	-1696.2	0%	14%	-284%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	1711.1	111.2	169.4	100%	62%	28%	65	99	9505	0.18	12	18
Anthropogenic	1711.1	68.7	428.5	0%	38%	72%	40	250			7	45

Morphometry	Mean	Min	Max
Volume (hm^3)	540.0	224.2	743.5
Area (km^2)	265.7	217.4	270.9
Elevation (ft)	4140.8	4136.8	4143.3
Mean Depth (meters)	2.0	1.0	2.7

Phosphorus Model Parameters		
Hydraulic Residence Time	0.34	years
Net Water Load	6.44	m/yr
Areal Total P Load	0.68	g/m^2-yr
Total P Retention Coefficient	14%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 1999- 2010

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	Nutrient Loads TN mt/y	Percent of Inflow Flow	Percent of Inflow TP	Percent of Inflow TN	Nutrient Concs TP ppb	Nutrient Concs TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	245.6	20.9	25.7	16%	13%	5%	85	105	333	0.74	63	77
Wood River @ Dike Road	323.3	35.0	52.2	21%	23%	10%	108	161	394	0.82	89	132
7-Mile Canal	95.9	14.1	46.9	6%	9%	9%	147	489	96	0.99	146	486
Sprague River	447.0	32.6	145.8	29%	21%	29%	73	326	4171	0.11	8	35
Williamson River	804.7	66.6	270.7	53%	43%	54%	83	336	7812	0.10	9	35
Klamath L Outlet	1361.6	162.6	2378.4	90%	105%	473%	119	1747	9771	0.14	17	243
Agency Lake Inflows												
Wood River above Weed Rd	245.6	20.9	25.7	56%	33%	16%	85	105	333	0.74	63	77
Wood River below Weed Rd	77.7	14.1	26.5	18%	22%	17%	181	341	61	1.28	231	436
7-Mile Canal	95.9	14.1	46.9	22%	22%	30%	147	489	96	0.99	146	486
Agency Lake Ranch	20.4	14.0	56.9	5%	22%	36%	686	2795	46	0.44	301	1228
Total Agency Inflow	439.5	63.0	156.0	100%	100%	100%	143	355	537	0.82	117	291
Klamath Lake Inflows												
Sprague River	447.0	32.6	145.8	54%	43%	45%	73	326	4171	0.11	8	35
Williamson R below Sprague	357.7	34.0	124.9	43%	45%	39%	95	349	3641	0.10	9	34
Pumped Inflows to KL	21.0	8.9	50.7	3%	12%	16%	426	2416	45	0.47	201	1138
Total Klamath Inflow	825.7	75.5	321.3	100%	100%	100%	91	389	7856	0.11	10	41
Overall Balance												
Total Tributaries	1223.9	115.7	369.8	80%	75%	74%	95	302	8302	0.15	14	45
Total Pumped to Lake	41.3	22.9	107.6	3%	15%	21%	554	2602	91	0.45	252	1184
Ungauged Inflows	255.4	16.6	25.3	17%	11%	5%	65	99	1110	0.23	15	23
Total External Inflows	1520.7	155.2	502.7	100%	100%	100%	102	331	9503	0.16	16	53
Precipitation	102.7	4.6	27.3	7%	3%	5%	44	266	268	0.38	17	102
Evaporation	258.3			17%					268	0.96		
Net Inflow	1365.0	159.7	530.0	90%	103%	105%	117	388	9771	0.14	16	54
Lake Outflow	1361.6	162.6	2378.4	90%	105%	473%	119	1747	9771	0.14	17	243
Storage Increase	-7.4	-0.6	8.7	0%	0%	2%						
Retention	10.8	-2.2	-1857.1	1%	-1%	-369%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	1520.7	98.8	150.5	100%	64%	30%	65	99	9503	0.16	10	16
Anthropogenic	1520.7	56.3	352.1	0%	36%	70%	37	232			6	37

Morphometry	Mean	Min	Max
Volume (hm^3)	549.6	298.8	742.6
Area (km^2)	267.9	249.4	270.9
Elevation (ft)	4140.9	4137.8	4143.3
Mean Depth (meters)	2.1	1.2	2.7

Phosphorus Model Parameters		
Hydraulic Residence Time	0.40	years
Net Water Load	5.68	m/yr
Areal Total P Load	0.58	g/m^2-yr
Total P Retention Coefficient	-1%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 2002- 2010

Term	Flow	Nutrient Loads		Percent of Inflow			Nutrient Concs		Dr. Area	Runoff	P Export	N Export
	hm^3/yr	TP mt/y	TN mt/y	Flow	TP	TN	TP ppb	TN ppb	km^2	m/yr	kg/km^2	kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	243.2	20.9	25.9	17%	14%	5%	86	106	333	0.73	63	78
Wood River @ Dike Road	333.2	36.2	55.1	23%	25%	11%	109	165	394	0.85	92	140
7-Mile Canal	97.7	14.9	51.0	7%	10%	11%	153	523	96	1.01	155	529
Sprague River	420.9	30.7	142.8	30%	21%	29%	73	339	4171	0.10	7	34
Williamson River	751.9	63.5	258.0	53%	43%	53%	84	343	7812	0.10	8	33
Klamath L Outlet	1267.1	147.9	2316.8	89%	100%	477%	117	1829	9771	0.13	15	237
Agency Lake Inflows												
Wood River above Weed Rd	243.2	20.9	25.9	54%	33%	16%	86	106	333	0.73	63	78
Wood River below Weed Rd	90.0	15.4	29.3	20%	24%	18%	171	325	61	1.48	252	481
7-Mile Canal	97.7	14.9	51.0	22%	24%	32%	153	523	96	1.01	155	529
Agency Lake Ranch	21.0	11.8	55.0	5%	19%	34%	560	2618	46	0.45	254	1185
Total Agency Inflow	451.9	62.9	161.1	100%	100%	100%	139	357	537	0.84	117	300
Klamath Lake Inflows												
Sprague River	420.9	30.7	142.8	55%	43%	47%	73	339	4171	0.10	7	34
Williamson R below Sprague	331.0	32.7	115.2	43%	46%	38%	99	348	3641	0.09	9	32
Pumped Inflows to KL	19.7	8.1	47.0	3%	11%	15%	413	2390	43	0.46	189	1096
Total Klamath Inflow	771.6	71.6	305.0	100%	100%	100%	93	395	7854	0.10	9	39
Overall Balance												
Total Tributaries	1182.8	114.6	364.1	83%	78%	75%	97	308	8302	0.14	14	44
Total Pumped to Lake	40.7	19.9	102.0	3%	13%	21%	489	2508	89	0.46	223	1142
Ungauged Inflows	201.7	13.1	20.0	14%	9%	4%	65	99	1112	0.18	12	18
Total External Inflows	1425.2	147.6	486.1	100%	100%	100%	104	341	9503	0.15	16	51
Precipitation	106.3	4.6	27.7	7%	3%	6%	44	261	268	0.40	17	104
Evaporation	256.5			18%					268	0.96		
Net Inflow	1274.9	152.3	513.8	89%	103%	106%	119	403	9771	0.13	16	53
Lake Outflow	1267.1	147.9	2316.8	89%	100%	477%	117	1829	9771	0.13	15	237
Storage Increase	-6.4	0.9	-40.0	0%	1%	-8%						
Retention	14.2	3.4	-1763.0	1%	2%	-363%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	1425.2	92.6	141.1	100%	63%	29%	65	99	9503	0.15	10	15
Anthropogenic	1425.2	55.0	345.0	0%	37%	71%	39	242			6	36

Morphometry	Mean	Min	Max
Volume (hm^3)	537.1	298.8	742.6
Area (km^2)	267.6	249.4	270.9
Elevation (ft)	4140.8	4137.8	4143.3
Mean Depth (meters)	2.0	1.2	2.7

Phosphorus Model Parameters		
Hydraulic Residence Time	0.42	years
Net Water Load	5.33	m/yr
Areal Total P Load	0.55	g/m^2-yr
Total P Retention Coefficient	2%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 1992- 2010

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	Nutrient Loads TN mt/y	Percent of Inflow Flow	Percent of Inflow TP	Percent of Inflow TN	Nutrient Concs TP ppb	Nutrient Concs TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	246.9	21.0	28.0	16%	13%	5%	85	114	333	0.74	63	84
Wood River @ Dike Road	317.7	35.6	55.7	20%	22%	10%	112	175	394	0.81	90	141
7-Mile Canal	103.4	14.8	49.2	6%	9%	9%	143	476	96	1.07	153	510
Sprague River	501.9	38.1	177.3	32%	23%	33%	76	353	4171	0.12	9	43
Williamson River	845.9	73.4	296.3	53%	45%	55%	87	350	7812	0.11	9	38
Klamath L Outlet	1439.2	162.4	2364.2	90%	99%	440%	113	1643	9771	0.15	17	242
Agency Lake Inflows												
Wood River above Weed Rd	246.9	21.0	28.0	56%	34%	18%	85	114	333	0.74	63	84
Wood River below Weed Rd	70.9	14.5	27.7	16%	24%	18%	205	391	61	1.17	239	455
7-Mile Canal	103.4	14.8	49.2	23%	24%	32%	143	476	96	1.07	153	510
Agency Lake Ranch	21.0	11.0	49.0	5%	18%	32%	525	2330	46	0.45	238	1056
Total Agency Inflow	442.1	61.4	153.9	100%	100%	100%	139	348	537	0.82	114	287
Klamath Lake Inflows												
Sprague River	501.9	38.1	177.3	58%	45%	50%	76	353	4171	0.12	9	43
Williamson R below Sprague	344.0	35.3	118.9	40%	42%	33%	103	346	3641	0.09	10	33
Pumped Inflows to KL	23.8	11.4	59.9	3%	13%	17%	479	2520	50	0.47	227	1194
Total Klamath Inflow	869.7	84.8	356.2	100%	100%	100%	98	410	7862	0.11	11	45
Overall Balance												
Total Tributaries	1267.0	123.8	401.3	80%	75%	75%	98	317	8302	0.15	15	48
Total Pumped to Lake	44.8	22.4	108.9	3%	14%	20%	501	2431	97	0.46	232	1128
Ungauged Inflows	279.1	18.1	27.6	18%	11%	5%	65	99	1105	0.25	16	25
Total External Inflows	1590.8	164.3	537.7	100%	100%	100%	103	338	9504	0.17	17	57
Precipitation	114.2	4.8	28.7	7%	3%	5%	42	251	267	0.43	18	107
Evaporation	255.6			16%					267	0.96		
Net Inflow	1449.4	169.1	566.4	91%	103%	105%	117	391	9771	0.15	17	58
Lake Outflow	1439.2	162.4	2364.2	90%	99%	440%	113	1643	9771	0.15	17	242
Storage Increase	2.6	-0.9	0.1	0%	-1%	0%						
Retention	7.6	7.6	-1797.8	0%	5%	-334%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	1590.8	103.4	157.5	100%	63%	29%	65	99	9504	0.17	11	17
Anthropogenic	1590.8	60.9	380.2	0%	37%	71%	38	239			6	40

Morphometry	Mean	Min	Max
Volume (hm^3)	546.1	224.2	743.5
Area (km^2)	267.1	217.4	270.9
Elevation (ft)	4140.9	4136.8	4143.3
Mean Depth (meters)	2.0	1.0	2.7

Phosphorus Model Parameters		
Hydraulic Residence Time	0.38	years
Net Water Load	5.96	m/yr
Areal Total P Load	0.62	g/m^2-yr
Total P Retention Coefficient	5%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 2006- 2010

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	Nutrient Loads TN mt/y	Percent of Inflow Flow	Percent of Inflow TP	Percent of Inflow TN	Nutrient Concs TP ppb	Nutrient Concs TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	255.8	22.0	28.3	17%	15%	6%	86	110	333	0.77	66	85
Wood River @ Dike Road	350.5	38.8	62.3	23%	26%	12%	111	178	394	0.89	98	158
7-Mile Canal	106.1	16.7	55.4	7%	11%	11%	157	522	96	1.10	173	574
Sprague River	462.1	34.0	155.5	31%	22%	31%	74	337	4171	0.11	8	37
Williamson River	808.4	67.7	268.1	54%	45%	54%	84	332	7812	0.10	9	34
Klamath L Outlet	1355.6	168.6	2527.0	90%	111%	505%	124	1864	9771	0.14	17	259
Agency Lake Inflows												
Wood River above Weed Rd	255.8	22.0	28.3	54%	35%	17%	86	110	333	0.77	66	85
Wood River below Weed Rd	94.7	16.8	34.0	20%	27%	20%	177	360	61	1.56	276	560
7-Mile Canal	106.1	16.7	55.4	22%	27%	33%	157	522	96	1.10	173	574
Agency Lake Ranch	19.8	7.1	49.3	4%	11%	30%	360	2493	46	0.43	153	1063
Total Agency Inflow	476.4	62.6	166.9	100%	100%	100%	131	350	537	0.89	117	311
Klamath Lake Inflows												
Sprague River	462.1	34.0	155.5	56%	45%	50%	74	337	4171	0.11	8	37
Williamson R below Sprague	346.3	33.7	112.6	42%	45%	36%	97	325	3641	0.10	9	31
Pumped Inflows to KL	19.0	7.9	45.5	2%	10%	14%	413	2390	41	0.47	193	1116
Total Klamath Inflow	827.4	75.6	313.6	100%	100%	100%	91	379	7852	0.11	10	40
Overall Balance												
Total Tributaries	1265.0	123.2	385.8	84%	81%	77%	97	305	8302	0.15	15	46
Total Pumped to Lake	38.8	15.0	94.7	3%	10%	19%	386	2443	87	0.45	172	1088
Ungauged Inflows	201.4	13.1	19.9	13%	9%	4%	65	99	1115	0.18	12	18
Total External Inflows	1505.2	151.2	500.5	100%	100%	100%	100	333	9504	0.16	16	53
Precipitation	110.3	4.7	28.2	7%	3%	6%	43	256	267	0.41	18	106
Evaporation	254.1			17%					267	0.95		
Net Inflow	1361.4	156.0	528.7	90%	103%	106%	115	388	9771	0.14	16	54
Lake Outflow	1355.6	168.6	2527.0	90%	111%	505%	124	1864	9771	0.14	17	259
Storage Increase	-5.0	1.6	-5.7	0%	1%	-1%						
Retention	10.8	-14.2	-1992.7	1%	-9%	-398%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	1505.2	97.8	149.0	100%	65%	30%	65	99	9504	0.16	10	16
Anthropogenic	1505.2	53.4	351.5	0%	35%	70%	35	234			6	37

Morphometry	Mean	Min	Max
Volume (hm^3)	521.4	298.8	742.6
Area (km^2)	267.1	249.4	270.9
Elevation (ft)	4140.6	4137.8	4143.3
Mean Depth (meters)	2.0	1.2	2.7

Phosphorus Model Parameters		
Hydraulic Residence Time	0.38	years
Net Water Load	5.64	m/yr
Areal Total P Load	0.57	g/m^2-yr
Total P Retention Coefficient	-9%	

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Upper Klamath Lake Water & Nutrient Balances Water Years: 2008- 2010

Term	Flow hm^3/yr	Nutrient Loads TP mt/y	Nutrient Loads TN mt/y	Percent of Inflow Flow	Percent of Inflow TP	Percent of Inflow TN	Nutrient Concs TP ppb	Nutrient Concs TN ppb	Dr. Area km^2	Runoff m/yr	P Export kg/km^2	N Export kg/km^2
Major Gauged Sites												
Wood River @ Weed Road	244.9	21.1	24.5	18%	17%	6%	86	100	333	0.74	63	74
Wood River @ Dike Road	347.1	35.9	54.5	26%	29%	14%	103	157	394	0.88	91	138
7-Mile Canal	101.4	13.5	46.0	8%	11%	12%	133	454	96	1.05	140	477
Sprague River	349.4	22.9	112.2	26%	18%	29%	65	321	4171	0.08	5	27
Williamson River	690.0	54.7	191.4	52%	44%	50%	79	277	7812	0.09	7	25
Klamath L Outlet	1143.6	134.0	2242.6	86%	108%	587%	117	1961	9771	0.12	14	230
Agency Lake Inflows												
Wood River above Weed Rd	244.9	21.1	24.5	53%	40%	18%	86	100	333	0.74	63	74
Wood River below Weed Rd	102.2	14.8	30.0	22%	28%	22%	145	294	61	1.68	243	493
7-Mile Canal	101.4	13.5	46.0	22%	26%	34%	133	454	96	1.05	140	477
Agency Lake Ranch	17.3	3.2	34.1	4%	6%	25%	185	1969	46	0.37	69	737
Total Agency Inflow	465.8	52.6	134.7	100%	100%	100%	113	289	537	0.87	98	251
Klamath Lake Inflows												
Sprague River	349.4	22.9	112.2	49%	37%	48%	65	321	4171	0.08	5	27
Williamson R below Sprague	340.6	31.9	79.2	48%	52%	34%	94	233	3641	0.09	9	22
Pumped Inflows to KL	16.9	7.0	40.4	2%	11%	17%	413	2390	37	0.45	186	1079
Total Klamath Inflow	706.9	61.7	231.9	100%	100%	100%	87	328	7849	0.09	8	30
Overall Balance												
Total Tributaries	1138.4	104.1	292.0	86%	84%	76%	91	256	8302	0.14	13	35
Total Pumped to Lake	34.3	10.2	74.6	3%	8%	20%	297	2177	84	0.41	122	890
Ungauged Inflows	155.5	10.1	15.4	12%	8%	4%	65	99	1118	0.14	9	14
Total External Inflows	1328.2	124.4	382.0	100%	100%	100%	94	288	9504	0.14	13	40
Precipitation	101.6	4.5	27.1	8%	4%	7%	45	267	267	0.38	17	102
Evaporation	251.7			19%					267	0.94		
Net Inflow	1178.1	128.9	409.1	89%	104%	107%	109	347	9771	0.12	13	42
Lake Outflow	1143.6	134.0	2242.6	86%	108%	587%	117	1961	9771	0.12	14	230
Storage Increase	16.5	0.8	8.6	1%	1%	2%						
Retention	18.0	-5.8	-1842.1	1%	-5%	-482%						
Natural Background vs. Anthropogenic Loads												
Background / Natural	1328.2	86.3	131.5	100%	69%	34%	65	99	9504	0.14	9	14
Anthropogenic	1328.2	38.0	250.5	0%	31%	66%	29	189			4	26

Morphometry	Mean	Min	Max
Volume (hm^3)	497.7	298.8	719.5
Area (km^2)	266.5	249.4	270.5
Elevation (ft)	4140.3	4137.8	4143.0
Mean Depth (meters)	1.9	1.2	2.7

Phosphorus Model Parameters		
Hydraulic Residence Time	0.42	years
Net Water Load	4.98	m/yr
Areal Total P Load	0.47	g/m^2-yr
Total P Retention Coefficient	-5%	

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Mass Balances by Water Year Season: (All) October-September

Row Labels	Wood_ Weed	Wood Dike - Weed	Wood_ Dike	Agency Lake Ranch	7mile_D ike	Total Agency Inflow	Sprague	William son- Sprague	William son Mouth	Pumped to Klamath L	Total Klamath Inflow	Total Tributar ies	Ungaug ed Inflows	Total Pumped to Lake	Total External Inflows	Precipit ation	Total Inflow + Precip	Evapora tion	Lake Outflow	Retention	Storage Increase	Lake Mean Storage	Natural- Backgro und	Anthrop ogenic
Sum of Flow_hm3																								
1992	168	42	210	20	86	317	178	255	433	27	460	729	151	47	927	71	998	271	785	4	-62	5353	927	927
1993	211	60	272	21	83	375	704	300	1004	27	1032	1359	379	48	1786	175	1961	247	1549	0	164	6323	1786	1786
1994	209	38	246	21	67	335	229	245	474	28	502	787	308	49	1145	69	1215	272	1149	0	-206	5929	1145	1145
1995	196	60	256	21	91	368	648	271	919	27	946	1266	341	48	1655	146	1802	249	1333	0	220	6447	1655	1655
1996	296	70	365	23	164	552	827	327	1154	30	1184	1683	405	54	2141	173	2314	249	2125	0	-60	6931	2141	2141
1997	357	73	430	25	159	614	812	411	1223	32	1255	1812	329	57	2198	163	2360	240	2011	11	99	7009	2198	2198
1998	307	71	378	23	165	565	775	434	1209	28	1237	1752	324	51	2127	140	2266	229	2053	0	-16	7395	2127	2127
1999	265	29	294	25	131	450	808	479	1287	28	1315	1712	554	53	2319	118	2437	252	2157	0	28	7145	2319	2319
2000	278	42	320	29	83	431	509	471	980	26	1006	1383	427	54	1864	98	1962	245	1775	0	-59	7135	1864	1864
2001	215	51	266	2	57	326	260	363	623	21	644	947	269	23	1239	60	1299	294	1005	1	-1	6860	1239	1239
2002	214	73	287	22	59	367	355	361	716	20	736	1061	287	42	1390	104	1494	265	1309	0	-81	6794	1390	1390
2003	216	115	331	25	119	476	395	320	715	21	736	1166	149	45	1361	114	1475	266	1131	43	35	6675	1361	1361
2004	246	71	317	13	89	419	343	303	647	21	667	1053	237	33	1324	105	1428	263	1171	0	-6	6271	1324	1324
2005	233	78	311	31	81	423	384	264	648	20	669	1040	135	51	1227	82	1309	244	1015	31	19	7005	1227	1227
2006	273	68	341	22	133	496	865	381	1246	22	1269	1720	307	44	2072	157	2228	256	2012	0	-39	6862	2072	2072
2007	271	99	370	25	93	488	396	328	724	22	746	1187	233	47	1468	90	1558	259	1333	0	-35	6518	1468	1468
2008	251	103	354	31	91	476	456	340	796	17	813	1241	177	48	1465	112	1577	262	1267	6	42	6315	1465	1465
2009	250	119	369	21	106	496	311	355	666	17	683	1141	151	38	1329	104	1433	251	1192	40	-50	6212	1329	1329
2010	234	84	318	0	108	426	282	327	609	17	626	1035	139	17	1191	89	1280	242	972	8	57	5395	1191	1191
Sum of TP_kg																								
1992	14921	9893	24814	5561	11864	42239	12656	32144	44799	14622	59421	81477	9784	20183	111444	3873	115317	0	126524	41081	-52288	684759	60255	51189
1993	21752	20613	42366	5726	14053	62145	68701	32685	101386	15056	116442	157805	24627	20782	203213	6056	209270	0	130418	74693	4159	643791	116083	87131
1994	19565	9486	29051	5837	8064	42952	15542	26389	41931	15348	57279	79046	20051	21185	120282	3829	124111	0	106906	23818	-6613	481580	74448	45833
1995	16193	18355	34548	5689	12020	52257	50710	27820	78530	14960	93490	125098	22181	20650	167929	5426	173354	0	147892	-44152	69614	804265	107602	60326
1996	23231	19556	42787	6355	29606	78748	64705	49571	114276	16712	130987	186668	26295	23067	236030	6064	242095	0	184718	87307	-29931	663755	139165	96865
1997	28766	17482	46247	6733	17585	70565	64444	41118	105562	17704	123266	169395	21382	24436	215214	5833	221046	0	239314	-33201	14933	916329	142851	72362
1998	24289	11920	36209	6217	18376	60802	56204	53001	109206	14584	123790	163791	21089	20801	205681	5353	211034	0	198689	21475	-9130	798408	138239	67442
1999	23150	10880	34029	6703	19170	59902	64973	42486	107459	13823	121282	160659	36005	20525	217189	4901	222091	0	262773	-46603	5921	846985	150723	66466
2000	22166	9604	31770	51218	8737	91725	33832	39148	72980	11594	84574	113487	27745	62812	204044	4479	208523	0	224327	-14023	-1781	856031	121172	82871
2001	17545	10148	27693	3916	6882	38492	15526	32132	47658	8657	56316	82234	17490	12574	112297	3677	115974	0	132479	3864	-20370	822125	80540	31758
2002	18946	12830	31776	25201	11902	68879	24631	37012	61643	8456	70099	105321	18625	33657	157603	4592	162194	0	115198	30972	16024	626339	90356	67247
2003	18544	14718	33262	20148	16828	70238	25502	30848	56350	8486	64836	106440	9714	28634	144789	4813	149602	0	140819	-6390	15173	918970	88438	56351
2004	21078	12874	33952	7741	11859	53552	24609	29706	54315	8503	62818	100126	15423	16244	131793	4611	136404	0	117572	64979	-46147	586480	86033	45760
2005	19420	13857	33277	17124	10280	60681	32093	28363	60456	8394	68850	104013	8788	25518	138319	4136	142455	0	114633	12257	15566	710665	79734	58585
2006	24643	18863	43506	14492	25231	83230	75813	41822	117635	9195	126829	186372	19979	23687	230038	5705	235744	0	198999	-758	37503	714314	134664	95374
2007	22044	20641	42685	11456	17749	71891	25470	31230	56700	9107	65807	117135	15155	20563	152852	4292	157144	0	241946	-52837	-31965	1079174	95404	57448
2008	22178	16089	38267	7793	12492	58552	32322	32946	65268	7021	72289	116027	11476	14814	142317	4765	147082	0	166797	-35064	15350	776964	95251	47066
2009	20728	16024	36751	1834	14150	52736	18527	31029	49556	7029	56585	100458	9785	8863	119106	4588	123694	0	143120	6662	-26088	671042	86389	32717
2010	20292	12291	32583	0	13864	46447	17734	31646	49380	6907	56287	95827	9066	6907	111800	4249	116048	0	92077	10949	13022	549885	77414	34386
Sum of TP_FWM_ppb																								
1992	89	234	118	272	138	133	71	126	103	549	129	112	65	429	120	54	115	0	161			128	65	55
1993	103	342	156	272	170	166	98	109	101	549	113	116	65	429	114	35	107	0	84			102	65	49
1994	94	252	118	272	120	128	68	108	88	549	114	100	65	429	105	55	102	0	93			81	65	40
1995	83	304	135	272	132	142	78	103	85	549	99	99	65	429	101	37	96	0	111			125	65	36
1996	79	280	117	272	181	143	78	152	99	549	111	111	65	429	110	35	105	0	87			96	65	45
1997	81	238	107	272	111	115	79	100	86	549	98	93	65	429	98	36	94	0	119			131	65	33
1998	79	168	96	272	112	108	73	122	90	522	100	94	65	409	97	38	93	0	97			108	65	32
1999	87	381	116	272	146	133	80	89	84	491	92	94	65	389	94	41	91	0	122			119	65	29
2000	80	228	99	1788	105	213	66	83	74	455	84	82	65	1160	109	46	106	0	126			120	65	44
2001	81	198	104	1788	120	118	60	88	77	413	87	87	65	543	91	61	89	0	132			120	65	26
2002	89	175	111	1163	202	187	69	103	86	413	95	99	65	799	113	44	109	0	88			92	65	48
2003	86	128	100	812	141	148	65	96	79	413	88	91	65	631	106	42	101	0	125			138	65	41
2004	86	182	107	611	133	128	72	98	84	413	94	95	65	488	100	44	96	0	100			94	65	35
2005	83	178	107	553	127	143	84	107	93	413	103	100	65	498	113	51	109	0	113			101	65	48
2006	90	277	127	669	190	168	88	110	94	413	100	108	65	539	111	36	106	0	99			104	65	46
2007	81	209	115	457	190	147	64	95	78	413	88	99	65	436	104	48	101	0	181			166	65	39
2008	88	156	108	249	138	123	71	97	82	413	89	94	65	307	97	43	93	0	132			123	65	32
2009	83	135	100	88	134	106	60	87	74	413	83	88	65	235	90	44	86	0	120			108	65	25
2010	87	146	102		129	109	63	97	81	413	90	93	65	413	94	48	91	0	95			102	65	29
Sum of TN_kg																								
1992	24543	16532	41075	32655	42658	116389	57293	9277	66570	70791	137361	150304	14901	103446	268652	23167	291818	0	1709700	-888777	-529105	8528573	91773	176879
1993	25834	51301	77135	33624	42211	152971	352020	90796	442816	72892	515708	562162	37508	106517	706187	36162	742349	0	2001649	-1458941	199641	8339622	176803	529384
1994	22620	14633	37253	34277	23621	95150	47573	29520	77093	74306	151399	137967	30538	108583	277088	22907	299995	0	1527914	-954471	-273448	6391461	113391	163697
1995	30220	36282	66501	33411	49419	149331	285009	105311	390320	72429	462748	506241	33783	105839	645863	32409	678272	0	2169883	-2278751	787140	10006901	163887	481976
1996	43882	40835	84716	37321	84234	206272	330380	90352	420733	80907	501640	589684	40049	118228	747961	36213	784174	0	3054205	-2066953	-203078	9777571	211959	536002
1997	43270	27964	71234	39537	64690	175461	269070	211066	480136	85710	565846	616060	32567	125247	773874	34834	808709	0	3192395	-2499608	115921	11276478	217573	556301
1998	34172	20742	54915	36509	65721	157145	278586	225195	503781	72811	576592	624417	32120	109320	765857	31978	797834	0	2724891	-1727072	-199984	10745413	210549	555308
1999	25201	19813	45014	39360	53844	138218	252917	179547	432464	71669	504133	531322	54839	111029	697190	29290	726480	0	3113345	-2460657	73791	9544090	229563	467627
2000	30482	18158	48640	138520	30910	218071	153793	177597	331390	63058	394449	410941	42257	201578	654776	26775	681551	0	2431486	-1826952	77017	8762765	184555	470221
2001	19756	16575	36332	10592	19107	66030	57956	104630	162586	50119	212705	218025	26638	60710	305373	21999	327373	0	2146141	-2132278	313510	11690747	122668	182706
2002	19739	22245	41985	63381	36138	141504	120026	139674	259700	48954	308654	337823	28367	112335	478525	27446	505971	0	2196264	-1360188	-330105	10882366	137619	340906
2003	21584	21324	42908	66855	57856	167619	104403	185316	289719	49126	338845	390483	14796	115981	521260	28765	550025	0	2061968	-1677415	165472	11167320	134698	386562
2004	26590	22787	49377	36743	47096	133217	129440	87399	216839	49225	266063	313312	23490	85968	422770	27559	450330	0	2112272	-1359941	-302001	9931527	131035	291735
2005	23545	26882	50427	81280	41461	173167	153237	61473	214711	48592	263303	306598	13384	129872	449854	24736	474590	0	1846113	-1506228	134705	11470358	121441	328413
2006	40367	40936	81303	65281	87241	233825	322596	231288	553883	53229	607113	722427	30429	118510	871367	34074	905441	0	3013837	-2287951	179555	11260038	205103	666263
2007	27263	39204	66467	78579	51508	196554	118350	93836	212186	52720	264906	330161	23082	131299	484542	25661	510203	0	2890210	-2146287	-233720	11421610	145308	339233
2008	25727	30350	56077	72418	38539	167034	166182	98322	264503	40645	305148	359120	17479	113062	489661	28477	518138	0	2738863	-2322333	101608	12135054	145075	344586
2009	26669	34747	61417	30054	54686	146156	95214	83069	178283	40692	218975	294385	14903	70747	380035	27422	407457	0	2389176	-1793826	-187894	11222162	131578	248457
2010	21251	24933	46184	0	44808	90992	75282	56407	131689	39983	171672	222681	13809	39983	276472	25402	301875	0	1601237	-1411548	112185	8236228	117907	158565
Sum of TN_FWM_ppb																								
1992	146	391	195	1596	495	367	322	36	154	2660	299	206	99	2198	290	324	292	0	2177			1593	99	191
1993	122	851	284	1596	512	408	500	302	441	2660	500	414	99	2198	395	207	379	0	1292			1319	99	296
1994	108	389	151	1596	352	284	208	120	163	2660	302	175	99	2198	242	330	247	0	1330			1078	99	143
1995	154	601	259	1596	543	406	440	388	425	2660	489	400	99	2198	390	221	376	0	1628			1552	99	291
1996	148	584	232	1596	515	373	400	276	365	2660	424	350	99	2198	349	209	339	0	1437			1411	99	250
1997	121	381	166	1596	407	286	332	514	393	2660	451	340	99	2198	352	214	343	0	1588			1609	99	253
1998	111	293	145	1596	399	278	359	519	417	2606	466	357	99	2151	360	229	352	0	1327			1453	99	261
1999	95	694	153	1596	410	307	313	375	336	2544	383	310	99	2102	301	248	298	0	1444			1336	99	202
2000	110	430	152	4835	373	505	302	377	338	2473	392	297	99	3722	351	274	347	0	1370			1228	99	252
2001	92	324	136	4835	332	202	223	288	261	2390	330	230	99	2621	246	367	252	0	2136			1704	99	147
2002	92	304	146	2926	613	385	338	387	363	2390	419	318	99	2666	344	265	339	0	1678			1602	99	245
2003	100	185	129	2693	485	352	264	579	405	2390	461	335	99	2556	383	251	373	0	1823			1673	99	284
2004	108	322	156	2901	527	318	377	288	335	2390	399	298	99	2585	319	263	315	0	1804			1584	99	220
2005	101	346	162	2627	512	409	399	233	331	2390	394	295	99	2533	367	302	363	0	1820			1638	99	268

Mass Balances by Water Year **Season: O-A** **October-April**

Row Labels	Wood_ Weed	Wood Dike - Weed	Wood_ Dike	Agency Lake Ranch	7mile_D ike	Total Agency Inflow	Sprague	William son-Sprague	William son Mouth	Pumped to Klamath L	Total Klamath Inflow	Total Tributar ies	Ungaug ed Inflows	Total Pumped to Lake	Total External Inflows	Precipit ation	Total Inflow + Precip	Evapora tion	Lake Outflow	Retention	Storage Increase	Lake Mean Storage	Natural-Backgro und	Anthrop ogenic
Sum of Flow_hm3																								
1992	135	18	153	13	59	224	139	158	297	17	314	508	65	30	603	55	659	59	317	4	280	3296	603	603
1993	135	38	173	13	54	239	453	181	634	17	651	861	192	29	1082	140	1222	59	712	0	451	3237	1082	1082
1994	174	21	194	14	47	255	169	160	329	18	347	571	129	32	731	50	782	63	506	0	213	3654	731	731
1995	130	38	168	13	52	233	405	168	573	17	589	793	164	30	986	122	1108	57	542	0	509	3221	986	986
1996	184	42	226	15	108	348	607	214	821	19	839	1154	266	33	1454	141	1595	59	1258	0	278	4021	1454	1454
1997	235	50	285	16	85	386	632	307	938	20	959	1309	256	36	1600	129	1729	59	1321	11	339	3972	1600	1600
1998	196	37	232	14	121	367	417	281	698	17	715	1051	187	31	1269	105	1374	60	1085	0	230	4187	1269	1269
1999	170	19	189	15	87	292	484	306	790	17	808	1067	366	33	1465	98	1563	59	1312	0	192	4062	1465	1465
2000	190	16	206	2	66	274	354	324	678	16	695	950	255	19	1223	88	1311	59	1017	0	235	4226	1223	1223
2001	164	30	194	2	50	246	188	247	435	13	448	679	102	15	797	44	840	59	493	1	287	3995	797	797
2002	160	44	204	0	38	242	246	255	501	13	514	744	137	13	894	97	991	59	649	0	282	4085	894	894
2003	153	76	229	0	87	317	254	211	466	13	479	782	45	13	841	97	937	59	456	43	379	3798	841	841
2004	177	39	216	5	64	285	257	194	451	13	464	731	117	18	866	86	952	66	588	0	298	3516	866	866
2005	168	49	217	0	60	277	191	163	354	13	367	631	18	13	661	58	720	57	288	31	343	3949	661	661
2006	174	36	210	0	92	303	580	231	811	13	825	1114	176	13	1303	149	1452	52	1072	0	329	4059	1303	1303
2007	197	57	254	0	71	325	298	211	509	14	523	834	105	14	953	76	1029	59	600	0	371	3859	953	953
2008	172	62	234	7	66	307	264	206	470	11	480	769	74	18	860	90	950	56	527	0	368	3441	860	860
2009	172	75	247	21	77	344	189	216	405	11	415	728	50	31	809	76	885	61	485	40	299	3481	809	809
2010	169	52	221	0	67	288	153	198	351	10	361	639	67	10	716	70	786	56	494	5	231	2858	716	716
Sum of TP_kg																								
1992	11366	4501	15867	3489	6066	25422	8477	18009	26485	9175	35660	48418	4257	12664	65339	2555	67894	0	45566	59049	-36721	329081	39217	26123
1993	14283	11596	25880	3479	7821	37180	51951	20385	72336	9149	81486	106037	12470	12629	131135	4310	135445	0	52535	63451	19459	291403	70345	60790
1994	16607	6284	22891	3749	4973	31612	11787	18097	29884	9857	39742	57748	8383	13606	79736	2452	82188	0	30693	49196	2299	204104	47546	32191
1995	11033	6848	17881	3490	4836	26207	40161	16671	56833	9177	66009	79550	10631	12667	102848	3892	106740	0	45377	46685	14678	263905	64072	38776
1996	14346	12717	27063	3948	19479	50491	52727	30994	83721	10382	94103	130264	17286	14330	161880	4381	166261	0	91871	148489	-74099	330458	94485	67395
1997	18814	13402	32216	4249	8967	45433	55591	27778	83368	11173	94542	124552	16628	15423	156602	4109	160712	0	103915	94073	-37276	395341	104019	52583
1998	15037	6135	21172	3814	11307	36294	31325	34675	66000	8948	74948	98480	12159	12762	123401	3609	127010	0	82856	96218	-52064	371627	82515	40886
1999	14672	8034	22705	4159	12362	39227	43894	28178	72072	8576	80648	107140	23783	12735	143658	3456	147114	0	92384	94776	-40046	346967	95241	48417
2000	14912	4644	19556	4222	6536	30314	25709	23976	49686	7485	57170	75778	16543	11707	104027	3261	107288	0	76642	76549	-45903	339472	79516	24511
2001	13028	5803	18831	3916	5119	27866	11266	20265	31531	5493	37024	55481	6629	9409	71520	2320	73840	0	44555	66782	-37497	341539	51776	19743
2002	14192	8952	23144	0	6160	29304	18457	25560	44017	5263	49281	73322	8931	5263	87516	3434	90951	0	34130	77911	-21090	230705	58105	29411
2003	13137	9560	22697	0	10381	33079	16654	20054	36709	5299	42008	69788	2957	5299	78043	3427	81470	0	40482	65151	-24163	411820	54639	23404
2004	15146	7928	23074	3049	7390	33513	20068	17499	37567	5341	42907	68031	7611	8390	84032	3209	87241	0	40724	94594	-48077	254320	56279	27753
2005	13785	9020	22806	0	6666	29472	13743	19126	32869	5241	38109	62340	1138	5241	68719	2622	71341	0	25024	33861	12456	270417	42990	25728
2006	15741	10567	26308	0	13601	39909	52625	24429	77054	5510	82565	116964	11447	5510	133921	4529	138450	0	63656	88988	-14195	290286	84712	49208
2007	16104	13412	29515	0	12977	42492	20176	18661	38837	5880	44717	81329	6827	5880	94036	2995	97031	0	63463	80998	-47431	523563	61961	32075
2008	15335	8180	23515	1086	9014	33616	20812	19973	40786	4375	45161	73315	4788	5461	83564	3286	86851	0	46914	56670	-16734	323672	55923	27641
2009	14144	9082	23226	1834	9567	34627	11313	19023	30336	4421	34758	63129	3230	6256	72615	2989	75604	0	49634	66370	-40401	325281	52597	20018
2010	14688	7912	22600	0	7783	30383	8530	17841	26371	4326	30697	56755	4329	4326	65410	2843	68252	0	41879	24337	2036	247534	46518	18892
Sum of TP_FWM_ppb																								
1992	84	248	104	272	104	113	61	114	89	549	114	95	65	429	108	46	103	0	144			100	65	43
1993	106	309	150	272	145	155	115	112	114	549	125	123	65	429	121	31	111	0	74			90	65	56
1994	96	304	118	272	105	124	70	113	91	549	114	101	65	429	109	49	105	0	61			56	65	44
1995	85	180	107	272	93	113	99	99	99	549	112	100	65	429	104	32	96	0	84			82	65	39
1996	78	303	120	272	180	145	87	145	102	549	112	113	65	429	111	31	104	0	73			82	65	46
1997	80	268	113	272	105	118	88	91	89	549	99	95	65	429	98	32	93	0	79			100	65	33
1998	77	167	91	272	94	99	75	123	95	522	105	94	65	409	97	34	92	0	76			89	65	32
1999	86	417	120	272	142	135	91	92	91	491	100	100	65	389	98	35	94	0	70			85	65	33
2000	78	291	95	1788	99	111	73	74	73	455	82	80	65	622	85	37	82	0	75			80	65	20
2001	79	194	97	1788	103	113	60	82	72	413	83	82	65	607	90	53	88	0	90			85	65	25
2002	89	202	113		163	121	75	100	88	413	96	99	65	413	98	36	92	0	53			56	65	33
2003	86	125	99		119	104	65	95	79	413	88	89	65	413	93	35	87	0	89			108	65	28
2004	86	203	107	611	115	118	78	90	83	413	92	93	65	468	97	37	92	0	69			72	65	32
2005	82	184	105		110	106	72	118	93	413	104	99	65	413	104	45	99	0	87			68	65	39
2006	90	294	125		147	132	91	106	95	413	100	105	65	413	103	30	95	0	59			72	65	38
2007	82	236	116		183	131	68	89	76	413	85	98	65	413	99	39	94	0	106			136	65	34
2008	89	133	101	150	138	110	79	97	87	413	94	95	65	306	97	37	91	0	89			94	65	32
2009	82	121	94	88	125	101	60	88	75	413	84	87	65	199	90	39	85	0	102			93	65	25
2010	87	151	102		117	106	56	90	75	413	85	89	65	413	91	41	87	0	85			87	65	26
Sum of TN_kg																								
1992	16531	1572	18102	20490	19560	58153	38381	8047	46428	44420	90848	84090	6484	64910	155484	15273	170757	0	689388	-175183	-343448	4302990	59730	95754
1993	15794	31602	47396	20433	21983	89811	253035	63950	316984	44295	361279	386363	18992	64728	470083	25720	495803	0	741237	-256454	11019	3732090	107140	362942
1994	16588	9770	26357	22014	9259	57630	27125	25240	52365	47723	100088	87981	12767	69737	170486	14662	185147	0	460017	-44968	-229902	2983548	72415	98070
1995	18084	16884	34969	20494	21528	76991	206693	86934	293627	44427	338054	350124	16192	64921	431237	23231	454468	0	534457	-302109	222120	3295279	97587	333650
1996	33206	29352	62559	23186	56471	142216	273237	66562	339799	50264	390063	458829	26328	73450	558606	26145	584751	0	1696390	-584821	-526818	5830458	143908	414698
1997	34278	26857	61135	24953	40993	127082	225458	179822	405280	54095	459375	507409	25325	79048	611782	24527	636309	0	1757681	-638428	-482944	5458936	158429	453353
1998	21505	9214	30719	22399	46804	99922	159438	149117	308555	44672	353227	386077	18519	67071	471668	21547	493215	0	1392845	-271805	-627825	5931578	125676	345992
1999	15203	15761	30964	24421	34239	89624	155367	98837	254204	44467	298671	319407	36223	68889	424519	20641	445159	0	1390899	-482871	-462869	4391184	145059	279460
2000	19029	10730	29759	11419	23898	65076	112282	130736	243018	40707	283725	296675	25196	52126	373997	19480	393476	0	995975	-99765	-502733	4406377	121109	252888
2001	14291	9264	23555	10592	14204	48351	34502	85988	120490	31800	152290	158249	10097	42392	210738	13878	224616	0	780769	-80709	-475444	5421557	78859	131878
2002	12770	17889	30659	0	16904	47563	84215	117132	201347	30470	231817	248910	13603	30470	292983	20508	313491	0	989688	63037	-739234	5910313	88499	204484
2003	16120	11511	27632	0	35672	63304	67870	170701	238571	30678	269249	301875	4503	30678	337056	20465	357521	0	760221	-240526	-162174	5430527	83220	253836
2004	19307	17001	36308	14475	33267	84049	99062	73192	172254	30917	203170	241828	11592	45391	298812	19170	317982	0	924112	-197106	-409024	5306131	85717	213095
2005	14310	14447	28758	0	26030	54787	54885	44931	99816	30339	130155	154604	1733	30339	186676	15677	202352	0	465713	-28098	-235262	5879375	65478	121198
2006	28503	23744	52247	0	61332	113579	218142	164610	382752	31899	414651	496331	17435	31899	545665	27024	572689	0	1445613	-370213	-502711	6758191	129024	416641
2007	21616	27913	49529	0	39279	88808	89512	72384	161896	34040	195937	250705	10398	34040	295144	17893	313037	0	1102072	-330430	-458605	6219344	94371	200773
2008	17060	14261	31321	7600	27586	66506	93531	56513	150044	25327	175371	208951	7292	32926	249169	19629	268799	0	1076487	-441960	-365728	7107225	85174	163995
2009	18503	21483	39987	30054	38818	108859	48928	48692	97621	25596	123216	176425	4920	55650	236995	17855	254850	0	1018508	-266739	-496919	6560275	80110	156885
2010	15433	17131	32565	0	25057	57622	29563	37575	67139	25042	92181	124761	6594	25042	156397	16987	173383	0	845758	-506476	-165898	4589700	70850	85547
Sum of TN_FWM_ppb																								
1992	123	87	119	1596	334	260	276	51	156	2660	290	165	99	2198	258	276	259	0	2177			1306	99	159
1993	117	842	274	1596	409	375	559	352	500	2660	555	449	99	2198	434	183	406	0	1041			1153	99	335
1994	96	473	136	1596	196	226	160	158	159	2660	288	154	99	2198	233	293	237	0	909			816	99	134
1995	139	443	208	1596	414	331	510	518	513	2660	574	442	99	2198	437	191	410	0	986			1023	99	338
1996	181	700	277	1596	522	408	450	311	414	2660	465	398	99	2198	384	185	367	0	1348			1450	99	285
1997	146	537	214	1596	482	329	357	586	432	2660	479	388	99	2198	382	190	368	0	1331			1374	99	283
1998	110	251	132	1596	388	272	382	531	442	2606	494	367	99	2151	372	205	359	0	1284			1417	99	273
1999	90	818	164	1596	393	307	321	323	322	2544	370	299	99	2102	290	211	285	0	1060			1081	99	191
2000	100	673	145	4835	363	237	317	404	358	2473	408	312	99	2769	306	221	300	0	979			1043	99	207
2001	87	309	121	4835	285	196	183	348	277	2390	340	233	99	2736	265	318	267	0	1584			1357	99	166
2002	80	403	150		446	196	342	459	402	2390	451	335	99	2390	328	212	316	0	1525			1447	99	229
2003	105	151	121		409	200	267	808	512	2390	563	386	99	2390	401	212	381	0	1667			1430	99	302
2004	109	435	168	2901	519	295	386	377	382	2390	438	331	99	2532	345	223	334	0	1571			1509	99	246
2005	85	295	133		430	198	287	276	282	2390	355	245	99	2390	282	270	281	0	1615			1489	99	183

Mass Balances by Water Year **Season: M-S** **May-September**

Row Labels	Wood_ Weed	Wood Dike - Weed	Wood_ Dike	Agency Lake Ranch	7mile_D ike	Total Agency Inflow	Sprague	William son-Sprague	William son Mouth	Pumped to Klamath L	Total Klamath Inflow	Total Tributar ies	Ungaug ed Inflows	Total Pumped to Lake	Total External Inflows	Precipit ation	Total Inflow + Precip	Evapora tion	Lake Outflow	Retention	Storage Increase	Lake Mean Storage	Natural-Backgro und	Anthrop ogenic
Sum of Flow_hm3																								
1992	34	24	58	8	28	93	39	97	136	10	146	221	85	18	324	16	340	212	469	0	-341	2057	324	324
1993	76	23	99	8	29	136	251	119	370	11	381	498	187	19	704	35	738	188	837	0	-287	3086	704	704
1994	35	17	52	8	20	80	59	85	145	10	155	217	180	18	414	19	433	209	643	0	-419	2275	414	414
1995	66	22	88	8	39	135	243	103	346	11	357	473	178	19	670	25	694	192	791	0	-289	3226	670	670
1996	112	28	140	9	55	204	220	113	333	12	345	528	139	20	687	32	719	191	867	0	-338	2910	687	687
1997	122	23	145	9	74	228	180	104	284	12	296	503	73	21	597	34	631	181	690	0	-240	3037	597	597
1998	111	34	145	9	44	198	358	153	511	11	522	700	137	20	857	35	892	169	969	0	-246	3208	857	857
1999	96	9	105	9	44	158	324	173	497	11	507	645	188	20	854	20	874	193	845	0	-164	3083	854	854
2000	88	26	114	26	17	157	155	147	302	9	311	433	172	35	641	10	651	186	758	0	-294	2909	641	641
2001	51	21	72	0	8	80	72	116	188	8	195	268	167	8	443	16	459	235	512	0	-288	2865	443	443
2002	53	29	82	22	21	125	109	105	214	8	222	318	149	29	496	7	503	206	660	0	-363	2709	496	496
2003	63	39	102	25	32	159	141	109	249	8	257	383	104	33	520	18	538	207	675	0	-345	2877	520	520
2004	70	32	102	8	25	134	86	109	196	8	203	322	120	15	458	19	476	197	582	0	-303	2756	458	458
2005	66	29	94	31	21	146	193	101	294	8	302	409	118	39	565	24	589	187	726	0	-324	3056	565	565
2006	99	32	131	22	40	193	286	149	435	9	444	607	131	31	768	8	776	204	941	0	-368	2803	768	768
2007	74	42	115	25	23	163	98	118	216	8	223	354	128	33	515	14	528	200	734	0	-405	2659	515	515
2008	79	42	121	24	25	170	192	134	326	6	333	472	103	30	605	22	627	206	741	6	-325	2874	605	605
2009	78	44	122	0	29	151	122	139	261	6	268	413	101	6	520	28	548	190	707	0	-349	2732	520	520
2010	65	32	97	0	41	138	129	129	258	6	264	396	73	6	475	19	494	187	478	3	-174	2537	475	475
Sum of TP_kg																								
1992	3556	5391	8947	2072	5798	16817	4179	14135	18314	5447	23761	33059	5527	7519	46105	1318	47423	0	80959	-17968	-15567	355678	21038	25066
1993	7469	9017	16486	2246	6233	24965	16750	12299	29050	5907	34957	51768	12157	8153	72079	1746	73825	0	77882	11242	-15299	352388	45738	26341
1994	2959	3202	6161	2088	3091	11340	3755	8292	12046	5491	17537	21298	11668	7579	40545	1377	41923	0	76213	-25378	-8912	277476	26903	13642
1995	5160	11507	16667	2200	7184	26050	10548	11149	21697	5784	27481	45548	11550	7983	65081	1534	66614	0	102515	-90837	54936	540360	43530	21551
1996	8885	6839	15724	2407	10126	28257	11978	18577	30555	6329	36884	56405	9009	8737	74150	1683	75834	0	92847	-61181	44168	333297	44680	29471
1997	9951	4080	14031	2483	8618	25132	8853	13341	22194	6530	28724	44843	4754	9014	58611	1724	60335	0	135399	-127274	52209	520988	38832	19779
1998	9252	5785	15037	2403	7069	24509	24879	18326	43205	5636	48842	65311	8930	8039	82280	1744	84024	0	115834	-74743	42934	426780	55724	26556
1999	8478	2846	11324	2544	6808	20676	21079	14308	35387	5246	40633	53519	12223	7790	73532	1445	74977	0	170389	-141380	45967	500018	55483	18049
2000	7254	4959	12214	46996	2201	61411	8122	15172	23294	4110	27404	37709	11202	51106	100017	1217	101234	0	147684	-90572	44122	516559	41656	58360
2001	4518	4344	8862	0	1764	10626	4260	11867	16127	3164	19291	26753	10861	3164	40778	1356	42134	0	87925	-62918	17127	480586	28763	12014
2002	4754	3878	8632	25201	5742	39575	6173	11452	17625	3193	20818	31999	9693	28394	70086	1157	71244	0	81068	-46939	37114	395634	32250	37836
2003	5407	5157	10564	20148	6446	37159	8847	10794	19642	3187	22828	36652	6758	23335	66745	1386	68132	0	100337	-71541	39336	507150	33799	32947
2004	5932	4946	10878	4692	4469	20038	4541	12208	16749	3163	19911	32095	7812	7854	47761	1401	49163	0	76848	-29615	1930	332160	29754	18007
2005	5635	4837	10471	17124	3614	31210	18350	9237	27587	3153	30740	41673	7650	20277	69600	1514	71114	0	89608	-21604	3109	440248	36744	32856
2006	8902	8296	17199	14492	11630	43321	23187	17393	40580	3685	44265	69409	8532	18177	96117	1176	97294	0	135343	-89746	51697	424028	49951	46166
2007	5940	7229	13170	11456	4773	29399	5295	12569	17864	3227	21090	35806	8327	14683	58816	1297	60113	0	178482	-133835	15466	555611	33444	25373
2008	6843	7909	14752	6708	3478	24937	11509	12973	24482	2646	27128	42712	6688	9354	58753	1478	60232	0	119882	-91734	32084	453292	39328	19425
2009	6583	6942	13525	0	4583	18108	7214	12006	19220	2608	21828	37328	6555	2608	46491	1599	48090	0	93486	-59708	14312	345761	33792	12699
2010	5604	4379	9983	0	6081	16063	9204	13805	23009	2581	25590	39072	4737	2581	46390	1406	47796	0	50198	-13388	10986	302351	30896	15494
Sum of TP_FWM_ppb																								
1992	106	223	155	272	210	181	107	146	135	549	163	150	65	429	142	82	140	0	173			173	65	77
1993	98	397	167	272	217	184	67	103	78	549	92	104	65	429	102	50	100	0	93			114	65	37
1994	84	188	118	272	155	142	63	97	83	549	113	98	65	429	98	71	97	0	119			122	65	33
1995	78	516	188	272	185	192	43	108	63	549	77	96	65	429	97	62	96	0	130			167	65	32
1996	79	244	112	272	183	138	54	165	92	549	107	107	65	429	108	53	105	0	107			115	65	43
1997	82	175	97	272	117	110	49	128	78	549	97	89	65	429	98	51	96	0	196			172	65	33
1998	83	169	104	272	160	124	70	119	85	522	94	93	65	409	96	50	94	0	120			133	65	31
1999	89	307	108	272	155	131	65	83	71	491	80	83	65	389	86	71	86	0	202			162	65	21
2000	83	189	107	1788	129	390	52	103	77	455	88	87	65	1447	156	125	156	0	195			178	65	91
2001	88	205	122		232	133	60	102	86	413	99	100	65	413	92	83	92	0	172			168	65	27
2002	89	134	105	1163	273	317	57	109	82	413	94	101	65	966	141	164	142	0	123			146	65	76
2003	85	133	103	812	201	234	63	99	79	413	89	96	65	717	128	78	127	0	149			176	65	63
2004	85	156	107	611	178	149	53	112	86	413	98	100	65	512	104	75	103	0	132			121	65	39
2005	86	169	111	553	176	214	95	91	94	413	102	102	65	526	123	64	121	0	123			144	65	58
2006	90	258	131	669	288	224	81	116	93	413	100	114	65	594	125	149	125	0	144			151	65	60
2007	81	173	114	457	211	180	54	107	83	413	94	101	65	446	114	94	114	0	243			209	65	49
2008	87	190	122	279	139	147	60	97	75	413	82	91	65	307	97	67	96	0	162			158	65	32
2009	84	157	110		158	120	59	86	74	413	82	90	65	413	89	57	88	0	132			127	65	24
2010	86	138	103		147	116	71	107	89	413	97	99	65	413	98	74	97	0	105			119	65	33
Sum of TN_kg																								
1992	8012	14960	22973	12165	23098	58236	18912	1230	20142	26371	46514	66213	8418	38536	113167	7894	121062	0	1020313	-713594	-185657	4225584	32043	81125
1993	10041	19699	29740	13192	20228	63160	98985	26846	125831	28597	154429	175799	18516	41789	236104	10443	246547	0	1260412	-1202487	188622	4607531	69662	166442
1994	6032	4863	10895	12263	14362	37520	20448	4280	24728	26583	51311	49985	17771	38846	106602	8245	114848	0	1067896	-909503	-43546	3407913	40975	65627
1995	12135	19397	31533	12917	27891	72341	78316	18377	96693	28001	124694	156117	17591	40918	214626	9178	223804	0	1635426	-1976642	565020	6711622	66300	148326
1996	10675	11483	22158	14135	27763	64056	57144	23790	80934	30643	111577	130855	13721	44779	189355	10068	199423	0	1357815	-1482132	323740	3947113	68050	121304
1997	8991	1107	10099	14584	23697	48379	43612	31244	74856	31615	106471	108651	7241	46199	162092	10308	172400	0	1434714	-1861180	598865	5817542	59145	102947
1998	12667	11529	24196	14109	18918	57223	119148	76078	195226	28139	223365	238340	13600	42248	294189	10430	304619	0	1332046	-1455267	427840	4813835	84873	209316
1999	9997	4052	14050	14939	19605	48594	97550	80710	178260	27201	205461	211915	18616	42140	272671	8649	281320	0	1722446	-1977786	536660	5152906	84504	188167
2000	11453	7428	18881	127101	7012	152995	41511	46861	88372	22352	110724	114266	17061	149453	280780	7295	288075	0	1435511	-1727187	579751	4356388	63446	217334
2001	5466	7311	12777	0	4903	17679	23454	18642	42096	18318	60415	59776	16542	18318	94636	8121	102757	0	1365373	-2051569	788953	6269190	43808	50827
2002	6970	4356	11326	63381	19234	93941	35811	22542	58353	18484	76837	88913	14764	81864	185542	6938	192479	0	1206576	-1423226	409129	4972052	49120	136422
2003	5464	9813	15277	66855	22183	104315	36533	14615	51148	18448	69596	88608	10293	85303	184204	8300	192504	0	1301746	-1436889	327647	5736793	51478	132726
2004	7283	5787	13069	22269	13829	49167	30378	14207	44585	18308	62893	71484	11898	40576	123958	8389	132347	0	1188159	-1162835	107023	4625396	45318	78640
2005	9235	12434	21669	81280	15431	118380	98352	16542	114894	18253	133147	151994	11651	99533	263179	9059	272238	0	1380400	-1478130	369967	5590983	55963	207215
2006	11864	17192	29056	65281	25909	120246	104454	66677	171131	21330	192462	226096	12995	86611	325702	7050	332752	0	1568224	-1917737	682266	4501848	76080	249622
2007	5647	11291	16938	78579	12229	107746	28838	21452	50289	18679	68969	79456	12683	97258	189398	7768	197166	0	1788137	-1815856	224885	5202266	50938	138460
2008	8667	16089	24756	64818	10954	100527	72651	41808	114459	15318	129778	150169	10186	80136	240491	8848	249339	0	1662376	-1880373	467337	5027829	59900	180591
2009	8166	13264	21430	0	15868	37297	46286	34377	80662	15097	95759	117959	9984	15097	143040	9567	152607	0	1370669	-1527086	309025	4661887	51468	91572
2010	5817	7801	13619	0	19751	33370	45719	18831	64550	14941	79491	97920	7215	14941	120075	8416	128491	0	755480	-905071	278083	3646529	47057	73018
Sum of TN_FWM_ppb																								
1992	239	619	398	1596	837	627	484	13	148	2660	319	299	99	2198	350	491	356	0	2177			2054	99	251
1993	132	866	301	1596	705	465	394	226	340	2660	406	353	99	2198	336	300	334	0	1505			1493	99	237
1994	172	286	209	1596	721	471	344	50	171	2660	332	231	99	2198	258	427	265	0	1660			1498	99	159
1995	183	869	356	1596	717	534	323	178	279	2660	350	330	99	2198	320	373	322	0	2068			2080	99	221
1996	95	410	158	1596	501	314	259	211	243	2660	324	248	99	2198	275	315	277	0	1567			1356	99	176
1997	74	48	70	1596	322	212	242	300	263	2660	359	216	99	2198	271	306	273	0	2080			1915	99	172
1998	114	338	167	1596	429	289	333	496	382	2606	428	340	99	2151	343	301	342	0	1375			1501	99	244
1999	105	437	134	1596	445	307	301	467	359	2544	405	328	99	2102	319	423	322	0	2039			1671	99	220
2000	130	283	166	4835	412	972	268	318	292	2473	356	264	99	4230	438	750	443	0	1894			1497	99	339
2001	107	345	176		646	221	328	160	224	2390	309	223	99	2390	214	497	224	0	2667			2188	99	115
2002	130	151	138	2926	913	751	329	214	272	2390	346	280	99	2785	374	983	382	0	1828			1835	99	275
2003	86	253	150	2693	691	656	260	135	205	2390	271	231	99	2621	354	467	358	0	1928			1994	99	255
2004	104	183	129	2901	550	366	352	130	228	2390	309	222	99	2646	271	452	278	0	2041			1679	99	172
2005	141	433	230	2627	750	812	510	163	391	2390	441	372	99	2580	466	381	462	0	1901			1830	99	367

Mass Balances by Year Interval **Season: October-September**

Interval	Wood_Weed	Wood Dike - Weed	Wood_Dike	Agency Lake Ranch	7mile_Dike	Total Agency Inflow	Sprague	Williamson-Sprague	Williamson Mouth	Pumped to Klamath L	Total Klamath Inflow	Total Tributaries	Ungauged Inflows	Total Pumped to Lake	Total External Inflows	Precipitation	Total Inflow + Precip	Evaporation	Lake Outflow	Retention	Storage Increase	Lake Mean Storage	Natural-Background	Anthropogenic
Flow hm3/yr																								
92-10	247	71	318	21	103	442	502	344	846	24	870	1267	279	45	1591	114	1705	256	1439	8	3	6557	1591	1591
92-98	249	59	308	22	116	447	596	321	917	29	945	1341	320	51	1711	134	1845	251	1572	2	20	6484	1711	1711
99-10	246	78	323	20	96	440	447	358	805	21	826	1224	255	41	1521	103	1623	258	1362	11	-7	6599	1521	1521
92-00	254	54	308	23	114	445	610	355	965	28	993	1387	358	51	1796	128	1924	251	1660	2	12	6630	1796	1796
01-10	240	86	327	19	94	439	405	334	739	20	759	1159	208	39	1406	102	1508	260	1241	13	-6	6491	1406	1406
92-96	216	54	270	21	98	390	517	280	797	28	825	1165	317	49	1531	127	1658	258	1388	1	11	6197	1531	1531
97-01	284	53	338	21	119	477	633	432	1064	27	1091	1521	381	48	1949	116	2065	252	1800	2	10	7109	1949	1949
02-06	237	81	318	22	96	436	469	326	794	21	815	1208	223	43	1475	112	1587	259	1328	15	-14	6721	1475	1475
07-10	251	101	353	19	99	471	361	338	699	18	717	1151	175	37	1363	99	1462	254	1191	14	4	6110	1363	1363
92-94	196	47	243	21	79	342	370	267	637	27	664	958	279	48	1286	105	1391	263	1161	1	-34	5869	1286	1286
08-10	245	102	347	17	101	466	349	341	690	17	707	1139	156	34	1328	102	1430	252	1144	18	16	5974	1328	1328
TP Load kg/yr																								
92-10	21024	14533	35557	11039	14774	61370	38105	35321	73426	11377	84803	123757	18140	22416	164313	4802	169115		162379	7633	-897	744835	103409	60904
92-98	21245	15329	36575	6017	15938	58530	47566	37533	85099	15569	100668	137611	20772	21586	179970	5205	185175		162066	24432	-1322	713269	111235	68736
99-10	20895	14068	34963	13969	14095	63027	32586	34031	66617	8931	75548	115675	16604	22900	155179	4567	159746		162562	-2166	-649	763248	98843	56336
92-00	21559	14199	35758	11115	15497	62371	47974	38263	86237	14934	101170	137492	23240	26049	186781	5091	191871		180174	12266	-568	743989	116727	70054
01-10	20542	14833	35375	10971	14124	60470	29223	32674	61896	8175	70072	111395	13550	19146	144091	4543	148634		146364	3463	-1193	745596	91422	52669
92-96	19133	15581	34713	5834	15121	55668	42463	33722	76184	15340	91524	126019	20587	21173	167780	5050	172829		139292	36549	-3012	655630	99511	68269
97-01	23183	12007	35190	14957	14150	64297	46996	41577	88573	13272	101845	137913	24742	28230	190885	4848	195734		211517	-13698	-2086	847975	126705	64180
02-06	20526	14628	35155	16941	15220	67316	36529	33550	70080	8607	78687	120454	14506	25548	160508	4771	165280		137444	20212	7624	711354	95845	64663
07-10	21310	16261	37572	5271	14564	57406	23513	31713	55226	7516	62742	107362	11371	12787	131519	4473	135992		160985	-17572	-7420	769266	88615	42904
92-94	18746	13331	32077	5708	11327	49112	32300	30406	62705	15009	77714	106109	18154	20717	144980	4586	149566		121283	46531	-18247	603377	83595	61384
08-10	21066	14801	35867	3209	13502	52578	22861	31874	54735	6986	61720	104104	10109	10195	124408	4534	128941		133998	-5818	761	665964	86351	38056
TP FWM Conc ppb																								
92-10	85	205	112	525	143	139	76	103	87	479	98	98	65	501	103	42	99		113			114	65	38
92-98	85	259	119	272	137	131	80	117	93	546	107	103	65	426	105	39	100		103			110	65	40
99-10	85	181	108	686	147	143	73	95	83	426	91	95	65	554	102	44	98		119			116	65	37
92-00	85	263	116	480	136	140	79	108	89	530	102	99	65	508	104	40	100		109			112	65	39
01-10	85	172	108	574	151	138	72	98	84	413	92	96	65	492	102	45	99		118			115	65	37
92-96	89	288	129	272	154	143	82	121	96	549	111	108	65	429	110	40	104		100			106	65	45
97-01	82	226	104	725	119	135	74	96	83	492	93	91	65	593	98	42	95		117			119	65	33
02-06	87	181	111	758	158	154	78	103	88	413	97	100	65	591	109	42	104		104			106	65	44
07-10	85	160	107	273	147	122	65	94	79	413	88	93	65	341	96	45	93		135			126	65	31
92-94	96	285	132	272	144	143	87	114	98	549	117	111	65	429	113	44	107		104			103	65	48
08-10	86	145	103	185	133	113	65	94	79	413	87	91	65	297	94	45	90		117			111	65	29
TN Load kg/yr																								
92-10	28038	27697	55735	48968	49250	153953	177333	118951	296284	59887	356172	401269	27628	108855	537753	28699	566452		2364292	-1797904	64	10146857	157499	380254
92-98	32077	29756	61833	35333	53222	150389	231419	108788	340207	75692	415899	455262	31638	111026	597926	31096	629022		2340091	-1696368	-14702	9295146	169419	428507
99-10	25681	26496	52178	56922	46933	156032	145783	124880	270663	50668	321330	369773	25289	107589	502652	27301	529953		2378409	-1857134	8677	10643689	150546	352106
92-00	31136	27362	58498	47246	50812	156557	225182	124296	349478	73841	423320	458789	35396	121087	615272	30415	645687		2436163	-1795798	5322	9263653	177784	437488
01-10	25249	27998	53248	50518	47844	151610	134269	114141	248410	47328	295738	349501	20638	97847	467986	27154	495140		2299608	-1799799	-4668	10941741	139243	328743
92-96	29420	31916	61336	34258	48429	144023	214455	65051	279506	74265	353771	389271	31356	108523	529150	30172	559322		2092670	-1529579	-3770	8608826	151562	377588
97-01	30576	20651	51227	52904	46855	150985	202464	179607	382072	68673	450745	480153	37684	121577	639414	28975	668389		2721652	-2129313	76051	10403899	192982	446432
02-06	26365	26835	53200	62708	53958	169866	165940	141030	306970	49825	356796	414129	22093	112533	548755	28516	577271		2246091	-1638345	-30475	10942322	145979	402776
07-10	25228	32308	57536	45263	47385	150184	113757	82908	196665	43510	240175	301587	17318	88773	407677	26741	434418		2404872	-1918498	-51955	10753764	134967	272710
92-94	24332	27489	51821	33519	36164	121503	152295	43198	195493	72663	268156	283477	27649	106182	417309	27412	444721		1746421	-1100730	-200971	7753219	127322	289987
08-10	24549	30010	54559	34157	46011	134727	112226	79266	191492	40440	231932	292062	15397	74597	382056	27101	409157		2243092	-1842569	8633	10531148	131520	250536
TN FWM Conc ppb																								
92-10	114	391	175	2330	476	348	353	346	350	2520	410	317	99	2431	338	251	332		1643			1548	99	239
92-98	129	502	201	1596	458	337	388	339	371	2653	440	339	99	2191	349	232	341		1488			1434	99	250
99-10	105	341	161	2795	489	355	326	349	336	2416	389	302	99	2602	331	266	326		1747			1613	99	232
92-00	123	507	190	2042	445	352	369	350	362	2622	426	331	99	2361	343	237	336		1468			1397	99	244
01-10	105	325	163	2644	511	345	332	342	336	2390	390	302	99	2515	333	267	328		1853			1686	99	234
92-96	136	590	227	1596	494	370	415	233	351	2660	429	334	99	2198	346	237	337		1507			1389	99	247
97-01	107	388	152	2565	394	316	320	416	359	2547	413	316	99	2555	328	251	324		1512			1464	99	229
02-06	111	332	168	2805	560	389	354	433	386	2390	438	343	99	2605	372	254	364		1692			1628	99	273
07-10	100	319	163	2347	477	319	315	246	281	2390	335	262	99	2368	299	271	297		2019			1760	99	200
92-94	124	588	213	1596	460	355	411	162	307	2660	404	296	99	2198	324	260	320		1504			1321	99	225
08-10	100	294	157	1969	454	289	321	233	277	2390	328	256	99	2177	288	267	286		1961			1763	99	189

Mass Balances by Year Interval **Season: October-April**

Interval	Wood_Weed	Wood Dike - Weed	Wood_Dike	Agency Lake Ranch	7mile_Dike	Total Agency Inflow	Sprague	Williamson-Sprague	Williamson Mouth	Pumped to Klamath L	Total Klamath Inflow	Total Tributaries	Ungauged Inflows	Total Pumped to Lake	Total External Inflows	Precipitation	Total Inflow + Precip	Evaporation	Lake Outflow	Retention	Storage Increase	Lake Mean Storage	Natural-Background	Anthropogenic
Flow hm3/yr																								
92-10	171	42	213	8	71	292	331	223	553	15	568	838	146	23	1006	93	1099	59	722	7	311	3732	1006	1006
92-98	170	35	204	14	75	293	403	210	613	18	631	892	180	32	1104	106	1210	59	820	2	328	3655	1104	1104
99-10	172	46	218	4	69	292	288	230	518	13	532	806	126	18	949	86	1035	58	665	10	301	3777	949	949
92-00	172	31	203	13	75	291	407	233	640	18	657	918	209	30	1157	103	1260	59	897	2	303	3764	1157	1157
01-10	171	52	223	4	67	293	262	213	475	12	488	765	89	16	870	84	954	58	565	12	319	3704	870	870
92-96	151	31	183	13	64	260	355	176	531	17	548	777	163	31	971	102	1073	59	667	1	346	3486	971	971
97-01	191	30	221	10	82	313	415	293	708	17	725	1011	233	27	1271	93	1364	59	1046	2	256	4088	1271	1271
02-06	166	49	215	1	68	285	306	211	517	13	530	800	99	14	913	97	1010	59	611	15	326	3881	913	913
07-10	178	61	239	7	70	316	226	208	433	12	445	742	74	19	835	78	913	58	526	11	317	3410	835	835
92-94	148	25	173	13	53	240	254	167	420	17	437	647	129	30	806	82	888	60	511	1	315	3396	806	806
08-10	171	63	234	9	70	313	202	207	408	11	419	712	63	20	795	79	874	58	502	15	299	3260	795	795
TP Load kg/yr																								
92-10	14546	8662	23208	2341	9000	34550	27119	22168	49288	7109	56397	81496	9475	9450	100421	3352	103773		56437	72850	-25514	320605	65392	35029
92-98	14498	8784	23282	3746	9064	36091	36003	23801	59804	9695	69499	92150	11688	13440	117277	3615	120893		64687	79594	-23389	312274	71743	45535
99-10	14574	8591	23165	1522	8963	33650	21937	21215	43153	5601	48754	75281	8184	7123	90588	3198	93786		51624	68916	-26754	325465	61688	28900
92-00	14563	8240	22804	3844	9150	35798	35736	24307	60043	9325	69368	91996	13571	13169	118736	3558	122295		69093	80943	-27741	319151	75217	43519
01-10	14530	9042	23572	989	8866	33426	19365	20243	39608	5115	44723	72045	5789	6104	83938	3165	87103		45046	65566	-23509	321914	56550	27387
92-96	13527	8389	21916	3631	8635	34182	33021	20831	53852	9548	63400	84403	10605	13179	108188	3518	111706		53208	73374	-14877	283790	63133	45055
97-01	15292	7604	22896	4072	8858	35827	33557	26974	60531	8335	68867	92286	15148	12407	119842	3351	123193		80070	85680	-42557	358989	82613	37228
02-06	14400	9206	23606	610	8840	33056	24310	21333	45643	5331	50974	78089	6417	5941	90446	3444	93891		40803	72101	-19014	291510	59345	31101
07-10	15068	9646	24714	730	9835	35280	15208	18874	34082	4751	38833	68632	4794	5481	78906	3028	81934		50473	57094	-25632	355013	54250	24657
92-94	14085	7461	21546	3573	6286	31405	24071	18831	42902	9394	52296	70734	8370	12966	92070	3106	95176		42931	57232	-4988	274863	52369	39701
08-10	14723	8391	23114	973	8788	32876	13552	18946	32498	4374	36872	64400	4116	5347	73863	3039	76902		46142	49126	-18366	298829	51679	22184
TP FWM Conc ppb																								
92-10	85	206	109	298	127	118	82	100	89	479	99	97	65	416	100	36	94		78			86	65	35
92-98	85	253	114	272	121	123	89	113	98	546	110	103	65	426	106	34	100		79			85	65	41
99-10	85	186	106	346	130	115	76	92	83	426	92	93	65	406	95	37	91		78			86	65	30
92-00	85	266	112	303	121	123	88	104	94	530	106	100	65	435	103	34	97		77			85	65	38
01-10	85	174	106	281	132	114	74	95	83	413	92	94	65	384	96	38	91		80			87	65	31
92-96	89	268	120	272	135	132	93	118	101	549	116	109	65	429	111	35	104		80			81	65	46
97-01	80	250	103	411	108	114	81	92	85	492	95	91	65	462	94	36	90		77			88	65	29
02-06	87	188	110	611	129	116	80	101	88	413	96	98	65	427	99	35	93		67			75	65	34
07-10	85	157	103	104	141	112	67	91	79	413	87	92	65	296	95	39	90		96			104	65	30
92-94	95	293	124	272	118	131	95	113	102	549	120	109	65	429	114	38	107		84			81	65	49
08-10	86	133	99	104	126	105	67	92	80	413	88	90	65	268	93	39	88		92			92	65	28
TN Load kg/yr																								
92-10	19375	17178	36554	13291	31204	81049	119538	88472	208010	37430	245440	275768	14431	50721	340921	20016	360937		1003570	-276612	-366021	5237636	99598	241323
92-98	22284	17893	40177	21996	30943	93115	169052	82810	251863	47128	298990	322982	17801	69123	409907	21586	431493		1038859	-324824	-282543	4504983	109269	300637
99-10	17679	16761	34440	8213	31357	74011	90655	91774	182429	31774	214203	248227	12466	39987	300679	19101	319780		982985	-248488	-414717	5665017	93956	206723
92-00	21135	16860	37996	21090	30526	89612	161224	89916	251140	46119	297259	319662	20670	67209	407540	21247	428787		1073210	-317378	-327045	4481382	114562	292979
01-10	17791	17465	35256	6272	31815	73343	82021	87172	169193	29611	198804	236264	8817	35883	280963	18909	299872		940894	-239922	-401100	5918264	86130	194833
92-96	20041	17836	37877	21323	25760	84960	159694	50147	209841	46226	256066	273477	16153	67549	357179	21006	378185		824298	-272707	-173406	4028873	96156	261023
97-01	20861	14365	35226	18757	32028	86011	137409	128900	266309	43148	309458	333564	23072	61905	418541	20015	438555		1263634	-314716	-510363	5121927	125826	292714
02-06	18202	16919	35121	2895	34641	72657	104835	114113	218948	30861	249809	288710	9773	33755	332238	20569	352807		917069	-154581	-409681	5856907	90387	241851
07-10	18153	20197	38350	9413	32685	80449	65384	53791	119175	27501	146676	190210	7301	36915	234426	18091	252517		1010706	-386402	-371787	6119136	82626	151800
92-94	16304	14314	30618	20979	16934	68532	106180	32412	138592	45479	184072	186145	12748	66458	265351	18551	283902		630214	-158868	-187444	3672876	79762	185589
08-10	16999	17625	34624	12551	30487	77662	57341	47594	104934	25321	130256	170046	6269	37873	214187	18157	232344		980251	-405059	-342848	6085734	78711	135476
TN FWM Conc ppb																								
92-10	113	409	171	1692	439	277	362	397	376	2520	432	329	99	2233	339	215	328		1390			1403	99	240
92-98	131	515	197	1596	412	318	419	395	411	2653	474	362	99	2191	371	203	357		1267			1232	99	272
99-10	103	362	158	1865	456	254	315	399	352	2416	403	308	99	2278	317	223	309		1478			1500	99	218
92-00	123	545	187	1663	405	308	396	386	392	2622	452	348	99	2220	352	206	340		1197			1191	99	253
01-10	104	336	158	1783	474	250	313	409	356	2390	408	309	99	2256	323	225	314		1665			1598	99	224
92-96	132	570	207	1596	403	327	450	285	395	2660	467	352	99	2198	368	206	352		1236			1156	99	269
97-01	109	473	159	1894	392	275	331	440	376	2546	427	330	99	2306	329	216	322		1209			1253	99	230
02-06	109	346	163	2901	506	255	343	541	424	2390	472	361	99	2427	364	211	349		1502			1509	99	265
07-10	102	329	160	1345	468	255	289	259	275	2390	330	256	99	1995	281	232	277		1920			1795	99	182
92-94	110	562	177	1596	319	286	418	195	330	2660	421	288	99	2198	329	227	320		1232			1082	99	230
08-10	99	280	148	1345	438	248	284	230	257	2390	311	239	99	1901	269	231	266		1953			1867	99	170

Mass Balances by Year Interval **Season: May-September**

Interval	Wood_Weed	Wood Dike - Weed	Wood_Dike	Agency Lake Ranch	7mile_Dike	Total Agency Inflow	Sprague	Williamson-Sprague	Williamson Mouth	Pumped to Klamath L	Total Klamath Inflow	Total Tributaries	Ungauged Inflows	Total Pumped to Lake	Total External Inflows	Precipitation	Total Inflow + Precip	Evaporation	Lake Outflow	Retention	Storage Increase	Lake Mean Storage	Natural-Background	Anthropogenic
Flow hm3/yr																								
92-10	76	29	104	13	32	150	171	121	293	9	302	429	133	22	585	21	606	197	717	0	-308	2824	585	585
92-98	79	25	104	8	41	153	193	111	304	11	314	449	140	19	608	28	635	192	752	0	-308	2829	608	608
99-10	73	31	105	16	27	148	159	128	286	8	294	418	130	24	572	17	589	200	697	1	-308	2822	572	572
92-00	82	23	105	10	39	154	203	122	325	11	335	469	149	21	639	25	664	191	763	0	-291	2866	639	639
01-10	70	34	104	16	26	146	143	121	264	7	271	394	119	23	536	17	554	202	676	1	-324	2787	536	536
92-96	65	23	87	8	34	130	162	103	266	11	277	387	154	19	560	25	585	198	721	0	-335	2711	560	560
97-01	94	23	116	11	37	164	218	139	356	10	366	510	148	21	678	23	701	193	755	0	-246	3021	678	678
02-06	70	32	102	21	28	151	163	115	278	8	286	408	124	29	562	15	577	200	717	0	-341	2840	562	562
07-10	74	40	114	12	29	156	135	130	265	7	272	409	101	19	529	21	549	196	665	2	-313	2700	529	529
92-94	48	21	70	8	25	103	117	100	217	10	227	312	151	18	480	23	504	203	650	0	-349	2473	480	480
08-10	74	39	113	8	32	153	148	134	282	6	288	427	92	14	533	23	556	194	642	3	-283	2714	533	533
TP Load kg/yr																								
92-10	6478	5871	12349	8698	5774	26821	10985	13153	24138	4268	28406	42261	8665	12966	63891	1451	65342		105942	-65217	24617	424230	38016	25875
92-98	6747	6546	13293	2271	6874	22439	11563	13731	25294	5875	31169	45462	9085	8146	62693	1590	64282		97379	-55163	22067	400995	39492	23201
99-10	6321	5477	11798	12447	5132	29377	10648	12815	23464	3330	26794	40394	8420	15777	64591	1370	65960		110938	-71082	26104	437783	37155	27436
92-00	6996	5958	12954	7271	6348	26573	12238	13955	26194	5609	31803	45496	9669	12880	68044	1532	69577		111080	-68677	27173	424838	41509	26535
01-10	6012	5792	11803	9982	5258	27044	9858	12430	22288	3061	25349	39350	7761	13043	60154	1377	61531		101318	-62103	22316	423682	34872	25282
92-96	5606	7191	12797	2203	6487	21486	9442	12890	22332	5792	28124	41616	9982	7994	59592	1532	61124		86083	-36825	11865	371840	36378	23214
97-01	7891	4403	12294	10885	5292	28471	13439	14603	28042	4937	32979	45627	9594	15823	71043	1497	72541		131446	-99377	40472	488986	44092	26952
02-06	6126	5423	11549	16331	6380	34261	12220	12217	24437	3276	27713	42366	8089	19607	70062	1327	71389		96641	-51889	26637	419844	36500	33562
07-10	6242	6615	12857	4541	4729	22127	8305	12838	21144	2765	23909	38730	6577	7306	52613	1445	54058		110512	-74666	18212	414254	34365	18248
92-94	4661	5870	10531	2135	5041	17707	8228	11575	19803	5615	25418	35375	9784	7750	52910	1481	54390		78351	-10702	-13260	328514	31226	21683
08-10	6343	6410	12753	2236	4714	19703	9309	12928	22237	2612	24849	39704	5993	4847	50545	1494	52039		87856	-54944	19127	367135	34672	15873
TP FWM Conc ppb																								
92-10	86	204	118	661	179	179	64	108	82	479	94	98	65	588	109	69	108		148			150	65	44
92-98	85	267	128	272	167	146	60	124	83	546	99	101	65	426	103	57	101		129			142	65	38
99-10	86	175	113	780	189	199	67	101	82	426	91	97	65	663	113	80	112		159			155	65	48
92-00	85	259	123	695	164	172	60	115	81	531	95	97	65	613	107	61	105		146			148	65	42
01-10	86	170	114	640	199	185	69	103	85	413	93	100	65	567	112	79	111		150			152	65	47
92-96	87	315	146	272	190	166	58	125	84	549	102	107	65	429	106	60	104		119			137	65	41
97-01	84	193	106	1015	142	173	62	105	79	493	90	89	65	763	105	65	103		174			162	65	40
02-06	87	169	113	765	229	226	75	106	88	413	97	104	65	669	125	88	124		135			148	65	60
07-10	84	166	113	370	160	142	61	99	80	413	88	95	65	385	100	70	98		166			153	65	35
92-94	97	276	151	272	198	172	71	115	91	549	112	113	65	429	110	63	108		121			133	65	45
08-10	86	164	113	279	148	129	63	96	79	413	86	93	65	338	95	65	94		137			135	65	30
TN Load kg/yr																								
92-10	8662	10519	19181	35677	18046	72904	57795	30479	88274	22457	110731	125501	13197	58134	196832	8682	205515		1360722	-1521292	366085	4909221	57901	138931
92-98	9793	11863	21656	13338	22280	57274	62367	25978	88344	28564	116909	132280	13837	41902	188019	9509	197529		1301232	-1371544	267841	4790163	60150	127870
99-10	8002	9735	17737	48708	15576	82021	55128	33105	88233	18894	107128	121546	12824	67603	201973	8200	210173		1395425	-1608645	423394	4978672	56590	145383
92-00	10000	10502	20503	26156	20286	66945	63959	34379	98338	27723	126061	139127	14726	53879	207732	9168	216900		1362953	-1478420	332366	4782270	63222	144510
01-10	7458	10534	17992	44246	16029	78267	52248	26969	79217	17718	96935	113238	11821	61964	187023	8246	195268		1358714	-1559877	396432	5023477	53113	133910
92-96	9379	14081	23460	12934	22669	59063	54761	14904	69666	28039	97705	115794	15203	40974	171971	9166	181137		1268372	-1256872	169636	4579953	55406	116565
97-01	9715	6286	16000	34147	14827	64974	65055	50707	115762	25525	141287	146590	14612	59672	220873	8961	229834		1458018	-1814598	586414	5281972	67155	153718
02-06	8163	9916	18079	59813	19317	97210	61106	26917	88022	18965	106987	125419	12320	78778	216517	7947	224464		1329021	-1483763	379206	5085414	55592	160925
07-10	7074	12111	19185	35849	14700	69735	48373	29117	77490	16009	93499	111376	10017	51858	173251	8650	181901		1394165	-1532097	319832	4634628	52341	120911
92-94	8028	13174	21203	12540	19229	52972	46115	10785	56900	27184	84085	97333	14902	39724	151958	8861	160819		1116207	-941862	-13527	4080343	47560	104398
08-10	7550	12385	19935	21606	15524	57065	54885	31672	86557	15118	101676	122016	9128	36724	167869	8944	176812		1262841	-1437510	351481	4445415	52808	115061
TN FWM Conc ppb																								
92-10	115	365	184	2711	558	486	337	251	302	2521	367	292	99	2634	337	413	339		1898			1738	99	238
92-98	123	484	208	1596	541	373	323	235	291	2652	372	295	99	2191	309	341	311		1730			1693	99	210
99-10	109	310	169	3051	574	554	347	260	308	2415	364	291	99	2842	353	481	357		2003			1765	99	254
92-00	122	456	195	2501	523	434	315	283	303	2623	376	297	99	2562	325	366	327		1786			1669	99	226
01-10	107	309	173	2838	606	536	366	223	300	2390	358	287	99	2694	349	473	353		2011			1803	99	250
92-96	145	617	268	1596	665	456	337	144	262	2660	353	299	99	2198	307	362	310		1758			1689	99	208
97-01	104	275	138	3184	398	395	299	365	325	2548	386	287	99	2877	326	390	328		1932			1749	99	227
02-06	116	310	177	2801	694	642	375	234	317	2390	375	308	99	2690	386	530	389		1854			1791	99	287
07-10	96	304	169	2918	499	448	358	224	292	2390	344	273	99	2732	328	417	331		2097			1716	99	229
92-94	166	619	305	1596	757	515	396	107	262	2660	370	312	99	2198	316	379	319		1718			1650	99	217
08-10	102	316	176	2694	489	373	371	236	307	2390	353	286	99	2560	315	388	318		1967			1638	99	216

Mass Balances by Month, Season, & Water Year **Variable: Sum of Flow_hm3**

Water Yr	Season	Month	Wood_Weed	Wood Dike - Weed	Wood_Dike	Agency Lake Ranch	7mile_Dike	Total Agency Inflow	Sprague	Williamson-Sprague	Williamson Mouth	Pumped to Klamath L	Total Klamath Inflow	Total Tributaries	Ungauged Inflows	Total Pumped to Lake	Total External Inflows	Precipitation	Total Inflow + Precip	Evaporation	Lake Outflow	Retention	Storage Increase	Lake Mean Storage	Natural-Background	Anthropogenic
1992	**O-A**	10	16.9	3.8	20.7	0.7	5.6	27.0	16.2	22.0	38.3	0.9	39.2	64.6	11.1	1.6	77.3	3.8	81.1	16.9	69.0	0.0	-4.7	319.3	77.3	77.3
1992	**O-A**	11	20.3	2.8	23.1	0.6	8.7	32.4	18.8	22.8	41.6	0.8	42.4	73.4	9.9	1.4	84.6	15.6	100.2	7.0	31.9	0.0	61.4	356.6	84.6	84.6
1992	**O-A**	12	22.1	3.7	25.7	0.6	10.9	37.2	19.9	23.2	43.1	0.8	43.9	79.7	6.1	1.5	87.3	10.5	97.7	0.0	40.1	0.0	57.6	417.9	87.3	87.3
1992	**O-A**	1	20.3	3.6	23.9	1.1	11.9	36.9	19.6	23.2	42.8	1.4	44.2	78.6	9.9	2.5	91.0	6.3	97.4	0.0	48.4	0.0	48.9	474.3	91.0	91.0
1992	**O-A**	2	19.5	3.6	23.1	2.3	9.0	34.4	20.3	21.3	41.6	3.0	44.5	73.7	0.0	5.2	78.9	7.4	86.3	0.0	24.6	4.0	58.1	521.1	78.9	78.9
1992	**O-A**	3	20.2	0.5	20.8	4.3	5.3	30.3	21.7	25.3	46.9	5.6	52.5	73.0	3.5	9.9	86.4	2.6	89.0	11.9	9.1	0.0	68.1	589.9	86.4	86.4
1992	**O-A**	4	15.3	0.1	15.4	3.2	7.2	25.8	22.6	20.3	42.8	4.2	47.0	65.4	24.9	7.5	97.7	9.2	107.0	23.2	93.6	0.0	-9.9	616.7	97.7	97.7
1992	**O-A Total**		**134.5**	**18.2**	**152.7**	**12.8**	**58.5**	**224.1**	**139.1**	**158.0**	**297.1**	**16.7**	**313.8**	**508.3**	**65.5**	**29.5**	**603.3**	**55.4**	**658.7**	**59.0**	**316.7**	**4.0**	**279.5**	**3295.8**	**603.3**	**603.3**
1992	**M-S**	5	8.7	2.4	11.1	1.9	7.9	20.9	9.1	20.6	29.7	2.5	32.1	48.6	36.1	4.4	89.1	0.7	89.8	47.3	122.8	0.0	-80.3	573.5	89.1	89.1
1992	**M-S**	6	3.5	4.5	8.0	2.0	7.1	17.0	6.9	18.0	24.8	2.6	27.4	39.9	4.9	4.5	49.3	8.5	57.8	47.7	112.1	0.0	-102.0	473.4	49.3	49.3
1992	**M-S**	7	6.7	6.0	12.7	1.7	5.3	19.7	8.1	19.4	27.5	2.2	29.7	45.5	21.6	3.9	71.0	3.1	74.1	46.1	82.9	0.0	-55.0	408.5	71.0	71.0
1992	**M-S**	8	3.7	5.4	9.1	1.2	2.7	13.0	5.8	18.3	24.1	1.5	25.6	35.9	17.2	2.7	55.7	0.7	56.5	43.8	94.9	0.0	-82.2	324.5	55.7	55.7
1992	**M-S**	9	10.9	5.9	16.8	0.9	4.7	22.3	9.2	20.6	29.7	1.1	30.9	51.2	5.3	2.0	58.5	3.1	61.6	27.1	56.0	0.0	-21.5	277.6	58.5	58.5
1992	**M-S Total**		**33.5**	**24.2**	**57.7**	**7.6**	**27.6**	**92.9**	**39.1**	**96.8**	**135.8**	**9.9**	**145.7**	**221.1**	**85.0**	**17.5**	**323.7**	**16.1**	**339.7**	**212.1**	**468.7**	**0.0**	**-341.1**	**2057.4**	**323.7**	**323.7**
1992 Total			**168.1**	**42.3**	**210.4**	**20.5**	**86.1**	**317.0**	**178.2**	**254.8**	**432.9**	**26.6**	**459.5**	**729.4**	**150.5**	**47.1**	**927.0**	**71.4**	**998.4**	**271.0**	**785.4**	**4.0**	**-61.6**	**5353.2**	**927.0**	**927.0**
1993	**O-A**	10	14.4	4.8	19.3	0.7	7.2	27.2	14.8	22.2	37.0	0.9	37.9	63.5	8.1	1.6	73.2	13.5	86.6	18.3	56.5	0.0	11.8	268.6	73.2	73.2
1993	**O-A**	11	18.5	3.6	22.1	0.6	12.5	35.3	19.1	21.7	40.8	0.8	41.6	75.5	16.8	1.4	93.7	14.1	107.8	6.8	45.0	0.0	56.1	314.1	93.7	93.7
1993	**O-A**	12	19.7	1.0	20.8	0.6	7.9	29.3	21.3	20.1	41.4	0.8	42.2	70.0	10.6	1.5	82.1	33.8	115.9	0.0	39.6	0.0	76.2	379.3	82.1	82.1
1993	**O-A**	1	18.6	3.2	21.8	1.1	4.1	27.0	25.4	17.5	43.0	1.4	44.4	68.8	20.3	2.5	91.6	27.4	119.0	0.0	58.7	0.0	60.3	447.4	91.6	91.6
1993	**O-A**	2	17.0	1.9	18.9	2.2	1.6	22.6	24.5	19.1	43.7	2.8	46.5	64.1	13.3	5.0	82.5	17.6	100.1	0.0	29.8	0.0	70.3	508.4	82.5	82.5
1993	**O-A**	3	23.5	7.8	31.2	4.3	13.7	49.2	201.6	21.9	223.5	5.6	229.1	268.4	52.1	9.9	330.4	21.3	351.7	11.9	193.7	0.0	146.2	618.9	330.4	330.4
1993	**O-A**	4	23.4	15.2	38.6	3.3	6.8	48.8	146.1	59.0	205.1	4.3	209.4	250.5	70.6	7.6	328.8	12.6	341.3	22.3	288.5	0.0	30.5	700.5	328.8	328.8
1993	**O-A Total**		**135.1**	**37.5**	**172.7**	**12.8**	**53.8**	**239.3**	**452.9**	**181.5**	**634.4**	**16.7**	**651.1**	**860.9**	**191.8**	**29.5**	**1082.2**	**140.2**	**1222.4**	**59.3**	**711.8**	**0.0**	**451.4**	**3237.1**	**1082.2**	**1082.2**
1993	**M-S**	5	19.4	9.3	28.6	2.0	9.8	40.5	126.7	32.5	159.2	2.6	161.8	197.7	48.2	4.6	250.5	17.8	268.3	38.5	207.5	0.0	22.3	720.7	250.5	250.5
1993	**M-S**	6	19.9	7.1	27.0	2.1	5.1	34.2	74.4	23.6	97.9	2.8	100.7	130.0	49.1	4.9	184.0	8.5	192.5	37.4	207.1	0.0	-52.0	720.7	184.0	184.0
1993	**M-S**	7	10.8	3.1	13.9	1.9	3.7	19.4	19.3	20.3	39.6	2.4	42.0	57.2	35.3	4.3	96.7	0.4	97.1	44.9	148.4	0.0	-96.2	636.6	96.7	96.7
1993	**M-S**	8	11.1	2.2	13.3	1.3	6.8	21.4	15.4	21.4	36.8	1.7	38.5	56.9	22.5	3.0	82.4	7.1	89.4	37.0	137.7	0.0	-85.2	544.0	82.4	82.4
1993	**M-S**	9	15.0	1.0	16.0	1.0	3.3	20.3	15.4	21.1	36.5	1.3	37.8	55.8	32.0	2.2	90.1	1.1	91.1	30.1	136.9	0.0	-75.9	463.6	90.1	90.1
1993	**M-S Total**		**76.1**	**22.7**	**98.8**	**8.3**	**28.7**	**135.8**	**251.1**	**118.9**	**370.1**	**10.7**	**380.8**	**497.6**	**187.0**	**19.0**	**703.7**	**34.8**	**738.5**	**187.9**	**837.5**	**0.0**	**-286.9**	**3085.8**	**703.7**	**703.7**
1993 Total			**211.3**	**60.3**	**271.5**	**21.1**	**82.5**	**375.1**	**704.1**	**300.4**	**1004.5**	**27.4**	**1031.9**	**1358.6**	**378.9**	**48.5**	**1785.9**	**175.0**	**1960.9**	**247.2**	**1549.2**	**0.0**	**164.5**	**6322.9**	**1785.9**	**1785.9**
1994	**O-A**	10	26.1	0.8	27.0	0.8	9.5	37.3	22.1	22.0	44.1	1.0	45.1	80.6	28.1	1.8	110.4	8.8	119.2	19.4	91.6	0.0	8.1	431.8	110.4	110.4
1994	**O-A**	11	24.3	1.7	25.9	0.7	7.0	33.6	21.2	21.4	42.6	0.8	43.4	75.5	8.6	1.5	85.6	3.7	89.3	7.1	78.1	0.0	4.1	443.0	85.6	85.6
1994	**O-A**	12	27.6	2.3	29.9	0.7	15.2	45.8	24.3	22.2	46.4	0.9	47.4	91.5	4.5	1.6	97.6	13.4	111.0	0.0	89.0	0.0	22.0	462.7	97.6	97.6
1994	**O-A**	1	27.1	2.3	29.4	1.2	9.2	39.8	23.5	22.0	45.5	1.6	47.1	84.1	21.6	2.8	108.5	5.9	114.4	0.0	64.6	0.0	49.8	489.3	108.5	108.5
1994	**O-A**	2	23.6	2.5	26.1	2.4	1.2	29.6	20.7	19.7	40.4	3.1	43.5	67.6	12.6	5.6	85.8	12.9	98.7	0.0	33.2	0.0	65.5	550.6	85.8	85.8
1994	**O-A**	3	26.1	5.3	31.4	4.7	4.4	40.4	30.5	28.3	58.8	6.1	64.9	94.5	16.0	10.8	121.3	1.3	122.6	11.9	41.7	0.0	69.0	622.1	121.3	121.3
1994	**O-A**	4	18.9	5.8	24.7	3.4	0.7	28.8	27.1	24.4	51.5	4.4	55.9	76.9	37.6	7.7	122.2	4.1	126.3	24.4	107.6	0.0	-5.8	654.9	122.2	122.2
1994	**O-A Total**		**173.7**	**20.6**	**194.3**	**13.8**	**47.2**	**255.3**	**169.3**	**160.1**	**329.3**	**17.9**	**347.3**	**570.8**	**129.0**	**31.7**	**731.5**	**50.1**	**781.5**	**62.9**	**505.9**	**0.0**	**212.8**	**3654.4**	**731.5**	**731.5**
1994	**M-S**	5	11.8	3.9	15.8	1.9	0.1	17.8	23.6	17.4	41.0	2.5	43.5	56.9	42.6	4.5	103.9	12.4	116.3	32.4	93.8	0.0	-9.9	648.1	103.9	103.9
1994	**M-S**	6	5.7	4.4	10.2	2.0	3.3	15.5	13.4	15.6	29.0	2.6	31.6	42.5	45.7	4.5	92.8	2.2	95.0	45.7	146.9	0.0	-97.6	592.4	92.8	92.8
1994	**M-S**	7	5.5	1.7	7.2	1.7	3.1	12.0	6.5	17.2	23.6	2.2	25.9	33.9	29.6	3.9	67.4	0.7	68.2	57.5	155.0	0.0	-144.3	462.5	67.4	67.4
1994	**M-S**	8	6.3	3.2	9.5	1.2	5.8	16.5	6.6	16.5	23.1	1.5	24.6	38.4	29.8	2.7	71.0	0.0	71.0	45.0	144.8	0.0	-118.9	330.1	71.0	71.0
1994	**M-S**	9	5.7	3.7	9.4	0.9	7.6	17.9	9.3	18.7	28.0	1.1	29.2	45.0	31.8	2.0	78.8	3.9	82.7	28.2	102.6	0.0	-48.1	241.8	78.8	78.8
1994	**M-S Total**		**35.1**	**17.0**	**52.0**	**7.7**	**19.9**	**79.6**	**59.4**	**85.4**	**144.8**	**10.0**	**154.8**	**216.7**	**179.5**	**17.7**	**413.9**	**19.3**	**433.2**	**208.8**	**643.1**	**0.0**	**-418.7**	**2275.0**	**413.9**	**413.9**
1994 Total			**208.7**	**37.6**	**246.3**	**21.5**	**67.1**	**334.9**	**228.6**	**245.5**	**474.1**	**27.9**	**502.0**	**787.5**	**308.5**	**49.4**	**1145.4**	**69.4**	**1214.7**	**271.7**	**1149.0**	**0.0**	**-205.9**	**5929.4**	**1145.4**	**1145.4**
1995	**O-A**	10	14.5	5.7	20.2	0.7	11.1	32.0	15.0	22.3	37.3	0.9	38.2	68.5	20.0	1.6	90.1	2.6	92.7	16.6	70.0	0.0	6.1	226.8	90.1	90.1
1995	**O-A**	11	16.9	5.7	22.5	0.6	12.9	36.0	16.0	22.9	39.0	0.8	39.7	74.4	14.8	1.4	90.5	22.8	113.4	6.3	44.1	0.0	63.0	265.1	90.5	90.5
1995	**O-A**	12	18.0	9.4	27.4	0.6	3.5	31.6	19.3	22.9	42.2	0.8	43.0	73.2	10.4	1.5	85.0	10.2	95.2	0.0	34.2	0.0	61.0	329.3	85.0	85.0
1995	**O-A**	1	21.0	2.9	23.9	1.1	3.6	28.6	45.2	20.8	66.0	1.4	67.4	93.5	35.5	2.5	131.5	33.8	165.3	0.0	28.2	0.0	137.1	419.7	131.5	131.5
1995	**O-A**	2	19.4	2.4	21.8	2.2	4.6	28.6	70.9	20.9	91.8	2.8	94.6	118.2	30.8	5.0	154.0	3.9	157.9	0.0	20.3	0.0	137.7	581.8	154.0	154.0
1995	**O-A**	3	20.6	6.3	27.0	4.3	11.7	43.0	123.1	28.1	151.3	5.6	156.9	189.9	26.6	10.0	226.5	25.7	252.2	11.9	176.1	0.0	64.2	685.4	226.5	226.5
1995	**O-A**	4	19.4	5.7	25.0	3.3	4.7	33.0	115.5	29.7	145.2	4.3	149.5	174.9	25.6	7.6	208.1	22.7	230.8	22.3	168.9	0.0	39.6	712.7	208.1	208.1
1995	**O-A Total**		**129.8**	**38.1**	**167.9**	**12.8**	**52.1**	**232.8**	**405.0**	**167.7**	**572.7**	**16.7**	**589.4**	**792.6**	**163.6**	**29.5**	**985.7**	**121.8**	**1107.5**	**57.2**	**541.9**	**0.0**	**508.5**	**3220.8**	**985.7**	**985.7**
1995	**M-S**	5	17.0	7.7	24.8	2.0	13.3	40.0	119.4	29.3	148.7	2.6	151.3	186.8	54.0	4.6	245.3	5.9	251.2	34.2	226.1	0.0	-9.1	729.9	245.3	245.3
1995	**M-S**	6	12.7	7.5	20.2	2.1	13.0	35.3	61.1	23.5	84.6	2.7	87.3	117.8	27.4	4.8	150.0	13.5	163.5	36.8	125.8	0.0	0.8	731.6	150.0	150.0
1995	**M-S**	7	14.2	2.1	16.3	1.8	5.6	23.7	32.2	13.7	45.9	2.4	48.3	67.9	36.9	4.2	109.0	5.1	114.1	43.9	144.4	0.0	-74.1	692.2	109.0	109.0
1995	**M-S**	8	9.3	2.2	11.6	1.3	2.8	15.6	16.4	17.4	33.8	1.6	35.4	48.2	29.2	2.9	80.3	0.0	80.3	42.9	158.0	0.0	-120.6	588.7	80.3	80.3
1995	**M-S**	9	12.9	2.7	15.6	0.9	4.2	20.8	13.4	19.6	32.9	1.2	34.2	52.8	30.2	2.2	85.2	0.1	85.3	34.3	136.7	0.0	-85.8	483.8	85.2	85.2
1995	**M-S Total**		**66.2**	**22.3**	**88.5**	**8.1**	**38.9**	**135.5**	**242.6**	**103.4**	**346.0**	**10.5**	**356.5**	**473.4**	**177.7**	**18.6**	**669.7**	**24.6**	**694.3**	**192.0**	**791.0**	**0.0**	**-288.7**	**3226.1**	**669.7**	**669.7**
1995 Total			**195.9**	**60.4**	**256.3**	**20.9**	**91.0**	**368.2**	**647.6**	**271.2**	**918.7**	**27.2**	**945.9**	**1266.0**	**341.2**	**48.2**	**1655.4**	**146.4**	**1801.9**	**249.2**	**1332.9**	**0.0**	**219.8**	**6446.9**	**1655.4**	**1655.4**

Mass Balances by Month, Season, & Water Year **Variable: Sum of Flow_hm3**

Water Yr	Season	Month	Wood_Weed	Wood Dike - Weed	Wood_Dike	Agency Lake Ranch	7mile_Dike	Total Agency Inflow	Sprague	Williamson-Sprague	Williamson Mouth	Pumped to Klamath L	Total Klamath Inflow	Total Tributaries	Ungauged Inflows	Total Pumped to Lake	Total External Inflows	Precipitation	Total Inflow + Precip	Evaporation	Lake Outflow	Retention	Storage Increase	Lake Mean Storage	Natural-Background	Anthropogenic
1996	**O-A**	10	20.5	4.8	25.3	0.7	6.3	32.4	20.2	22.7	42.9	1.0	43.8	74.5	21.6	1.7	97.8	0.7	98.5	17.3	102.3	0.0	-21.2	432.1	97.8	97.8
1996	**O-A**	11	21.7	8.8	30.6	0.6	8.5	39.7	20.9	22.9	43.8	0.8	44.6	82.9	10.8	1.5	95.1	9.4	104.5	7.1	87.6	0.0	9.8	427.4	95.1	95.1
1996	**O-A**	12	28.6	14.7	43.3	0.7	19.8	63.8	48.2	24.5	72.6	0.9	73.5	135.8	29.9	1.6	167.3	44.3	211.6	0.0	69.4	0.0	142.2	510.4	167.3	167.3
1996	**O-A**	1	26.0	3.9	29.9	1.2	19.6	50.7	63.0	28.9	91.9	1.5	93.5	141.4	49.5	2.7	193.7	46.8	240.5	0.0	194.5	0.0	46.0	615.8	193.7	193.7
1996	**O-A**	2	28.2	6.2	34.5	2.5	27.4	64.4	204.3	33.2	237.5	3.3	240.7	299.3	72.0	5.8	377.1	20.5	397.6	0.0	359.8	0.0	37.8	649.5	377.1	377.1
1996	**O-A**	3	28.6	1.7	30.3	5.0	10.6	45.9	134.5	46.4	180.9	6.5	187.3	221.8	54.2	11.5	287.4	9.9	297.4	11.9	259.9	0.0	25.5	670.4	287.4	287.4
1996	**O-A**	4	29.9	1.8	31.7	3.8	15.9	51.4	115.4	35.5	150.9	4.9	155.8	198.6	28.0	8.7	235.2	9.8	245.0	22.3	184.8	0.0	37.9	715.1	235.2	235.2
1996	**O-A Total**		**183.6**	**42.0**	**225.6**	**14.5**	**108.2**	**348.3**	**606.5**	**214.0**	**820.5**	**18.9**	**839.4**	**1154.3**	**265.9**	**33.4**	**1453.6**	**141.5**	**1595.1**	**58.7**	**1258.4**	**0.0**	**278.0**	**4020.6**	**1453.6**	**1453.6**
1996	**M-S**	5	32.7	2.7	35.4	2.2	23.7	61.3	122.8	31.0	153.8	2.9	156.7	212.9	44.7	5.1	262.7	16.8	279.5	34.2	241.1	0.0	4.1	730.2	262.7	262.7
1996	**M-S**	6	19.3	7.7	27.0	2.3	6.3	35.6	45.6	22.5	68.2	3.0	71.2	101.5	27.5	5.3	134.3	9.6	143.9	37.6	185.4	0.0	-79.1	690.0	134.3	134.3
1996	**M-S**	7	17.9	6.6	24.4	2.0	9.5	35.9	21.9	16.8	38.7	2.6	41.3	72.7	20.6	4.5	97.8	1.2	99.0	46.4	162.5	0.0	-109.9	593.7	97.8	97.8
1996	**M-S**	8	16.6	4.6	21.2	1.4	7.8	30.4	12.1	21.5	33.6	1.8	35.3	62.6	25.1	3.1	90.8	1.4	92.2	43.6	144.2	0.0	-95.6	488.5	90.8	90.8
1996	**M-S**	9	25.4	6.4	31.8	1.0	8.1	40.9	17.8	21.1	38.9	1.3	40.2	78.7	20.7	2.3	101.8	2.9	104.7	28.8	133.5	0.0	-57.6	407.9	101.8	101.8
1996	**M-S Total**		**111.9**	**28.0**	**139.9**	**8.9**	**55.4**	**204.1**	**220.3**	**112.9**	**333.1**	**11.5**	**344.7**	**528.4**	**138.6**	**20.4**	**687.4**	**31.9**	**719.3**	**190.6**	**866.7**	**0.0**	**-338.1**	**2910.2**	**687.4**	**687.4**
1996 Total			**295.5**	**69.9**	**365.4**	**23.4**	**163.6**	**552.4**	**826.8**	**326.8**	**1153.6**	**30.4**	**1184.0**	**1682.7**	**404.5**	**53.8**	**2141.0**	**173.4**	**2314.4**	**249.3**	**2125.1**	**0.0**	**-60.1**	**6930.9**	**2141.0**	**2141.0**
1997	**O-A**	10	29.9	3.6	33.5	0.8	9.0	43.3	22.6	22.9	45.5	1.0	46.6	88.0	23.9	1.9	113.8	8.8	122.5	17.4	102.7	0.0	2.4	377.4	113.8	113.8
1997	**O-A**	11	35.1	3.3	38.4	0.7	13.9	53.0	29.0	22.9	52.0	0.9	52.9	104.3	32.6	1.6	138.4	17.6	156.1	7.1	77.5	0.0	71.5	416.6	138.4	138.4
1997	**O-A**	12	37.3	2.8	40.1	0.7	14.0	54.9	60.5	37.1	97.6	1.0	98.6	151.7	75.6	1.7	229.1	46.1	275.1	0.0	130.3	0.0	144.8	530.1	229.1	229.1
1997	**O-A**	1	34.3	8.6	42.8	1.4	17.1	61.3	229.0	79.7	308.7	1.8	310.5	368.6	81.4	3.1	453.1	25.7	478.8	0.0	463.2	0.0	15.6	659.5	453.1	453.1
1997	**O-A**	2	33.5	8.5	42.0	2.8	13.8	58.6	103.3	52.3	155.6	3.6	159.2	211.3	35.7	6.4	253.5	7.7	261.1	0.0	245.5	0.0	15.6	629.9	253.5	253.5
1997	**O-A**	3	35.7	12.1	47.8	5.3	9.4	62.5	86.6	51.0	137.6	6.9	144.5	194.8	0.0	12.2	206.9	8.6	215.6	11.9	151.6	11.0	41.1	655.3	206.9	206.9
1997	**O-A**	4	29.4	11.2	40.6	3.9	8.0	52.5	100.6	40.7	141.3	5.1	146.4	189.9	6.6	9.1	205.6	14.5	220.1	22.3	150.0	0.0	47.8	702.9	205.6	205.6
1997	**O-A Total**		**235.1**	**50.1**	**285.2**	**15.6**	**85.1**	**385.9**	**631.6**	**306.6**	**938.2**	**20.3**	**958.6**	**1308.5**	**255.8**	**36.0**	**1600.3**	**129.0**	**1729.3**	**58.7**	**1320.7**	**11.0**	**338.9**	**3971.6**	**1600.3**	**1600.3**
1997	**M-S**	5	26.8	3.3	30.1	2.3	16.3	48.6	81.9	32.0	113.8	3.0	116.8	160.1	35.3	5.3	200.8	4.5	205.3	34.2	190.9	0.0	-19.8	714.9	200.8	200.8
1997	**M-S**	6	23.4	4.7	28.1	2.3	14.9	45.3	40.4	14.3	54.6	3.1	57.7	97.6	14.3	5.4	117.3	9.0	126.3	42.5	134.8	0.0	-51.1	689.4	117.3	117.3
1997	**M-S**	7	21.1	6.8	27.9	2.0	12.7	42.6	21.8	17.2	39.0	2.6	41.6	79.5	9.0	4.7	93.2	7.9	101.1	42.9	138.6	0.0	-80.5	610.1	93.2	93.2
1997	**M-S**	8	23.9	3.9	27.8	1.4	13.8	43.0	15.6	21.1	36.6	1.8	38.5	78.2	10.7	3.2	92.2	7.5	99.7	38.0	134.5	0.0	-72.8	534.4	92.2	92.2
1997	**M-S**	9	26.8	4.7	31.5	1.0	16.1	48.6	20.5	19.8	40.3	1.4	41.6	87.8	3.8	2.4	94.0	5.0	98.9	23.4	91.0	0.0	-15.5	488.6	94.0	94.0
1997	**M-S Total**		**121.9**	**23.3**	**145.2**	**9.1**	**73.7**	**228.0**	**180.1**	**104.3**	**284.4**	**11.9**	**296.2**	**503.3**	**73.1**	**21.0**	**597.4**	**33.7**	**631.2**	**181.0**	**689.8**	**0.0**	**-239.7**	**3037.3**	**597.4**	**597.4**
1997 Total			**357.0**	**73.4**	**430.4**	**24.8**	**158.8**	**614.0**	**811.7**	**410.9**	**1222.6**	**32.2**	**1254.8**	**1811.8**	**329.0**	**57.0**	**2197.7**	**162.7**	**2360.4**	**239.7**	**2010.5**	**11.0**	**99.2**	**7008.9**	**2197.7**	**2197.7**
1998	**O-A**	10	30.8	5.3	36.1	0.8	20.1	57.1	22.5	22.8	45.3	1.0	46.3	101.6	6.4	1.8	109.8	10.9	120.7	18.6	90.6	0.0	11.4	490.0	109.8	109.8
1998	**O-A**	11	26.7	3.1	29.9	0.7	17.1	47.6	26.4	23.8	50.2	0.9	51.1	97.2	24.0	1.6	122.7	16.4	139.1	7.2	85.4	0.0	46.6	520.0	122.7	122.7
1998	**O-A**	12	25.5	2.3	27.8	0.8	17.6	46.2	25.7	30.0	55.7	0.9	56.6	101.2	13.7	1.7	116.5	8.2	124.7	0.0	105.9	0.0	18.8	557.4	116.5	116.5
1998	**O-A**	1	26.1	2.3	28.4	1.2	19.2	48.8	65.7	37.0	102.7	1.5	104.2	150.3	44.9	2.7	197.9	35.0	232.9	0.0	158.2	0.0	74.7	609.1	197.9	197.9
1998	**O-A**	2	26.3	2.3	28.6	2.4	17.6	48.5	59.3	54.6	114.0	2.9	116.9	160.1	51.4	5.3	216.8	12.8	229.7	0.0	219.0	0.0	10.7	642.1	216.8	216.8
1998	**O-A**	3	31.7	7.5	39.2	4.6	19.1	62.9	109.1	57.6	166.7	5.7	172.4	225.0	26.5	10.3	261.8	17.2	279.0	11.9	222.6	0.0	44.4	672.0	261.8	261.8
1998	**O-A**	4	28.5	13.9	42.4	3.5	9.8	55.7	108.6	55.1	163.6	4.3	168.0	215.8	20.2	7.9	243.9	4.4	248.3	22.3	202.9	0.0	23.1	696.3	243.9	243.9
1998	**O-A Total**		**195.7**	**36.6**	**232.4**	**14.0**	**120.6**	**367.0**	**417.4**	**280.9**	**698.3**	**17.1**	**715.4**	**1051.2**	**187.1**	**31.2**	**1269.5**	**104.9**	**1374.4**	**60.0**	**1084.6**	**0.0**	**229.8**	**4186.9**	**1269.5**	**1269.5**
1998	**M-S**	5	28.0	8.3	36.3	2.1	9.4	47.8	179.1	43.0	222.1	2.6	224.7	267.8	31.2	4.7	303.6	26.1	329.7	17.0	297.9	0.0	14.8	725.4	303.6	303.6
1998	**M-S**	6	26.3	7.4	33.6	2.3	12.2	48.1	109.5	37.5	147.0	2.8	149.7	192.8	25.7	5.1	223.5	4.1	227.6	35.9	200.8	0.0	-9.1	727.1	223.5	223.5
1998	**M-S**	7	21.2	3.4	24.7	2.0	8.7	35.4	33.8	27.1	60.9	2.5	63.4	94.3	30.0	4.5	128.8	1.4	130.2	44.7	172.0	0.0	-86.4	681.8	128.8	128.8
1998	**M-S**	8	16.7	4.1	20.9	1.4	6.6	28.8	16.8	23.5	40.3	1.7	42.0	67.7	27.1	3.1	98.0	0.0	98.0	40.9	160.4	0.0	-103.3	581.4	98.0	98.0
1998	**M-S**	9	18.8	10.9	29.6	1.0	7.3	38.0	18.5	22.3	40.8	1.3	42.1	77.7	23.4	2.3	103.4	3.0	106.5	30.8	137.7	0.0	-62.1	492.5	103.4	103.4
1998	**M-S Total**		**111.0**	**34.1**	**145.1**	**8.8**	**44.1**	**198.1**	**357.6**	**153.4**	**511.0**	**10.8**	**521.8**	**700.3**	**137.4**	**19.6**	**857.3**	**34.7**	**892.0**	**169.3**	**968.8**	**0.0**	**-246.1**	**3208.1**	**857.3**	**857.3**
1998 Total			**306.7**	**70.8**	**377.5**	**22.9**	**164.7**	**565.1**	**775.0**	**434.3**	**1209.3**	**27.9**	**1237.2**	**1751.5**	**324.4**	**50.8**	**2126.8**	**139.6**	**2266.3**	**229.3**	**2053.3**	**0.0**	**-16.3**	**7395.0**	**2126.8**	**2126.8**
1999	**O-A**	10	24.9	6.0	30.9	0.8	10.6	42.4	23.8	23.9	47.7	0.9	48.7	89.3	24.6	1.8	115.6	1.9	117.5	17.7	75.3	0.0	24.5	473.9	115.6	115.6
1999	**O-A**	11	27.0	2.8	29.8	0.7	13.4	44.0	38.3	31.4	69.6	0.8	70.5	112.9	45.6	1.5	160.1	34.6	194.7	7.2	104.1	0.0	83.5	529.7	160.1	160.1
1999	**O-A**	12	25.8	2.3	28.1	0.8	12.6	41.4	47.5	52.7	100.2	0.9	101.1	140.9	44.9	1.7	187.4	12.6	200.0	0.0	181.2	0.0	18.9	599.8	187.4	187.4
1999	**O-A**	1	24.5	2.2	26.6	1.3	12.3	40.2	43.0	48.5	91.5	1.5	93.1	130.5	52.2	2.8	185.5	23.9	209.4	0.0	197.9	0.0	11.5	591.9	185.5	185.5
1999	**O-A**	2	20.9	1.9	22.8	2.6	11.0	36.4	36.6	38.9	75.5	3.0	78.5	109.2	55.4	5.6	170.2	19.1	189.3	0.0	163.9	0.0	25.5	620.9	170.2	170.2
1999	**O-A**	3	23.7	2.1	25.8	5.1	13.5	44.4	125.9	47.7	173.6	5.9	179.5	212.9	78.4	11.0	302.3	2.4	304.7	11.9	309.3	0.0	-16.4	611.5	302.3	302.3
1999	**O-A**	4	22.9	2.0	25.0	3.9	13.9	42.8	169.3	62.8	232.1	4.5	236.6	271.0	64.8	8.4	344.1	3.1	347.2	22.2	280.6	0.0	44.4	634.1	344.1	344.1
1999	**O-A Total**		**169.7**	**19.3**	**189.0**	**15.3**	**87.2**	**291.5**	**484.4**	**305.9**	**790.3**	**17.5**	**807.8**	**1066.6**	**365.9**	**32.8**	**1465.2**	**97.7**	**1562.9**	**59.0**	**1312.2**	**0.0**	**191.7**	**4061.6**	**1465.2**	**1465.2**
1999	**M-S**	5	19.9	1.9	21.8	2.4	11.6	35.8	165.1	48.9	213.9	2.7	216.6	247.3	46.7	5.1	299.1	3.3	302.4	36.9	221.1	0.0	44.5	683.1	299.1	299.1
1999	**M-S**	6	17.2	1.7	19.0	2.4	9.2	30.6	90.2	40.0	130.2	2.8	132.9	158.3	42.3	5.2	205.8	0.2	206.0	39.9	193.2	0.0	-27.2	708.1	205.8	205.8
1999	**M-S**	7	18.1	1.8	19.9	2.1	8.3	30.3	26.6	30.8	57.4	2.4	59.8	85.7	39.3	4.5	129.5	0.1	129.6	49.5	185.2	0.0	-105.2	626.4	129.5	129.5
1999	**M-S**	8	19.8	1.9	21.7	1.4	7.8	30.9	22.3	24.4	46.7	1.6	48.3	76.1	24.8	3.1	104.1	16.8	120.9	35.5	123.8	0.0	-38.5	551.2	104.1	104.1
1999	**M-S**	9	20.6	1.9	22.5	1.1	7.1	30.7	19.4	28.9	48.3	1.2	49.6	78.0	34.9	2.3	115.1	0.0	115.2	31.6	121.2	0.0	-37.6	514.4	115.1	115.1
1999	**M-S Total**		**95.6**	**9.3**	**104.9**	**9.4**	**44.0**	**158.3**	**323.7**	**172.9**	**496.6**	**10.7**	**507.3**	**645.5**	**188.0**	**20.1**	**853.6**	**20.5**	**874.0**	**193.4**	**844.6**	**0.0**	**-164.0**	**3083.3**	**853.6**	**853.6**
1999 Total			**265.3**	**28.5**	**293.9**	**24.7**	**131.3**	**449.8**	**808.1**	**478.8**	**1286.9**	**28.2**	**1315.1**	**1712.1**	**553.9**	**52.8**	**2318.8**	**118.1**	**2437.0**	**252.4**	**2156.8**	**0.0**	**27.8**	**7145.0**	**2318.8**	**2318.8**

Mass Balances by Month, Season, & Water Year **Variable: Sum of Flow_hm3**

Water Yr	Season	Month	Wood_Weed	Wood Dike - Weed	Wood_Dike	Agency Lake Ranch	7mile_Dike	Total Agency Inflow	Sprague	Williamson-Sprague	Williamson Mouth	Pumped to Klamath L	Total Klamath Inflow	Total Tributaries	Ungauged Inflows	Total Pumped to Lake	Total External Inflows	Precipitation	Total Inflow + Precip	Evaporation	Lake Outflow	Retention	Storage Increase	Lake Mean Storage	Natural-Background	Anthropogenic
2000	**O-A**	10	26.9	2.3	29.1	0.9	10.2	40.2	24.4	31.9	56.4	0.9	57.3	95.7	21.1	1.8	118.6	6.3	124.9	17.7	93.2	0.0	13.9	500.5	118.6	118.6
2000	**O-A**	11	27.3	2.3	29.6	0.7	10.5	40.8	26.4	38.3	64.7	0.8	65.5	104.8	20.4	1.5	126.7	9.4	136.2	7.2	99.5	0.0	29.5	521.9	126.7	126.7
2000	**O-A**	12	28.3	2.4	30.6	0.8	10.4	41.8	27.3	45.0	72.3	0.8	73.2	113.4	27.8	1.6	142.8	5.6	148.4	0.0	97.6	0.0	50.8	566.3	142.8	142.8
2000	**O-A**	1	28.0	2.3	30.3	0.0	9.7	40.0	40.0	45.3	85.3	1.4	86.7	125.3	54.7	1.4	181.5	24.9	206.3	0.0	157.9	0.0	48.5	623.0	181.5	181.5
2000	**O-A**	2	26.3	2.2	28.5	0.0	8.9	37.4	51.8	51.5	103.3	2.9	106.2	140.7	52.0	2.9	195.6	20.2	215.8	0.0	198.5	0.0	17.3	650.8	195.6	195.6
2000	**O-A**	3	27.6	2.3	30.0	0.0	8.8	38.8	75.4	61.8	137.1	5.6	142.7	175.9	48.0	5.6	229.5	6.2	235.7	11.9	208.2	0.0	15.6	661.9	229.5	229.5
2000	**O-A**	4	25.6	2.2	27.8	0.0	7.3	35.1	109.0	50.2	159.1	4.1	163.2	194.2	30.4	4.1	228.7	15.4	244.2	22.3	162.5	0.0	59.3	701.2	228.7	228.7
2000	**O-A Total**		**190.0**	**15.9**	**205.9**	**2.4**	**65.8**	**274.1**	**354.3**	**324.0**	**678.3**	**16.5**	**694.7**	**950.0**	**254.5**	**18.8**	**1223.3**	**88.0**	**1311.3**	**59.1**	**1017.4**	**0.0**	**234.8**	**4225.6**	**1223.3**	**1223.3**
2000	**M-S**	5	21.6	2.2	23.8	3.8	4.0	31.7	78.3	42.8	121.1	2.3	123.5	148.9	60.8	6.2	216.0	2.7	218.7	33.3	197.7	0.0	-12.4	730.3	216.0	216.0
2000	**M-S**	6	18.5	3.7	22.2	14.2	2.2	38.6	29.2	31.5	60.7	2.3	63.1	85.1	49.3	16.6	151.0	0.8	151.8	44.4	186.5	0.0	-79.0	681.9	151.0	151.0
2000	**M-S**	7	15.6	7.7	23.3	0.0	0.6	23.9	15.4	26.7	42.1	2.0	44.1	66.0	27.8	2.0	95.8	3.4	99.3	40.6	162.1	0.0	-103.4	595.3	95.8	95.8
2000	**M-S**	8	13.1	6.9	20.1	4.9	2.4	27.4	12.2	24.4	36.6	1.4	37.9	59.0	13.0	6.3	78.3	0.4	78.7	41.8	154.4	0.0	-117.5	473.9	78.3	78.3
2000	**M-S**	9	19.0	5.7	24.6	3.3	7.9	35.8	19.8	21.8	41.7	1.0	42.7	74.2	21.3	4.3	99.8	2.4	102.2	26.1	57.3	0.0	18.7	427.7	99.8	99.8
2000	**M-S Total**		**87.8**	**26.3**	**114.0**	**26.3**	**17.0**	**157.3**	**154.9**	**147.3**	**302.2**	**9.0**	**311.2**	**433.2**	**172.3**	**35.3**	**640.9**	**9.7**	**650.6**	**186.2**	**758.0**	**0.0**	**-293.6**	**2909.2**	**640.9**	**640.9**
2000 Total			**277.7**	**42.2**	**320.0**	**28.7**	**82.8**	**431.4**	**509.1**	**471.3**	**980.4**	**25.5**	**1005.9**	**1383.2**	**426.8**	**54.2**	**1864.2**	**97.7**	**1961.9**	**245.2**	**1775.4**	**0.0**	**-58.7**	**7134.7**	**1864.2**	**1864.2**
2001	**O-A**	10	25.3	6.1	31.4	2.2	7.4	41.0	23.8	27.1	50.9	0.7	51.7	89.7	19.1	2.9	111.8	8.4	120.1	17.7	91.1	0.0	11.4	438.8	111.8	111.8
2001	**O-A**	11	24.3	7.8	32.2	0.0	7.4	39.6	25.1	31.9	57.0	0.6	57.6	96.6	21.6	0.6	118.8	4.6	123.3	7.1	60.7	0.0	55.5	478.6	118.8	118.8
2001	**O-A**	12	25.5	6.2	31.7	0.0	8.3	40.0	26.0	33.4	59.5	0.7	60.2	99.5	13.0	0.7	113.1	7.9	121.0	0.0	77.6	0.0	43.4	532.7	113.1	113.1
2001	**O-A**	1	24.2	3.6	27.8	0.0	7.6	35.4	25.4	33.7	59.1	1.2	60.3	94.5	14.2	1.2	109.9	3.6	113.5	0.0	83.1	0.0	30.3	560.2	109.9	109.9
2001	**O-A**	2	21.3	2.1	23.5	0.0	6.5	30.0	23.5	30.9	54.5	2.3	56.8	84.4	0.0	2.3	86.7	5.9	92.7	0.0	49.6	1.0	41.9	600.3	86.7	86.7
2001	**O-A**	3	24.5	2.2	26.6	0.0	7.7	34.4	32.1	47.0	79.1	4.5	83.5	113.5	18.6	4.5	136.5	7.6	144.1	11.9	50.7	0.0	81.5	663.8	136.5	136.5
2001	**O-A**	4	19.0	1.9	20.9	0.0	4.9	25.8	32.1	43.0	75.1	3.3	78.4	100.9	15.5	3.3	119.7	5.7	125.5	22.3	80.0	0.0	23.1	720.4	119.7	119.7
2001	**O-A Total**		**164.1**	**29.9**	**194.1**	**2.2**	**49.9**	**246.1**	**188.2**	**247.0**	**435.1**	**13.3**	**448.5**	**679.1**	**102.0**	**15.5**	**796.6**	**43.6**	**840.2**	**59.0**	**493.0**	**1.0**	**287.0**	**3994.8**	**796.6**	**796.6**
2001	**M-S**	5	12.7	1.9	14.7	0.0	2.9	17.5	23.4	32.5	55.9	1.9	57.9	73.5	42.3	1.9	117.7	4.6	122.3	45.5	114.8	0.0	-37.9	710.5	117.7	117.7
2001	**M-S**	6	9.8	5.5	15.3	0.0	1.5	16.8	13.2	23.0	36.2	2.0	38.1	53.0	32.5	2.0	87.5	2.7	90.1	49.2	125.6	0.0	-84.7	639.0	87.5	87.5
2001	**M-S**	7	9.0	5.0	14.0	0.0	1.1	15.2	11.8	20.9	32.7	1.7	34.4	47.8	33.1	1.7	82.6	3.0	85.6	55.2	75.5	0.0	-45.1	586.9	82.6	82.6
2001	**M-S**	8	9.0	5.1	14.1	0.0	1.1	15.2	10.8	19.4	30.2	1.2	31.4	45.4	35.5	1.2	82.0	0.2	82.2	50.9	142.4	0.0	-111.1	490.8	82.0	82.0
2001	**M-S**	9	10.7	3.7	14.4	0.0	0.9	15.4	12.4	20.4	32.8	0.9	33.7	48.2	23.7	0.9	72.7	5.9	78.6	33.8	53.7	0.0	-9.0	438.0	72.7	72.7
2001	**M-S Total**		**51.2**	**21.2**	**72.4**	**0.0**	**7.6**	**80.0**	**71.5**	**116.2**	**187.7**	**7.7**	**195.4**	**267.8**	**167.1**	**7.7**	**442.5**	**16.3**	**458.8**	**234.7**	**511.9**	**0.0**	**-287.8**	**2865.1**	**442.5**	**442.5**
2001 Total			**215.3**	**51.2**	**266.5**	**2.2**	**57.5**	**326.1**	**259.7**	**363.2**	**622.9**	**21.0**	**643.9**	**946.8**	**269.1**	**23.2**	**1239.1**	**60.0**	**1299.0**	**293.7**	**1004.9**	**1.0**	**-0.8**	**6860.0**	**1239.1**	**1239.1**
2002	**O-A**	10	19.1	6.9	26.0	0.0	2.9	28.8	18.3	22.8	41.1	0.7	41.8	70.0	16.9	0.7	87.5	4.3	91.8	18.1	72.1	0.0	1.6	438.9	87.5	87.5
2002	**O-A**	11	21.6	4.3	25.9	0.0	4.7	30.6	21.3	23.2	44.6	0.6	45.2	75.2	29.7	0.6	105.5	23.3	128.7	7.1	65.3	0.0	56.3	461.7	105.5	105.5
2002	**O-A**	12	24.5	3.6	28.1	0.0	6.7	34.7	25.6	30.7	56.2	0.6	56.9	91.0	23.0	0.6	114.6	28.3	142.9	0.0	70.0	0.0	72.8	535.8	114.6	114.6
2002	**O-A**	1	25.1	5.7	30.8	0.0	7.3	38.1	46.5	44.0	90.5	1.1	91.5	128.6	18.6	1.1	148.3	15.6	163.9	0.0	106.5	0.0	57.4	612.4	148.3	148.3
2002	**O-A**	2	22.0	7.2	29.2	0.0	5.7	34.9	28.6	38.1	66.7	2.2	68.9	101.6	7.6	2.2	111.4	11.5	122.8	0.0	82.5	0.0	40.3	641.3	111.4	111.4
2002	**O-A**	3	25.8	10.4	36.2	0.0	6.3	42.5	38.0	54.3	92.3	4.3	96.6	134.8	19.5	4.3	158.7	3.6	162.2	11.9	119.0	0.0	31.3	678.9	158.7	158.7
2002	**O-A**	4	22.0	6.3	28.3	0.0	4.4	32.7	67.8	42.2	110.0	3.3	113.2	142.7	22.0	3.3	168.0	10.2	178.2	22.3	133.6	0.0	22.3	716.3	168.0	168.0
2002	**O-A Total**		**160.1**	**44.4**	**204.4**	**0.0**	**37.9**	**242.3**	**246.1**	**255.3**	**501.4**	**12.7**	**514.2**	**743.8**	**137.4**	**12.7**	**893.9**	**96.6**	**990.6**	**59.5**	**649.1**	**0.0**	**282.0**	**4085.4**	**893.9**	**893.9**
2002	**M-S**	5	12.5	4.2	16.7	13.7	2.0	32.4	57.5	26.0	83.4	1.9	85.4	102.2	41.2	15.7	159.1	1.2	160.3	36.4	150.2	0.0	-26.4	714.3	159.1	159.1
2002	**M-S**	6	11.1	4.4	15.5	7.9	3.1	26.5	22.2	18.0	40.2	2.0	42.2	58.8	38.2	9.9	107.0	5.1	112.1	45.2	158.2	0.0	-91.3	653.8	107.0	107.0
2002	**M-S**	7	9.1	4.8	14.0	0.0	7.0	20.9	11.9	19.4	31.3	1.7	33.1	52.2	37.5	1.7	91.5	0.1	91.5	51.6	163.5	0.0	-123.6	535.5	91.5	91.5
2002	**M-S**	8	8.6	6.7	15.3	0.0	4.5	19.8	7.6	20.8	28.4	1.2	29.6	48.2	18.3	1.2	67.6	0.2	67.8	41.8	109.0	0.0	-83.0	431.5	67.6	67.6
2002	**M-S**	9	12.1	8.7	20.9	0.0	4.4	25.3	9.7	21.2	30.9	0.9	31.8	56.2	13.9	0.9	71.0	0.5	71.6	30.9	79.3	0.0	-38.6	373.9	71.0	71.0
2002	**M-S Total**		**53.4**	**28.9**	**82.3**	**21.7**	**21.1**	**125.0**	**108.9**	**105.3**	**214.3**	**7.7**	**222.0**	**317.6**	**149.1**	**29.4**	**496.2**	**7.1**	**503.2**	**205.9**	**660.1**	**0.0**	**-362.8**	**2709.0**	**496.2**	**496.2**
2002 Total			**213.5**	**73.2**	**286.8**	**21.7**	**59.0**	**367.4**	**355.1**	**360.6**	**715.7**	**20.5**	**736.2**	**1061.4**	**286.5**	**42.1**	**1390.1**	**103.7**	**1493.8**	**265.4**	**1309.2**	**0.0**	**-80.8**	**6794.4**	**1390.1**	**1390.1**
2003	**O-A**	10	18.9	8.7	27.6	0.0	7.5	35.1	17.8	21.9	39.6	0.7	40.3	74.7	10.5	0.7	85.9	0.3	86.2	17.3	61.7	0.0	7.2	355.8	85.9	85.9
2003	**O-A**	11	20.2	7.4	27.6	0.0	10.1	37.8	19.8	22.3	42.1	0.6	42.7	79.8	9.5	0.6	89.9	13.1	103.1	7.1	48.4	0.0	47.6	389.0	89.9	89.9
2003	**O-A**	12	22.8	7.8	30.6	0.0	12.2	42.8	23.9	23.0	47.0	0.6	47.6	89.8	9.2	0.6	99.6	29.4	129.1	0.0	53.3	0.0	75.8	438.8	99.6	99.6
2003	**O-A**	1	25.5	10.3	35.8	0.0	17.1	52.9	40.9	31.6	72.5	1.1	73.6	125.3	1.5	1.1	127.9	20.1	148.0	0.0	38.3	0.0	109.7	536.8	127.9	127.9
2003	**O-A**	2	20.7	14.5	35.2	0.0	14.1	49.3	35.0	42.4	77.4	2.2	79.6	126.7	0.0	2.2	128.9	4.6	133.5	0.0	29.0	30.0	74.0	639.0	128.9	128.9
2003	**O-A**	3	23.1	14.1	37.2	0.0	14.3	51.4	44.8	37.1	81.9	4.3	86.2	133.4	0.0	4.3	137.7	17.1	154.8	11.9	69.7	13.0	60.2	706.5	137.7	137.7
2003	**O-A**	4	21.9	13.4	35.3	0.0	12.1	47.4	72.2	33.1	105.3	3.3	108.5	152.6	14.8	3.3	170.7	12.0	182.7	22.3	155.4	0.0	5.0	732.3	170.7	170.7
2003	**O-A Total**		**153.1**	**76.2**	**229.3**	**0.0**	**87.3**	**316.6**	**254.4**	**211.3**	**465.7**	**12.8**	**478.5**	**782.3**	**45.5**	**12.8**	**840.6**	**96.7**	**937.3**	**58.6**	**455.9**	**43.0**	**379.3**	**3798.1**	**840.6**	**840.6**
2003	**M-S**	5	15.6	10.4	26.0	0.0	9.0	34.9	75.1	26.8	101.9	1.9	103.9	136.9	29.6	1.9	168.4	6.4	174.8	33.3	159.6	0.0	-18.1	731.3	168.4	168.4
2003	**M-S**	6	11.2	7.7	18.9	24.8	6.7	50.4	38.3	14.3	52.7	2.0	54.6	78.2	18.9	26.8	123.9	0.1	124.0	50.1	161.1	0.0	-87.3	674.7	123.9	123.9
2003	**M-S**	7	9.4	4.8	14.3	0.0	5.8	20.1	11.1	20.5	31.7	1.7	33.4	51.8	25.4	1.7	78.9	2.7	81.7	51.0	134.0	0.0	-103.3	573.8	78.9	78.9
2003	**M-S**	8	10.0	9.4	19.4	0.0	5.0	24.4	7.3	22.5	29.8	1.2	31.0	54.1	7.5	1.2	62.8	2.4	65.2	40.5	111.2	0.0	-86.5	481.5	62.8	62.8
2003	**M-S**	9	17.2	6.4	23.6	0.0	5.6	29.2	8.9	24.3	33.2	0.9	34.1	62.5	22.6	0.9	85.9	6.2	92.2	32.5	109.2	0.0	-49.5	415.2	85.9	85.9
2003	**M-S Total**		**63.3**	**38.8**	**102.1**	**24.8**	**32.1**	**159.0**	**140.7**	**108.5**	**249.3**	**7.7**	**257.0**	**383.5**	**104.0**	**32.5**	**520.0**	**17.8**	**537.8**	**207.4**	**675.2**	**0.0**	**-344.8**	**2876.5**	**520.0**	**520.0**
2003 Total			**216.4**	**115.0**	**331.4**	**24.8**	**119.4**	**475.6**	**395.1**	**319.8**	**715.0**	**20.6**	**735.5**	**1165.8**	**149.5**	**45.4**	**1360.6**	**114.5**	**1475.0**	**266.0**	**1131.1**	**43.0**	**34.5**	**6674.7**	**1360.6**	**1360.6**

Mass Balances by Month, Season, & Water Year **Variable: Sum of Flow_hm3**

Water Yr	Season	Month	Wood_Weed	Wood Dike - Weed	Wood_Dike	Agency Lake Ranch	7mile_Dike	Total Agency Inflow	Sprague	Williamson-Sprague	Williamson Mouth	Pumped to Klamath L	Total Klamath Inflow	Total Tributaries	Ungauged Inflows	Total Pumped to Lake	Total External Inflows	Precipitation	Total Inflow + Precip	Evaporation	Lake Outflow	Retention	Storage Increase	Lake Mean Storage	Natural-Background	Anthropogenic
2004	**O-A**	10	22.0	4.2	26.2	0.0	4.6	30.8	16.5	21.9	38.5	0.7	39.2	69.2	16.6	0.7	86.5	0.2	86.7	18.5	89.1	0.0	-20.9	375.1	86.5	86.5
2004	**O-A**	11	23.6	5.6	29.2	0.0	7.4	36.6	19.6	22.0	41.6	0.6	42.2	78.1	13.9	0.6	92.6	15.1	107.7	5.0	86.6	0.0	16.1	375.4	92.6	92.6
2004	**O-A**	12	28.3	6.0	34.3	0.0	9.6	43.9	22.7	22.9	45.7	0.6	46.3	89.6	27.1	0.6	117.3	25.6	142.9	0.0	96.6	0.0	46.2	405.6	117.3	117.3
2004	**O-A**	1	26.6	5.7	32.4	0.0	4.4	36.8	27.7	22.2	49.9	1.1	51.0	86.8	18.0	1.1	105.8	19.2	125.0	0.0	57.3	0.0	67.7	468.5	105.8	105.8
2004	**O-A**	2	25.3	5.6	30.9	0.0	8.2	39.2	44.9	29.9	74.8	2.3	77.1	113.9	13.6	2.3	129.8	19.0	148.8	0.0	51.4	0.0	97.4	544.0	129.8	129.8
2004	**O-A**	3	28.4	6.1	34.5	4.6	19.1	58.1	69.7	41.1	110.9	4.3	115.2	164.4	6.2	8.9	179.5	3.8	183.3	17.0	70.9	0.0	95.4	653.1	179.5	179.5
2004	**O-A**	4	22.5	5.8	28.3	0.4	10.9	39.5	55.6	34.1	89.7	3.3	92.9	128.8	21.8	3.7	154.3	3.3	157.6	25.3	136.4	0.0	-4.1	693.9	154.3	154.3
2004	**O-A Total**		**176.6**	**39.1**	**215.7**	**5.0**	**64.2**	**284.8**	**256.8**	**194.2**	**451.0**	**12.9**	**463.9**	**730.8**	**117.1**	**17.9**	**865.8**	**86.1**	**952.0**	**65.8**	**588.4**	**0.0**	**297.8**	**3515.5**	**865.8**	**865.8**
2004	**M-S**	5	17.0	5.0	22.0	7.7	7.0	36.7	39.3	23.4	62.8	1.9	64.7	91.8	36.1	9.6	137.5	10.0	147.5	35.0	127.3	0.0	-14.8	677.9	137.5	137.5
2004	**M-S**	6	12.0	6.7	18.7	0.0	3.5	22.2	19.2	18.8	37.9	2.0	39.9	60.2	37.9	2.0	100.1	3.6	103.7	46.3	125.6	0.0	-68.2	641.6	100.1	100.1
2004	**M-S**	7	11.5	5.3	16.8	0.0	4.4	21.2	9.2	23.0	32.2	1.7	33.9	53.4	22.7	1.7	77.8	2.2	79.9	49.4	117.4	0.0	-86.9	564.4	77.8	77.8
2004	**M-S**	8	11.4	7.1	18.5	0.0	6.3	24.8	7.4	23.0	30.4	1.2	31.6	55.2	11.4	1.2	67.8	2.3	70.1	39.7	119.3	0.0	-88.9	472.5	67.8	67.8
2004	**M-S**	9	18.0	7.5	25.5	0.0	3.9	29.4	11.2	21.1	32.2	0.9	33.1	61.6	12.0	0.9	74.5	0.5	75.1	27.0	92.6	0.0	-44.6	399.3	74.5	74.5
2004	**M-S Total**		**69.8**	**31.7**	**101.5**	**7.7**	**25.1**	**134.3**	**86.3**	**109.3**	**195.6**	**7.7**	**203.2**	**322.2**	**120.2**	**15.3**	**457.8**	**18.6**	**476.3**	**197.5**	**582.3**	**0.0**	**-303.4**	**2755.6**	**457.8**	**457.8**
2004 Total			**246.5**	**70.7**	**317.2**	**12.7**	**89.3**	**419.2**	**343.1**	**303.5**	**646.6**	**20.6**	**667.2**	**1053.0**	**237.3**	**33.3**	**1323.6**	**104.7**	**1428.3**	**263.3**	**1170.7**	**0.0**	**-5.6**	**6271.2**	**1323.6**	**1323.6**
2005	**O-A**	10	22.9	8.2	31.1	0.0	4.5	35.6	16.9	23.4	40.2	0.7	40.9	75.8	0.0	0.7	76.5	12.0	88.6	15.0	43.1	2.0	28.3	389.9	76.5	76.5
2005	**O-A**	11	22.7	6.3	29.0	0.0	4.6	33.6	16.9	24.3	41.1	0.6	41.7	74.8	9.5	0.6	84.9	4.9	89.8	6.4	43.5	0.0	39.9	438.4	84.9	84.9
2005	**O-A**	12	27.9	7.1	35.0	0.0	13.0	48.0	27.5	26.0	53.5	0.6	54.1	101.5	7.5	0.6	109.7	17.3	127.0	0.0	33.8	0.0	93.2	508.5	109.7	109.7
2005	**O-A**	1	25.5	6.9	32.4	0.0	6.3	38.7	25.1	21.1	46.2	1.1	47.3	85.0	0.5	1.1	86.5	4.9	91.4	0.0	43.1	0.0	48.4	573.9	86.5	86.5
2005	**O-A**	2	22.5	6.8	29.2	0.0	5.0	34.2	27.0	17.4	44.4	2.2	46.6	78.6	0.0	2.2	80.8	2.1	82.9	0.0	21.2	5.0	56.7	626.1	80.8	80.8
2005	**O-A**	3	25.9	6.5	32.5	0.0	14.1	46.5	36.8	27.9	64.7	4.3	69.0	111.2	0.0	4.3	115.5	3.3	118.8	15.6	24.1	13.0	65.9	687.1	115.5	115.5
2005	**O-A**	4	20.3	7.2	27.5	0.0	12.9	40.4	41.2	22.6	63.8	3.2	67.0	104.2	0.0	3.2	107.5	13.5	121.0	20.2	79.6	11.0	10.7	724.8	107.5	107.5
2005	**O-A Total**		**167.7**	**49.0**	**216.7**	**0.0**	**60.5**	**277.2**	**191.4**	**162.6**	**354.0**	**12.7**	**366.7**	**631.2**	**17.5**	**12.7**	**661.4**	**58.1**	**719.5**	**57.1**	**288.4**	**31.0**	**343.0**	**3948.8**	**661.4**	**661.4**
2005	**M-S**	5	23.0	3.2	26.2	0.0	6.9	33.1	118.9	21.2	140.1	1.9	142.0	173.3	51.7	1.9	226.9	19.2	246.1	29.1	210.4	0.0	6.6	731.8	226.9	226.9
2005	**M-S**	6	12.1	6.2	18.4	10.6	4.4	33.4	38.2	21.9	60.1	2.0	62.0	82.9	22.1	12.6	117.5	2.3	119.8	37.5	126.0	0.0	-43.7	717.9	117.5	117.5
2005	**M-S**	7	7.8	5.3	13.1	13.1	4.6	30.8	15.5	18.2	33.7	1.7	35.4	51.4	22.3	14.8	88.5	0.1	88.6	50.8	138.1	0.0	-100.3	643.6	88.5	88.5
2005	**M-S**	8	9.0	5.5	14.5	7.2	2.8	24.5	8.7	20.2	29.0	1.2	30.1	46.3	12.3	8.4	66.9	0.0	66.9	43.8	139.3	0.0	-116.2	532.6	66.9	66.9
2005	**M-S**	9	13.6	8.5	22.1	0.0	1.8	23.9	11.4	19.9	31.3	0.9	32.2	55.2	9.3	0.9	65.4	2.2	67.6	25.4	112.2	0.0	-70.0	429.9	65.4	65.4
2005	**M-S Total**		**65.6**	**28.7**	**94.3**	**30.9**	**20.6**	**145.8**	**192.8**	**101.4**	**294.2**	**7.6**	**301.8**	**409.0**	**117.7**	**38.6**	**565.3**	**23.8**	**589.1**	**186.5**	**726.1**	**0.0**	**-323.6**	**3055.9**	**565.3**	**565.3**
2005 Total			**233.3**	**77.7**	**311.0**	**30.9**	**81.0**	**423.0**	**384.1**	**264.0**	**648.2**	**20.3**	**668.5**	**1040.2**	**135.2**	**51.3**	**1226.7**	**81.9**	**1308.6**	**243.7**	**1014.5**	**31.0**	**19.4**	**7004.6**	**1226.7**	**1226.7**
2006	**O-A**	10	20.8	4.4	25.2	0.0	3.2	28.4	18.6	21.8	40.5	0.7	41.1	68.8	14.5	0.7	84.0	2.5	86.5	13.5	85.2	0.0	-12.1	397.2	84.0	84.0
2006	**O-A**	11	24.2	3.4	27.6	0.0	7.7	35.3	25.6	21.3	46.9	0.6	47.5	82.2	21.3	0.6	104.1	37.5	141.6	5.1	56.8	0.0	79.7	439.9	104.1	104.1
2006	**O-A**	12	26.4	2.3	28.7	0.0	11.7	40.4	72.5	17.1	89.7	0.6	90.3	130.1	16.9	0.6	147.6	52.2	199.7	0.0	54.0	0.0	145.7	531.5	147.6	147.6
2006	**O-A**	1	27.3	4.7	32.0	0.0	16.7	48.7	128.2	33.5	161.7	1.1	162.8	210.4	51.5	1.1	262.9	31.6	294.6	0.0	275.7	0.0	18.9	632.6	262.9	262.9
2006	**O-A**	2	22.6	6.5	29.1	0.0	13.6	42.7	71.5	31.6	103.1	2.3	105.3	145.7	24.3	2.3	172.3	10.4	182.7	0.0	158.0	0.0	24.7	658.7	172.3	172.3
2006	**O-A**	3	24.9	6.6	31.5	0.0	17.4	49.0	83.5	42.3	125.8	4.5	130.3	174.7	6.2	4.5	185.5	7.5	192.9	12.5	144.2	0.0	36.2	684.3	185.5	185.5
2006	**O-A**	4	28.1	8.0	36.1	0.0	22.2	58.3	179.8	63.9	243.7	3.5	247.2	302.0	41.5	3.5	346.9	7.2	354.1	20.9	297.8	0.0	35.5	714.7	346.9	346.9
2006	**O-A Total**		**174.2**	**35.9**	**210.1**	**0.0**	**92.5**	**302.6**	**579.7**	**231.5**	**811.2**	**13.3**	**824.6**	**1113.8**	**176.1**	**13.3**	**1303.3**	**148.8**	**1452.1**	**51.9**	**1071.6**	**0.0**	**328.5**	**4059.0**	**1303.3**	**1303.3**
2006	**M-S**	5	19.4	6.2	25.6	0.0	9.7	35.3	177.2	53.3	230.4	2.2	232.6	265.7	47.8	2.2	315.7	3.1	318.8	37.0	280.1	0.0	1.7	738.3	315.7	315.7
2006	**M-S**	6	21.9	11.6	33.5	10.9	9.1	53.6	52.0	33.7	85.7	2.3	88.0	128.4	34.2	13.2	175.8	3.3	179.1	46.5	266.7	0.0	-134.1	674.6	175.8	175.8
2006	**M-S**	7	19.5	5.4	24.9	10.8	6.8	42.5	23.3	21.9	45.2	2.0	47.2	77.0	23.7	12.8	113.4	0.0	113.4	51.4	161.1	0.0	-99.1	549.5	113.4	113.4
2006	**M-S**	8	16.6	4.3	20.9	0.0	7.7	28.6	16.8	20.3	37.2	1.4	38.5	65.8	15.5	1.4	82.6	1.1	83.8	41.1	129.8	0.0	-87.2	456.1	82.6	82.6
2006	**M-S**	9	21.5	4.6	26.1	0.0	7.0	33.1	16.5	20.1	36.6	1.0	37.6	69.7	10.2	1.0	80.9	0.4	81.3	27.8	102.8	0.0	-49.2	384.2	80.9	80.9
2006	**M-S Total**		**99.0**	**32.2**	**131.2**	**21.7**	**40.4**	**193.2**	**285.7**	**149.4**	**435.1**	**8.9**	**444.0**	**606.6**	**131.3**	**30.6**	**768.5**	**7.9**	**776.4**	**203.8**	**940.5**	**0.0**	**-368.0**	**2802.7**	**768.5**	**768.5**
2006 Total			**273.2**	**68.1**	**341.3**	**21.7**	**132.8**	**495.8**	**865.4**	**380.9**	**1246.3**	**22.3**	**1268.6**	**1720.4**	**307.4**	**43.9**	**2071.8**	**156.7**	**2228.5**	**255.8**	**2012.2**	**0.0**	**-39.5**	**6861.7**	**2071.8**	**2071.8**
2007	**O-A**	10	29.2	3.8	32.9	0.0	6.0	39.0	21.7	23.0	44.7	0.8	45.5	83.7	14.5	0.8	99.0	3.5	102.6	14.5	80.9	0.0	7.2	367.1	99.0	99.0
2007	**O-A**	11	31.5	6.2	37.7	0.0	15.4	53.1	25.9	22.1	48.0	0.7	48.7	101.2	16.9	0.7	118.8	14.1	132.8	5.9	67.0	0.0	59.9	401.9	118.8	118.8
2007	**O-A**	12	33.2	6.6	39.8	0.0	19.2	59.0	34.5	24.0	58.5	0.8	59.2	117.4	9.2	0.8	127.4	27.5	155.0	0.0	56.2	0.0	98.8	480.5	127.4	127.4
2007	**O-A**	1	27.4	8.3	35.7	0.0	3.1	38.8	28.9	24.7	53.5	1.2	54.8	92.3	22.0	1.2	115.6	5.4	121.0	0.0	66.9	0.0	54.1	568.2	115.6	115.6
2007	**O-A**	2	25.3	10.1	35.4	0.0	8.4	43.8	40.0	27.7	67.7	2.4	70.2	111.6	9.0	2.4	123.0	14.3	137.3	0.0	62.5	0.0	74.7	621.0	123.0	123.0
2007	**O-A**	3	28.2	12.5	40.7	0.0	11.3	52.0	84.2	48.4	132.6	4.8	137.3	184.5	23.6	4.8	212.9	3.1	216.0	15.6	147.6	0.0	52.7	692.2	212.9	212.9
2007	**O-A**	4	22.7	9.4	32.0	0.0	7.4	39.4	63.1	40.8	103.9	3.5	107.4	143.3	9.8	3.5	156.6	8.0	164.6	23.1	118.5	0.0	23.1	728.6	156.6	156.6
2007	**O-A Total**		**197.4**	**56.8**	**254.3**	**0.0**	**70.8**	**325.0**	**298.4**	**210.6**	**508.9**	**14.2**	**523.2**	**834.0**	**105.0**	**14.2**	**953.2**	**76.0**	**1029.2**	**59.1**	**599.6**	**0.0**	**370.5**	**3859.5**	**953.2**	**953.2**
2007	**M-S**	5	17.9	7.5	25.4	1.5	4.8	31.7	47.9	27.2	75.1	2.0	77.1	105.3	49.8	3.5	158.6	2.9	161.6	38.8	173.0	0.0	-50.3	722.7	158.6	158.6
2007	**M-S**	6	13.1	7.1	20.2	18.3	2.5	41.1	20.9	19.9	40.9	2.0	42.9	63.6	43.0	20.4	126.9	2.3	129.2	43.9	191.3	0.0	-106.0	639.2	126.9	126.9
2007	**M-S**	7	13.4	8.4	21.8	5.2	1.7	28.7	10.7	23.6	34.3	1.7	36.0	57.8	27.4	6.9	92.1	3.6	95.7	48.1	145.8	0.0	-98.2	523.1	92.1	92.1
2007	**M-S**	8	12.5	9.7	22.2	0.0	6.2	28.3	7.7	23.5	31.2	1.2	32.4	59.6	7.3	1.2	68.1	3.3	71.4	41.5	133.0	0.0	-103.2	424.5	68.1	68.1
2007	**M-S**	9	16.6	9.2	25.9	0.0	7.4	33.3	10.6	23.4	34.0	0.9	34.9	67.3	0.6	0.9	68.8	1.7	70.5	27.7	90.6	0.0	-47.8	349.0	68.8	68.8
2007	**M-S Total**		**73.5**	**41.9**	**115.4**	**25.1**	**22.6**	**163.1**	**97.9**	**117.6**	**215.5**	**7.8**	**223.3**	**353.5**	**128.1**	**32.9**	**514.5**	**13.8**	**528.3**	**200.0**	**733.8**	**0.0**	**-405.5**	**2658.5**	**514.5**	**514.5**
2007 Total			**270.9**	**98.7**	**369.7**	**25.1**	**93.4**	**488.1**	**396.2**	**328.2**	**724.4**	**22.1**	**746.5**	**1187.5**	**233.1**	**47.1**	**1467.8**	**89.8**	**1557.6**	**259.2**	**1333.4**	**0.0**	**-35.0**	**6518.0**	**1467.8**	**1467.8**

Mass Balances by Month, Season, & Water Year **Variable: Sum of Flow_hm3**

Water Yr	Season	Month	Wood_Weed	Wood Dike - Weed	Wood_Dike	Agency Lake Ranch	7mile_Dike	Total Agency Inflow	Sprague	Williamson-Sprague	Williamson Mouth	Pumped to Klamath L	Total Klamath Inflow	Total Tributaries	Ungauged Inflows	Total Pumped to Lake	Total External Inflows	Precipitation	Total Inflow + Precip	Evaporation	Lake Outflow	Retention	Storage Increase	Lake Mean Storage	Natural-Background	Anthropogenic
2008	**O-A**	10	23.3	10.8	34.1	0.0	9.8	44.0	22.0	22.8	44.8	0.6	45.3	88.7	16.8	0.6	106.2	13.9	120.1	12.4	63.1	0.0	44.6	350.7	106.2	106.2
2008	**O-A**	11	24.7	9.8	34.5	0.0	10.7	45.2	23.0	22.8	45.8	0.5	46.3	91.0	1.3	0.5	92.8	11.3	104.1	7.1	67.2	0.0	29.9	384.1	92.8	92.8
2008	**O-A**	12	23.9	9.8	33.7	0.0	8.4	42.1	23.7	25.8	49.4	0.5	50.0	91.6	6.3	0.5	98.4	22.5	120.9	0.0	84.3	0.0	36.6	423.1	98.4	98.4
2008	**O-A**	1	23.6	6.0	29.6	0.0	6.6	36.2	25.6	25.3	50.9	0.9	51.8	87.1	9.2	0.9	97.1	30.5	127.7	0.0	66.5	0.0	61.2	477.2	97.1	97.1
2008	**O-A**	2	22.8	7.5	30.4	0.0	4.8	35.2	23.5	25.4	48.9	1.9	50.8	84.1	10.9	1.9	96.9	5.3	102.1	0.0	54.7	0.0	47.4	527.6	96.9	96.9
2008	**O-A**	3	26.5	8.7	35.2	0.0	6.2	41.5	65.7	32.0	97.7	3.5	101.2	139.2	15.0	3.5	157.7	5.2	162.9	13.5	37.9	0.0	111.6	599.5	157.7	157.7
2008	**O-A**	4	27.2	8.9	36.2	7.2	19.0	62.4	80.4	51.7	132.1	2.7	134.8	187.2	14.1	9.9	211.3	1.1	212.3	23.0	153.1	0.0	36.2	678.6	211.3	211.3
2008	**O-A Total**		**172.0**	**61.7**	**233.8**	**7.2**	**65.5**	**306.5**	**263.9**	**205.7**	**469.6**	**10.6**	**480.2**	**768.9**	**73.7**	**17.8**	**860.3**	**89.9**	**950.2**	**56.0**	**526.6**	**0.0**	**367.5**	**3440.9**	**860.3**	**860.3**
2008	**M-S**	5	18.9	10.8	29.7	0.0	10.1	39.7	91.6	41.0	132.6	1.6	134.2	172.3	0.0	1.6	173.9	17.6	191.6	33.5	151.1	6.0	0.8	688.0	173.9	173.9
2008	**M-S**	6	16.5	5.3	21.8	17.9	7.8	47.4	61.7	23.1	84.8	1.7	86.5	114.4	35.4	19.6	169.3	1.3	170.6	45.1	165.9	0.0	-40.3	698.7	169.3	169.3
2008	**M-S**	7	14.0	8.9	22.9	6.1	0.9	30.0	17.0	22.2	39.2	1.4	40.6	63.0	30.6	7.6	101.2	0.3	101.4	52.7	165.3	0.0	-116.5	597.6	101.2	101.2
2008	**M-S**	8	13.3	8.6	21.9	0.0	0.8	22.7	9.8	25.6	35.4	1.0	36.4	58.1	23.6	1.0	82.7	2.9	85.7	43.1	144.6	0.0	-102.1	490.3	82.7	82.7
2008	**M-S**	9	16.3	7.9	24.3	0.0	5.5	29.7	11.7	22.4	34.2	0.7	34.9	63.9	13.3	0.7	77.9	0.0	77.9	31.5	113.7	0.0	-67.2	399.4	77.9	77.9
2008	**M-S Total**		**79.0**	**41.6**	**120.5**	**24.1**	**25.0**	**169.6**	**191.9**	**134.3**	**326.2**	**6.4**	**332.6**	**471.7**	**102.9**	**30.5**	**605.1**	**22.2**	**627.2**	**205.9**	**740.6**	**6.0**	**-325.4**	**2874.0**	**605.1**	**605.1**
2008 Total			**251.0**	**103.3**	**354.3**	**31.3**	**90.5**	**476.1**	**455.7**	**340.0**	**795.7**	**17.0**	**812.7**	**1240.5**	**176.6**	**48.3**	**1465.4**	**112.1**	**1577.5**	**262.0**	**1267.2**	**6.0**	**42.2**	**6314.9**	**1465.4**	**1465.4**
2009	**O-A**	10	23.5	8.9	32.3	0.0	6.9	39.2	16.3	25.1	41.4	0.6	42.0	80.6	5.0	0.6	86.1	6.7	92.8	16.1	87.9	0.0	-11.2	370.4	86.1	86.1
2009	**O-A**	11	26.3	8.1	34.4	0.0	11.7	46.1	18.9	24.9	43.8	0.5	44.3	89.9	17.0	0.5	107.4	13.5	120.9	5.8	65.1	0.0	50.0	397.0	107.4	107.4
2009	**O-A**	12	24.2	11.0	35.2	0.0	9.5	44.7	21.2	24.5	45.7	0.5	46.2	90.4	5.0	0.5	95.9	21.7	117.6	0.0	81.8	0.0	35.8	424.9	95.9	95.9
2009	**O-A**	1	26.0	11.4	37.4	0.0	6.9	44.3	22.7	30.9	53.6	0.9	54.5	97.9	22.7	0.9	121.5	7.8	129.3	0.0	71.3	0.0	57.9	486.2	121.5	121.5
2009	**O-A**	2	22.6	9.6	32.2	0.0	5.8	38.0	21.7	28.7	50.4	1.8	52.2	88.4	0.0	1.8	90.2	10.2	100.4	0.0	49.8	3.0	47.4	524.4	90.2	90.2
2009	**O-A**	3	27.9	14.1	42.0	13.2	24.5	79.8	43.7	40.0	83.8	3.6	87.4	150.3	0.0	16.9	167.1	12.4	179.5	13.9	45.8	22.0	97.7	604.8	167.1	167.1
2009	**O-A**	4	21.3	11.8	33.1	7.5	11.5	52.1	44.3	41.8	86.1	2.7	88.8	130.7	0.0	10.2	140.9	3.6	144.5	25.3	83.2	15.0	21.4	673.1	140.9	140.9
2009	**O-A Total**		**171.8**	**74.8**	**246.6**	**20.8**	**76.8**	**344.2**	**188.7**	**215.9**	**404.6**	**10.7**	**415.3**	**728.0**	**49.7**	**31.5**	**809.2**	**75.9**	**885.1**	**61.1**	**485.0**	**40.0**	**299.0**	**3480.8**	**809.2**	**809.2**
2009	**M-S**	5	22.2	12.2	34.4	0.0	10.3	44.7	61.9	37.0	98.9	1.6	100.5	143.6	19.1	1.6	164.3	13.9	178.2	36.5	137.6	0.0	4.1	687.7	164.3	164.3
2009	**M-S**	6	17.1	8.8	25.9	0.0	4.7	30.6	30.4	27.3	57.7	1.6	59.4	88.4	29.8	1.6	119.8	11.3	131.1	37.3	129.9	0.0	-36.2	670.7	119.8	119.8
2009	**M-S**	7	13.1	8.0	21.1	0.0	1.8	22.9	11.2	25.5	36.7	1.4	38.2	59.7	29.0	1.4	90.0	0.1	90.2	48.7	175.1	0.0	-133.6	569.9	90.0	90.0
2009	**M-S**	8	12.2	7.3	19.5	0.0	4.6	24.0	9.1	25.0	34.0	1.0	35.0	58.1	10.4	1.0	69.4	2.5	72.0	38.3	146.9	0.0	-113.2	449.5	69.4	69.4
2009	**M-S**	9	13.8	7.9	21.6	0.0	7.6	29.2	9.5	24.4	33.9	0.7	34.6	63.1	12.6	0.7	76.4	0.2	76.6	29.0	117.7	0.0	-70.2	353.7	76.4	76.4
2009	**M-S Total**		**78.3**	**44.2**	**122.4**	**0.0**	**29.0**	**151.4**	**122.1**	**139.2**	**261.3**	**6.3**	**267.6**	**412.7**	**100.8**	**6.3**	**519.9**	**28.1**	**548.0**	**189.8**	**707.2**	**0.0**	**-349.0**	**2731.6**	**519.9**	**519.9**
2009 Total			**250.1**	**119.0**	**369.1**	**20.8**	**105.8**	**495.6**	**310.8**	**355.1**	**665.9**	**17.0**	**683.0**	**1140.7**	**150.5**	**37.8**	**1329.1**	**104.0**	**1433.1**	**251.0**	**1192.2**	**40.0**	**-50.0**	**6212.4**	**1329.1**	**1329.1**
2010	**O-A**	10	22.3	9.9	32.2	0.0	9.5	41.7	15.9	27.4	43.2	0.6	43.8	84.9	10.3	0.6	95.8	2.9	98.7	13.3	85.4	0.0	0.0	318.6	95.8	95.8
2010	**O-A**	11	24.0	8.1	32.1	0.0	8.6	40.7	17.3	27.0	44.3	0.5	44.7	85.0	15.6	0.5	101.1	8.0	109.1	7.0	81.6	0.0	20.5	331.2	101.1	101.1
2010	**O-A**	12	25.3	7.0	32.3	0.0	9.4	41.7	20.7	24.4	45.1	0.5	45.6	86.8	0.0	0.5	87.4	16.3	103.7	0.0	79.4	5.0	19.1	349.5	87.4	87.4
2010	**O-A**	1	26.6	5.8	32.5	0.0	8.3	40.7	21.8	28.3	50.1	0.9	51.0	90.9	7.3	0.9	99.1	17.1	116.2	0.0	62.1	0.0	54.1	389.0	99.1	99.1
2010	**O-A**	2	22.5	7.4	30.0	0.0	12.4	42.3	21.7	26.7	48.4	1.8	50.2	90.7	4.6	1.8	97.2	9.1	106.2	0.0	51.7	0.0	54.6	444.4	97.2	97.2
2010	**O-A**	3	25.1	6.4	31.6	0.0	7.5	39.1	23.4	32.2	55.6	3.5	59.1	94.7	21.5	3.5	119.7	6.3	126.0	15.2	70.0	0.0	40.8	491.6	119.7	119.7
2010	**O-A**	4	22.8	7.8	30.6	0.0	10.9	41.5	31.6	32.4	64.1	2.7	66.7	105.6	7.3	2.7	115.5	10.1	125.7	20.1	63.9	0.0	41.7	533.7	115.5	115.5
2010	**O-A Total**		**168.8**	**52.5**	**221.2**	**0.0**	**66.6**	**287.8**	**152.5**	**198.3**	**350.8**	**10.5**	**361.3**	**638.6**	**66.6**	**10.5**	**715.7**	**69.9**	**785.6**	**55.6**	**494.0**	**5.0**	**230.8**	**2858.1**	**715.7**	**715.7**
2010	**M-S**	5	13.0	7.8	20.8	0.0	14.3	35.1	54.9	30.1	85.0	1.6	86.6	120.1	0.0	1.6	121.7	6.1	127.8	27.0	75.0	3.0	23.0	569.0	121.7	121.7
2010	**M-S**	6	15.9	7.4	23.2	0.0	11.8	35.0	42.9	26.7	69.6	1.6	71.2	104.6	16.3	1.6	122.5	5.8	128.3	39.2	83.3	0.0	5.7	591.0	122.5	122.5
2010	**M-S**	7	11.2	5.4	16.6	0.0	3.3	19.9	12.6	24.4	37.0	1.4	38.4	56.9	26.8	1.4	85.1	0.9	85.9	53.2	118.6	0.0	-85.9	537.0	85.1	85.1
2010	**M-S**	8	10.8	5.2	16.0	0.0	2.7	18.7	7.5	23.3	30.8	1.0	31.8	49.5	18.4	1.0	68.9	1.1	70.0	42.5	116.3	0.0	-88.8	451.2	68.9	68.9
2010	**M-S**	9	14.2	6.0	20.2	0.0	9.3	29.5	11.4	24.1	35.5	0.7	36.2	65.0	11.4	0.7	77.2	5.0	82.1	24.8	84.8	0.0	-27.5	388.7	77.2	77.2
2010	**M-S Total**		**65.1**	**31.8**	**96.9**	**0.0**	**41.3**	**138.2**	**129.3**	**128.7**	**258.0**	**6.3**	**264.3**	**396.2**	**72.9**	**6.3**	**475.3**	**18.9**	**494.2**	**186.8**	**478.1**	**3.0**	**-173.5**	**2536.9**	**475.3**	**475.3**
2010 Total			**233.9**	**84.3**	**318.1**	**0.0**	**107.8**	**426.0**	**281.9**	**326.9**	**608.8**	**16.7**	**625.5**	**1034.8**	**139.5**	**16.7**	**1191.0**	**88.8**	**1279.8**	**242.4**	**972.1**	**8.0**	**57.3**	**5395.0**	**1191.0**	**1191.0**

Mass Balances by Month, Season, & Water Year **Variable: Sum of TP_kg**

Water Yr	Season	Month	Wood_Weed	Wood Dike - Weed	Wood_Dike	Agency Lake Ranch	7mile_Dike	Total Agency Inflow	Sprague	Williamson-Sprague	Williamson Mouth	Pumped to Klamath L	Total Klamath Inflow	Total Tributaries	Ungauged Inflows	Total Pumped to Lake	Total External Inflows	Precipitation	Total Inflow + Precip	Evaporation	Lake Outflow	Retention	Storage Increase	Lake Mean Storage	Natural-Background	Anthropogenic
1992	O-A	10	1440	615	2055	189	746	2990	744	3329	4073	498	4571	6874	720	687	8281	276	8557	0	19291	8968	-19702	73364	5023	3258
1992	O-A	11	1732	349	2081	161	960	3202	924	2446	3370	424	3794	6411	644	586	7640	520	8161	0	5855	24071	-21766	50265	5501	2139
1992	O-A	12	1851	594	2445	175	953	3573	859	2214	3073	459	3532	6471	398	634	7503	423	7926	0	4666	4166	-906	42682	5673	1830
1992	O-A	1	1876	829	2705	296	1090	4091	1160	2551	3711	778	4489	7506	646	1073	9226	338	9564	0	5382	7653	-3471	40697	5918	3309
1992	O-A	2	1620	851	2472	617	896	3985	1417	2126	3544	1622	5166	6912	0	2239	9151	346	9497	0	2325	11130	-3958	36437	5130	4021
1992	O-A	3	1576	760	2336	1170	557	4063	1508	2874	4382	3077	7458	7275	229	4247	11751	259	12010	0	545	736	10730	35303	5618	6133
1992	O-A	4	1270	504	1774	881	862	3518	1865	2468	4333	2317	6650	6969	1619	3198	11787	392	12179	0	7502	2324	2353	50334	6353	5433
1992	**O-A Total**		**11366**	**4501**	**15867**	**3489**	**6066**	**25422**	**8477**	**18009**	**26485**	**9175**	**35660**	**48418**	**4257**	**12664**	**65339**	**2555**	**67894**	**0**	**45566**	**59049**	**-36721**	**329081**	**39217**	**26123**
1992	M-S	5	773	1412	2185	519	1783	4487	1235	2554	3789	1366	5155	7757	2345	1885	11987	220	12207	0	11285	-16223	17145	55438	5791	6196
1992	M-S	6	337	964	1301	533	1355	3189	886	2088	2974	1403	4377	5630	319	1936	7885	376	8261	0	23847	-64416	48830	101690	3206	4679
1992	M-S	7	810	1164	1974	463	1174	3611	834	3888	4722	1217	5938	7870	1404	1679	10953	267	11220	0	26806	25449	-41034	114014	4616	6338
1992	M-S	8	439	943	1382	318	689	2389	595	2965	3560	837	4397	5631	1116	1155	7903	211	8113	0	11281	15257	-18424	44015	3624	4279
1992	M-S	9	1196	909	2105	238	797	3140	629	2640	3269	625	3894	6171	343	863	7377	244	7621	0	7740	21965	-22084	40521	3802	3575
1992	**M-S Total**		**3556**	**5391**	**8947**	**2072**	**5798**	**16817**	**4179**	**14135**	**18314**	**5447**	**23761**	**33059**	**5527**	**7519**	**46105**	**1318**	**47423**	**0**	**80959**	**-17968**	**-15567**	**355678**	**21038**	**25066**
1992 Total			**14921**	**9893**	**24814**	**5561**	**11864**	**42239**	**12656**	**32144**	**44799**	**14622**	**59421**	**81477**	**9784**	**20183**	**111444**	**3873**	**115317**	**0**	**126524**	**41081**	**-52288**	**684759**	**60255**	**51189**
1993	O-A	10	1433	576	2009	188	704	2901	926	2579	3505	494	4000	6218	525	683	7425	466	7891	0	5648	9784	-7540	27665	4755	2671
1993	O-A	11	1793	914	2707	160	1493	4360	1076	2578	3653	421	4075	7853	1095	582	9530	484	10014	0	3460	2884	3670	25598	6091	3439
1993	O-A	12	1780	300	2081	174	847	3102	1339	2087	3426	456	3882	6354	690	630	7674	910	8584	0	2182	-3789	10191	33618	5336	2337
1993	O-A	1	1728	588	2315	294	507	3116	1536	1998	3533	772	4306	6355	1317	1066	8738	779	9517	0	3855	-1995	7657	42888	5953	2785
1993	O-A	2	1635	990	2625	592	203	3420	1718	2022	3740	1556	5296	6568	867	2148	9582	554	10137	0	1755	241	8140	50107	5361	4222
1993	O-A	3	2914	2775	5689	1168	3011	9868	30394	3005	33399	3072	36472	42099	3389	4241	49728	652	50381	0	11543	34262	4577	57183	21479	28250
1993	O-A	4	3000	5454	8454	904	1055	10414	14962	6117	21079	2376	23455	30589	4588	3280	38457	464	38921	0	24092	22065	-7237	54343	21370	17087
1993	**O-A Total**		**14283**	**11596**	**25880**	**3479**	**7821**	**37180**	**51951**	**20385**	**72336**	**9149**	**81486**	**106037**	**12470**	**12629**	**131135**	**4310**	**135445**	**0**	**52535**	**63451**	**19459**	**291403**	**70345**	**60790**
1993	M-S	5	2157	4818	6975	548	2196	9719	10459	3279	13737	1441	15179	22908	3133	1989	28030	580	28610	0	12532	24881	-8802	46791	16284	11746
1993	M-S	6	1997	2403	4400	579	955	5934	4061	1983	6045	1523	7567	11400	3190	2102	16691	378	17070	0	12660	-37576	41985	62544	11959	4732
1993	M-S	7	1029	1006	2035	507	802	3344	1056	2296	3352	1333	4685	6189	2294	1840	10323	214	10537	0	19279	-20866	12124	101598	6288	4035
1993	M-S	8	1022	419	1441	350	1870	3661	633	2399	3032	921	3952	6343	1459	1271	9073	354	9427	0	20681	18499	-29754	90234	5353	3719
1993	M-S	9	1264	372	1636	262	409	2307	542	2342	2884	690	3574	4929	2080	952	7961	220	8181	0	12730	26303	-30852	51221	5853	2108
1993	**M-S Total**		**7469**	**9017**	**16486**	**2246**	**6233**	**24965**	**16750**	**12299**	**29050**	**5907**	**34957**	**51768**	**12157**	**8153**	**72079**	**1746**	**73825**	**0**	**77882**	**11242**	**-15299**	**352388**	**45738**	**26341**
1993 Total			**21752**	**20613**	**42366**	**5726**	**14053**	**62145**	**68701**	**32685**	**101386**	**15056**	**116442**	**157805**	**24627**	**20782**	**203213**	**6056**	**209270**	**0**	**130418**	**74693**	**4159**	**643791**	**116083**	**87131**
1994	O-A	10	2155	386	2541	208	837	3586	900	2235	3135	547	3682	6513	1824	755	9092	388	9480	0	5232	20240	-15992	24711	7178	1914
1994	O-A	11	2203	434	2637	178	597	3412	1065	2285	3350	467	3817	6585	558	644	7788	275	8063	0	4723	-3183	6523	25157	5562	2226
1994	O-A	12	3014	641	3654	192	1445	5292	1713	2677	4390	506	4896	9489	290	698	10478	486	10964	0	7069	3693	202	27214	6343	4135
1994	O-A	1	3583	821	4405	326	1432	6163	2570	3479	6049	857	6907	11886	1406	1183	14476	329	14805	0	4321	8849	1634	27606	7053	7422
1994	O-A	2	1983	566	2549	657	117	3322	1314	1995	3309	1727	5036	5974	821	2384	9178	456	9634	0	1547	5727	2361	29808	5578	3600
1994	O-A	3	2104	1162	3266	1274	464	5004	2326	2856	5183	3350	8532	8912	1042	4624	14579	233	14811	0	1835	12579	397	31988	7886	6692
1994	O-A	4	1564	2274	3839	914	81	4834	1899	2570	4468	2403	6872	8388	2441	3317	14147	285	14431	0	5966	1291	7174	37620	7945	6202
1994	**O-A Total**		**16607**	**6284**	**22891**	**3749**	**4973**	**31612**	**11787**	**18097**	**29884**	**9857**	**39742**	**57748**	**8383**	**13606**	**79736**	**2452**	**82188**	**0**	**30693**	**49196**	**2299**	**204104**	**47546**	**32191**
1994	M-S	5	961	908	1868	528	10	2407	1575	1958	3533	1389	4921	5411	2767	1917	10095	467	10563	0	4058	4292	2213	35928	6753	3342
1994	M-S	6	454	752	1206	537	495	2238	749	1521	2271	1413	3683	3971	2973	1950	8895	245	9140	0	15352	-61576	55363	66532	6031	2863
1994	M-S	7	440	412	852	465	651	1968	502	1358	1859	1222	3082	3362	1922	1687	6971	220	7191	0	24270	-1101	-15978	95347	4383	2588
1994	M-S	8	597	560	1157	320	1041	2518	488	1791	2279	840	3119	4477	1940	1160	7576	195	7771	0	19891	37840	-49959	50560	4612	2964
1994	M-S	9	507	570	1077	238	895	2210	441	1664	2105	627	2732	4077	2066	866	7008	250	7258	0	12642	-4834	-550	29109	5123	1885
1994	**M-S Total**		**2959**	**3202**	**6161**	**2088**	**3091**	**11340**	**3755**	**8292**	**12046**	**5491**	**17537**	**21298**	**11668**	**7579**	**40545**	**1377**	**41923**	**0**	**76213**	**-25378**	**-8912**	**277476**	**26903**	**13642**
1994 Total			**19565**	**9486**	**29051**	**5837**	**8064**	**42952**	**15542**	**26389**	**41931**	**15348**	**57279**	**79046**	**20051**	**21185**	**120282**	**3829**	**124111**	**0**	**106906**	**23818**	**-6613**	**481580**	**74448**	**45833**
1995	O-A	10	1174	835	2009	189	1023	3221	718	1978	2696	496	3192	5729	1299	684	7712	223	7935	0	7492	14170	-13726	20422	5857	1855
1995	O-A	11	1169	760	1929	161	1012	3101	665	1920	2585	422	3008	5526	960	583	7070	655	7725	0	4407	-6926	10244	25886	5885	1185
1995	O-A	12	1439	1203	2641	174	356	3172	882	2048	2930	457	3387	5928	673	631	7232	411	7643	0	3176	-2604	7072	29863	5524	1708
1995	O-A	1	2115	979	3094	294	377	3765	7375	2454	9830	774	10604	13301	2305	1069	16675	913	17588	0	2183	327	15077	40070	8545	8129
1995	O-A	2	1882	589	2471	596	489	3556	9636	-33	9602	1566	11168	12563	2001	2162	16725	267	16993	0	1569	25227	-9803	54482	10013	6713
1995	O-A	3	1734	1187	2921	1177	1124	5222	11734	4526	16260	3096	19356	20304	1729	4273	26307	747	27054	0	14422	2328	10304	44015	14720	11587
1995	O-A	4	1521	1295	2816	899	454	4170	9150	3779	12929	2365	15294	16200	1663	3264	21127	676	21803	0	12129	14163	-4490	49166	13529	7599
1995	**O-A Total**		**11033**	**6848**	**17881**	**3490**	**4836**	**26207**	**40161**	**16671**	**56833**	**9177**	**66009**	**79550**	**10631**	**12667**	**102848**	**3892**	**106740**	**0**	**45377**	**46685**	**14678**	**263905**	**64072**	**38776**
1995	M-S	5	1187	2550	3737	541	1350	5628	5601	2901	8502	1422	9924	13590	3508	1962	19060	331	19391	0	10591	15771	-6970	38998	15945	3115
1995	M-S	6	1021	5345	6366	565	2751	9682	2770	2414	5184	1487	6671	14300	1779	2052	18132	484	18615	0	13880	-87186	91921	94818	9747	8385
1995	M-S	7	1146	2694	3840	495	1909	6244	1399	2015	3414	1302	4716	9163	2400	1797	13360	314	13674	0	23397	-22811	13087	139408	7083	6277
1995	M-S	8	722	479	1201	342	656	2198	429	1742	2171	900	3071	4027	1898	1242	7167	206	7373	0	25375	-7363	-10638	133045	5218	1949
1995	M-S	9	1083	439	1523	256	519	2298	349	2077	2426	673	3100	4468	1965	930	7362	199	7561	0	29273	10752	-32463	134092	5537	1825
1995	**M-S Total**		**5160**	**11507**	**16667**	**2200**	**7184**	**26050**	**10548**	**11149**	**21697**	**5784**	**27481**	**45548**	**11550**	**7983**	**65081**	**1534**	**66614**	**0**	**102515**	**-90837**	**54936**	**540360**	**43530**	**21551**
1995 Total			**16193**	**18355**	**34548**	**5689**	**12020**	**52257**	**50710**	**27820**	**78530**	**14960**	**93490**	**125098**	**22181**	**20650**	**167929**	**5426**	**173354**	**0**	**147892**	**-44152**	**69614**	**804265**	**107602**	**60326**

Mass Balances by Month, Season, & Water Year **Variable: Sum of TP_kg**

Water Yr	Season	Month	Wood_Weed	Wood Dike - Weed	Wood_Dike	Agency Lake Ranch	7mile_Dike	Total Agency Inflow	Sprague	Williamson-Sprague	Williamson Mouth	Pumped to Klamath L	Total Klamath Inflow	Total Tributaries	Ungauged Inflows	Total Pumped to Lake	Total External Inflows	Precipitation	Total Inflow + Precip	Evaporation	Lake Outflow	Retention	Storage Increase	Lake Mean Storage	Natural-Background	Anthropogenic
1996	**O-A**	10	1429	637	2066	203	429	2698	749	2189	2938	533	3471	5432	1402	736	7571	219	7790	0	15005	34289	-41505	76301	6354	1217
1996	**O-A**	11	1642	910	2551	173	992	3717	1061	2591	3652	455	4107	7195	699	629	8523	395	8918	0	10411	11625	-13119	50496	6182	2341
1996	**O-A**	12	2217	2388	4605	188	5786	10579	3996	2485	6482	495	6977	16873	1945	684	19502	1136	20638	0	6854	9204	4580	45172	10874	8627
1996	**O-A**	1	2338	1532	3870	322	6736	10928	8154	3019	11173	847	12020	21779	3220	1169	26167	1188	27356	0	15514	13595	-1753	49630	12589	13579
1996	**O-A**	2	2546	2028	4574	685	3382	8641	23222	8851	32073	1802	33875	40029	4677	2487	47193	624	47817	0	26331	21470	16	47635	24511	22682
1996	**O-A**	3	1953	2047	4000	1354	759	6113	9013	6370	15383	3561	18944	20142	3522	4915	28579	414	28994	0	13812	36510	-21328	38520	18684	9895
1996	**O-A**	4	2222	3176	5398	1022	1395	7815	6532	5489	12020	2689	14709	18813	1821	3711	24345	405	24750	0	3944	21796	-989	22704	15291	9054
1996	**O-A Total**		**14346**	**12717**	**27063**	**3948**	**19479**	**50491**	**52727**	**30994**	**83721**	**10382**	**94103**	**130264**	**17286**	**14330**	**161880**	**4381**	**166261**	**0**	**91871**	**148489**	**-74099**	**330458**	**94485**	**67395**
1996	**M-S**	5	2437	2429	4866	603	2973	8442	7516	4731	12247	1586	13833	20086	2904	2189	25179	560	25739	0	8822	2283	14634	33290	17073	8106
1996	**M-S**	6	1547	1463	3010	622	803	4435	2547	5433	7981	1635	9616	11794	1789	2257	15840	402	16242	0	10333	-14502	20411	45758	8727	7113
1996	**M-S**	7	1495	1049	2543	537	2962	6042	866	3938	4804	1412	6216	10310	1339	1949	13598	230	13828	0	17379	-38817	35266	80222	6359	7239
1996	**M-S**	8	1338	917	2255	369	2015	4639	444	2189	2633	971	3604	6903	1629	1340	9872	235	10106	0	23954	-7554	-6293	98538	5902	3969
1996	**M-S**	9	2068	982	3050	276	1373	4699	604	2285	2889	726	3615	7312	1348	1002	9662	257	9919	0	32359	-2591	-19850	75489	6619	3043
1996	**M-S Total**		**8885**	**6839**	**15724**	**2407**	**10126**	**28257**	**11978**	**18577**	**30555**	**6329**	**36884**	**56405**	**9009**	**8737**	**74150**	**1683**	**75834**	**0**	**92847**	**-61181**	**44168**	**333297**	**44680**	**29471**
1996 Total			**23231**	**19556**	**42787**	**6355**	**29606**	**78748**	**64705**	**49571**	**114276**	**16712**	**130987**	**186668**	**26295**	**23067**	**236030**	**6064**	**242095**	**0**	**184718**	**87307**	**-29931**	**663755**	**139165**	**96865**
1997	**O-A**	10	2205	1041	3247	219	892	4357	846	2372	3218	575	3793	7357	1555	794	9705	386	10091	0	18106	-52179	44163	71845	7394	2312
1997	**O-A**	11	2627	1030	3657	187	1381	5225	1563	1969	3532	491	4023	8570	2119	678	11367	567	11934	0	9542	28173	-25780	98860	8999	2368
1997	**O-A**	12	4112	2682	6794	203	2211	9208	5654	5172	10826	534	11360	19830	4914	738	25481	1173	26654	0	12311	50079	-35736	71230	14889	10593
1997	**O-A**	1	2650	1964	4614	371	1658	6643	28429	5406	33835	976	34811	40107	5289	1348	46744	746	47490	0	30726	17749	-986	45530	29450	17294
1997	**O-A**	2	2601	2545	5147	761	1325	7233	7635	3745	11380	2001	13381	17851	2320	2763	22934	347	23281	0	18338	16364	-11421	46327	16476	6458
1997	**O-A**	3	2523	2363	4886	1436	813	7135	5401	4506	9907	3777	13684	15606	0	5213	20820	387	21207	0	7962	25629	-12384	30612	13450	7370
1997	**O-A**	4	2095	1777	3872	1072	688	5632	6062	4608	10670	2818	13488	15230	430	3890	19550	504	20055	0	6930	8257	4867	30936	13361	6190
1997	**O-A Total**		**18814**	**13402**	**32216**	**4249**	**8967**	**45433**	**55591**	**27778**	**83368**	**11173**	**94542**	**124552**	**16628**	**15423**	**156602**	**4109**	**160712**	**0**	**103915**	**94073**	**-37276**	**395341**	**104019**	**52583**
1997	**M-S**	5	2062	653	2716	630	1650	4995	4765	3663	8428	1656	10084	12793	2294	2286	17373	301	17674	0	9539	-30108	38243	45786	13050	4324
1997	**M-S**	6	1882	726	2608	637	1790	5035	1970	2132	4101	1676	5777	8499	929	2313	11742	388	12129	0	29102	-85846	68873	103519	7625	4117
1997	**M-S**	7	1759	1065	2824	552	1696	5072	789	2399	3189	1451	4640	7709	586	2003	10298	371	10669	0	34075	-49660	26254	147914	6058	4240
1997	**M-S**	8	2023	916	2939	380	1802	5121	597	2661	3258	1000	4258	7999	699	1380	10077	362	10439	0	35987	28189	-53737	129964	5992	4085
1997	**M-S**	9	2226	719	2945	284	1680	4909	732	2486	3218	747	3965	7843	246	1032	9121	302	9423	0	26696	10152	-27425	93804	6108	3013
1997	**M-S Total**		**9951**	**4080**	**14031**	**2483**	**8618**	**25132**	**8853**	**13341**	**22194**	**6530**	**28724**	**44843**	**4754**	**9014**	**58611**	**1724**	**60335**	**0**	**135399**	**-127274**	**52209**	**520988**	**38832**	**19779**
1997 Total			**28766**	**17482**	**46247**	**6733**	**17585**	**70565**	**64444**	**41118**	**105562**	**17704**	**123266**	**169395**	**21382**	**24436**	**215214**	**5833**	**221046**	**0**	**239314**	**-33201**	**14933**	**916329**	**142851**	**72362**
1998	**O-A**	10	2272	667	2938	225	1676	4839	926	2062	2988	528	3515	7602	416	753	8771	433	9204	0	14667	-2267	-3195	85368	7138	1633
1998	**O-A**	11	1930	375	2305	192	1287	3784	1228	2049	3277	450	3727	6869	1561	641	9071	542	9613	0	10937	8919	-10243	75733	7979	1092
1998	**O-A**	12	1882	310	2192	206	1329	3727	1194	2435	3630	483	4113	7151	888	690	8728	377	9105	0	12846	12874	-16614	62708	7573	1155
1998	**O-A**	1	2121	630	2751	326	1886	4962	5962	7095	13057	764	13821	17694	2916	1089	21699	942	22641	0	12153	20397	-9910	49056	12861	8839
1998	**O-A**	2	2127	770	2897	643	1749	5289	4887	9917	14804	1509	16312	19450	3344	2152	24945	456	25401	0	13304	24390	-12292	37938	14095	10851
1998	**O-A**	3	2373	1418	3791	1260	2105	7156	9552	5166	14718	2956	17674	20613	1721	4216	26551	567	27117	0	9518	20474	-2874	28703	17016	9535
1998	**O-A**	4	2333	1965	4298	963	1275	6536	7575	5952	13527	2259	15786	19101	1313	3222	23636	292	23928	0	9432	11431	3065	32121	15854	7782
1998	**O-A Total**		**15037**	**6135**	**21172**	**3814**	**11307**	**36294**	**31325**	**34675**	**66000**	**8948**	**74948**	**98480**	**12159**	**12762**	**123401**	**3609**	**127010**	**0**	**82856**	**96218**	**-52064**	**371627**	**82515**	**40886**
1998	**M-S**	5	2354	1386	3741	576	1279	5596	14142	6072	20214	1352	21566	25234	2026	1928	29188	754	29942	0	14834	5235	9873	41997	19737	9451
1998	**M-S**	6	2211	1149	3360	618	1902	5880	7603	4083	11686	1450	13136	16948	1668	2069	20685	286	20971	0	17140	-21705	25536	57194	14529	6156
1998	**M-S**	7	1887	698	2584	547	1676	4807	1742	3133	4875	1284	6158	9135	1953	1831	12918	237	13155	0	27535	-89749	75369	118899	8370	4548
1998	**M-S**	8	1358	774	2132	378	1305	3815	582	2605	3187	887	4074	6624	1764	1265	9653	205	9859	0	30799	23458	-44399	123508	6367	3286
1998	**M-S**	9	1442	1778	3220	283	907	4410	810	2433	3244	663	3907	7371	1518	946	9835	262	10097	0	25525	8017	-23445	85182	6721	3114
1998	**M-S Total**		**9252**	**5785**	**15037**	**2403**	**7069**	**24509**	**24879**	**18326**	**43205**	**5636**	**48842**	**65311**	**8930**	**8039**	**82280**	**1744**	**84024**	**0**	**115834**	**-74743**	**42934**	**426780**	**55724**	**26556**
1998 Total			**24289**	**11920**	**36209**	**6217**	**18376**	**60802**	**56204**	**53001**	**109206**	**14584**	**123790**	**163791**	**21089**	**20801**	**205681**	**5353**	**211034**	**0**	**198689**	**21475**	**-9130**	**798408**	**138239**	**67442**
1999	**O-A**	10	1766	1422	3188	224	845	4256	995	2531	3525	461	3987	7558	1598	685	9841	245	10086	0	10259	13837	-14010	65188	7514	2327
1999	**O-A**	11	1947	1059	3006	191	1014	4211	2066	3228	5294	394	5689	9314	2967	586	12866	925	13792	0	11443	535	1813	61296	10404	2462
1999	**O-A**	12	1988	950	2938	211	1141	4289	2716	4929	7645	435	8080	11724	2918	645	15287	470	15757	0	18383	4383	-7008	60572	12184	3103
1999	**O-A**	1	2466	1197	3664	360	2241	6265	4093	4386	8479	743	9222	14384	3394	1103	18880	708	19588	0	12914	14824	-8149	50760	12058	6823
1999	**O-A**	2	2092	1015	3107	713	2006	5826	3342	3580	6922	1470	8392	12035	3600	2183	17818	587	18405	0	10064	15017	-6676	44299	11065	6753
1999	**O-A**	3	2339	1240	3579	1398	2676	7653	14023	3169	17192	2883	20075	23447	5096	4281	32823	257	33080	0	16714	26227	-9861	35033	19648	13175
1999	**O-A**	4	2074	1150	3224	1062	2440	6726	16659	6356	23015	2190	25205	28678	4212	3252	36142	263	36405	0	12607	19954	3845	29819	22368	13774
1999	**O-A Total**		**14672**	**8034**	**22705**	**4159**	**12362**	**39227**	**43894**	**28178**	**72072**	**8576**	**80648**	**107140**	**23783**	**12735**	**143658**	**3456**	**147114**	**0**	**92384**	**94776**	**-40046**	**346967**	**95241**	**48417**
1999	**M-S**	5	1708	526	2233	642	1323	4198	11338	3477	14815	1324	16139	18371	3037	1966	23374	276	23650	0	13446	-7165	17369	43736	19443	3931
1999	**M-S**	6	1521	408	1929	655	1479	4064	6542	2473	9015	1351	10366	12424	2749	2006	17178	203	17382	0	15539	-48905	50748	76408	13377	3801
1999	**M-S**	7	1594	700	2294	566	1876	4736	1431	3056	4487	1166	5654	8658	2556	1732	12945	208	13153	0	47751	-81817	47219	132857	8415	4531
1999	**M-S**	8	2017	666	2684	389	1219	4292	982	2342	3324	803	4127	7227	1615	1193	10034	558	10593	0	50737	-9647	-30498	145615	6764	3270
1999	**M-S**	9	1638	546	2183	292	910	3385	786	2960	3747	602	4349	6840	2266	894	10000	199	10199	0	42915	6154	-38871	101403	7484	2516
1999	**M-S Total**		**8478**	**2846**	**11324**	**2544**	**6808**	**20676**	**21079**	**14308**	**35387**	**5246**	**40633**	**53519**	**12223**	**7790**	**73532**	**1445**	**74977**	**0**	**170389**	**-141380**	**45967**	**500018**	**55483**	**18049**
1999 Total			**23150**	**10880**	**34029**	**6703**	**19170**	**59902**	**64973**	**42486**	**107459**	**13823**	**121282**	**160659**	**36005**	**20525**	**217189**	**4901**	**222091**	**0**	**262773**	**-46603**	**5921**	**846985**	**150723**	**66466**

Mass Balances by Month, Season, & Water Year **Variable: Sum of TP_kg**

Water Yr	Season	Month	Wood_Weed	Wood Dike - Weed	Wood_Dike	Agency Lake Ranch	7mile_Dike	Total Agency Inflow	Sprague	Williamson-Sprague	Williamson Mouth	Pumped to Klamath L	Total Klamath Inflow	Total Tributaries	Ungauged Inflows	Total Pumped to Lake	Total External Inflows	Precipitation	Total Inflow + Precip	Evaporation	Lake Outflow	Retention	Storage Increase	Lake Mean Storage	Natural-Background	Anthropogenic
2000	**O-A**	10	2024	369	2394	1524	1079	4996	1070	2948	4019	412	4431	7491	1374	1936	10802	337	11138	0	17642	4532	-11036	74711	7709	3093
2000	**O-A**	11	2136	460	2597	1304	923	4824	1481	3165	4646	353	4998	8166	1329	1656	11151	396	11547	0	12075	9052	-9579	64532	8237	2914
2000	**O-A**	12	2169	552	2720	1395	844	4959	1465	3361	4826	377	5203	8391	1808	1772	11971	322	12293	0	9836	12166	-9708	55513	9283	2688
2000	**O-A**	1	2222	855	3077	0	917	3994	3117	3113	6230	635	6865	10225	3558	635	14417	728	15145	0	9108	18523	-12487	44880	11795	2622
2000	**O-A**	2	2001	609	2610	0	864	3474	5093	2755	7848	1328	9176	11322	3379	1328	16029	618	16646	0	9662	14949	-7965	32226	12711	3317
2000	**O-A**	3	2265	691	2956	0	978	3933	5601	4207	9808	2525	12333	13741	3119	2525	19385	337	19722	0	11006	9705	-988	34567	14916	4470
2000	**O-A**	4	2094	1109	3203	0	930	4133	7882	4427	12309	1854	14164	16443	1976	1854	20273	524	20797	0	7314	7623	5861	33043	14866	5407
2000	**O-A Total**		**14912**	**4644**	**19556**	**4222**	**6536**	**30314**	**25709**	**23976**	**49686**	**7485**	**57170**	**75778**	**16543**	**11707**	**104027**	**3261**	**107288**	**0**	**76642**	**76549**	**-45903**	**339472**	**79516**	**24511**
2000	**M-S**	5	1682	472	2154	6854	398	9406	4393	3955	8348	1059	9407	10900	3955	7913	22768	263	23032	0	14075	-14685	23642	52860	14037	8731
2000	**M-S**	6	1523	839	2362	25456	299	28117	1715	3320	5035	1057	6091	7696	3205	26513	37414	217	37631	0	41831	-89954	85754	106443	9814	27600
2000	**M-S**	7	1367	1442	2808	0	127	2935	553	2836	3389	907	4296	6324	1807	907	9039	278	9317	0	49648	-43468	3137	160165	6228	2811
2000	**M-S**	8	1200	959	2159	8812	342	11313	513	2704	3217	623	3840	5719	847	9434	16000	212	16212	0	30895	48705	-63388	118591	5090	10910
2000	**M-S**	9	1482	1248	2730	5875	1035	9640	948	2357	3305	464	3769	7070	1387	6338	14796	247	15043	0	11235	8830	-5022	78500	6487	8309
2000	**M-S Total**		**7254**	**4959**	**12214**	**46996**	**2201**	**61411**	**8122**	**15172**	**23294**	**4110**	**27404**	**37709**	**11202**	**51106**	**100017**	**1217**	**101234**	**0**	**147684**	**-90572**	**44122**	**516559**	**41656**	**58360**
2000 Total			**22166**	**9604**	**31770**	**51218**	**8737**	**91725**	**33832**	**39148**	**72980**	**11594**	**84574**	**113487**	**27745**	**62812**	**204044**	**4479**	**208523**	**0**	**224327**	**-14023**	**-1781**	**856031**	**121172**	**82871**
2001	**O-A**	10	1796	994	2790	3916	672	7379	1139	2512	3651	308	3959	7114	1244	4224	12582	380	12962	0	12347	22018	-21403	69844	7265	5318
2001	**O-A**	11	1766	1022	2788	0	625	3413	1222	2633	3855	262	4117	7268	1401	262	8930	294	9225	0	7556	4470	-2802	56502	7719	1212
2001	**O-A**	12	2118	796	2914	0	692	3606	1350	2750	4100	283	4383	7707	842	283	8832	370	9202	0	8330	7293	-6421	52294	7354	1478
2001	**O-A**	1	1921	1002	2923	0	745	3668	1401	2938	4338	476	4814	8007	925	476	9407	280	9688	0	5757	13000	-9069	43663	7143	2264
2001	**O-A**	2	1739	732	2470	0	701	3172	1407	2600	4007	950	4957	7179	0	950	8129	311	8440	0	2919	6849	-1329	35892	5638	2491
2001	**O-A**	3	2112	698	2810	0	940	3750	2462	3419	5881	1842	7723	9630	1211	1842	12684	365	13049	0	3075	10639	-665	39959	8875	3808
2001	**O-A**	4	1576	558	2135	0	743	2878	2285	3414	5699	1372	7071	8577	1006	1372	10955	320	11275	0	4570	2514	4192	43385	7782	3173
2001	**O-A Total**		**13028**	**5803**	**18831**	**3916**	**5119**	**27866**	**11266**	**20265**	**31531**	**5493**	**37024**	**55481**	**6629**	**9409**	**71520**	**2320**	**73840**	**0**	**44555**	**66782**	**-37497**	**341539**	**51776**	**19743**
2001	**M-S**	5	1077	978	2055	0	547	2602	1609	3174	4784	797	5581	7386	2752	797	10935	303	11238	0	4558	-10834	17514	40169	7653	3282
2001	**M-S**	6	844	951	1795	0	398	2193	719	2267	2986	815	3801	5179	2114	815	8108	255	8363	0	14912	-59213	52665	91429	5685	2423
2001	**M-S**	7	791	919	1710	0	344	2054	560	2232	2792	706	3498	4847	2150	706	7703	269	7971	0	19856	-55831	43946	148058	5369	2334
2001	**M-S**	8	831	942	1773	0	295	2068	721	2058	2780	485	3265	4848	2305	485	7637	208	7846	0	38697	36782	-67634	127867	5330	2307
2001	**M-S**	9	975	554	1529	0	179	1708	650	2135	2785	362	3147	4493	1540	362	6395	321	6715	0	9901	26179	-29365	73062	4727	1668
2001	**M-S Total**		**4518**	**4344**	**8862**	**0**	**1764**	**10626**	**4260**	**11867**	**16127**	**3164**	**19291**	**26753**	**10861**	**3164**	**40778**	**1356**	**42134**	**0**	**87925**	**-62918**	**17127**	**480586**	**28763**	**12014**
2001 Total			**17545**	**10148**	**27693**	**3916**	**6882**	**38492**	**15526**	**32132**	**47658**	**8657**	**56316**	**82234**	**17490**	**12574**	**112297**	**3677**	**115974**	**0**	**132479**	**3864**	**-20370**	**822125**	**80540**	**31758**
2002	**O-A**	10	1552	741	2293	0	314	2607	817	2259	3076	286	3362	5683	1097	286	7066	294	7360	0	5981	30160	-28781	40723	5690	1377
2002	**O-A**	11	1726	634	2360	0	442	2802	952	2284	3236	243	3479	6037	1929	243	8210	686	8896	0	3690	4956	250	29822	6856	1354
2002	**O-A**	12	2016	883	2899	0	733	3632	1275	3127	4401	263	4665	8033	1495	263	9792	798	10590	0	4062	6341	187	30650	7450	2342
2002	**O-A**	1	2207	1939	4146	0	1116	5261	4252	5034	9287	447	9733	14548	1212	447	16207	533	16740	0	4563	13794	-1616	30462	9640	6567
2002	**O-A**	2	2652	819	3471	0	972	4443	2484	4517	7000	902	7902	11443	495	902	12841	427	13268	0	3661	8521	1086	28511	7239	5602
2002	**O-A**	3	2285	2374	4658	0	1411	6069	3102	5046	8148	1777	9926	14217	1270	1777	17265	282	17547	0	5995	1267	10284	34097	10312	6952
2002	**O-A**	4	1754	1563	3317	0	1173	4491	5576	3293	8869	1344	10213	13360	1432	1344	16136	414	16550	0	6177	12872	-2499	36441	10919	5217
2002	**O-A Total**		**14192**	**8952**	**23144**	**0**	**6160**	**29304**	**18457**	**25560**	**44017**	**5263**	**49281**	**73322**	**8931**	**5263**	**87516**	**3434**	**90951**	**0**	**34130**	**77911**	**-21090**	**230705**	**58105**	**29411**
2002	**M-S**	5	1009	714	1723	15961	462	18146	3361	2589	5950	798	6748	8136	2680	16759	27575	232	27806	0	7408	9827	10572	41295	10339	17236
2002	**M-S**	6	1002	613	1615	9240	713	11569	1308	2035	3343	823	4166	5672	2486	10063	18221	306	18527	0	13811	-49515	54231	72370	6955	11266
2002	**M-S**	7	857	643	1499	0	2330	3829	705	2201	2905	714	3619	6734	2437	714	9885	206	10091	0	26459	-21688	5321	113473	5945	3940
2002	**M-S**	8	795	731	1526	0	1432	2959	381	2306	2687	491	3179	5646	1186	491	7324	208	7531	0	18378	20310	-31157	92694	4395	2928
2002	**M-S**	9	1091	1177	2268	0	804	3072	419	2321	2739	367	3106	5811	904	367	7082	206	7288	0	15012	-5872	-1852	75802	4616	2466
2002	**M-S Total**		**4754**	**3878**	**8632**	**25201**	**5742**	**39575**	**6173**	**11452**	**17625**	**3193**	**20818**	**31999**	**9693**	**28394**	**70086**	**1157**	**71244**	**0**	**81068**	**-46939**	**37114**	**395634**	**32250**	**37836**
2002 Total			**18946**	**12830**	**31776**	**25201**	**11902**	**68879**	**24631**	**37012**	**61643**	**8456**	**70099**	**105321**	**18625**	**33657**	**157603**	**4592**	**162194**	**0**	**115198**	**30972**	**16024**	**626339**	**90356**	**67247**
2003	**O-A**	10	1602	1227	2830	0	737	3567	786	2433	3219	290	3509	6786	681	290	7757	206	7963	0	7756	20960	-20753	59297	5581	2176
2003	**O-A**	11	1769	769	2539	0	995	3534	1049	2356	3405	247	3652	6939	619	247	7805	471	8276	0	4975	1935	1365	54905	5846	1958
2003	**O-A**	12	1891	754	2645	0	1301	3946	1278	2417	3695	267	3963	7641	601	267	8510	822	9331	0	5462	533	3337	55804	6477	2033
2003	**O-A**	1	2290	1656	3946	0	2638	6585	3388	3255	6643	451	7094	13228	95	451	13774	627	14401	0	2955	6440	5006	60778	8314	5460
2003	**O-A**	2	1735	1954	3689	0	1902	5591	2699	3411	6109	910	7019	11701	0	910	12611	282	12893	0	2545	10604	-256	64157	8377	4233
2003	**O-A**	3	2040	1513	3553	0	1625	5178	2754	3307	6061	1787	7848	11240	0	1787	13026	566	13593	0	5435	12119	-3961	61984	8950	4076
2003	**O-A**	4	1809	1687	3496	0	1183	4679	4701	2875	7576	1347	8922	12254	960	1347	14561	452	15013	0	11354	12561	-8902	54895	11094	3467
2003	**O-A Total**		**13137**	**9560**	**22697**	**0**	**10381**	**33079**	**16654**	**20054**	**36709**	**5299**	**42008**	**69788**	**2957**	**5299**	**78043**	**3427**	**81470**	**0**	**40482**	**65151**	**-24163**	**411820**	**54639**	**23404**
2003	**M-S**	5	1253	1604	2856	0	1025	3881	5041	2362	7402	795	8198	11284	1923	795	14002	341	14343	0	7982	4242	2119	41880	10944	3058
2003	**M-S**	6	986	1125	2112	20148	1706	23966	2237	1772	4010	821	4831	7827	1226	20969	30023	201	30224	0	14623	-15903	31504	72072	8054	21969
2003	**M-S**	7	840	566	1406	0	1688	3094	617	2149	2766	713	3479	5860	1652	713	8225	263	8488	0	26536	-106781	88733	139196	5131	3095
2003	**M-S**	8	878	1062	1940	0	1314	3254	504	2190	2694	491	3184	5948	487	491	6926	254	7179	0	30235	27645	-50700	150603	4083	2842
2003	**M-S**	9	1450	800	2251	0	713	2964	449	2321	2770	367	3137	5734	1469	367	7570	327	7897	0	20961	19256	-32320	103399	5587	1983
2003	**M-S Total**		**5407**	**5157**	**10564**	**20148**	**6446**	**37159**	**8847**	**10794**	**19642**	**3187**	**22828**	**36652**	**6758**	**23335**	**66745**	**1386**	**68132**	**0**	**100337**	**-71541**	**39336**	**507150**	**33799**	**32947**
2003 Total			**18544**	**14718**	**33262**	**20148**	**16828**	**70238**	**25502**	**30848**	**56350**	**8486**	**64836**	**106440**	**9714**	**28634**	**144789**	**4813**	**149602**	**0**	**140819**	**-6390**	**15173**	**918970**	**88438**	**56351**

Mass Balances by Month, Season, & Water Year **Variable: Sum of TP_kg**

Water Yr	Season	Month	Wood_Weed	Wood Dike - Weed	Wood_Dike	Agency Lake Ranch	7mile_Dike	Total Agency Inflow	Sprague	Williamson-Sprague	Williamson Mouth	Pumped to Klamath L	Total Klamath Inflow	Total Tributaries	Ungauged Inflows	Total Pumped to Lake	Total External Inflows	Precipitation	Total Inflow + Precip	Evaporation	Lake Outflow	Retention	Storage Increase	Lake Mean Storage	Natural-Background	Anthropogenic
2004	O-A	10	1761	541	2302	0	432	2734	607	2227	2833	290	3123	5567	1076	290	6933	206	7139	0	9202	47889	-49952	58254	5622	1311
2004	O-A	11	1893	638	2531	0	773	3304	817	2176	2993	247	3240	6297	903	247	7447	511	7958	0	6522	9726	-8290	35529	6020	1426
2004	O-A	12	2393	624	3017	0	1277	4293	1060	2154	3213	268	3481	7507	1760	268	9535	740	10275	0	6517	11559	-7801	27642	7625	1910
2004	O-A	1	2281	874	3155	0	561	3715	1707	2028	3735	452	4187	7450	1169	452	9072	607	9679	0	2600	7715	-636	21784	6879	2192
2004	O-A	2	2632	1796	4427	0	1014	5442	5216	2276	7492	940	8432	12933	883	940	14756	591	15348	0	2514	7629	5205	26632	8437	6320
2004	O-A	3	2301	2068	4369	2815	2387	9571	6183	3634	9817	1791	11608	16573	401	4606	21580	285	21865	0	3887	-4540	22518	35246	11668	9912
2004	O-A	4	1886	1388	3274	235	946	4454	4480	3004	7484	1352	8836	11704	1419	1586	14709	269	14978	0	9482	14617	-9121	49235	10027	4682
2004	**O-A Total**		**15146**	**7928**	**23074**	**3049**	**7390**	**33513**	**20068**	**17499**	**37567**	**5341**	**42907**	**68031**	**7611**	**8390**	**84032**	**3209**	**87241**	**0**	**40724**	**94594**	**-48077**	**254320**	**56279**	**27753**
2004	M-S	5	1343	1289	2632	4692	934	8257	2200	2838	5037	794	5831	8603	2345	5486	16433	417	16850	0	6885	6057	3908	41743	8937	7496
2004	M-S	6	912	1053	1964	0	588	2552	951	2009	2959	814	3773	5511	2466	814	8791	274	9066	0	11293	-43204	40977	58923	6506	2285
2004	M-S	7	1023	753	1776	0	982	2758	506	2537	3042	706	3748	5801	1475	706	7982	251	8233	0	17654	-10359	938	97558	5056	2926
2004	M-S	8	1136	940	2076	0	1431	3507	453	2514	2967	486	3453	6474	743	486	7703	252	7955	0	23458	4898	-20401	80292	4410	3293
2004	M-S	9	1518	911	2429	0	535	2964	432	2311	2742	363	3105	5707	783	363	6852	207	7059	0	17559	12993	-23492	53645	4845	2008
2004	**M-S Total**		**5932**	**4946**	**10878**	**4692**	**4469**	**20038**	**4541**	**12208**	**16749**	**3163**	**19911**	**32095**	**7812**	**7854**	**47761**	**1401**	**49163**	**0**	**76848**	**-29615**	**1930**	**332160**	**29754**	**18007**
2004 Total			**21078**	**12874**	**33952**	**7741**	**11859**	**53552**	**24609**	**29706**	**54315**	**8503**	**62818**	**100126**	**15423**	**16244**	**131793**	**4611**	**136404**	**0**	**117572**	**64979**	**-46147**	**586480**	**86033**	**45760**
2005	O-A	10	1736	876	2612	0	390	3003	656	2318	2974	287	3261	5976	0	287	6264	455	6718	0	6414	-3858	4162	44790	4974	1290
2005	O-A	11	1698	659	2357	0	355	2713	754	2266	3020	245	3265	5733	620	245	6597	300	6897	0	6442	18792	-18337	40760	5519	1079
2005	O-A	12	2872	1591	4462	0	2066	6528	3097	4429	7527	265	7792	14055	488	265	14807	569	15376	0	2314	10975	2087	35361	7128	7679
2005	O-A	1	2142	1079	3221	0	555	3776	1611	2252	3862	449	4311	7638	30	449	8118	309	8427	0	2319	7208	-1100	32329	5623	2494
2005	O-A	2	1714	791	2506	0	439	2945	1934	2282	4216	903	5119	7161	0	903	8064	230	8294	0	1037	4053	3203	30634	5254	2810
2005	O-A	3	1915	2384	4299	0	1328	5627	3036	3095	6131	1766	7898	11759	0	1766	13525	276	13801	0	1281	5500	7020	36709	7508	6017
2005	O-A	4	1708	1641	3348	0	1532	4880	2655	2483	5138	1326	6464	10019	0	1326	11344	484	11828	0	5216	-8810	15421	49834	6984	4360
2005	**O-A Total**		**13785**	**9020**	**22806**	**0**	**6666**	**29472**	**13743**	**19126**	**32869**	**5241**	**38109**	**62340**	**1138**	**5241**	**68719**	**2622**	**71341**	**0**	**25024**	**33861**	**12456**	**270417**	**42990**	**25728**
2005	M-S	5	1972	1158	3131	0	1009	4140	12465	1190	13655	784	14439	17794	3363	784	21942	610	22552	0	9874	17031	-4353	49896	14749	7193
2005	M-S	6	1008	989	1997	5864	652	8513	3418	1973	5392	813	6205	8041	1433	6677	16151	248	16400	0	11691	-31001	35710	66569	7636	8515
2005	M-S	7	681	877	1558	7272	1177	10007	1132	1929	3062	706	3768	5797	1448	7978	15223	208	15430	0	22790	-73332	65972	129829	5754	9469
2005	M-S	8	785	711	1496	3988	516	5999	731	2043	2774	486	3260	4785	799	4474	10058	205	10263	0	21692	41783	-53212	112988	4351	5707
2005	M-S	9	1188	1102	2290	0	261	2551	604	2102	2706	363	3069	5256	607	363	6226	242	6468	0	23562	23915	-41008	80967	4254	1972
2005	**M-S Total**		**5635**	**4837**	**10471**	**17124**	**3614**	**31210**	**18350**	**9237**	**27587**	**3153**	**30740**	**41673**	**7650**	**20277**	**69600**	**1514**	**71114**	**0**	**89608**	**-21604**	**3109**	**440248**	**36744**	**32856**
2005 Total			**19420**	**13857**	**33277**	**17124**	**10280**	**60681**	**32093**	**28363**	**60456**	**8394**	**68850**	**104013**	**8788**	**25518**	**138319**	**4136**	**142455**	**0**	**114633**	**12257**	**15566**	**710665**	**79734**	**58585**
2006	O-A	10	1658	747	2405	0	355	2760	890	2358	3248	287	3535	6009	942	287	7238	255	7493	0	13204	6629	-12340	54100	5460	1778
2006	O-A	11	2281	861	3142	0	1437	4579	2162	2110	4272	245	4517	8851	1384	245	10480	984	11464	0	4904	22790	-16229	36919	6765	3715
2006	O-A	12	2598	570	3168	0	1563	4730	6460	2287	8747	265	9013	13478	1096	265	14839	1301	16139	0	3370	7633	5136	32298	9591	5247
2006	O-A	1	2573	1831	4404	0	2355	6759	12783	3587	16370	457	16827	23129	3346	457	26933	870	27803	0	11125	14339	2339	37486	17091	9841
2006	O-A	2	1907	1838	3745	0	1860	5604	6307	2984	9291	936	10227	14895	1578	936	17410	405	17815	0	7875	7293	2646	40248	11199	6211
2006	O-A	3	2223	1719	3942	0	2479	6421	7832	4979	12811	1866	14677	19232	405	1866	21503	363	21866	0	7863	10402	3601	43081	12055	9448
2006	O-A	4	2502	3001	5502	0	3553	9055	16192	6123	22315	1453	23768	31370	2695	1453	35519	351	35870	0	15315	19902	652	46154	22551	12967
2006	**O-A Total**		**15741**	**10567**	**26308**	**0**	**13601**	**39909**	**52625**	**24429**	**77054**	**5510**	**82565**	**116964**	**11447**	**5510**	**133921**	**4529**	**138450**	**0**	**63656**	**88988**	**-14195**	**290286**	**84712**	**49208**
2006	M-S	5	1672	2781	4453	0	2656	7109	17111	6810	23921	906	24827	31029	3104	906	35040	271	35311	0	13226	18272	3812	45158	20519	14520
2006	M-S	6	2100	3129	5229	8723	5250	19202	3877	3594	7472	948	8420	17951	2225	9671	29846	268	30115	0	15453	-13083	27745	56070	11428	18419
2006	M-S	7	1855	1057	2912	5769	1387	10069	1035	2596	3631	829	4460	7930	1537	6598	16066	205	16271	0	34929	-65230	46572	117865	7374	8692
2006	M-S	8	1508	595	2103	0	1379	3482	534	2120	2654	573	3226	6136	1005	573	7713	228	7941	0	43053	-16089	-19023	109070	5370	2343
2006	M-S	9	1766	735	2501	0	958	3460	630	2273	2904	429	3333	6363	661	429	7453	203	7657	0	28681	-13616	-7408	95864	5261	2192
2006	**M-S Total**		**8902**	**8296**	**17199**	**14492**	**11630**	**43321**	**23187**	**17393**	**40580**	**3685**	**44265**	**69409**	**8532**	**18177**	**96117**	**1176**	**97294**	**0**	**135343**	**-89746**	**51697**	**424028**	**49951**	**46166**
2006 Total			**24643**	**18863**	**43506**	**14492**	**25231**	**83230**	**75813**	**41822**	**117635**	**9195**	**126829**	**186372**	**19979**	**23687**	**230038**	**5705**	**235744**	**0**	**198999**	**-758**	**37503**	**714314**	**134664**	**95374**
2007	O-A	10	2210	693	2903	0	606	3509	1016	2425	3441	340	3781	6950	944	340	8234	275	8509	0	15940	9960	-17391	84384	6436	1799
2007	O-A	11	2614	951	3565	0	1942	5507	1385	2188	3573	290	3863	9080	1099	290	10469	491	10960	0	10165	-471	1266	79980	7720	2749
2007	O-A	12	2574	1063	3637	0	2458	6096	2021	2322	4343	314	4657	10438	600	314	11352	783	12135	0	8498	-408	4045	82670	8283	3070
2007	O-A	1	2327	814	3141	0	287	3428	2176	2448	4624	511	5135	8053	1433	511	9996	319	10314	0	6118	11114	-6918	82758	7514	2481
2007	O-A	2	2114	1361	3474	0	1028	4503	2980	1951	4931	1003	5935	9434	582	1003	11019	487	11506	0	4778	12320	-5592	74868	7993	3027
2007	O-A	3	2420	2967	5386	0	3290	8676	6608	3804	10412	1965	12377	19088	1531	1965	22585	272	22857	0	10358	25026	-12528	66514	13836	8749
2007	O-A	4	1846	5563	7408	0	3364	10772	3990	3524	7514	1457	8971	18286	637	1457	20380	369	20749	0	7607	23457	-10314	52389	10180	10201
2007	**O-A Total**		**16104**	**13412**	**29515**	**0**	**12977**	**42492**	**20176**	**18661**	**38837**	**5880**	**44717**	**81329**	**6827**	**5880**	**94036**	**2995**	**97031**	**0**	**63463**	**80998**	**-47431**	**523563**	**61961**	**32075**
2007	M-S	5	1354	3082	4436	948	1663	7047	3154	3046	6200	822	7022	12298	3239	1770	17308	268	17576	0	18941	-31211	29847	63077	10311	6997
2007	M-S	6	998	905	1903	8533	521	10956	906	2380	3286	829	4115	5709	2793	9361	17864	248	18112	0	50699	-85691	53104	91497	8248	9616
2007	M-S	7	1220	1106	2327	1976	394	4696	476	2410	2886	716	3602	5606	1779	2692	10077	280	10357	0	50206	-109928	70079	176682	5988	4089
2007	M-S	8	977	1068	2045	0	1075	3121	370	2375	2745	492	3237	5866	474	492	6832	273	7105	0	36205	69479	-98580	147176	4424	2408
2007	M-S	9	1392	1067	2459	0	1120	3579	388	2359	2747	367	3115	6327	42	367	6736	228	6964	0	22431	23517	-38984	77180	4473	2263
2007	**M-S Total**		**5940**	**7229**	**13170**	**11456**	**4773**	**29399**	**5295**	**12569**	**17864**	**3227**	**21090**	**35806**	**8327**	**14683**	**58816**	**1297**	**60113**	**0**	**178482**	**-133835**	**15466**	**555611**	**33444**	**25373**
2007 Total			**22044**	**20641**	**42685**	**11456**	**17749**	**71891**	**25470**	**31230**	**56700**	**9107**	**65807**	**117135**	**15155**	**20563**	**152852**	**4292**	**157144**	**0**	**241946**	**-52837**	**-31965**	**1079174**	**95404**	**57448**

Mass Balances by Month, Season, & Water Year **Variable: Sum of TP_kg**

Water Yr	Season	Month	Wood_Weed	Wood Dike - Weed	Wood_Dike	Agency Lake Ranch	7mile_Dike	Total Agency Inflow	Sprague	Williamson-Sprague	Williamson Mouth	Pumped to Klamath L	Total Klamath Inflow	Total Tributaries	Ungauged Inflows	Total Pumped to Lake	Total External Inflows	Precipitation	Total Inflow + Precip	Evaporation	Lake Outflow	Retention	Storage Increase	Lake Mean Storage	Natural-Background	Anthropogenic
2008	**O-A**	10	1818	1262	3080	0	893	3973	767	2317	3084	239	3323	7057	1095	239	8391	492	8882	0	8606	18763	-18488	56533	6901	1490
2008	**O-A**	11	2113	1234	3347	0	1356	4703	1032	2293	3325	203	3528	8028	86	203	8317	433	8750	0	6475	9463	-7187	42139	6032	2285
2008	**O-A**	12	2001	770	2771	0	692	3463	1119	2220	3340	220	3560	6802	407	220	7429	677	8106	0	7257	4818	-3968	35877	6393	1036
2008	**O-A**	1	2170	638	2808	0	684	3492	1505	2570	4075	372	4447	7567	595	372	8535	846	9381	0	4987	2563	1831	36242	6314	2221
2008	**O-A**	2	2171	1019	3190	0	570	3760	1589	2653	4243	775	5018	8002	708	775	9485	302	9787	0	4817	-9097	14067	47696	6297	3189
2008	**O-A**	3	2594	1648	4241	0	1058	5299	8085	3726	11811	1463	13274	17110	978	1463	19551	315	19866	0	3525	12722	3618	55701	10253	9298
2008	**O-A**	4	2469	1611	4079	1086	3761	8926	6715	4193	10908	1103	12011	18749	919	2188	21856	222	22078	0	11248	17438	-6607	49484	13733	8124
2008	**O-A Total**		**15335**	**8180**	**23515**	**1086**	**9014**	**33616**	**20812**	**19973**	**40786**	**4375**	**45161**	**73315**	**4788**	**5461**	**83564**	**3286**	**86851**	**0**	**46914**	**56670**	**-16734**	**323672**	**55923**	**27641**
2008	**M-S**	5	1739	3423	5162	0	1568	6730	6088	3688	9776	655	10432	16506	0	655	17162	577	17738	0	8408	4560	4771	48049	11305	5856
2008	**M-S**	6	1246	1746	2993	4522	1013	8528	3921	2576	6497	682	7180	10504	2298	5204	18006	228	18234	0	12837	-36401	41798	65374	11004	7002
2008	**M-S**	7	1125	1303	2428	2186	171	4785	763	2208	2971	594	3565	5571	1987	2779	10338	211	10549	0	34611	-53790	29729	115266	6575	3763
2008	**M-S**	8	1157	900	2057	0	109	2166	372	2392	2765	409	3174	4931	1536	409	6876	266	7142	0	33675	-19963	-6570	130255	5379	1498
2008	**M-S**	9	1575	537	2112	0	616	2728	365	2108	2473	306	2778	5200	866	306	6372	196	6568	0	30351	13860	-37643	94348	5066	1306
2008	**M-S Total**		**6843**	**7909**	**14752**	**6708**	**3478**	**24937**	**11509**	**12973**	**24482**	**2646**	**27128**	**42712**	**6688**	**9354**	**58753**	**1478**	**60232**	**0**	**119882**	**-91734**	**32084**	**453292**	**39328**	**19425**
2008 Total			**22178**	**16089**	**38267**	**7793**	**12492**	**58552**	**32322**	**32946**	**65268**	**7021**	**72289**	**116027**	**11476**	**14814**	**142317**	**4765**	**147082**	**0**	**166797**	**-35064**	**15350**	**776964**	**95251**	**47066**
2009	**O-A**	10	1906	816	2722	0	612	3334	691	2154	2846	242	3087	6180	322	242	6744	342	7085	0	13846	14745	-21506	69662	5596	1148
2009	**O-A**	11	1897	713	2610	0	1187	3797	637	2032	2669	206	2875	6466	1108	206	7780	480	8260	0	7888	15663	-15291	53621	6982	799
2009	**O-A**	12	2009	1173	3182	0	900	4082	931	2314	3245	223	3468	7327	326	223	7875	659	8534	0	6926	9348	-7740	35366	6234	1641
2009	**O-A**	1	2405	1338	3742	0	1018	4760	1086	2879	3966	377	4343	8726	1474	377	10578	368	10946	0	5819	3383	1744	40333	7895	2682
2009	**O-A**	2	1911	1155	3066	0	586	3651	1109	2580	3689	760	4449	7340	0	760	8100	399	8499	0	3679	6251	-1430	38582	5865	2235
2009	**O-A**	3	2263	2182	4445	1082	3110	8637	2948	3589	6537	1494	8031	14091	0	2576	16667	466	17134	0	5460	2481	9193	39175	10863	5804
2009	**O-A**	4	1753	1705	3459	752	2155	6366	3909	3475	7385	1120	8505	12998	0	1872	14871	274	15145	0	6016	14499	-5371	48542	9162	5709
2009	**O-A Total**		**14144**	**9082**	**23226**	**1834**	**9567**	**34627**	**11313**	**19023**	**30336**	**4421**	**34758**	**63129**	**3230**	**6256**	**72615**	**2989**	**75604**	**0**	**49634**	**66370**	**-40401**	**325281**	**52597**	**20018**
2009	**M-S**	5	1903	2774	4677	0	1877	6554	4100	2848	6948	656	7604	13502	1243	656	15401	499	15901	0	5862	10297	-258	37556	10678	4724
2009	**M-S**	6	1375	1196	2571	0	597	3168	1810	2252	4062	671	4733	7230	1935	671	9836	437	10273	0	8456	-38317	40134	56929	7784	2052
2009	**M-S**	7	1113	1066	2179	0	336	2514	476	2395	2872	582	3453	5386	1884	582	7851	208	8058	0	19444	-16369	4983	86555	5853	1998
2009	**M-S**	8	1012	875	1886	0	742	2628	371	2251	2621	400	3022	5249	677	400	6327	257	6584	0	33628	-30618	3574	84099	4514	1813
2009	**M-S**	9	1181	1031	2212	0	1032	3244	456	2261	2717	299	3016	5961	816	299	7076	198	7274	0	26095	15299	-34121	80621	4963	2113
2009	**M-S Total**		**6583**	**6942**	**13525**	**0**	**4583**	**18108**	**7214**	**12006**	**19220**	**2608**	**21828**	**37328**	**6555**	**2608**	**46491**	**1599**	**48090**	**0**	**93486**	**-59708**	**14312**	**345761**	**33792**	**12699**
2009 Total			**20728**	**16024**	**36751**	**1834**	**14150**	**52736**	**18527**	**31029**	**49556**	**7029**	**56585**	**100458**	**9785**	**8863**	**119106**	**4588**	**123694**	**0**	**143120**	**6662**	**-26088**	**671042**	**86389**	**32717**
2010	**O-A**	10	1858	1239	3096	0	875	3971	691	2436	3127	236	3364	7098	671	236	8006	256	8262	0	6840	29327	-27904	33209	6226	1780
2010	**O-A**	11	2010	879	2890	0	735	3625	816	2206	3023	202	3224	6648	1013	202	7862	359	8221	0	7554	-13995	14662	31721	6568	1294
2010	**O-A**	12	2287	863	3150	0	1191	4342	1120	2205	3326	218	3544	7667	0	218	7886	543	8428	0	7749	18734	-18055	32948	5678	2208
2010	**O-A**	1	2594	995	3589	0	1017	4606	1334	2487	3820	369	4190	8427	475	369	9271	561	9833	0	5166	-941	5609	33998	6441	2831
2010	**O-A**	2	2010	1011	3022	0	1591	4613	1243	2625	3868	744	4612	8481	300	744	9525	375	9900	0	3487	1998	4415	29876	6316	3209
2010	**O-A**	3	2002	1272	3275	0	789	4064	1267	2977	4244	1460	5703	8308	1397	1460	11164	338	11502	0	5135	-1618	7985	35704	7780	3384
2010	**O-A**	4	1926	1652	3579	0	1584	5163	2059	2905	4963	1097	6060	10126	473	1097	11695	411	12107	0	5948	-9166	15325	50079	7509	4187
2010	**O-A Total**		**14688**	**7912**	**22600**	**0**	**7783**	**30383**	**8530**	**17841**	**26371**	**4326**	**30697**	**56755**	**4329**	**4326**	**65410**	**2843**	**68252**	**0**	**41879**	**24337**	**2036**	**247534**	**46518**	**18892**
2010	**M-S**	5	1165	1089	2254	0	1888	4141	4121	2541	6662	646	7307	10803	0	646	11448	334	11782	0	5850	29896	-23964	43305	7909	3539
2010	**M-S**	6	1390	1165	2555	0	1701	4256	3303	4703	8006	665	8670	12262	1058	665	13984	321	14305	0	3407	13081	-2183	30155	7963	6021
2010	**M-S**	7	942	663	1605	0	710	2315	729	2348	3077	577	3654	5391	1739	577	7708	223	7931	0	8674	-62638	61895	56121	5529	2179
2010	**M-S**	8	908	559	1467	0	546	2013	490	2071	2561	397	2958	4574	1198	397	6169	228	6396	0	19791	-12375	-1020	95610	4479	1689
2010	**M-S**	9	1199	903	2102	0	1237	3339	562	2142	2704	297	3000	6043	742	297	7081	300	7382	0	12476	18649	-23742	77160	5015	2066
2010	**M-S Total**		**5604**	**4379**	**9983**	**0**	**6081**	**16063**	**9204**	**13805**	**23009**	**2581**	**25590**	**39072**	**4737**	**2581**	**46390**	**1406**	**47796**	**0**	**50198**	**-13388**	**10986**	**302351**	**30896**	**15494**
2010 Total			**20292**	**12291**	**32583**	**0**	**13864**	**46447**	**17734**	**31646**	**49380**	**6907**	**56287**	**95827**	**9066**	**6907**	**111800**	**4249**	**116048**	**0**	**92077**	**10949**	**13022**	**549885**	**77414**	**34386**

Mass Balances by Month, Season, & Water Year **Variable: Sum of TP_FWM_ppb**

Water Yr	Season	Month	Wood_Weed	Wood Dike - Weed	Wood_Dike	Agency Lake Ranch	7mile_Dike	Total Agency Inflow	Sprague	Williamson-Sprague	Williamson Mouth	Pumped to Klamath L	Total Klamath Inflow	Total Tributaries	Ungauged Inflows	Total Pumped to Lake	Total External Inflows	Precipitation	Total Inflow + Precip	Evaporation	Lake Outflow	Retention	Storage Increase	Lake Mean Storage	Natural-Background	Anthropogenic
1992	**O-A**	10	85	160	99	272	134	111	46	151	106	549	117	106	65	429	107	72	105	0	280		4180	230	65	42
1992	**O-A**	11	86	123	90	272	110	99	49	107	81	549	90	87	65	429	90	33	81	0	184		-355	141	65	25
1992	**O-A**	12	84	162	95	272	88	96	43	96	71	549	80	81	65	429	86	40	81		116		-16	102	65	21
1992	**O-A**	1	92	233	113	272	91	111	59	110	87	549	102	96	65	429	101	53	98		111		-71	86	65	36
1992	**O-A**	2	83	237	107	272	100	116	70	100	85	549	116	94		429	116	47	110		94	2783	-68	70	65	51
1992	**O-A**	3	78	1385	113	272	105	134	70	114	93	549	142	100	65	429	136	101	135	0	60		158	60	65	71
1992	**O-A**	4	83	3672	115	272	120	136	83	122	101	549	141	107	65	429	121	43	114	0	80		-239	82	65	56
1992	**O-A Total**		**84**	**248**	**104**	**272**	**104**	**113**	**61**	**114**	**89**	**549**	**114**	**95**	**65**	**429**	**108**	**46**	**103**	**0**	**144**	**14762**	**-131**	**100**	**65**	**43**
1992	**M-S**	5	89	591	197	272	226	215	136	124	128	549	160	160	65	429	135	315	136	0	92		-213	97	65	70
1992	**M-S**	6	97	214	163	272	191	187	129	116	120	549	160	141	65	429	160	44	143	0	213		-479	215	65	95
1992	**M-S**	7	121	193	155	272	223	183	103	201	172	549	200	173	65	429	154	88	151	0	323		746	279	65	89
1992	**M-S**	8	117	176	152	272	257	184	102	162	148	549	172	157	65	429	142	283	144	0	119		224	136	65	77
1992	**M-S**	9	109	155	125	272	170	141	69	128	110	549	126	121	65	429	126	79	124	0	138		1026	146	65	61
1992	**M-S Total**		**106**	**223**	**155**	**272**	**210**	**181**	**107**	**146**	**135**	**549**	**163**	**150**	**65**	**429**	**142**	**82**	**140**	**0**	**173**		**46**	**173**	**65**	**77**
1992 Total			**89**	**234**	**118**	**272**	**138**	**133**	**71**	**126**	**103**	**549**	**129**	**112**	**65**	**429**	**120**	**54**	**115**	**0**	**161**	**10270**	**849**	**128**	**65**	**55**
1993	**O-A**	10	99	119	104	272	98	107	63	116	95	549	105	98	65	429	102	35	91	0	100		-639	103	65	37
1993	**O-A**	11	97	254	122	272	119	124	56	119	90	549	98	104	65	429	102	34	93	0	77		65	82	65	37
1993	**O-A**	12	90	297	100	272	108	106	63	104	83	549	92	91	65	429	93	27	74		55		134	89	65	28
1993	**O-A**	1	93	183	106	272	124	116	60	114	82	549	97	92	65	429	95	28	80		66		127	96	65	30
1993	**O-A**	2	96	521	139	272	128	151	70	106	86	549	114	102	65	429	116	32	101		59		116	99	65	51
1993	**O-A**	3	124	357	182	272	220	200	151	137	149	549	159	157	65	429	150	31	143	0	60		31	92	65	85
1993	**O-A**	4	128	359	219	272	155	214	102	104	103	549	112	122	65	429	117	37	114	0	83		-237	78	65	52
1993	**O-A Total**		**106**	**309**	**150**	**272**	**145**	**155**	**115**	**112**	**114**	**549**	**125**	**123**	**65**	**429**	**121**	**31**	**111**	**0**	**74**		**43**	**90**	**65**	**56**
1993	**M-S**	5	111	519	244	272	224	240	83	101	86	549	94	116	65	429	112	33	107	0	60		-395	65	65	47
1993	**M-S**	6	100	339	163	272	188	173	55	84	62	549	75	88	65	429	91	45	89	0	61		-808	87	65	26
1993	**M-S**	7	95	324	146	272	220	172	55	113	85	549	111	108	65	429	107	567	108	0	130		-126	160	65	42
1993	**M-S**	8	92	189	108	272	274	171	41	112	82	549	103	111	65	429	110	50	105	0	150		349	166	65	45
1993	**M-S**	9	85	356	102	272	123	114	35	111	79	549	95	88	65	429	88	208	90	0	93		407	110	65	23
1993	**M-S Total**		**98**	**397**	**167**	**272**	**217**	**184**	**67**	**103**	**78**	**549**	**92**	**104**	**65**	**429**	**102**	**50**	**100**	**0**	**93**		**53**	**114**	**65**	**37**
1993 Total			**103**	**342**	**156**	**272**	**170**	**166**	**98**	**109**	**101**	**549**	**113**	**116**	**65**	**429**	**114**	**35**	**107**	**0**	**84**		**25**	**102**	**65**	**49**
1994	**O-A**	10	82	474	94	272	88	96	41	101	71	549	82	81	65	429	82	44	80	0	57		-1965	57	65	17
1994	**O-A**	11	91	262	102	272	86	102	50	107	79	549	88	87	65	429	91	74	90	0	60		1601	57	65	26
1994	**O-A**	12	109	284	122	272	95	116	71	121	95	549	103	104	65	429	107	36	99		79		9	59	65	42
1994	**O-A**	1	132	354	150	272	156	155	109	158	133	549	147	141	65	429	133	56	129		67		33	56	65	68
1994	**O-A**	2	84	227	98	272	101	112	64	101	82	549	116	88	65	429	107	35	98		47		36	54	65	42
1994	**O-A**	3	81	219	104	272	106	124	76	101	88	549	132	94	65	429	120	182	121	0	44		6	51	65	55
1994	**O-A**	4	83	393	155	272	111	168	70	105	87	549	123	109	65	429	116	70	114	0	55		-1247	57	65	51
1994	**O-A Total**		**96**	**304**	**118**	**272**	**105**	**124**	**70**	**113**	**91**	**549**	**114**	**101**	**65**	**429**	**109**	**49**	**105**	**0**	**61**		**11**	**56**	**65**	**44**
1994	**M-S**	5	81	230	118	272	133	135	67	112	86	549	113	95	65	429	97	38	91	0	43		-224	55	65	32
1994	**M-S**	6	79	170	119	272	149	145	56	97	78	549	117	93	65	429	96	112	96	0	105		-567	112	65	31
1994	**M-S**	7	80	242	118	272	210	164	78	79	79	549	119	99	65	429	103	294	105	0	157		111	206	65	38
1994	**M-S**	8	95	173	121	272	180	153	73	109	99	549	127	117	65	429	107		110	0	137		420	153	65	42
1994	**M-S**	9	89	154	115	272	117	124	47	89	75	549	94	91	65	429	89	64	88	0	123		11	120	65	24
1994	**M-S Total**		**84**	**188**	**118**	**272**	**155**	**142**	**63**	**97**	**83**	**549**	**113**	**98**	**65**	**429**	**98**	**71**	**97**	**0**	**119**		**21**	**122**	**65**	**33**
1994 Total			**94**	**252**	**118**	**272**	**120**	**128**	**68**	**108**	**88**	**549**	**114**	**100**	**65**	**429**	**105**	**55**	**102**	**0**	**93**		**32**	**81**	**65**	**40**
1995	**O-A**	10	81	146	99	272	93	101	48	89	72	549	84	84	65	429	86	85	86	0	107		-2258	90	65	21
1995	**O-A**	11	69	133	86	272	79	86	42	84	66	549	76	74	65	429	78	29	68	0	100		163	98	65	13
1995	**O-A**	12	80	127	96	272	101	100	46	89	69	549	79	81	65	429	85	40	80		93		116	91	65	20
1995	**O-A**	1	101	339	129	272	106	132	163	118	149	549	157	142	65	429	127	27	106		77		110	95	65	62
1995	**O-A**	2	97	247	113	272	105	124	136	-2	105	549	118	106	65	429	109	69	108		77		-71	94	65	44
1995	**O-A**	3	84	188	108	272	96	122	95	161	107	549	123	107	65	429	116	29	107	0	82		161	64	65	51
1995	**O-A**	4	79	229	113	272	97	126	79	127	89	549	102	93	65	429	102	30	94	0	72		-113	69	65	37
1995	**O-A Total**		**85**	**180**	**107**	**272**	**93**	**113**	**99**	**99**	**99**	**549**	**112**	**100**	**65**	**429**	**104**	**32**	**96**	**0**	**84**		**29**	**82**	**65**	**39**
1995	**M-S**	5	70	330	151	272	102	141	47	99	57	549	66	73	65	429	78	56	77	0	47		768	53	65	13
1995	**M-S**	6	80	710	315	272	212	275	45	103	61	549	76	121	65	429	121	36	114	0	110		111474	130	65	56
1995	**M-S**	7	80	1302	235	272	340	263	43	147	74	549	98	135	65	429	123	61	120	0	162		-177	201	65	58
1995	**M-S**	8	77	213	104	272	234	141	26	100	64	549	87	84	65	429	89		92	0	161		88	226	65	24
1995	**M-S**	9	84	161	97	272	122	110	26	106	74	549	91	85	65	429	86	2984	89	0	214		379	277	65	21
1995	**M-S Total**		**78**	**516**	**188**	**272**	**185**	**192**	**43**	**108**	**63**	**549**	**77**	**96**	**65**	**429**	**97**	**62**	**96**	**0**	**130**		**-190**	**167**	**65**	**32**
1995 Total			**83**	**304**	**135**	**272**	**132**	**142**	**78**	**103**	**85**	**549**	**99**	**99**	**65**	**429**	**101**	**37**	**96**	**0**	**111**		**317**	**125**	**65**	**36**

Mass Balances by Month, Season, & Water Year **Variable: Sum of TP_FWM_ppb**

Water Yr	Season	Month	Wood_Weed	Wood Dike - Weed	Wood_Dike	Agency Lake Ranch	7mile_Dike	Total Agency Inflow	Sprague	Williamson-Sprague	Williamson Mouth	Pumped to Klamath L	Total Klamath Inflow	Total Tributaries	Ungauged Inflows	Total Pumped to Lake	Total External Inflows	Precipitation	Total Inflow + Precip	Evaporation	Lake Outflow	Retention	Storage Increase	Lake Mean Storage	Natural-Background	Anthropogenic
1996	**O-A**	10	70	133	82	272	68	83	37	97	69	549	79	73	65	429	77	304	79	0	147		1961	177	65	12
1996	**O-A**	11	76	103	84	272	116	94	51	113	83	549	92	87	65	429	90	42	85	0	119		-1344	118	65	25
1996	**O-A**	12	77	162	106	272	292	166	83	102	89	549	95	124	65	429	117	26	98		99		32	89	65	52
1996	**O-A**	1	90	394	129	272	344	216	129	104	122	549	129	154	65	429	135	25	114		80		-38	81	65	70
1996	**O-A**	2	90	327	133	272	123	134	114	267	135	549	141	134	65	429	125	30	120		73		0	73	65	60
1996	**O-A**	3	68	1199	132	272	71	133	67	137	85	549	101	91	65	429	99	42	98	0	53		-836	57	65	34
1996	**O-A**	4	74	1756	170	272	88	152	57	154	80	549	94	95	65	429	103	41	101	0	21		-26	32	65	38
1996	**O-A Total**		**78**	**303**	**120**	**272**	**180**	**145**	**87**	**145**	**102**	**549**	**112**	**113**	**65**	**429**	**111**	**31**	**104**	**0**	**73**		**-267**	**82**	**65**	**46**
1996	**M-S**	5	75	905	138	272	125	138	61	153	80	549	88	94	65	429	96	33	92	0	37		3549	46	65	31
1996	**M-S**	6	80	189	111	272	128	125	56	241	117	549	135	116	65	429	118	42	113	0	56		-258	66	65	53
1996	**M-S**	7	84	160	104	272	311	168	40	234	124	549	151	142	65	429	139	196	140	0	107		-321	135	65	74
1996	**M-S**	8	81	198	106	272	258	153	37	102	78	549	102	110	65	429	109	164	110	0	166		66	202	65	44
1996	**M-S**	9	81	154	96	272	170	115	34	108	74	549	90	93	65	429	95	89	95	0	242		344	185	65	30
1996	**M-S Total**		**79**	**244**	**112**	**272**	**183**	**138**	**54**	**165**	**92**	**549**	**107**	**107**	**65**	**429**	**108**	**53**	**105**	**0**	**107**		**-131**	**115**	**65**	**43**
1996 Total			**79**	**280**	**117**	**272**	**181**	**143**	**78**	**152**	**99**	**549**	**111**	**111**	**65**	**429**	**110**	**35**	**105**	**0**	**87**		**498**	**96**	**65**	**45**
1997	**O-A**	10	74	292	97	272	99	101	37	104	71	549	81	84	65	429	85	44	82	0	176		18244	190	65	20
1997	**O-A**	11	75	314	95	272	99	99	54	86	68	549	76	82	65	429	82	32	76	0	123		-361	237	65	17
1997	**O-A**	12	110	947	169	272	158	168	93	139	111	549	115	131	65	429	111	25	97		94		-247	134	65	46
1997	**O-A**	1	77	229	108	272	97	108	124	68	110	549	112	109	65	429	103	29	99		66		-63	69	65	38
1997	**O-A**	2	78	300	123	272	96	123	74	72	73	549	84	84	65	429	90	45	89		75		-731	74	65	25
1997	**O-A**	3	71	196	102	272	87	114	62	88	72	549	95	80		429	101	45	98	0	53	2330	-301	47	65	36
1997	**O-A**	4	71	158	95	272	86	107	60	113	76	549	92	80	65	429	95	35	91	0	46		102	44	65	30
1997	**O-A Total**		**80**	**268**	**113**	**272**	**105**	**118**	**88**	**91**	**89**	**549**	**99**	**95**	**65**	**429**	**98**	**32**	**93**	**0**	**79**	**8552**	**-110**	**100**	**65**	**33**
1997	**M-S**	5	77	198	90	272	101	103	58	115	74	549	86	80	65	429	87	67	86	0	50		-1932	64	65	22
1997	**M-S**	6	80	154	93	272	120	111	49	149	75	549	100	87	65	429	100	43	96	0	216		-1349	150	65	35
1997	**M-S**	7	83	157	101	272	134	119	36	140	82	549	111	97	65	429	110	47	106	0	246		-326	242	65	45
1997	**M-S**	8	85	237	106	272	131	119	38	126	89	549	111	102	65	429	109	48	105	0	268		738	243	65	44
1997	**M-S**	9	83	154	94	272	105	101	36	126	80	549	95	89	65	429	97	61	95	0	293		1766	192	65	32
1997	**M-S Total**		**82**	**175**	**97**	**272**	**117**	**110**	**49**	**128**	**78**	**549**	**97**	**89**	**65**	**429**	**98**	**51**	**96**	**0**	**196**		**-218**	**172**	**65**	**33**
1997 Total			**81**	**238**	**107**	**272**	**111**	**115**	**79**	**100**	**86**	**549**	**98**	**93**	**65**	**429**	**98**	**36**	**94**	**0**	**119**	**-3018**	**151**	**131**	**65**	**33**
1998	**O-A**	10	74	126	81	272	83	85	41	91	66	522	76	75	65	409	80	40	76	0	162		-279	174	65	15
1998	**O-A**	11	72	120	77	272	75	79	46	86	65	522	73	71	65	409	74	33	69	0	128		-220	146	65	9
1998	**O-A**	12	74	133	79	272	75	81	46	81	65	522	73	71	65	409	75	46	73		121		-882	112	65	10
1998	**O-A**	1	81	279	97	272	98	102	91	192	127	522	133	118	65	409	110	27	97		77		-133	81	65	45
1998	**O-A**	2	81	340	101	272	100	109	82	181	130	522	140	121	65	409	115	35	111		61		-1150	59	65	50
1998	**O-A**	3	75	190	97	272	110	114	88	90	88	522	103	92	65	409	101	33	97	0	43		-65	43	65	36
1998	**O-A**	4	82	142	101	272	130	117	70	108	83	522	94	88	65	409	97	66	96	0	46		133	46	65	32
1998	**O-A Total**		**77**	**167**	**91**	**272**	**94**	**99**	**75**	**123**	**95**	**522**	**105**	**94**	**65**	**409**	**97**	**34**	**92**	**0**	**76**		**-227**	**89**	**65**	**32**
1998	**M-S**	5	84	167	103	272	136	117	79	141	91	522	96	94	65	409	96	29	91	0	50		665	58	65	31
1998	**M-S**	6	84	156	100	272	156	122	69	109	80	522	88	88	65	409	93	70	92	0	85		-2815	79	65	28
1998	**M-S**	7	89	203	105	272	193	136	52	116	80	522	97	97	65	409	100	164	101	0	160		-872	174	65	35
1998	**M-S**	8	81	187	102	272	198	132	35	111	79	522	97	98	65	409	99		101	0	192		430	212	65	34
1998	**M-S**	9	77	163	109	272	125	116	44	109	79	522	93	95	65	409	95	86	95	0	185		378	173	65	30
1998	**M-S Total**		**83**	**169**	**104**	**272**	**160**	**124**	**70**	**119**	**85**	**522**	**94**	**93**	**65**	**409**	**96**	**50**	**94**	**0**	**120**		**-174**	**133**	**65**	**31**
1998 Total			**79**	**168**	**96**	**272**	**112**	**108**	**73**	**122**	**90**	**522**	**100**	**94**	**65**	**409**	**97**	**38**	**93**	**0**	**97**		**559**	**108**	**65**	**32**
1999	**O-A**	10	71	237	103	272	79	100	42	106	74	491	82	85	65	389	85	126	86	0	136		-572	138	65	20
1999	**O-A**	11	72	376	101	272	76	96	54	103	76	491	81	82	65	389	80	27	71	0	110		22	116	65	15
1999	**O-A**	12	77	420	105	272	91	104	57	94	76	491	80	83	65	389	82	37	79		101		-372	101	65	17
1999	**O-A**	1	101	556	137	272	183	156	95	90	93	491	99	110	65	389	102	30	94		65		-709	86	65	37
1999	**O-A**	2	100	540	137	272	183	160	91	92	92	491	107	110	65	389	105	31	97		61		-262	71	65	40
1999	**O-A**	3	99	588	139	272	199	172	111	66	99	491	112	110	65	389	109	105	109	0	54		600	57	65	44
1999	**O-A**	4	90	563	129	272	176	157	98	101	99	491	107	106	65	389	105	86	105	0	45		87	47	65	40
1999	**O-A Total**		**86**	**417**	**120**	**272**	**142**	**135**	**91**	**92**	**91**	**491**	**100**	**100**	**65**	**389**	**98**	**35**	**94**	**0**	**70**		**-209**	**85**	**65**	**33**
1999	**M-S**	5	86	276	102	272	114	117	69	71	69	491	75	74	65	389	78	83	78	0	61		391	64	65	13
1999	**M-S**	6	88	234	102	272	161	133	73	62	69	491	78	78	65	389	83	1194	84	0	80		-1867	108	65	18
1999	**M-S**	7	88	386	115	272	225	156	54	99	78	491	95	101	65	389	100	1932	102	0	258		-449	212	65	35
1999	**M-S**	8	102	350	124	272	156	139	44	96	71	491	85	95	65	389	96	33	88	0	410		792	264	65	31
1999	**M-S**	9	80	285	97	272	128	110	40	102	77	491	88	88	65	389	87	5881	89	0	354		1033	197	65	22
1999	**M-S Total**		**89**	**307**	**108**	**272**	**155**	**131**	**65**	**83**	**71**	**491**	**80**	**83**	**65**	**389**	**86**	**71**	**86**	**0**	**202**		**-280**	**162**	**65**	**21**
1999 Total			**87**	**381**	**116**	**272**	**146**	**133**	**80**	**89**	**84**	**491**	**92**	**94**	**65**	**389**	**94**	**41**	**91**	**0**	**122**		**213**	**119**	**65**	**29**

Mass Balances by Month, Season, & Water Year **Variable: Sum of TP_FWM_ppb**

Water Yr	Season	Month	Wood_Weed	Wood Dike - Weed	Wood_Dike	Agency Lake Ranch	7mile_Dike	Total Agency Inflow	Sprague	Williamson-Sprague	Williamson Mouth	Pumped to Klamath L	Total Klamath Inflow	Total Tributaries	Ungauged Inflows	Total Pumped to Lake	Total External Inflows	Precipitation	Total Inflow + Precip	Evaporation	Lake Outflow	Retention	Storage Increase	Lake Mean Storage	Natural-Background	Anthropogenic
2000	**O-A**	10	75	162	82	1788	106	124	44	92	71	455	77	78	65	1101	91	54	89	0	189		-794	149	65	26
2000	**O-A**	11	78	202	88	1788	88	118	56	83	72	455	76	78	65	1101	88	42	85	0	121		-325	124	65	23
2000	**O-A**	12	77	234	89	1788	81	119	54	75	67	455	71	74	65	1101	84	58	83		101		-191	98	65	19
2000	**O-A**	1	79	366	102		94	100	78	69	73	455	79	82	65	455	79	29	73		58		-258	72	65	14
2000	**O-A**	2	76	278	92		97	93	98	54	76	455	86	80	65	455	82	31	77		49		-461	50	65	17
2000	**O-A**	3	82	298	99		111	101	74	68	72	455	86	78	65	455	84	54	84	0	53		-63	52	65	19
2000	**O-A**	4	82	506	115		128	118	72	88	77	455	87	85	65	455	89	34	85	0	45		99	47	65	24
2000	**O-A Total**		**78**	**291**	**95**	**1788**	**99**	**111**	**73**	**74**	**73**	**455**	**82**	**80**	**65**	**622**	**85**	**37**	**82**	**0**	**75**		**-195**	**80**	**65**	**20**
2000	**M-S**	5	78	210	90	1788	99	297	56	92	69	455	76	73	65	1284	105	97	105	0	71		-1911	72	65	40
2000	**M-S**	6	82	226	106	1788	139	728	59	105	83	455	97	90	65	1601	248	263	248	0	224		-1085	156	65	183
2000	**M-S**	7	88	187	120		212	123	36	106	81	455	97	96	65	455	94	81	94	0	306		-30	269	65	29
2000	**M-S**	8	91	138	108	1788	145	413	42	111	88	455	101	97	65	1498	204	575	206	0	200		539	250	65	139
2000	**M-S**	9	78	221	111	1788	131	269	48	108	79	455	88	95	65	1472	148	104	147	0	196		-269	184	65	83
2000	**M-S Total**		**83**	**189**	**107**	**1788**	**129**	**390**	**52**	**103**	**77**	**455**	**88**	**87**	**65**	**1447**	**156**	**125**	**156**	**0**	**195**		**-150**	**178**	**65**	**91**
2000 Total			**80**	**228**	**99**	**1788**	**105**	**213**	**66**	**83**	**74**	**455**	**84**	**82**	**65**	**1160**	**109**	**46**	**106**	**0**	**126**		**30**	**120**	**65**	**44**
2001	**O-A**	10	71	163	89	1788	91	180	48	93	72	413	77	79	65	1439	113	45	108	0	136		-1877	159	65	48
2001	**O-A**	11	73	131	87		84	86	49	83	68	413	71	75	65	413	75	64	75	0	125		-50	118	65	10
2001	**O-A**	12	83	128	92		83	90	52	82	69	413	73	77	65	413	78	47	76		107		-148	98	65	13
2001	**O-A**	1	79	278	105		99	104	55	87	73	413	80	85	65	413	86	78	85		69		-299	78	65	21
2001	**O-A**	2	81	345	105		107	106	60	84	74	413	87	85		413	94	52	91		59	6849	-32	60	65	29
2001	**O-A**	3	86	322	106		121	109	77	73	74	413	92	85	65	413	93	48	91	0	61		-8	60	65	28
2001	**O-A**	4	83	297	102		150	111	71	79	76	413	90	85	65	413	92	56	90	0	57		182	60	65	27
2001	**O-A Total**		**79**	**194**	**97**	**1788**	**103**	**113**	**60**	**82**	**72**	**413**	**83**	**82**	**65**	**607**	**90**	**53**	**88**	**0**	**90**	**66782**	**-131**	**85**	**65**	**25**
2001	**M-S**	5	85	513	140		191	148	69	98	86	413	96	101	65	413	93	66	92	0	40		-462	57	65	28
2001	**M-S**	6	86	174	118		258	131	54	99	83	413	100	98	65	413	93	96	93	0	119		-622	143	65	28
2001	**M-S**	7	88	182	122		305	136	48	107	86	413	102	101	65	413	93	89	93	0	263		-974	252	65	28
2001	**M-S**	8	93	185	126		268	136	67	106	92	413	104	107	65	413	93	1197	95	0	272		609	261	65	28
2001	**M-S**	9	91	150	106		189	111	52	105	85	413	94	93	65	413	88	55	85	0	184		3277	167	65	23
2001	**M-S Total**		**88**	**205**	**122**		**232**	**133**	**60**	**102**	**86**	**413**	**99**	**100**	**65**	**413**	**92**	**83**	**92**	**0**	**172**		**-60**	**168**	**65**	**27**
2001 Total			**81**	**198**	**104**	**1788**	**120**	**118**	**60**	**88**	**77**	**413**	**87**	**87**	**65**	**543**	**91**	**61**	**89**	**0**	**132**	**3864**	**25040**	**120**	**65**	**26**
2002	**O-A**	10	81	107	88		110	90	45	99	75	413	80	81	65	413	81	69	80	0	83		-17690	93	65	16
2002	**O-A**	11	80	147	91		94	92	45	98	73	413	77	80	65	413	78	30	69	0	57		4	65	65	13
2002	**O-A**	12	82	247	103		110	105	50	102	78	413	82	88	65	413	85	28	74		58		3	57	65	20
2002	**O-A**	1	88	340	135		153	138	92	114	103	413	106	113	65	413	109	34	102		43		-28	50	65	44
2002	**O-A**	2	120	114	119		172	127	87	119	105	413	115	113	65	413	115	37	108		44		27	44	65	50
2002	**O-A**	3	89	228	129		224	143	82	93	88	413	103	105	65	413	109	78	108	0	50		329	50	65	44
2002	**O-A**	4	80	248	117		267	137	82	78	81	413	90	94	65	413	96	41	93	0	46		-112	51	65	31
2002	**O-A Total**		**89**	**202**	**113**		**163**	**121**	**75**	**100**	**88**	**413**	**96**	**99**	**65**	**413**	**98**	**36**	**92**	**0**	**53**		**-75**	**56**	**65**	**33**
2002	**M-S**	5	81	168	103	1163	227	559	59	100	71	413	79	80	65	1071	173	195	174	0	49		-401	58	65	108
2002	**M-S**	6	90	140	104	1163	228	436	59	113	83	413	99	96	65	1013	170	60	165	0	87		-594	111	65	105
2002	**M-S**	7	94	133	107		335	183	59	114	93	413	109	129	65	413	108	3081	110	0	162		-43	212	65	43
2002	**M-S**	8	92	109	100		318	149	50	111	95	413	108	117	65	413	108	1110	111	0	169		375	215	65	43
2002	**M-S**	9	90	135	109		181	121	43	110	89	413	98	103	65	413	100	380	102	0	189		48	203	65	35
2002	**M-S Total**		**89**	**134**	**105**	**1163**	**273**	**317**	**57**	**109**	**82**	**413**	**94**	**101**	**65**	**966**	**141**	**164**	**142**	**0**	**123**		**-102**	**146**	**65**	**76**
2002 Total			**89**	**175**	**111**	**1163**	**202**	**187**	**69**	**103**	**86**	**413**	**95**	**99**	**65**	**799**	**113**	**44**	**109**	**0**	**88**		**-198**	**92**	**65**	**48**
2003	**O-A**	10	85	141	103		99	102	44	111	81	413	87	91	65	413	90	685	92	0	126		-2887	167	65	25
2003	**O-A**	11	88	104	92		98	94	53	106	81	413	86	87	65	413	87	36	80	0	103		29	141	65	22
2003	**O-A**	12	83	96	86		107	92	53	105	79	413	83	85	65	413	85	28	72		102		44	127	65	20
2003	**O-A**	1	90	161	110		155	125	83	103	92	413	96	106	65	413	108	31	97		77		46	113	65	43
2003	**O-A**	2	84	135	105		135	113	77	81	79	413	88	92		413	98	62	97		88	353	-3	100	65	33
2003	**O-A**	3	88	107	96		114	101	61	89	74	413	91	84		413	95	33	88	0	78	932	-66	88	65	30
2003	**O-A**	4	82	126	99		98	99	65	87	72	413	82	80	65	413	85	38	82	0	73		-1798	75	65	20
2003	**O-A Total**		**86**	**125**	**99**		**119**	**104**	**65**	**95**	**79**	**413**	**88**	**89**	**65**	**413**	**93**	**35**	**87**	**0**	**89**	**1515**	**-64**	**108**	**65**	**28**
2003	**M-S**	5	80	154	110		114	111	67	88	73	413	79	82	65	413	83	53	82	0	50		-117	57	65	18
2003	**M-S**	6	88	146	112	812	254	476	58	124	76	413	88	100	65	782	242	2486	244	0	91		-361	107	65	177
2003	**M-S**	7	89	117	99		290	154	55	105	87	413	104	113	65	413	104	96	104	0	198		-859	243	65	39
2003	**M-S**	8	88	112	100		265	134	69	97	90	413	103	110	65	413	110	108	110	0	272		586	313	65	45
2003	**M-S**	9	84	125	95		127	101	50	95	83	413	92	92	65	413	88	53	86	0	192		653	249	65	23
2003	**M-S Total**		**85**	**133**	**103**	**812**	**201**	**234**	**63**	**99**	**79**	**413**	**89**	**96**	**65**	**717**	**128**	**78**	**127**	**0**	**149**		**-114**	**176**	**65**	**63**
2003 Total			**86**	**128**	**100**	**812**	**141**	**148**	**65**	**96**	**79**	**413**	**88**	**91**	**65**	**631**	**106**	**42**	**101**	**0**	**125**	**-149**	**440**	**138**	**65**	**41**

Mass Balances by Month, Season, & Water Year **Variable: Sum of TP_FWM_ppb**

Water Yr	Season	Month	Wood_Weed	Wood Dike - Weed	Wood_Dike	Agency Lake Ranch	7mile_Dike	Total Agency Inflow	Sprague	Williamson-Sprague	Williamson Mouth	Pumped to Klamath L	Total Klamath Inflow	Total Tributaries	Ungauged Inflows	Total Pumped to Lake	Total External Inflows	Precipitation	Total Inflow + Precip	Evaporation	Lake Outflow	Retention	Storage Increase	Lake Mean Storage	Natural-Background	Anthropogenic
2004	**O-A**	10	80	128	88		95	89	37	102	74	413	80	80	65	413	80	870	82	0	103		2387	155	65	15
2004	**O-A**	11	80	113	87		105	90	42	99	72	413	77	81	65	413	80	34	74	0	75		-515	95	65	15
2004	**O-A**	12	85	104	88		133	98	47	94	70	413	75	84	65	413	81	29	72		67		-169	68	65	16
2004	**O-A**	1	86	152	97		127	101	62	91	75	413	82	86	65	413	86	32	77		45		-9	46	65	21
2004	**O-A**	2	104	321	143		123	139	116	76	100	413	109	114	65	413	114	31	103		49		53	49	65	49
2004	**O-A**	3	81	340	127	611	125	165	89	88	89	413	101	101	65	515	120	76	119	0	55		236	54	65	55
2004	**O-A**	4	84	241	116	611	87	113	81	88	83	413	95	91	65	434	95	82	95	0	70		2216	71	65	30
2004	**O-A Total**		**86**	**203**	**107**	**611**	**115**	**118**	**78**	**90**	**83**	**413**	**92**	**93**	**65**	**468**	**97**	**37**	**92**	**0**	**69**		**-161**	**72**	**65**	**32**
2004	**M-S**	5	79	257	120	611	133	225	56	121	80	413	90	94	65	571	120	42	114	0	54		-264	62	65	55
2004	**M-S**	6	76	156	105		167	115	50	107	78	413	95	92	65	413	88	77	87	0	90		-601	92	65	23
2004	**M-S**	7	89	142	106		225	130	55	110	94	413	110	109	65	413	103	116	103	0	150		-11	173	65	38
2004	**M-S**	8	99	133	112		226	141	62	109	98	413	109	117	65	413	114	111	113	0	197		229	170	65	49
2004	**M-S**	9	84	122	95		137	101	39	110	85	413	94	93	65	413	92	391	94	0	190		527	134	65	27
2004	**M-S Total**		**85**	**156**	**107**	**611**	**178**	**149**	**53**	**112**	**86**	**413**	**98**	**100**	**65**	**512**	**104**	**75**	**103**	**0**	**132**		**-6**	**121**	**65**	**39**
2004 Total			**86**	**182**	**107**	**611**	**133**	**128**	**72**	**98**	**84**	**413**	**94**	**95**	**65**	**488**	**100**	**44**	**96**	**0**	**100**		**8169**	**94**	**65**	**35**
2005	**O-A**	10	76	107	84		87	84	39	99	74	413	80	79		413	82	38	76	0	149	-1929	147	115	65	17
2005	**O-A**	11	75	104	81		77	81	45	93	73	413	78	77	65	413	78	61	77	0	148		-460	93	65	13
2005	**O-A**	12	103	223	127		159	136	113	170	141	413	144	138	65	413	135	33	121		68		22	70	65	70
2005	**O-A**	1	84	157	99		88	98	64	107	84	413	91	90	65	413	94	63	92		54		-23	56	65	29
2005	**O-A**	2	76	117	86		88	86	72	131	95	413	110	91		413	100	110	100		49	811	57	49	65	35
2005	**O-A**	3	74	365	132		94	121	83	111	95	413	114	106		413	117	83	116	0	53	423	107	53	65	52
2005	**O-A**	4	84	227	122		119	121	64	110	81	413	96	96		413	106	36	98	0	66	-801	1439	69	65	41
2005	**O-A Total**		**82**	**184**	**105**		**110**	**106**	**72**	**118**	**93**	**413**	**104**	**99**	**65**	**413**	**104**	**45**	**99**	**0**	**87**	**1092**	**36**	**68**	**65**	**39**
2005	**M-S**	5	86	366	120		146	125	105	56	97	413	102	103	65	413	97	32	92	0	47		-660	68	65	32
2005	**M-S**	6	83	159	109	553	147	255	89	90	90	413	100	97	65	531	137	107	137	0	93		-817	93	65	72
2005	**M-S**	7	87	166	119	553	255	325	73	106	91	413	106	113	65	537	172	2564	174	0	165		-658	202	65	107
2005	**M-S**	8	87	130	103	553	184	245	84	101	96	413	108	103	65	534	150		153	0	156		458	212	65	85
2005	**M-S**	9	87	129	103		145	107	53	106	86	413	95	95	65	413	95	112	96	0	210		586	188	65	30
2005	**M-S Total**		**86**	**169**	**111**	**553**	**176**	**214**	**95**	**91**	**94**	**413**	**102**	**102**	**65**	**526**	**123**	**64**	**121**	**0**	**123**		**-10**	**144**	**65**	**58**
2005 Total			**83**	**178**	**107**	**553**	**127**	**143**	**84**	**107**	**93**	**413**	**103**	**100**	**65**	**498**	**113**	**51**	**109**	**0**	**113**	**395**	**802**	**101**	**65**	**48**
2006	**O-A**	10	80	171	96		111	97	48	108	80	413	86	87	65	413	86	103	87	0	155		1016	136	65	21
2006	**O-A**	11	94	256	114		187	130	84	99	91	413	95	108	65	413	101	26	81	0	86		-204	84	65	36
2006	**O-A**	12	98	244	110		134	117	89	133	98	413	100	104	65	413	101	25	81		62		35	61	65	36
2006	**O-A**	1	94	390	138		141	139	100	107	101	413	103	110	65	413	102	28	94		40		124	59	65	37
2006	**O-A**	2	84	282	129		137	131	88	95	90	413	97	102	65	413	101	39	98		50		107	61	65	36
2006	**O-A**	3	89	259	125		142	131	94	118	102	413	113	110	65	413	116	49	113	0	55		99	63	65	51
2006	**O-A**	4	89	376	153		160	155	90	96	92	413	96	104	65	413	102	49	101	0	51		18	65	65	37
2006	**O-A Total**		**90**	**294**	**125**		**147**	**132**	**91**	**106**	**95**	**413**	**100**	**105**	**65**	**413**	**103**	**30**	**95**	**0**	**59**		**-43**	**72**	**65**	**38**
2006	**M-S**	5	86	452	174		274	201	97	128	104	413	107	117	65	413	111	88	111	0	47		2308	61	65	46
2006	**M-S**	6	96	270	156	799	575	358	75	107	87	413	96	140	65	732	170	82	168	0	58		-207	83	65	105
2006	**M-S**	7	95	194	117	536	203	237	44	118	80	413	94	103	65	517	142		143	0	217		-470	215	65	77
2006	**M-S**	8	91	137	100		179	122	32	104	71	413	84	93	65	413	93	200	95	0	332		218	239	65	28
2006	**M-S**	9	82	159	96		137	104	38	113	79	413	89	91	65	413	92	531	94	0	279		150	250	65	27
2006	**M-S Total**		**90**	**258**	**131**	**669**	**288**	**224**	**81**	**116**	**93**	**413**	**100**	**114**	**65**	**594**	**125**	**149**	**125**	**0**	**144**		**-140**	**151**	**65**	**60**
2006 Total			**90**	**277**	**127**	**669**	**190**	**168**	**88**	**110**	**94**	**413**	**100**	**108**	**65**	**539**	**111**	**36**	**106**	**0**	**99**		**-950**	**104**	**65**	**46**
2007	**O-A**	10	76	183	88		100	90	47	105	77	413	83	83	65	413	83	78	83	0	197		-2411	230	65	18
2007	**O-A**	11	83	153	94		126	104	53	99	74	413	79	90	65	413	88	35	83	0	152		21	199	65	23
2007	**O-A**	12	78	161	91		128	103	59	97	74	413	79	89	65	413	89	28	78		151		41	172	65	24
2007	**O-A**	1	85	98	88		94	88	75	99	86	413	94	87	65	413	86	59	85		91		-128	146	65	21
2007	**O-A**	2	84	134	98		122	103	74	70	73	413	85	85	65	413	90	34	84		76		-75	121	65	25
2007	**O-A**	3	86	238	132		291	167	78	79	79	413	90	103	65	413	106	87	106	0	70		-238	96	65	41
2007	**O-A**	4	81	595	231		457	274	63	86	72	413	84	128	65	413	130	46	126	0	64		-447	72	65	65
2007	**O-A Total**		**82**	**236**	**116**		**183**	**131**	**68**	**89**	**76**	**413**	**85**	**98**	**65**	**413**	**99**	**39**	**94**	**0**	**106**		**-128**	**136**	**65**	**34**
2007	**M-S**	5	76	412	175	620	349	222	66	112	83	413	91	117	65	503	109	92	109	0	109		-594	87	65	44
2007	**M-S**	6	76	127	94	465	207	267	43	119	80	413	96	90	65	460	141	107	140	0	265		-501	143	65	76
2007	**M-S**	7	91	132	107	380	229	164	44	102	84	413	100	97	65	388	109	78	108	0	344		-714	338	65	44
2007	**M-S**	8	78	110	92		174	110	48	101	88	413	100	98	65	413	100	83	100	0	272		955	347	65	35
2007	**M-S**	9	84	116	95		150	107	37	101	81	413	89	94	65	413	98	136	99	0	248		815	221	65	33
2007	**M-S Total**		**81**	**173**	**114**	**457**	**211**	**180**	**54**	**107**	**83**	**413**	**94**	**101**	**65**	**446**	**114**	**94**	**114**	**0**	**243**		**-38**	**209**	**65**	**49**
2007 Total			**81**	**209**	**115**	**457**	**190**	**147**	**64**	**95**	**78**	**413**	**88**	**99**	**65**	**436**	**104**	**48**	**101**	**0**	**181**		**914**	**166**	**65**	**39**

Mass Balances by Month, Season, & Water Year **Variable: Sum of TP_FWM_ppb**

Water Yr	Season	Month	Wood_Weed	Wood Dike - Weed	Wood_Dike	Agency Lake Ranch	7mile_Dike	Total Agency Inflow	Sprague	Williamson-Sprague	Williamson Mouth	Pumped to Klamath L	Total Klamath Inflow	Total Tributaries	Ungauged Inflows	Total Pumped to Lake	Total External Inflows	Precipitation	Total Inflow + Precip	Evaporation	Lake Outflow	Retention	Storage Increase	Lake Mean Storage	Natural-Background	Anthropogenic
2008	**O-A**	10	78	116	90		91	90	35	102	69	413	73	80	65	413	79	35	74	0	136		-415	161	65	14
2008	**O-A**	11	86	125	97		127	104	45	101	73	413	76	88	65	413	90	38	84	0	96		-241	110	65	25
2008	**O-A**	12	84	78	82		82	82	47	86	68	413	71	74	65	413	76	30	67		86		-108	85	65	11
2008	**O-A**	1	92	106	95		104	97	59	102	80	413	86	87	65	413	88	28	73		75		30	76	65	23
2008	**O-A**	2	95	135	105		118	107	68	104	87	413	99	95	65	413	98	58	96		88		296	90	65	33
2008	**O-A**	3	98	188	120		170	128	123	116	121	413	131	123	65	413	124	61	122	0	93		32	93	65	59
2008	**O-A**	4	91	180	113	150	198	143	83	81	83	413	89	100	65	221	103	211	104	0	73		-182	73	65	38
2008	**O-A Total**		**89**	**133**	**101**	**150**	**138**	**110**	**79**	**97**	**87**	**413**	**94**	**95**	**65**	**306**	**97**	**37**	**91**	**0**	**89**		**-46**	**94**	**65**	**32**
2008	**M-S**	5	92	318	174		156	169	66	90	74	413	78	96		413	99	33	93	0	56	760	5785	70	65	34
2008	**M-S**	6	76	330	138	252	131	180	64	111	77	413	83	92	65	266	106	169	107	0	77		-1036	94	65	41
2008	**M-S**	7	80	146	106	356	184	160	45	99	76	413	88	88	65	367	102	762	104	0	209		-255	193	65	37
2008	**M-S**	8	87	104	94		140	95	38	94	78	413	87	85	65	413	83	91	83	0	233		64	266	65	18
2008	**M-S**	9	97	68	87		113	92	31	94	72	413	80	81	65	413	82		84	0	267		560	236	65	17
2008	**M-S Total**		**87**	**190**	**122**	**279**	**139**	**147**	**60**	**97**	**75**	**413**	**82**	**91**	**65**	**307**	**97**	**67**	**96**	**0**	**162**	**-15289**	**-99**	**158**	**65**	**32**
2008 Total			**88**	**156**	**108**	**249**	**138**	**123**	**71**	**97**	**82**	**413**	**89**	**94**	**65**	**307**	**97**	**43**	**93**	**0**	**132**	**-5844**	**364**	**123**	**65**	**32**
2009	**O-A**	10	81	92	84		89	85	42	86	69	413	74	77	65	413	78	51	76	0	158		1918	188	65	13
2009	**O-A**	11	72	88	76		102	82	34	82	61	413	65	72	65	413	72	35	68	0	121		-306	135	65	7
2009	**O-A**	12	83	107	90		95	91	44	94	71	413	75	81	65	413	82	30	73		85		-216	83	65	17
2009	**O-A**	1	92	117	100		148	107	48	93	74	413	80	89	65	413	87	47	85		82		30	83	65	22
2009	**O-A**	2	84	121	95		100	96	51	90	73	413	85	83		413	90	39	85		74	2084	-30	74	65	25
2009	**O-A**	3	81	154	106	82	127	108	67	90	78	413	92	94		153	100	38	95	0	119	113	94	65	65	35
2009	**O-A**	4	82	145	104	100	188	122	88	83	86	413	96	99		183	106	77	105	0	72	967	-251	72	65	41
2009	**O-A Total**		**82**	**121**	**94**	**88**	**125**	**101**	**60**	**88**	**75**	**413**	**84**	**87**	**65**	**199**	**90**	**39**	**85**	**0**	**102**	**1659**	**-135**	**93**	**65**	**25**
2009	**M-S**	5	86	227	136		183	147	66	77	70	413	76	94	65	413	94	36	89	0	43		-63	55	65	29
2009	**M-S**	6	81	135	99		126	103	59	83	70	413	80	82	65	413	82	39	78	0	65		-1109	85	65	17
2009	**M-S**	7	85	133	103		185	110	42	94	78	413	91	90	65	413	87	1925	89	0	111		-37	152	65	22
2009	**M-S**	8	83	120	97		162	109	41	90	77	413	86	90	65	413	91	101	91	0	229		-32	187	65	26
2009	**M-S**	9	86	131	102		136	111	48	93	80	413	87	95	65	413	93	849	95	0	222		486	228	65	28
2009	**M-S Total**		**84**	**157**	**110**		**158**	**120**	**59**	**86**	**74**	**413**	**82**	**90**	**65**	**413**	**89**	**57**	**88**	**0**	**132**		**-41**	**127**	**65**	**24**
2009 Total			**83**	**135**	**100**	**88**	**134**	**106**	**60**	**87**	**74**	**413**	**83**	**88**	**65**	**235**	**90**	**44**	**86**	**0**	**120**	**167**	**521**	**108**	**65**	**25**
2010	**O-A**	10	83	125	96		92	95	44	89	72	413	77	84	65	413	84	88	84	0	80			104	65	19
2010	**O-A**	11	84	108	90		85	89	47	82	68	413	72	78	65	413	78	45	75	0	93		715	96	65	13
2010	**O-A**	12	90	124	98		126	104	54	91	74	413	78	88		413	90	33	81		98	3747	-945	94	65	25
2010	**O-A**	1	97	171	111		123	113	61	88	76	413	82	93	65	413	94	33	85		83		104	87	65	29
2010	**O-A**	2	89	136	101		129	109	57	98	80	413	92	93	65	413	98	41	93		67		81	67	65	33
2010	**O-A**	3	80	198	104		105	104	54	93	76	413	96	88	65	413	93	53	91	0	73		196	73	65	28
2010	**O-A**	4	84	212	117		145	124	65	90	77	413	91	96	65	413	101	41	96	0	93		367	94	65	36
2010	**O-A Total**		**87**	**151**	**102**		**117**	**106**	**56**	**90**	**75**	**413**	**85**	**89**	**65**	**413**	**91**	**41**	**87**	**0**	**85**	**4867**	**9**	**87**	**65**	**26**
2010	**M-S**	5	89	140	108		132	118	75	84	78	413	84	90		413	94	55	92	0	78	9965	-1044	76	65	29
2010	**M-S**	6	88	158	110		144	122	77	176	115	413	122	117	65	413	114	55	111	0	41		-380	51	65	49
2010	**M-S**	7	84	122	97		218	116	58	96	83	413	95	95	65	413	91	259	92	0	73		-720	105	65	26
2010	**M-S**	8	84	107	92		202	108	65	89	83	413	93	92	65	413	90	204	91	0	170		11	212	65	25
2010	**M-S**	9	84	150	104		133	113	49	89	76	413	83	93	65	413	92	60	90	0	147		864	199	65	27
2010	**M-S Total**		**86**	**138**	**103**		**147**	**116**	**71**	**107**	**89**	**413**	**97**	**99**	**65**	**413**	**98**	**74**	**97**	**0**	**105**	**-4463**	**-63**	**119**	**65**	**33**
2010 Total			**87**	**146**	**102**		**129**	**109**	**63**	**97**	**81**	**413**	**90**	**93**	**65**	**413**	**94**	**48**	**91**	**0**	**95**	**1369**	**227**	**102**	**65**	**29**

Mass Balances by Month, Season, & Water Year **Variable: Sum of TN_kg**

Water Yr	Season	Month	Wood_Weed	Wood Dike - Weed	Wood_Dike	Agency Lake Ranch	7mile_Dike	Total Agency Inflow	Sprague	Williamson-Sprague	Williamson Mouth	Pumped to Klamath L	Total Klamath Inflow	Total Tributaries	Ungauged Inflows	Total Pumped to Lake	Total External Inflows	Precipitation	Total Inflow + Precip	Evaporation	Lake Outflow	Retention	Storage Increase	Lake Mean Storage	Natural-Background	Anthropogenic
1992	O-A	10	2231	-804	1427	1112	2459	4998	10030	-4423	5607	2411	8018	9493	1096	3523	14112	1649	15761	0	211649	-145648	-50240	874499	7651	6461
1992	O-A	11	4816	-787	4029	948	4542	9519	9892	-1054	8838	2055	10893	17410	981	3002	21392	3106	24499	0	104901	288144	-368547	610450	8379	13013
1992	O-A	12	1522	61	1583	1026	3032	5641	3449	828	4277	2224	6501	8892	606	3250	12749	2527	15276	0	104930	-137375	47721	517873	8641	4108
1992	O-A	1	2035	191	2226	1736	1886	5848	1015	1157	2172	3764	5936	6283	985	5501	12769	2019	14788	0	104851	-121202	31139	560804	9013	3756
1992	O-A	2	2368	1848	4216	3623	3328	11167	4261	1207	5469	7853	13322	13013	0	11476	24489	2070	26559	0	45688	-46791	27663	586922	7813	16676
1992	O-A	3	1780	1806	3587	6871	1416	11874	4769	6778	11547	14895	26442	16550	350	21766	38665	1554	40220	0	11726	41692	-13199	514085	8556	30109
1992	O-A	4	1778	-743	1035	5175	2898	9107	4964	3554	8518	11217	19735	12450	2466	16392	31309	2345	33654	0	105643	-54003	-17986	638357	9677	21632
1992	O-A Total		16531	1572	18102	20490	19560	58153	38381	8047	46428	44420	90848	84090	6484	64910	155484	15273	170757	0	689388	-175183	-343448	4302990	59730	95754
1992	M-S	5	812	562	1374	3050	4287	8712	2523	1509	4031	6612	10644	9693	3572	9663	22927	1320	24247	0	120689	-519150	422708	621346	8820	14108
1992	M-S	6	1011	1943	2954	3133	7415	13501	3397	1141	4538	6791	11329	14906	486	9924	25315	2249	27564	0	325358	-601211	303417	1352288	4884	20432
1992	M-S	7	3650	2712	6362	2717	4143	13221	4481	1987	6468	5890	12358	16973	2138	8606	27718	1600	29317	0	263943	248037	-482663	1112739	7030	20687
1992	M-S	8	1080	3665	4745	1869	3594	10207	4338	-1457	2881	4052	6933	11219	1700	5921	18840	1264	20104	0	220235	115258	-315389	712318	5519	13321
1992	M-S	9	1459	6079	7538	1396	3660	12594	4174	-1950	2224	3026	5250	13422	522	4422	18367	1463	19829	0	90088	43471	-113730	426893	5790	12577
1992	M-S Total		8012	14960	22973	12165	23098	58236	18912	1230	20142	26371	46514	66213	8418	38536	113167	7894	121062	0	1020313	-713594	-185657	4225584	32043	81125
1992 Total			24543	16532	41075	32655	42658	116389	57293	9277	66570	70791	137361	150304	14901	103446	268652	23167	291818	0	1709700	-888777	-529105	8528573	91773	176879
1993	O-A	10	921	1544	2465	1104	1536	5106	3828	-1241	2587	2394	4981	6589	800	3498	10886	2782	13668	0	80053	-18062	-48323	336832	7242	3644
1993	O-A	11	1555	2159	3714	941	4629	9284	3912	1749	5661	2041	7702	14004	1667	2982	18653	2892	21545	0	51746	-149849	119648	402811	9276	9377
1993	O-A	12	1569	3165	4734	1019	2784	8537	4217	6893	11110	2209	13319	18628	1051	3228	22906	5428	28334	0	57400	-180347	151281	533389	8128	14779
1993	O-A	1	1796	4428	6224	1724	1239	9188	6801	2082	8883	3738	12621	16347	2006	5463	23816	4646	28462	0	95033	-126376	59804	649964	9067	14748
1993	O-A	2	1568	2793	4361	3475	449	8285	7830	1931	9760	7533	17293	14571	1320	11008	26899	3309	30208	0	47385	-56009	38832	683072	8165	18734
1993	O-A	3	4980	4523	9504	6862	6685	23051	150631	-1199	149431	14875	164306	165620	5161	21737	192518	3893	196411	0	190650	110574	-104814	663226	32714	159804
1993	O-A	4	3404	12990	16394	5307	4659	26361	75816	53735	129551	11505	141057	150605	6988	16812	174405	2769	177174	0	218969	163615	-205409	462796	32549	141857
1993	O-A Total		15794	31602	47396	20433	21983	89811	253035	63950	316984	44295	361279	386363	18992	64728	470083	25720	495803	0	741237	-256454	11019	3732090	107140	362942
1993	M-S	5	3026	10605	13631	3218	5708	22558	53043	12944	65987	6977	72964	85326	4771	10195	100293	3464	103757	0	123267	18305	-37816	367511	24802	75491
1993	M-S	6	3361	4653	8014	3400	4910	16325	30336	10774	41110	7371	48481	54035	4859	10771	69665	2261	71926	0	255163	-1534254	1351018	972323	18215	51450
1993	M-S	7	1173	1766	2938	2977	2933	8848	8611	-2692	5919	6453	12372	11790	3494	9429	24714	1283	25996	0	433202	144467	-551673	1422646	9577	15136
1993	M-S	8	1175	1727	2902	2056	5225	10183	2438	2257	4696	4457	9153	12823	2223	6513	21559	2117	23675	0	263182	-103961	-135545	969796	8153	13405
1993	M-S	9	1306	947	2253	1540	1453	5247	4556	3563	8119	3339	11458	11825	3168	4880	19873	1318	21192	0	185598	272956	-437362	875255	8915	10958
1993	M-S Total		10041	19699	29740	13192	20228	63160	98985	26846	125831	28597	154429	175799	18516	41789	236104	10443	246547	0	1260412	-1202487	188622	4607531	69662	166442
1993 Total			25834	51301	77135	33624	42211	152971	352020	90796	442816	72892	515708	562162	37508	106517	706187	36162	742349	0	2001649	-1458941	199641	8339622	176803	529384
1994	O-A	10	1776	293	2069	1221	1700	4991	3246	814	4060	2648	6708	7830	2778	3869	14477	2319	16796	0	89525	41956	-114685	488371	10933	3543
1994	O-A	11	1506	100	1606	1042	786	3434	1977	1348	3325	2260	5584	5717	850	3302	9869	1648	11517	0	83622	-21200	-50905	435806	8471	1398
1994	O-A	12	2607	2592	5198	1130	1617	7945	1898	887	2785	2450	5235	9600	442	3580	13622	2905	16527	0	102617	-64838	-21252	409657	9660	3962
1994	O-A	1	3256	1497	4754	1915	3077	9745	5229	1004	6234	4151	10385	14064	2142	6066	22272	1969	24240	0	52715	-24646	-3829	389545	10743	11529
1994	O-A	2	1309	822	2130	3857	313	6300	2307	2166	4472	8361	12833	6915	1250	12218	20383	2723	23106	0	30165	-10256	3197	392164	8496	11887
1994	O-A	3	2271	2417	4688	7481	1500	13669	6049	10270	16319	16218	32537	22507	1588	23699	47794	1395	49189	0	26278	-72305	95216	408172	12012	35782
1994	O-A	4	3863	2048	5912	5367	267	11545	6420	8750	15170	11636	26806	21348	3718	17003	42069	1703	43773	0	75097	106321	-137645	459833	12101	29969
1994	O-A Total		16588	9770	26357	22014	9259	57630	27125	25240	52365	47723	100088	87981	12767	69737	170486	14662	185147	0	460017	-44968	-229902	2983548	72415	98070
1994	M-S	5	1186	1475	2661	3101	29	5791	5526	1736	7261	6723	13984	9951	4215	9824	23990	2791	26782	0	52282	-223014	197514	363775	10286	13704
1994	M-S	6	919	1096	2015	3155	1834	7004	3851	-350	3501	6839	10340	7350	4529	9994	21873	1468	23341	0	298771	-1048646	773216	1113977	9186	12687
1994	M-S	7	685	1385	2070	2730	3438	8238	3900	228	4128	5917	10045	9636	2927	8647	21210	1318	22528	0	346889	172983	-497344	1006862	6676	14534
1994	M-S	8	2597	-358	2239	1876	5643	9758	3606	2686	6292	4068	10360	14174	2954	5944	23073	1171	24244	0	228405	223863	-428024	593834	7025	16048
1994	M-S	9	644	1265	1909	1400	3419	6729	3565	-20	3546	3036	6582	8874	3147	4436	16457	1497	17953	0	141550	-34689	-88907	329465	7803	8654
1994	M-S Total		6032	4863	10895	12263	14362	37520	20448	4280	24728	26583	51311	49985	17771	38846	106602	8245	114848	0	1067896	-909503	-43546	3407913	40975	65627
1994 Total			22620	14633	37253	34277	23621	95150	47573	29520	77093	74306	151399	137967	30538	108583	277088	22907	299995	0	1527914	-954471	-273448	6391461	113391	163697
1995	O-A	10	1521	683	2204	1107	3376	6688	2729	2641	5370	2400	7771	10951	1979	3508	16437	1334	17771	0	95054	-111333	34050	319735	8921	7516
1995	O-A	11	1113	243	1356	943	4284	6584	1986	2442	4428	2045	6473	10068	1463	2989	14520	3908	18428	0	65344	-171870	124954	383670	8963	5557
1995	O-A	12	1227	1528	2755	1021	1262	5038	3782	2170	5952	2214	8166	9969	1025	3235	14229	2455	16684	0	51007	-51229	16906	479255	8414	5815
1995	O-A	1	2993	2034	5027	1729	1652	8409	28133	4709	32842	3749	36591	39521	3511	5478	48510	5445	53955	0	29283	-51302	75974	516887	13015	35495
1995	O-A	2	5013	1617	6630	3497	3162	13289	42782	16444	59226	7582	66807	69018	3048	11079	83144	1600	84745	0	19443	4147	61155	603126	15250	67895
1995	O-A	3	4250	6136	10386	6914	6242	23542	72396	19601	91997	14989	106986	108625	2634	21903	133161	4455	137617	0	135893	150327	-148603	470839	22420	110742
1995	O-A	4	1968	4643	6611	5281	1550	13442	54885	38926	93811	11449	105261	101972	2533	16731	121236	4033	125268	0	138434	-70849	57683	521767	20605	100631
1995	O-A Total		18084	16884	34969	20494	21528	76991	206693	86934	293627	44427	338054	350124	16192	64921	431237	23231	454468	0	534457	-302109	222120	3295279	97587	333650
1995	M-S	5	2458	6958	9417	3175	6067	18659	46609	9942	56551	6882	63433	72035	5343	10057	87435	1982	89417	0	169538	-175971	95850	605633	24286	63149
1995	M-S	6	1757	9145	10902	3321	12559	26782	14421	6306	20727	7199	27926	44188	2709	10519	57417	2888	60305	0	283723	-1726046	1502629	1487341	14845	42571
1995	M-S	7	3623	2299	5922	2908	5317	14146	8645	1665	10310	6304	16614	21548	3655	9212	34416	1879	36294	0	417733	263507	-644946	1679045	10788	23628
1995	M-S	8	3542	-1084	2458	2009	2312	6780	4232	-366	3866	4356	8222	8636	2891	6365	17893	1233	19126	0	410639	-544462	152950	1514928	7948	9945
1995	M-S	9	755	2079	2834	1504	1636	5974	4410	829	5239	3260	8499	9709	2992	4764	17466	1196	18662	0	353794	206331	-541462	1424675	8433	9032
1995	M-S Total		12135	19397	31533	12917	27891	72341	78316	18377	96693	28001	124694	156117	17591	40918	214626	9178	223804	0	1635426	-1976642	565020	6711622	66300	148326
1995 Total			30220	36282	66501	33411	49419	149331	285009	105311	390320	72429	462748	506241	33783	105839	645863	32409	678272	0	2169883	-2278751	787140	10006901	163887	481976

Mass Balances by Month, Season, & Water Year **Variable: Sum of TN_kg**

Water Yr	Season	Month	Wood_Weed	Wood Dike - Weed	Wood_Dike	Agency Lake Ranch	7mile_Dike	Total Agency Inflow	Sprague	Williamson-Sprague	Williamson Mouth	Pumped to Klamath L	Total Klamath Inflow	Total Tributaries	Ungauged Inflows	Total Pumped to Lake	Total External Inflows	Precipitation	Total Inflow + Precip	Evaporation	Lake Outflow	Retention	Storage Increase	Lake Mean Storage	Natural-Background	Anthropogenic
1996	O-A	10	1011	1550	2561	1191	601	4353	3529	216	3745	2583	6328	6908	2135	3774	12817	1313	14130	0	244769	82760	-313399	974429	9678	3139
1996	O-A	11	959	1378	2337	1017	707	4061	2966	-785	2181	2204	4385	5225	1065	3221	9511	2359	11870	0	175394	-329810	166286	835167	9416	95
1996	O-A	12	2574	6218	8792	1106	4884	14782	17115	-6266	10850	2398	13248	24526	2963	3504	30992	6772	37764	0	165877	-267455	139343	1121913	16562	14430
1996	O-A	1	7667	994	8661	1891	9839	20391	33831	5374	39205	4099	43304	57705	4904	5990	68599	7083	75681	0	323552	-128771	-119099	1039921	19174	49425
1996	O-A	2	12166	2755	14921	4024	29572	48517	121229	-4572	116657	8723	125380	161149	7123	12748	181020	3722	184742	0	479638	-35660	-259236	876342	37332	143688
1996	O-A	3	5206	9096	14302	7953	5627	27881	66725	25148	91873	17240	109113	111801	5364	25193	142358	2476	144834	0	189670	297316	-342152	469424	28458	113900
1996	O-A	4	3624	7361	10985	6004	5241	22231	27842	47446	75288	13016	88305	91515	2773	19020	113309	2420	115728	0	117489	-203200	201440	513263	23289	90020
1996	O-A Total		33206	29352	62559	23186	56471	142216	273237	66562	339799	50264	390063	458829	26328	73450	558606	26145	584751	0	1696390	-584821	-526818	5830458	143908	414698
1996	M-S	5	2175	3586	5760	3541	8653	17955	31469	14103	45572	7677	53249	59986	4423	11218	75627	3341	78968	0	149436	48502	-118970	496201	26004	49623
1996	M-S	6	2509	1880	4389	3652	2189	10230	11388	4658	16046	7916	23962	22624	2725	11568	36917	2403	39320	0	149177	-543093	433237	647800	13291	23626
1996	M-S	7	1861	1125	2986	3154	6879	13019	5717	-330	5388	6836	12224	15253	2039	9990	27282	1380	28662	0	291900	-547634	284397	1018229	9685	17597
1996	M-S	8	2016	1683	3699	2168	5799	11665	3902	1636	5538	4699	10237	15035	2480	6867	24383	1407	25789	0	324919	126372	-425503	993093	8989	15393
1996	M-S	9	2114	3209	5324	1621	4243	11188	4668	3723	8390	3515	11905	17957	2054	5136	25146	1537	26684	0	442383	-566278	150580	791790	10081	15066
1996	M-S Total		10675	11483	22158	14135	27763	64056	57144	23790	80934	30643	111577	130855	13721	44779	189355	10068	199423	0	1357815	-1482132	323740	3947113	68050	121304
1996 Total			43882	40835	84716	37321	84234	206272	330380	90352	420733	80907	501640	589684	40049	118228	747961	36213	784174	0	3054205	-2066953	-203078	9777571	211959	536002
1997	O-A	10	2217	1320	3536	1284	1780	6600	4363	925	5288	2784	8072	10604	2368	4068	17039	2304	19344	0	268005	-538145	289484	1012495	11261	5778
1997	O-A	11	3784	500	4284	1097	4519	9899	5592	168	5760	2377	8137	14562	3228	3474	21264	3382	24646	0	148790	-15643	-108501	1105906	13706	7558
1997	O-A	12	14200	9471	23671	1193	14573	39437	25443	14188	39631	2587	42218	77875	7484	3780	89139	6991	96130	0	298501	-97647	-104724	1026476	22677	66463
1997	O-A	1	4752	5492	10244	2180	9721	22145	96008	56278	152286	4727	157013	172251	8056	6907	187214	4448	191662	0	624828	-223667	-209500	914597	44855	142359
1997	O-A	2	4961	4237	9198	4470	6620	20287	41401	43536	84937	9690	94627	100755	3534	14159	118448	2074	120522	0	256939	118662	-255078	629360	25094	93354
1997	O-A	3	2935	3963	6898	8435	2560	17893	25158	35135	60293	18286	78579	69751	0	26721	96472	2316	98788	0	106549	158320	-166080	378475	20486	75986
1997	O-A	4	1430	1874	3304	6294	1222	10820	27494	29592	57086	13644	70730	61612	656	19938	82206	3012	85217	0	54071	-40309	71455	391628	20350	61856
1997	O-A Total		34278	26857	61135	24953	40993	127082	225458	179822	405280	54095	459375	507409	25325	79048	611782	24527	636309	0	1757681	-638428	-482944	5458936	158429	453353
1997	M-S	5	1962	612	2574	3699	3853	10127	23176	21741	44917	8019	52936	51345	3494	11718	66556	1802	68358	0	93919	-549460	523900	545295	19876	46681
1997	M-S	6	1270	223	1492	3743	4298	9533	8393	3479	11872	8114	19986	17662	1416	11857	30934	2317	33251	0	406539	-982912	609625	1394239	11613	19322
1997	M-S	7	2281	19	2300	3240	4028	9568	4199	1501	5700	7025	12725	12028	892	10265	23185	2217	25402	0	343534	-139018	-179115	1451120	9227	13958
1997	M-S	8	1705	434	2139	2233	5586	9957	3881	1397	5277	4840	10117	13002	1064	7072	21139	2165	23303	0	366174	-141628	-201243	1408121	9127	12012
1997	M-S	9	1773	-180	1593	1669	5932	9194	3963	3127	7090	3618	10708	14615	375	5287	20278	1807	22085	0	224549	-48163	-154301	1018769	9302	10976
1997	M-S Total		8991	1107	10099	14584	23697	48379	43612	31244	74856	31615	106471	108651	7241	46199	162092	10308	172400	0	1434714	-1861180	598865	5817542	59145	102947
1997 Total			43270	27964	71234	39537	64690	175461	269070	211066	480136	85710	565846	616060	32567	125247	773874	34834	808709	0	3192395	-2499608	115921	11276478	217573	556301
1998	O-A	10	3231	-1477	1754	1321	6189	9265	2469	6829	9298	2634	11932	17242	634	3955	21831	2589	24420	0	179330	-224359	69449	1059617	10872	10959
1998	O-A	11	2517	-927	1590	1126	4628	7343	3432	6548	9981	2245	12225	16198	2377	3370	21945	3237	25182	0	185334	-225017	64865	1106712	12152	9793
1998	O-A	12	2277	-239	2038	1210	4779	8027	4314	6791	11105	2414	13519	17921	1352	3624	22898	2255	25152	0	258074	-233978	1056	1149122	11534	11363
1998	O-A	1	3941	1165	5106	1912	9383	16401	32703	15916	48619	3813	52432	63108	4442	5725	73275	5614	78889	0	270003	8693	-199807	1119272	19588	53687
1998	O-A	2	3009	2034	5043	3777	7551	16371	23855	26643	50498	7532	58029	63092	5092	11308	79493	2721	82213	0	235717	338740	-492244	668337	21467	58025
1998	O-A	3	3883	5337	9220	7400	8822	25442	50515	38585	89100	14758	103858	107142	2622	22158	131921	3383	135305	0	152528	13827	-31050	462161	25916	106005
1998	O-A	4	2647	3320	5967	5654	5452	17074	42150	47806	89956	11276	101232	101375	2000	16930	120306	1749	122055	0	111859	50288	-40093	366359	24147	96159
1998	O-A Total		21505	9214	30719	22399	46804	99922	159438	149117	308555	44672	353227	386077	18519	67071	471668	21547	493215	0	1392845	-271805	-627825	5931578	125676	345992
1998	M-S	5	2831	1987	4817	3385	3947	12149	66937	36581	103517	6750	110268	112282	3085	10135	125502	4499	130000	0	196681	-288314	221633	485883	30061	95441
1998	M-S	6	3632	842	4474	3630	4480	12585	33483	23457	56940	7240	64180	65894	2541	10871	79306	1712	81018	0	190693	-525939	416264	825966	22129	57177
1998	M-S	7	3071	1015	4086	3213	4196	11496	9311	12227	21538	6408	27946	29820	2974	9621	42416	1418	43834	0	397305	-668790	315320	1465303	12748	29668
1998	M-S	8	1562	1924	3486	2221	3693	9400	4887	2527	7414	4429	11844	14594	2687	6650	23931	1233	25163	0	288803	84019	-347658	1217099	9698	14233
1998	M-S	9	1572	5761	7332	1660	2602	11594	4531	1286	5817	3311	9128	15751	2313	4971	23034	1569	24603	0	258564	-56242	-177718	819584	10237	12797
1998	M-S Total		12667	11529	24196	14109	18918	57223	119148	76078	195226	28139	223365	238340	13600	42248	294189	10430	304619	0	1332046	-1455267	427840	4813835	84873	209316
1998 Total			34172	20742	54915	36509	65721	157145	278586	225195	503781	72811	576592	624417	32120	109320	765857	31978	797834	0	2724891	-1727072	-199984	10745413	210549	555308
1999	O-A	10	1431	4189	5621	1314	2113	9048	3931	724	4655	2393	7048	12389	2433	3707	18529	1470	19999	0	143874	-128233	4358	805994	11444	7086
1999	O-A	11	1738	3074	4813	1123	2479	8415	7588	1909	9497	2045	11541	16789	4519	3167	24475	5518	29994	0	208966	-191789	12816	808768	15846	8629
1999	O-A	12	1633	2208	3841	1237	2393	7472	9841	7705	17545	2253	19798	23780	4444	3491	31714	2809	34523	0	317182	-179713	-102945	787894	18557	13157
1999	O-A	1	2501	1422	3923	2115	4868	10906	10778	14442	25219	3851	29070	34011	5169	5966	45145	4224	49369	0	211409	-47132	-114908	650070	18365	26781
1999	O-A	2	2034	1223	3258	4187	4339	11783	8459	10566	19025	7624	26648	26621	5483	11810	43914	3503	47417	0	160507	-19876	-93213	558412	16853	27061
1999	O-A	3	2559	1860	4419	8209	7832	20460	50501	20752	71253	14946	86200	83504	7761	23155	114420	1539	115960	0	208887	37877	-130804	433501	29925	84495
1999	O-A	4	3306	1783	5089	6237	10214	21540	64270	42740	107010	11356	118366	122313	6414	17593	146320	1578	147898	0	140074	45997	-38173	346545	34068	112252
1999	O-A Total		15203	15761	30964	24421	34239	89624	155367	98837	254204	44467	298671	319407	36223	68889	424519	20641	445159	0	1390899	-482871	-462869	4391184	145059	279460
1999	M-S	5	1209	720	1929	3770	3398	9097	51531	28218	79749	6865	86613	85076	4625	10635	100335	1654	101990	0	121339	-169620	150271	400146	29613	70723
1999	M-S	6	2025	-453	1572	3846	4424	9842	29375	26393	55767	7003	62770	61763	4187	10849	76799	1221	78020	0	186110	-1123294	1015204	899881	20374	56424
1999	M-S	7	1720	1934	3654	3321	5604	12580	6384	10794	17178	6048	23226	26437	3893	9369	39698	1248	40946	0	623046	-382836	-199263	1577173	12816	26882
1999	M-S	8	2481	1030	3511	2287	3616	9415	5486	6985	12471	4164	16635	19598	2460	6451	28510	3332	31842	0	462579	-252802	-177935	1259151	10303	18207
1999	M-S	9	2563	822	3385	1715	2562	7661	4774	8321	13095	3122	16217	19041	3451	4837	27329	1194	28522	0	329372	-49233	-251616	1016555	11398	15931
1999	M-S Total		9997	4052	14050	14939	19605	48594	97550	80710	178260	27201	205461	211915	18616	42140	272671	8649	281320	0	1722446	-1977786	536660	5152906	84504	188167
1999 Total			25201	19813	45014	39360	53844	138218	252917	179547	432464	71669	504133	531322	54839	111029	697190	29290	726480	0	3113345	-2460657	73791	9544090	229563	467627

Mass Balances by Month, Season, & Water Year **Variable: Sum of TN_kg**

Water Yr	Season	Month	Wood_Weed	Wood Dike - Weed	Wood_Dike	Agency Lake Ranch	7mile_Dike	Total Agency Inflow	Sprague	Williamson-Sprague	Williamson Mouth	Pumped to Klamath L	Total Klamath Inflow	Total Tributaries	Ungauged Inflows	Total Pumped to Lake	Total External Inflows	Precipitation	Total Inflow + Precip	Evaporation	Lake Outflow	Retention	Storage Increase	Lake Mean Storage	Natural-Background	Anthropogenic
2000	O-A	10	1933	58	1991	4121	2615	8727	3732	8558	12290	2242	14532	16896	2093	6363	25352	2013	27365	0	151175	-50796	-73014	836296	11741	13611
2000	O-A	11	2765	-1001	1764	3526	1956	7246	3206	10542	13749	1918	15666	17469	2024	5444	24937	2368	27305	0	152155	-72166	-52685	774213	12546	12391
2000	O-A	12	2651	-10	2641	3772	1715	8127	4099	12001	16100	2052	18151	20455	2754	5823	29033	1926	30959	0	146680	-75565	-40156	734837	14138	14895
2000	O-A	1	3273	2475	5748	0	2403	8151	12233	22193	34426	3452	37878	42577	5419	3452	51448	4342	55790	0	160330	-43739	-60802	691913	17964	33483
2000	O-A	2	4174	1755	5929	0	4249	10178	22877	18771	41649	7225	48873	51826	5146	7225	64197	3685	67881	0	164224	57033	-153376	543261	19360	44837
2000	O-A	3	2406	2840	5246	0	5936	11181	24850	29425	54275	13734	68009	65456	4751	13734	83941	2016	85957	0	125559	118730	-158332	393605	22718	61223
2000	O-A	4	1827	4613	6441	0	5025	11465	41285	29246	70530	10085	80616	81995	3009	10085	95090	3130	98220	0	95851	-33264	35632	432252	22642	72448
2000	**O-A Total**		**19029**	**10730**	**29759**	**11419**	**23898**	**65076**	**112282**	**130736**	**243018**	**40707**	**283725**	**296675**	**25196**	**52126**	**373997**	**19480**	**393476**	**0**	**995975**	**-99765**	**-502733**	**4406377**	**121109**	**252888**
2000	M-S	5	1782	1100	2881	18536	1199	22616	22967	27432	50400	5760	56160	54480	6024	24296	84800	1578	86378	0	118232	-54488	22634	379005	21380	63420
2000	M-S	6	2408	489	2897	68846	927	72671	6258	11653	17911	5747	23657	21736	4882	74593	101211	1301	102512	0	487110	-1264375	879778	1196371	14947	86264
2000	M-S	7	1753	248	2000	0	294	2294	3068	3532	6600	4935	11535	8894	2753	4935	16582	1665	18246	0	405422	-88455	-298720	1075384	9486	7096
2000	M-S	8	2191	2597	4787	23831	991	29610	4088	2687	6775	3386	10161	12553	1289	27218	41060	1272	42332	0	278332	60742	-296741	924076	7753	33307
2000	M-S	9	3320	2995	6315	15888	3601	25804	5130	1557	6687	2523	9211	16603	2113	18411	37127	1479	38606	0	146416	-380610	272800	781552	9880	27247
2000	**M-S Total**		**11453**	**7428**	**18881**	**127101**	**7012**	**152995**	**41511**	**46861**	**88372**	**22352**	**110724**	**114266**	**17061**	**149453**	**280780**	**7295**	**288075**	**0**	**1435511**	**-1727187**	**579751**	**4356388**	**63446**	**217334**
2000 Total			**30482**	**18158**	**48640**	**138520**	**30910**	**218071**	**153793**	**177597**	**331390**	**63058**	**394449**	**410941**	**42257**	**201578**	**654776**	**26775**	**681551**	**0**	**2431486**	**-1826952**	**77017**	**8762765**	**184555**	**470221**
2001	O-A	10	2268	1146	3413	10592	2091	16096	4852	4806	9658	1782	11440	15162	1895	12374	29432	2271	31703	0	244586	-87371	-125513	1087678	11065	18367
2001	O-A	11	1708	1988	3696	0	1418	5113	3272	11733	15005	1517	16522	20118	2134	1517	23769	1760	25529	0	118751	-121641	28419	847592	11757	12012
2001	O-A	12	3125	928	4053	0	1287	5340	4197	9535	13732	1637	15369	19072	1283	1637	21992	2213	24205	0	146139	-112548	-9386	864290	11201	10791
2001	O-A	1	1951	706	2657	0	1704	4361	2313	12884	15197	2757	17954	19558	1408	2757	23723	1678	25401	0	111660	-45552	-40706	824340	10879	12844
2001	O-A	2	1129	721	1849	0	1278	3127	1835	8268	10103	5502	15605	13230	0	5502	18732	1858	20590	0	61297	155616	-196324	741479	8588	10144
2001	O-A	3	2943	1879	4822	0	3668	8489	7868	20378	28246	10665	38911	36736	1844	10665	49245	2182	51426	0	41885	58142	-48601	541126	13518	35727
2001	O-A	4	1168	1897	3065	0	2758	5823	10165	18383	28549	7941	36490	34372	1532	7941	43846	1916	45762	0	56451	72644	-83333	515053	11852	31994
2001	**O-A Total**		**14291**	**9264**	**23555**	**10592**	**14204**	**48351**	**34502**	**85988**	**120490**	**31800**	**152290**	**158249**	**10097**	**42392**	**210738**	**13878**	**224616**	**0**	**780769**	**-80709**	**-475444**	**5421557**	**78859**	**131878**
2001	M-S	5	929	1832	2760	0	1553	4314	6985	14678	21663	4613	26277	25977	4192	4613	34782	1816	36598	0	84252	-330725	283071	492575	11655	23126
2001	M-S	6	882	1385	2268	0	896	3164	3820	4953	8773	4717	13489	11937	3220	4717	19873	1529	21402	0	278997	-1160378	902782	1350565	8659	11214
2001	M-S	7	592	1640	2232	0	837	3069	3689	694	4383	4085	8467	7452	3275	4085	14812	1610	16422	0	279546	-566271	303146	1733728	8177	6635
2001	M-S	8	1997	1422	3419	0	944	4364	4676	-1998	2678	2808	5486	7041	3510	2808	13360	1249	14609	0	544584	224494	-754469	1561896	8118	5242
2001	M-S	9	1065	1032	2097	0	672	2769	4285	315	4600	2096	6695	7369	2345	2096	11809	1918	13726	0	177993	-218689	54423	1130425	7199	4610
2001	**M-S Total**		**5466**	**7311**	**12777**	**0**	**4903**	**17679**	**23454**	**18642**	**42096**	**18318**	**60415**	**59776**	**16542**	**18318**	**94636**	**8121**	**102757**	**0**	**1365373**	**-2051569**	**788953**	**6269190**	**43808**	**50827**
2001 Total			**19756**	**16575**	**36332**	**10592**	**19107**	**66030**	**57956**	**104630**	**162586**	**50119**	**212705**	**218025**	**26638**	**60710**	**305373**	**21999**	**327373**	**0**	**2146141**	**-2132278**	**313510**	**11690747**	**122668**	**182706**
2002	O-A	10	959	786	1745	0	654	2399	2993	1378	4371	1656	6027	6770	1671	1656	10096	1758	11855	0	208546	139848	-336539	1066962	8666	1431
2002	O-A	11	1841	353	2194	0	592	2786	2646	-194	2451	1410	3861	5237	2938	1410	9585	4093	13678	0	157391	-152479	8766	927084	10442	-856
2002	O-A	12	1736	1039	2774	0	1240	4015	4792	2030	6822	1525	8347	10837	2277	1525	14639	4762	19401	0	153175	-141129	7355	954087	11347	3292
2002	O-A	1	1564	2877	4441	0	2991	7432	19723	32579	52302	2587	54889	59734	1846	2587	64167	3185	67352	0	150210	-34695	-48163	950115	14682	49485
2002	O-A	2	2599	3841	6440	0	3067	9507	9500	28362	37862	5222	43083	47369	755	5222	53345	2551	55896	0	105164	150441	-199708	816911	11025	42320
2002	O-A	3	2005	5464	7469	0	4493	11962	13193	26843	40035	10289	50325	51997	1935	10289	64221	1687	65908	0	113214	81344	-128650	635368	15706	48515
2002	O-A	4	2066	3529	5595	0	3867	9462	31370	26134	57504	7782	65286	66966	2181	7782	76929	2473	79402	0	101990	19706	-42295	559787	16631	60299
2002	**O-A Total**		**12770**	**17889**	**30659**	**0**	**16904**	**47563**	**84215**	**117132**	**201347**	**30470**	**231817**	**248910**	**13603**	**30470**	**292983**	**20508**	**313491**	**0**	**989688**	**63037**	**-739234**	**5910313**	**88499**	**204484**
2002	M-S	5	1999	493	2492	40141	1706	44339	20380	15947	36326	4620	40946	40524	4082	44761	89367	1388	90755	0	118064	-263156	235847	610393	15747	73620
2002	M-S	6	2022	709	2731	23240	2946	28916	6256	2124	8380	4763	13143	14057	3786	28003	45845	1831	47676	0	276733	-715265	486208	1028758	10592	35253
2002	M-S	7	1281	554	1835	0	7882	9717	4159	1353	5512	4133	9645	15229	3712	4133	23074	1239	24313	0	375491	-300749	-50430	1222672	9055	14019
2002	M-S	8	655	449	1104	0	4084	5188	2311	1417	3728	2844	6572	8916	1807	2844	13567	1246	14813	0	245345	3340	-233873	1114014	6694	6873
2002	M-S	9	1012	2152	3164	0	2616	5781	2705	1701	4407	2124	6531	10187	1377	2124	13688	1235	14923	0	190942	-147396	-28623	996215	7031	6657
2002	**M-S Total**		**6970**	**4356**	**11326**	**63381**	**19234**	**93941**	**35811**	**22542**	**58353**	**18484**	**76837**	**88913**	**14764**	**81864**	**185542**	**6938**	**192479**	**0**	**1206576**	**-1423226**	**409129**	**4972052**	**49120**	**136422**
2002 Total			**19739**	**22245**	**41985**	**63381**	**36138**	**141504**	**120026**	**139674**	**259700**	**48954**	**308654**	**337823**	**28367**	**112335**	**478525**	**27446**	**505971**	**0**	**2196264**	**-1360188**	**-330105**	**10882366**	**137619**	**340906**
2003	O-A	10	1227	1065	2292	0	1954	4247	3655	-619	3036	1680	4716	7283	1038	1680	10000	1236	11236	0	134471	115428	-238663	765559	8500	1500
2003	O-A	11	1102	1524	2626	0	1971	4598	3264	618	3882	1431	5314	8480	942	1431	10854	2813	13667	0	100709	-92895	5854	706418	8905	1949
2003	O-A	12	2207	1237	3444	0	3754	7198	4169	2337	6507	1548	8054	13705	916	1548	16169	4900	21069	0	110069	-125156	36156	708534	9865	6303
2003	O-A	1	3397	2803	6200	0	9834	16034	17719	17760	35479	2610	38090	51514	145	2610	54269	3744	58013	0	65641	-78743	71115	771751	12662	41607
2003	O-A	2	2087	3233	5320	0	6148	11468	15372	32265	47637	5269	52905	59105	0	5269	64373	1687	66061	0	69393	-25640	22308	831555	12760	51614
2003	O-A	3	4730	-109	4622	0	7917	12539	7683	60508	68192	10343	78535	80730	0	10343	91073	3381	94455	0	101308	-5845	-1009	841899	13632	77442
2003	O-A	4	1370	1757	3127	0	4093	7220	16007	57831	73838	7796	81635	81059	1462	7796	90317	2703	93020	0	178631	-27675	-57936	804810	16897	73420
2003	**O-A Total**		**16120**	**11511**	**27632**	**0**	**35672**	**63304**	**67870**	**170701**	**238571**	**30678**	**269249**	**301875**	**4503**	**30678**	**337056**	**20465**	**357521**	**0**	**760221**	**-240526**	**-162174**	**5430527**	**83220**	**253836**
2003	M-S	5	1299	1222	2521	0	3060	5581	18720	14817	33537	4604	38141	39118	2930	4604	46652	2038	48690	0	137738	40627	-129675	701385	16669	29982
2003	M-S	6	1054	2228	3282	66855	6577	76714	9256	-3723	5534	4753	10287	15393	1868	71608	88869	1208	90077	0	163423	-652604	579258	851368	12267	76602
2003	M-S	7	885	1672	2557	0	5439	7996	3036	532	3568	4127	7695	11564	2517	4127	18208	1575	19782	0	350512	-700100	369371	1626422	7814	10394
2003	M-S	8	739	3067	3806	0	5002	8808	3296	1641	4937	2841	7778	13745	742	2841	17327	1521	18849	0	386287	6641	-374079	1467828	6219	11109
2003	M-S	9	1487	1624	3111	0	2105	5216	2224	1348	3572	2123	5695	8788	2238	2123	13148	1958	15107	0	263787	-131452	-117228	1089790	8509	4639
2003	**M-S Total**		**5464**	**9813**	**15277**	**66855**	**22183**	**104315**	**36533**	**14615**	**51148**	**18448**	**69596**	**88608**	**10293**	**85303**	**184204**	**8300**	**192504**	**0**	**1301746**	**-1436889**	**327647**	**5736793**	**51478**	**132726**
2003 Total			**21584**	**21324**	**42908**	**66855**	**57856**	**167619**	**104403**	**185316**	**289719**	**49126**	**338845**	**390483**	**14796**	**115981**	**521260**	**28765**	**550025**	**0**	**2061968**	**-1677415**	**165472**	**11167320**	**134698**	**386562**

Mass Balances by Month, Season, & Water Year **Variable: Sum of TN_kg**

Water Yr	Season	Month	Wood_Weed	Wood Dike - Weed	Wood_Dike	Agency Lake Ranch	7mile_Dike	Total Agency Inflow	Sprague	Williamson-Sprague	Williamson Mouth	Pumped to Klamath L	Total Klamath Inflow	Total Tributaries	Ungauged Inflows	Total Pumped to Lake	Total External Inflows	Precipitation	Total Inflow + Precip	Evaporation	Lake Outflow	Retention	Storage Increase	Lake Mean Storage	Natural-Background	Anthropogenic
2004	**O-A**	10	1720	1478	3197	0	786	3983	2011	1132	3143	1679	4822	7126	1639	1679	10444	1236	11681	0	182096	185155	-355570	873769	8563	1881
2004	**O-A**	11	1589	2582	4172	0	2501	6673	2725	358	3083	1431	4514	9756	1375	1431	12562	3050	15612	0	163694	-131856	-16227	735277	9169	3392
2004	**O-A**	12	4282	1939	6222	0	5757	11979	4352	1576	5929	1550	7479	17907	2681	1550	22138	4413	26551	0	197447	-206505	35609	744173	11613	10525
2004	**O-A**	1	3570	1206	4776	0	2169	6944	6728	4420	11147	2619	13766	18092	1781	2619	22491	3625	26116	0	95662	-134291	64745	805652	10478	12014
2004	**O-A**	2	3745	2369	6114	0	4309	10423	26618	16469	43087	5443	48530	53510	1344	5443	60297	3529	63827	0	73770	112987	-122930	786639	12850	47448
2004	**O-A**	3	2602	5410	8012	13361	13519	34892	35845	31253	67098	10368	77466	88629	610	23730	112968	1708	114676	0	70855	67004	-23183	666126	17771	95197
2004	**O-A**	4	1799	2016	3815	1113	4227	9155	20783	17985	38767	7826	46593	46809	2161	8939	57910	1609	59519	0	140587	-89600	8531	694496	15273	42637
2004	**O-A Total**		**19307**	**17001**	**36308**	**14475**	**33267**	**84049**	**99062**	**73192**	**172254**	**30917**	**203170**	**241828**	**11592**	**45391**	**298812**	**19170**	**317982**	**0**	**924112**	**-197106**	**-409024**	**5306131**	**85717**	**213095**
2004	**M-S**	5	1597	1249	2846	22269	3685	28799	14241	10695	24936	4597	29533	31467	3571	26865	61904	2491	64395	0	118924	-52625	-1904	651685	13612	48291
2004	**M-S**	6	1197	1594	2791	0	1879	4670	6190	-154	6036	4711	10747	10705	3757	4711	19173	1642	20815	0	197316	-692150	515649	925018	9909	9264
2004	**M-S**	7	824	689	1513	0	2704	4217	3253	146	3399	4086	7485	7616	2247	4086	13949	1503	15452	0	278837	-194409	-68976	1230620	7701	6249
2004	**M-S**	8	1576	1171	2747	0	3912	6659	3104	1467	4570	2813	7383	11229	1131	2813	15173	1510	16684	0	302143	19012	-304471	994664	6717	8457
2004	**M-S**	9	2089	1083	3172	0	1649	4822	3591	2053	5644	2101	7745	10466	1192	2101	13759	1243	15002	0	290939	-242663	-33274	823409	7379	6380
2004	**M-S Total**		**7283**	**5787**	**13069**	**22269**	**13829**	**49167**	**30378**	**14207**	**44585**	**18308**	**62893**	**71484**	**11898**	**40576**	**123958**	**8389**	**132347**	**0**	**1188159**	**-1162835**	**107023**	**4625396**	**45318**	**78640**
2004 Total			**26590**	**22787**	**49377**	**36743**	**47096**	**133217**	**129440**	**87399**	**216839**	**49225**	**266063**	**313312**	**23490**	**85968**	**422770**	**27559**	**450330**	**0**	**2112272**	**-1359941**	**-302001**	**9931527**	**131035**	**291735**
2005	**O-A**	10	1442	1277	2719	0	943	3662	4325	1946	6271	1662	7933	9934	0	1662	11596	2718	14313	0	125205	-42128	-68763	749546	7575	4020
2005	**O-A**	11	1130	373	1503	0	498	2001	3176	3311	6487	1417	7904	8488	944	1417	10849	1795	12644	0	79582	-165326	98388	781859	8405	2444
2005	**O-A**	12	3360	3746	7107	0	6867	13973	11117	5886	17003	1535	18538	30977	743	1535	33254	3395	36649	0	61930	-162281	137000	921178	10857	22397
2005	**O-A**	1	1310	1790	3101	0	996	4097	4167	453	4620	2598	7218	8717	46	2598	11362	1849	13211	0	68651	2525	-57964	956805	8565	2798
2005	**O-A**	2	1435	1275	2710	0	891	3601	6631	3236	9868	5227	15095	13469	0	5227	18696	1376	20072	0	33391	-88082	74762	978875	8003	10693
2005	**O-A**	3	3427	3554	6981	0	9553	16534	13195	18787	31983	10225	42208	48517	0	10225	58742	1654	60396	0	29653	314250	-283506	860600	11435	47307
2005	**O-A**	4	2205	2432	4636	0	6281	10918	12274	11311	23585	7675	31259	34502	0	7675	42177	2890	45067	0	67302	112945	-135179	630511	10638	31539
2005	**O-A Total**		**14310**	**14447**	**28758**	**0**	**26030**	**54787**	**54885**	**44931**	**99816**	**30339**	**130155**	**154604**	**1733**	**30339**	**186676**	**15677**	**202352**	**0**	**465713**	**-28098**	**-235262**	**5879375**	**65478**	**121198**
2005	**M-S**	5	3764	1194	4957	0	4724	9681	70224	6011	76235	4541	80776	85916	5123	4541	95580	3642	99222	0	150986	-133737	81973	573820	22463	73117
2005	**M-S**	6	1464	3297	4761	27836	2478	35075	16028	5408	21435	4707	26142	28674	2183	32542	63400	1489	64889	0	194922	-764008	633974	963370	11630	51770
2005	**M-S**	7	1053	2005	3058	34516	5187	42761	4924	2018	6942	4089	11031	15187	2205	38605	55998	1246	57244	0	331944	-702634	427934	1546410	8764	47234
2005	**M-S**	8	1184	1167	2351	18928	1663	22942	3321	1650	4971	2814	7785	8985	1216	21742	31943	1230	33173	0	355631	156876	-479334	1385482	6627	25316
2005	**M-S**	9	1770	4771	6541	0	1379	7921	3856	1455	5311	2102	7413	13232	924	2102	16258	1452	17710	0	346917	-34627	-294580	1121902	6479	9778
2005	**M-S Total**		**9235**	**12434**	**21669**	**81280**	**15431**	**118380**	**98352**	**16542**	**114894**	**18253**	**133147**	**151994**	**11651**	**99533**	**263179**	**9059**	**272238**	**0**	**1380400**	**-1478130**	**369967**	**5590983**	**55963**	**207215**
2005 Total			**23545**	**26882**	**50427**	**81280**	**41461**	**173167**	**153237**	**61473**	**214711**	**48592**	**263303**	**306598**	**13384**	**129872**	**449854**	**24736**	**474590**	**0**	**1846113**	**-1506228**	**134705**	**11470358**	**121441**	**328413**
2006	**O-A**	10	1825	1108	2933	0	860	3793	3492	4339	7831	1663	9494	11624	1435	1663	14722	1526	16248	0	232162	-290266	74353	912288	8316	6406
2006	**O-A**	11	4969	2190	7159	0	6585	13744	8974	1493	10466	1418	11884	24211	2108	1418	27737	5869	33606	0	135172	-38253	-63313	1041625	10303	17434
2006	**O-A**	12	5616	1956	7572	0	7482	15053	26995	3629	30624	1537	32161	45677	1669	1537	48883	7753	56636	0	119534	-500902	438003	1128147	14608	34274
2006	**O-A**	1	5106	4160	9266	0	13220	22486	37341	55478	92819	2648	95467	115305	5097	2648	123049	5189	128239	0	402349	-36303	-237807	1275668	26031	97018
2006	**O-A**	2	2739	3447	6186	0	8655	14841	31124	24784	55908	5420	61328	70749	2404	5420	78573	2418	80991	0	228607	70264	-217880	1053228	17057	61516
2006	**O-A**	3	3375	3281	6656	0	8938	15594	35604	27360	62964	10801	73766	78559	617	10801	89977	2171	92148	0	155600	191185	-254638	807936	18361	71616
2006	**O-A**	4	4873	7603	12476	0	15591	28067	74612	47528	122139	8412	130552	150206	4105	8412	162724	2097	164821	0	172189	234061	-241429	539299	34348	128376
2006	**O-A Total**		**28503**	**23744**	**52247**	**0**	**61332**	**113579**	**218142**	**164610**	**382752**	**31899**	**414651**	**496331**	**17435**	**31899**	**545665**	**27024**	**572689**	**0**	**1445613**	**-370213**	**-502711**	**6758191**	**129024**	**416641**
2006	**M-S**	5	2101	4785	6886	0	6496	13381	70329	38196	108525	5247	113772	121907	4728	5247	131881	1626	133507	0	178837	-156815	111486	483632	31252	100629
2006	**M-S**	6	3548	8544	12092	27927	8655	48673	18220	21323	39543	5489	45032	60289	3388	33415	97093	1607	98700	0	254515	-522792	366977	648813	17405	79688
2006	**M-S**	7	1990	2142	4131	37354	3805	45290	6234	6044	12278	4797	17074	20214	2342	42151	64706	1231	65937	0	287707	-329101	107331	1141131	11231	53476
2006	**M-S**	8	1846	1135	2981	0	3868	6849	4804	552	5356	3315	8671	12206	1530	3315	17051	1367	18418	0	495445	-829815	352788	1154267	8179	8872
2006	**M-S**	9	2379	587	2966	0	3086	6052	4867	562	5429	2483	7912	11480	1007	2483	14971	1219	16190	0	351721	-79214	-256317	1074004	8013	6958
2006	**M-S Total**		**11864**	**17192**	**29056**	**65281**	**25909**	**120246**	**104454**	**66677**	**171131**	**21330**	**192462**	**226096**	**12995**	**86611**	**325702**	**7050**	**332752**	**0**	**1568224**	**-1917737**	**682266**	**4501848**	**76080**	**249622**
2006 Total			**40367**	**40936**	**81303**	**65281**	**87241**	**233825**	**322596**	**231288**	**553883**	**53229**	**607113**	**722427**	**30429**	**118510**	**871367**	**34074**	**905441**	**0**	**3013837**	**-2287951**	**179555**	**11260038**	**205103**	**666263**
2007	**O-A**	10	1474	1508	2982	0	1232	4214	4487	1868	6355	1968	8323	10569	1438	1968	13975	1646	15622	0	213683	3778	-201839	977475	9802	4173
2007	**O-A**	11	4555	1314	5869	0	7006	12875	5134	2375	7509	1679	9188	20384	1674	1679	23737	2933	26670	0	159840	-136215	3045	915546	11758	11979
2007	**O-A**	12	2595	1874	4468	0	9003	13471	6882	4402	11283	1817	13100	24754	914	1817	27485	4668	32153	0	134940	-145151	42365	938052	12615	14869
2007	**O-A**	1	3915	-20	3895	0	818	4713	6519	12901	19420	2955	22375	24133	2182	2955	29271	1906	31177	0	128438	-33123	-64138	944088	11445	17826
2007	**O-A**	2	2737	1711	4448	0	2936	7384	11195	8843	20038	5809	25847	27422	886	5809	34117	2905	37022	0	128503	-62952	-28529	879310	12174	21944
2007	**O-A**	3	4524	10005	14529	0	9618	24147	35580	22603	58183	11378	69561	82330	2332	11378	96040	1629	97669	0	214365	-35246	-81450	833385	21073	74967
2007	**O-A**	4	1816	11522	13338	0	8667	22005	19716	19392	39109	8435	47543	61113	971	8435	70519	2205	72724	0	122303	78479	-128058	731488	15504	55015
2007	**O-A Total**		**21616**	**27913**	**49529**	**0**	**39279**	**88808**	**89512**	**72384**	**161896**	**34040**	**195937**	**250705**	**10398**	**34040**	**295144**	**17893**	**313037**	**0**	**1102072**	**-330430**	**-458605**	**6219344**	**94371**	**200773**
2007	**M-S**	5	911	4557	5468	4970	3657	14095	14677	9892	24569	4761	29330	33695	4934	9730	48359	1606	49965	0	127543	14213	-91791	573441	15704	32655
2007	**M-S**	6	1533	1231	2764	53853	1449	58066	6221	1640	7861	4797	12658	12074	4254	58650	74979	1486	76465	0	452249	-1558264	1182480	893086	12562	62417
2007	**M-S**	7	1723	1299	3022	19756	1035	23813	3399	4136	7536	4145	11681	11593	2709	23902	38204	1679	39882	0	424679	-215149	-169648	1523487	9120	29084
2007	**M-S**	8	638	1392	2029	0	2835	4865	1338	3093	4430	2849	7280	9295	722	2849	12866	1632	14498	0	495567	150955	-632024	1309714	6739	6128
2007	**M-S**	9	842	2812	3654	0	3253	6906	3202	2691	5893	2127	8020	12800	64	2127	14990	1366	16356	0	288099	-207611	-64132	902538	6812	8178
2007	**M-S Total**		**5647**	**11291**	**16938**	**78579**	**12229**	**107746**	**28838**	**21452**	**50289**	**18679**	**68969**	**79456**	**12683**	**97258**	**189398**	**7768**	**197166**	**0**	**1788137**	**-1815856**	**224885**	**5202266**	**50938**	**138460**
2007 Total			**27263**	**39204**	**66467**	**78579**	**51508**	**196554**	**118350**	**93836**	**212186**	**52720**	**264906**	**330161**	**23082**	**131299**	**484542**	**25661**	**510203**	**0**	**2890210**	**-2146287**	**-233720**	**11421610**	**145308**	**339233**

Mass Balances by Month, Season, & Water Year **Variable: Sum of TN_kg**

Water Yr	Season	Month	Wood_Weed	Wood Dike - Weed	Wood_Dike	Agency Lake Ranch	7mile_Dike	Total Agency Inflow	Sprague	Williamson-Sprague	Williamson Mouth	Pumped to Klamath L	Total Klamath Inflow	Total Tributaries	Ungauged Inflows	Total Pumped to Lake	Total External Inflows	Precipitation	Total Inflow + Precip	Evaporation	Lake Outflow	Retention	Storage Increase	Lake Mean Storage	Natural-Background	Anthropogenic
2008	**O-A**	10	1340	1550	2890	0	2093	4983	4257	-196	4061	1381	5443	9044	1668	1381	12093	2935	15028	0	174369	-196175	36834	906368	10510	1583
2008	**O-A**	11	2059	2387	4446	0	4322	8768	2374	565	2939	1177	4116	11707	131	1177	13015	2590	15604	0	180844	-207790	42551	927219	9187	3827
2008	**O-A**	12	1381	704	2085	0	1289	3374	3235	1623	4858	1274	6132	8232	620	1274	10126	4040	14165	0	207997	-234302	40470	986373	9737	389
2008	**O-A**	1	2403	729	3132	0	1574	4706	3977	3373	7350	2153	9503	12056	907	2153	15116	5045	20161	0	145100	-219900	94961	1056430	9617	5499
2008	**O-A**	2	2682	1073	3754	0	1216	4970	4541	2822	7363	4487	11850	12333	1078	4487	17898	1807	19705	0	121006	-247036	145735	1169363	9590	8308
2008	**O-A**	3	3241	3111	6352	0	3045	9397	38521	11004	49525	8471	57996	58922	1489	8471	68881	1883	70764	0	83809	52650	-65695	1311941	15617	53264
2008	**O-A**	4	3954	4709	8663	7600	14047	30309	36627	37322	73949	6383	80332	96658	1400	13983	112041	1330	113371	0	163363	610593	-660585	749531	20916	91125
2008	**O-A Total**		**17060**	**14261**	**31321**	**7600**	**27586**	**66506**	**93531**	**56513**	**150044**	**25327**	**175371**	**208951**	**7292**	**32926**	**249169**	**19629**	**268799**	**0**	**1076487**	**-441960**	**-365728**	**7107225**	**85174**	**163995**
2008	**M-S**	5	2720	7679	10399	0	5151	15550	37660	26122	63782	3795	67577	79332	0	3795	83126	3444	86570	0	99724	3997	-17150	482961	17218	65908
2008	**M-S**	6	1678	3577	5256	42536	3401	51193	23749	9053	32802	3949	36751	41458	3501	46485	91444	1368	92812	0	194422	-1047144	945533	840543	16760	74684
2008	**M-S**	7	1243	2495	3739	22281	427	26447	4937	1897	6834	3437	10271	10999	3027	25719	39745	1268	41013	0	513746	-291672	-181060	1403186	10014	29731
2008	**M-S**	8	1200	1482	2682	0	346	3028	3274	2460	5734	2368	8102	8762	2340	2368	13469	1592	15062	0	451773	-364570	-72142	1257291	8192	5278
2008	**M-S**	9	1825	856	2681	0	1629	4310	3032	2276	5308	1769	7077	9617	1319	1769	12706	1176	13882	0	402711	-180984	-207845	1043848	7716	4990
2008	**M-S Total**		**8667**	**16089**	**24756**	**64818**	**10954**	**100527**	**72651**	**41808**	**114459**	**15318**	**129778**	**150169**	**10186**	**80136**	**240491**	**8848**	**249339**	**0**	**1662376**	**-1880373**	**467337**	**5027829**	**59900**	**180591**
2008 Total			**25727**	**30350**	**56077**	**72418**	**38539**	**167034**	**166182**	**98322**	**264503**	**40645**	**305148**	**359120**	**17479**	**113062**	**489661**	**28477**	**518138**	**0**	**2738863**	**-2322333**	**101608**	**12135054**	**145075**	**344586**
2009	**O-A**	10	1782	2033	3815	0	1767	5582	2917	1576	4494	1399	5893	10075	490	1399	11965	2043	14008	0	250147	-292170	56031	1024107	8523	3442
2009	**O-A**	11	3094	816	3910	0	5617	9527	2932	1928	4860	1192	6052	14387	1687	1192	17267	2867	20133	0	193706	-307734	134161	1180510	10633	6633
2009	**O-A**	12	1722	1541	3263	0	1977	5240	2526	1799	4325	1290	5614	9564	496	1290	11350	3933	15283	0	210765	-146350	-49132	1068993	9495	1855
2009	**O-A**	1	3888	2498	6385	0	4668	11053	3625	3462	7087	2183	9270	18140	2246	2183	22569	2202	24771	0	163706	-96087	-42848	1132789	12025	10543
2009	**O-A**	2	2488	1893	4380	0	1455	5836	3904	2738	6642	4400	11042	12478	0	4400	16878	2383	19261	0	96007	206164	-282910	982046	8933	7944
2009	**O-A**	3	3499	6455	9955	16136	14280	40370	15275	13780	29055	8649	37704	53289	0	24785	78075	2786	80860	0	37981	360222	-317343	630737	16546	61529
2009	**O-A**	4	2031	6248	8278	13918	9055	31251	17750	23408	41158	6483	47641	58491	0	20401	78892	1641	80533	0	66195	9216	5122	541094	13954	64938
2009	**O-A Total**		**18503**	**21483**	**39987**	**30054**	**38818**	**108859**	**48928**	**48692**	**97621**	**25596**	**123216**	**176425**	**4920**	**55650**	**236995**	**17855**	**254850**	**0**	**1018508**	**-266739**	**-496919**	**6560275**	**80110**	**156885**
2009	**M-S**	5	3096	7009	10106	0	8604	18710	25542	19984	45526	3799	49324	64235	1893	3799	69927	2981	72908	0	96723	-172124	148309	516245	16263	53664
2009	**M-S**	6	2109	1570	3679	0	1999	5678	11479	6264	17743	3884	21626	23420	2948	3884	30252	2612	32864	0	207197	-910210	735877	1055718	11856	18396
2009	**M-S**	7	1246	1309	2555	0	861	3415	3413	3246	6658	3367	10025	10074	2869	3367	16309	1245	17555	0	285667	101997	-370108	1132955	8915	7394
2009	**M-S**	8	851	1392	2243	0	1776	4019	2991	2596	5588	2317	7904	9606	1032	2317	12955	1542	14497	0	442980	-415970	-12513	976204	6875	6080
2009	**M-S**	9	864	1984	2848	0	2628	5476	2861	2287	5148	1730	6878	10624	1243	1730	13597	1187	14783	0	338102	-130779	-192540	980764	7559	6038
2009	**M-S Total**		**8166**	**13264**	**21430**	**0**	**15868**	**37297**	**46286**	**34377**	**80662**	**15097**	**95759**	**117959**	**9984**	**15097**	**143040**	**9567**	**152607**	**0**	**1370669**	**-1527086**	**309025**	**4661887**	**51468**	**91572**
2009 Total			**26669**	**34747**	**61417**	**30054**	**54686**	**146156**	**95214**	**83069**	**178283**	**40692**	**218975**	**294385**	**14903**	**70747**	**380035**	**27422**	**407457**	**0**	**2389176**	**-1793826**	**-187894**	**11222162**	**131578**	**248457**
2010	**O-A**	10	1489	4099	5588	0	1807	7395	2921	2465	5386	1369	6755	12781	1022	1369	15173	1534	16706	0	158739	19520	-161553	653705	9483	5689
2010	**O-A**	11	1624	913	2537	0	1372	3909	2115	1904	4019	1167	5186	7928	1542	1167	10637	2145	12783	0	177969	-314255	149069	723691	10004	633
2010	**O-A**	12	2125	1382	3507	0	2292	5799	2671	1345	4015	1264	5279	9814	0	1264	11078	3239	14316	0	155607	-17725	-123565	655230	8648	2430
2010	**O-A**	1	3338	1966	5304	0	3103	8408	4138	2259	6397	2138	8535	14805	724	2138	17667	3351	21018	0	121035	-129818	29800	761825	9809	7857
2010	**O-A**	2	2588	1982	4569	0	6374	10943	4234	3210	7444	4306	11750	18387	457	4306	23151	2241	25392	0	75525	51291	-101424	631644	9620	13531
2010	**O-A**	3	2299	2327	4626	0	3583	8209	4657	11221	15878	8450	24328	24087	2127	8450	34664	2020	36684	0	82880	-95223	49028	568205	11849	22815
2010	**O-A**	4	1970	4464	6433	0	6526	12959	8828	15172	24000	6348	30348	36959	720	6348	44027	2457	46484	0	74003	-20266	-7253	595401	11437	32591
2010	**O-A Total**		**15433**	**17131**	**32565**	**0**	**25057**	**57622**	**29563**	**37575**	**67139**	**25042**	**92181**	**124761**	**6594**	**25042**	**156397**	**16987**	**173383**	**0**	**845758**	**-506476**	**-165898**	**4589700**	**70850**	**85547**
2010	**M-S**	5	872	1139	2011	0	6566	8577	18133	8649	26781	3737	30519	35359	0	3737	39096	1997	41093	0	64981	302052	-325941	437839	12047	27049
2010	**M-S**	6	1890	2250	4140	0	6367	10507	17328	3058	20387	3847	24234	30893	1611	3847	36351	1920	38271	0	50184	-136644	124731	361646	12128	24223
2010	**M-S**	7	1120	1047	2167	0	1663	3830	4480	2447	6927	3340	10268	10758	2649	3340	16747	1338	18085	0	177634	-760650	601102	814349	8421	8326
2010	**M-S**	8	890	858	1748	0	1442	3190	2474	2218	4692	2299	6991	7882	1824	2299	12005	1364	13369	0	278672	-299355	34053	1046730	6822	5183
2010	**M-S**	9	1044	2508	3552	0	3713	7266	3304	2459	5763	1717	7480	13029	1131	1717	15876	1797	17674	0	184009	-10474	-155861	985964	7638	8238
2010	**M-S Total**		**5817**	**7801**	**13619**	**0**	**19751**	**33370**	**45719**	**18831**	**64550**	**14941**	**79491**	**97920**	**7215**	**14941**	**120075**	**8416**	**128491**	**0**	**755480**	**-905071**	**278083**	**3646529**	**47057**	**73018**
2010 Total			**21251**	**24933**	**46184**	**0**	**44808**	**90992**	**75282**	**56407**	**131689**	**39983**	**171672**	**222681**	**13809**	**39983**	**276472**	**25402**	**301875**	**0**	**1601237**	**-1411548**	**112185**	**8236228**	**117907**	**158565**

Mass Balances by Month, Season, & Water Year **Variable: Sum of TN_FWM_ppb**

Water Yr	Season	Month	Wood_Weed	Wood Dike - Weed	Wood_Dike	Agency Lake Ranch	7mile_Dike	Total Agency Inflow	Sprague	Williamson-Sprague	Williamson Mouth	Pumped to Klamath L	Total Klamath Inflow	Total Tributaries	Ungauged Inflows	Total Pumped to Lake	Total External Inflows	Precipitation	Total Inflow + Precip	Evaporation	Lake Outflow	Retention	Storage Increase	Lake Mean Storage	Natural-Background	Anthropogenic
1992	**O-A**	10	132	-210	69	1596	440	185	617	-201	146	2660	205	147	99	2198	183	429	194	0	3069		10660	2739	99	84
1992	**O-A**	11	238	-278	175	1596	522	294	527	-46	213	2660	257	237	99	2198	253	199	244	0	3290		-6006	1712	99	154
1992	**O-A**	12	69	17	62	1596	279	151	173	36	99	2660	148	112	99	2198	146	242	156		2616		828	1239	99	47
1992	**O-A**	1	100	54	93	1596	158	159	52	50	51	2660	134	80	99	2198	140	318	152		2165		636	1182	99	41
1992	**O-A**	2	121	514	182	1596	370	325	210	57	132	2660	299	177		2198	310	281	308		1854	-11698	476	1126	99	211
1992	**O-A**	3	88	3292	173	1596	268	391	220	268	246	2660	503	227	99	2198	447	605	452	0	1294		-194	871	99	348
1992	**O-A**	4	117	-5420	67	1596	403	353	220	176	199	2660	420	190	99	2198	320	255	315	0	1129		1826	1035	99	221
1992	**O-A Total**		**123**	**87**	**119**	**1596**	**334**	**260**	**276**	**51**	**156**	**2660**	**290**	**165**	**99**	**2198**	**258**	**276**	**259**	**0**	**2177**	**-43796**	**-1229**	**1306**	**99**	**159**
1992	**M-S**	5	94	235	124	1596	544	417	278	73	136	2660	331	199	99	2198	257	1887	270	0	983		-5263	1083	99	158
1992	**M-S**	6	292	431	371	1596	1045	793	493	64	183	2660	413	374	99	2198	513	265	477	0	2901		-2974	2857	99	414
1992	**M-S**	7	544	450	500	1596	788	671	551	103	235	2660	416	373	99	2198	390	524	396	0	3183		8774	2724	99	291
1992	**M-S**	8	289	683	521	1596	1341	788	743	-80	120	2660	271	313	99	2198	338	1698	356	0	2320		3835	2195	99	239
1992	**M-S**	9	133	1036	449	1596	783	564	456	-95	75	2660	170	262	99	2198	314	473	322	0	1609		5286	1538	99	215
1992	**M-S Total**		**239**	**619**	**398**	**1596**	**837**	**627**	**484**	**13**	**148**	**2660**	**319**	**299**	**99**	**2198**	**350**	**491**	**356**	**0**	**2177**		**544**	**2054**	**99**	**251**
1992 Total			**146**	**391**	**195**	**1596**	**495**	**367**	**322**	**36**	**154**	**2660**	**299**	**206**	**99**	**2198**	**290**	**324**	**292**	**0**	**2177**	**-222194**	**8592**	**1593**	**99**	**191**
1993	**O-A**	10	64	319	128	1596	214	188	259	-56	70	2660	131	104	99	2198	149	206	158	0	1417		-4097	1254	99	50
1993	**O-A**	11	84	599	168	1596	369	263	204	81	139	2660	185	185	99	2198	199	205	200	0	1150		2133	1283	99	100
1993	**O-A**	12	79	3133	228	1596	353	292	198	343	268	2660	315	266	99	2198	279	161	245		1449		1984	1406	99	180
1993	**O-A**	1	97	1378	286	1596	302	341	267	119	207	2660	285	237	99	2198	260	170	239		1619		993	1453	99	161
1993	**O-A**	2	92	1469	231	1596	282	366	319	101	223	2660	372	227	99	2198	326	188	302		1592		552	1344	99	227
1993	**O-A**	3	212	582	304	1596	488	468	747	-55	669	2660	717	617	99	2198	583	183	558	0	984		-717	1072	99	484
1993	**O-A**	4	145	854	424	1596	686	541	519	911	632	2660	674	601	99	2198	530	220	519	0	759		-6735	661	99	431
1993	**O-A Total**		**117**	**842**	**274**	**1596**	**409**	**375**	**559**	**352**	**500**	**2660**	**555**	**449**	**99**	**2198**	**434**	**183**	**406**	**0**	**1041**		**24**	**1153**	**99**	**335**
1993	**M-S**	5	156	1141	476	1596	581	557	419	398	414	2660	451	432	99	2198	400	195	387	0	594		-1698	510	99	301
1993	**M-S**	6	169	656	297	1596	967	477	408	457	420	2660	481	416	99	2198	379	266	374	0	1232		-26006	1349	99	280
1993	**M-S**	7	109	569	212	1596	803	456	446	-133	149	2660	294	206	99	2198	255	3403	268	0	2919		5736	2235	99	156
1993	**M-S**	8	106	781	218	1596	764	475	158	106	128	2660	238	225	99	2198	262	299	265	0	1912		1591	1783	99	163
1993	**M-S**	9	87	906	141	1596	438	259	297	168	222	2660	303	212	99	2198	221	1249	233	0	1356		5764	1888	99	122
1993	**M-S Total**		**132**	**866**	**301**	**1596**	**705**	**465**	**394**	**226**	**340**	**2660**	**406**	**353**	**99**	**2198**	**336**	**300**	**334**	**0**	**1505**		**-657**	**1493**	**99**	**237**
1993 Total			**122**	**851**	**284**	**1596**	**512**	**408**	**500**	**302**	**441**	**2660**	**500**	**414**	**99**	**2198**	**395**	**207**	**379**	**0**	**1292**		**1214**	**1319**	**99**	**296**
1994	**O-A**	10	68	359	77	1596	178	134	147	37	92	2660	149	97	99	2198	131	264	141	0	977		-14094	1131	99	32
1994	**O-A**	11	62	60	62	1596	113	102	93	63	78	2660	129	76	99	2198	115	445	129	0	1071		-12496	984	99	16
1994	**O-A**	12	94	1150	174	1596	106	174	78	40	60	2660	111	105	99	2198	140	216	149		1153		-966	885	99	41
1994	**O-A**	1	120	645	162	1596	335	245	223	46	137	2660	221	167	99	2198	205	332	212		816		-77	796	99	106
1994	**O-A**	2	55	329	82	1596	270	212	112	110	111	2660	295	102	99	2198	238	211	234		909		49	712	99	139
1994	**O-A**	3	87	455	149	1596	341	338	198	363	278	2660	502	238	99	2198	394	1089	401	0	629		1380	656	99	295
1994	**O-A**	4	204	354	239	1596	365	401	237	358	294	2660	480	277	99	2198	344	420	347	0	698		23918	702	99	245
1994	**O-A Total**		**96**	**473**	**136**	**1596**	**196**	**226**	**160**	**158**	**159**	**2660**	**288**	**154**	**99**	**2198**	**233**	**293**	**237**	**0**	**909**		**-1080**	**816**	**99**	**134**
1994	**M-S**	5	100	374	169	1596	371	325	234	100	177	2660	321	175	99	2198	231	224	230	0	557		-20021	561	99	132
1994	**M-S**	6	160	249	198	1596	551	453	287	-22	121	2660	327	173	99	2198	236	668	246	0	2034		-7922	1880	99	137
1994	**M-S**	7	125	812	288	1596	1110	687	604	13	175	2660	388	284	99	2198	315	1764	330	0	2238		3447	2177	99	216
1994	**M-S**	8	411	-111	235	1596	977	592	543	163	272	2660	421	369	99	2198	325		342	0	1577		3600	1799	99	226
1994	**M-S**	9	114	343	204	1596	448	377	384	-1	127	2660	226	197	99	2198	209	383	217	0	1379		1849	1362	99	110
1994	**M-S Total**		**172**	**286**	**209**	**1596**	**721**	**471**	**344**	**50**	**171**	**2660**	**332**	**231**	**99**	**2198**	**258**	**427**	**265**	**0**	**1660**		**104**	**1498**	**99**	**159**
1994 Total			**108**	**389**	**151**	**1596**	**352**	**284**	**208**	**120**	**163**	**2660**	**302**	**175**	**99**	**2198**	**242**	**330**	**247**	**0**	**1330**		**1328**	**1078**	**99**	**143**
1995	**O-A**	10	105	119	109	1596	305	209	183	118	144	2660	204	160	99	2198	182	507	192	0	1357		5601	1410	99	83
1995	**O-A**	11	66	43	60	1596	332	183	124	106	114	2660	163	135	99	2198	160	171	163	0	1482		1985	1447	99	61
1995	**O-A**	12	68	162	100	1596	357	159	196	95	141	2660	190	136	99	2198	167	240	175		1490		277	1455	99	68
1995	**O-A**	1	142	703	210	1596	464	295	622	226	497	2660	542	423	99	2198	369	161	326		1038		554	1232	99	270
1995	**O-A**	2	258	677	304	1596	680	464	604	788	645	2660	706	584	99	2198	540	411	537		958		444	1037	99	441
1995	**O-A**	3	206	973	385	1596	535	548	588	697	608	2660	682	572	99	2198	588	173	546	0	772		-2315	687	99	489
1995	**O-A**	4	102	820	264	1596	330	407	475	1308	646	2660	704	583	99	2198	582	178	543	0	820		1457	732	99	483
1995	**O-A Total**		**139**	**443**	**208**	**1596**	**414**	**331**	**510**	**518**	**513**	**2660**	**574**	**442**	**99**	**2198**	**437**	**191**	**410**	**0**	**986**		**437**	**1023**	**99**	**338**
1995	**M-S**	5	144	899	380	1596	457	466	390	340	380	2660	419	386	99	2198	356	334	356	0	750		-10564	830	99	257
1995	**M-S**	6	138	1216	539	1596	969	760	236	269	245	2660	320	375	99	2198	383	214	369	0	2255		1822254	2033	99	284
1995	**M-S**	7	254	1111	363	1596	946	596	268	122	224	2660	344	318	99	2198	316	367	318	0	2894		8700	2426	99	217
1995	**M-S**	8	380	-483	212	1596	826	434	258	-21	114	2660	232	179	99	2198	223		238	0	2599		-1268	2573	99	124
1995	**M-S**	9	59	760	181	1596	386	287	330	42	159	2660	249	184	99	2198	205	17902	219	0	2588		6314	2945	99	106
1995	**M-S Total**		**183**	**869**	**356**	**1596**	**717**	**534**	**323**	**178**	**279**	**2660**	**350**	**330**	**99**	**2198**	**320**	**373**	**322**	**0**	**2068**		**-1957**	**2080**	**99**	**221**
1995 Total			**154**	**601**	**259**	**1596**	**543**	**406**	**440**	**388**	**425**	**2660**	**489**	**400**	**99**	**2198**	**390**	**221**	**376**	**0**	**1628**		**3582**	**1552**	**99**	**291**

Mass Balances by Month, Season, & Water Year **Variable: Sum of TN_FWM_ppb**

Water Yr	Season	Month	Wood_Weed	Wood Dike - Weed	Wood_Dike	Agency Lake Ranch	7mile_Dike	Total Agency Inflow	Sprague	Williamson-Sprague	Williamson Mouth	Pumped to Klamath L	Total Klamath Inflow	Total Tributaries	Ungauged Inflows	Total Pumped to Lake	Total External Inflows	Precipitation	Total Inflow + Precip	Evaporation	Lake Outflow	Retention	Storage Increase	Lake Mean Storage	Natural-Background	Anthropogenic
1996	**O-A**	10	49	324	101	1596	95	135	175	10	87	2660	144	93	99	2198	131	1823	143	0	2392		14810	2255	99	32
1996	**O-A**	11	44	156	76	1596	83	102	142	-34	50	2660	98	63	99	2198	100	251	114	0	2001		17034	1954	99	1
1996	**O-A**	12	90	422	203	1596	247	232	355	-256	149	2660	180	181	99	2198	185	153	178		2389		980	2198	99	86
1996	**O-A**	1	295	256	290	1596	502	402	537	186	427	2660	463	408	99	2198	354	151	315		1663		-2592	1689	99	255
1996	**O-A**	2	431	444	433	1596	1078	753	593	-138	491	2660	521	538	99	2198	480	181	465		1333		-6855	1349	99	381
1996	**O-A**	3	182	5328	472	1596	529	607	496	542	508	2660	582	504	99	2198	495	250	487	0	730		-13405	700	99	396
1996	**O-A**	4	121	4069	346	1596	330	433	241	1336	499	2660	567	461	99	2198	482	248	472	0	636		5313	718	99	383
1996	**O-A Total**		**181**	**700**	**277**	**1596**	**522**	**408**	**450**	**311**	**414**	**2660**	**465**	**398**	**99**	**2198**	**384**	**185**	**367**	**0**	**1348**		**-1895**	**1450**	**99**	**285**
1996	**M-S**	5	67	1337	163	1596	365	293	256	455	296	2660	340	282	99	2198	288	199	283	0	620		-28855	680	99	189
1996	**M-S**	6	130	243	162	1596	349	288	249	207	235	2660	337	223	99	2198	275	249	273	0	805		-5479	939	99	176
1996	**M-S**	7	104	172	122	1596	722	362	261	-20	139	2660	296	210	99	2198	279	1178	290	0	1796		-2587	1715	99	180
1996	**M-S**	8	121	363	174	1596	742	384	322	76	165	2660	290	240	99	2198	269	982	280	0	2254		4453	2033	99	170
1996	**M-S**	9	83	504	167	1596	524	274	262	177	216	2660	296	228	99	2198	247	536	255	0	3314		-2613	1941	99	148
1996	**M-S Total**		**95**	**410**	**158**	**1596**	**501**	**314**	**259**	**211**	**243**	**2660**	**324**	**248**	**99**	**2198**	**275**	**315**	**277**	**0**	**1567**		**-958**	**1356**	**99**	**176**
1996 Total			**148**	**584**	**232**	**1596**	**515**	**373**	**400**	**276**	**365**	**2660**	**424**	**350**	**99**	**2198**	**349**	**209**	**339**	**0**	**1437**		**3381**	**1411**	**99**	**250**
1997	**O-A**	10	74	370	106	1596	198	153	193	40	116	2660	173	121	99	2198	150	263	158	0	2610		119586	2683	99	51
1997	**O-A**	11	108	152	112	1596	326	187	193	7	111	2660	154	140	99	2198	154	192	158	0	1921		-1518	2655	99	55
1997	**O-A**	12	381	3343	590	1596	1039	719	421	382	406	2660	428	513	99	2198	389	152	349		2291		-723	1936	99	290
1997	**O-A**	1	139	641	239	1596	570	362	419	706	493	2660	506	467	99	2198	413	173	400		1349		-13432	1387	99	314
1997	**O-A**	2	148	499	219	1596	480	346	401	833	546	2660	594	477	99	2198	467	271	462		1046		-16336	999	99	368
1997	**O-A**	3	82	328	144	1596	273	286	291	689	438	2660	544	358		2198	466	268	458	0	703	14393	-4038	578	99	367
1997	**O-A**	4	49	167	81	1596	153	206	273	727	404	2660	483	325	99	2198	400	208	387	0	361		1495	557	99	301
1997	**O-A Total**		**146**	**537**	**214**	**1596**	**482**	**329**	**357**	**586**	**432**	**2660**	**479**	**388**	**99**	**2198**	**382**	**190**	**368**	**0**	**1331**	**-58039**	**-1425**	**1374**	**99**	**283**
1997	**M-S**	5	73	185	86	1596	237	208	283	680	395	2660	453	321	99	2198	332	401	333	0	492		-26472	763	99	233
1997	**M-S**	6	54	47	53	1596	289	210	208	244	217	2660	346	181	99	2198	264	259	263	0	3016		-11941	2022	99	165
1997	**M-S**	7	108	3	83	1596	318	225	193	87	146	2660	306	151	99	2198	249	282	251	0	2478		2226	2379	99	150
1997	**M-S**	8	71	112	77	1596	405	232	249	66	144	2660	263	166	99	2198	229	290	234	0	2723		2763	2635	99	130
1997	**M-S**	9	66	-39	51	1596	369	189	194	158	176	2660	257	167	99	2198	216	365	223	0	2466		9938	2085	99	117
1997	**M-S Total**		**74**	**48**	**70**	**1596**	**322**	**212**	**242**	**300**	**263**	**2660**	**359**	**216**	**99**	**2198**	**271**	**306**	**273**	**0**	**2080**		**-2499**	**1915**	**99**	**172**
1997 Total			**121**	**381**	**166**	**1596**	**407**	**286**	**332**	**514**	**393**	**2660**	**451**	**340**	**99**	**2198**	**352**	**214**	**343**	**0**	**1588**	**-227237**	**1168**	**1609**	**99**	**253**
1998	**O-A**	10	105	-278	49	1596	308	162	110	300	205	2606	258	170	99	2151	199	238	202	0	1979		6070	2162	99	100
1998	**O-A**	11	94	-295	53	1596	271	154	130	275	199	2606	239	167	99	2151	179	198	181	0	2171		1391	2128	99	80
1998	**O-A**	12	89	-103	73	1596	271	174	168	227	199	2606	239	177	99	2151	197	276	202		2438		56	2061	99	98
1998	**O-A**	1	151	515	180	1596	488	336	498	430	473	2606	503	420	99	2151	370	160	339		1707		-2675	1838	99	271
1998	**O-A**	2	114	897	176	1596	430	337	402	488	443	2606	497	394	99	2151	367	212	358		1076		-46057	1041	99	268
1998	**O-A**	3	123	714	235	1596	461	404	463	670	535	2606	603	476	99	2151	504	197	485	0	685		-699	688	99	405
1998	**O-A**	4	93	239	141	1596	554	306	388	868	550	2606	603	470	99	2151	493	397	492	0	551		-1737	526	99	394
1998	**O-A Total**		**110**	**251**	**132**	**1596**	**388**	**272**	**382**	**531**	**442**	**2606**	**494**	**367**	**99**	**2151**	**372**	**205**	**359**	**0**	**1284**		**-2732**	**1417**	**99**	**273**
1998	**M-S**	5	101	239	133	1596	421	254	374	850	466	2606	491	419	99	2151	413	173	394	0	660		14932	670	99	314
1998	**M-S**	6	138	114	133	1596	367	262	306	626	387	2606	429	342	99	2151	355	418	356	0	950		-45892	1136	99	256
1998	**M-S**	7	145	295	166	1596	483	325	275	451	354	2606	441	316	99	2151	329	982	337	0	2311		-3647	2149	99	230
1998	**M-S**	8	93	464	167	1596	562	326	291	108	184	2606	282	215	99	2151	244		257	0	1801		3365	2094	99	145
1998	**M-S**	9	84	530	247	1596	358	305	245	58	143	2606	217	203	99	2151	223	515	231	0	1877		2862	1664	99	124
1998	**M-S Total**		**114**	**338**	**167**	**1596**	**429**	**289**	**333**	**496**	**382**	**2606**	**428**	**340**	**99**	**2151**	**343**	**301**	**342**	**0**	**1375**		**-1738**	**1501**	**99**	**244**
1998 Total			**111**	**293**	**145**	**1596**	**399**	**278**	**359**	**519**	**417**	**2606**	**466**	**357**	**99**	**2151**	**360**	**229**	**352**	**0**	**1327**		**12253**	**1453**	**99**	**261**
1999	**O-A**	10	58	697	182	1596	199	214	165	30	98	2544	145	139	99	2102	160	757	170	0	1910		178	1701	99	61
1999	**O-A**	11	64	1092	161	1596	185	191	198	61	136	2544	164	149	99	2102	153	159	154	0	2008		154	1527	99	54
1999	**O-A**	12	63	976	137	1596	190	180	207	146	175	2544	196	169	99	2102	169	223	173		1751		-5457	1314	99	70
1999	**O-A**	1	102	661	147	1596	397	271	251	298	275	2544	312	261	99	2102	243	177	236		1068		-9998	1098	99	144
1999	**O-A**	2	97	652	143	1596	395	324	231	272	252	2544	340	244	99	2102	258	183	250		979		-3661	899	99	159
1999	**O-A**	3	108	882	171	1596	582	461	401	435	410	2544	480	392	99	2102	379	632	381	0	675		7961	709	99	280
1999	**O-A**	4	144	874	204	1596	735	504	380	681	461	2544	500	451	99	2102	425	516	426	0	499		-860	547	99	326
1999	**O-A Total**		**90**	**818**	**164**	**1596**	**393**	**307**	**321**	**323**	**322**	**2544**	**370**	**299**	**99**	**2102**	**290**	**211**	**285**	**0**	**1060**		**-2414**	**1081**	**99**	**191**
1999	**M-S**	5	61	377	88	1596	292	254	312	577	373	2544	400	344	99	2102	335	497	337	0	549		3379	586	99	236
1999	**M-S**	6	117	-260	83	1596	482	322	326	661	428	2544	472	390	99	2102	373	7163	379	0	963		-37346	1271	99	274
1999	**M-S**	7	95	1067	183	1596	673	415	240	350	299	2544	388	309	99	2102	307	11591	316	0	3364		1895	2518	99	208
1999	**M-S**	8	126	542	162	1596	464	305	246	287	267	2544	344	257	99	2102	274	198	263	0	3735		4622	2284	99	175
1999	**M-S**	9	124	428	150	1596	360	250	245	288	271	2544	327	244	99	2102	237	35288	248	0	2718		6689	1976	99	138
1999	**M-S Total**		**105**	**437**	**134**	**1596**	**445**	**307**	**301**	**467**	**359**	**2544**	**405**	**328**	**99**	**2102**	**319**	**423**	**322**	**0**	**2039**		**-3273**	**1671**	**99**	**220**
1999 Total			**95**	**694**	**153**	**1596**	**410**	**307**	**313**	**375**	**336**	**2544**	**383**	**310**	**99**	**2102**	**301**	**248**	**298**	**0**	**1444**		**2658**	**1336**	**99**	**202**

Mass Balances by Month, Season, & Water Year **Variable: Sum of TN_FWM_ppb**

Water Yr	Season	Month	Wood_Weed	Wood Dike - Weed	Wood_Dike	Agency Lake Ranch	7mile_Dike	Total Agency Inflow	Sprague	Williamson-Sprague	Williamson Mouth	Pumped to Klamath L	Total Klamath Inflow	Total Tributaries	Ungauged Inflows	Total Pumped to Lake	Total External Inflows	Precipitation	Total Inflow + Precip	Evaporation	Lake Outflow	Retention	Storage Increase	Lake Mean Storage	Natural-Background	Anthropogenic
2000	**O-A**	10	72	25	68	4835	257	217	153	268	218	2473	254	177	99	3617	214	321	219	0	1621		-5256	1671	99	115
2000	**O-A**	11	101	-440	60	4835	187	178	121	275	212	2473	239	167	99	3617	197	251	201	0	1528		-1789	1483	99	98
2000	**O-A**	12	94	-4	86	4835	165	194	150	266	223	2473	248	180	99	3617	203	347	209		1504		-790	1298	99	104
2000	**O-A**	1	117	1059	190		247	204	306	490	404	2473	437	340	99	2473	284	175	270		1016		-1255	1111	99	185
2000	**O-A**	2	159	801	208		476	272	442	365	403	2473	460	368	99	2473	328	182	315		827		-8884	835	99	229
2000	**O-A**	3	87	1225	175		672	288	330	476	396	2473	477	372	99	2473	366	323	365	0	603		-10125	595	99	267
2000	**O-A**	4	71	2105	232		689	327	379	583	443	2473	494	422	99	2473	416	203	402	0	590		601	616	99	317
2000	**O-A Total**		**100**	**673**	**145**	**4835**	**363**	**237**	**317**	**404**	**358**	**2473**	**408**	**312**	**99**	**2769**	**306**	**221**	**300**	**0**	**979**		**-2141**	**1043**	**99**	**207**
2000	**M-S**	5	83	489	121	4835	299	714	293	640	416	2473	455	366	99	3942	393	583	395	0	598		-1830	519	99	294
2000	**M-S**	6	130	132	131	4835	430	1883	214	370	295	2473	375	255	99	4503	670	1575	675	0	2612		-11130	1754	99	571
2000	**M-S**	7	112	32	86		491	96	200	132	157	2473	262	135	99	2473	173	483	184	0	2502		2890	1806	99	74
2000	**M-S**	8	167	375	238	4835	420	1082	335	110	185	2473	268	213	99	4321	524	3450	538	0	1802		2525	1950	99	425
2000	**M-S**	9	175	529	257	4835	457	721	259	71	161	2473	216	224	99	4275	372	624	378	0	2554		14584	1828	99	273
2000	**M-S Total**		**130**	**283**	**166**	**4835**	**412**	**972**	**268**	**318**	**292**	**2473**	**356**	**264**	**99**	**4230**	**438**	**750**	**443**	**0**	**1894**		**-1975**	**1497**	**99**	**339**
2000 Total			**110**	**430**	**152**	**4835**	**373**	**505**	**302**	**377**	**338**	**2473**	**392**	**297**	**99**	**3722**	**351**	**274**	**347**	**0**	**1370**		**-1311**	**1228**	**99**	**252**
2001	**O-A**	10	90	187	109	4835	283	393	204	177	190	2390	221	169	99	4214	263	271	264	0	2685		-11005	2479	99	164
2001	**O-A**	11	70	254	115		192	129	130	368	263	2390	287	208	99	2390	200	384	207	0	1957		512	1771	99	101
2001	**O-A**	12	123	149	128		155	133	161	285	231	2390	255	192	99	2390	194	281	200		1882		-216	1623	99	95
2001	**O-A**	1	81	196	95		226	123	91	383	257	2390	298	207	99	2390	216	470	224		1343		-1343	1472	99	117
2001	**O-A**	2	53	340	79		196	104	78	267	186	2390	275	157		2390	216	312	222		1235	155616	-4691	1235	99	117
2001	**O-A**	3	120	865	181		474	247	245	433	357	2390	466	324	99	2390	361	289	357	0	825		-597	815	99	262
2001	**O-A**	4	61	1009	147		558	225	316	428	380	2390	465	341	99	2390	366	334	365	0	705		-3609	715	99	267
2001	**O-A Total**		**87**	**309**	**121**	**4835**	**285**	**196**	**183**	**348**	**277**	**2390**	**340**	**233**	**99**	**2736**	**265**	**318**	**267**	**0**	**1584**	**-80709**	**-1657**	**1357**	**99**	**166**
2001	**M-S**	5	73	961	188		541	246	299	451	387	2390	454	354	99	2390	295	394	299	0	734		-7466	693	99	196
2001	**M-S**	6	90	253	149		580	188	289	216	243	2390	354	225	99	2390	227	574	237	0	2222		-10660	2114	99	128
2001	**M-S**	7	66	325	159		742	203	314	33	134	2390	246	156	99	2390	179	534	192	0	3704		-6721	2954	99	80
2001	**M-S**	8	223	280	243		857	288	432	-103	89	2390	175	155	99	2390	163	7183	178	0	3825		6789	3182	99	64
2001	**M-S**	9	99	279	145		711	180	346	15	140	2390	199	153	99	2390	162	327	175	0	3314		-6074	2581	99	63
2001	**M-S Total**		**107**	**345**	**176**		**646**	**221**	**328**	**160**	**224**	**2390**	**309**	**223**	**99**	**2390**	**214**	**497**	**224**	**0**	**2667**		**-2741**	**2188**	**99**	**115**
2001 Total			**92**	**324**	**136**	**4835**	**332**	**202**	**223**	**288**	**261**	**2390**	**330**	**230**	**99**	**2621**	**246**	**367**	**252**	**0**	**2136**	**-2132278**	**-385389**	**1704**	**99**	**147**
2002	**O-A**	10	50	114	67		230	83	164	60	106	2390	144	97	99	2390	115	411	129	0	2894		-206849	2431	99	16
2002	**O-A**	11	85	82	85		125	91	124	-8	55	2390	85	70	99	2390	91	176	106	0	2410		156	2008	99	-8
2002	**O-A**	12	71	291	99		187	116	187	66	121	2390	147	119	99	2390	128	169	136		2187		101	1781	99	29
2002	**O-A**	1	62	505	144		409	195	424	741	578	2390	600	465	99	2390	433	204	411		1411		-839	1552	99	334
2002	**O-A**	2	118	536	221		542	273	332	744	568	2390	625	466	99	2390	479	222	455		1274		-4957	1274	99	380
2002	**O-A**	3	78	525	206		714	282	347	494	434	2390	521	386	99	2390	405	470	406	0	951		-4112	936	99	306
2002	**O-A**	4	94	559	198		879	289	463	620	523	2390	577	469	99	2390	458	243	446	0	763		-1900	781	99	359
2002	**O-A Total**		**80**	**403**	**150**		**446**	**196**	**342**	**459**	**402**	**2390**	**451**	**335**	**99**	**2390**	**328**	**212**	**316**	**0**	**1525**		**-2621**	**1447**	**99**	**229**
2002	**M-S**	5	161	116	149	2926	837	1366	355	614	435	2390	480	397	99	2860	562	1167	566	0	786		-8940	855	99	463
2002	**M-S**	6	182	162	177	2926	940	1089	282	118	208	2390	311	239	99	2819	428	361	425	0	1750		-5327	1573	99	329
2002	**M-S**	7	140	114	131		1134	465	348	70	176	2390	292	292	99	2390	252	18485	266	0	2297		408	2283	99	153
2002	**M-S**	8	76	67	72		907	262	303	68	131	2390	222	185	99	2390	201	6659	218	0	2250		2818	2581	99	102
2002	**M-S**	9	83	247	152		590	228	278	80	143	2390	205	181	99	2390	193	2280	209	0	2409		742	2665	99	94
2002	**M-S Total**		**130**	**151**	**138**	**2926**	**913**	**751**	**329**	**214**	**272**	**2390**	**346**	**280**	**99**	**2785**	**374**	**983**	**382**	**0**	**1828**		**-1128**	**1835**	**99**	**275**
2002 Total			**92**	**304**	**146**	**2926**	**613**	**385**	**338**	**387**	**363**	**2390**	**419**	**318**	**99**	**2666**	**344**	**265**	**339**	**0**	**1678**		**4086**	**1602**	**99**	**245**
2003	**O-A**	10	65	122	83		262	121	206	-28	77	2390	117	98	99	2390	116	4109	130	0	2180		-33203	2151	99	17
2003	**O-A**	11	55	206	95		195	122	165	28	92	2390	125	106	99	2390	121	214	133	0	2079		123	1816	99	22
2003	**O-A**	12	97	158	113		309	168	174	101	139	2390	169	153	99	2390	162	167	163		2065		477	1615	99	63
2003	**O-A**	1	133	272	173		576	303	433	562	490	2390	518	411	99	2390	424	186	392		1713		648	1438	99	325
2003	**O-A**	2	101	223	151		435	233	439	762	616	2390	665	467		2390	499	369	495		2390	-855	302	1301	99	400
2003	**O-A**	3	205	-8	124		555	244	171	1631	832	2390	911	605		2390	661	197	610	0	1453	-450	-17	1192	99	562
2003	**O-A**	4	62	131	89		339	152	222	1750	701	2390	752	531	99	2390	529	225	509	0	1149		-11701	1099	99	430
2003	**O-A Total**		**105**	**151**	**121**		**409**	**200**	**267**	**808**	**512**	**2390**	**563**	**386**	**99**	**2390**	**401**	**212**	**381**	**0**	**1667**	**-5594**	**-428**	**1430**	**99**	**302**
2003	**M-S**	5	83	118	97		341	160	249	553	329	2390	367	286	99	2390	277	319	279	0	863		7147	959	99	178
2003	**M-S**	6	94	289	174	2693	981	1522	241	-260	105	2390	188	197	99	2671	717	14917	727	0	1014		-6638	1262	99	618
2003	**M-S**	7	94	346	179		933	398	273	26	113	2390	230	223	99	2390	231	575	242	0	2615		-3575	2834	99	132
2003	**M-S**	8	74	325	196		1010	362	453	73	166	2390	251	254	99	2390	276	646	289	0	3474		4322	3048	99	177
2003	**M-S**	9	86	254	132		374	178	250	55	108	2390	167	141	99	2390	153	315	164	0	2415		2367	2625	99	54
2003	**M-S Total**		**86**	**253**	**150**	**2693**	**691**	**656**	**260**	**135**	**205**	**2390**	**271**	**231**	**99**	**2621**	**354**	**467**	**358**	**0**	**1928**		**-950**	**1994**	**99**	**255**
2003 Total			**100**	**185**	**129**	**2693**	**485**	**352**	**264**	**579**	**405**	**2390**	**461**	**335**	**99**	**2556**	**383**	**251**	**373**	**0**	**1823**	**-39010**	**4793**	**1673**	**99**	**284**

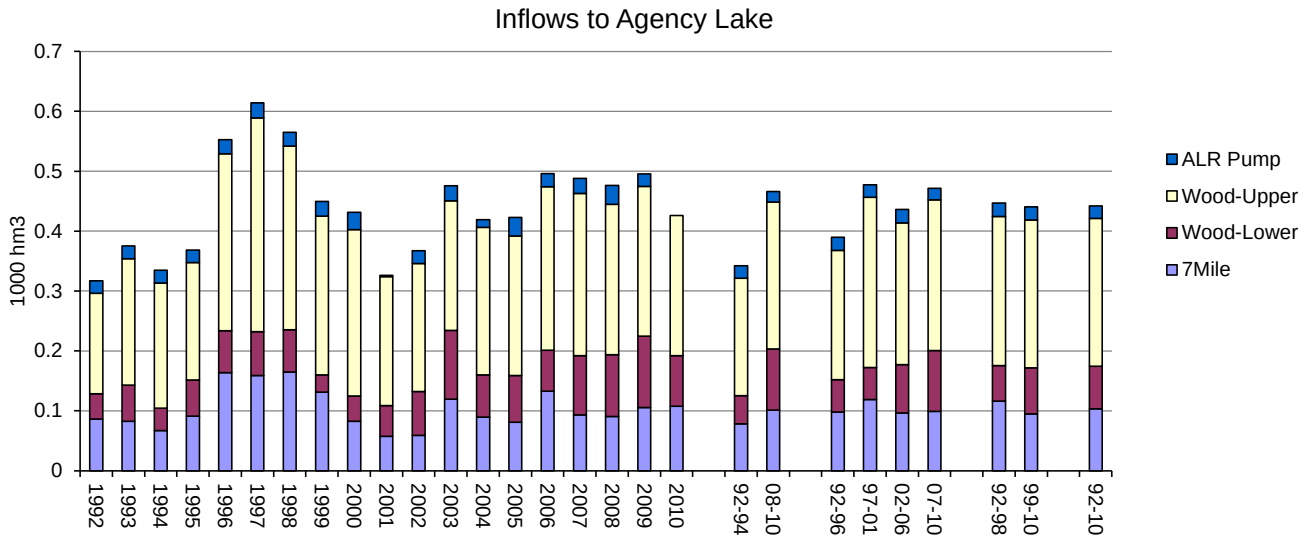
Mass Balances by Month, Season, & Water Year **Variable: Sum of TN_FWM_ppb**

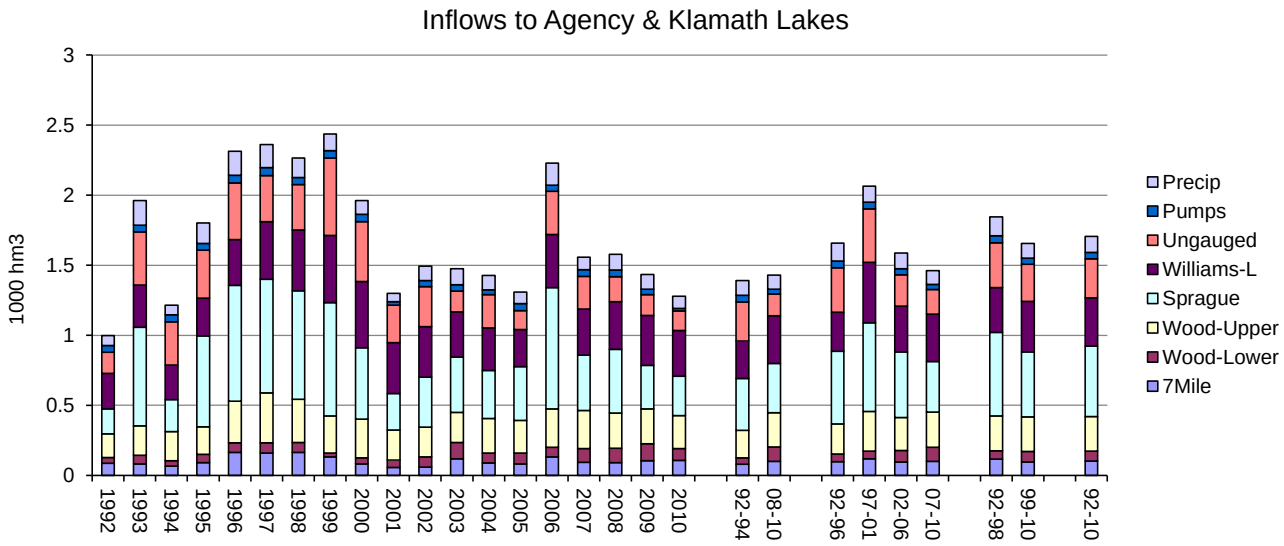
Water Yr	Season	Month	Wood_Weed	Wood Dike - Weed	Wood_Dike	Agency Lake Ranch	7mile_Dike	Total Agency Inflow	Sprague	Williamson-Sprague	Williamson Mouth	Pumped to Klamath L	Total Klamath Inflow	Total Tributaries	Ungauged Inflows	Total Pumped to Lake	Total External Inflows	Precipitation	Total Inflow + Precip	Evaporation	Lake Outflow	Retention	Storage Increase	Lake Mean Storage	Natural-Background	Anthropogenic
2004	**O-A**	10	78	349	122		172	129	122	52	82	2390	123	103	99	2390	121	5221	135	0	2043		16991	2329	99	22
2004	**O-A**	11	67	460	143		339	183	139	16	74	2390	107	125	99	2390	136	203	145	0	1890		-1009	1959	99	37
2004	**O-A**	12	152	322	182		598	273	191	69	130	2390	161	200	99	2390	189	173	186		2043		770	1835	99	90
2004	**O-A**	1	134	210	147		490	189	243	199	223	2390	270	209	99	2390	213	189	209		1669		956	1720	99	114
2004	**O-A**	2	148	424	198		523	266	593	552	576	2390	630	470	99	2390	465	186	429		1436		-1262	1446	99	366
2004	**O-A**	3	92	889	233	2901	709	600	514	760	605	2390	672	539	99	2653	629	453	626	0	999		-243	1020	99	530
2004	**O-A**	4	80	350	135	2901	389	232	374	528	432	2390	501	363	99	2444	375	489	378	0	1031		-2072	1001	99	276
2004	**O-A Total**		**109**	**435**	**168**	**2901**	**519**	**295**	**386**	**377**	**382**	**2390**	**438**	**331**	**99**	**2532**	**345**	**223**	**334**	**0**	**1571**		**-1374**	**1509**	**99**	**246**
2004	**M-S**	5	94	249	129	2901	525	785	362	456	397	2390	456	343	99	2799	450	248	436	0	934		128	961	99	351
2004	**M-S**	6	100	236	149		535	210	323	-8	159	2390	269	178	99	2390	192	460	201	0	1571		-7558	1442	99	93
2004	**M-S**	7	72	130	90		619	199	352	6	105	2390	221	143	99	2390	179	694	193	0	2375		794	2181	99	80
2004	**M-S**	8	138	165	148		619	268	422	64	150	2390	234	203	99	2390	224	665	238	0	2532		3423	2105	99	125
2004	**M-S**	9	116	145	125		422	164	322	97	175	2390	234	170	99	2390	185	2346	200	0	3141		746	2062	99	86
2004	**M-S Total**		**104**	**183**	**129**	**2901**	**550**	**366**	**352**	**130**	**228**	**2390**	**309**	**222**	**99**	**2646**	**271**	**452**	**278**	**0**	**2041**		**-353**	**1679**	**99**	**172**
2004 Total			**108**	**322**	**156**	**2901**	**527**	**318**	**377**	**288**	**335**	**2390**	**399**	**298**	**99**	**2585**	**319**	**263**	**315**	**0**	**1804**		**53463**	**1584**	**99**	**220**
2005	**O-A**	10	63	157	87		209	103	257	83	156	2390	194	131		2390	152	226	162	0	2906	-21064	-2427	1922	99	53
2005	**O-A**	11	50	59	52		108	59	188	136	158	2390	189	114	99	2390	128	367	141	0	1828		2468	1784	99	29
2005	**O-A**	12	120	526	203		527	291	404	227	318	2390	343	305	99	2390	303	196	289		1830		1471	1812	99	204
2005	**O-A**	1	51	261	96		158	106	166	21	100	2390	153	103	99	2390	131	375	144		1593		-1199	1667	99	32
2005	**O-A**	2	64	188	93		178	105	246	186	222	2390	324	171		2390	231	660	242		1577	-17616	1319	1563	99	132
2005	**O-A**	3	132	545	215		679	355	359	673	494	2390	612	436		2390	509	497	508	0	1230	24173	-4303	1252	99	410
2005	**O-A**	4	109	336	169		487	270	298	501	370	2390	466	331		2390	393	214	373	0	846	10268	-12610	870	99	294
2005	**O-A Total**		**85**	**295**	**133**		**430**	**198**	**287**	**276**	**282**	**2390**	**355**	**245**	**99**	**2390**	**282**	**270**	**281**	**0**	**1615**	**-906**	**-686**	**1489**	**99**	**183**
2005	**M-S**	5	164	377	189		682	292	590	283	544	2390	569	496	99	2390	421	190	403	0	718		12422	784	99	322
2005	**M-S**	6	121	529	259	2627	560	1050	420	247	357	2390	421	346	99	2590	540	644	542	0	1547		-14508	1342	99	441
2005	**M-S**	7	135	380	234	2627	1126	1387	317	111	206	2390	311	295	99	2600	633	15380	646	0	2403		-4267	2403	99	534
2005	**M-S**	8	131	213	162	2627	593	936	381	82	172	2390	258	194	99	2594	477		496	0	2552		4125	2601	99	378
2005	**M-S**	9	130	559	296		766	331	338	73	170	2390	230	240	99	2390	248	674	262	0	3091		4208	2610	99	149
2005	**M-S Total**		**141**	**433**	**230**	**2627**	**750**	**812**	**510**	**163**	**391**	**2390**	**441**	**372**	**99**	**2580**	**466**	**381**	**462**	**0**	**1901**		**-1143**	**1830**	**99**	**367**
2005 Total			**101**	**346**	**162**	**2627**	**512**	**409**	**399**	**233**	**331**	**2390**	**394**	**295**	**99**	**2533**	**367**	**302**	**363**	**0**	**1820**	**-48588**	**6941**	**1638**	**99**	**268**
2006	**O-A**	10	88	253	117		270	134	187	199	194	2390	231	169	99	2390	175	616	188	0	2726		-6124	2297	99	76
2006	**O-A**	11	205	651	260		855	390	350	70	223	2390	250	295	99	2390	267	157	237	0	2381		-794	2368	99	168
2006	**O-A**	12	213	838	264		641	373	372	212	342	2390	356	351	99	2390	331	149	284		2213		3005	2123	99	232
2006	**O-A**	1	187	886	290		793	462	291	1656	574	2390	586	548	99	2390	468	164	435		1460		-12583	2016	99	369
2006	**O-A**	2	121	530	213		636	348	435	785	543	2390	582	485	99	2390	456	232	443		1447		-8834	1599	99	357
2006	**O-A**	3	136	494	211		513	319	427	647	501	2390	566	450	99	2390	485	291	478	0	1079		-7029	1181	99	386
2006	**O-A**	4	174	952	346		702	482	415	744	501	2390	528	497	99	2390	469	292	465	0	578		-6809	755	99	370
2006	**O-A Total**		**164**	**661**	**249**		**663**	**375**	**376**	**711**	**472**	**2390**	**503**	**446**	**99**	**2390**	**419**	**182**	**394**	**0**	**1349**		**-1530**	**1665**	**99**	**320**
2006	**M-S**	5	108	777	269		669	379	397	717	471	2390	489	459	99	2390	418	529	419	0	639		67499	655	99	319
2006	**M-S**	6	162	737	360	2558	947	908	351	632	461	2390	512	470	99	2529	552	490	551	0	954		-2736	962	99	453
2006	**M-S**	7	102	393	166	3473	557	1065	267	276	271	2390	361	262	99	3303	570		581	0	1786		-1083	2077	99	471
2006	**M-S**	8	111	261	142		503	239	286	27	144	2390	225	186	99	2390	206	1202	220	0	3816		-4045	2531	99	107
2006	**M-S**	9	111	127	113		441	183	296	28	148	2390	210	165	99	2390	185	3188	199	0	3422		5207	2795	99	86
2006	**M-S Total**		**120**	**534**	**222**	**3012**	**642**	**622**	**366**	**446**	**393**	**2390**	**433**	**373**	**99**	**2831**	**424**	**896**	**429**	**0**	**1667**		**-1854**	**1606**	**99**	**325**
2006 Total			**148**	**601**	**238**	**3012**	**657**	**472**	**373**	**607**	**444**	**2390**	**479**	**420**	**99**	**2697**	**421**	**217**	**406**	**0**	**1498**		**-4547**	**1641**	**99**	**322**
2007	**O-A**	10	51	399	91		204	108	207	81	142	2390	183	126	99	2390	141	464	152	0	2643		-27984	2663	99	42
2007	**O-A**	11	144	212	156		455	242	198	108	156	2390	189	202	99	2390	200	209	201	0	2386		51	2278	99	101
2007	**O-A**	12	78	284	112		469	229	199	184	193	2390	221	211	99	2390	216	170	207		2402		429	1952	99	117
2007	**O-A**	1	143	-2	109		267	121	226	523	363	2390	409	261	99	2390	253	353	258		1919		-1186	1662	99	154
2007	**O-A**	2	108	169	126		349	168	280	319	296	2390	368	246	99	2390	277	203	270		2055		-382	1416	99	178
2007	**O-A**	3	160	803	357		852	465	422	467	439	2390	506	446	99	2390	451	521	452	0	1452		-1545	1204	99	352
2007	**O-A**	4	80	1232	416		1178	559	313	475	376	2390	443	427	99	2390	450	274	442	0	1032		-5545	1004	99	351
2007	**O-A Total**		**109**	**491**	**195**		**555**	**273**	**300**	**344**	**318**	**2390**	**375**	**301**	**99**	**2390**	**310**	**235**	**304**	**0**	**1838**		**-1238**	**1611**	**99**	**211**
2007	**M-S**	5	51	610	215	3250	767	445	306	363	327	2390	380	320	99	2763	305	549	309	0	737		1825	793	99	206
2007	**M-S**	6	117	173	137	2935	575	1414	297	82	192	2390	295	190	99	2881	591	640	592	0	2363		-11154	1397	99	492
2007	**M-S**	7	129	155	139	3800	602	830	317	175	220	2390	324	200	99	3447	415	467	417	0	2912		1728	2912	99	316
2007	**M-S**	8	51	144	92		460	172	173	132	142	2390	224	156	99	2390	189	496	203	0	3726		6125	3085	99	90
2007	**M-S**	9	51	305	141		437	207	303	115	173	2390	230	190	99	2390	218	814	232	0	3181		1341	2586	99	119
2007	**M-S Total**		**77**	**270**	**147**	**3133**	**541**	**661**	**295**	**182**	**233**	**2390**	**309**	**225**	**99**	**2957**	**368**	**562**	**373**	**0**	**2437**		**-555**	**1957**	**99**	**269**
2007 Total			**101**	**397**	**180**	**3133**	**552**	**403**	**299**	**286**	**293**	**2390**	**355**	**278**	**99**	**2785**	**330**	**286**	**328**	**0**	**2168**		**6683**	**1752**	**99**	**231**

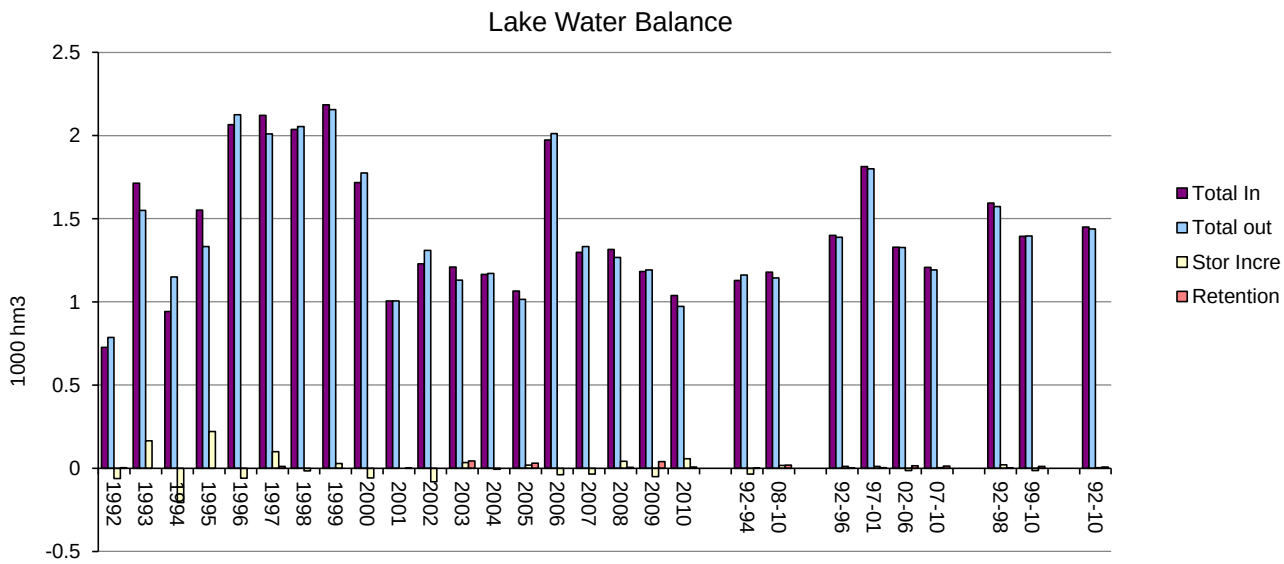
Mass Balances by Month, Season, & Water Year **Variable: Sum of TN_FWM_ppb**

Water Yr	Season	Month	Wood_Weed	Wood Dike - Weed	Wood_Dike	Agency Lake Ranch	7mile_Dike	Total Agency Inflow	Sprague	Williamson-Sprague	Williamson Mouth	Pumped to Klamath L	Total Klamath Inflow	Total Tributaries	Ungauged Inflows	Total Pumped to Lake	Total External Inflows	Precipitation	Total Inflow + Precip	Evaporation	Lake Outflow	Retention	Storage Increase	Lake Mean Storage	Natural-Background	Anthropogenic
2008	**O-A**	10	58	143	85		213	113	193	-9	91	2390	120	102	99	2390	114	211	125	0	2765		826	2585	99	15
2008	**O-A**	11	83	243	129		404	194	103	25	64	2390	89	129	99	2390	140	228	150	0	2692		1425	2414	99	41
2008	**O-A**	12	58	71	62		153	80	137	63	98	2390	123	90	99	2390	103	179	117		2467		1106	2331	99	4
2008	**O-A**	1	102	121	106		240	130	155	133	144	2390	183	138	99	2390	156	165	158		2183		1552	2214	99	57
2008	**O-A**	2	117	143	124		251	141	193	111	151	2390	233	147	99	2390	185	344	193		2213		3072	2216	99	86
2008	**O-A**	3	122	356	180		489	227	587	344	507	2390	573	423	99	2390	437	362	434	0	2214		-588	2188	99	338
2008	**O-A**	4	145	527	240	1050	741	486	455	722	560	2390	596	516	99	1411	530	1263	534	0	1067		-18233	1104	99	431
2008	**O-A Total**		**99**	**231**	**134**	**1050**	**421**	**217**	**354**	**275**	**320**	**2390**	**365**	**272**	**99**	**1846**	**290**	**218**	**283**	**0**	**2044**		**-995**	**2066**	**99**	**191**
2008	**M-S**	5	144	712	351		511	391	411	638	481	2390	504	460		2390	478	195	452	0	660	666	-20798	702	99	379
2008	**M-S**	6	102	676	242	2373	438	1079	385	391	387	2390	425	363	99	2375	540	1013	544	0	1172		-23437	1203	99	441
2008	**M-S**	7	89	280	163	3631	459	882	291	85	175	2390	253	175	99	3395	393	4569	404	0	3108		1554	2348	99	294
2008	**M-S**	8	90	171	122		442	133	332	96	162	2390	223	151	99	2390	163	546	176	0	3123		707	2564	99	64
2008	**M-S**	9	112	108	110		299	145	259	101	155	2390	203	151	99	2390	163		178	0	3542		3092	2614	99	64
2008	**M-S Total**		**110**	**387**	**205**	**2694**	**438**	**593**	**379**	**311**	**351**	**2390**	**390**	**318**	**99**	**2630**	**397**	**399**	**398**	**0**	**2245**	**-313396**	**-1436**	**1749**	**99**	**298**
2008 Total			**103**	**294**	**158**	**2314**	**426**	**351**	**365**	**289**	**332**	**2390**	**375**	**289**	**99**	**2341**	**334**	**254**	**328**	**0**	**2161**	**-387056**	**2409**	**1922**	**99**	**235**
2009	**O-A**	10	76	230	118		258	143	179	63	109	2390	140	125	99	2390	139	305	151	0	2846		-4998	2765	99	40
2009	**O-A**	11	118	101	114		480	207	155	77	111	2390	137	160	99	2390	161	212	166	0	2973		2684	2974	99	62
2009	**O-A**	12	71	141	93		208	117	119	73	95	2390	122	106	99	2390	118	181	130		2576		-1373	2516	99	19
2009	**O-A**	1	150	219	171		678	250	160	112	132	2390	170	185	99	2390	186	282	192		2295		-739	2330	99	87
2009	**O-A**	2	110	198	136		249	153	180	96	132	2390	211	141		2390	187	234	192		1926	68721	-5962	1873	99	88
2009	**O-A**	3	126	457	237	1219	582	506	349	344	347	2390	432	355		1471	467	224	450	0	829	16374	-3249	1043	99	368
2009	**O-A**	4	95	530	250	1850	788	599	401	560	478	2390	536	447		1993	560	462	557	0	796	614	239	804	99	461
2009	**O-A Total**		**108**	**287**	**162**	**1448**	**506**	**316**	**259**	**226**	**241**	**2390**	**297**	**242**	**99**	**1769**	**293**	**235**	**288**	**0**	**2100**	**-6668**	**-1662**	**1885**	**99**	**194**
2009	**M-S**	5	139	575	294		839	419	413	540	460	2390	491	447	99	2390	426	214	409	0	703		36025	751	99	327
2009	**M-S**	6	124	178	142		422	185	377	229	307	2390	364	265	99	2390	253	231	251	0	1595		-20330	1574	99	154
2009	**M-S**	7	95	163	121		475	149	304	127	181	2390	263	169	99	2390	181	11547	195	0	1632		2770	1988	99	82
2009	**M-S**	8	70	191	115		389	167	330	104	164	2390	226	165	99	2390	187	606	201	0	3016		111	2172	99	88
2009	**M-S**	9	63	253	132		346	188	301	94	152	2390	199	168	99	2390	178	5091	193	0	2872		2744	2773	99	79
2009	**M-S Total**		**104**	**300**	**175**		**548**	**246**	**379**	**247**	**309**	**2390**	**358**	**286**	**99**	**2390**	**275**	**340**	**278**	**0**	**1938**		**-885**	**1707**	**99**	**176**
2009 Total			**107**	**292**	**166**	**1448**	**517**	**295**	**306**	**234**	**268**	**2390**	**321**	**258**	**99**	**1872**	**286**	**264**	**284**	**0**	**2004**	**-44846**	**3756**	**1806**	**99**	**187**
2010	**O-A**	10	67	415	173		191	177	184	90	125	2390	154	151	99	2390	158	524	169	0	1859			2052	99	59
2010	**O-A**	11	68	113	79		160	96	122	71	91	2390	116	93	99	2390	105	268	117	0	2182		7270	2185	99	6
2010	**O-A**	12	84	198	109		243	139	129	55	89	2390	116	113		2390	127	198	138		1959	-3545	-6464	1875	99	28
2010	**O-A**	1	125	338	163		374	206	190	80	128	2390	167	163	99	2390	178	196	181		1948		551	1958	99	79
2010	**O-A**	2	115	266	152		516	259	195	120	154	2390	234	203	99	2390	238	247	239		1461		-1859	1421	99	139
2010	**O-A**	3	91	363	147		477	210	199	349	286	2390	411	254	99	2390	290	319	291	0	1185		1200	1156	99	191
2010	**O-A**	4	86	572	210		600	312	279	468	375	2390	455	350	99	2390	381	243	370	0	1159		-174	1116	99	282
2010	**O-A Total**		**91**	**327**	**147**		**376**	**200**	**194**	**190**	**191**	**2390**	**255**	**195**	**99**	**2390**	**219**	**243**	**221**	**0**	**1712**	**-101295**	**-719**	**1606**	**99**	**120**
2010	**M-S**	5	67	146	97		460	244	330	287	315	2390	352	294		2390	321	326	322	0	866	100684	-14202	769	99	222
2010	**M-S**	6	119	305	178		540	300	404	114	293	2390	340	295	99	2390	297	331	298	0	602		21739	612	99	198
2010	**M-S**	7	100	192	130		511	193	356	100	187	2390	267	189	99	2390	197	1556	210	0	1497		-6994	1517	99	98
2010	**M-S**	8	83	165	109		533	171	329	95	152	2390	220	159	99	2390	174	1220	191	0	2396		-383	2320	99	75
2010	**M-S**	9	73	417	176		400	246	289	102	162	2390	207	200	99	2390	206	360	215	0	2170		5672	2537	99	107
2010	**M-S Total**		**89**	**245**	**141**		**478**	**241**	**353**	**146**	**250**	**2390**	**301**	**247**	**99**	**2390**	**253**	**445**	**260**	**0**	**1580**	**-301690**	**-1602**	**1437**	**99**	**154**
2010 Total			**91**	**296**	**145**		**415**	**214**	**267**	**173**	**216**	**2390**	**274**	**215**	**99**	**2390**	**232**	**286**	**236**	**0**	**1647**	**-176443**	**1959**	**1527**	**99**	**133**

Season: Water Year, October-September







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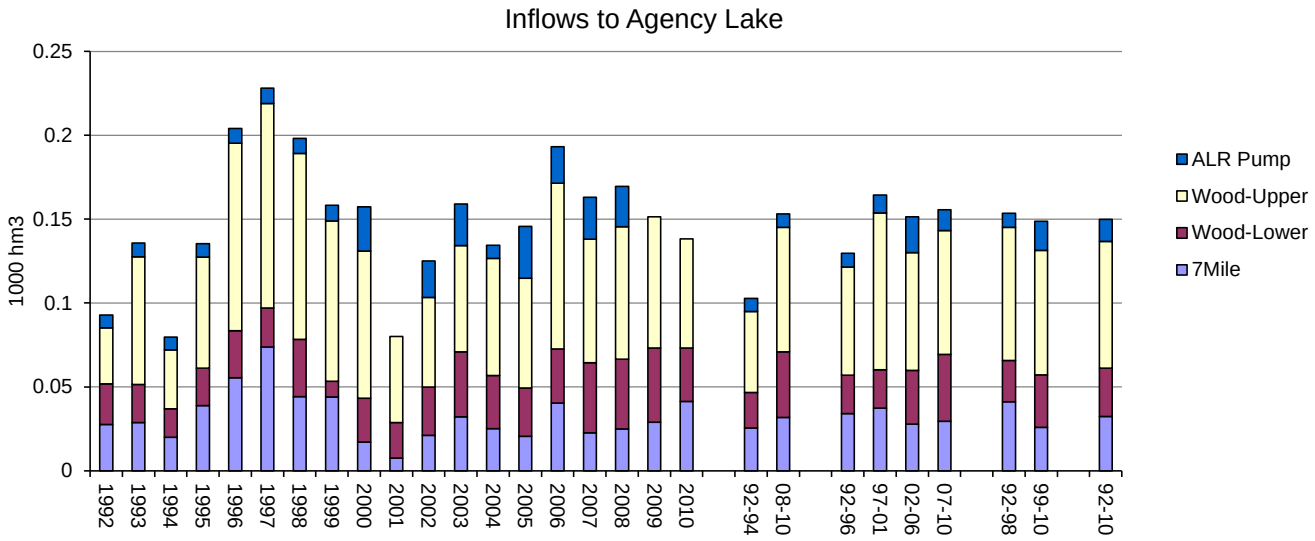

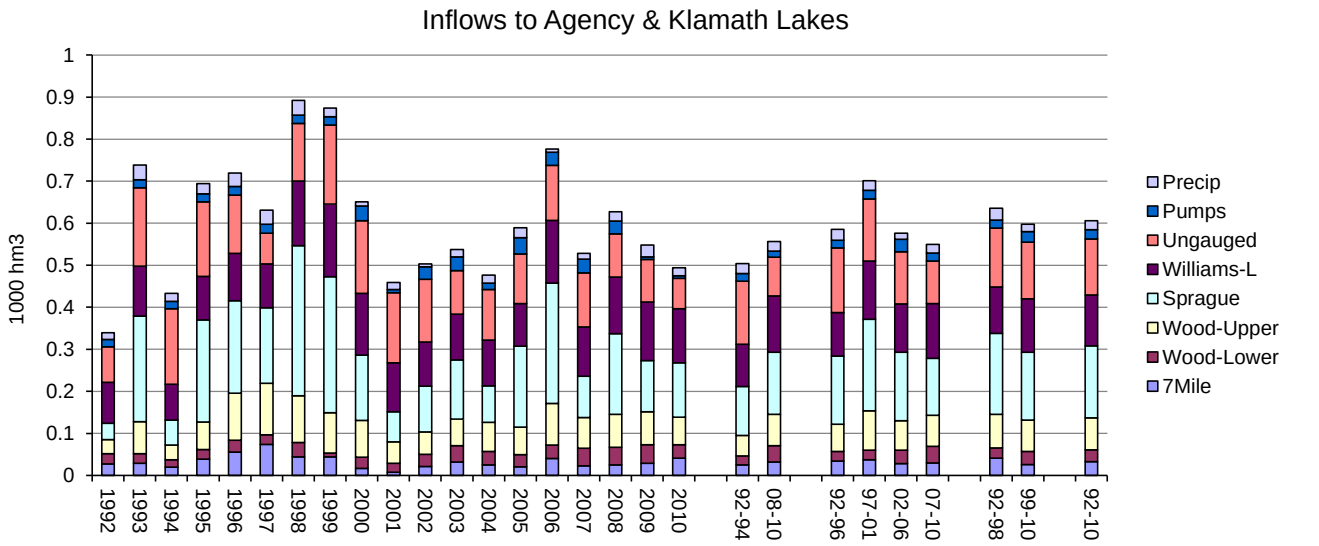

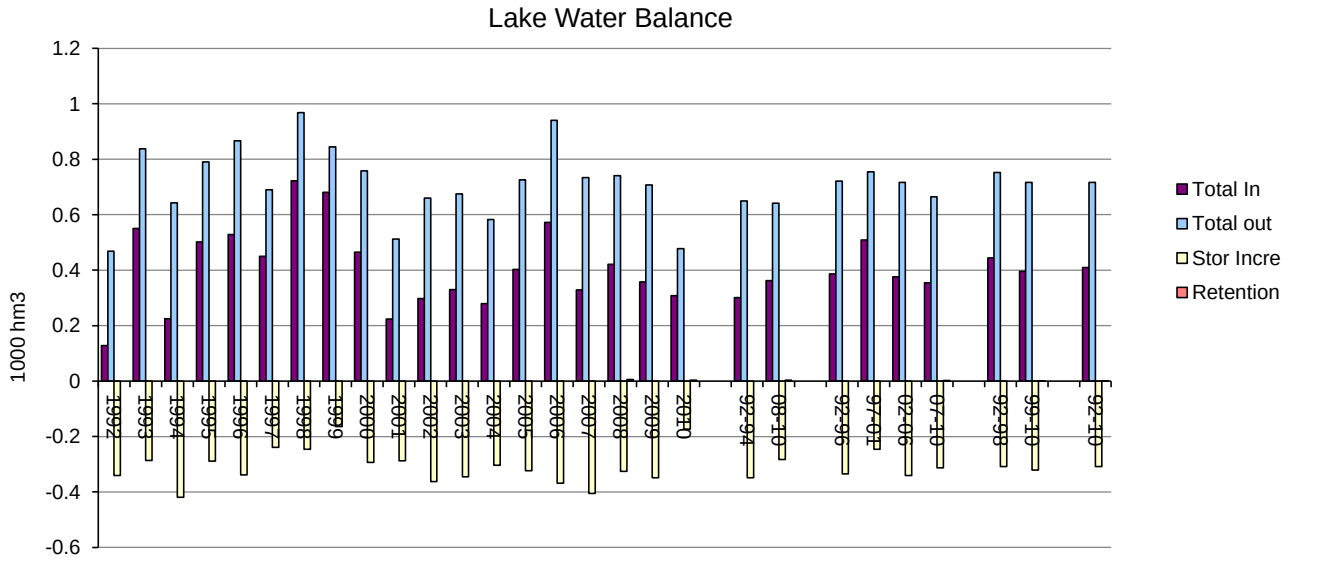

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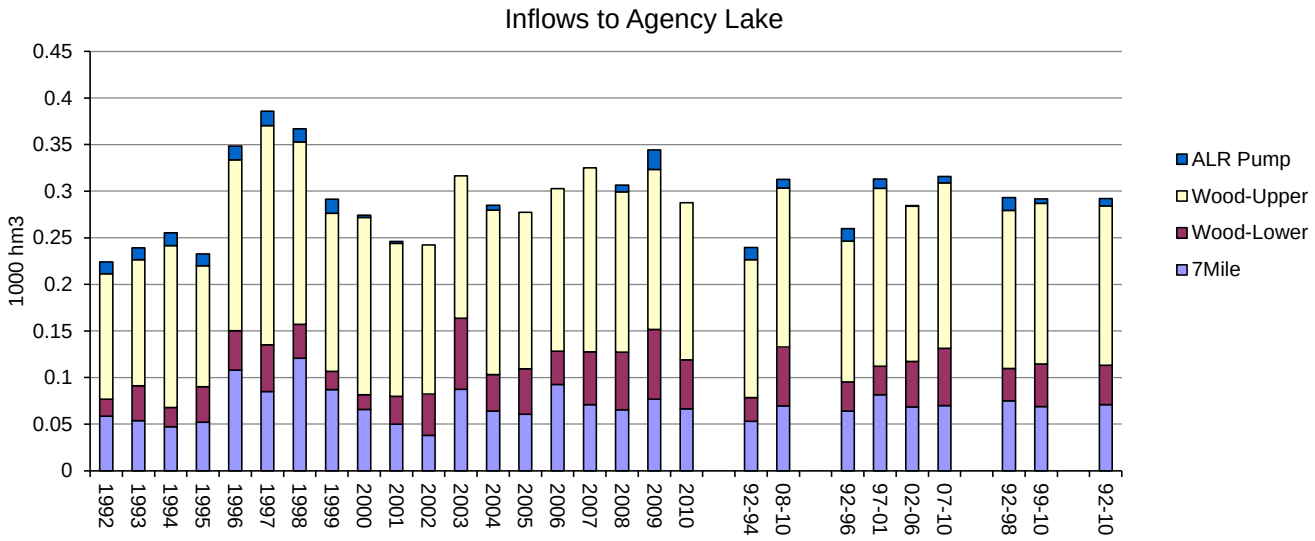
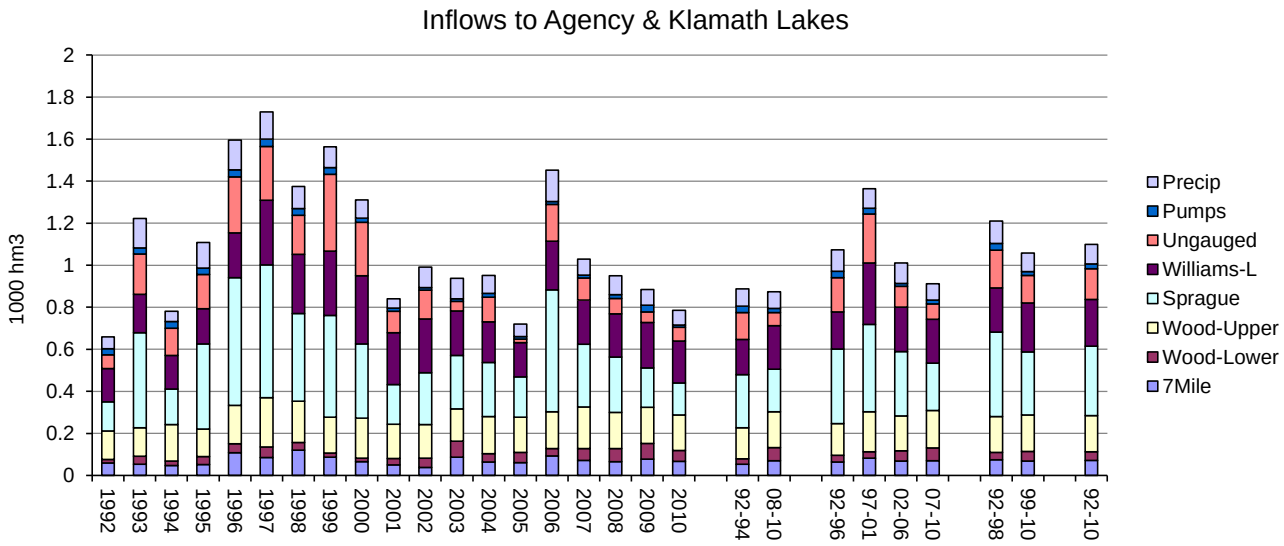
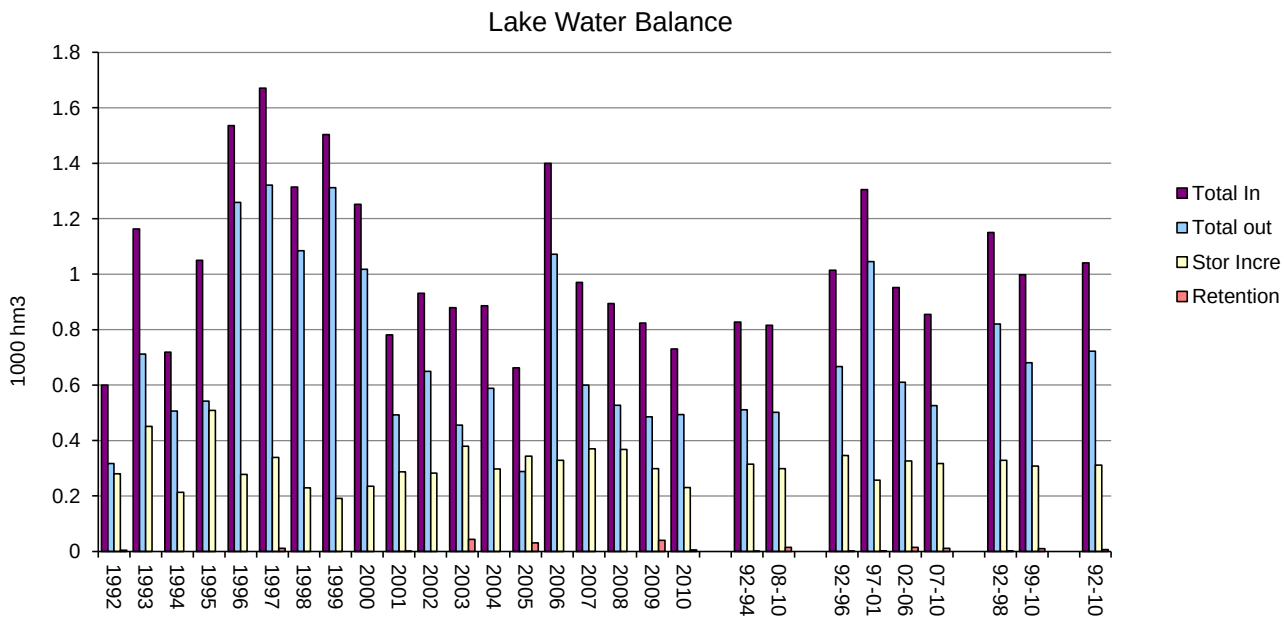
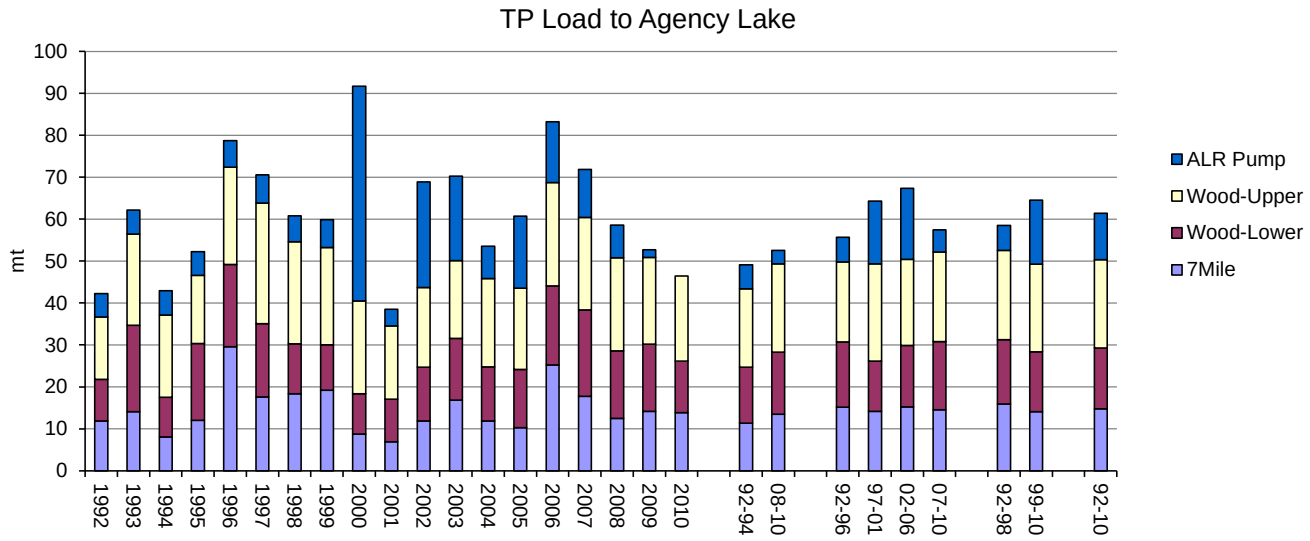
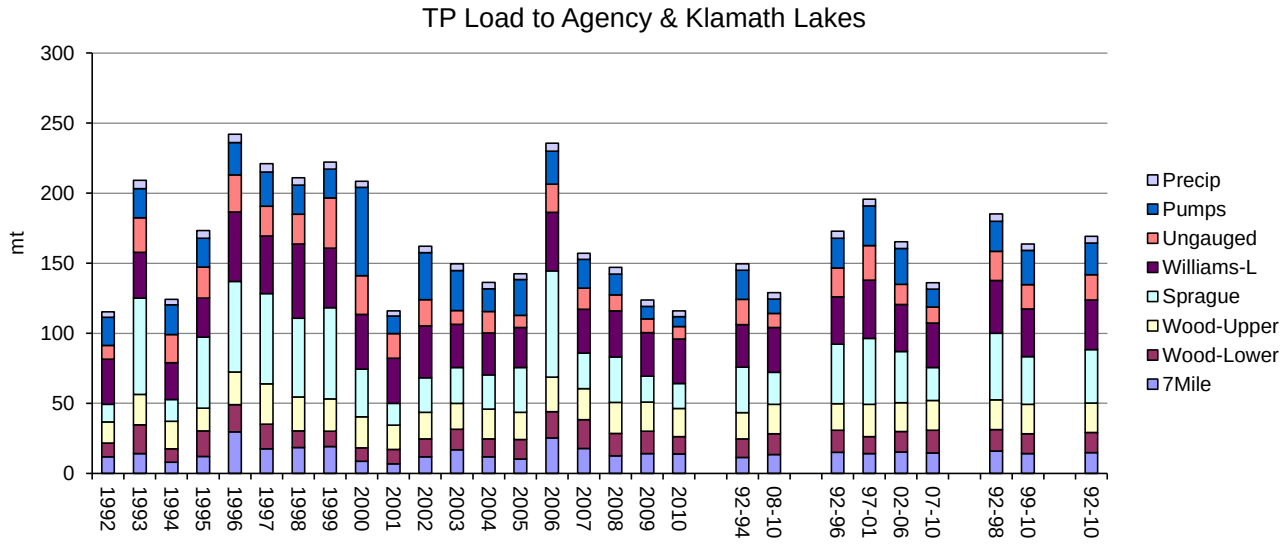


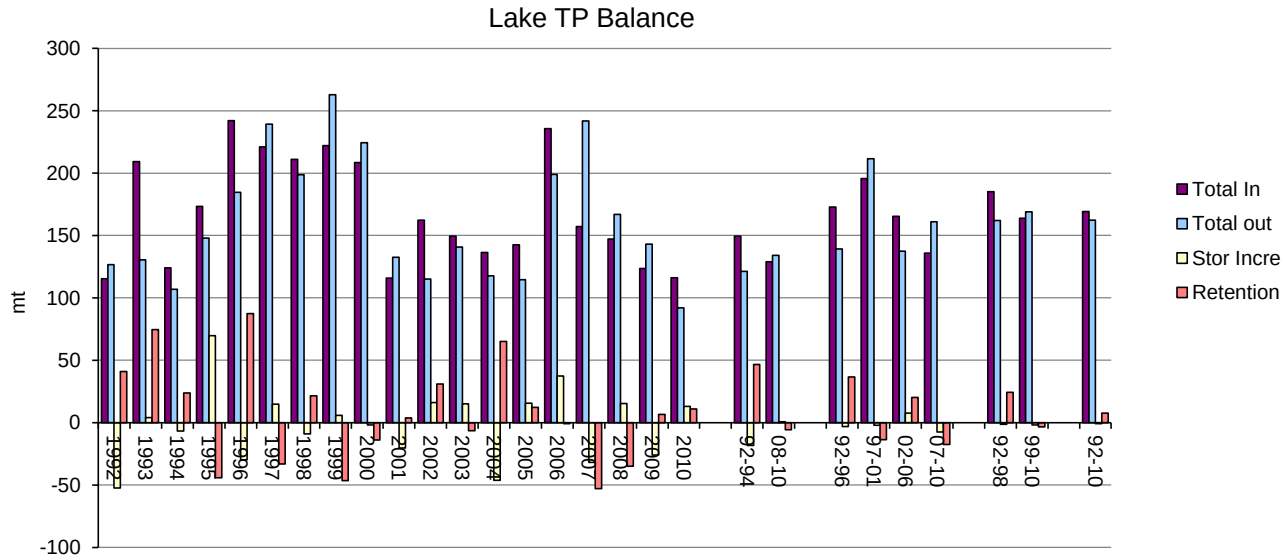




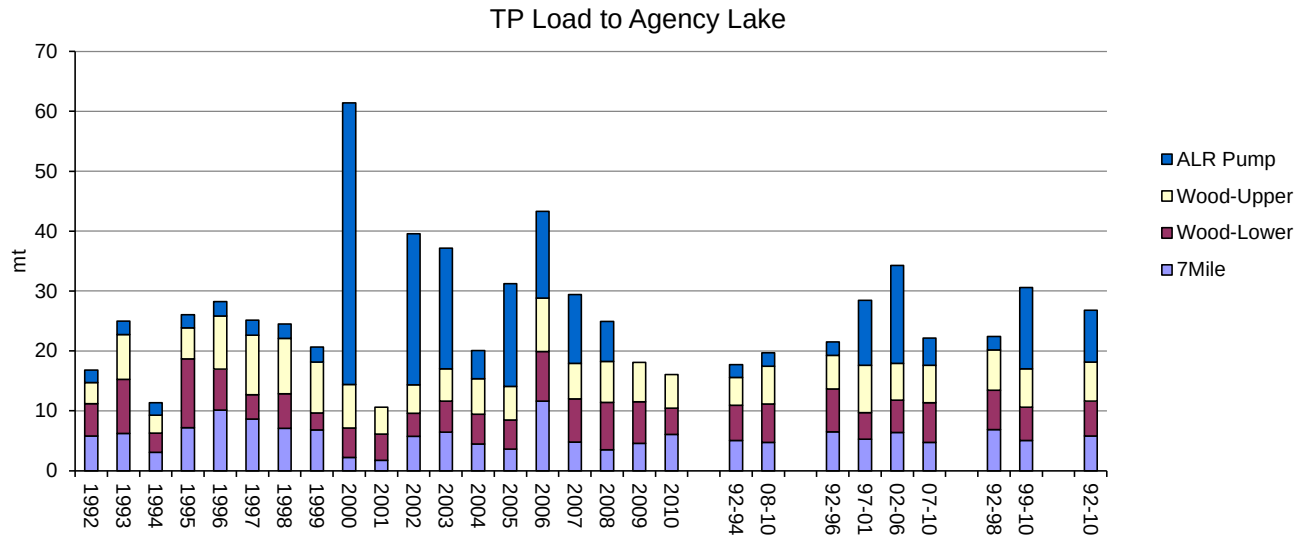
Season: Water Year, October-September

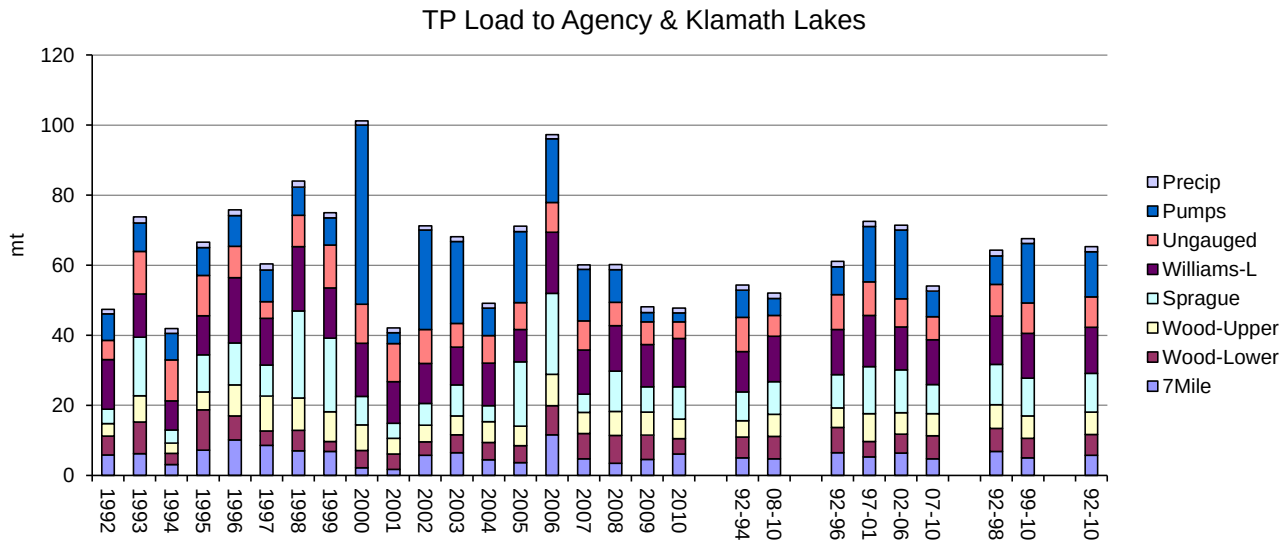


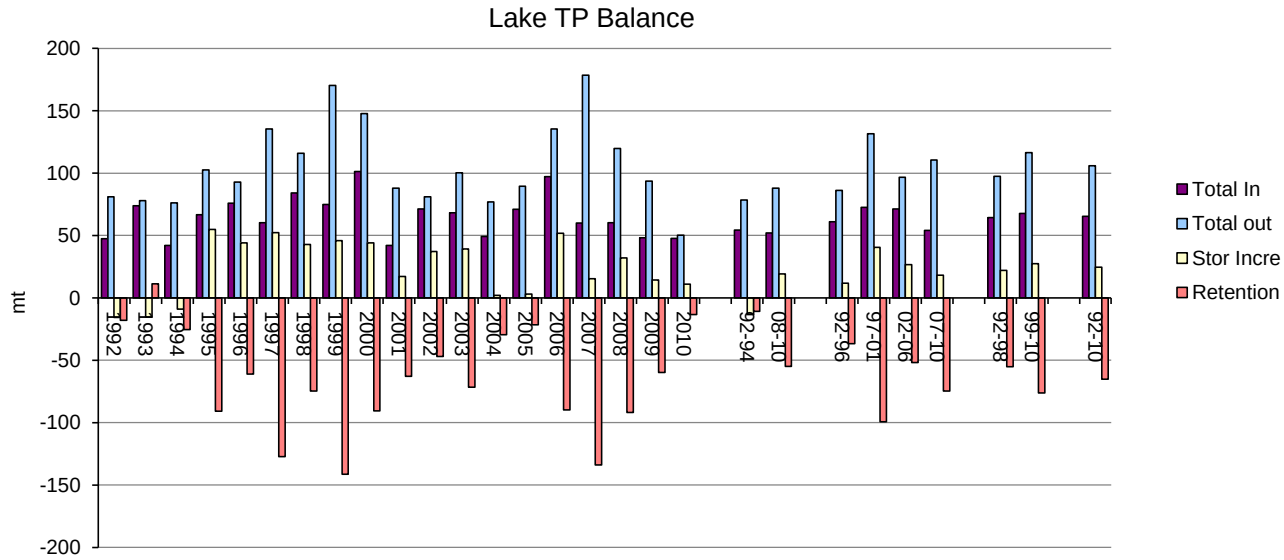




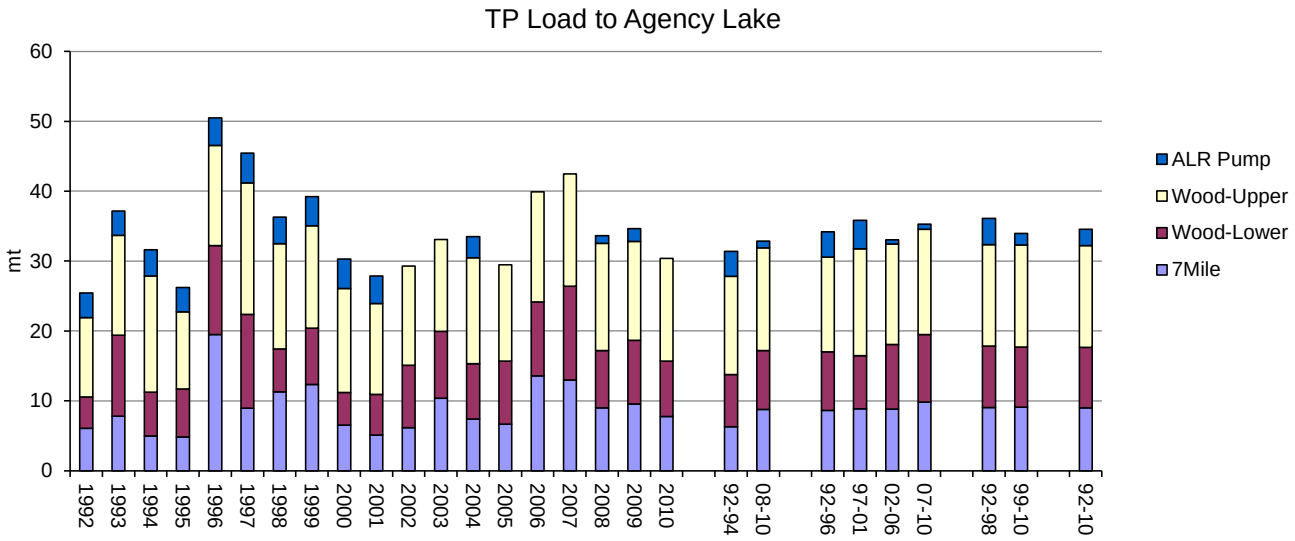
Season: May-September

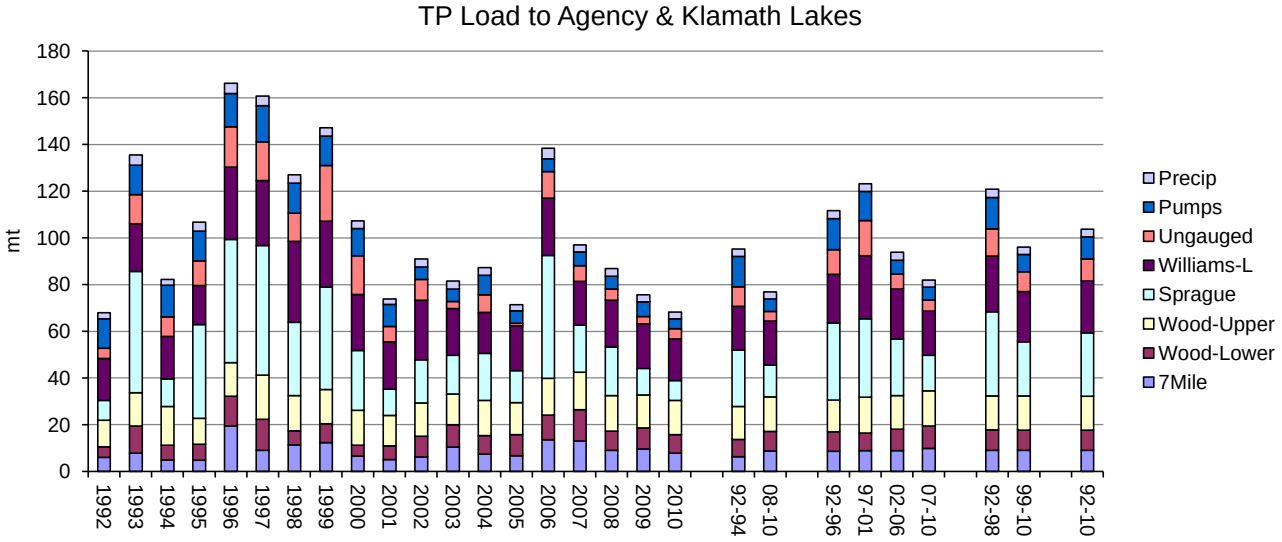


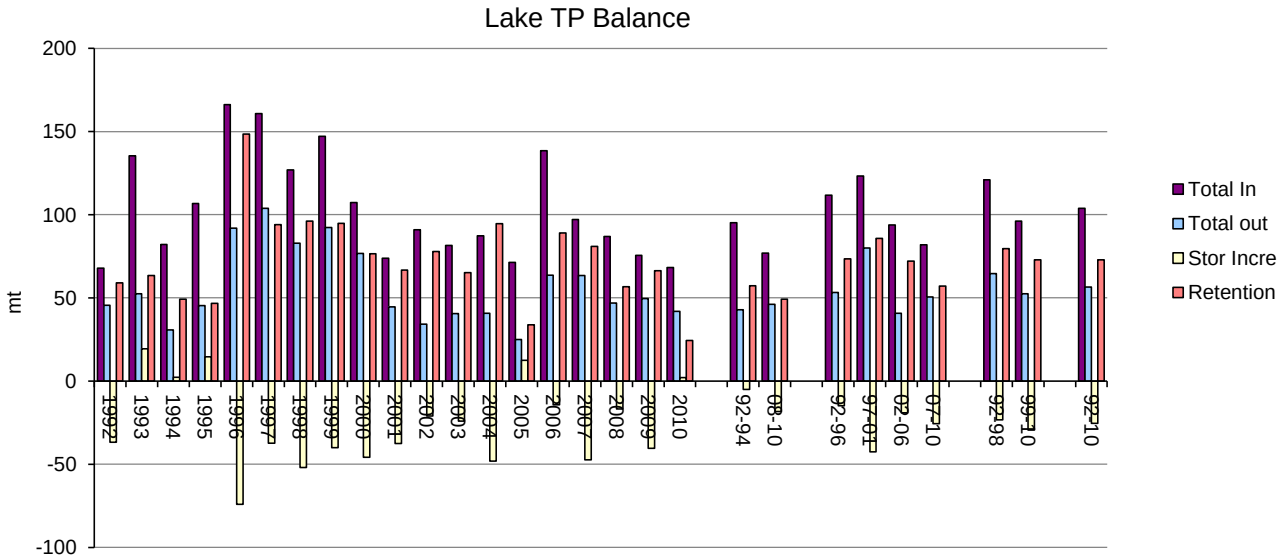




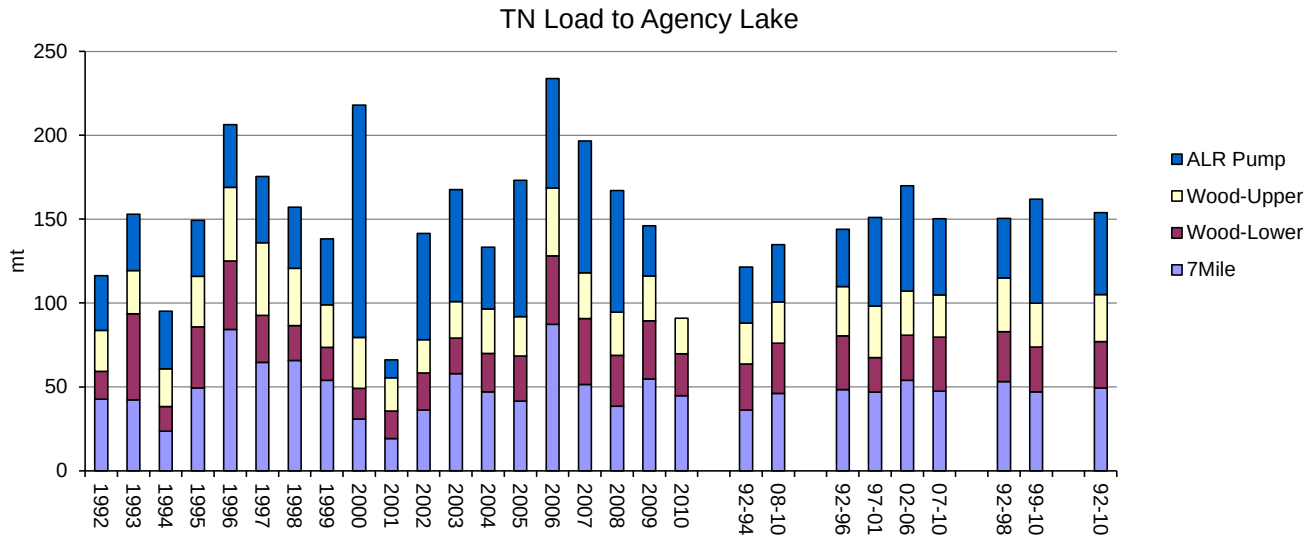
Season: October-April

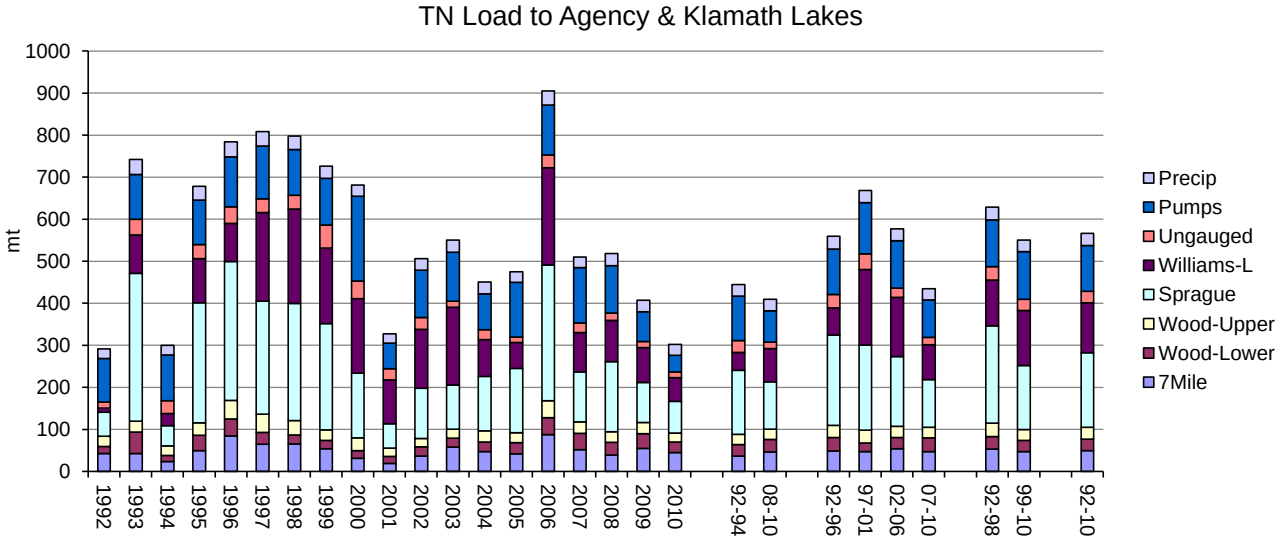


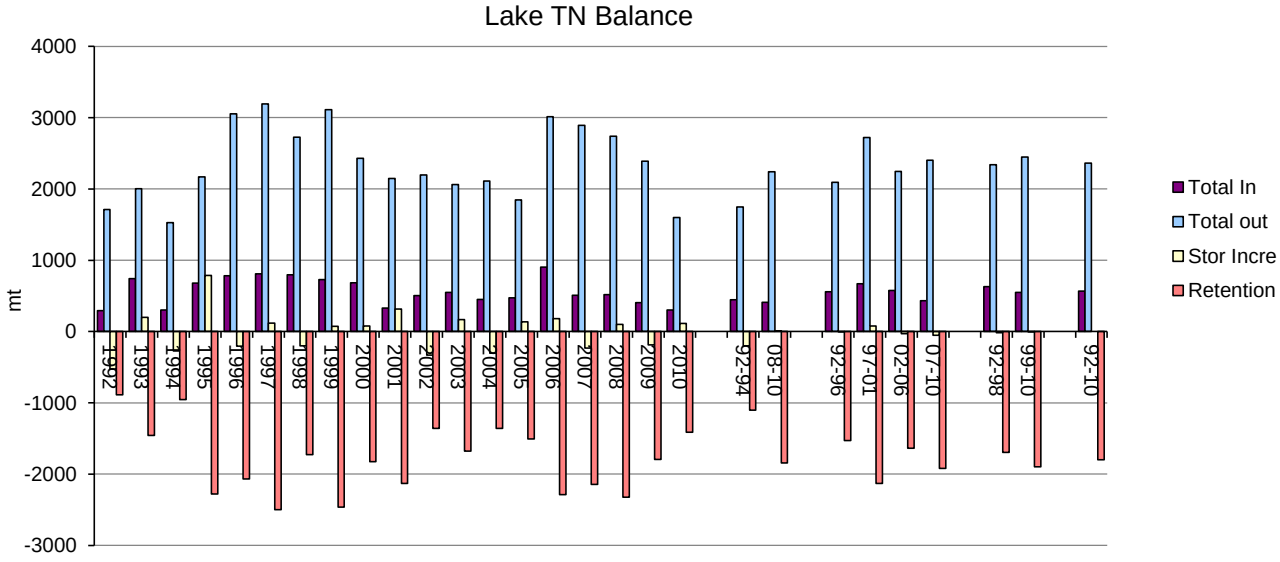




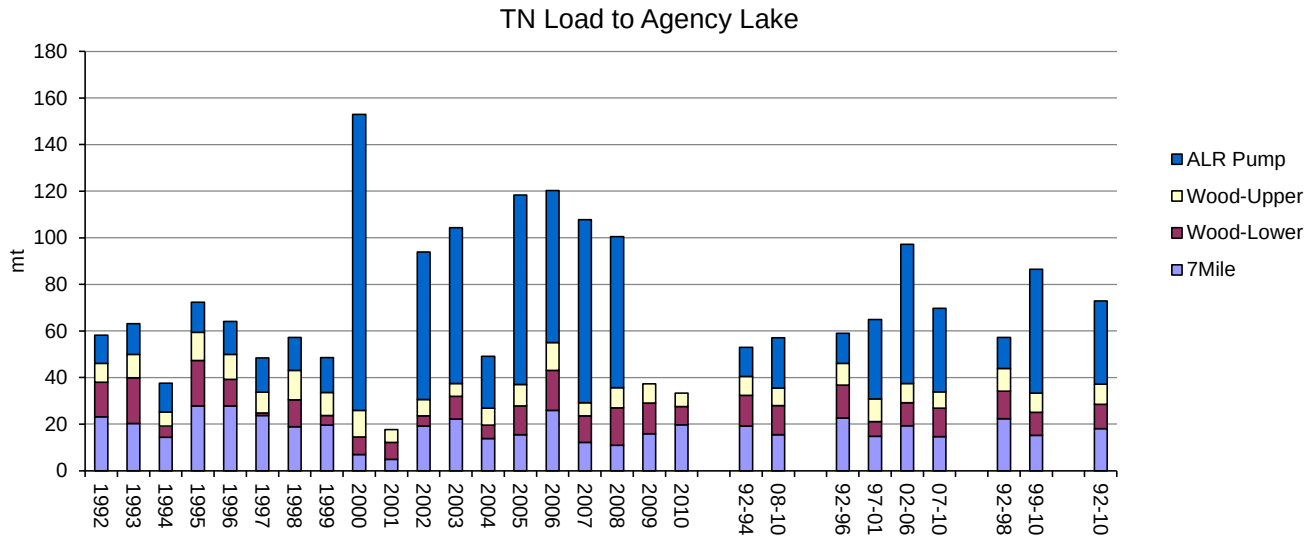
Season: Water Year, October-September

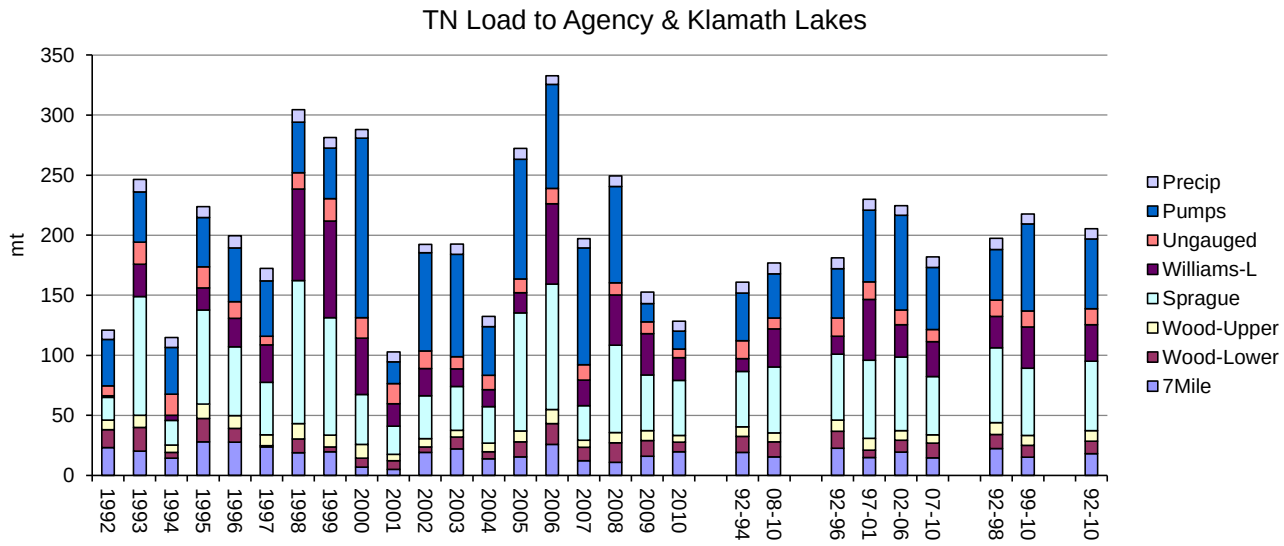


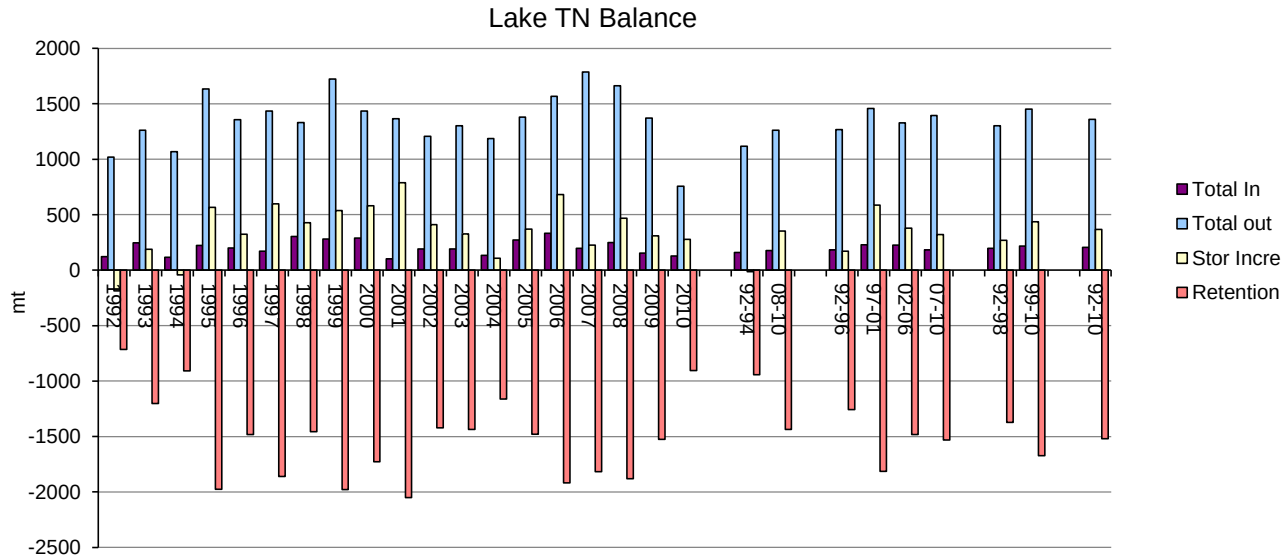




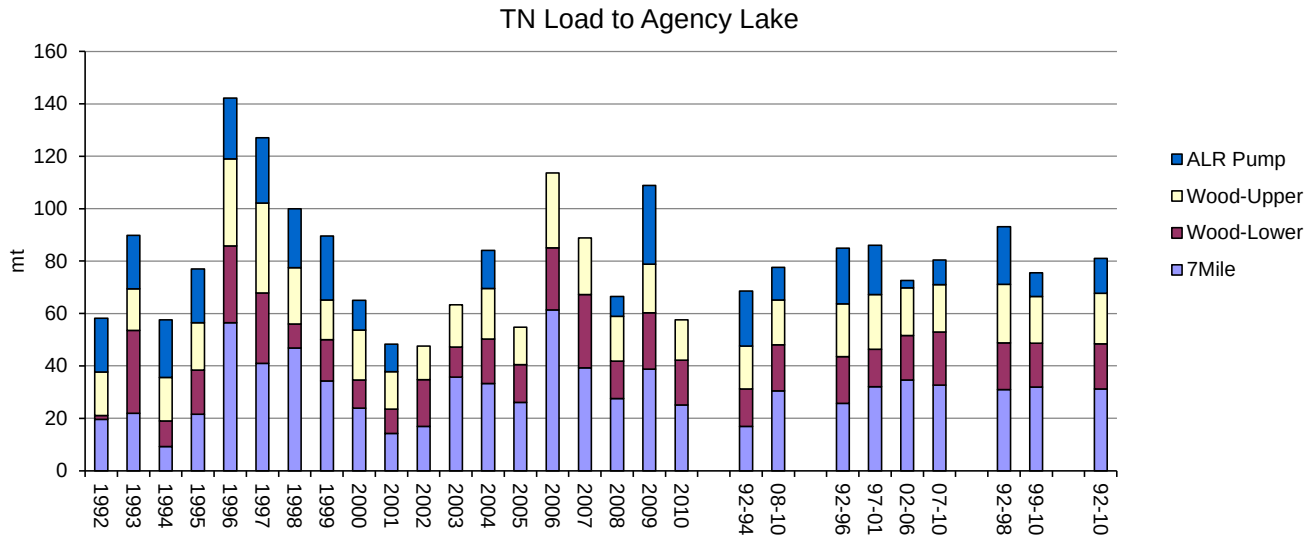
Season: May-September

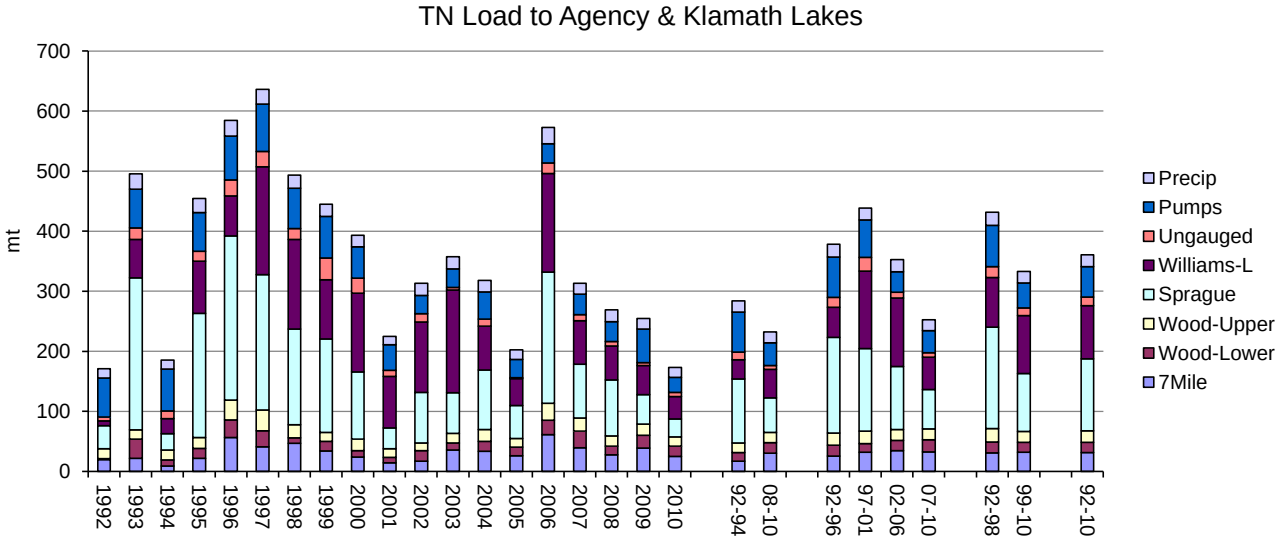


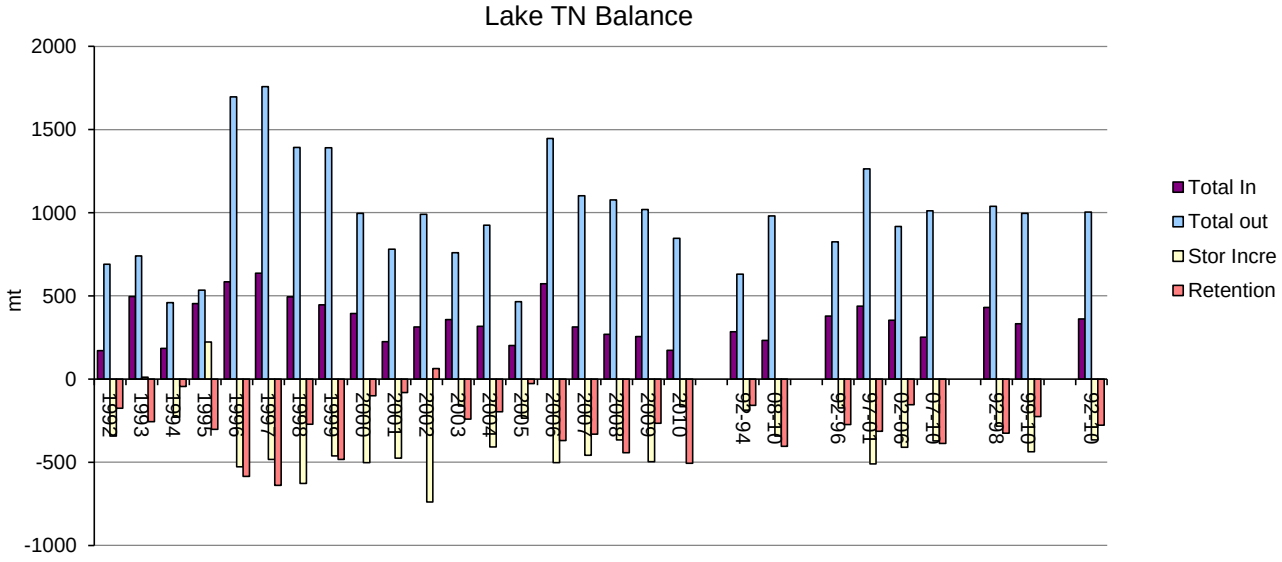




Season: October-April







Appendix F
Seasonal & Yearly Variations in Mass Balance Terms

Figures

F1 Seasonal and Annual Variations in Mass Balance Terms

Figure F1: Seasonal and Annual Variations in Mass Balance Terms

Description: Each figure shows the monthly, seasonal and annual variations in each mass balance term and nutrient species including:
Time series plots of monthly flows (shaded), nutrient loads (lines) and concentrations (lines) by mass balance term.
Annual mean +/- 1 standard error of flows, loads and concentrations by water year and multi-year periods
Monthly mean +/- 1 standard error of flows, loads and concentrations by month and season
Trend slopes +/- 1 standard error and level of significance (p-value) by month and season, linear regression

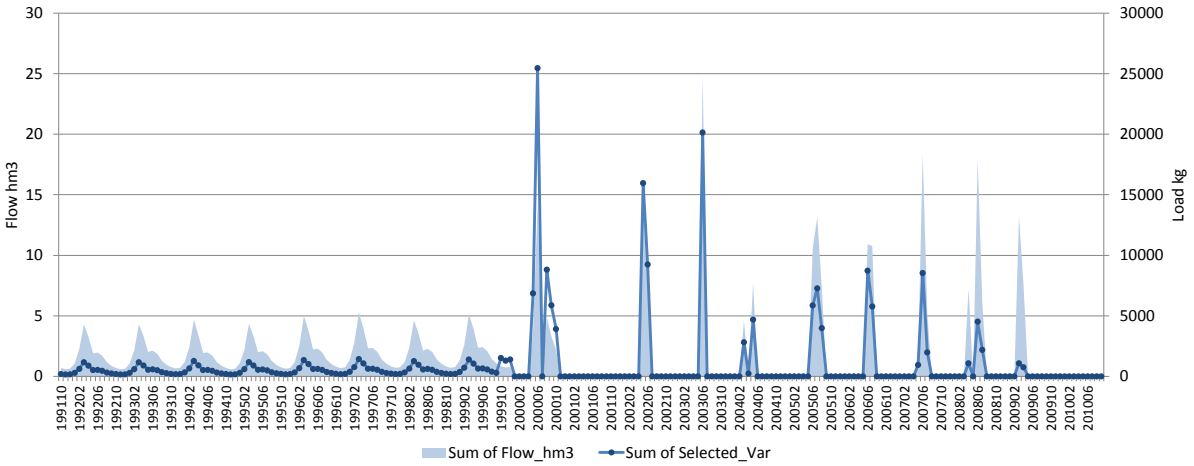
Variables: Flow, Total P, Total N

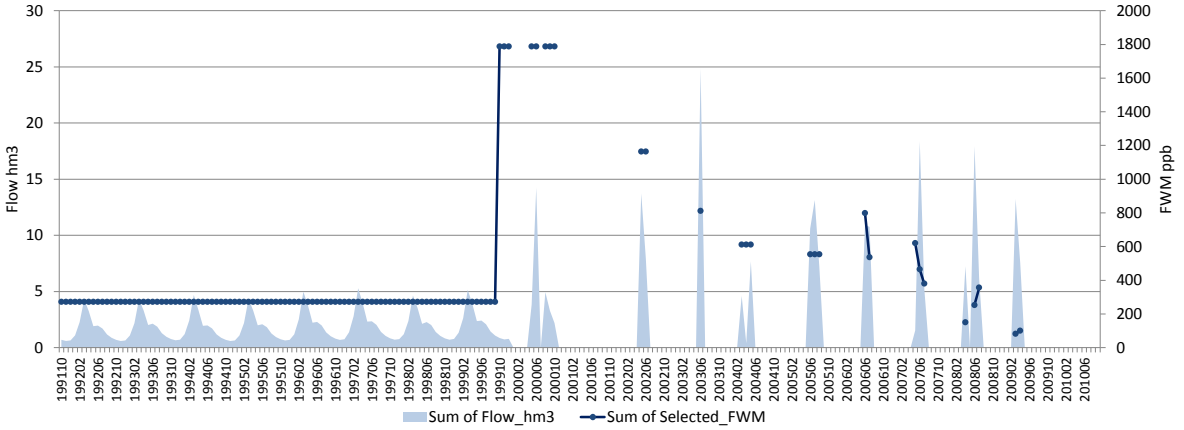
Seasons: Non-growing Season, October-April
Growing Season, May-September
Peak Algal Growth Season, June-August

Note: **Trend summaries in these figures are based on linear regression estimates and may differ from slopes and significance levels reported using the Seasonal Kendall Test, which is a more robust and powerful trend test, shown in Appendix G**

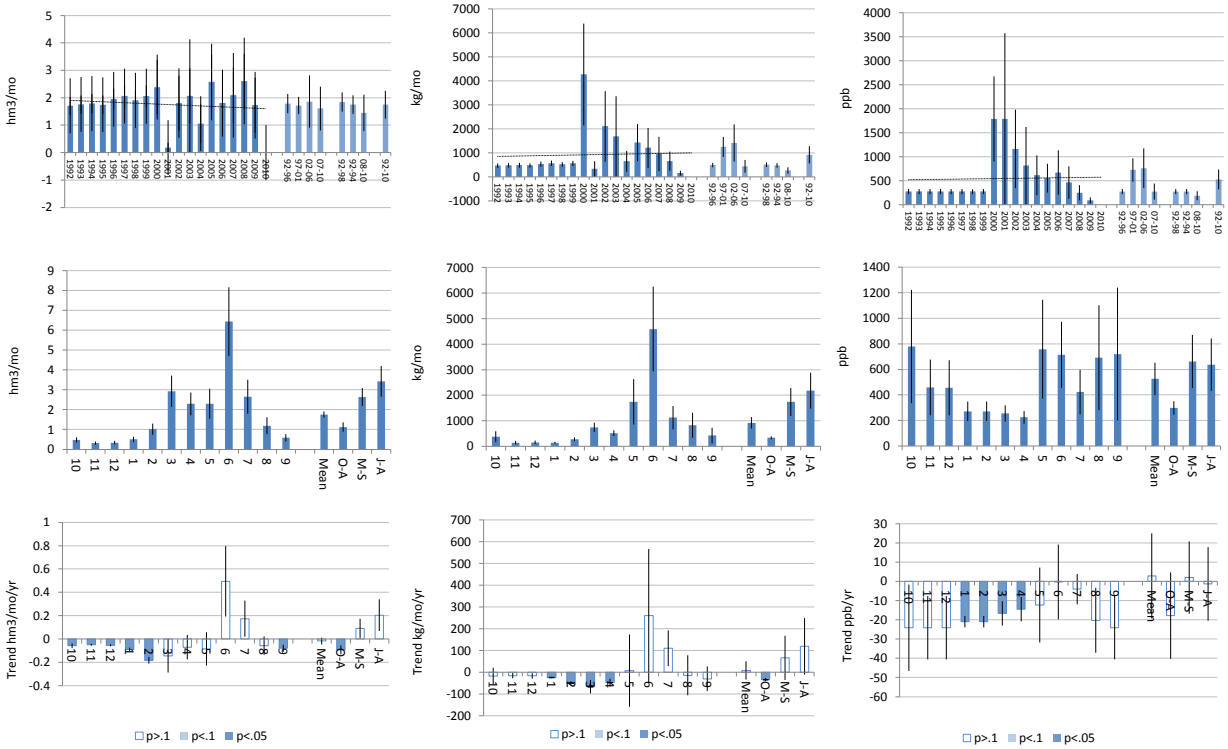
Total Pages: 44

Seasonal & Yearly Variations in Lake Mass Balance Variable: TP Term: Agency Lake Ranch



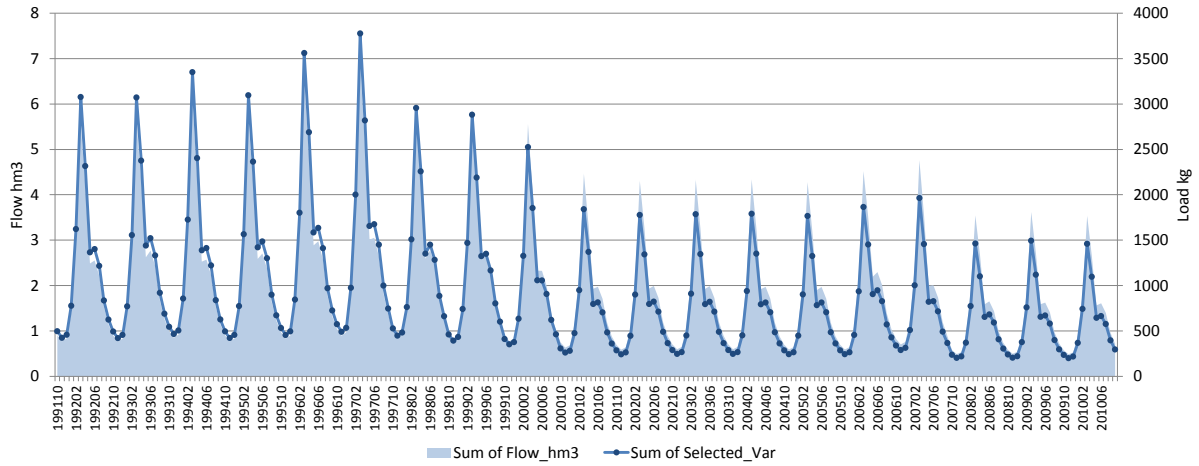


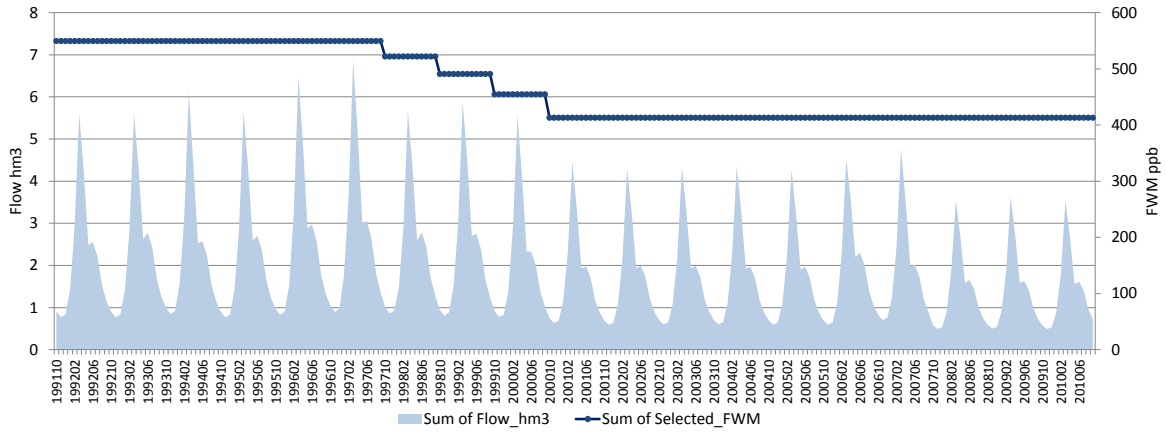
Flow hm3/month Load kg/month TP FWM Concentration ppb



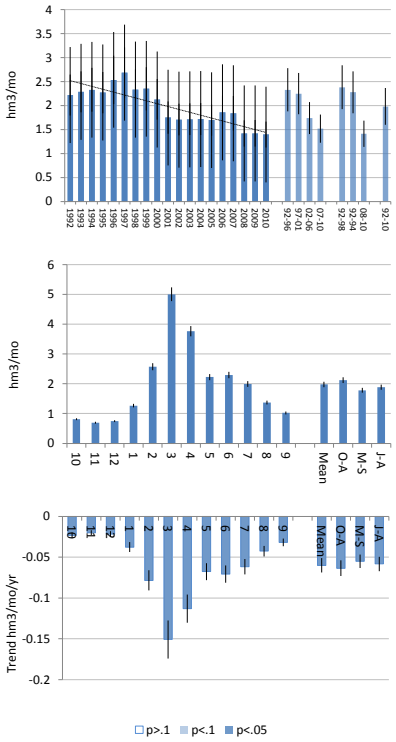
06/22/12

Seasonal & Yearly Variations in Lake Mass Balance Variable: TP Term: Pumped to Klamath L

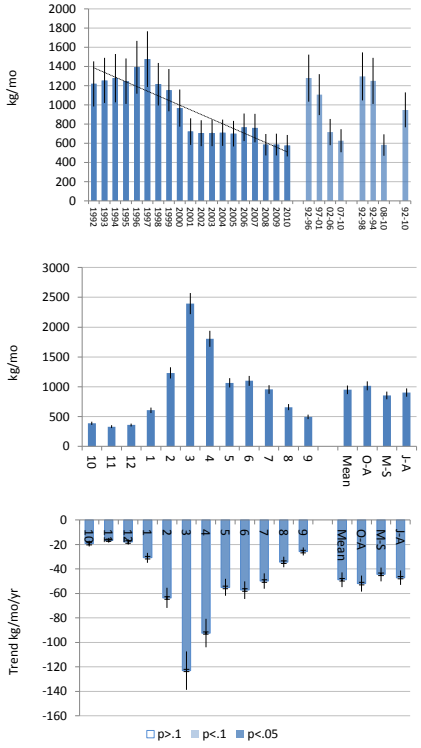




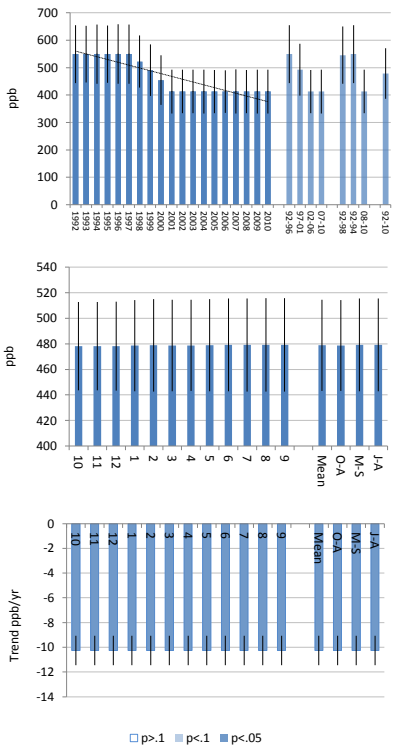
Flow hm3/month



Load kg/month TP

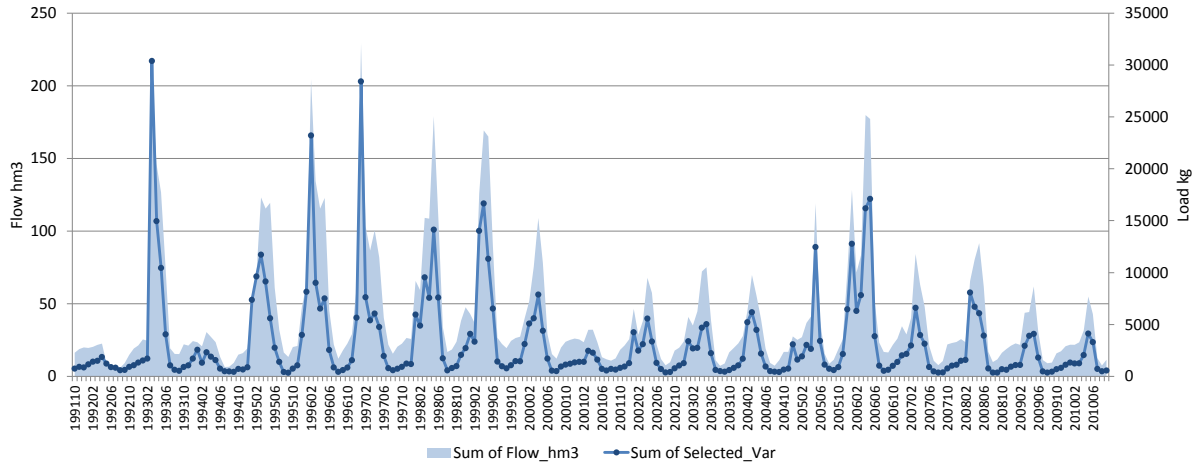


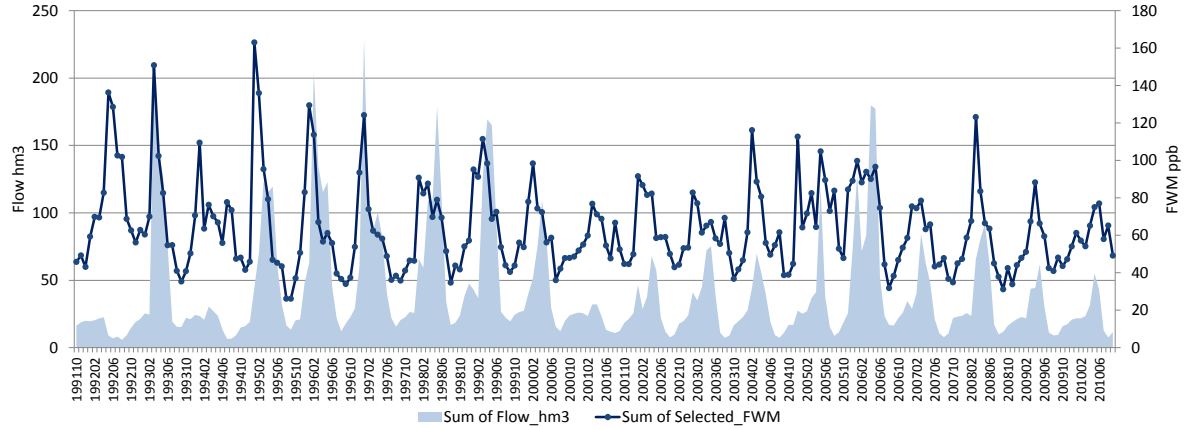
FWM Concentration ppb



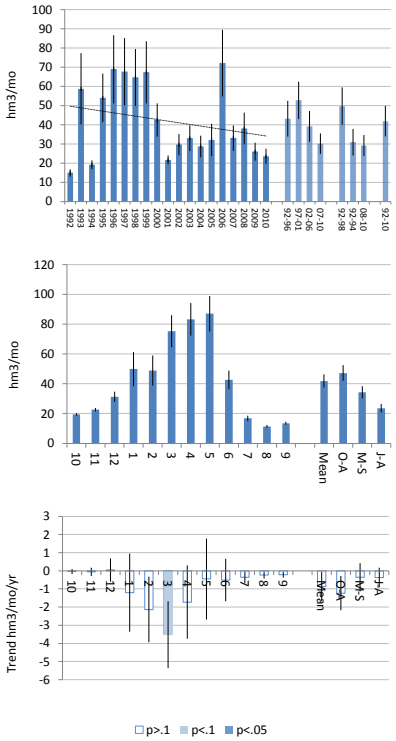
06/22/12

Seasonal & Yearly Variations in Lake Mass Balance Variable: TP Term: Sprague

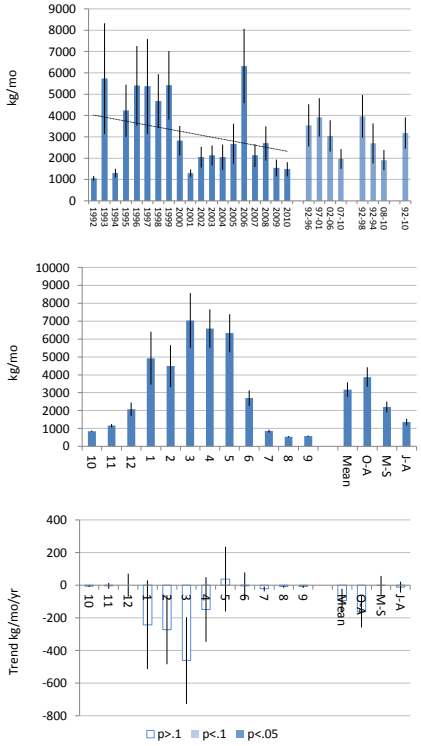




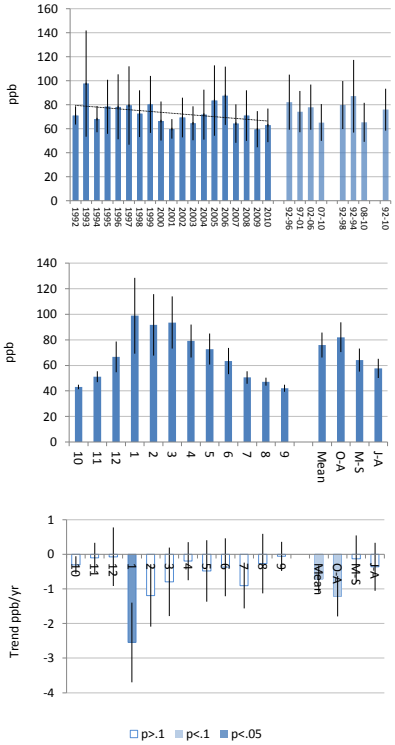
Flow hm3/month



Load kg/month TP

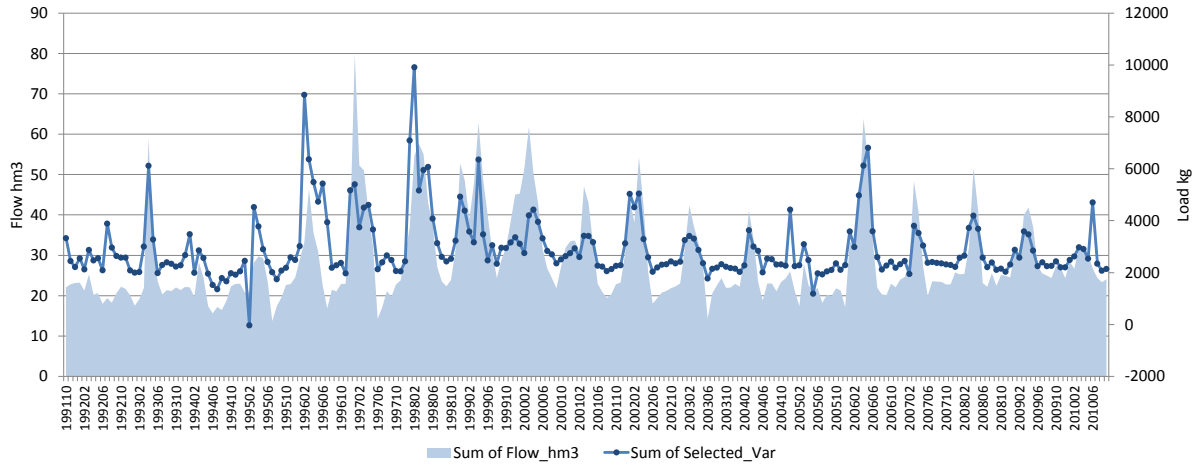


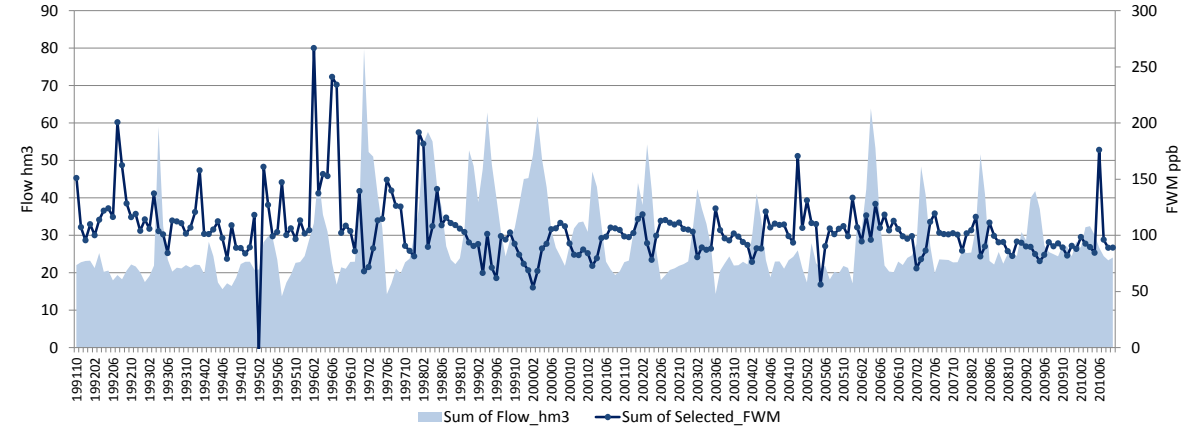
FWM Concentration ppb



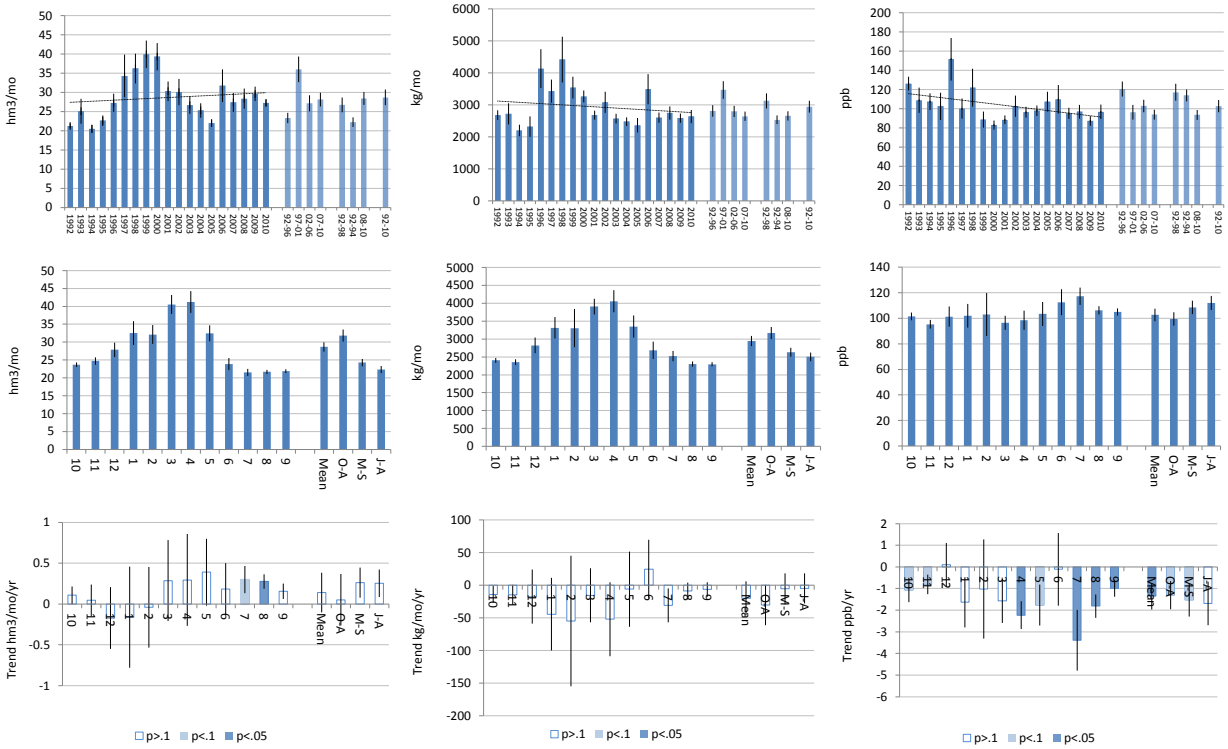
06/22/12

Seasonal & Yearly Variations in Lake Mass Balance Variable: TP Term: Williamson-Sprague



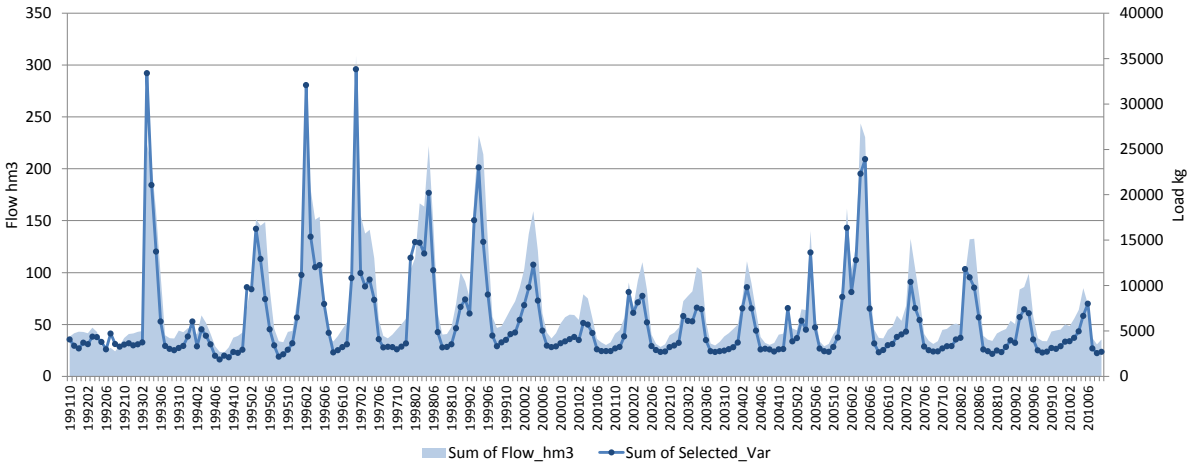


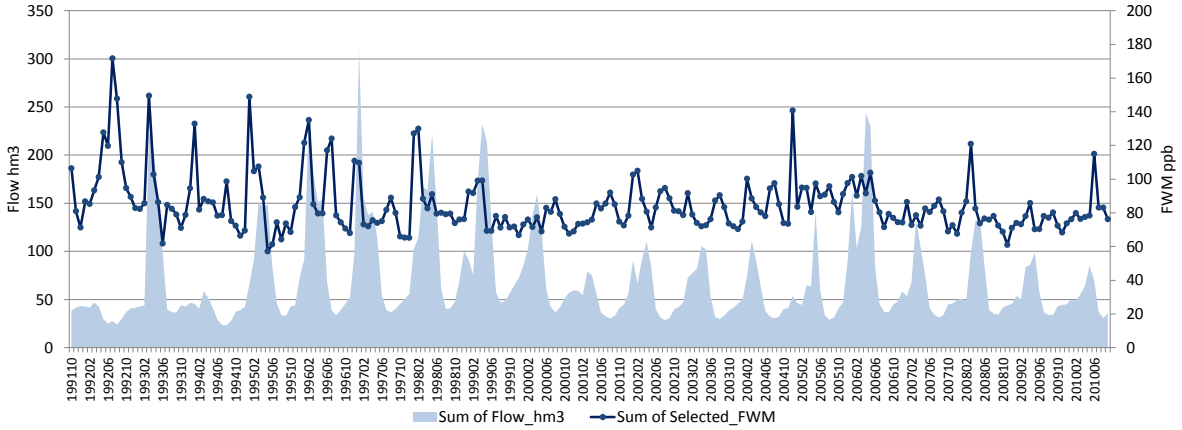
Flow hm3/month Load kg/month TP FWM Concentration ppb



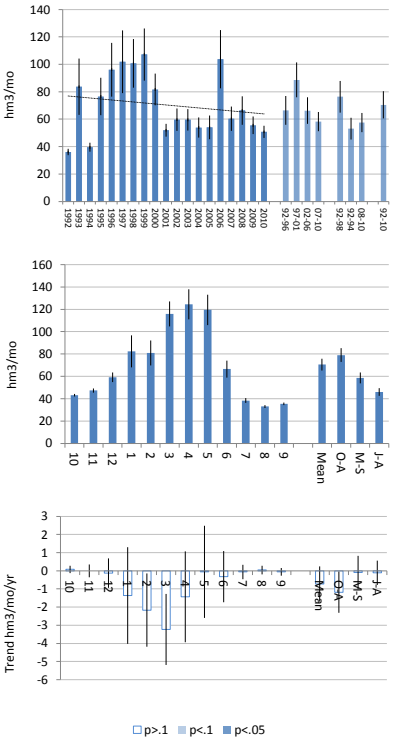
06/22/12

Seasonal & Yearly Variations in Lake Mass Balance Variable: TP Term: Williamson Mouth

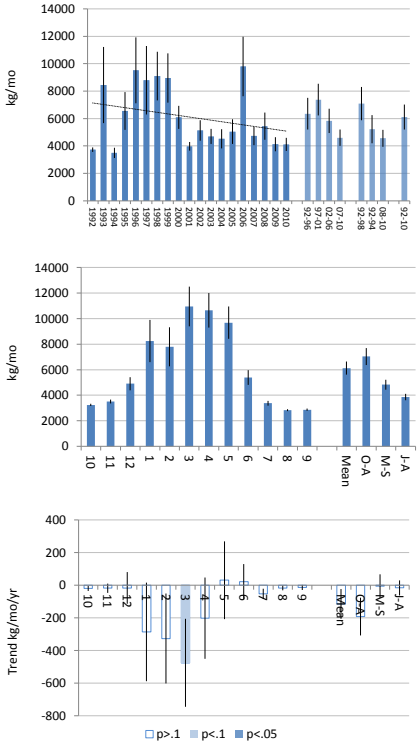




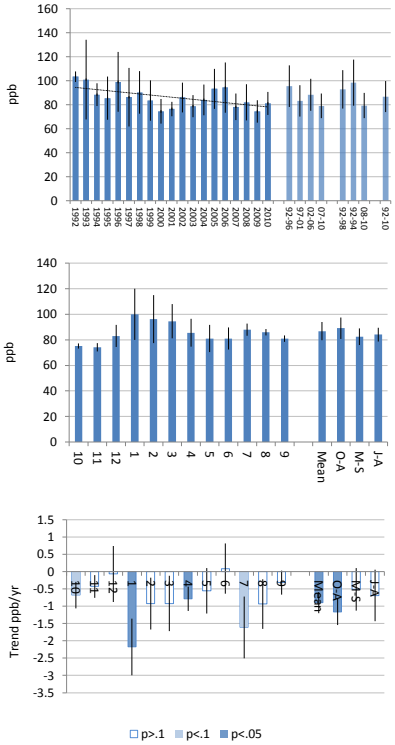
Flow hm3/month



Load kg/month TP

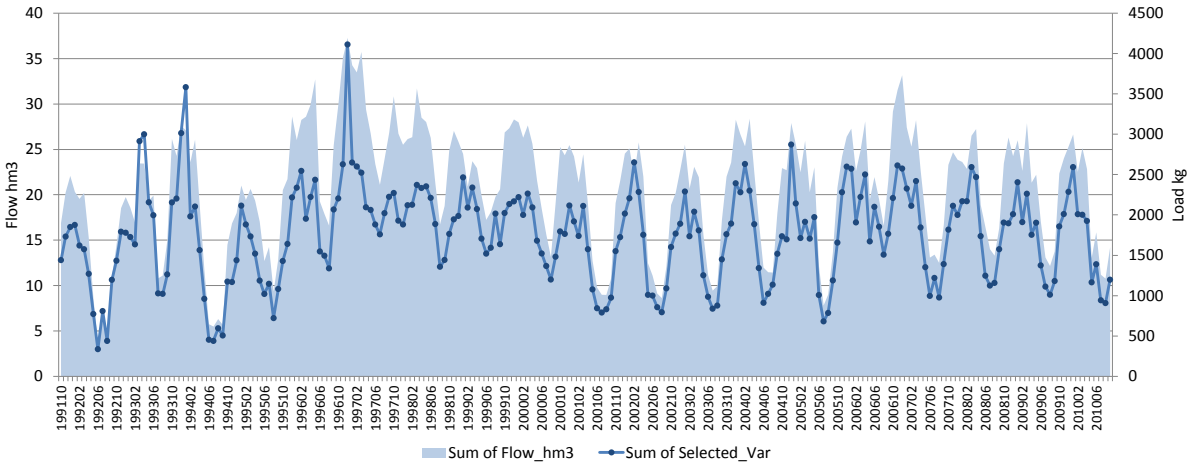


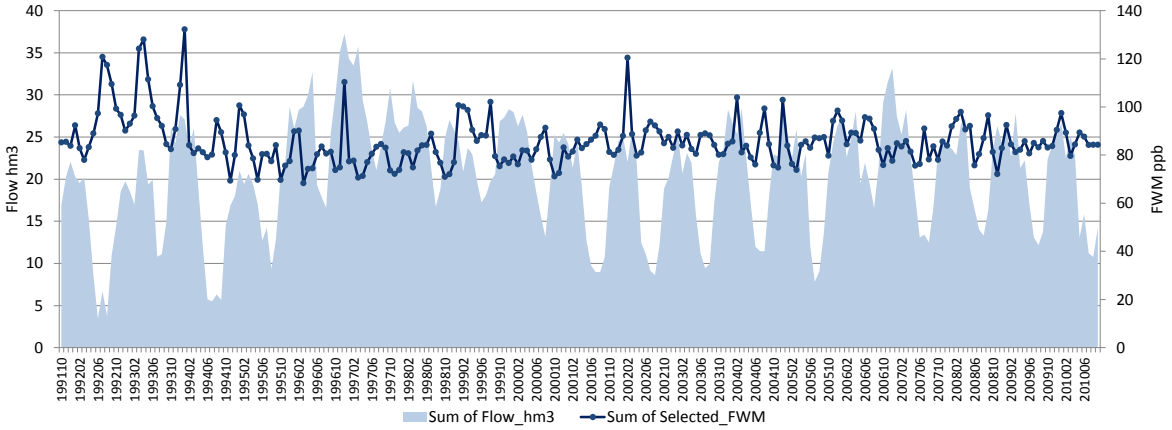
FWM Concentration ppb



06/22/12

Seasonal & Yearly Variations in Lake Mass Balance Variable: TP Term: Wood_Weed





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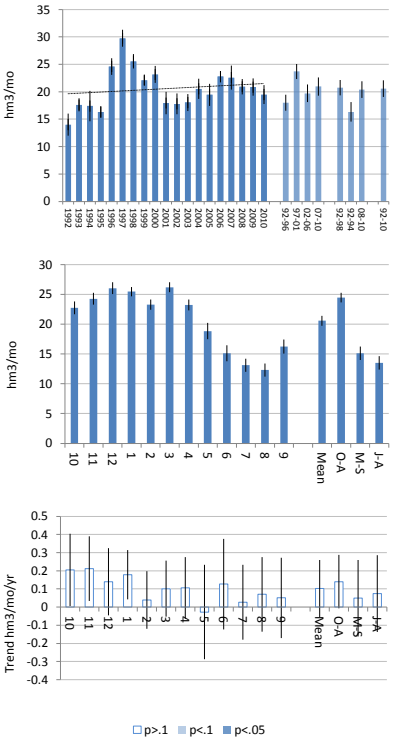
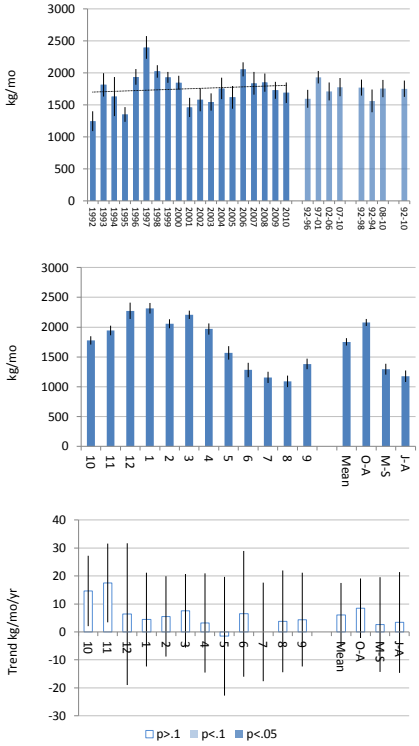
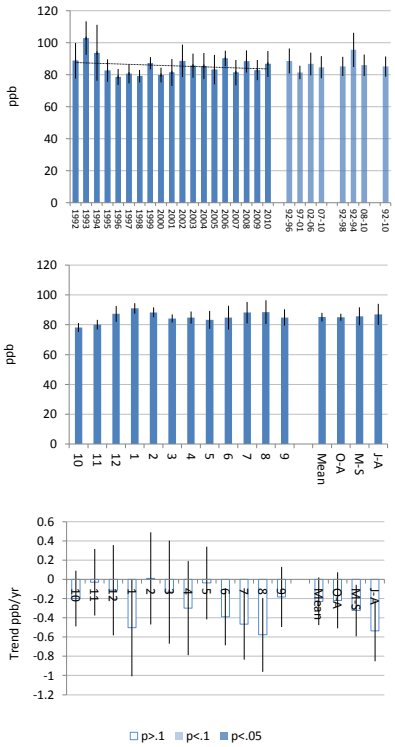


Load kg/month TP

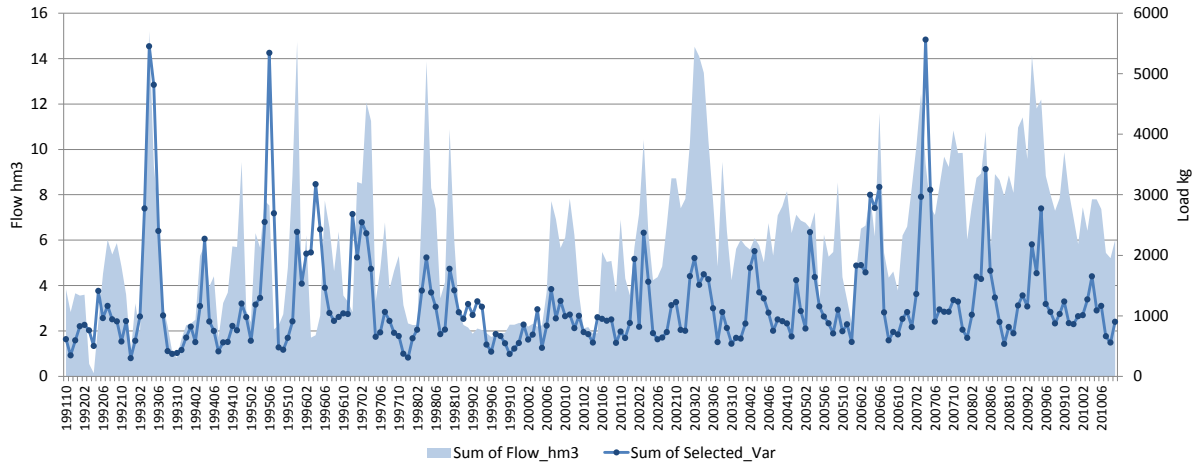


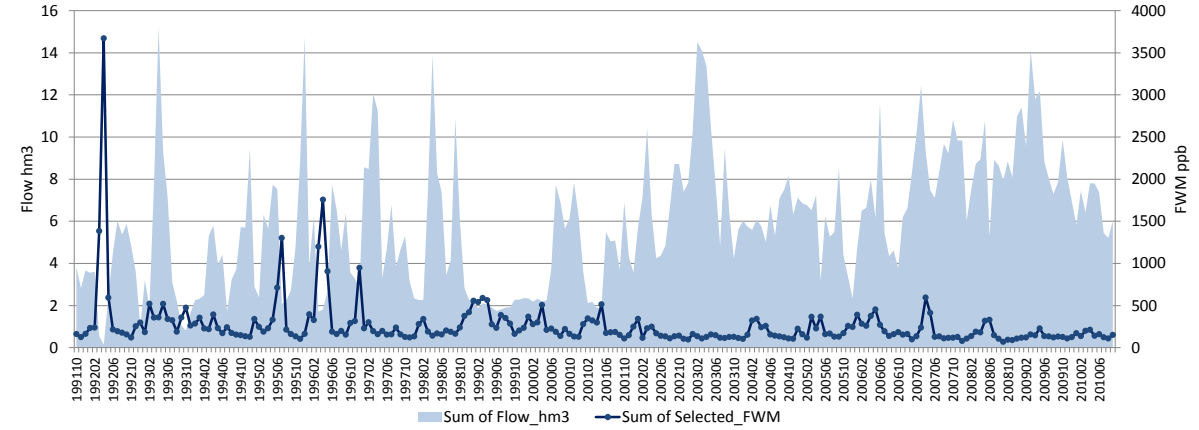
FWM Concentration ppb



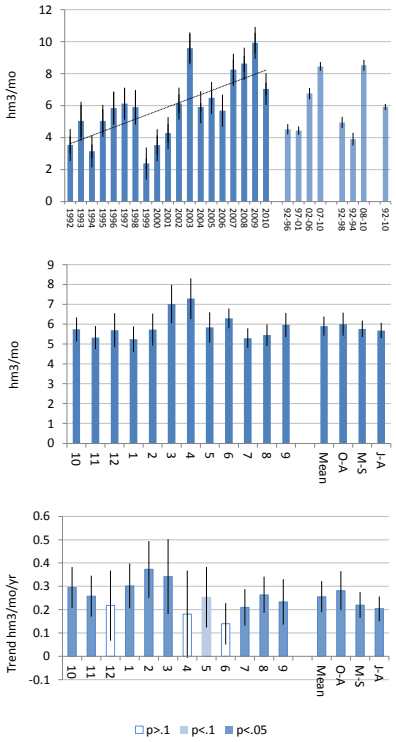
06/22/12

Seasonal & Yearly Variations in Lake Mass Balance Variable: TP Term: Wood Dike - Weed

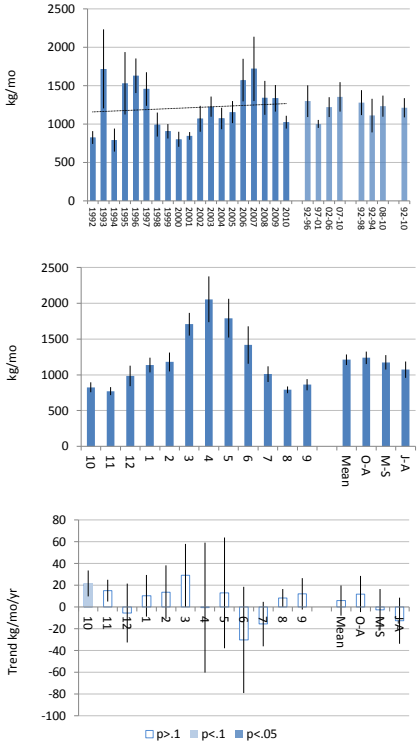




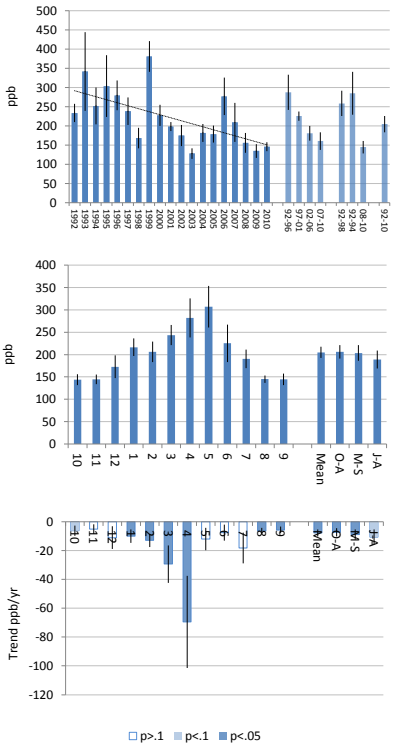
Flow hm3/month



Load kg/month TP



FWM Concentration ppb



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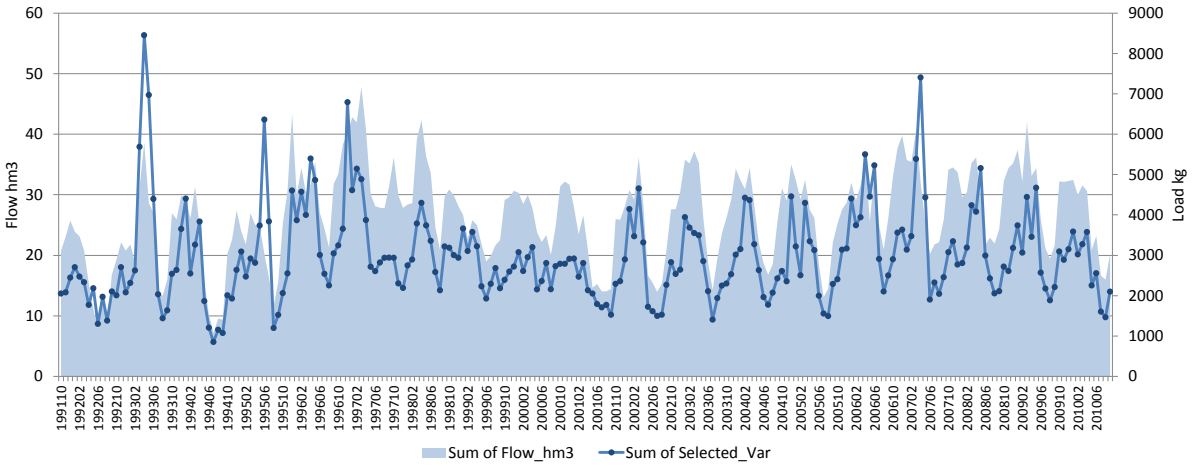
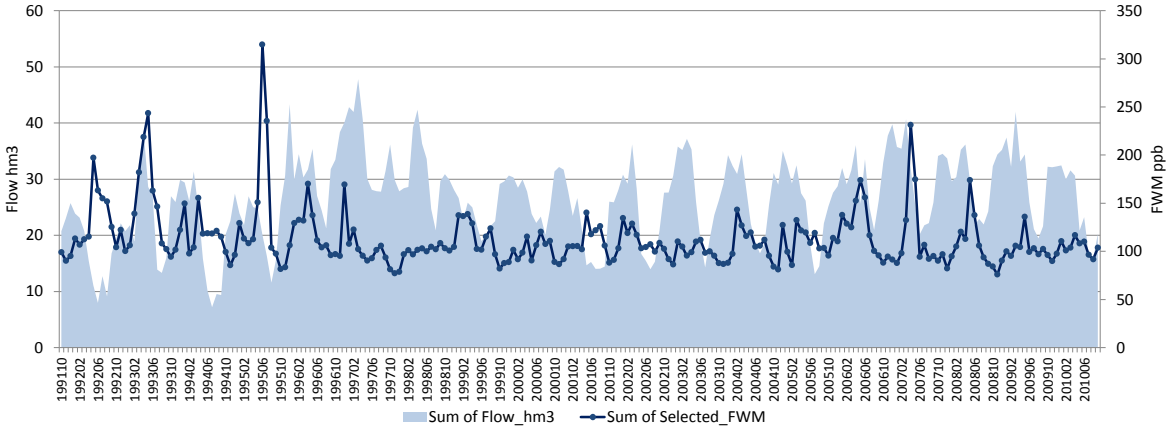
Seasonal & Yearly Variations in Lake Mass Balance Variable: TP Term: Wood_Dike





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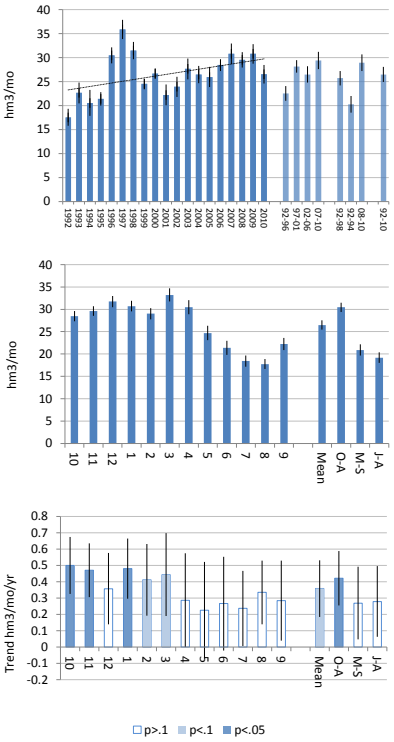
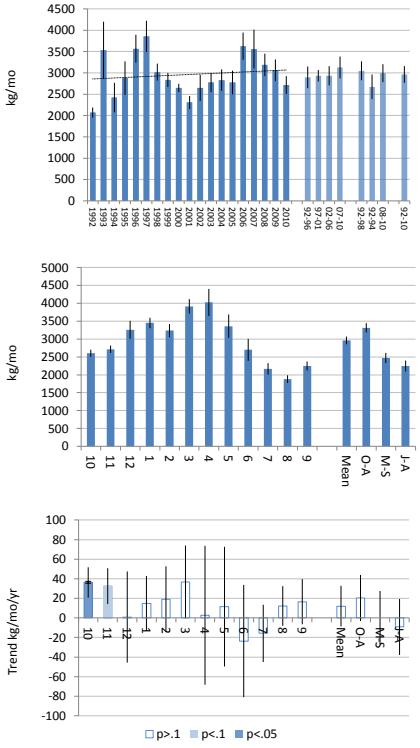
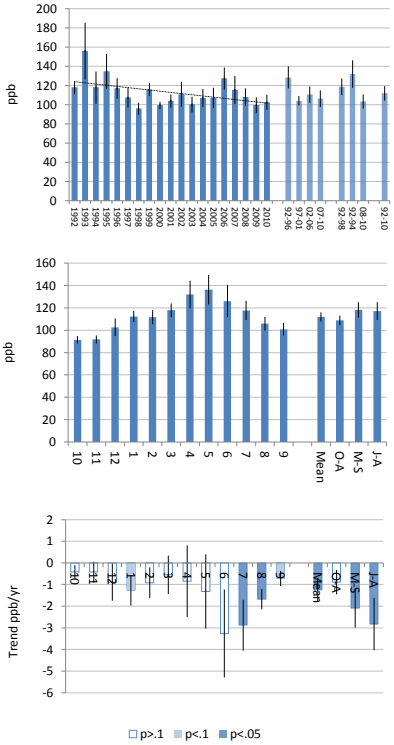


Load kg/month TP



FWM Concentration ppb



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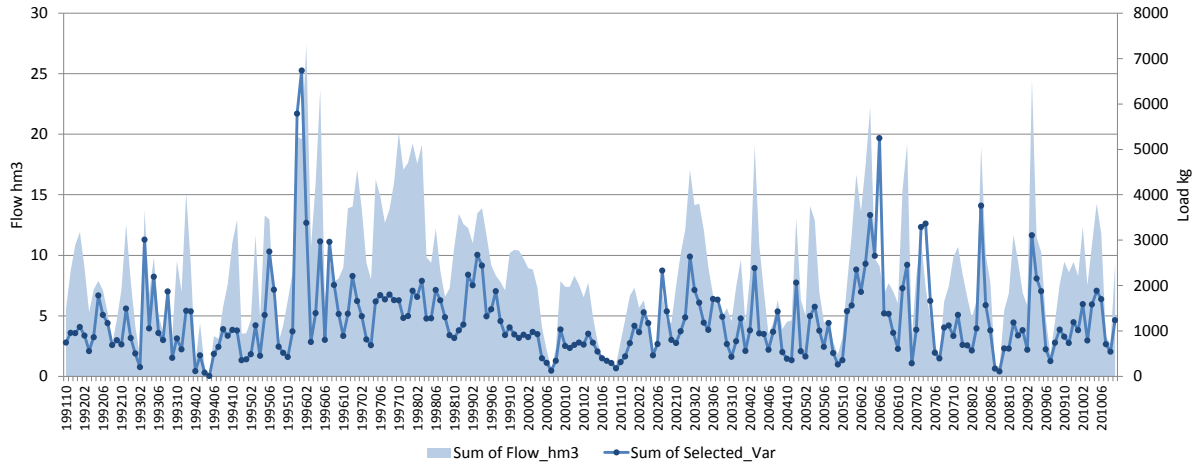
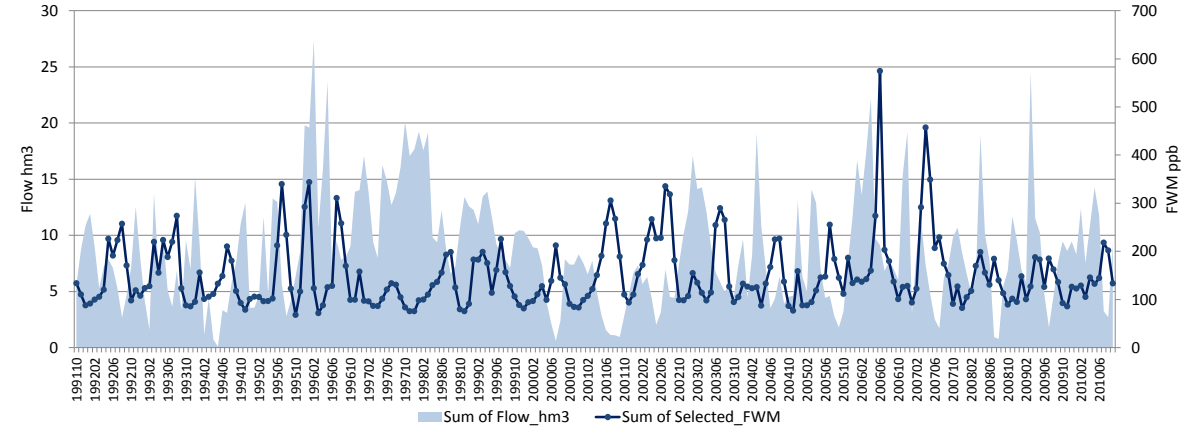
Seasonal & Yearly Variations in Lake Mass Balance Variable: TP Term: 7mile_Dike





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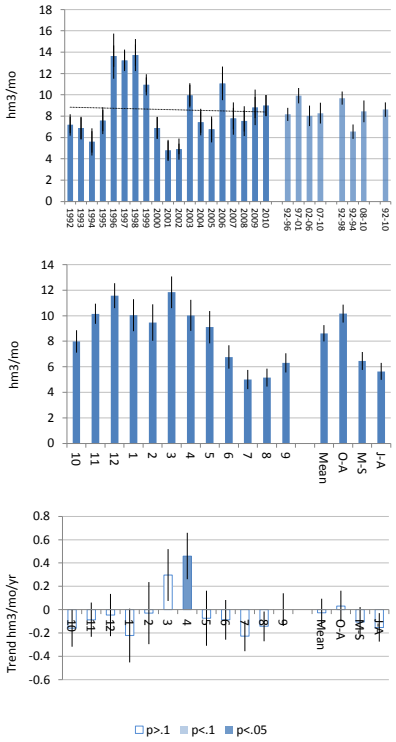
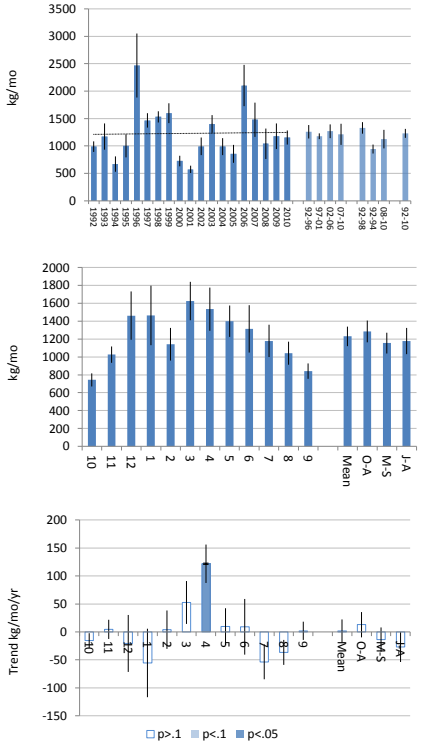
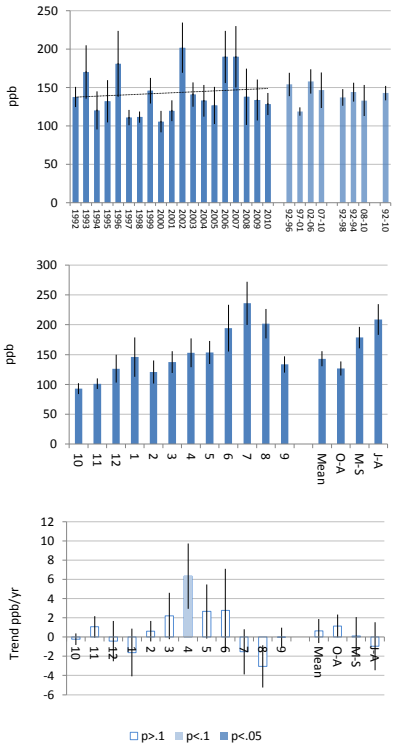


Load kg/month TP

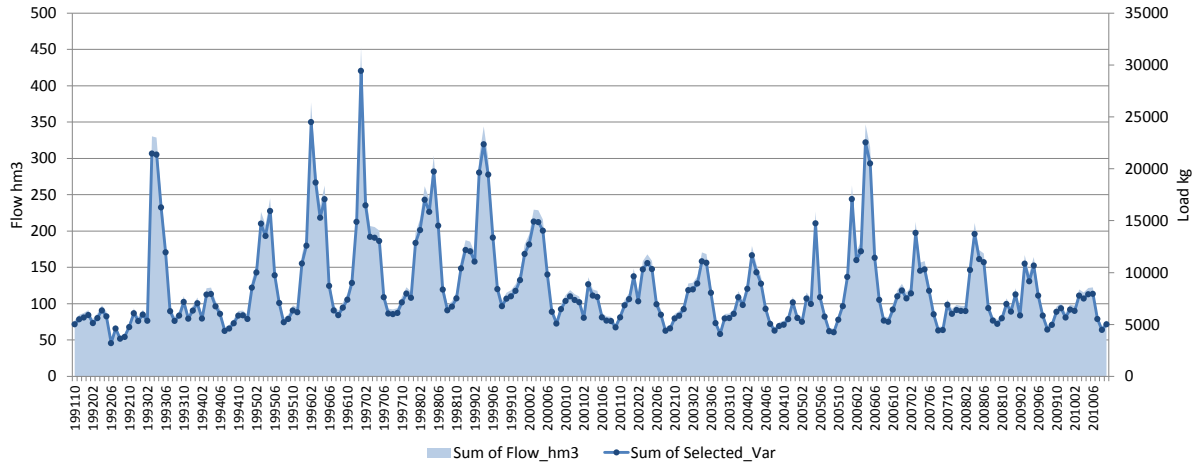


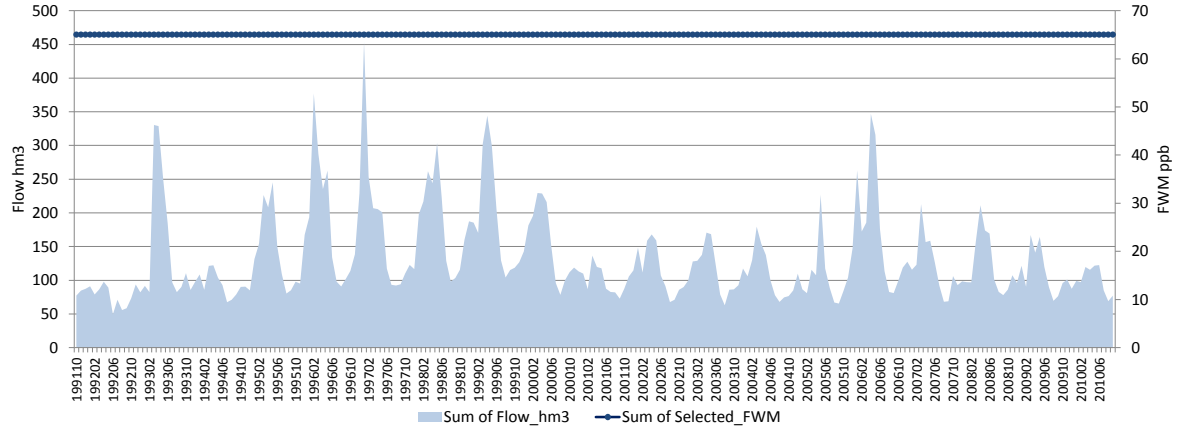
FWM Concentration ppb



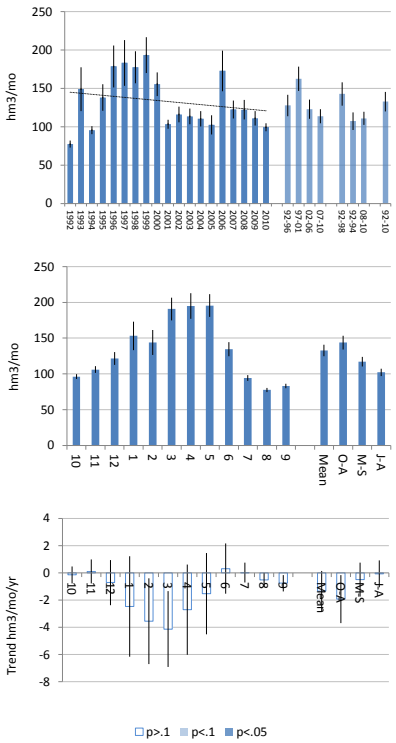
06/22/12

Seasonal & Yearly Variations in Lake Mass Balance Variable: TP Term: Natural-Background

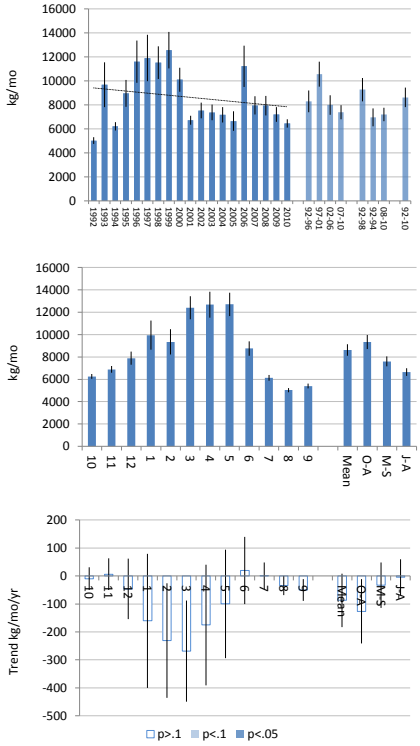




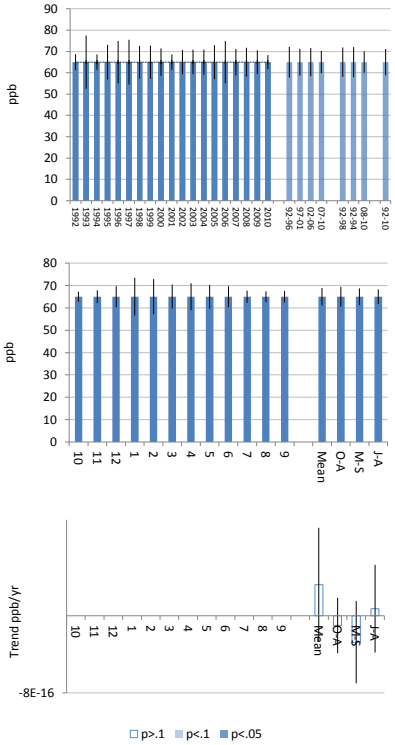
Flow hm3/month



Load kg/month TP

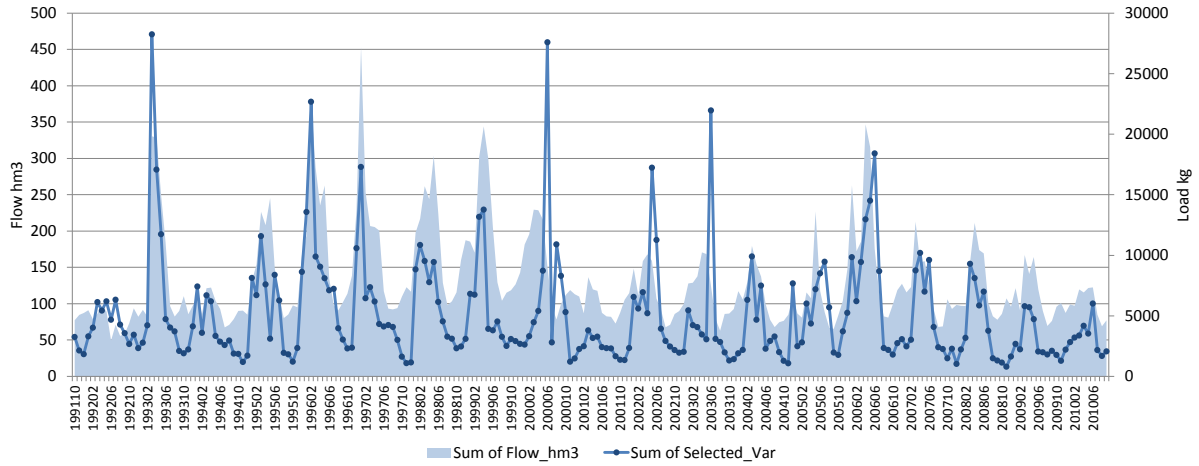


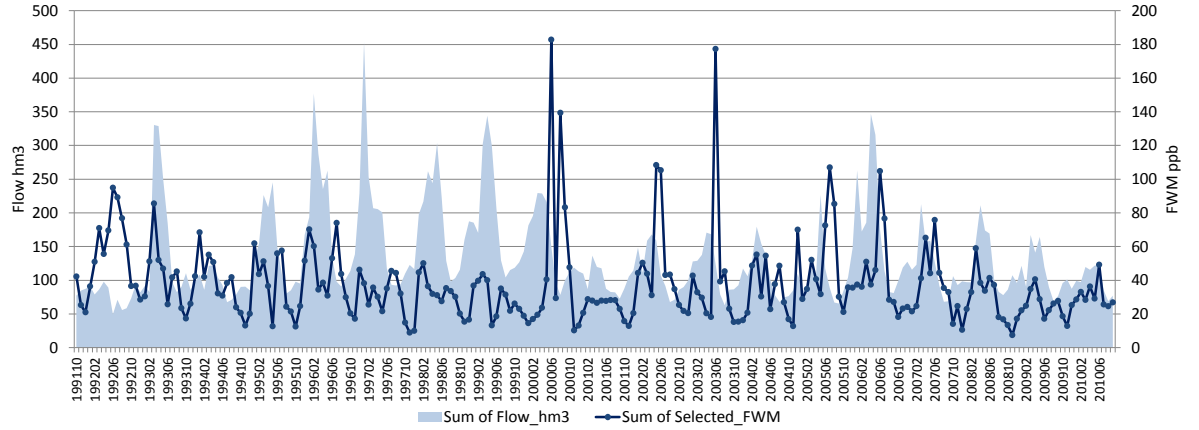
FWM Concentration ppb



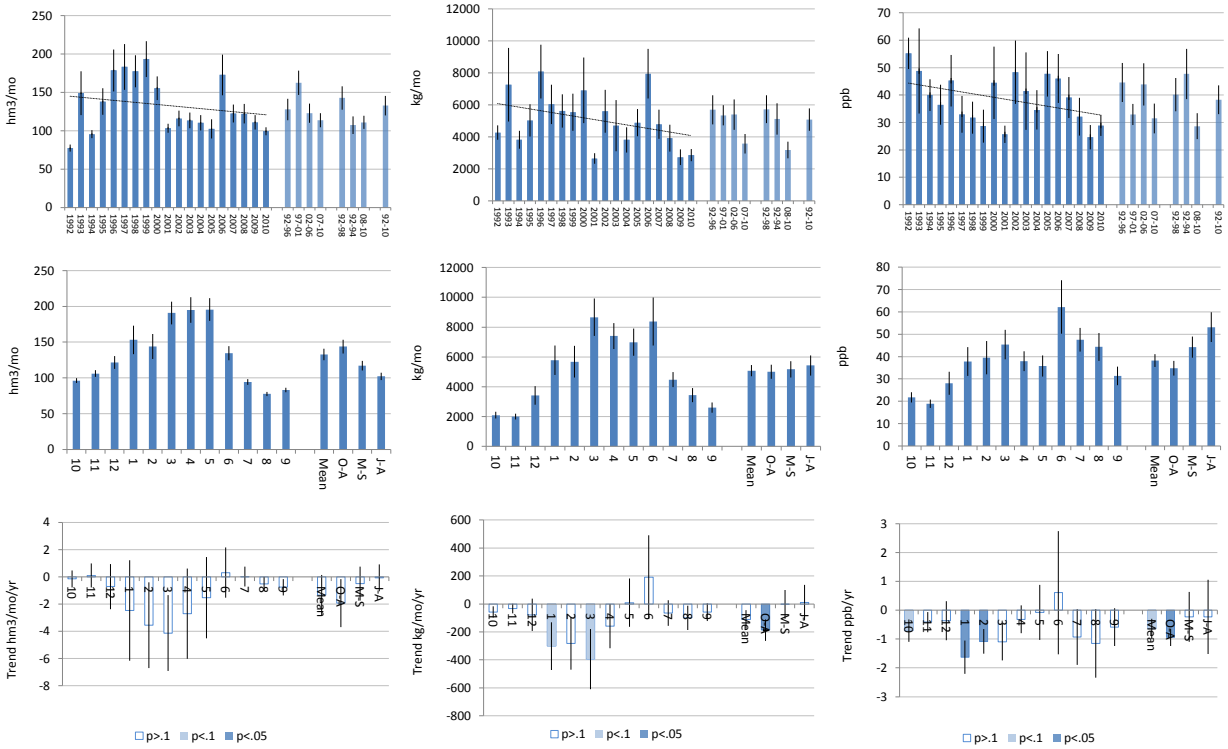
06/22/12

Seasonal & Yearly Variations in Lake Mass Balance Variable: TP Term: Anthropogenic



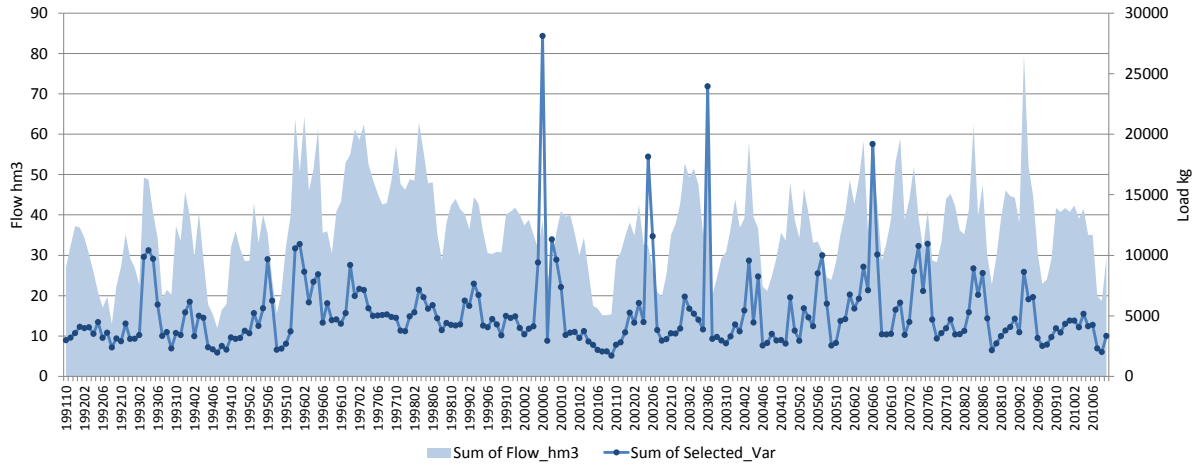


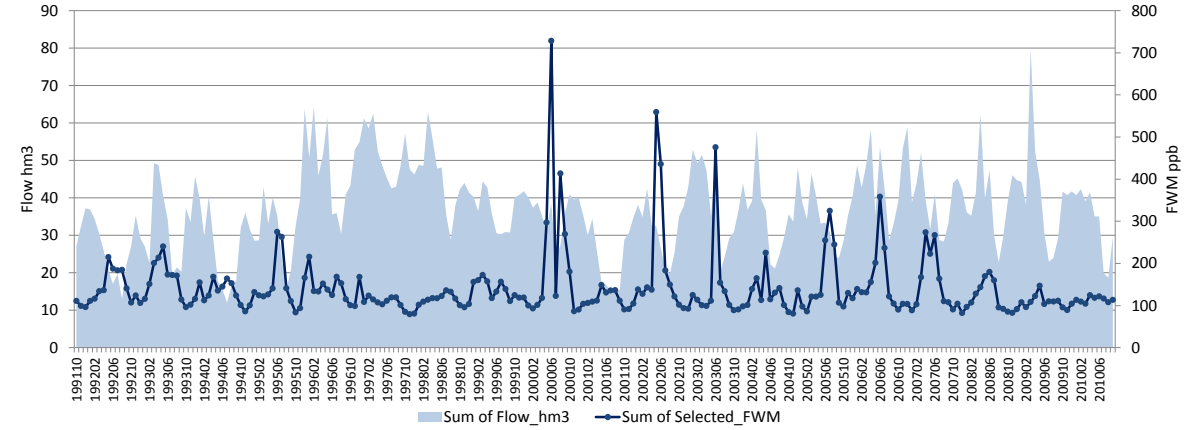
Flow hm3/month Load kg/month TP FWM Concentration ppb



06/22/12

Seasonal & Yearly Variations in Lake Mass Balance Variable: TP Term: Total Agency Inflow





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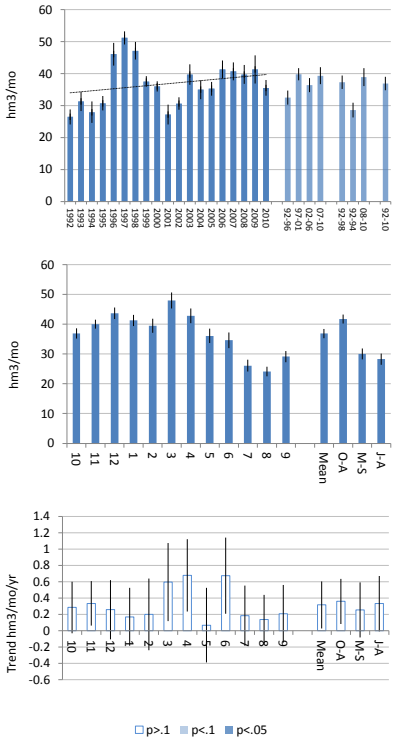
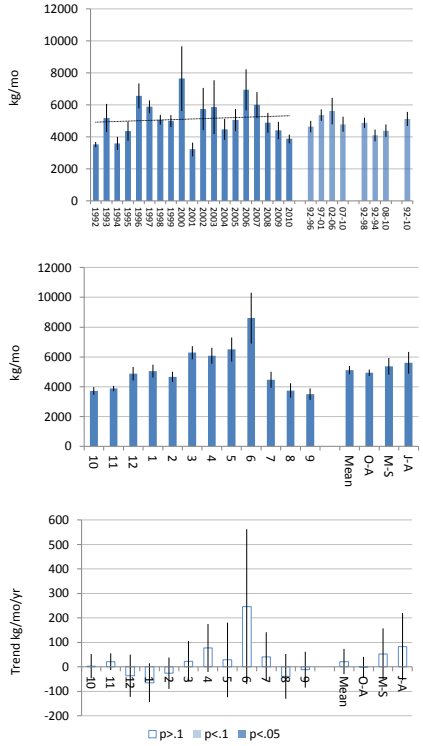
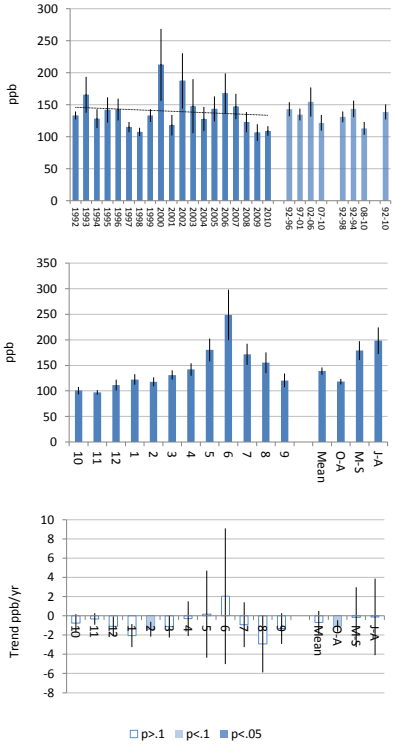


Load kg/month TP

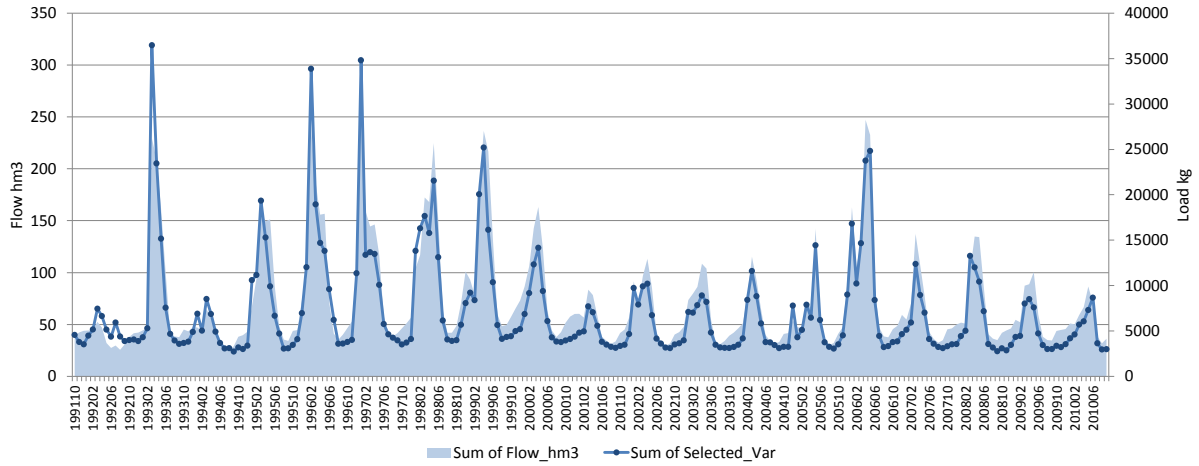


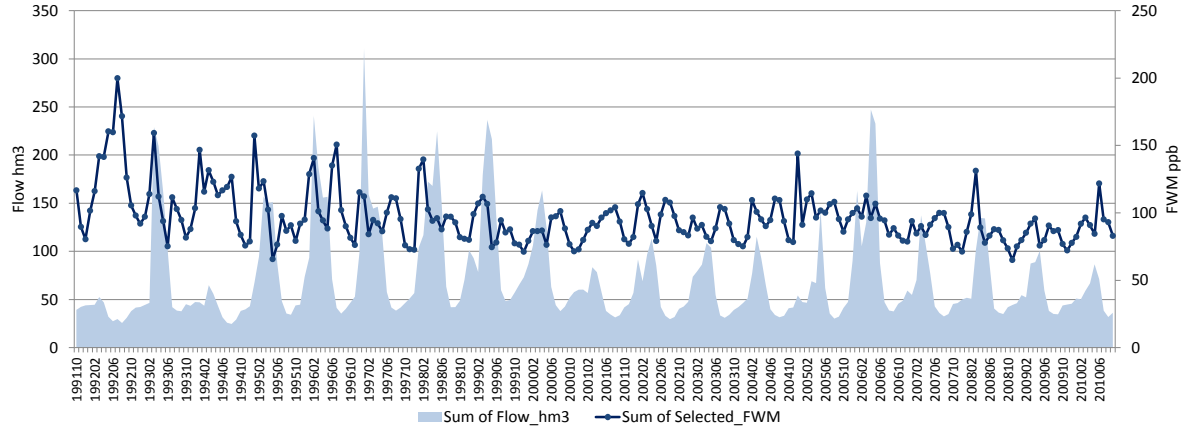
FWM Concentration ppb



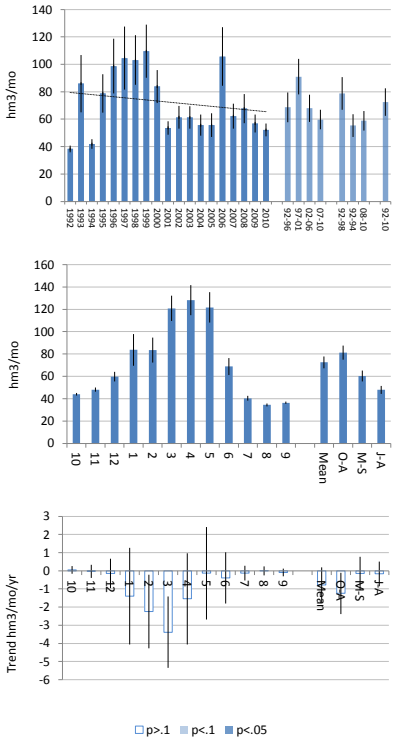
06/22/12

Seasonal & Yearly Variations in Lake Mass Balance Variable: TP Term: Total Klamath Inflow

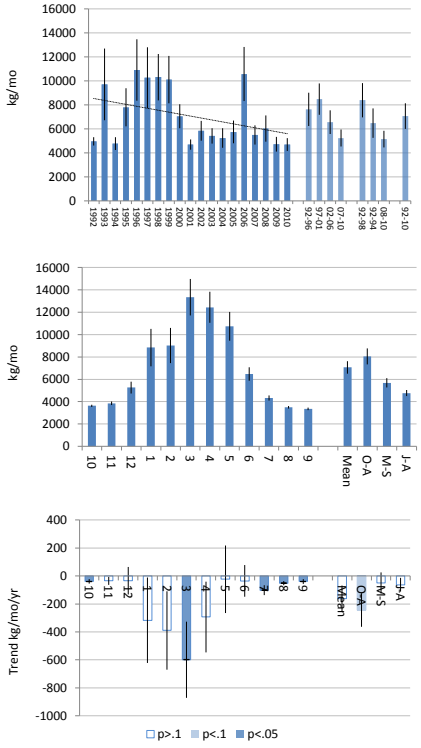




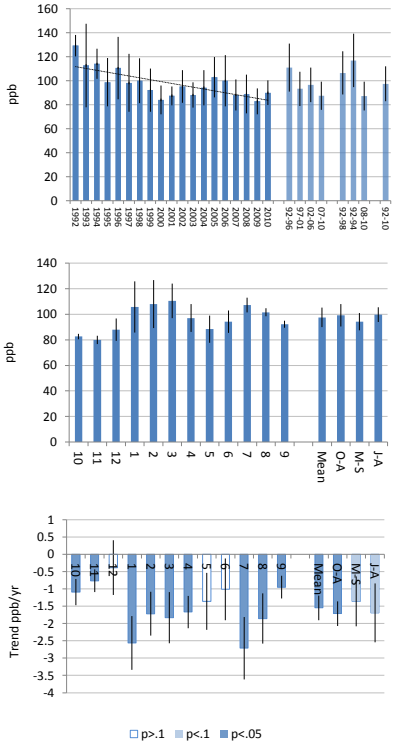
Flow hm3/month



Load kg/month TP



FWM Concentration ppb



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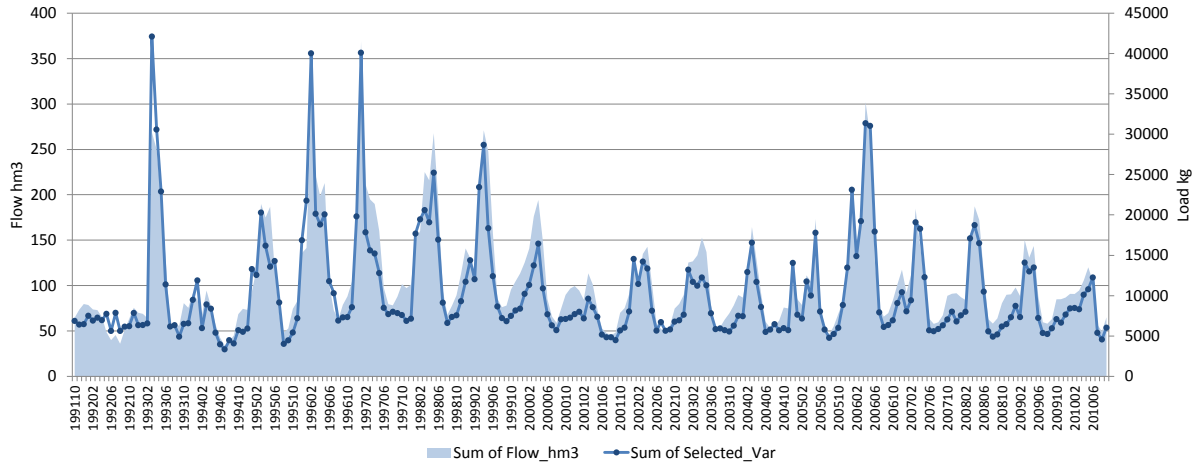
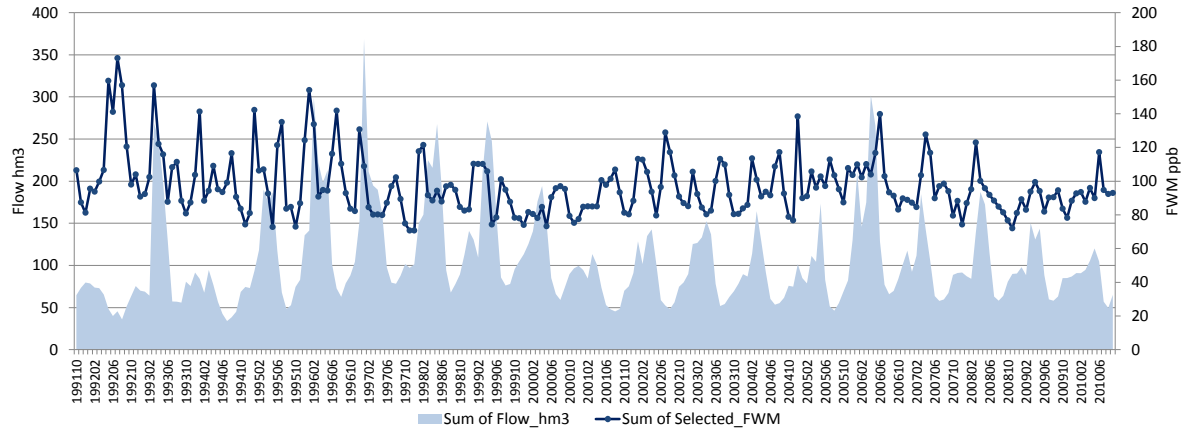
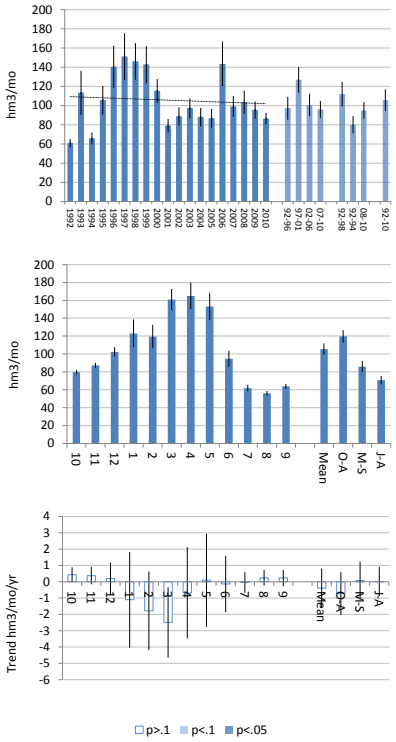
Seasonal & Yearly Variations in Lake Mass Balance Variable: TP Term: Total Tributaries

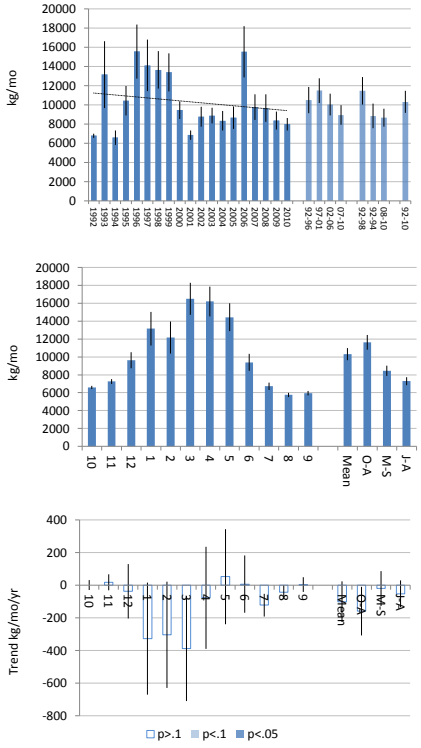




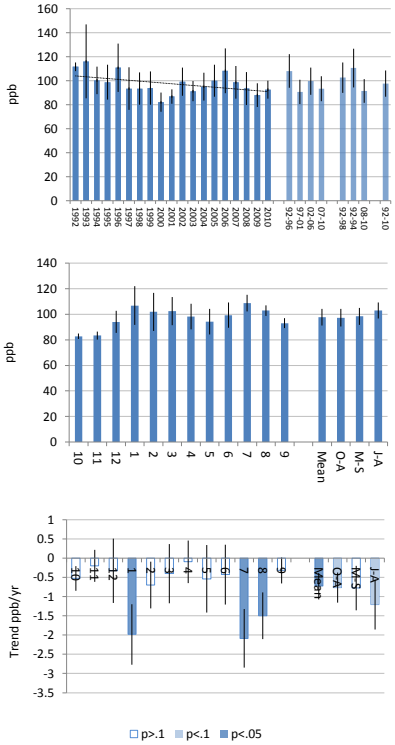
Flow hm3/month



Load kg/month TP



FWM Concentration ppb



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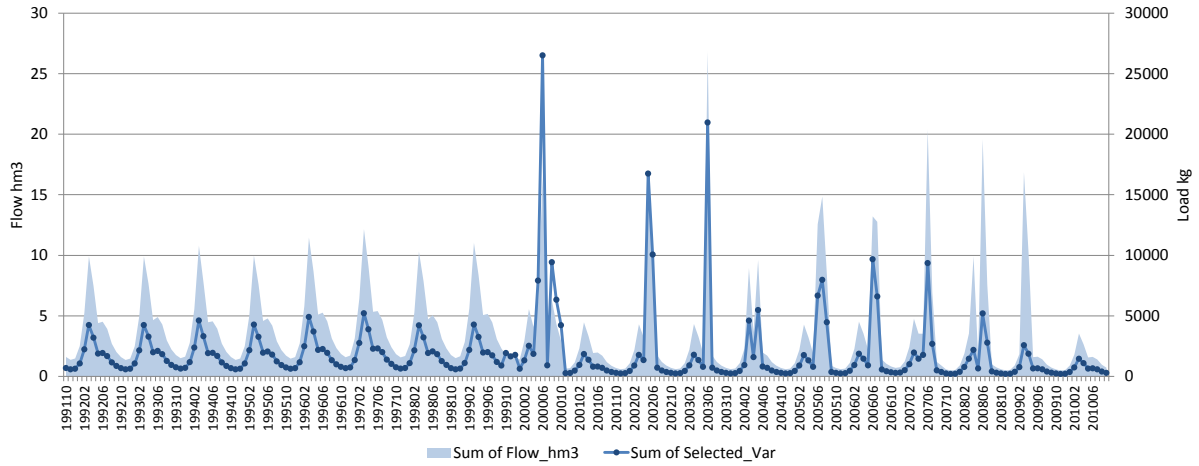
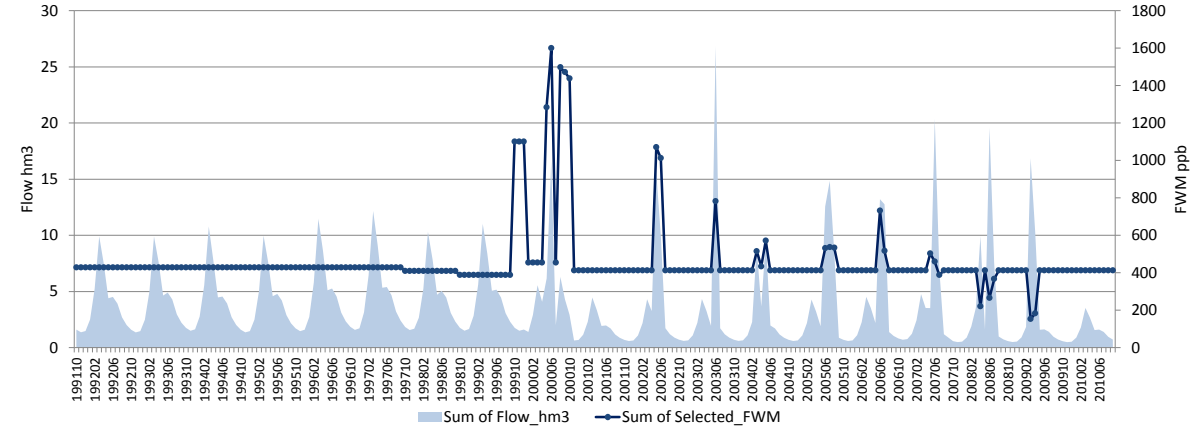
Seasonal & Yearly Variations in Lake Mass Balance Variable: TP Term: Total Pumped to Lake





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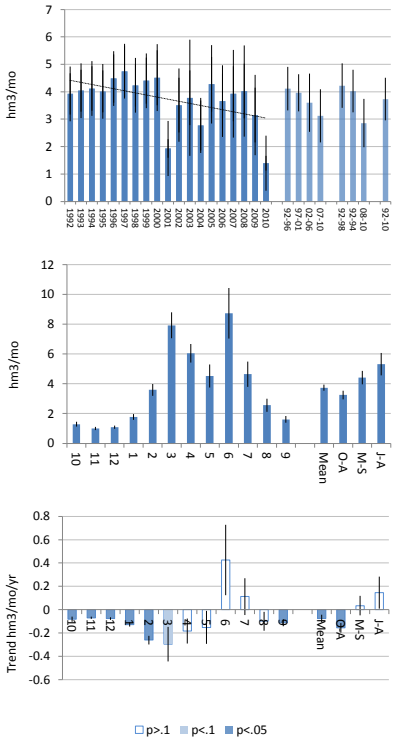
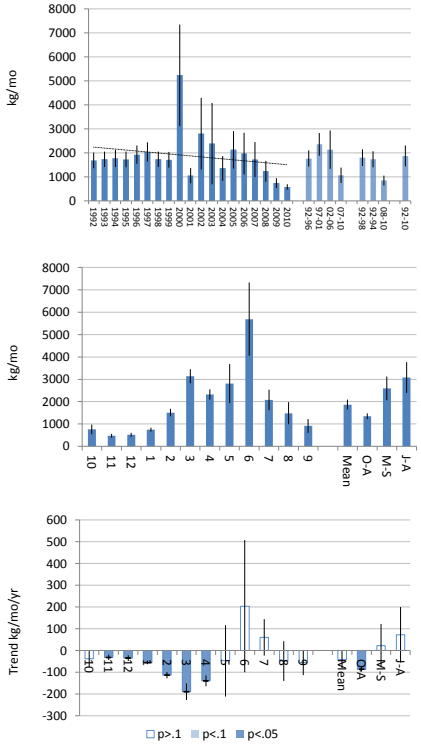
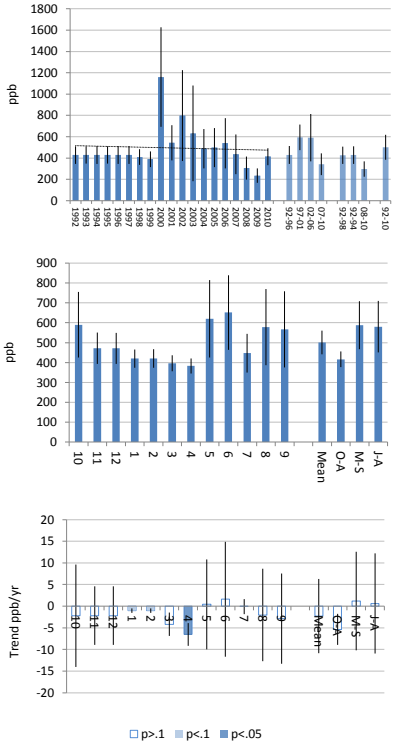


Load kg/month TP



FWM Concentration ppb



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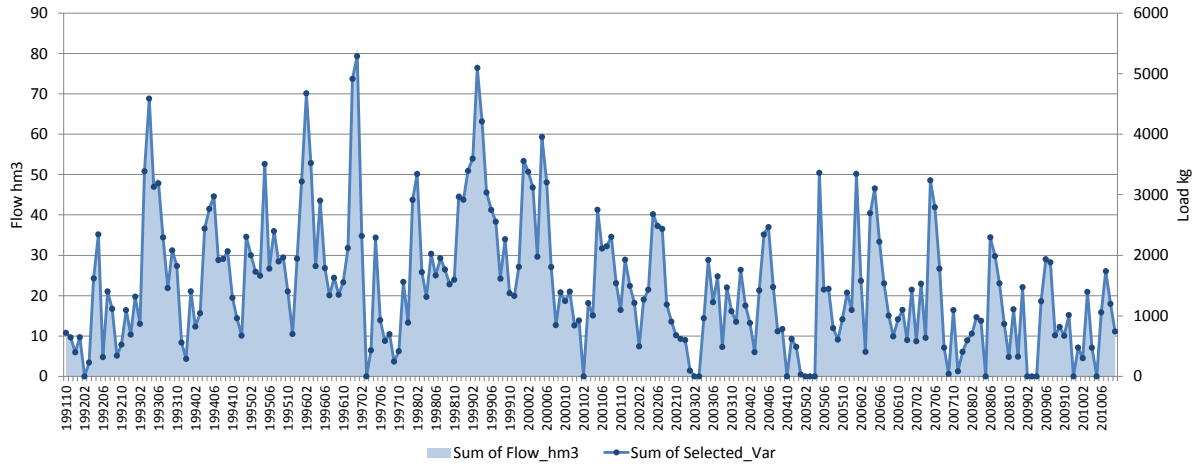
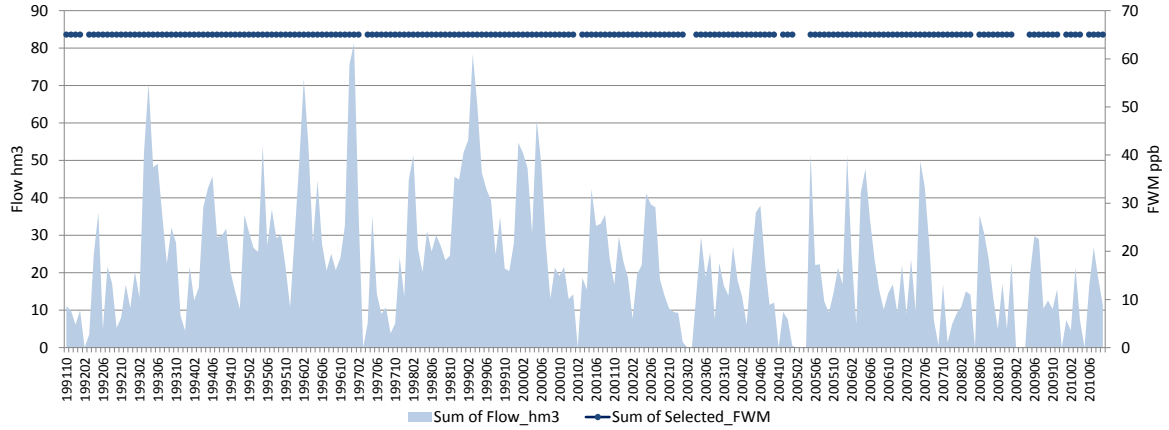
Seasonal & Yearly Variations in Lake Mass Balance Variable: TP Term: Ungauged Inflows





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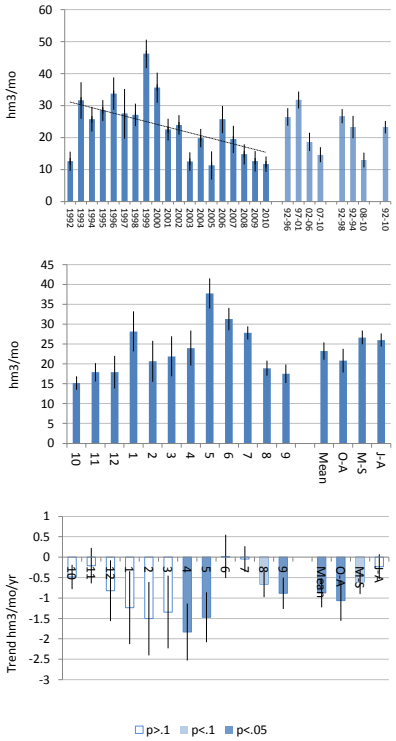
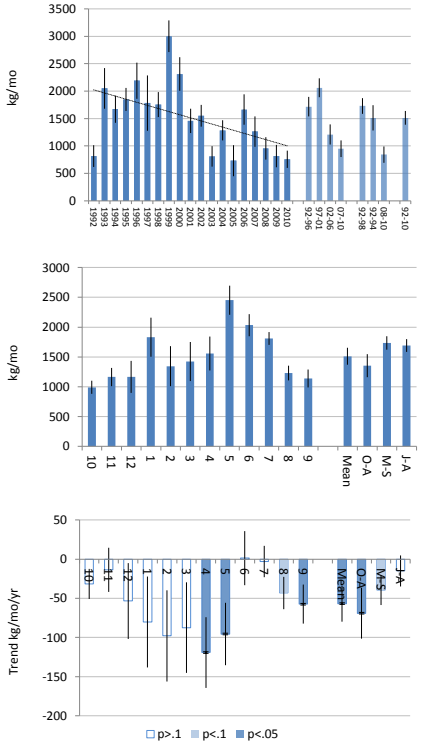
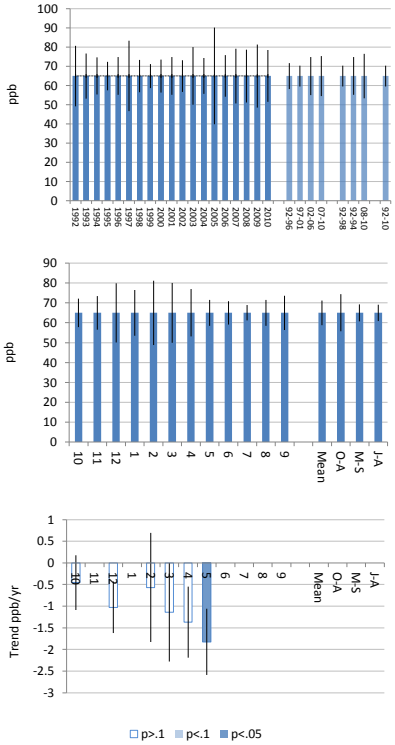


Load kg/month TP

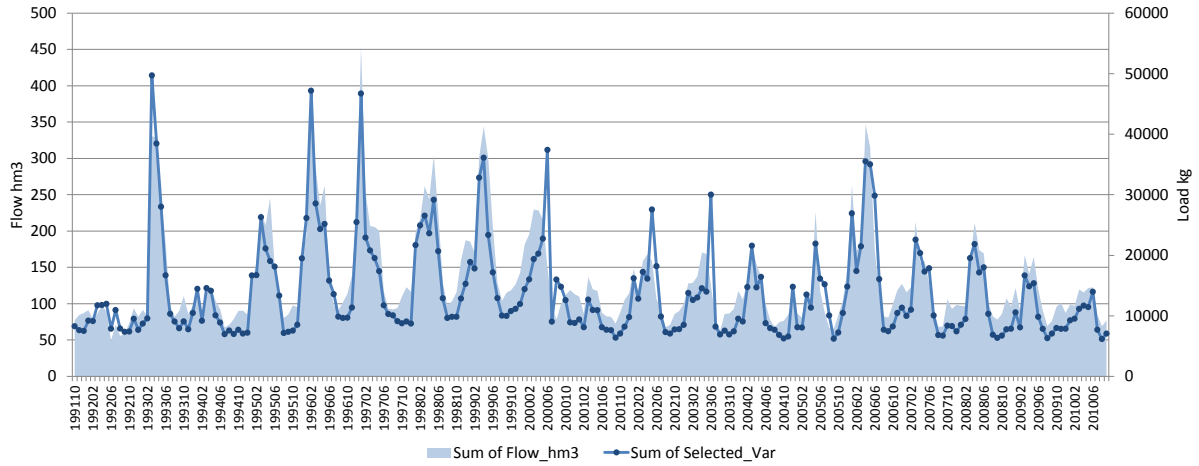


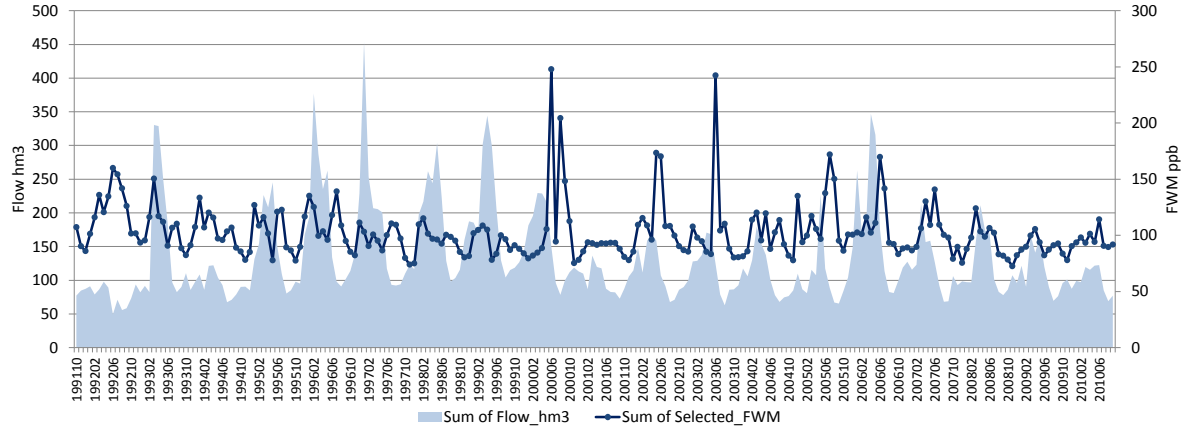
FWM Concentration ppb



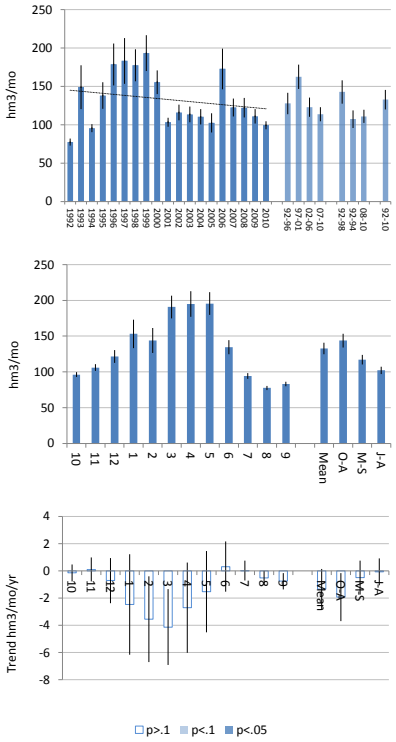
06/22/12

Seasonal & Yearly Variations in Lake Mass Balance Variable: TP Term: Total External Inflows

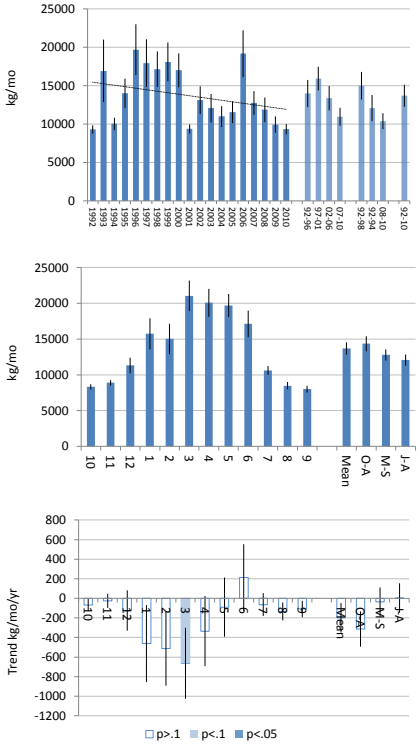




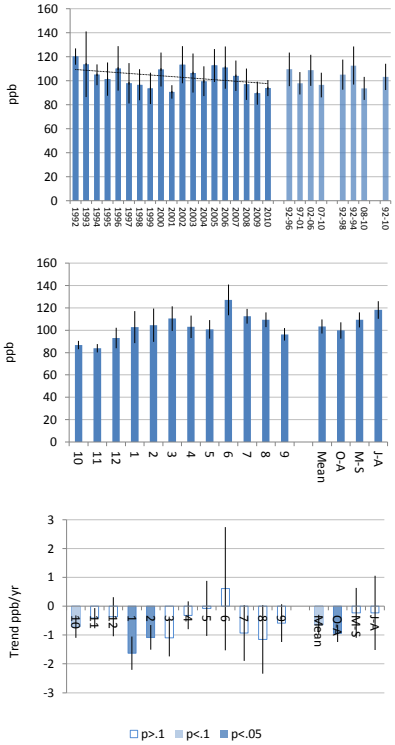
Flow hm3/month



Load kg/month TP

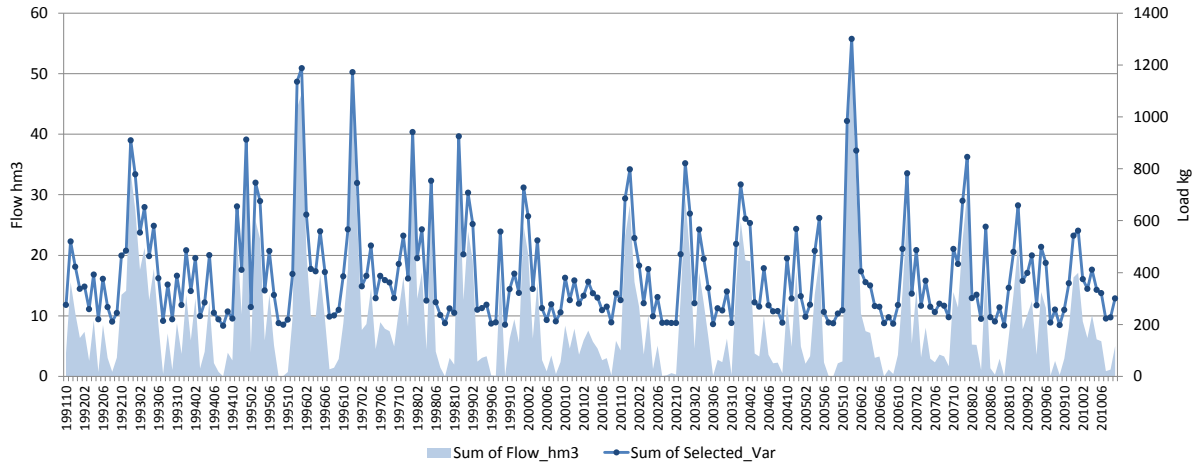


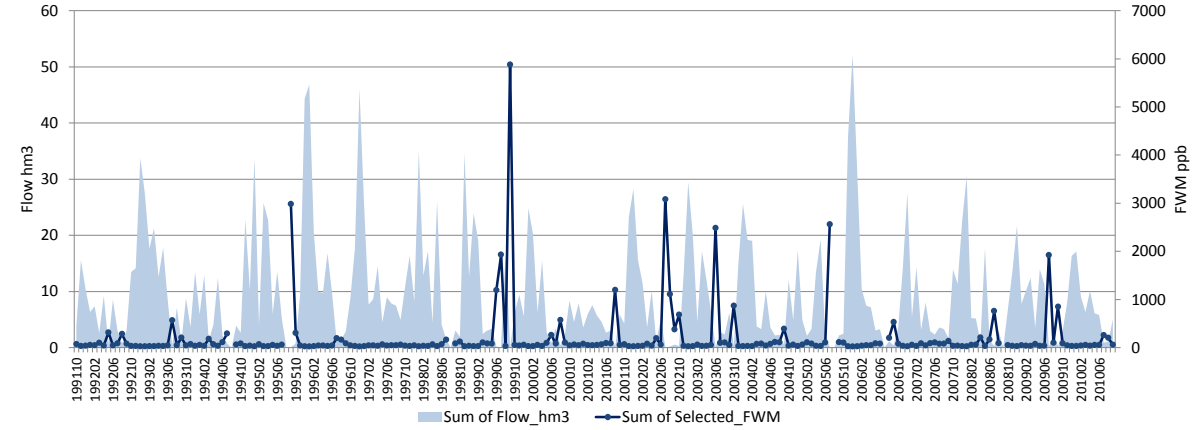
FWM Concentration ppb



06/22/12

Seasonal & Yearly Variations in Lake Mass Balance Variable: TP Term: Precipitation





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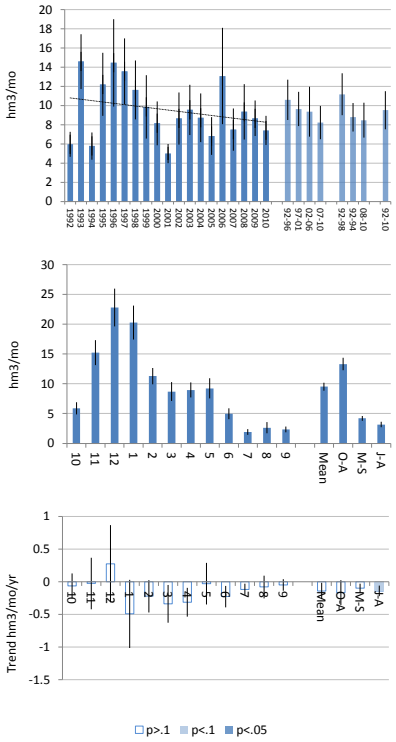
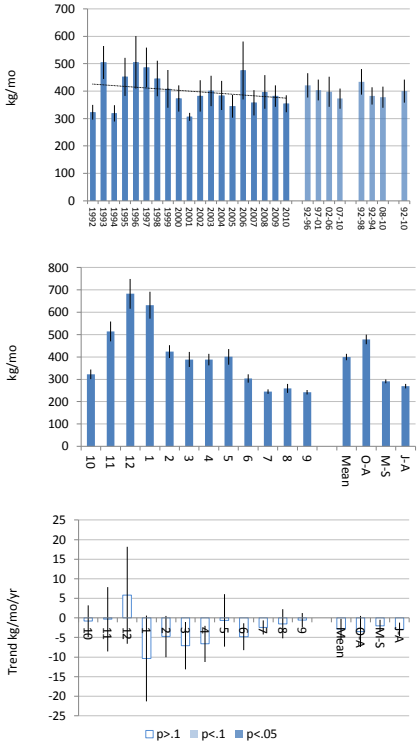
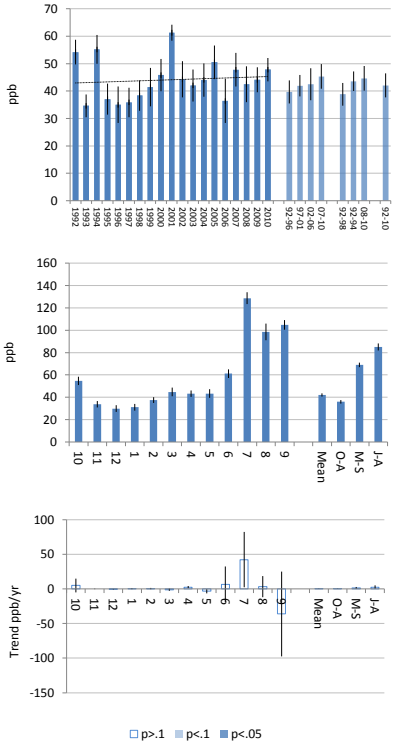


Load kg/month TP

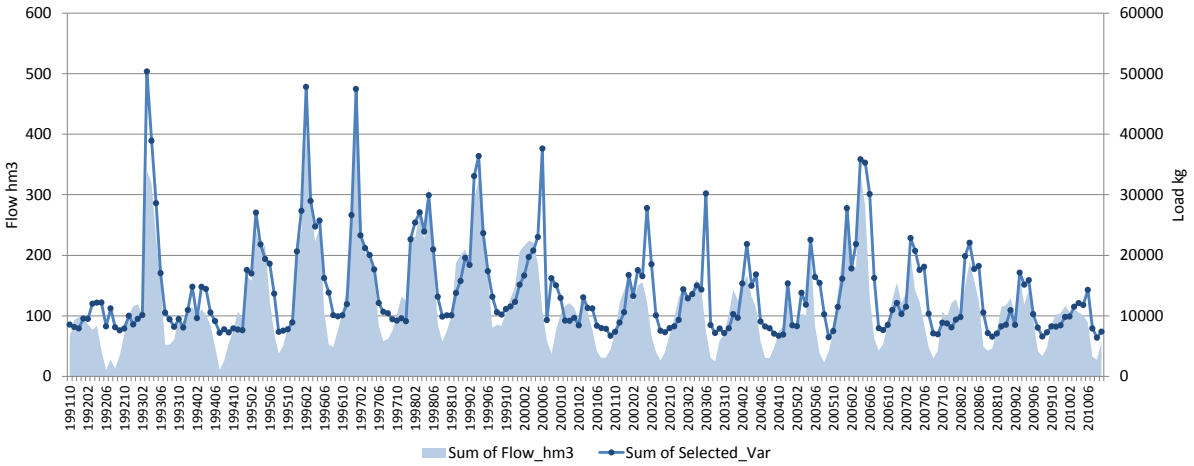


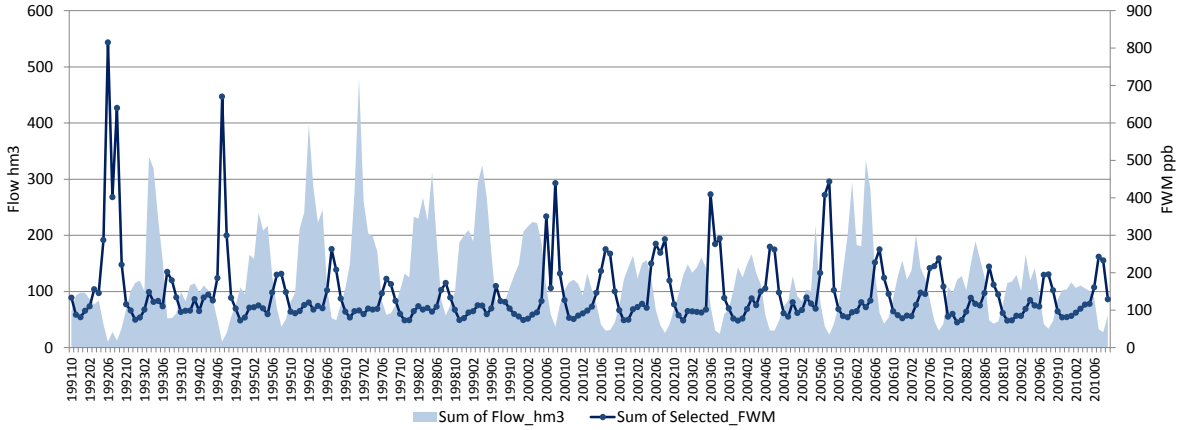
FWM Concentration ppb



06/22/12

Seasonal & Yearly Variations in Lake Mass Balance Variable: TP Term: Net Inflow





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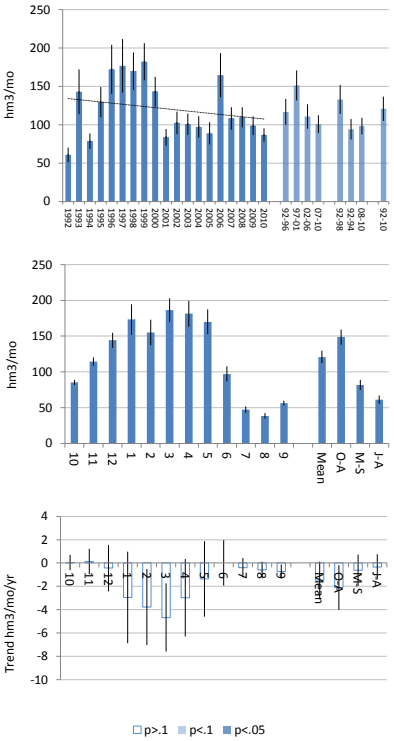
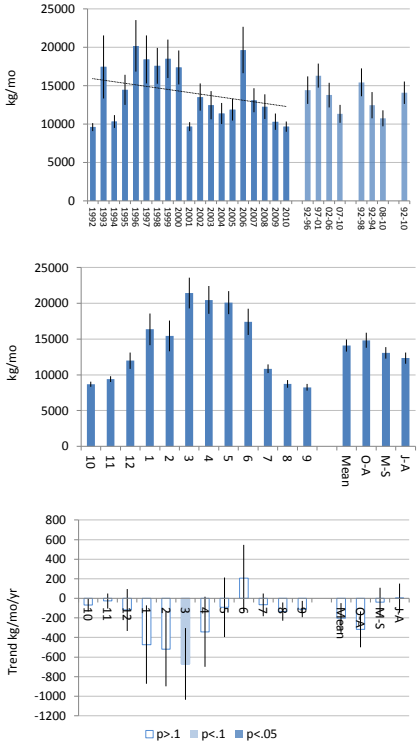
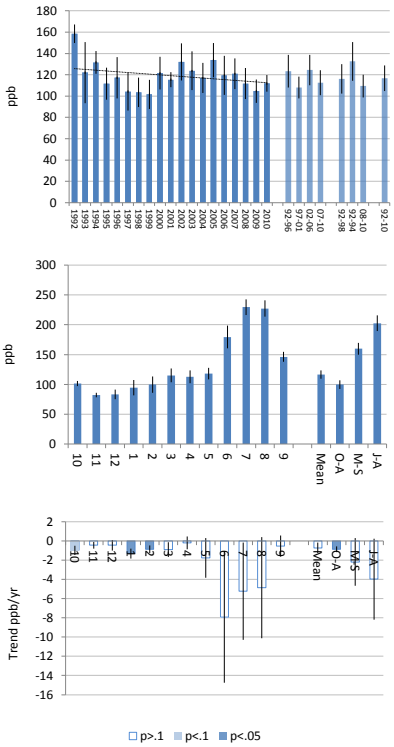


Load kg/month TP

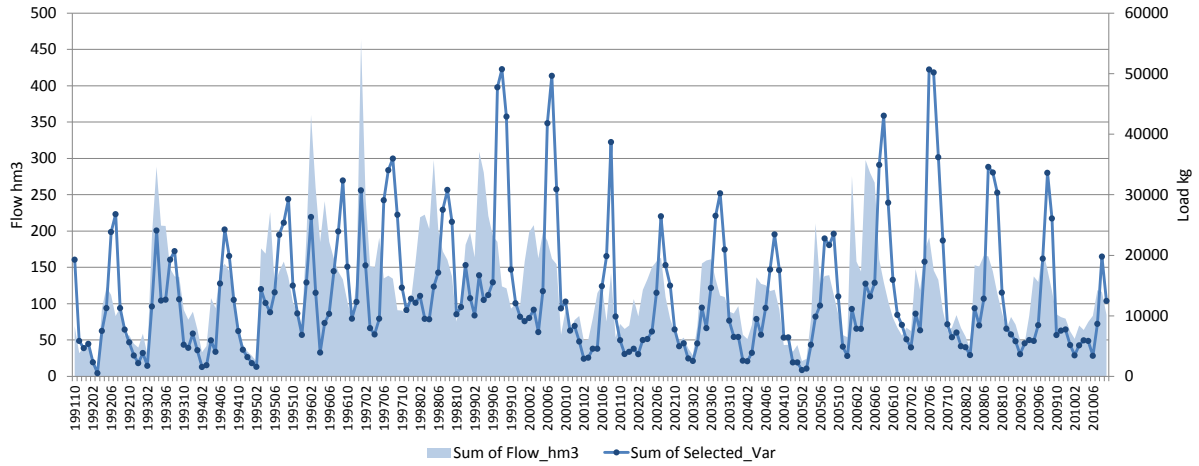


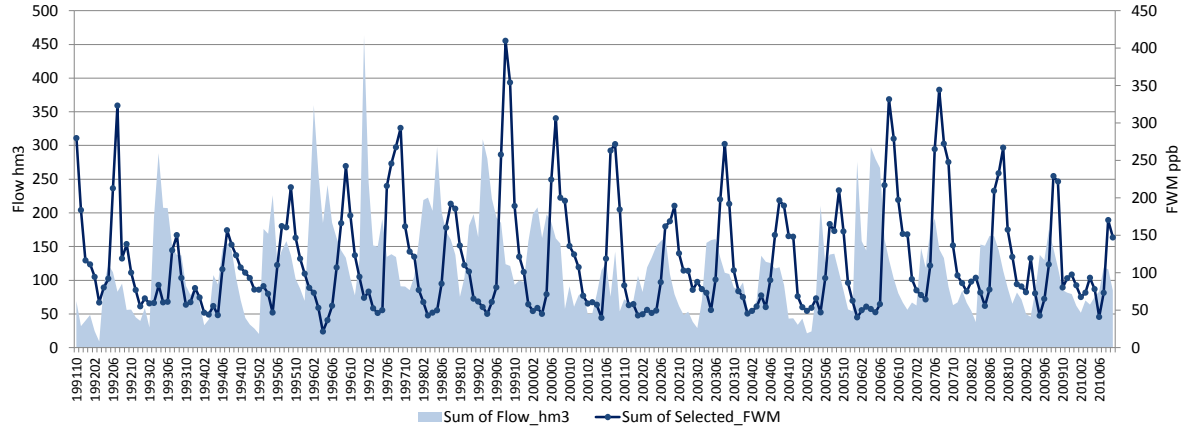
FWM Concentration ppb



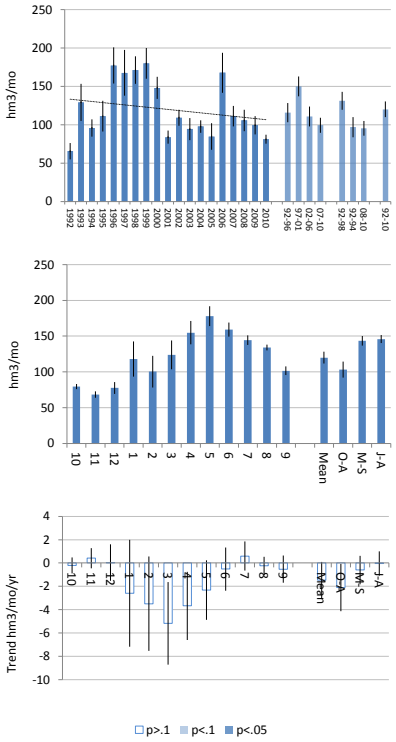
06/22/12

Seasonal & Yearly Variations in Lake Mass Balance Variable: TP Term: Lake Outflow

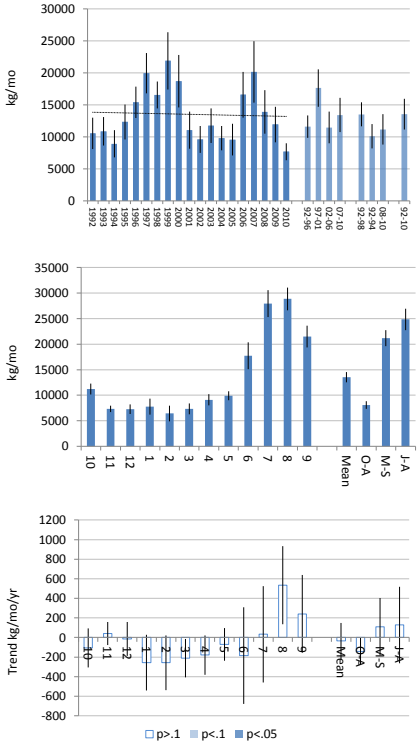




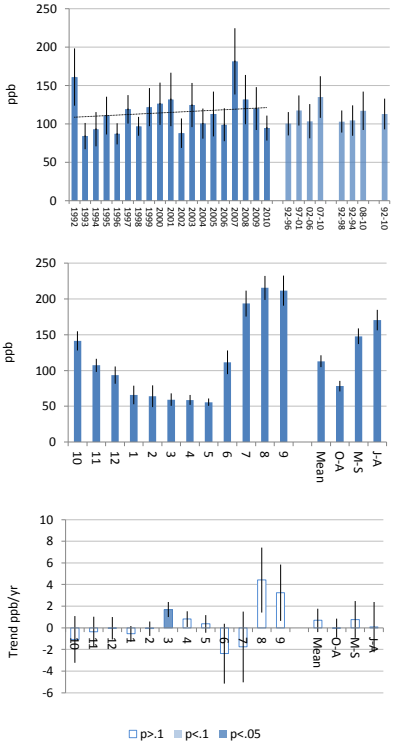
Flow hm3/month



Load kg/month TP

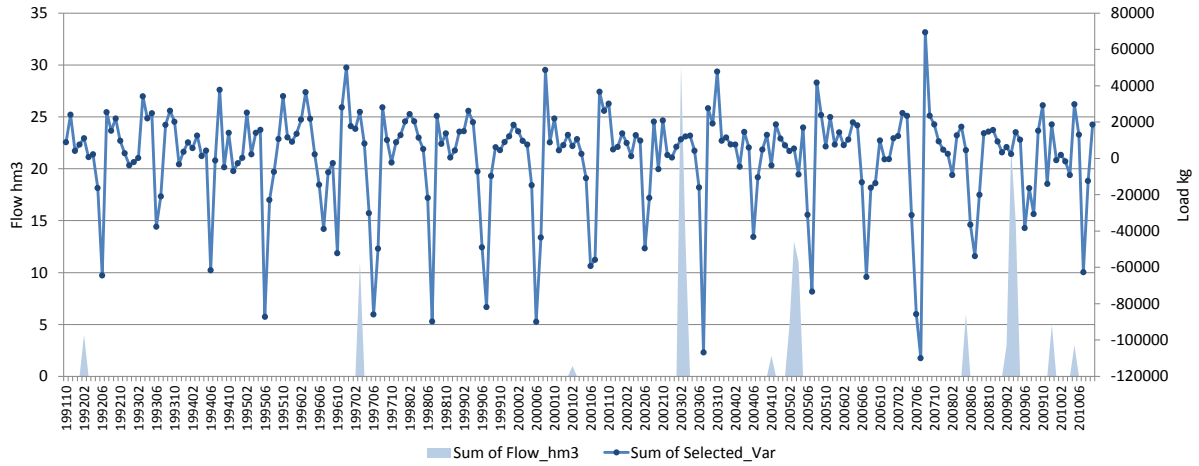


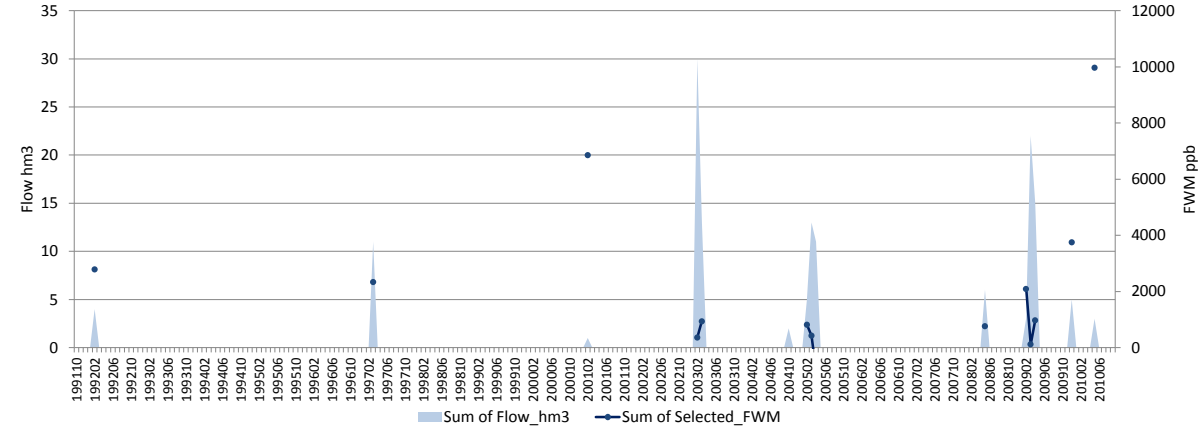
FWM Concentration ppb



06/22/12

Seasonal & Yearly Variations in Lake Mass Balance Variable: TP Term: Retention





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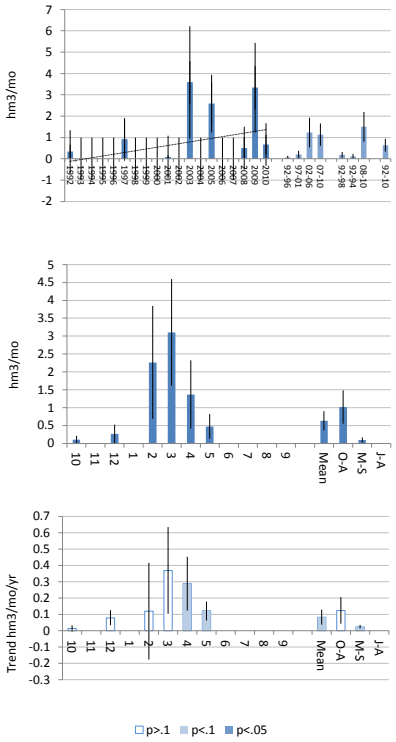
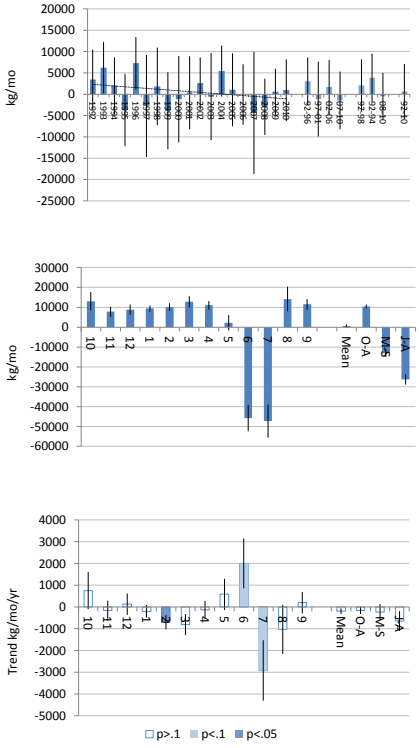
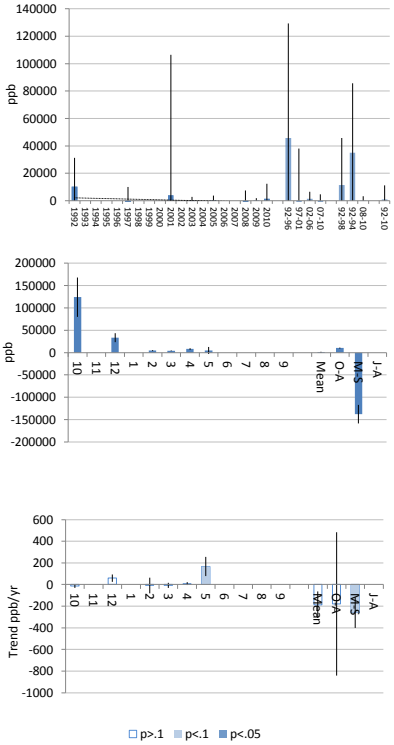


Load kg/month TP

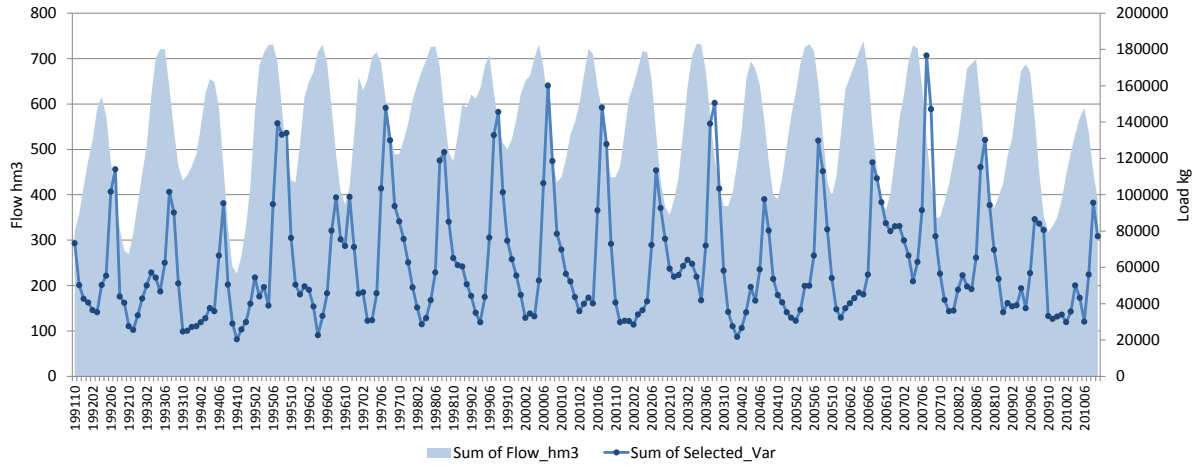


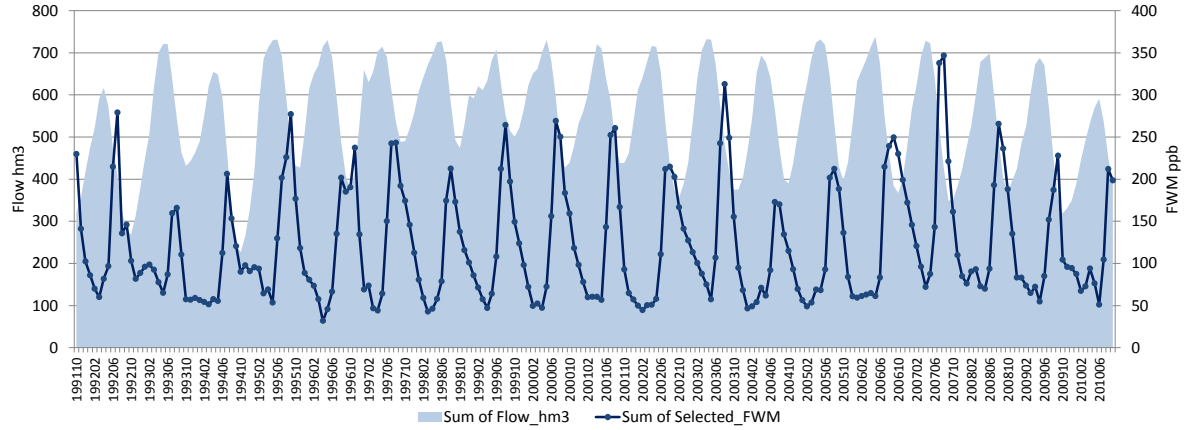
FWM Concentration ppb



06/22/12

Seasonal & Yearly Variations in Lake Mass Balance Variable: TP Term: Lake Mean Storage





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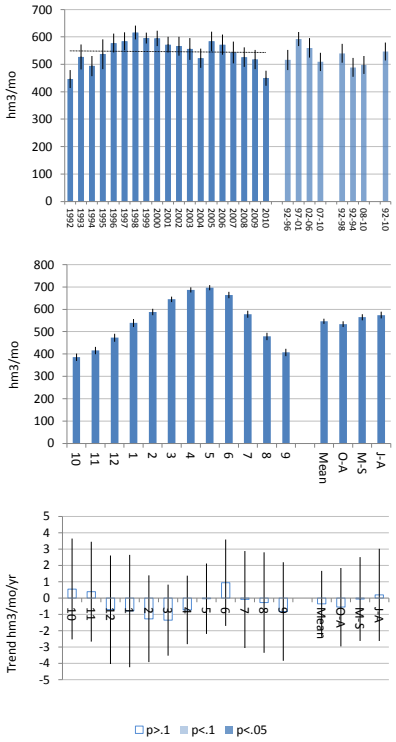
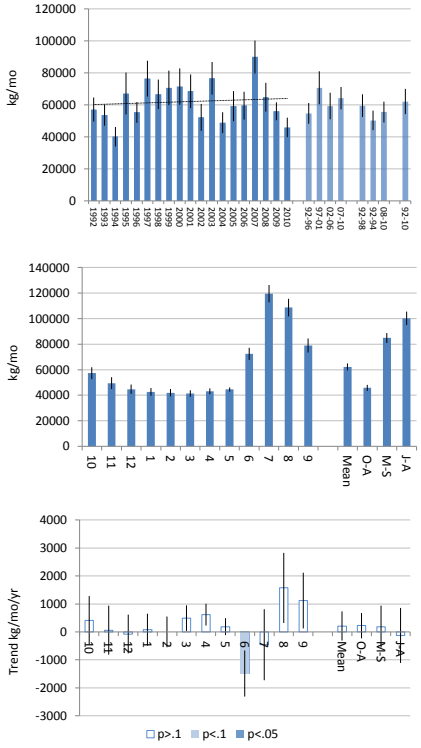
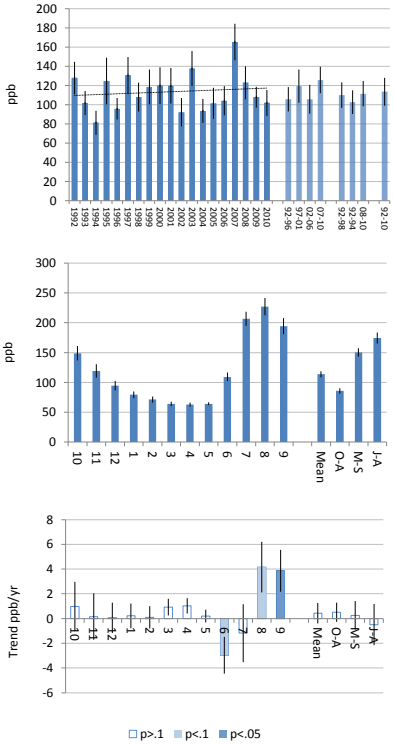


Load kg/month TP

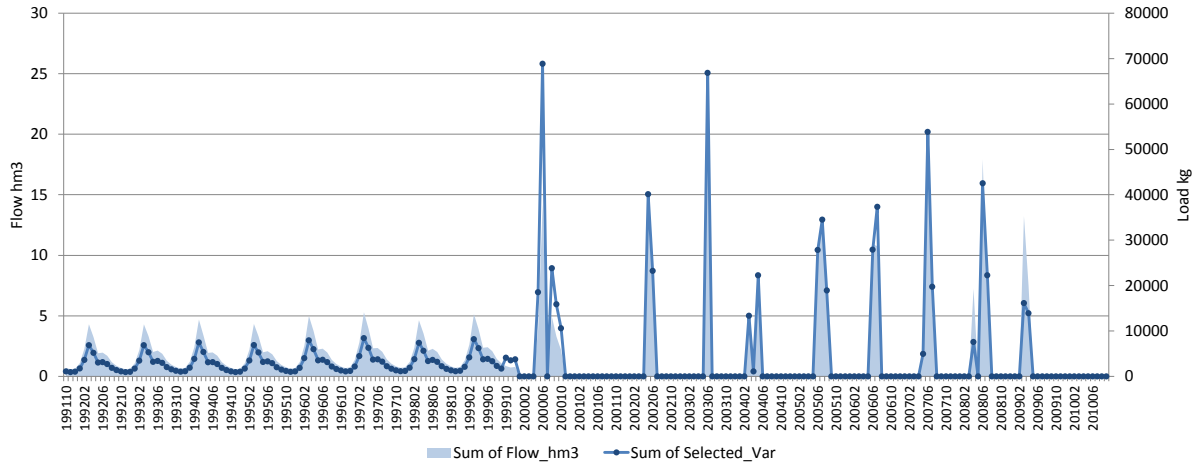


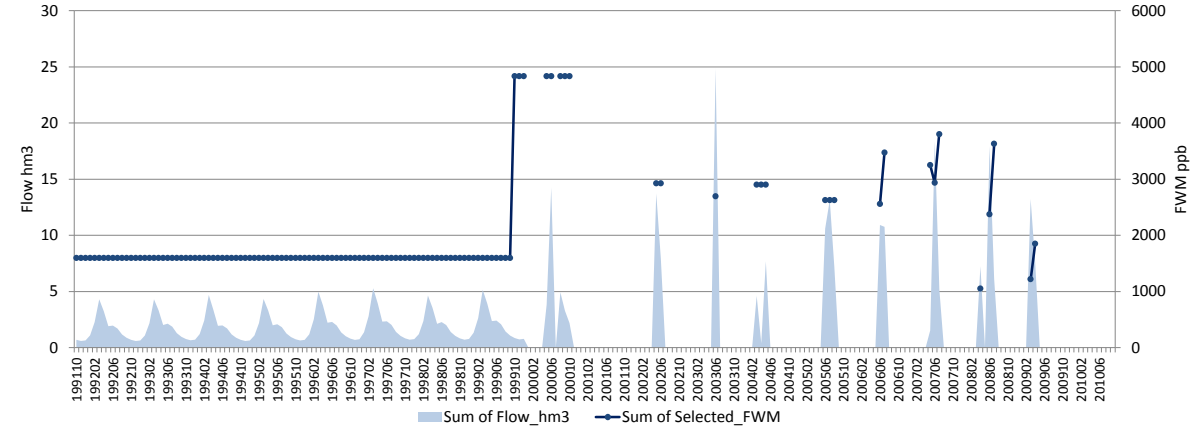
FWM Concentration ppb



06/22/12

Seasonal & Yearly Variations in Lake Mass Balance Variable: TN Term: Agency Lake Ranch





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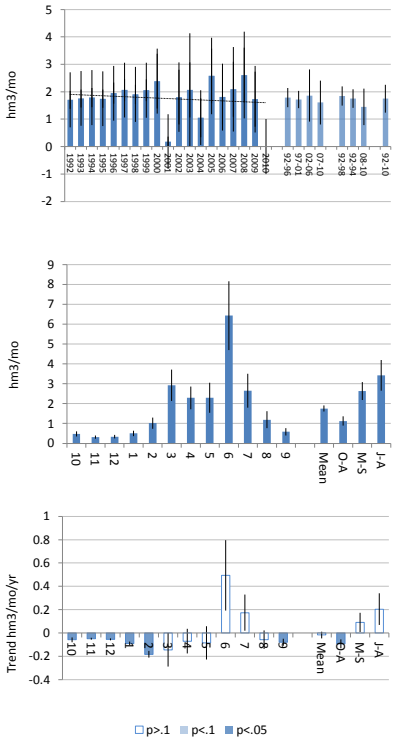
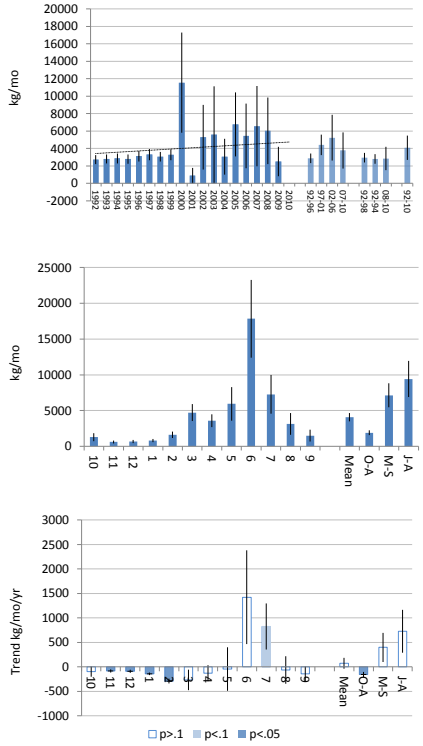
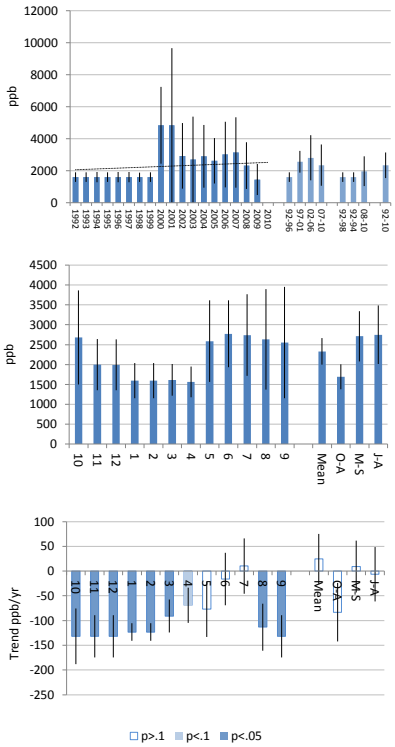


Load kg/month TN

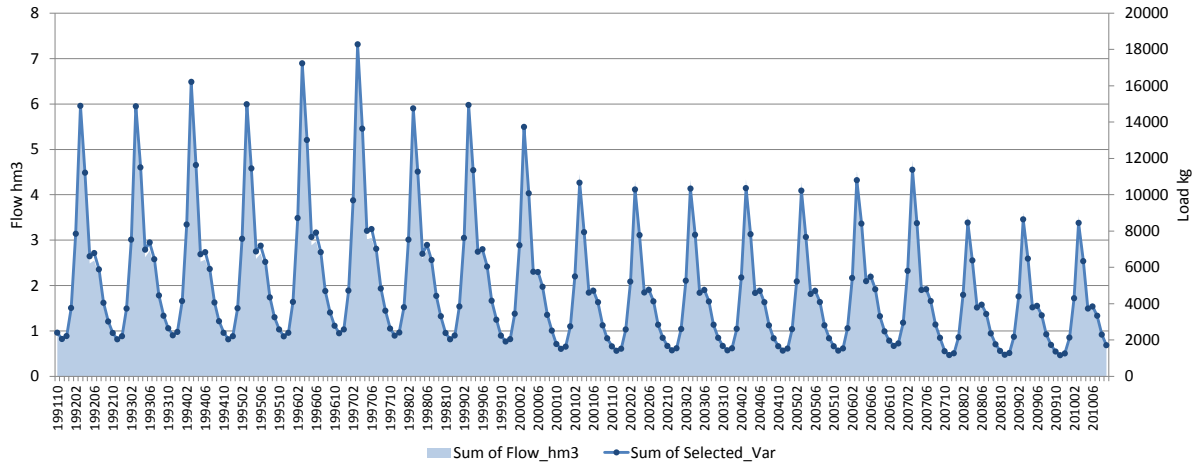


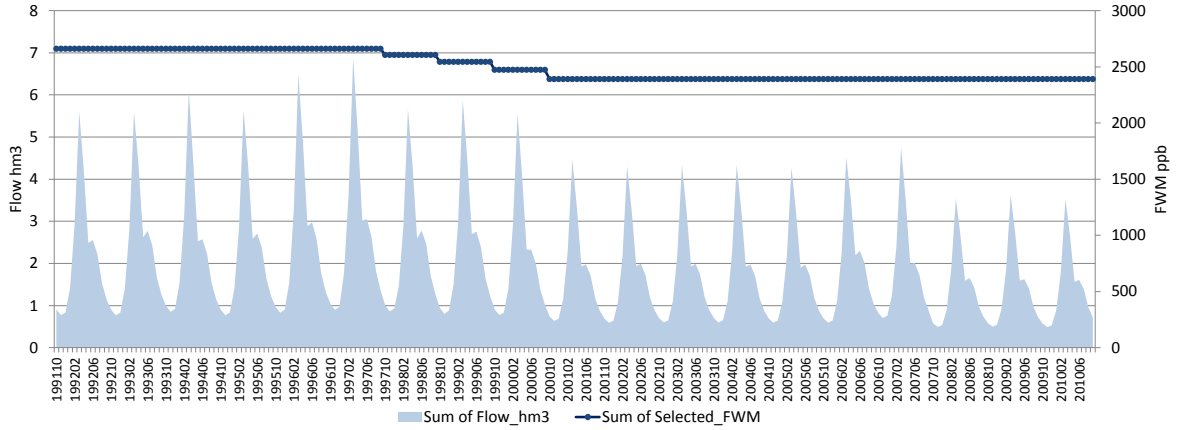
FWM Concentration ppb



06/22/12

Seasonal & Yearly Variations in Lake Mass Balance Variable: TN Term: Pumped to Klamath L





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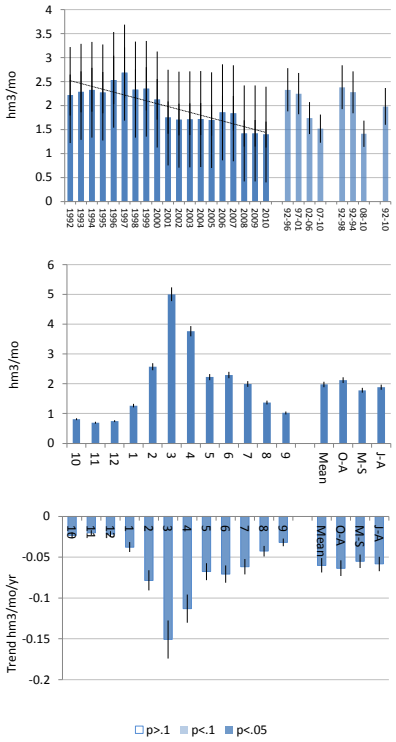
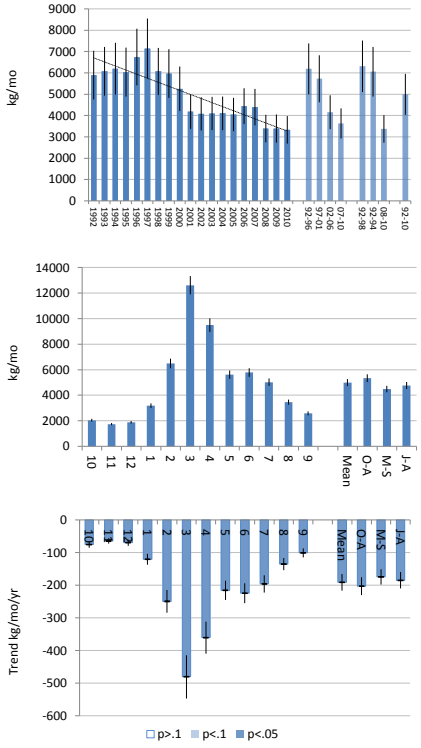
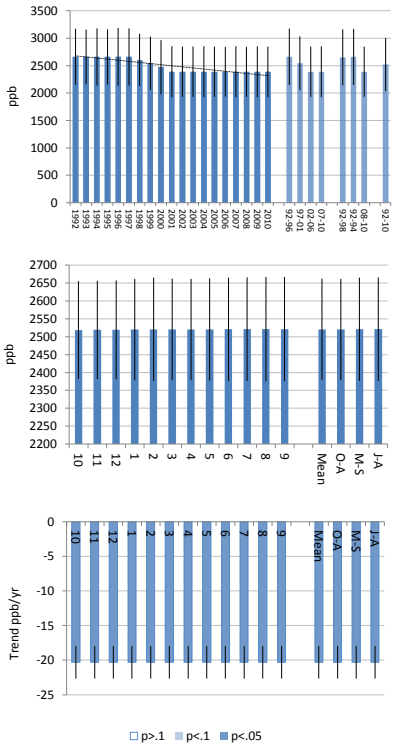


Load kg/month TN

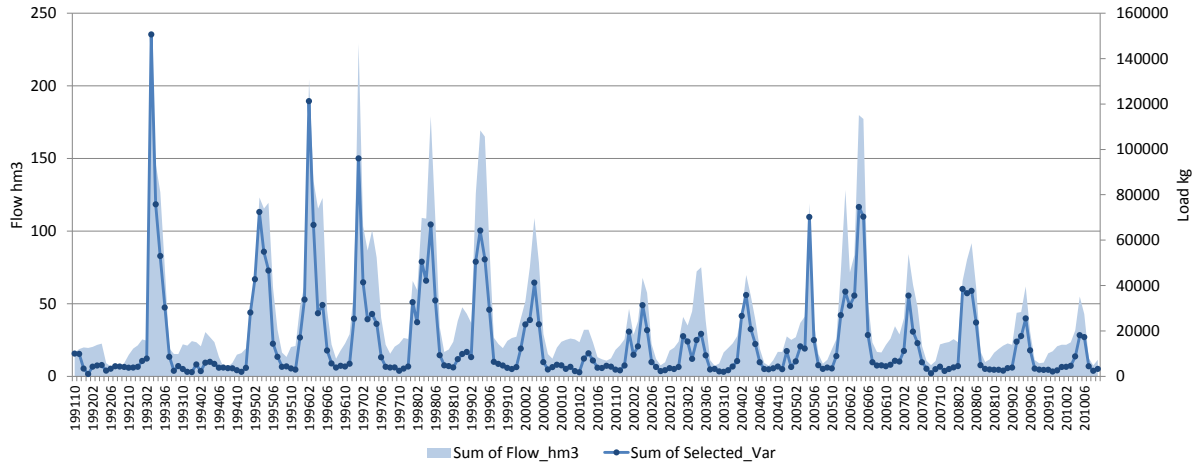


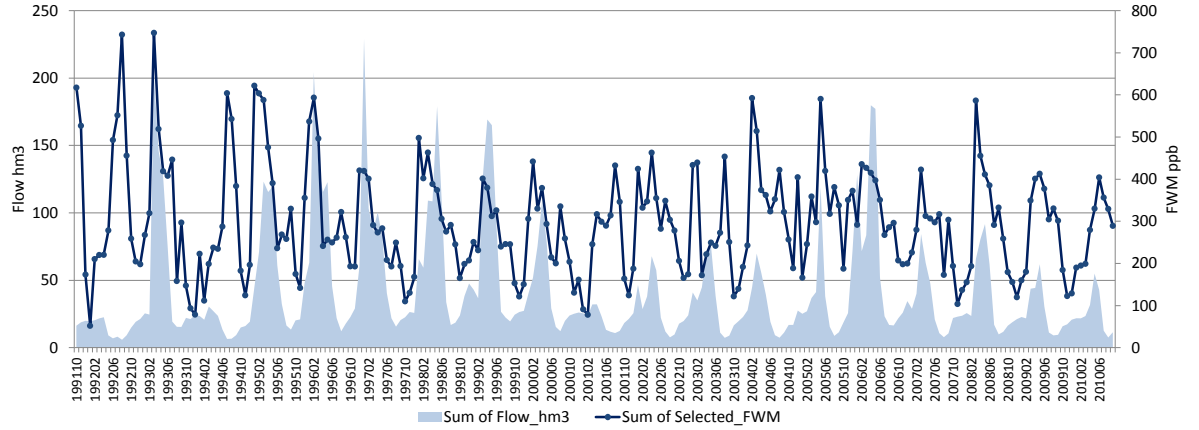
FWM Concentration ppb



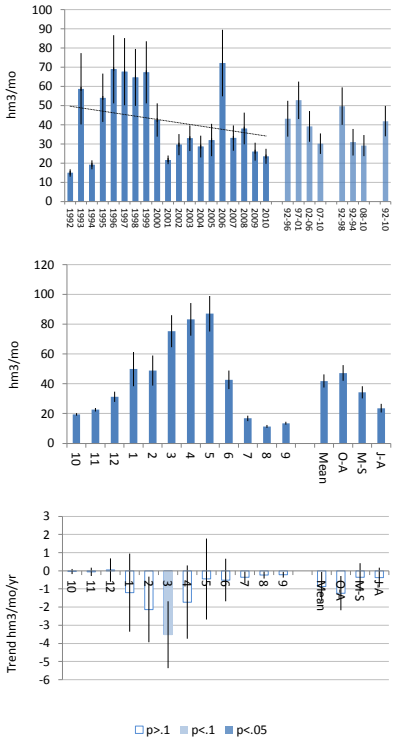
06/22/12

Seasonal & Yearly Variations in Lake Mass Balance Variable: TN Term: Sprague

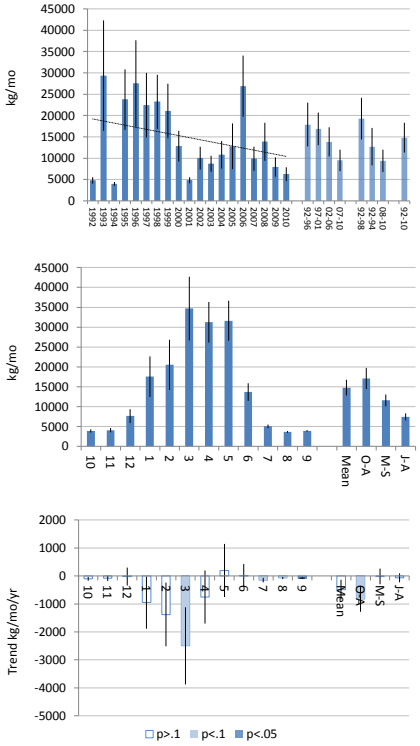




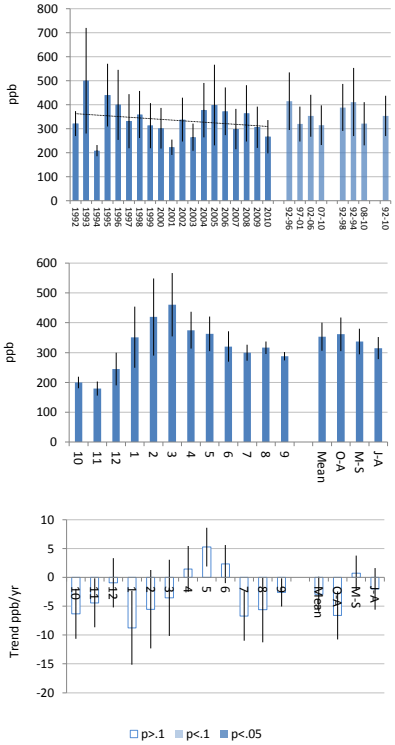
Flow hm3/month



Load kg/month TN

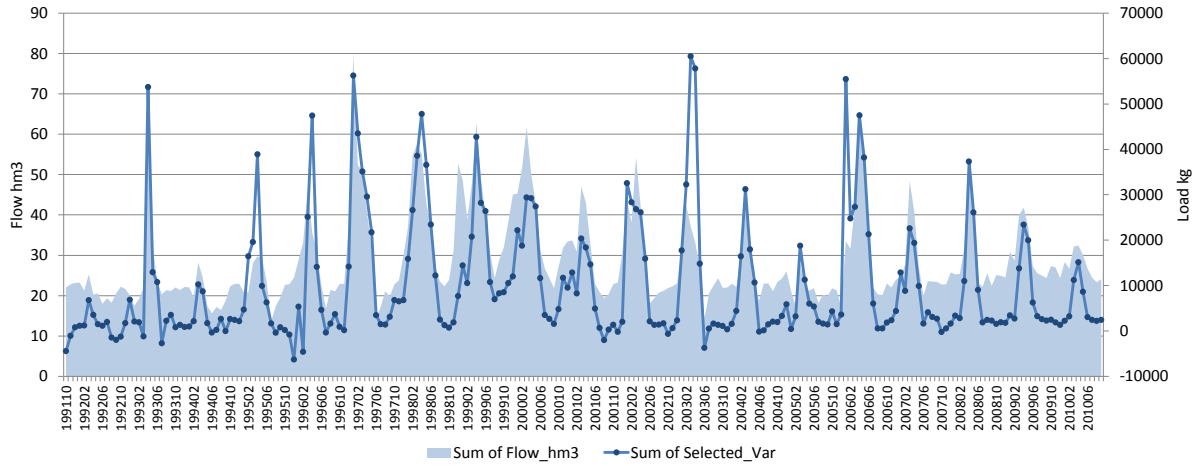


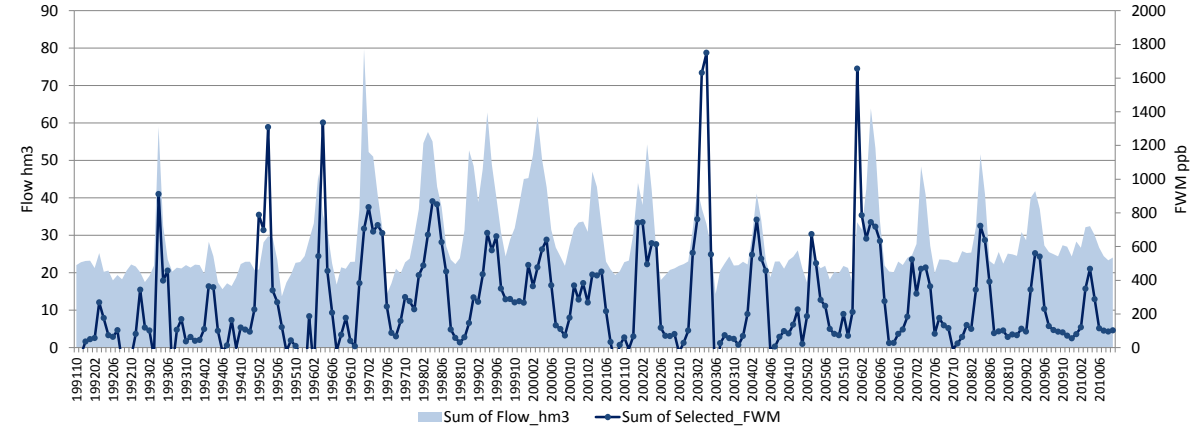
FWM Concentration ppb



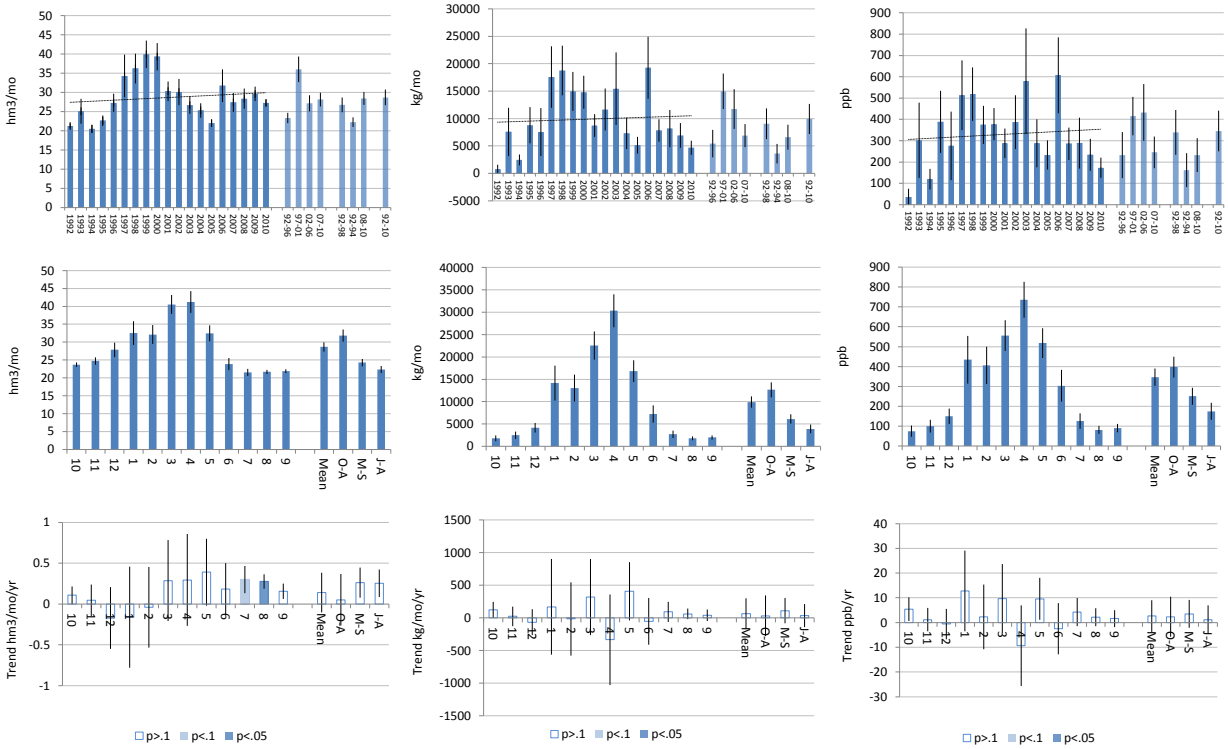
06/22/12

Seasonal & Yearly Variations in Lake Mass Balance Variable: TN Term: Williamson-Sprague



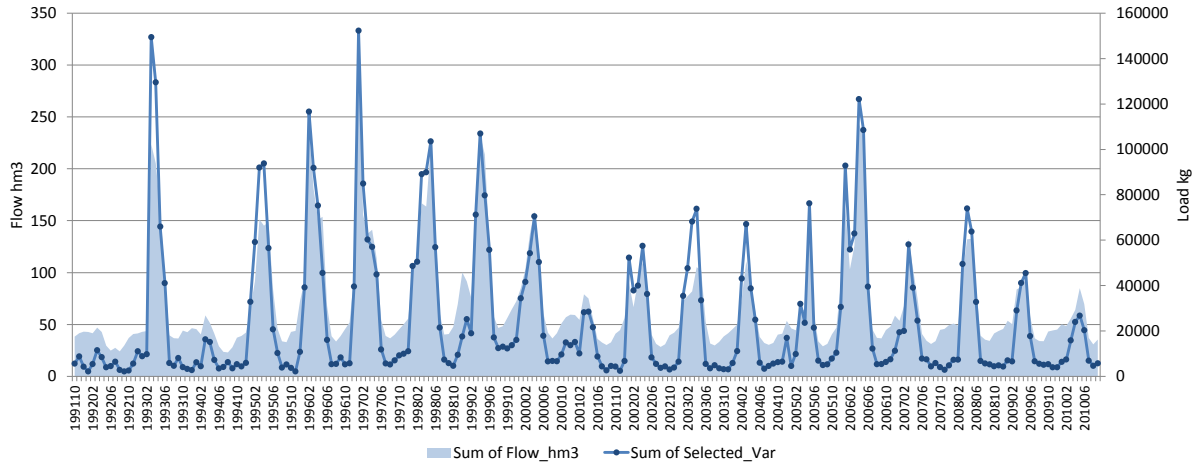


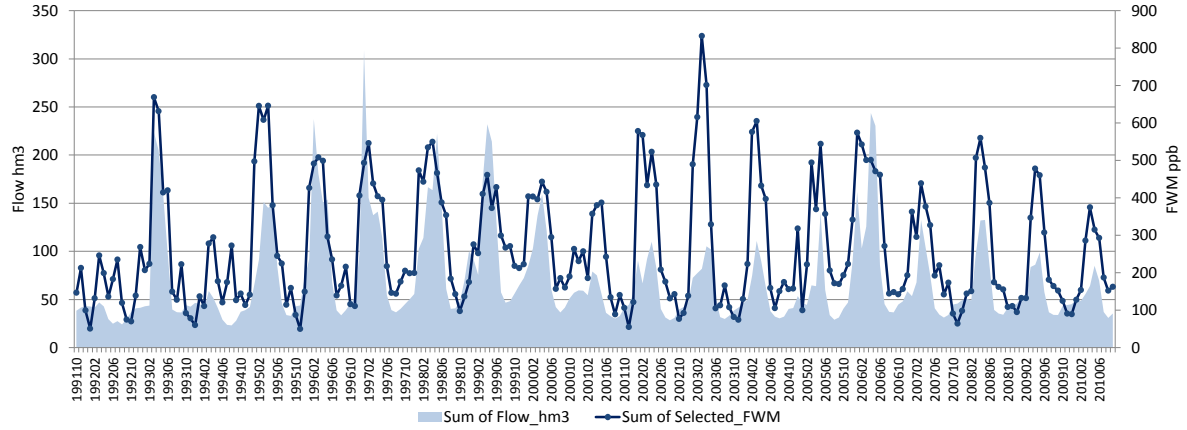
Flow hm3/month Load kg/month TN FWM Concentration ppb



06/22/12

Seasonal & Yearly Variations in Lake Mass Balance Variable: TN Term: Williamson Mouth





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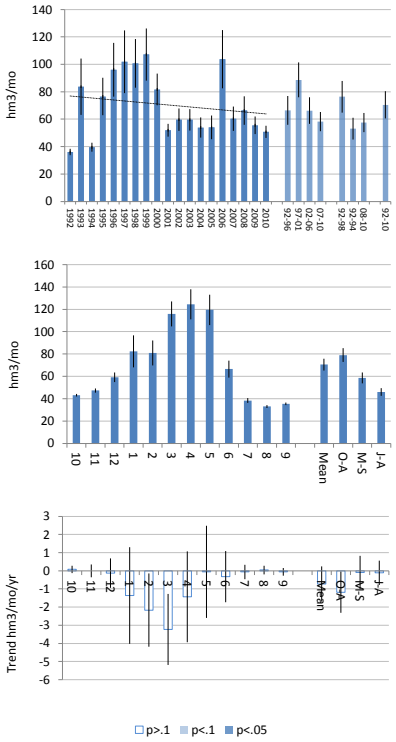
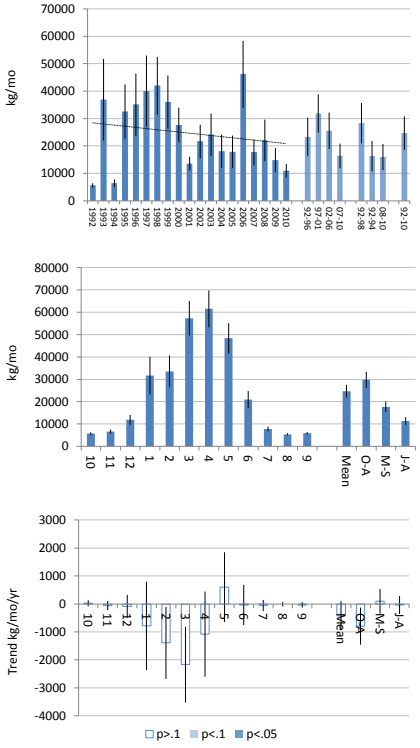
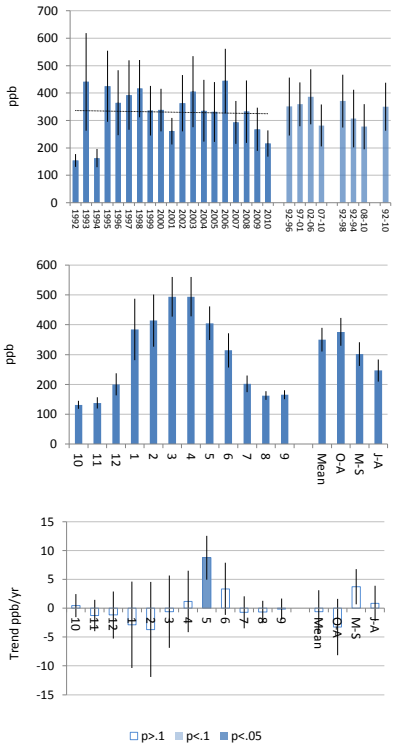


Load kg/month TN

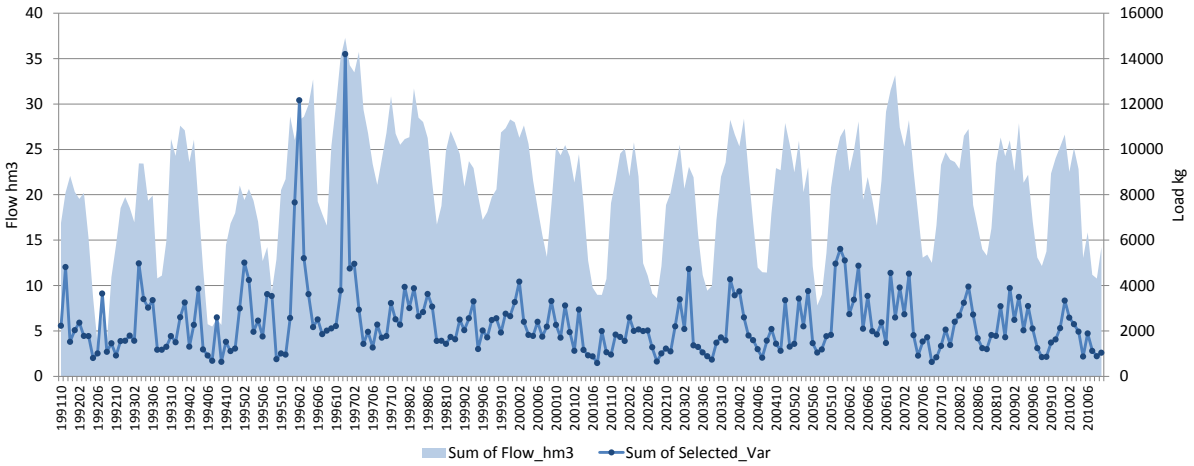


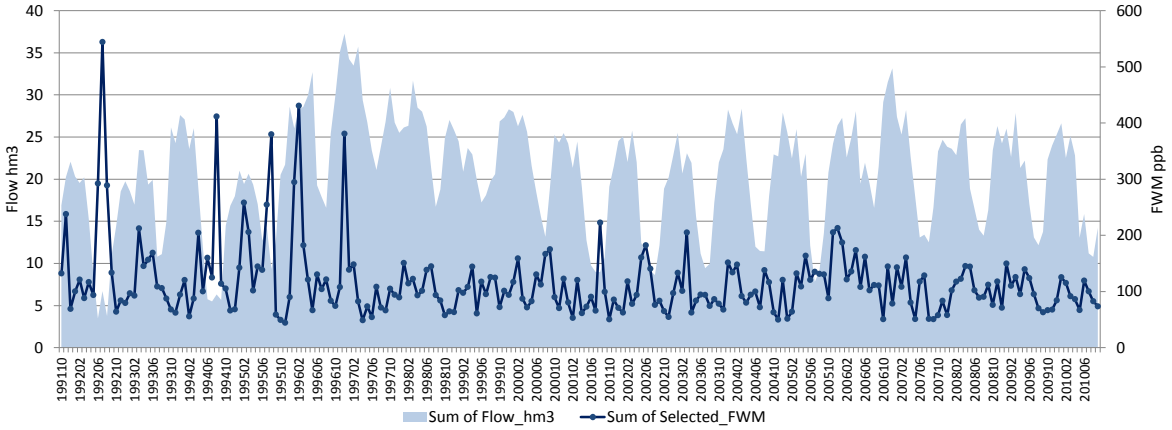
FWM Concentration ppb



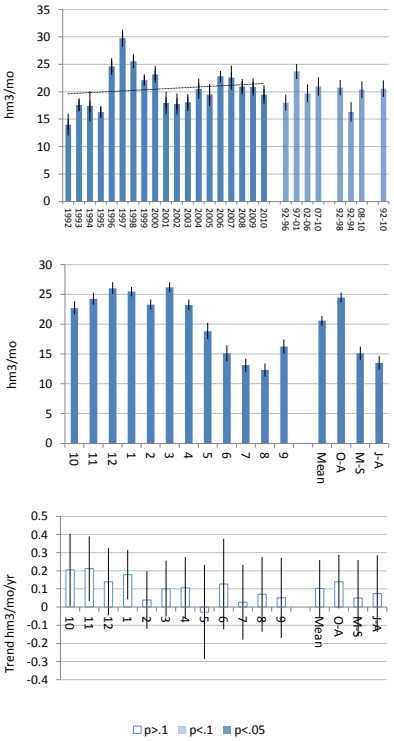
06/22/12

Seasonal & Yearly Variations in Lake Mass Balance Variable: TN Term: Wood_Weed

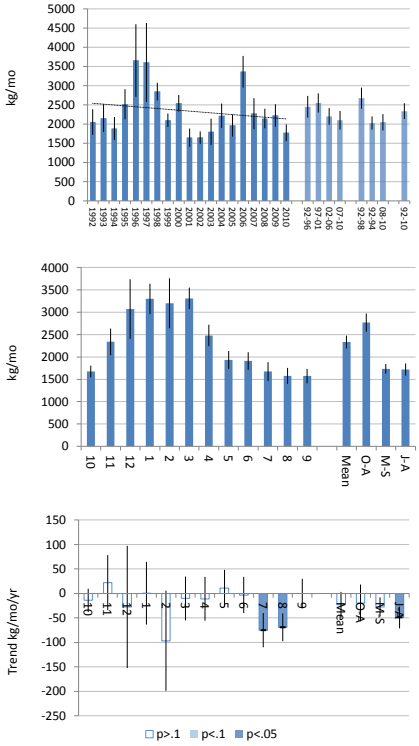




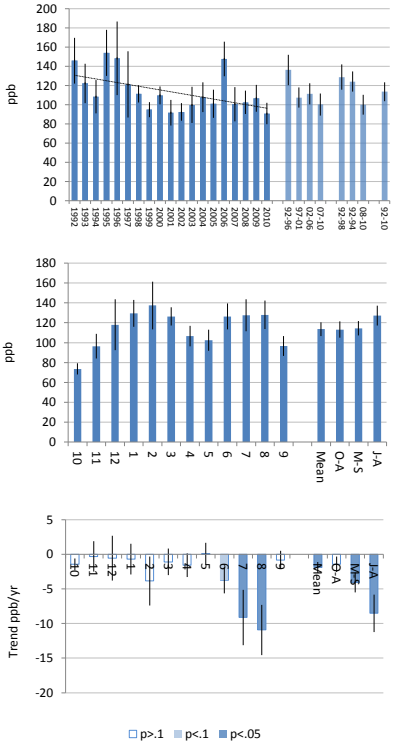
Flow hm3/month



Load kg/month TN



FWM Concentration ppb



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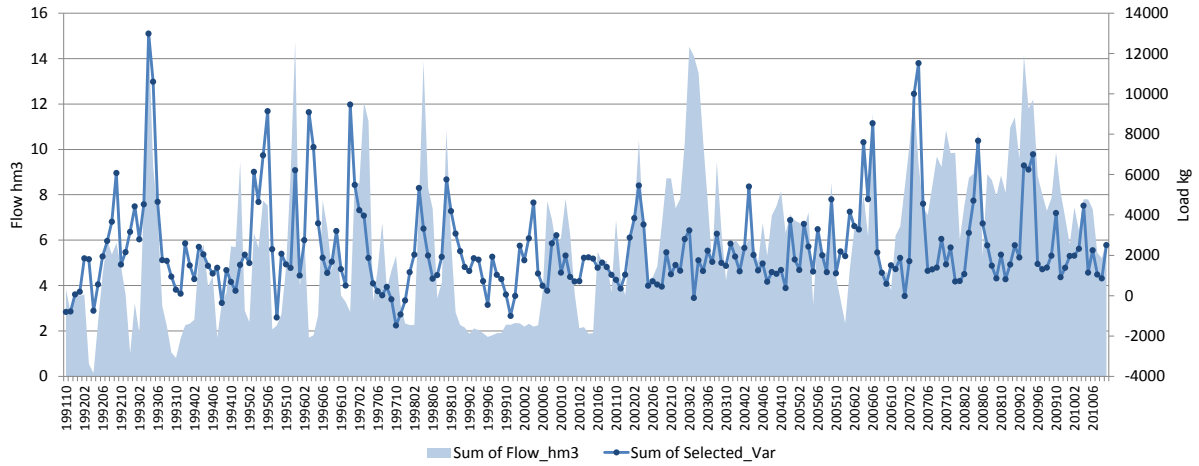
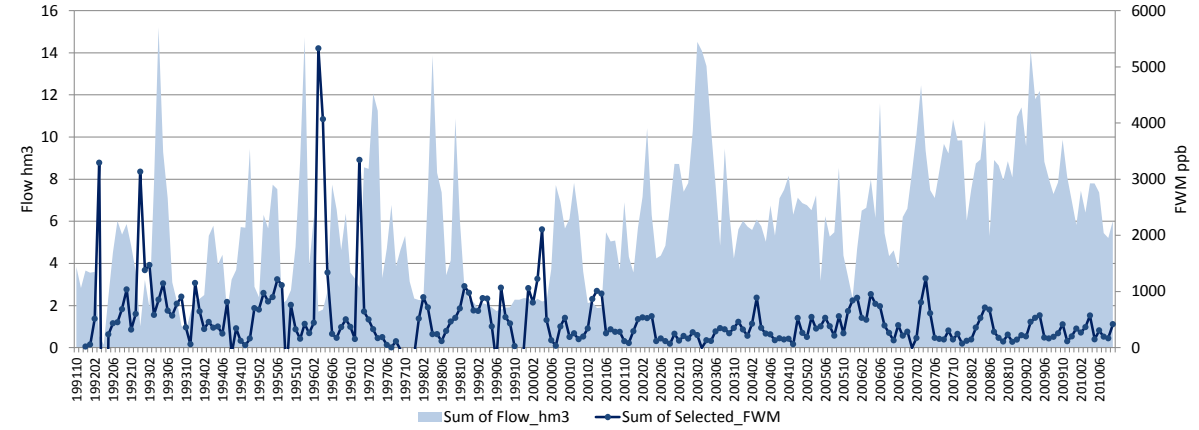
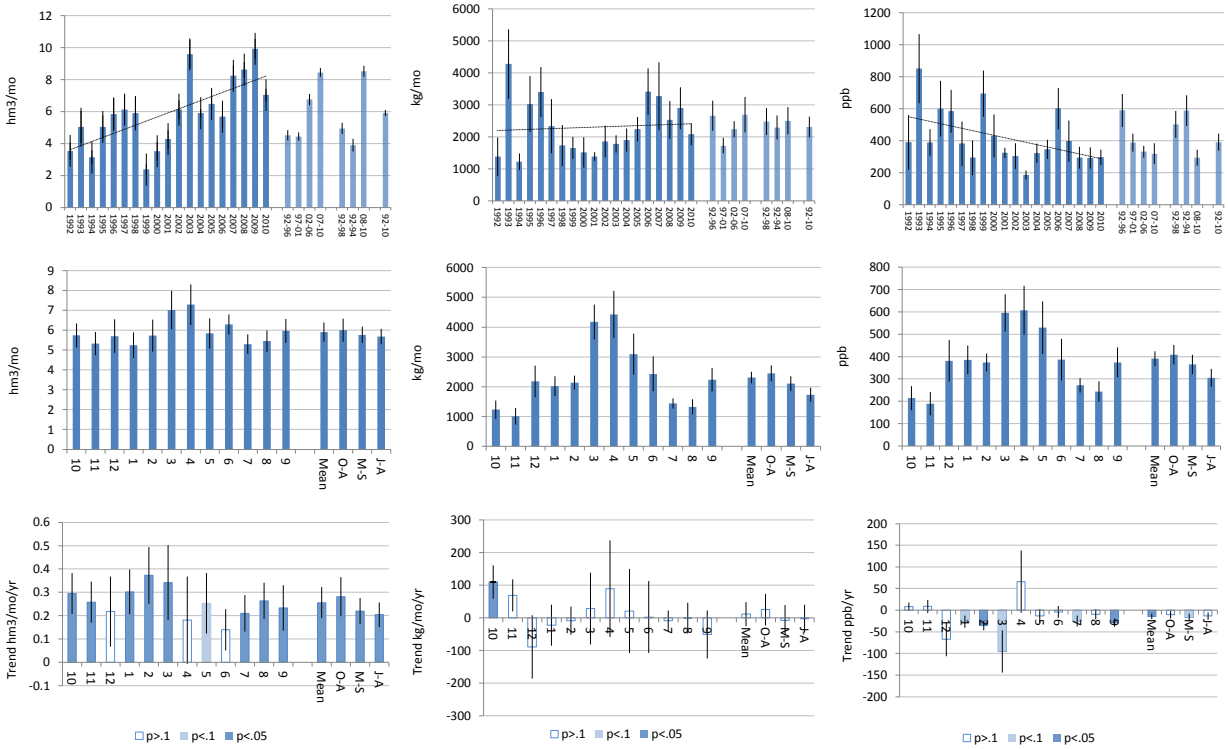
Seasonal & Yearly Variations in Lake Mass Balance Variable: TN Term: Wood Dike - Weed



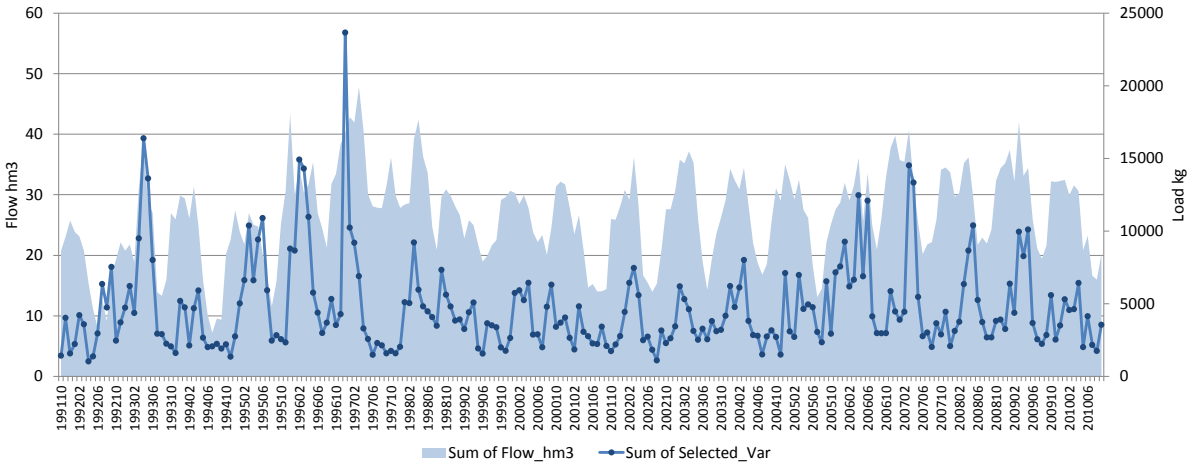


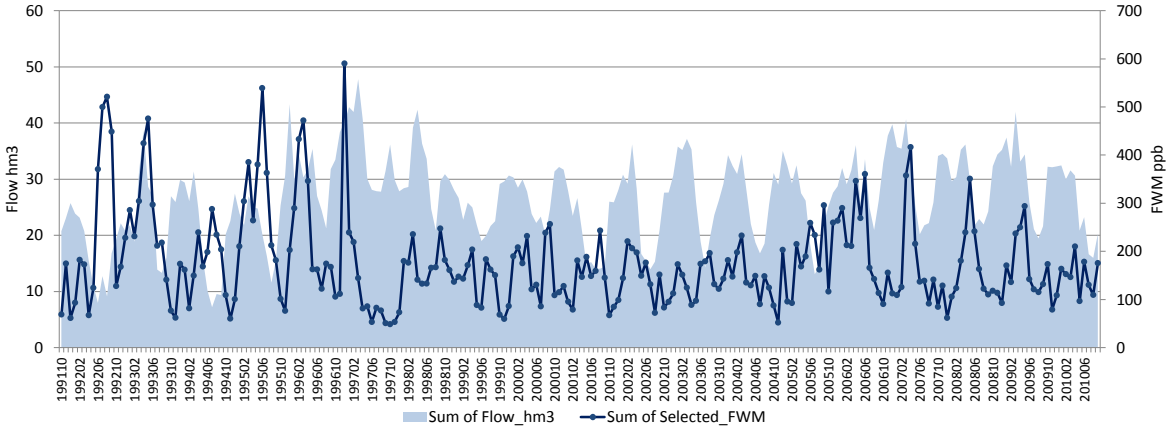
Flow hm3/month Load kg/month TN FWM Concentration ppb



06/22/12

Seasonal & Yearly Variations in Lake Mass Balance Variable: TN Term: Wood_Dike





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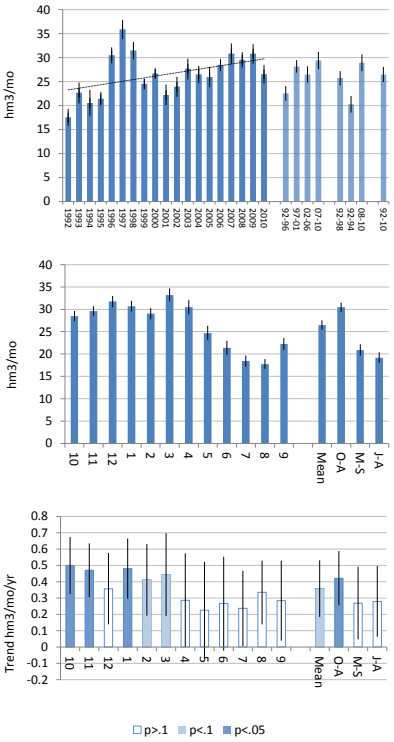
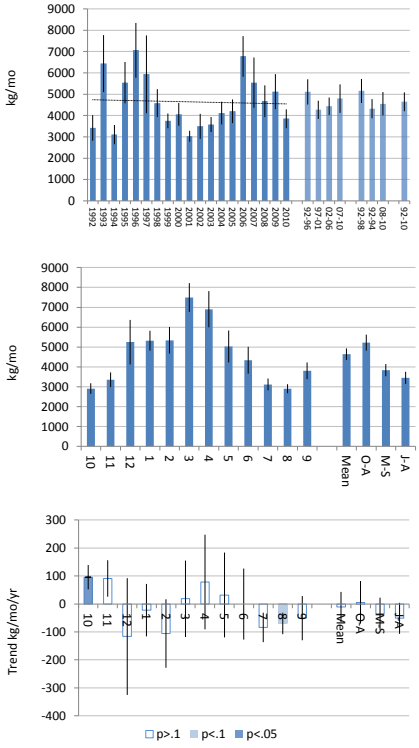
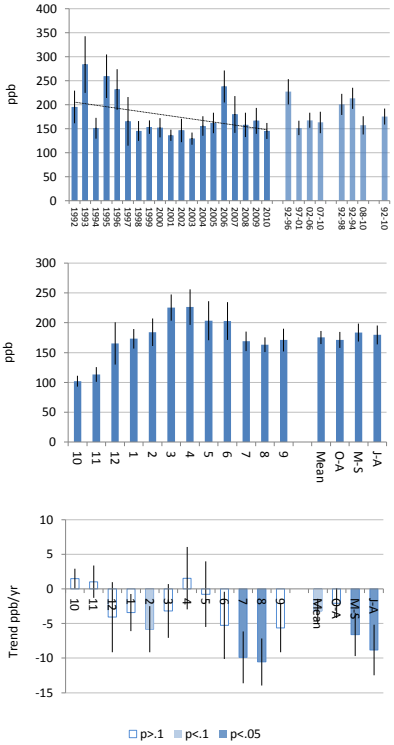


Load kg/month TN



FWM Concentration ppb



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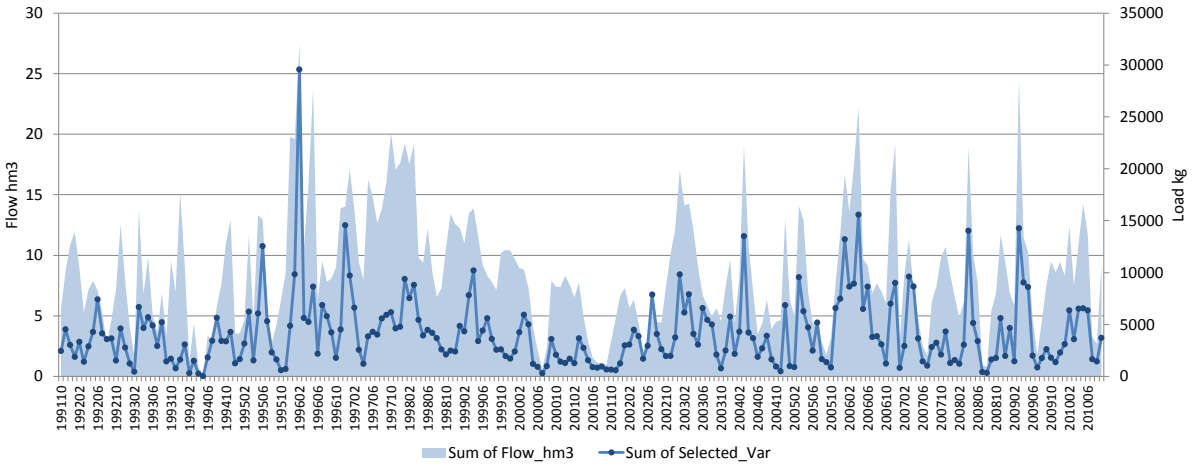
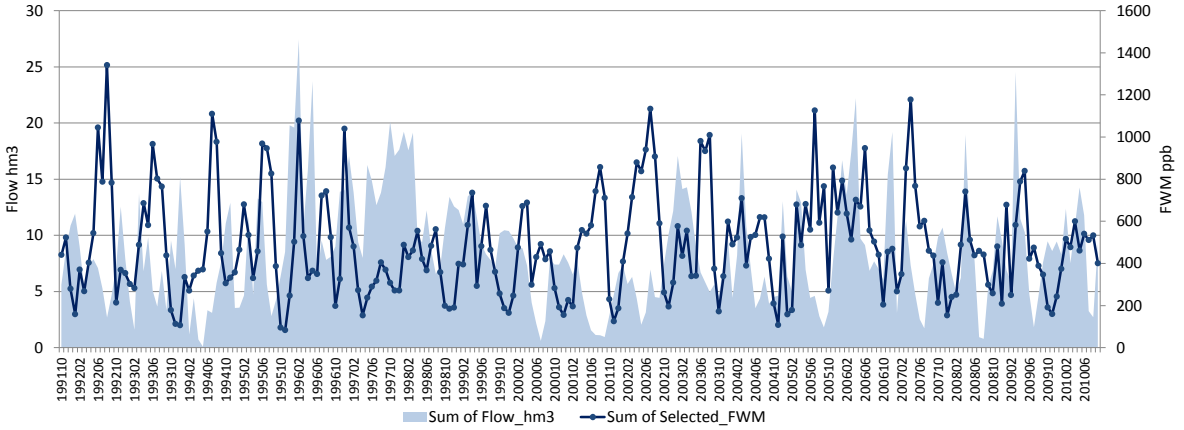
Seasonal & Yearly Variations in Lake Mass Balance Variable: TN Term: 7mile_Dike





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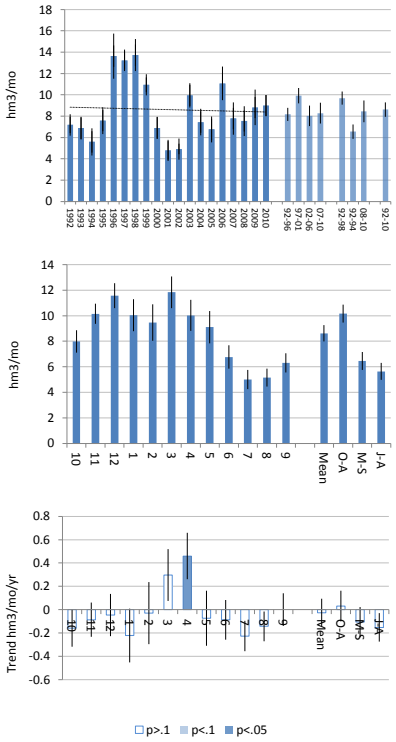
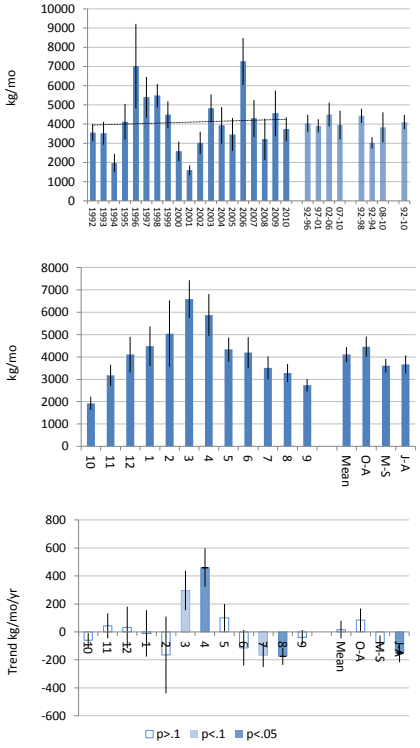
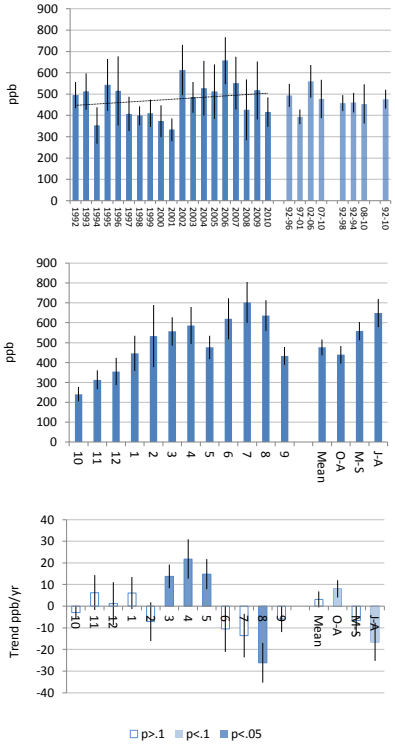


Load kg/month TN



FWM Concentration ppb



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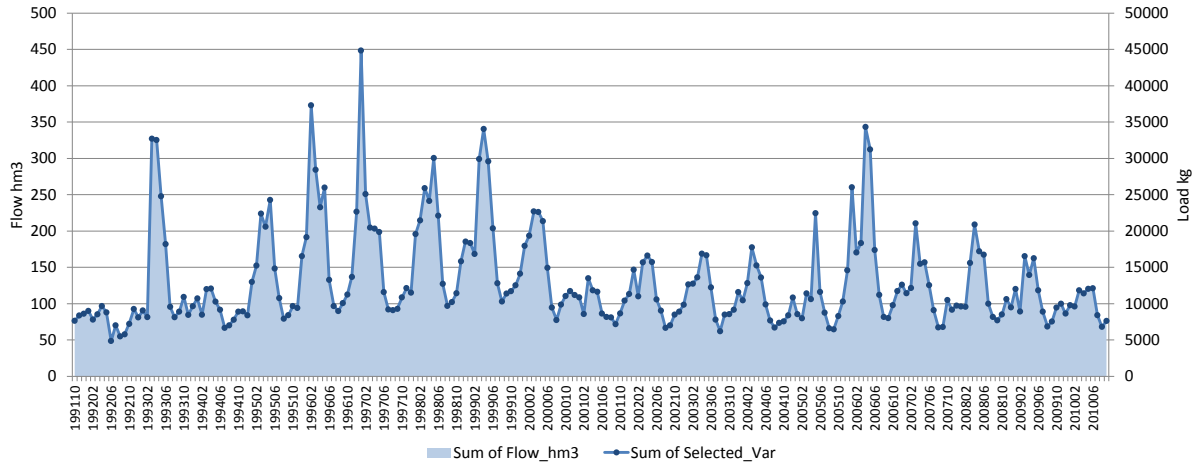
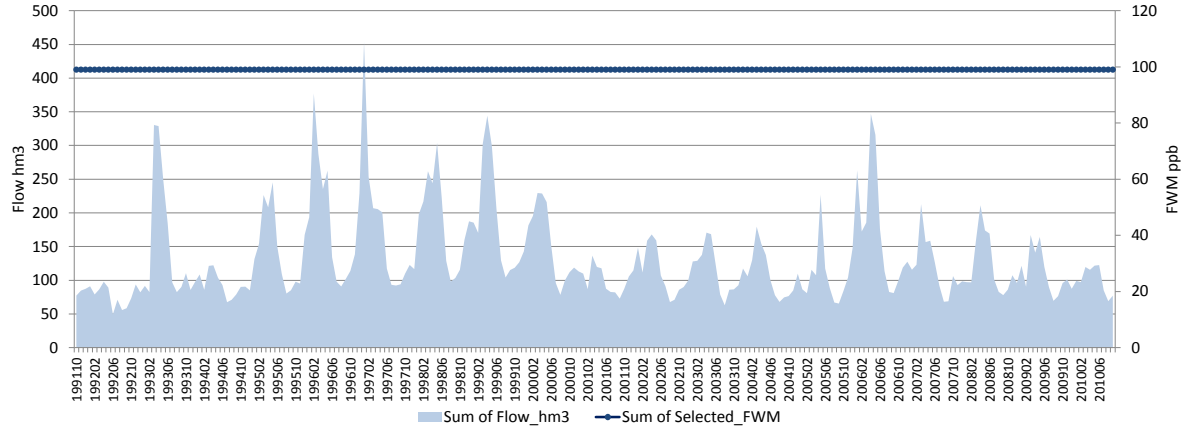
Seasonal & Yearly Variations in Lake Mass Balance Variable: TN Term: Natural-Background





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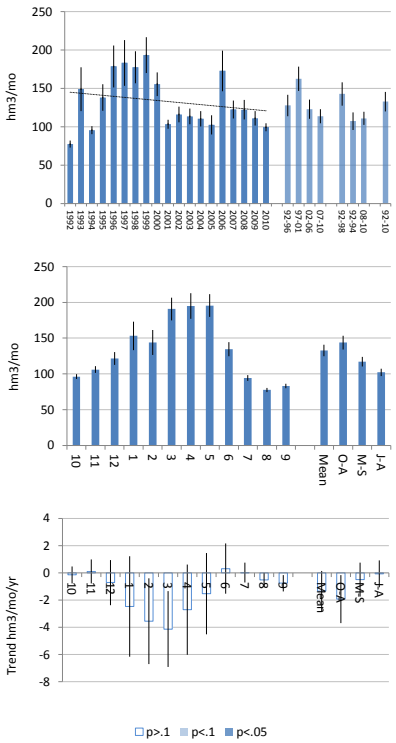
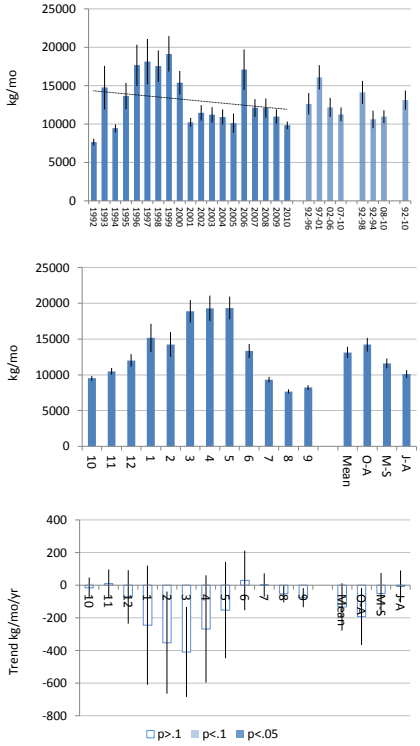
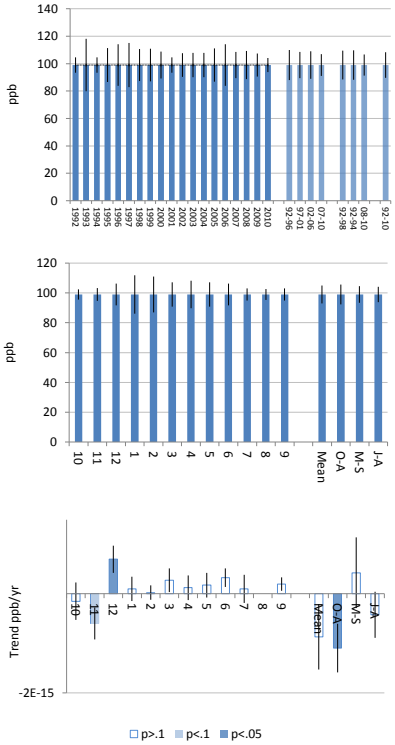


Load kg/month TN



FWM Concentration ppb



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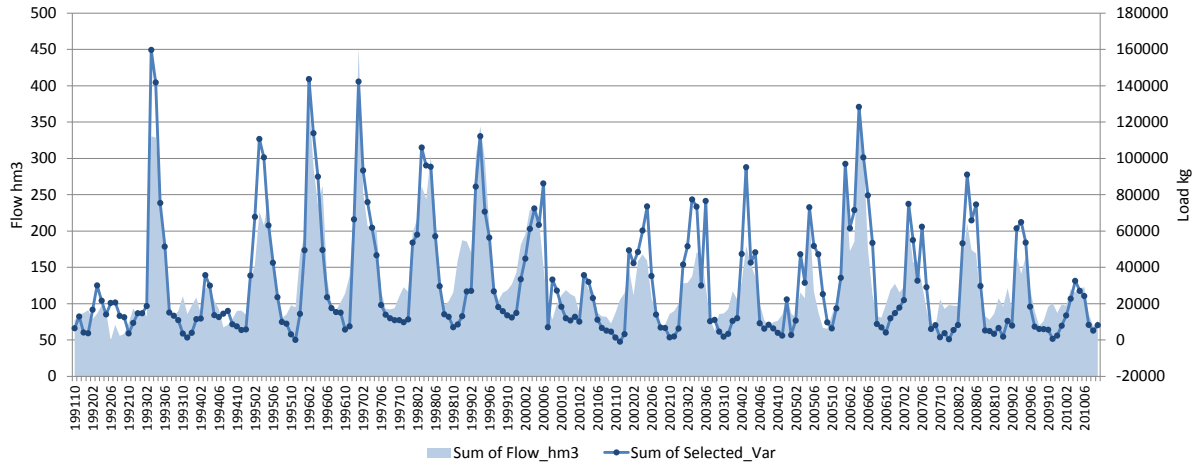
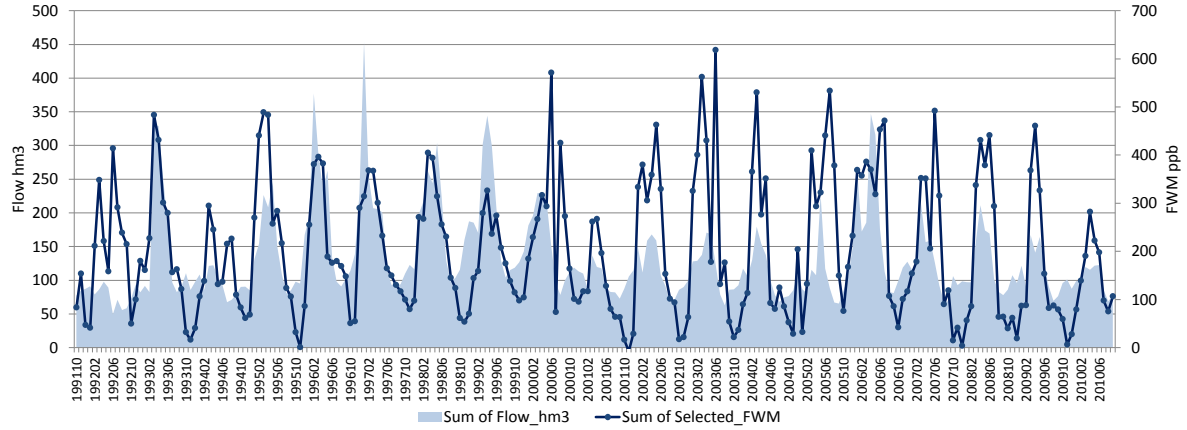
Seasonal & Yearly Variations in Lake Mass Balance Variable: TN Term: Anthropogenic





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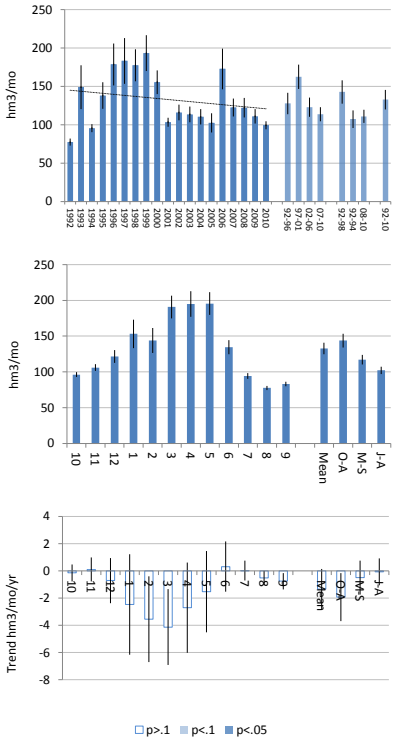
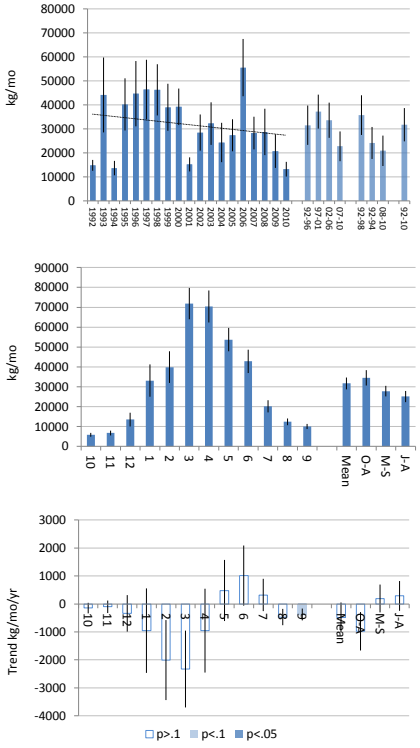
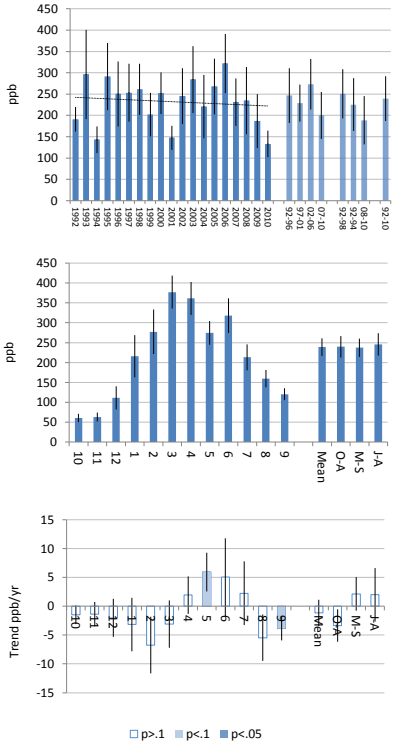


Load kg/month TN

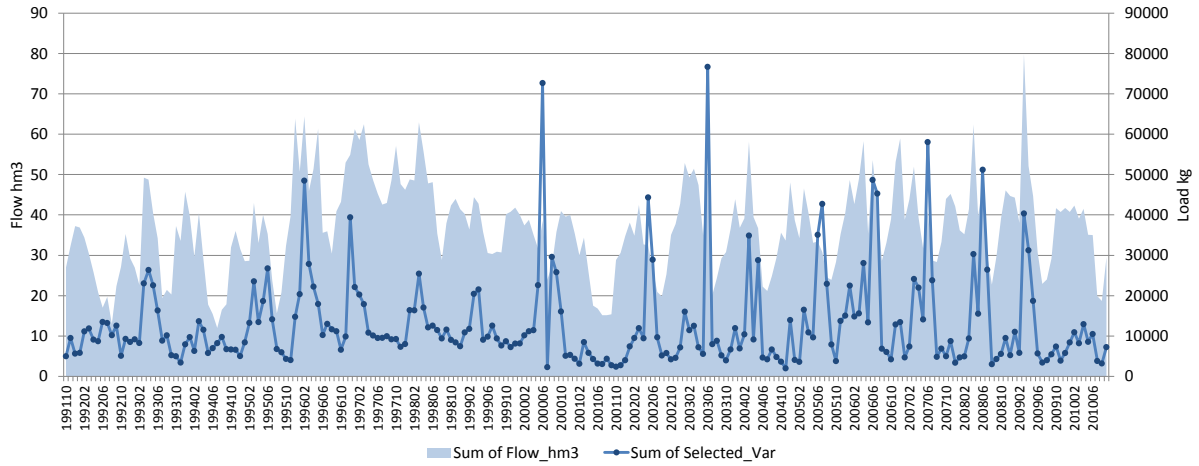


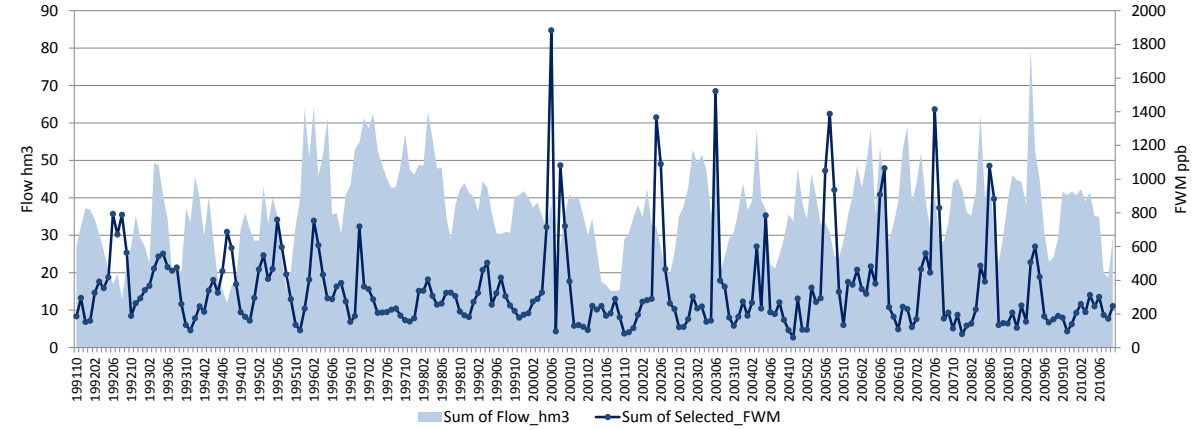
FWM Concentration ppb



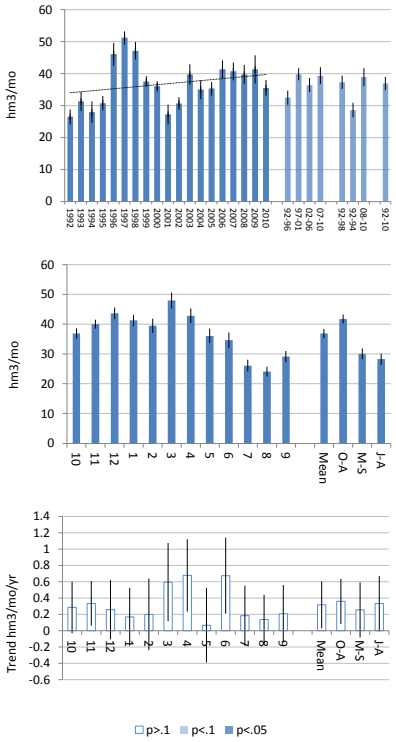
06/22/12

Seasonal & Yearly Variations in Lake Mass Balance Variable: TN Term: Total Agency Inflow

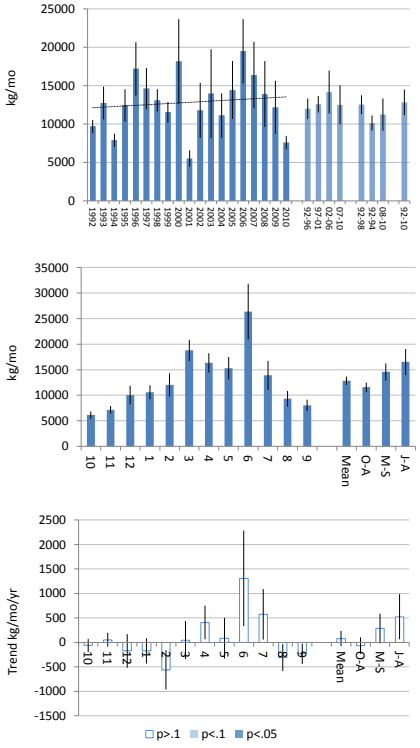




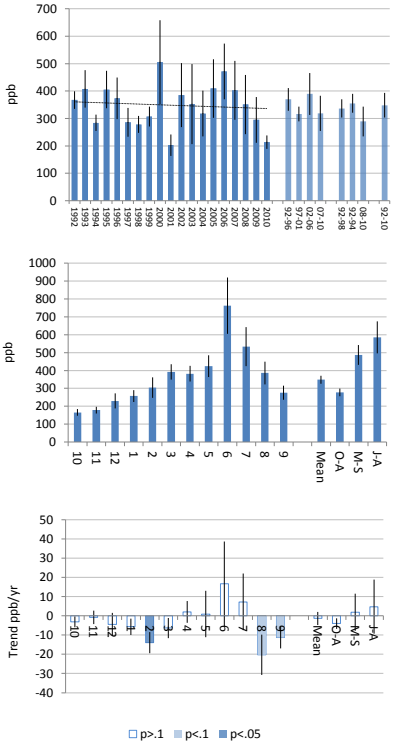
Flow hm3/month



Load kg/month TN

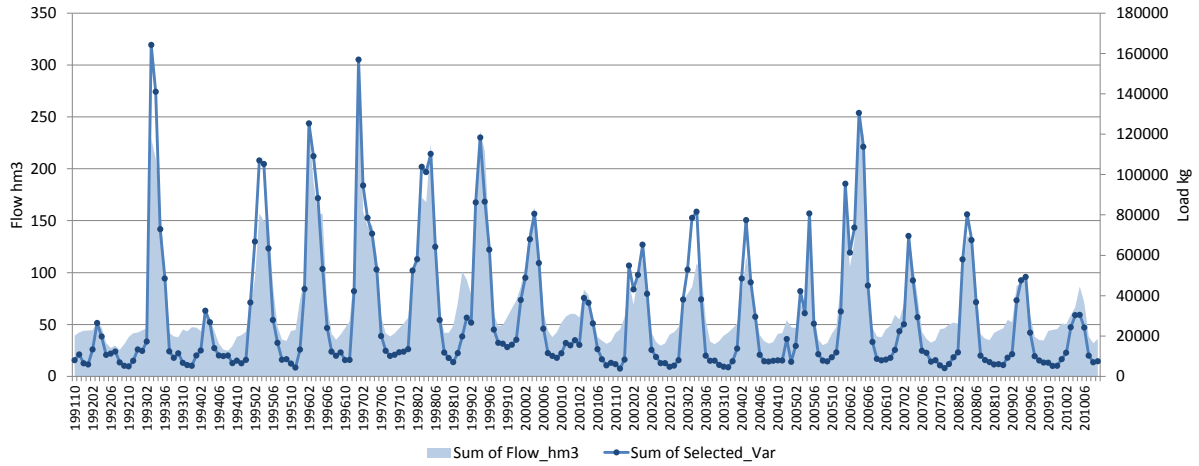


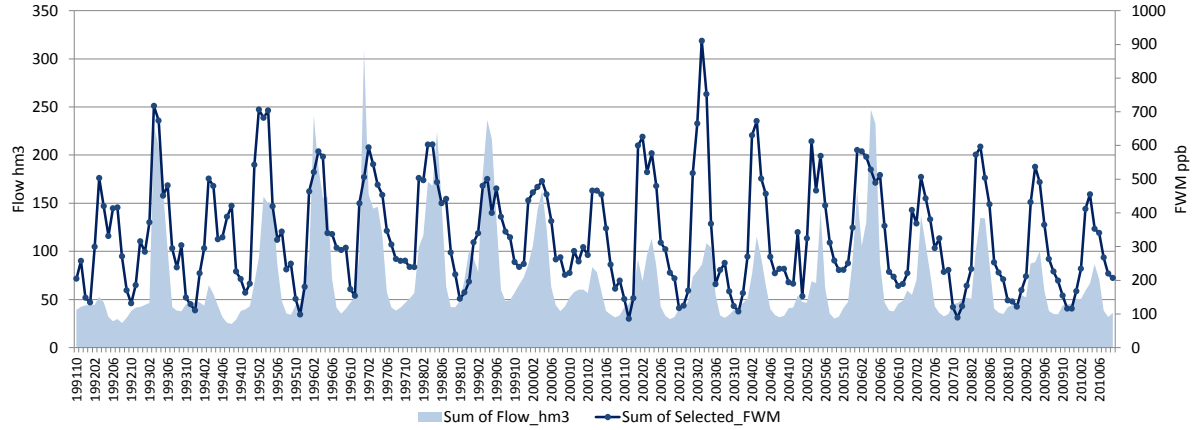
FWM Concentration ppb



06/22/12

Seasonal & Yearly Variations in Lake Mass Balance Variable: TN Term: Total Klamath Inflow





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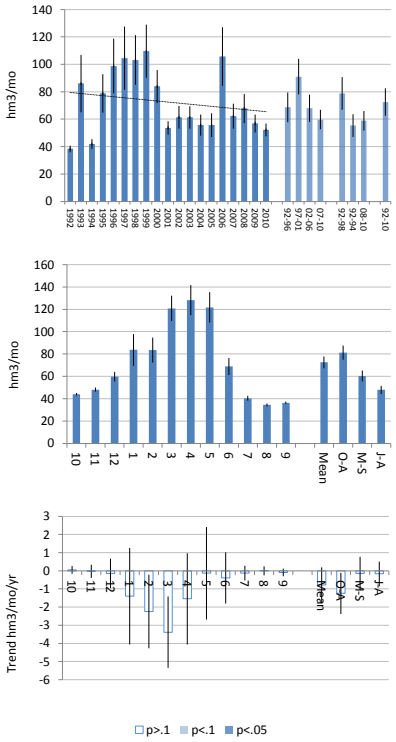
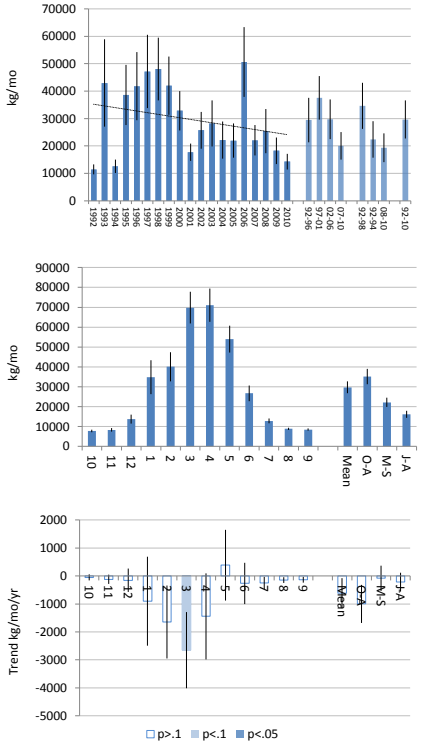
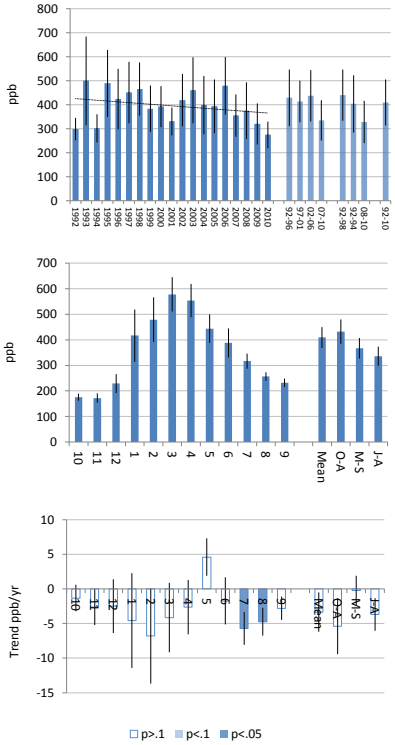


Load kg/month TN

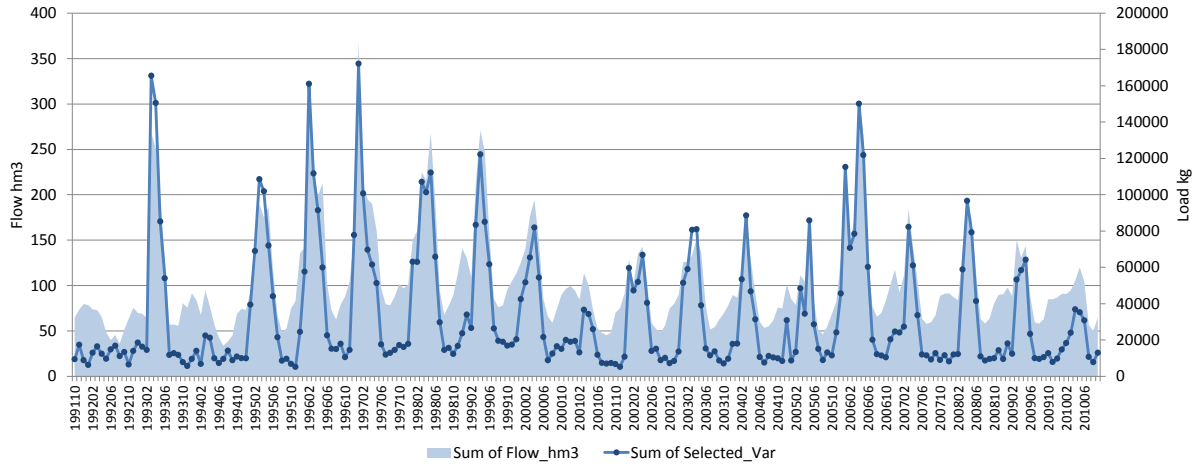


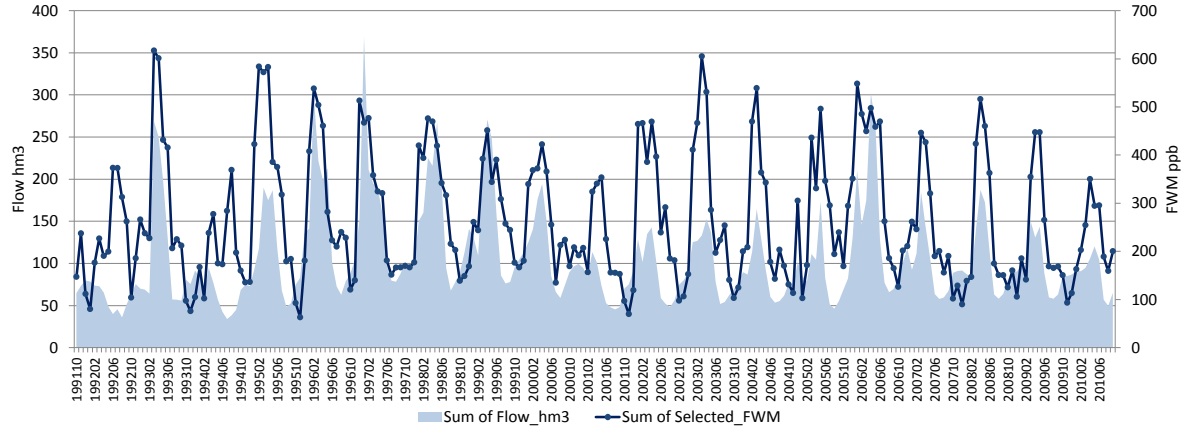
FWM Concentration ppb



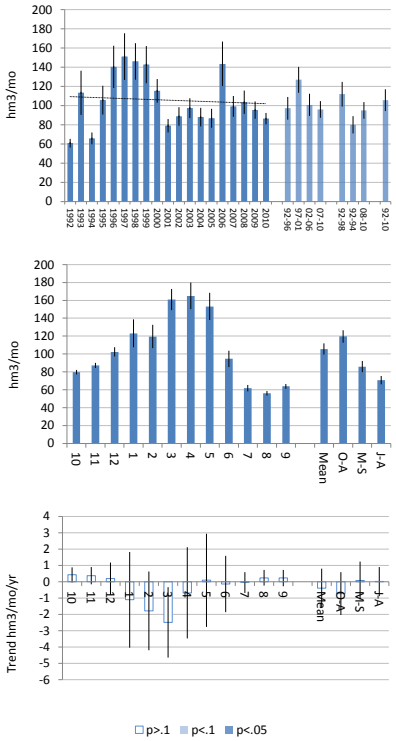
06/22/12

Seasonal & Yearly Variations in Lake Mass Balance Variable: TN Term: Total Tributaries

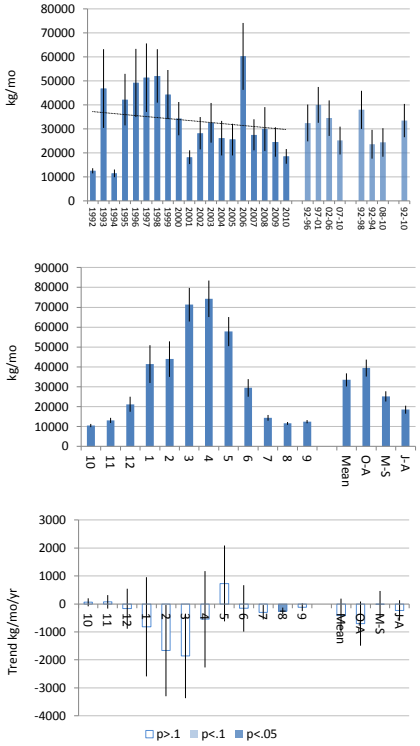




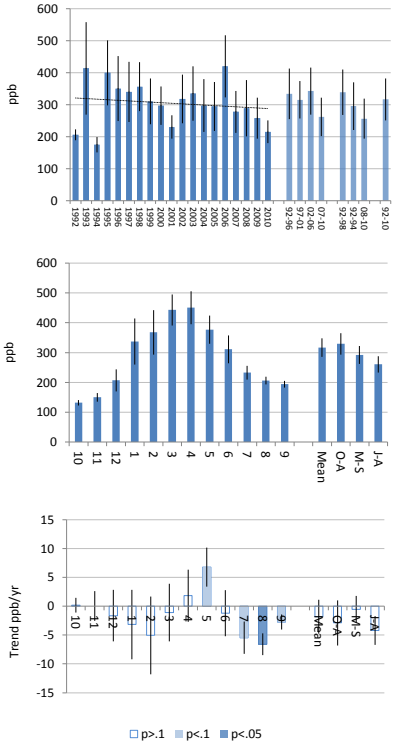
Flow hm3/month



Load kg/month TN

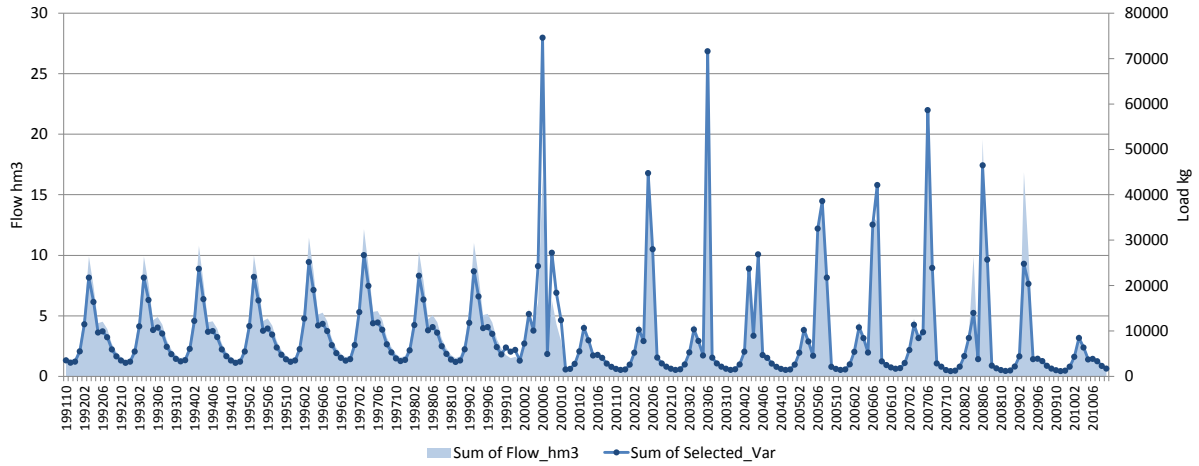


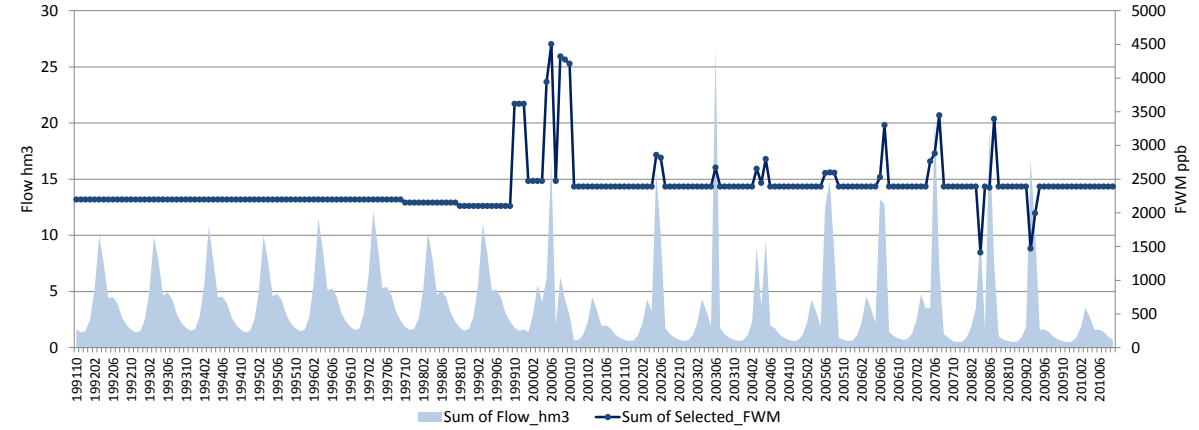
FWM Concentration ppb



06/22/12

Seasonal & Yearly Variations in Lake Mass Balance Variable: TN Term: Total Pumped to Lake





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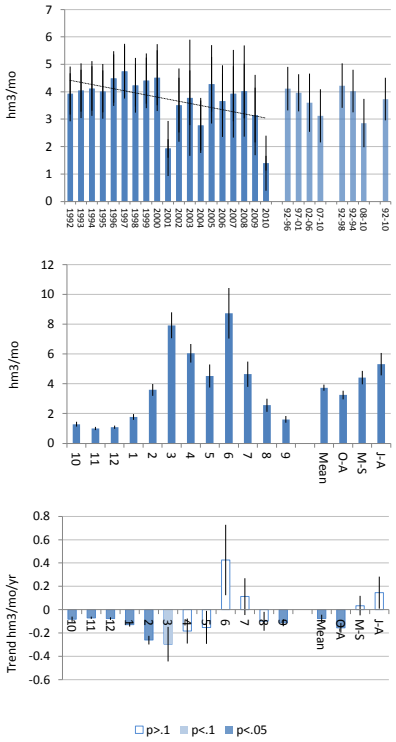
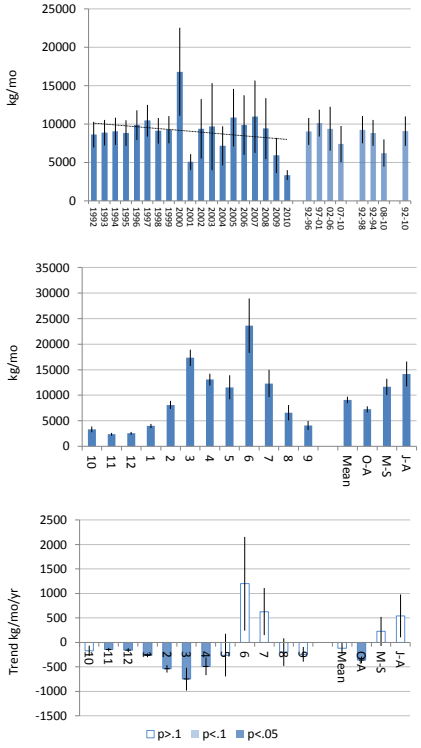
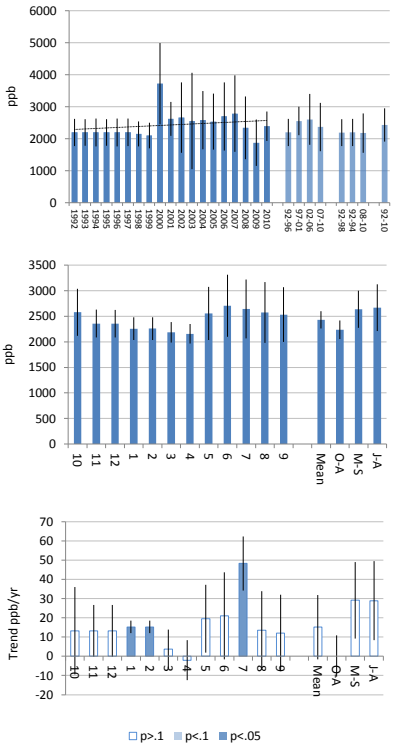


Load kg/month TN

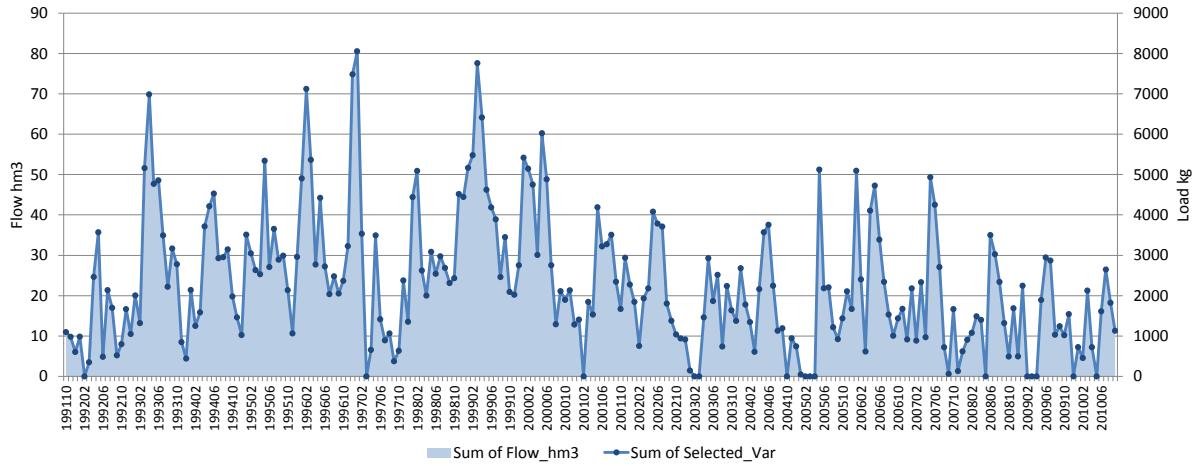


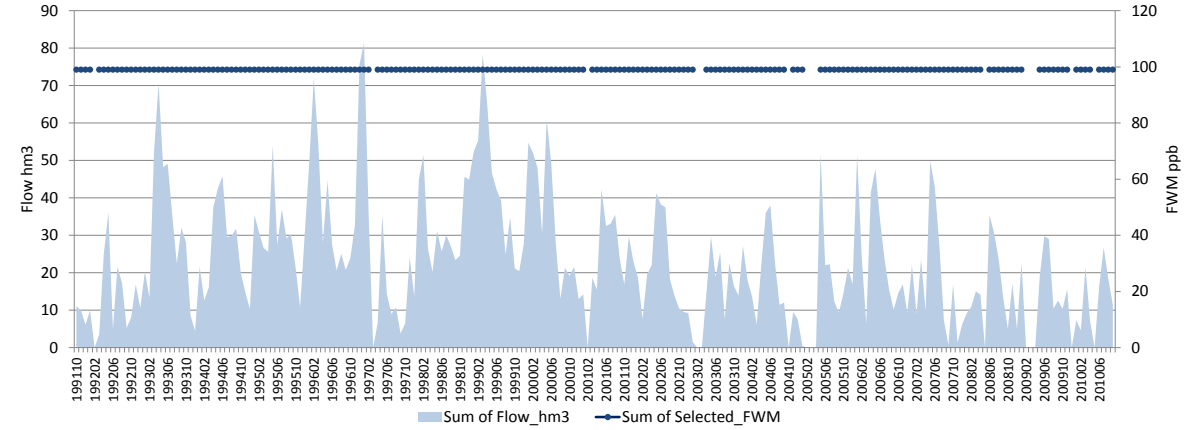
FWM Concentration ppb



06/22/12

Seasonal & Yearly Variations in Lake Mass Balance Variable: TN Term: Ungauged Inflows





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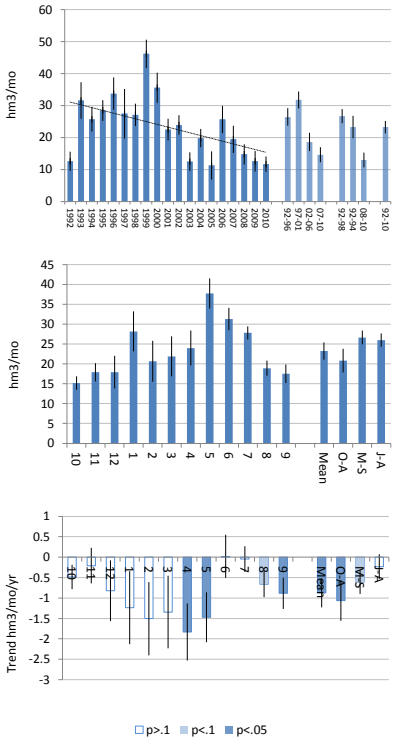
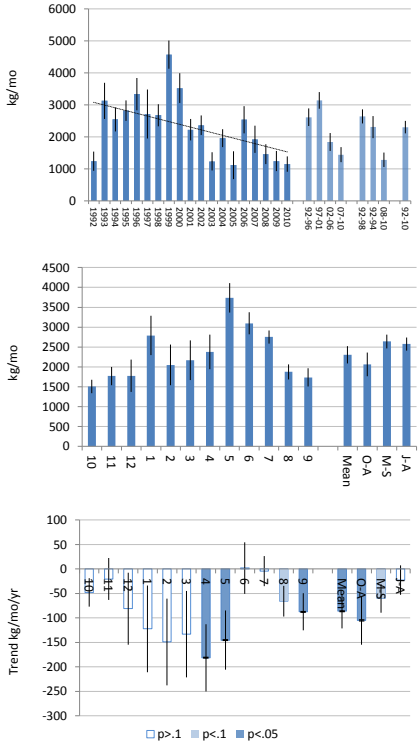
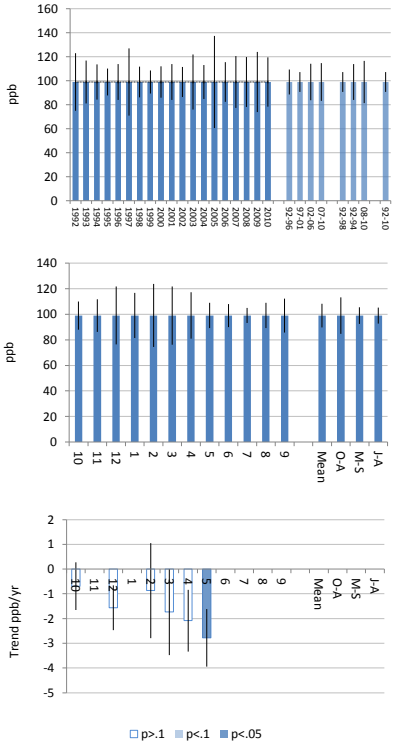


Load kg/month TN



FWM Concentration ppb



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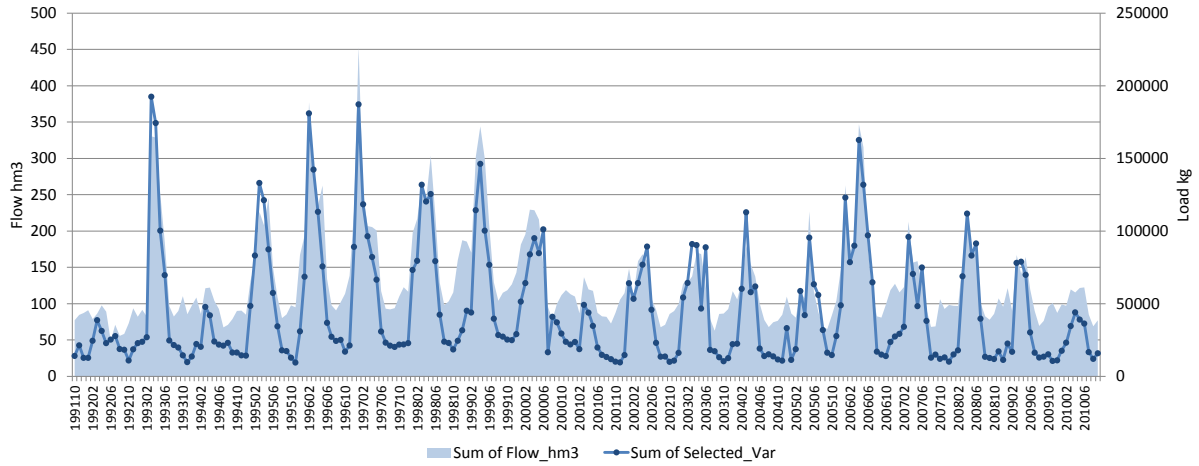
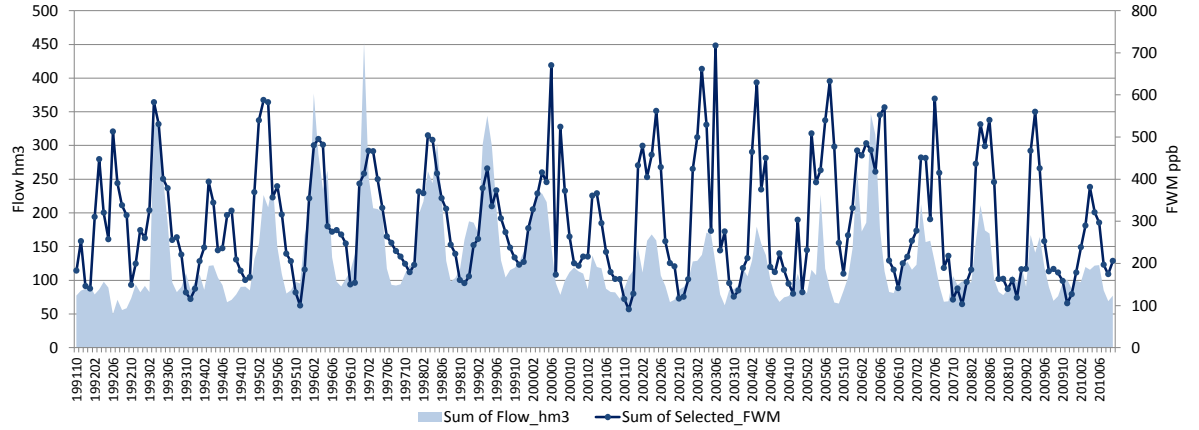
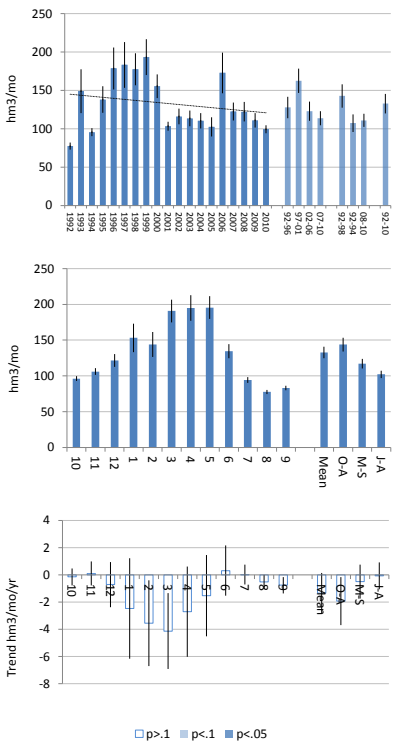
Seasonal & Yearly Variations in Lake Mass Balance Variable: TN Term: Total External Inflows

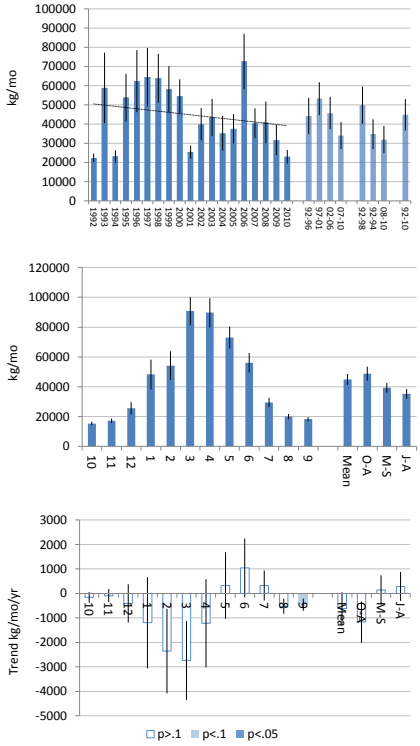




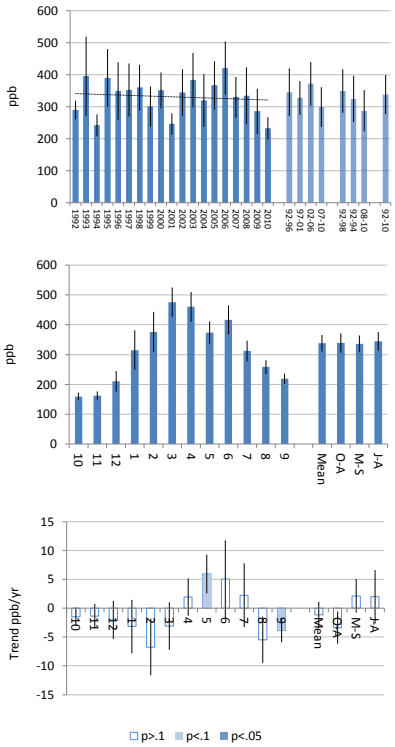
Flow hm3/month



Load kg/month TN



FWM Concentration ppb



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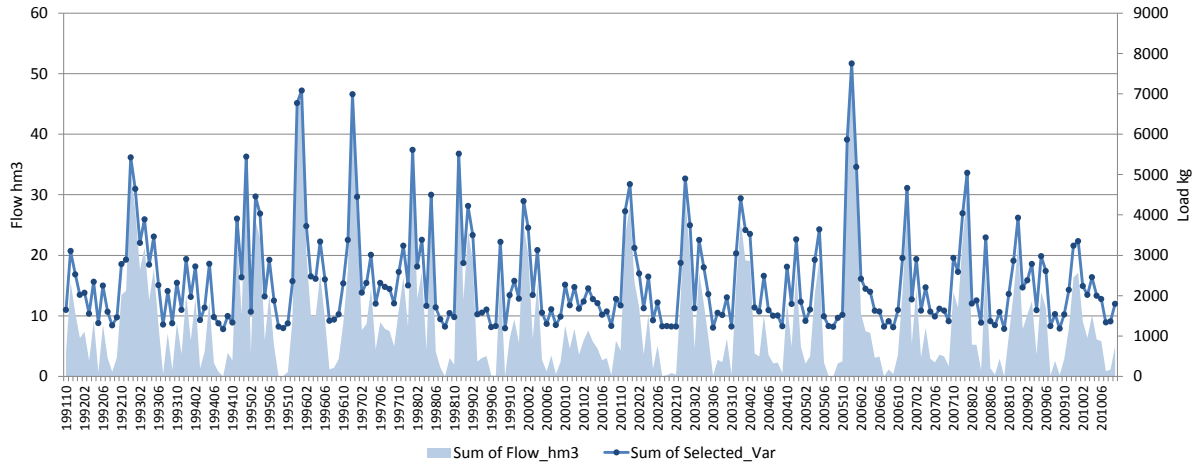
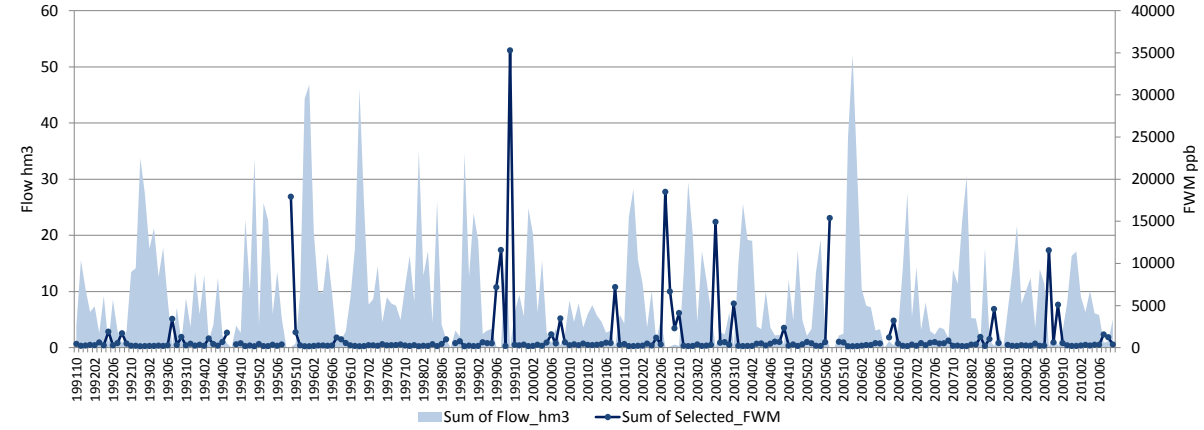
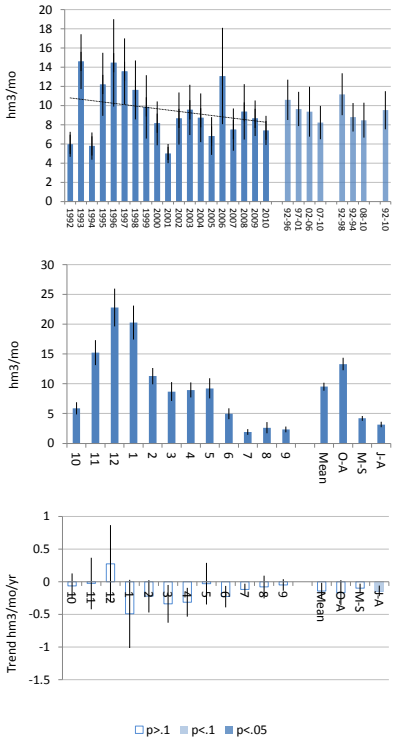
Seasonal & Yearly Variations in Lake Mass Balance Variable: TN Term: Precipitation

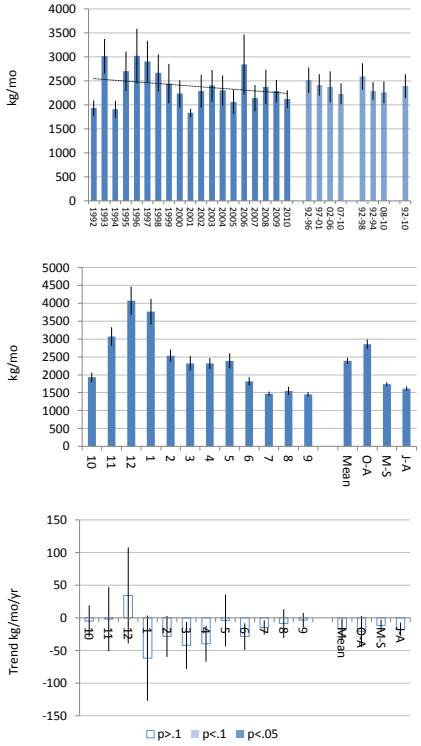




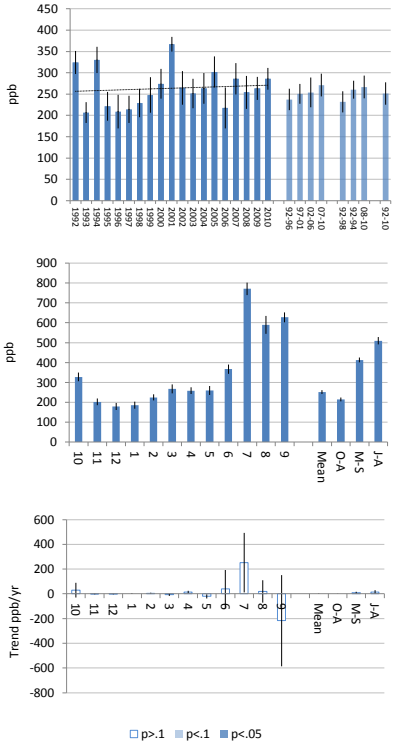
Flow hm3/month



Load kg/month TN



FWM Concentration ppb



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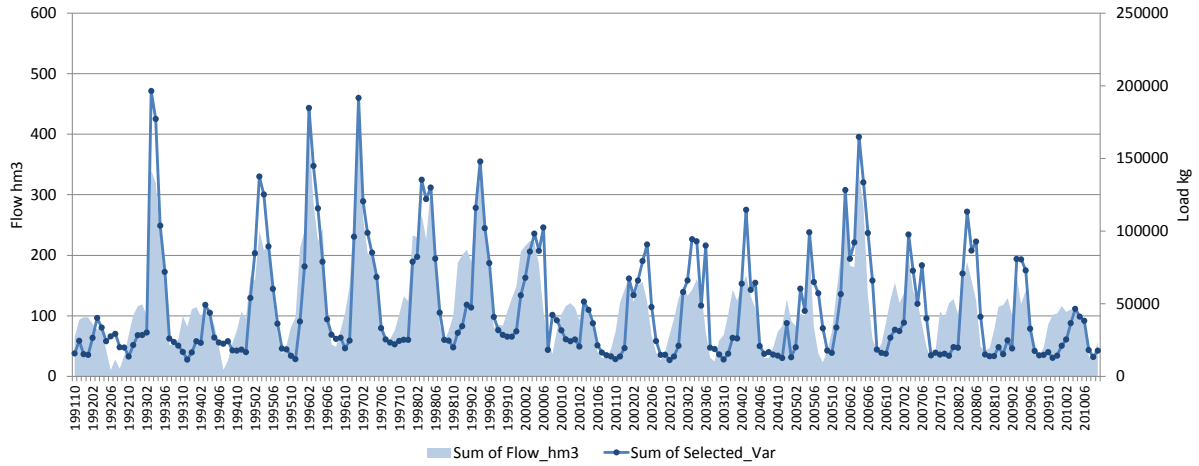
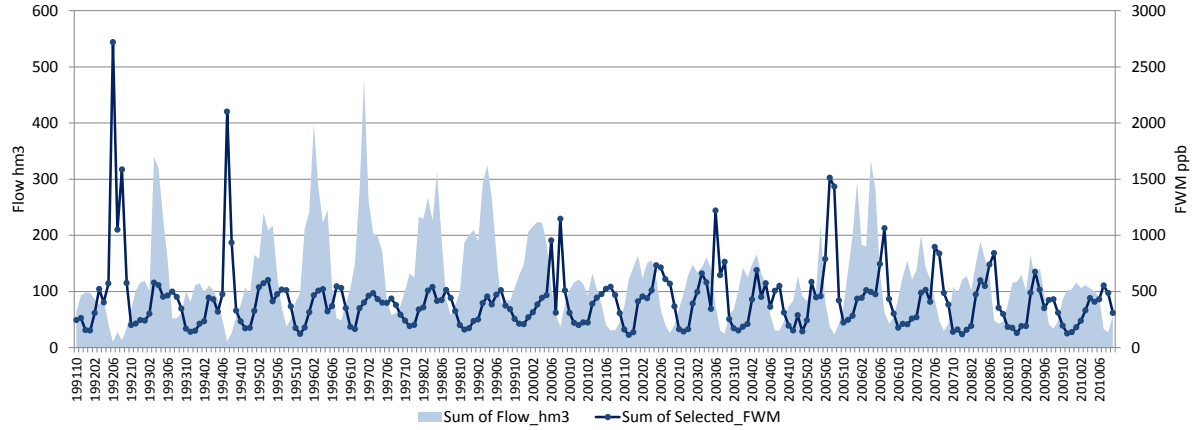
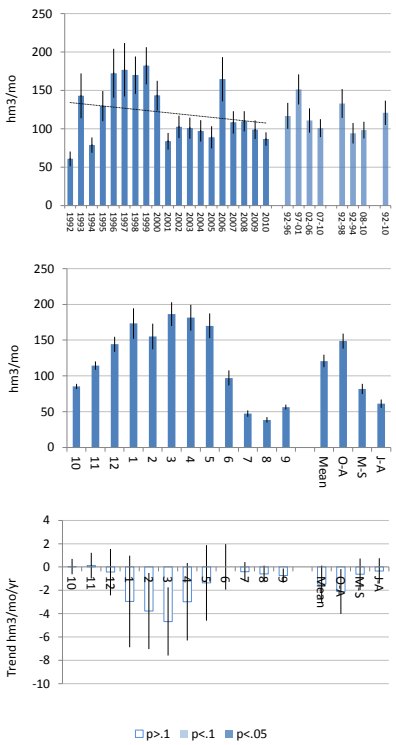
Seasonal & Yearly Variations in Lake Mass Balance Variable: TN Term: Net Inflow

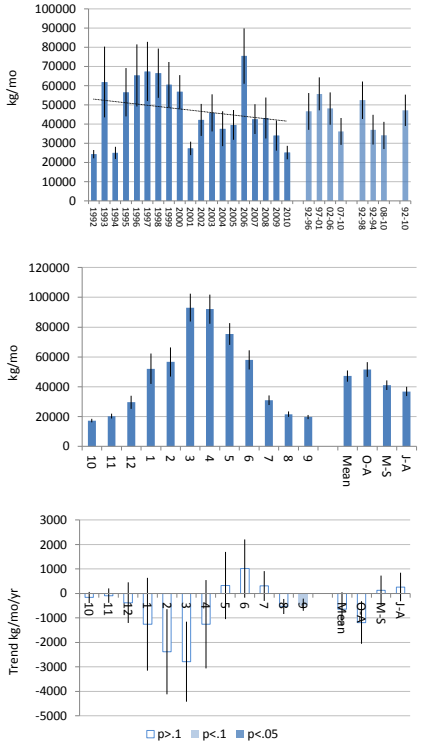




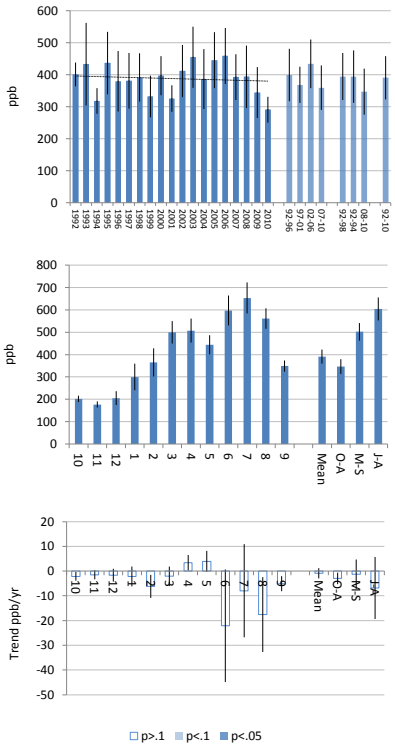
Flow hm3/month



Load kg/month TN



FWM Concentration ppb



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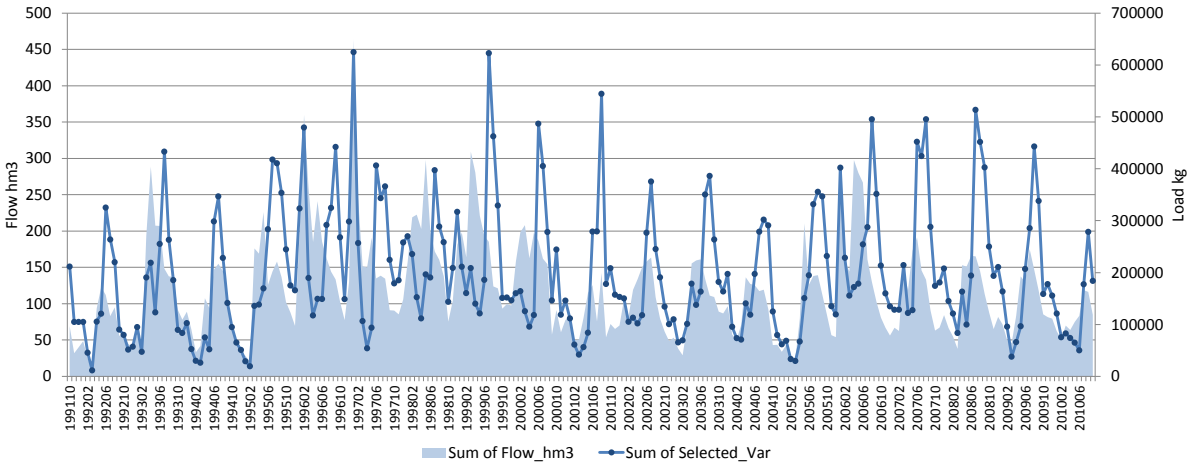
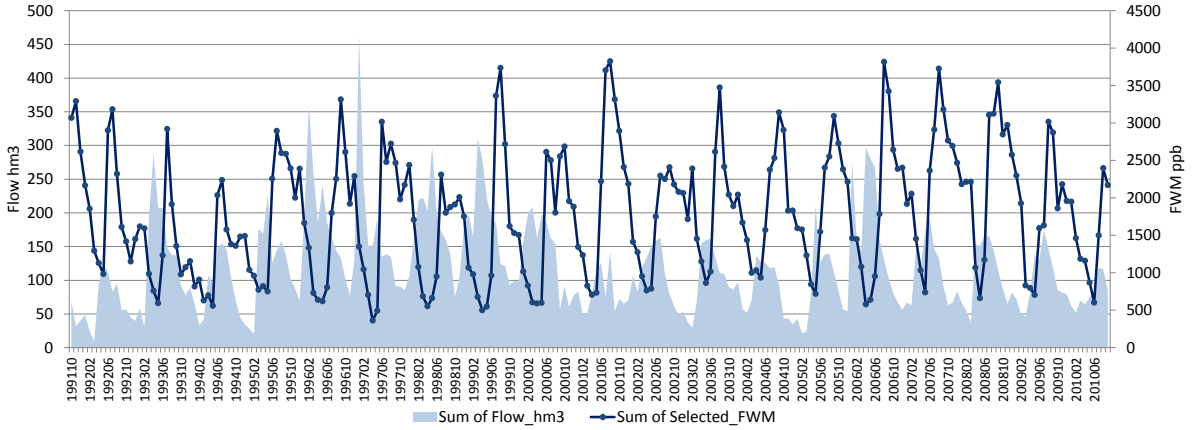
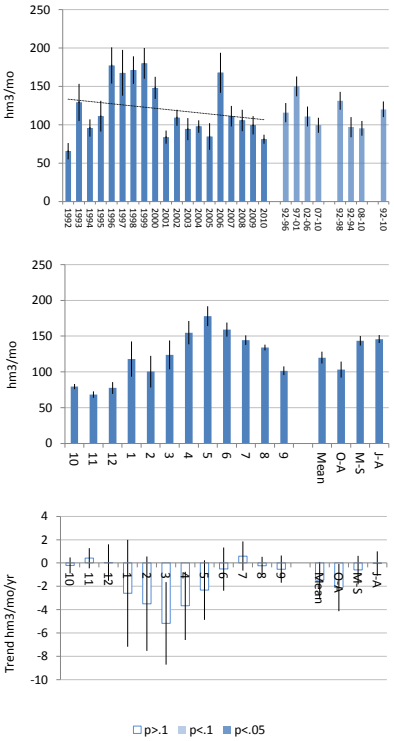
Seasonal & Yearly Variations in Lake Mass Balance Variable: TN Term: Lake Outflow

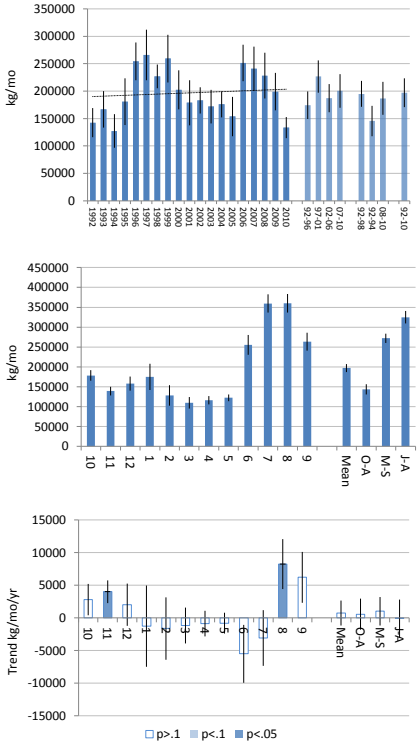




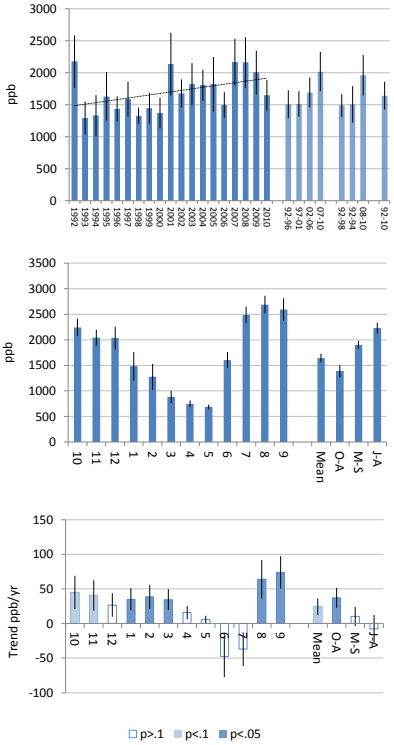
Flow hm3/month



Load kg/month TN



FWM Concentration ppb



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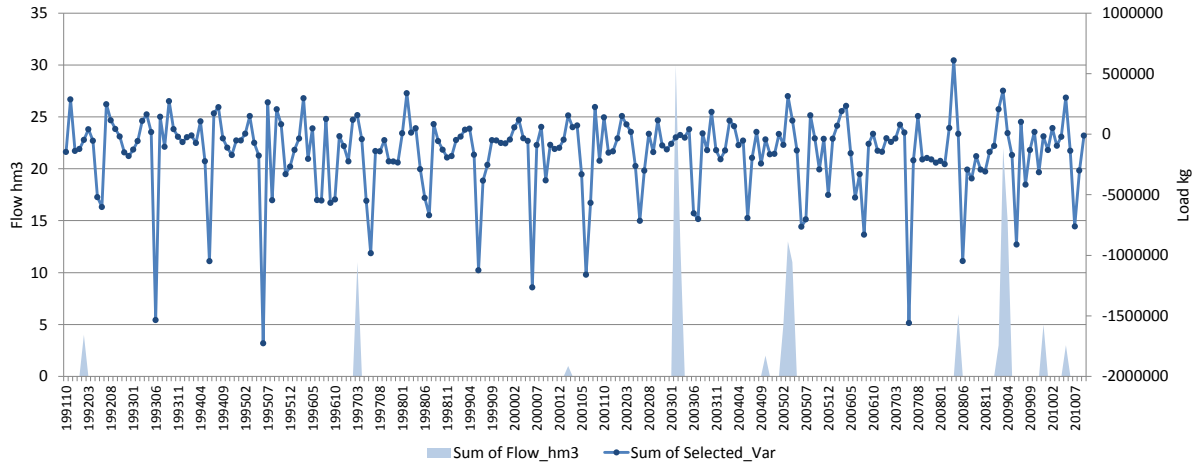
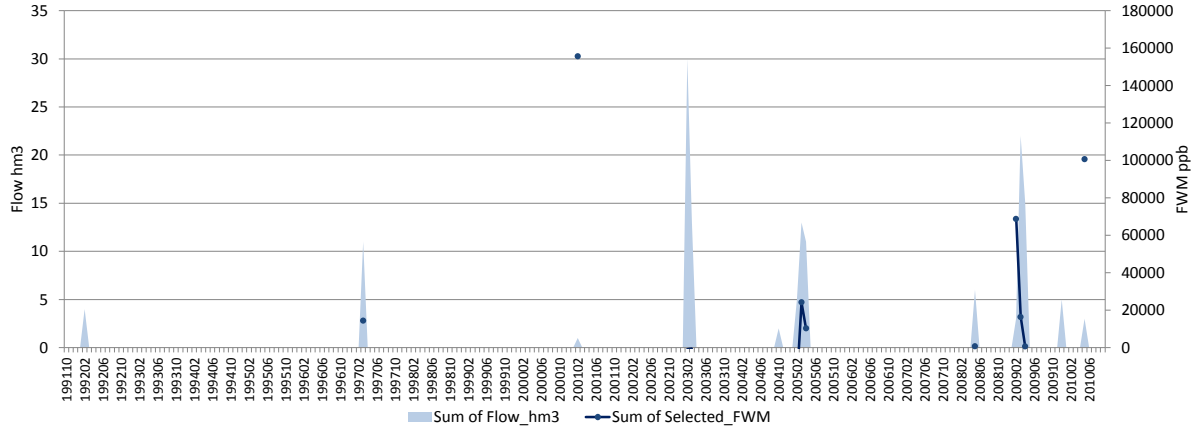
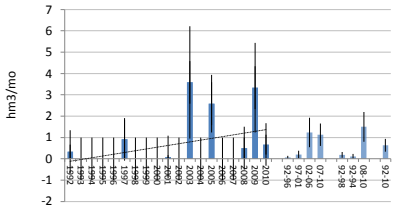
Seasonal & Yearly Variations in Lake Mass Balance Variable: TN Term: Retention

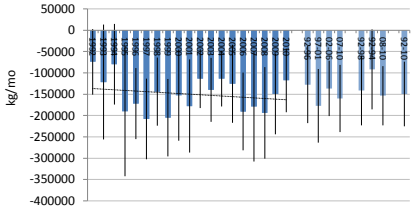




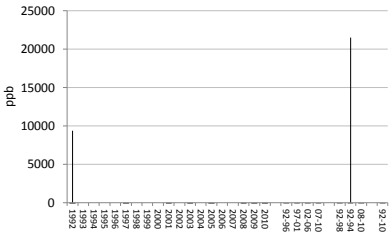
Flow hm3/month

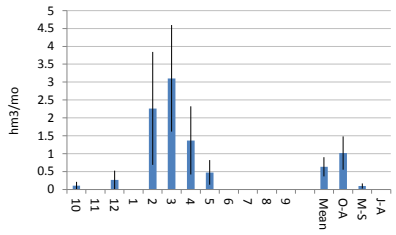


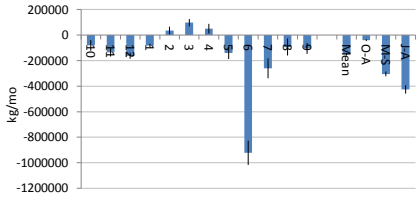
Load kg/month TN

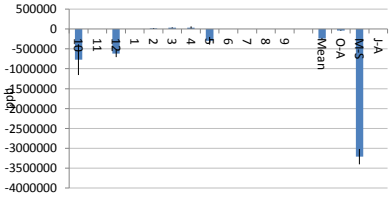


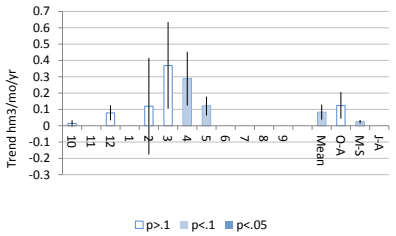
FWM Concentration ppb

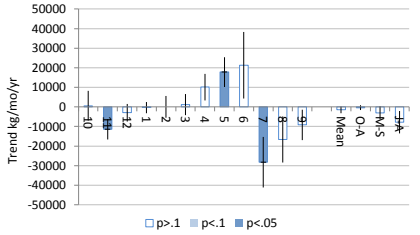


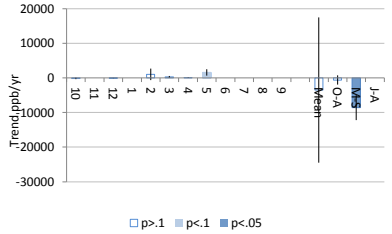












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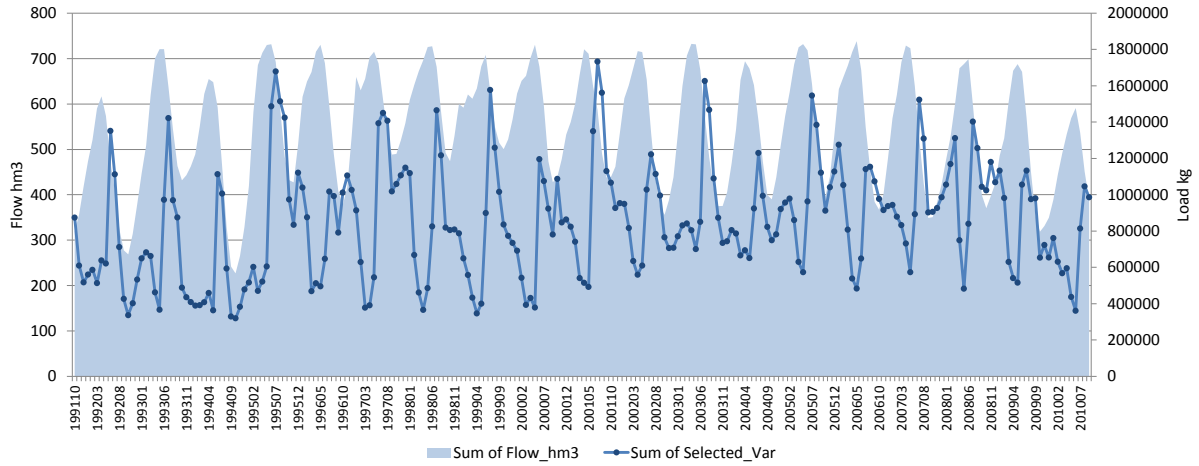
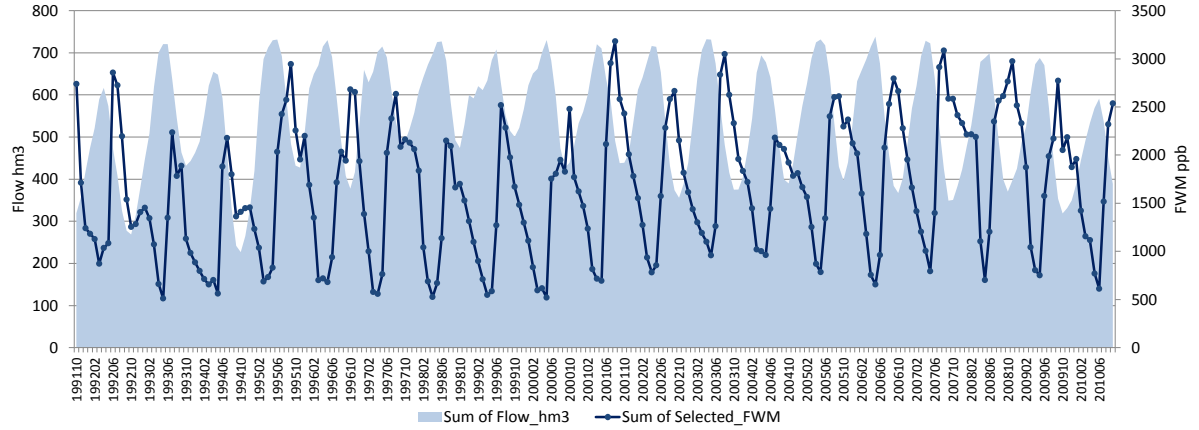
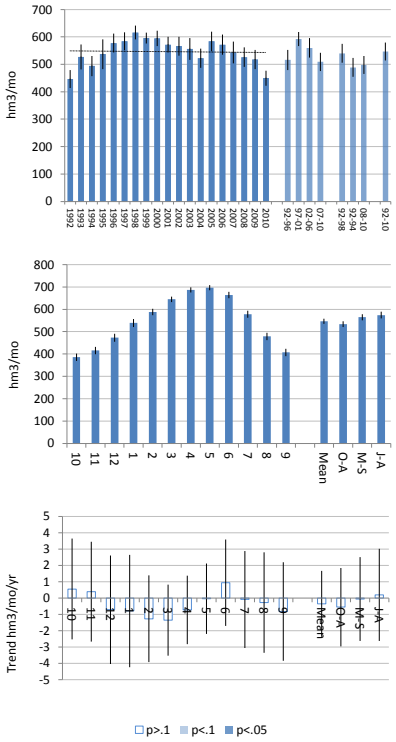
Seasonal & Yearly Variations in Lake Mass Balance Variable: TN Term: Lake Mean Storage

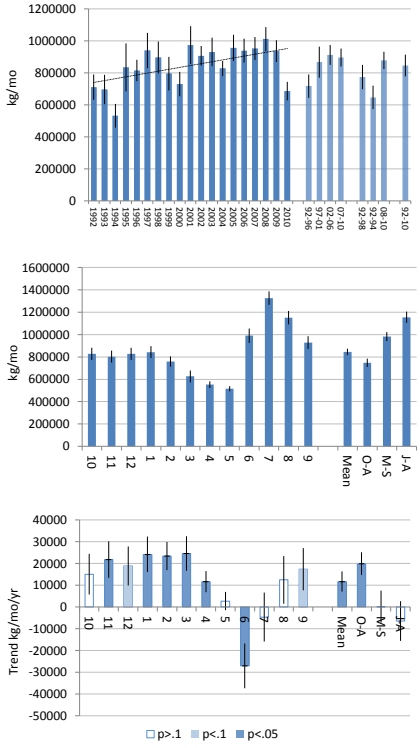




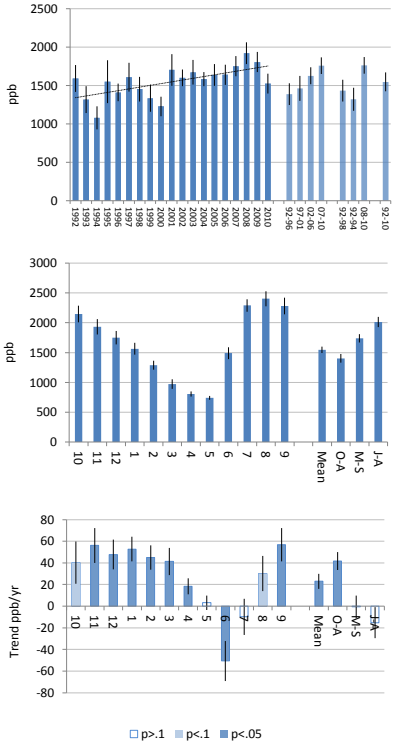
Flow hm3/month



Load kg/month TN



FWM Concentration ppb



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Appendix G
Seasonal Kendall Tests for Trends in Flow, Load, and Flow-Weighted-Mean Concentration

Table
G1 Tabulated Results for Seasonal Kendall Trend Tests

Figures
G1 Summary of Seasonal Kendall Trend Test
G2 Seasonal Kendall Trend Tests by Term
G3 Diagnostic Plots of Seasonal Kendall Trend Tests

References:

Jassby, A.D. and Cloern, J.E. (2012). wq: Some tools for exploring water quality monitoring data. R package version 0.3-5. Available online at http://cran.r-project.org/web/packages/wq/index.html

Helsel, D.R. and R. M. Hirsch (2002). Statistical Methods in Water Resources, Techniques of Water Resources Investigations, Book 4, Chapter A3. U.S. Geological Survey. 522 pages.

Table G1: Tabulated Results for Seasonal Kendall Trend Tests

Description: Trend slopes and significance (p-value) for flow, nutrient load and concentration using Seasonal Kendall test over period of record (WY 1992-2010) and Mann Kendall test based on annual mean values.

Variables: Flow, Total P Load and Concentration, Total N Load and Concentration

Total Pages: 33

Seasonal Kendall Trend Tests **Variable: Flow (hm3)**

Site	Months	Period 1992-2010 Trend Slope (units/yr)	Trend Slope (%/yr)	p-value
7mile_Dike	1	-0.008	-0.024	0.263
	2	-0.001	-0.002	0.944
	3	0.007	0.017	0.441
	4	0.015	0.044	0.050
	5	0.001	0.004	0.889
	6	-0.002	-0.008	0.726
	7	-0.009	-0.054	0.142
	8	-0.003	-0.017	0.294
	9	0.002	0.007	0.726
	10	-0.003	-0.012	0.401
	11	-0.003	-0.008	0.675
	12	-0.003	-0.009	0.529
	May-Sep	-0.002	-0.009	0.287
	Oct-Apr	-0.001	-0.002	0.874
	Oct-Sep	-0.001	-0.005	0.413
	Annual	0.001	0.003	0.726
Wood_Weed	1	0.005	0.006	0.184
	2	0.005	0.006	0.441
	3	0.004	0.005	0.363
	4	0.003	0.004	0.780
	5	0.002	0.004	0.834
	6	0.010	0.021	0.624
	7	0.003	0.006	0.834
	8	0.004	0.010	0.576
	9	0.002	0.004	0.944
	10	0.007	0.010	0.441
	11	0.009	0.011	0.234
	12	0.003	0.003	0.834
	May-Sep	0.003	0.006	0.453
	Oct-Apr	0.005	0.006	0.032
	Oct-Sep	0.005	0.007	0.033
	Annual	0.005	0.007	0.327
Wood_Dike-Wood_Weed	1	0.009	0.053	0.008
	2	0.012	0.061	0.014
	3	0.011	0.048	0.036
	4	0.009	0.038	0.142
	5	0.009	0.046	0.080
	6	0.004	0.021	0.208
	7	0.006	0.037	0.021
	8	0.009	0.051	0.006
	9	0.009	0.043	0.036
	10	0.010	0.053	0.010
	11	0.010	0.055	0.017
	12	0.010	0.054	0.036
	May-Sep	0.007	0.037	0.000
	Oct-Apr	0.010	0.051	0.000

Seasonal Kendall Trend Tests **Variable: Flow (hm3)**

Site	Months	Period 1992-2010 Trend Slope (units/yr)	Trend Slope (%/yr)	p-value
Wood_Dike-Wood_Weed	Oct-Sep	0.009	0.046	0.000
	Annual	0.009	0.045	0.002
Wood_Dike	1	0.018	0.019	0.002
	2	0.015	0.015	0.010
	3	0.018	0.016	0.059
	4	0.013	0.013	0.208
	5	0.010	0.013	0.484
	6	0.013	0.019	0.441
	7	0.005	0.008	0.363
	8	0.010	0.017	0.124
	9	0.007	0.010	0.675
	10	0.015	0.016	0.036
	11	0.016	0.016	0.069
	12	0.014	0.014	0.017
	May-Sep	0.009	0.013	0.045
	Oct-Apr	0.016	0.016	0.000
	Oct-Sep	0.014	0.016	0.000
	Annual	0.016	0.019	0.036
Total Agency Inflows	1	0.004	0.003	0.624
	2	0.015	0.011	0.294
	3	0.015	0.010	0.363
	4	0.027	0.019	0.142
	5	-0.001	-0.001	0.944
	6	0.022	0.019	0.208
	7	0.004	0.005	0.675
	8	0.004	0.006	0.889
	9	0.010	0.010	0.576
	10	0.012	0.010	0.208
	11	0.012	0.009	0.208
	12	0.010	0.007	0.401
	May-Sep	0.007	0.007	0.287
	Oct-Apr	0.013	0.009	0.005
	Oct-Sep	0.011	0.009	0.004
	Annual	0.015	0.013	0.208
Sprague	1	-0.021	-0.013	0.363
	2	-0.035	-0.020	0.363
	3	-0.116	-0.048	0.162
	4	-0.119	-0.043	0.294
	5	-0.034	-0.012	0.675
	6	-0.001	-0.001	1.000
	7	-0.013	-0.023	0.484
	8	-0.008	-0.023	0.576
	9	-0.007	-0.014	0.484
	10	-0.001	-0.001	0.834
	11	-0.003	-0.005	0.726
	12	-0.001	-0.001	0.944

Seasonal Kendall Trend Tests **Variable: Flow (hm3)**

Site	Months	Period 1992-2010 Trend Slope (units/yr)	Trend Slope (%/yr)	p-value
Sprague	May-Sep	-0.008	-0.007	0.260
	Oct-Apr	-0.010	-0.006	0.054
	Oct-Sep	-0.009	-0.006	0.027
	Annual	-0.038	-0.028	0.484
Williamson-Sprague	1	0.003	0.003	0.889
	2	-0.007	-0.007	0.834
	3	0.008	0.006	0.675
	4	0.012	0.009	0.624
	5	0.014	0.013	0.484
	6	0.010	0.013	0.441
	7	0.012	0.017	0.042
	8	0.009	0.013	0.025
	9	0.006	0.009	0.036
	10	0.003	0.003	0.108
	11	0.002	0.003	0.345
	12	0.002	0.002	0.889
	May-Sep	0.008	0.010	0.000
	Oct-Apr	0.003	0.003	0.165
	Oct-Sep	0.005	0.006	0.001
	Annual	0.006	0.007	0.441
Williamson	1	-0.012	-0.004	0.889
	2	-0.070	-0.024	0.576
	3	-0.148	-0.040	0.108
	4	-0.113	-0.027	0.401
	5	-0.040	-0.010	0.889
	6	0.009	0.004	0.780
	7	0.008	0.007	0.889
	8	0.001	0.001	0.944
	9	0.004	0.003	0.675
	10	0.005	0.004	0.401
	11	0.004	0.003	0.624
	12	-0.002	-0.001	0.944
	May-Sep	0.002	0.001	0.707
	Oct-Apr	-0.007	-0.003	0.459
	Oct-Sep	-0.002	-0.001	0.754
	Annual	-0.022	-0.010	0.624
Total Pumped to Lake	1	-0.003	-0.060	0.000
	2	-0.008	-0.061	0.000
	3	-0.012	-0.049	0.021
	4	-0.005	-0.023	0.234
	5	-0.005	-0.037	0.069
	6	0.006	0.021	0.294
	7	-0.001	-0.008	0.576
	8	-0.004	-0.043	0.025
	9	-0.003	-0.055	0.004
	10	-0.002	-0.052	0.005

Seasonal Kendall Trend Tests **Variable: Flow (hm3)**

Site	Months	Period 1992-2010 Trend Slope (units/yr)	Trend Slope (%/yr)	p-value
Total Pumped to Lake	11	-0.002	-0.058	0.001
	12	-0.002	-0.055	0.001
	May-Sep	-0.002	-0.016	0.004
	Oct-Apr	-0.003	-0.026	0.000
	Oct-Sep	-0.003	-0.022	0.000
	Annual	-0.001	-0.012	0.093
Total Klamath Inflows	1	-0.012	-0.005	0.780
	2	-0.071	-0.024	0.576
	3	-0.153	-0.039	0.108
	4	-0.116	-0.027	0.363
	5	-0.042	-0.011	0.889
	6	0.005	0.002	0.834
	7	0.009	0.007	1.000
	8	0.000	0.000	1.000
	9	0.003	0.002	0.780
	10	0.004	0.003	0.529
	11	0.004	0.002	0.624
	12	-0.002	-0.001	0.944
	May-Sep	0.001	0.001	0.876
	Oct-Apr	-0.009	-0.003	0.369
	Oct-Sep	-0.003	-0.001	0.565
	Annual	-0.024	-0.010	0.624
Total Tributaries	1	0.002	0.001	0.944
	2	-0.033	-0.008	0.889
	3	-0.120	-0.023	0.208
	4	-0.088	-0.016	0.675
	5	-0.010	-0.002	0.944
	6	0.023	0.007	0.834
	7	0.008	0.004	0.889
	8	0.007	0.004	0.675
	9	0.015	0.007	0.576
	10	0.017	0.007	0.263
	11	0.017	0.006	0.327
	12	0.000	0.000	1.000
	May-Sep	0.010	0.004	0.552
	Oct-Apr	0.001	0.000	0.895
	Oct-Sep	0.005	0.001	0.621
	Annual	-0.018	-0.005	0.624
Ungauged Inflows	1	-0.025	-0.027	0.327
	2	-0.030	-0.041	0.157
	3	-0.029	-0.041	0.205
	4	-0.053	-0.066	0.007
	5	-0.035	-0.029	0.132
	6	-0.012	-0.012	0.834
	7	-0.003	-0.004	0.834
	8	-0.021	-0.035	0.069

Seasonal Kendall Trend Tests **Variable: Flow (hm3)**

Site	Months	Period 1992-2010 Trend Slope (units/yr)	Trend Slope (%/yr)	p-value
Ungauged Inflows	9	-0.036	-0.062	0.025
	10	-0.022	-0.046	0.050
	11	-0.002	-0.003	0.889
	12	-0.020	-0.035	0.124
	May-Sep	-0.021	-0.024	0.006
	Oct-Apr	-0.025	-0.036	0.000
	Oct-Sep	-0.023	-0.030	0.000
	Annual	-0.035	-0.046	0.008
Total External Inflows	1	-0.039	-0.008	0.529
	2	-0.098	-0.019	0.624
	3	-0.171	-0.028	0.208
	4	-0.129	-0.020	0.363
	5	-0.084	-0.013	0.675
	6	0.013	0.003	0.834
	7	-0.011	-0.004	0.780
	8	-0.013	-0.005	0.624
	9	-0.029	-0.010	0.234
	10	-0.007	-0.002	0.780
	11	0.014	0.004	0.624
	12	-0.008	-0.002	0.944
	May-Sep	-0.019	-0.005	0.317
	Oct-Apr	-0.025	-0.005	0.214
	Oct-Sep	-0.020	-0.005	0.108
	Annual	-0.059	-0.014	0.363
Precipitation	1	-0.018	-0.027	0.263
	2	-0.008	-0.021	0.363
	3	-0.004	-0.016	0.576
	4	-0.009	-0.029	0.294
	5	0.001	0.003	0.944
	6	-0.008	-0.049	0.294
	7	-0.002	-0.039	0.208
	8	0.002	0.018	0.439
	9	-0.002	-0.026	0.327
	10	-0.002	-0.011	0.675
	11	-0.005	-0.009	0.624
	12	0.011	0.016	0.780
	May-Sep	-0.002	-0.011	0.273
	Oct-Apr	-0.006	-0.015	0.096
	Oct-Sep	-0.003	-0.010	0.047
	Annual	-0.007	-0.023	0.184
Net Inflow	1	-0.070	-0.012	0.529
	2	-0.074	-0.014	0.441
	3	-0.225	-0.037	0.184
	4	-0.157	-0.026	0.401
	5	-0.093	-0.017	0.624
	6	0.018	0.006	0.834

Seasonal Kendall Trend Tests **Variable: Flow (hm3)**

Site	Months	Period 1992-2010 Trend Slope (units/yr)	Trend Slope (%/yr)	p-value
Net Inflow	7	-0.010	-0.007	0.834
	8	-0.019	-0.016	0.401
	9	-0.016	-0.008	0.401
	10	0.012	0.004	0.576
	11	0.007	0.002	0.834
	12	0.004	0.001	1.000
	May-Sep	-0.016	-0.006	0.317
	Oct-Apr	-0.022	-0.004	0.290
	Oct-Sep	-0.019	-0.005	0.143
	Annual	-0.058	-0.015	0.441
Anthropogenic Sources	1	-0.039	-0.008	0.529
	2	-0.098	-0.019	0.624
	3	-0.171	-0.028	0.208
	4	-0.129	-0.020	0.363
	5	-0.084	-0.013	0.675
	6	0.013	0.003	0.834
	7	-0.011	-0.004	0.780
	8	-0.013	-0.005	0.624
	9	-0.029	-0.010	0.234
	10	-0.007	-0.002	0.780
	11	0.014	0.004	0.624
	12	-0.008	-0.002	0.944
	May-Sep	-0.019	-0.005	0.317
	Oct-Apr	-0.025	-0.005	0.214
	Oct-Sep	-0.020	-0.005	0.108
	Annual	-0.059	-0.014	0.363
Background Sources	1	-0.039	-0.008	0.529
	2	-0.098	-0.019	0.624
	3	-0.171	-0.028	0.208
	4	-0.129	-0.020	0.363
	5	-0.084	-0.013	0.675
	6	0.013	0.003	0.834
	7	-0.011	-0.004	0.780
	8	-0.013	-0.005	0.624
	9	-0.029	-0.010	0.234
	10	-0.007	-0.002	0.780
	11	0.014	0.004	0.624
	12	-0.008	-0.002	0.944
	May-Sep	-0.019	-0.005	0.317
	Oct-Apr	-0.025	-0.005	0.214
	Oct-Sep	-0.020	-0.005	0.108
	Annual	-0.059	-0.014	0.363
Lake Outflow	1	-0.006	-0.002	0.889
	2	-0.007	-0.002	0.889
	3	-0.215	-0.054	0.234
	4	-0.121	-0.023	0.124

Seasonal Kendall Trend Tests **Variable: Flow (hm3)**

Site	Months	Period 1992-2010 Trend Slope (units/yr)	Trend Slope (%/yr)	p-value
Lake Outflow	5	-0.117	-0.020	0.327
	6	-0.037	-0.007	0.675
	7	0.013	0.003	0.675
	8	-0.016	-0.004	0.675
	9	-0.033	-0.010	0.576
	10	-0.013	-0.005	0.576
	11	0.012	0.005	0.675
	12	0.006	0.003	0.944
	May-Sep	-0.022	-0.005	0.364
	Oct-Apr	-0.020	-0.006	0.234
	Oct-Sep	-0.020	-0.005	0.132
	Annual	-0.050	-0.013	0.363

Seasonal Kendall Trend Tests **Variable: TP Load (kg)**

Site	Months	Period 1992-2010 Trend Slope (units/yr)	Trend Slope (%/yr)	p-value
7mile_Dike	1	-0.51	-1.1%	0.576
	2	0.49	1.2%	0.624
	3	1.77	3.4%	0.080
	4	3.47	6.8%	0.002
	5	0.61	1.4%	0.675
	6	-0.50	-1.1%	0.726
	7	-1.68	-4.4%	0.108
	8	-1.52	-4.5%	0.142
	9	0.38	1.3%	0.484
	10	-0.32	-1.4%	0.363
	11	-0.14	-0.4%	0.889
	12	0.11	0.2%	1.000
	May-Sep	-0.56	-1.5%	0.302
	Oct-Apr	0.42	1.0%	0.161
	Oct-Sep	0.10	0.2%	0.694
	Annual	0.17	0.4%	0.726
Wood_Weed	1	0.62	0.8%	0.162
	2	0.29	0.4%	0.576
	3	0.29	0.4%	0.726
	4	0.43	0.7%	0.675
	5	0.12	0.2%	0.944
	6	0.26	0.6%	0.834
	7	-0.02	0.0%	1.000
	8	0.34	1.0%	0.624
	9	0.26	0.6%	0.726
	10	0.60	1.0%	0.208
	11	0.56	0.9%	0.263
	12	0.63	0.9%	0.208
	May-Sep	0.21	0.5%	0.595
	Oct-Apr	0.50	0.7%	0.013
	Oct-Sep	0.41	0.7%	0.024
	Annual	0.14	0.2%	0.726
Wood_Dike-Wood_Weed	1	0.32	0.9%	0.441
	2	0.73	1.8%	0.327
	3	1.12	2.0%	0.208
	4	0.26	0.4%	0.780
	5	1.08	1.9%	0.529
	6	0.37	0.8%	0.624
	7	-0.03	-0.1%	1.000
	8	0.17	0.7%	0.675
	9	0.49	1.7%	0.363
	10	0.60	2.3%	0.069
	11	0.65	2.5%	0.162
	12	0.48	1.5%	0.441
	May-Sep	0.30	0.8%	0.260
	Oct-Apr	0.61	1.5%	0.005

Seasonal Kendall Trend Tests **Variable: TP Load (kg)**

Site	Months	Period 1992-2010 Trend Slope (units/yr)	Trend Slope (%/yr)	p-value
Wood_Dike-Wood_Weed	Oct-Sep	0.46	1.1%	0.004
	Annual	0.42	1.1%	0.441
Wood_Dike	1	0.63	0.6%	0.529
	2	1.01	0.9%	0.363
	3	1.67	1.3%	0.327
	4	0.92	0.7%	0.441
	5	1.54	1.4%	0.441
	6	-0.05	-0.1%	1.000
	7	-0.66	-0.9%	0.624
	8	0.15	0.3%	0.889
	9	0.24	0.3%	0.780
	10	1.18	1.4%	0.036
	11	1.12	1.2%	0.184
	12	1.11	1.1%	0.162
	May-Sep	0.21	0.3%	0.754
	Oct-Apr	1.09	1.0%	0.002
	Oct-Sep	0.78	0.8%	0.009
	Annual	0.28	0.3%	0.529
Total Agency Inflows	1	-0.91	-0.6%	0.576
	2	-0.34	-0.2%	0.944
	3	0.99	0.5%	0.624
	4	2.80	1.4%	0.327
	5	-0.35	-0.2%	0.889
	6	4.16	1.5%	0.529
	7	-1.57	-1.1%	0.529
	8	-1.24	-1.0%	0.363
	9	0.68	0.6%	0.780
	10	0.43	0.4%	0.726
	11	0.76	0.6%	0.529
	12	1.04	0.7%	0.441
	May-Sep	-0.35	-0.2%	0.731
	Oct-Apr	0.68	0.4%	0.315
	Oct-Sep	0.28	0.2%	0.592
	Annual	0.36	0.2%	0.889
Sprague	1	-4.34	-2.7%	0.142
	2	-5.65	-3.6%	0.234
	3	-7.05	-3.1%	0.401
	4	-6.72	-3.1%	0.327
	5	1.48	0.7%	0.780
	6	0.40	0.4%	0.834
	7	-0.62	-2.3%	0.142
	8	-0.25	-1.5%	0.124
	9	-0.30	-1.6%	0.363
	10	-0.19	-0.7%	0.401
	11	-0.30	-0.8%	0.363
	12	-0.24	-0.4%	0.834

Seasonal Kendall Trend Tests **Variable: TP Load (kg)**

Site	Months	Period 1992-2010 Trend Slope (units/yr)	Trend Slope (%/yr)	p-value
Sprague	May-Sep	-0.28	-0.4%	0.125
	Oct-Apr	-0.71	-0.6%	0.012
	Oct-Sep	-0.45	-0.4%	0.004
	Annual	-3.18	-3.1%	0.327
Williamson-Sprague	1	-0.80	-0.8%	0.576
	2	-0.12	-0.1%	0.889
	3	-0.29	-0.2%	0.944
	4	-1.89	-1.4%	0.484
	5	-0.56	-0.5%	0.675
	6	0.65	0.7%	0.484
	7	-1.01	-1.2%	0.363
	8	-0.39	-0.5%	0.441
	9	-0.39	-0.5%	0.208
	10	-0.22	-0.3%	0.624
	11	-0.54	-0.7%	0.294
	12	-0.48	-0.5%	0.529
	May-Sep	-0.33	-0.4%	0.222
	Oct-Apr	-0.44	-0.4%	0.146
	Oct-Sep	-0.37	-0.4%	0.056
	Annual	-0.28	-0.3%	0.529
Williamson	1	-5.74	-2.2%	0.363
	2	-9.40	-3.4%	0.363
	3	-11.35	-3.2%	0.294
	4	-9.04	-2.5%	0.294
	5	-0.22	-0.1%	1.000
	6	1.67	0.9%	0.624
	7	-1.10	-1.0%	0.124
	8	-0.83	-0.9%	0.108
	9	-0.44	-0.5%	0.108
	10	-0.42	-0.4%	0.441
	11	-0.71	-0.6%	0.263
	12	-0.19	-0.1%	0.889
	May-Sep	-0.61	-0.4%	0.052
	Oct-Apr	-1.36	-0.6%	0.020
	Oct-Sep	-0.97	-0.5%	0.002
	Annual	-4.79	-2.4%	0.363
Total Pumped to Lake	1	-1.51	-6.3%	0.000
	2	-3.45	-6.5%	0.000
	3	-5.61	-5.5%	0.004
	4	-4.15	-5.4%	0.005
	5	-2.34	-2.6%	0.036
	6	0.23	0.1%	0.944
	7	-0.63	-0.9%	0.441
	8	-1.66	-3.5%	0.012
	9	-1.34	-4.4%	0.002
	10	-0.98	-4.0%	0.005

Seasonal Kendall Trend Tests **Variable: TP Load (kg)**

Site	Months	Period 1992-2010 Trend Slope (units/yr)	Trend Slope (%/yr)	p-value
Total Pumped to Lake	11	-0.86	-5.5%	0.001
	12	-0.90	-5.5%	0.001
	May-Sep	-1.34	-1.6%	0.000
	Oct-Apr	-1.35	-3.0%	0.000
	Oct-Sep	-1.34	-2.2%	0.000
	Annual	-1.14	-1.9%	0.234
Total Klamath Inflows	1	-5.91	-2.1%	0.142
	2	-12.01	-3.8%	0.059
	3	-15.24	-3.5%	0.124
	4	-12.58	-3.0%	0.162
	5	1.02	0.3%	1.000
	6	0.30	0.1%	1.000
	7	-2.86	-2.0%	0.017
	8	-1.92	-1.7%	0.005
	9	-1.38	-1.2%	0.021
	10	-1.21	-1.0%	0.030
	11	-1.40	-1.1%	0.124
	12	-0.69	-0.4%	0.624
	May-Sep	-1.76	-0.9%	0.001
	Oct-Apr	-2.21	-0.8%	0.000
	Oct-Sep	-2.01	-0.9%	0.000
	Annual	-5.29	-2.3%	0.124
Total Tributaries	1	-6.79	-1.6%	0.576
	2	-4.71	-1.1%	0.726
	3	-5.47	-1.0%	0.484
	4	-1.60	-0.3%	0.889
	5	1.91	0.4%	0.944
	6	1.11	0.4%	0.834
	7	-4.07	-1.9%	0.012
	8	-1.90	-1.0%	0.327
	9	-0.62	-0.3%	0.889
	10	-0.06	0.0%	1.000
	11	0.46	0.2%	0.780
	12	0.67	0.2%	0.889
	May-Sep	-1.92	-0.7%	0.133
	Oct-Apr	-0.72	-0.2%	0.597
	Oct-Sep	-1.34	-0.4%	0.166
	Annual	-3.90	-1.2%	0.441
Ungauged Inflows	1	-1.60	-2.7%	0.327
	2	-1.95	-4.1%	0.157
	3	-1.87	-4.1%	0.205
	4	-3.41	-6.6%	0.007
	5	-2.30	-2.9%	0.132
	6	-0.80	-1.2%	0.834
	7	-0.22	-0.4%	0.834
	8	-1.38	-3.5%	0.069

Seasonal Kendall Trend Tests **Variable: TP Load (kg)**

Site	Months	Period 1992-2010 Trend Slope (units/yr)	Trend Slope (%/yr)	p-value
Ungauged Inflows	9	-2.36	-6.2%	0.025
	10	-1.46	-4.6%	0.050
	11	-0.11	-0.3%	0.889
	12	-1.30	-3.5%	0.124
	May-Sep	-1.37	-2.4%	0.006
	Oct-Apr	-1.61	-3.6%	0.000
	Oct-Sep	-1.49	-3.0%	0.000
	Annual	-2.26	-4.6%	0.008
Total External Inflows	1	-13.69	-2.7%	0.184
	2	-14.43	-2.7%	0.142
	3	-16.76	-2.5%	0.208
	4	-11.82	-1.8%	0.401
	5	-5.33	-0.8%	0.484
	6	3.83	0.7%	0.484
	7	-4.23	-1.2%	0.363
	8	-4.02	-1.5%	0.030
	9	-1.89	-0.7%	0.108
	10	-1.92	-0.7%	0.363
	11	-1.56	-0.5%	0.624
	12	-1.41	-0.4%	0.889
	May-Sep	-2.41	-0.6%	0.033
	Oct-Apr	-3.39	-0.7%	0.012
	Oct-Sep	-3.02	-0.7%	0.001
	Annual	-9.86	-2.2%	0.208
Net Inflow	1	-12.50	-2.4%	0.263
	2	-15.03	-2.8%	0.162
	3	-17.84	-2.6%	0.234
	4	-11.77	-1.7%	0.327
	5	-4.88	-0.8%	0.576
	6	3.95	0.7%	0.529
	7	-4.11	-1.2%	0.294
	8	-4.00	-1.4%	0.025
	9	-2.16	-0.8%	0.124
	10	-1.96	-0.7%	0.294
	11	-1.66	-0.5%	0.484
	12	-0.30	-0.1%	0.944
	May-Sep	-2.55	-0.6%	0.031
	Oct-Apr	-3.43	-0.7%	0.011
	Oct-Sep	-2.96	-0.6%	0.001
	Annual	-10.20	-2.2%	0.208
Anthropogenic Sources	1	-7.03	-3.8%	0.069
	2	-4.43	-2.2%	0.069
	3	-5.81	-2.1%	0.108
	4	-4.42	-1.8%	0.234
	5	-1.95	-0.9%	0.726
	6	2.53	0.9%	0.834

Seasonal Kendall Trend Tests **Variable: TP Load (kg)**

Site	Months	Period 1992-2010 Trend Slope (units/yr)	Trend Slope (%/yr)	p-value
Anthropogenic Sources	7	-4.02	-2.8%	0.124
	8	-3.73	-3.4%	0.014
	9	-1.56	-1.8%	0.184
	10	-1.73	-2.6%	0.042
	11	-0.92	-1.4%	0.484
	12	-1.26	-1.1%	0.529
	May-Sep	-2.50	-1.5%	0.013
	Oct-Apr	-2.57	-1.6%	0.000
	Oct-Sep	-2.53	-1.5%	0.000
	Annual	-5.14	-3.1%	0.080
Background Sources	1	-2.52	-0.8%	0.529
	2	-6.39	-1.9%	0.624
	3	-11.08	-2.8%	0.208
	4	-8.37	-2.0%	0.363
	5	-5.46	-1.3%	0.675
	6	0.87	0.3%	0.834
	7	-0.69	-0.4%	0.780
	8	-0.83	-0.5%	0.624
	9	-1.86	-1.0%	0.234
	10	-0.43	-0.2%	0.780
	11	0.94	0.4%	0.624
	12	-0.54	-0.2%	0.944
	May-Sep	-1.21	-0.5%	0.317
	Oct-Apr	-1.60	-0.5%	0.214
	Oct-Sep	-1.30	-0.5%	0.108
	Annual	-3.85	-1.4%	0.363
Lake Outflow	1	-4.15	-1.7%	0.576
	2	-2.14	-0.9%	0.834
	3	-10.92	-4.6%	0.294
	4	-2.27	-0.7%	0.675
	5	-6.28	-2.0%	0.441
	6	-12.91	-2.2%	0.124
	7	1.11	0.1%	0.944
	8	21.86	2.3%	0.234
	9	12.25	1.7%	0.484
	10	-4.22	-1.2%	0.780
	11	2.37	1.0%	0.484
	12	1.08	0.5%	0.726
	May-Sep	-0.41	-0.1%	0.900
	Oct-Apr	-2.08	-0.8%	0.561
	Oct-Sep	-1.46	-0.3%	0.592
	Annual	-0.52	-0.1%	1.000
Retention	1	-11.76	-2.3%	0.363
	2	-31.31	-5.9%	0.025
	3	-27.12	-4.0%	0.162
	4	1.68	0.3%	0.889

Seasonal Kendall Trend Tests **Variable: TP Load (kg)**

Site	Months	Period 1992-2010 Trend Slope (units/yr)	Trend Slope (%/yr)	p-value
Retention	5	27.35	4.3%	0.208
	6	59.94	10.5%	0.080
	7	-104.16	-30.5%	0.059
	8	-33.36	-12.2%	0.327
	9	13.53	5.1%	0.624
	10	21.79	8.1%	0.327
	11	1.81	0.6%	0.944
	12	10.59	2.9%	0.263
	May-Sep	4.73	1.1%	0.778
	Oct-Apr	-5.55	-1.2%	0.412
	Oct-Sep	-3.02	-0.7%	0.664
	Annual	-4.57	-1.0%	0.263

Seasonal Kendall Trend Tests **Variable: TP Concentration (ppb)**

Site	Months	Period 1992-2010 Trend Slope (units/yr)	Trend Slope (%/yr)	p-value
7mile_Dike	1	-0.11	-0.1%	0.889
	2	0.52	0.4%	0.576
	3	1.79	1.3%	0.124
	4	3.79	2.4%	0.093
	5	2.12	1.3%	0.327
	6	-0.59	-0.3%	0.780
	7	-1.37	-0.6%	0.401
	8	-4.23	-2.0%	0.162
	9	0.77	0.6%	0.441
	10	-0.01	0.0%	1.000
	11	0.75	0.7%	0.484
	12	1.09	0.9%	0.529
	May-Sep	-0.27	-0.1%	0.731
	Oct-Apr	0.79	0.6%	0.057
	Oct-Sep	0.46	0.3%	0.222
	Annual	0.45	0.3%	0.624
Wood_Weed	1	-0.03	0.0%	0.944
	2	0.08	0.1%	0.726
	3	0.29	0.3%	0.529
	4	0.21	0.2%	0.294
	5	0.31	0.4%	0.294
	6	-0.19	-0.2%	0.675
	7	-0.01	0.0%	1.000
	8	-0.46	-0.5%	0.234
	9	0.01	0.0%	0.944
	10	0.03	0.0%	0.944
	11	0.20	0.2%	0.726
	12	0.11	0.1%	0.675
	May-Sep	-0.03	0.0%	0.827
	Oct-Apr	0.11	0.1%	0.267
	Oct-Sep	0.04	0.0%	0.486
	Annual	-0.02	0.0%	0.944
Wood_Dike-Wood_Weed	1	-10.17	-3.9%	0.042
	2	-9.28	-3.6%	0.093
	3	-10.48	-2.8%	0.108
	4	-14.72	-2.7%	0.069
	5	-8.11	-2.4%	0.162
	6	-3.38	-1.5%	0.124
	7	-6.69	-2.8%	0.003
	8	-5.67	-3.5%	0.001
	9	-3.16	-1.9%	0.006
	10	-2.87	-1.7%	0.108
	11	-3.14	-1.9%	0.142
	12	-5.58	-2.5%	0.036
	May-Sep	-4.76	-2.1%	0.000
	Oct-Apr	-7.09	-2.5%	0.000

Seasonal Kendall Trend Tests **Variable: TP Concentration (ppb)**

Site	Months	Period 1992-2010 Trend Slope (units/yr)	Trend Slope (%/yr)	p-value
Wood_Dike-Wood_Weed	Oct-Sep	-5.79	-2.2%	0.000
	Annual	-7.68	-3.5%	0.003
Wood_Dike	1	-1.04	-0.9%	0.108
	2	-0.83	-0.7%	0.184
	3	-0.31	-0.3%	0.780
	4	-0.15	-0.1%	0.889
	5	0.06	0.0%	0.889
	6	-0.92	-0.7%	0.234
	7	-1.70	-1.4%	0.025
	8	-1.10	-1.0%	0.001
	9	-0.61	-0.6%	0.093
	10	-0.39	-0.4%	0.327
	11	-0.28	-0.3%	0.576
	12	-0.62	-0.6%	0.327
	May-Sep	-0.93	-0.8%	0.000
	Oct-Apr	-0.57	-0.5%	0.021
	Oct-Sep	-0.71	-0.6%	0.000
	Annual	-0.91	-0.8%	0.036
Total Agency Inflows	1	-1.33	-1.1%	0.080
	2	-1.17	-1.0%	0.108
	3	-1.17	-0.9%	0.184
	4	-0.75	-0.5%	0.675
	5	-0.21	-0.1%	1.000
	6	-1.03	-0.4%	0.675
	7	-1.84	-1.1%	0.142
	8	-3.24	-2.1%	0.003
	9	-0.85	-0.7%	0.069
	10	-0.75	-0.7%	0.108
	11	-0.54	-0.6%	0.441
	12	-0.34	-0.3%	0.484
	May-Sep	-1.47	-0.9%	0.002
	Oct-Apr	-0.89	-0.8%	0.002
	Oct-Sep	-1.10	-0.8%	0.000
	Annual	-1.08	-0.8%	0.484
Sprague	1	-3.02	-3.6%	0.042
	2	-1.11	-1.4%	0.263
	3	-0.59	-0.7%	0.780
	4	-0.09	-0.1%	0.889
	5	-0.04	-0.1%	0.944
	6	0.40	0.6%	0.363
	7	-0.56	-1.0%	0.624
	8	0.33	0.6%	0.780
	9	0.13	0.3%	0.576
	10	-0.11	-0.3%	0.576
	11	-0.25	-0.5%	0.363
	12	-0.13	-0.2%	0.944

Seasonal Kendall Trend Tests **Variable: TP Concentration (ppb)**

Site	Months	Period 1992-2010 Trend Slope (units/yr)	Trend Slope (%/yr)	p-value
Sprague	May-Sep	0.12	0.2%	0.595
	Oct-Apr	-0.46	-0.7%	0.044
	Oct-Sep	-0.19	-0.3%	0.237
	Annual	-0.67	-0.9%	0.093
Williamson-Sprague	1	-1.15	-1.1%	0.142
	2	-0.98	-0.9%	0.405
	3	-0.97	-1.0%	0.529
	4	-1.82	-1.8%	0.006
	5	-1.66	-1.6%	0.059
	6	0.46	0.4%	0.675
	7	-1.99	-1.7%	0.010
	8	-1.32	-1.2%	0.003
	9	-1.11	-1.1%	0.025
	10	-0.48	-0.5%	0.441
	11	-0.63	-0.7%	0.108
	12	-0.23	-0.2%	0.834
	May-Sep	-1.25	-1.1%	0.000
	Oct-Apr	-0.88	-0.9%	0.001
	Oct-Sep	-1.07	-1.0%	0.000
	Annual	-0.96	-0.9%	0.030
Williamson	1	-2.32	-2.4%	0.025
	2	-0.71	-0.8%	0.263
	3	-0.59	-0.7%	0.576
	4	-0.62	-0.7%	0.124
	5	-0.28	-0.3%	0.576
	6	0.54	0.6%	0.529
	7	-0.20	-0.2%	0.624
	8	-0.29	-0.3%	0.576
	9	0.07	0.1%	0.726
	10	-0.11	-0.1%	0.944
	11	-0.44	-0.6%	0.363
	12	-0.17	-0.2%	0.780
	May-Sep	-0.06	-0.1%	0.778
	Oct-Apr	-0.55	-0.6%	0.009
	Oct-Sep	-0.31	-0.4%	0.028
	Annual	-0.81	-0.9%	0.012
Total Pumped to Lake	1	0.00	0.0%	0.036
	2	0.00	0.0%	0.036
	3	-1.07	-0.3%	0.049
	4	-1.33	-0.3%	0.019
	5	0.00	0.0%	0.305
	6	0.00	0.0%	0.591
	7	-1.00	-0.2%	0.147
	8	0.00	0.0%	0.103
	9	0.00	0.0%	0.036
	10	0.00	0.0%	0.063

Seasonal Kendall Trend Tests **Variable: TP Concentration (ppb)**

Site	Months	Period 1992-2010 Trend Slope (units/yr)	Trend Slope (%/yr)	p-value
Total Pumped to Lake	11	0.00	0.0%	0.036
	12	0.00	0.0%	0.036
	May-Sep	0.00	0.0%	0.002
	Oct-Apr	-0.94	-0.2%	0.000
	Oct-Sep	-0.89	-0.2%	0.000
	Annual	0.00	0.0%	0.834
Total Klamath Inflows	1	-2.53	-2.5%	0.008
	2	-1.37	-1.3%	0.036
	3	-1.58	-1.4%	0.059
	4	-1.22	-1.2%	0.017
	5	-0.55	-0.6%	0.401
	6	-0.49	-0.5%	0.624
	7	-1.31	-1.2%	0.005
	8	-1.09	-1.1%	0.080
	9	-0.56	-0.6%	0.017
	10	-0.46	-0.6%	0.036
	11	-0.79	-1.0%	0.108
	12	-0.44	-0.5%	0.294
	May-Sep	-0.80	-0.8%	0.000
	Oct-Apr	-0.98	-1.0%	0.000
	Oct-Sep	-0.93	-1.0%	0.000
	Annual	-1.41	-1.4%	0.004
Total Tributaries	1	-1.59	-1.5%	0.080
	2	-0.62	-0.6%	0.363
	3	0.08	0.1%	1.000
	4	-0.04	0.0%	1.000
	5	0.07	0.1%	0.889
	6	-0.09	-0.1%	0.944
	7	-1.13	-1.0%	0.030
	8	-1.28	-1.2%	0.036
	9	0.12	0.1%	0.675
	10	-0.22	-0.3%	0.484
	11	-0.26	-0.3%	0.576
	12	0.00	0.0%	1.000
	May-Sep	-0.40	-0.4%	0.091
	Oct-Apr	-0.31	-0.3%	0.132
	Oct-Sep	-0.36	-0.4%	0.024
	Annual	-0.58	-0.6%	0.069
Total External Inflows	1	-1.55	-1.5%	0.050
	2	-1.07	-1.0%	0.025
	3	-1.05	-1.0%	0.263
	4	-0.35	-0.3%	0.484
	5	-0.07	-0.1%	0.944
	6	-0.13	-0.1%	1.000
	7	-1.08	-1.0%	0.093
	8	-1.12	-1.0%	0.124

Seasonal Kendall Trend Tests **Variable: TP Concentration (ppb)**

Site	Months	Period 1992-2010 Trend Slope (units/yr)	Trend Slope (%/yr)	p-value
Total External Inflows	9	-0.03	0.0%	0.944
	10	-0.37	-0.4%	0.124
	11	-0.41	-0.5%	0.162
	12	-0.25	-0.3%	0.576
	May-Sep	-0.41	-0.4%	0.118
	Oct-Apr	-0.68	-0.7%	0.000
	Oct-Sep	-0.59	-0.6%	0.000
	Annual	-0.70	-0.7%	0.050
Net Inflow	1	-1.43	-1.5%	0.010
	2	-0.92	-0.9%	0.030
	3	-0.92	-0.8%	0.401
	4	0.25	0.2%	0.675
	5	0.08	0.1%	0.944
	6	0.02	0.0%	1.000
	7	-1.01	-0.4%	0.726
	8	-0.97	-0.4%	0.675
	9	0.22	0.2%	0.944
	10	-0.77	-0.7%	0.184
	11	-0.38	-0.5%	0.441
	12	-0.56	-0.7%	0.124
	May-Sep	-0.08	0.0%	0.802
	Oct-Apr	-0.70	-0.7%	0.001
	Oct-Sep	-0.55	-0.4%	0.006
	Annual	-0.51	-0.4%	0.401
Anthropogenic Sources	1	-1.55	-4.3%	0.050
	2	-1.07	-2.8%	0.025
	3	-1.05	-2.3%	0.263
	4	-0.35	-0.9%	0.484
	5	-0.07	-0.2%	0.944
	6	-0.13	-0.2%	1.000
	7	-1.08	-2.3%	0.093
	8	-1.12	-2.5%	0.124
	9	-0.03	-0.1%	0.944
	10	-0.37	-1.7%	0.124
	11	-0.41	-2.1%	0.162
	12	-0.25	-1.0%	0.576
	May-Sep	-0.41	-0.9%	0.118
	Oct-Apr	-0.68	-2.1%	0.000
	Oct-Sep	-0.59	-1.6%	0.000
	Annual	-0.70	-1.8%	0.050
Lake Outflow	1	-0.18	-0.3%	0.780
	2	-0.02	0.0%	1.000
	3	1.08	1.7%	0.069
	4	0.93	1.5%	0.234
	5	0.33	0.6%	0.624
	6	-2.26	-2.0%	0.263

Seasonal Kendall Trend Tests **Variable: TP Concentration (ppb)**

Site	Months	Period 1992-2010 Trend Slope (units/yr)	Trend Slope (%/yr)	p-value
Lake Outflow	7	-0.65	-0.3%	0.889
	8	4.97	2.3%	0.025
	9	4.27	2.0%	0.142
	10	0.25	0.2%	0.889
	11	-0.03	0.0%	1.000
	12	-0.08	-0.1%	1.000
	May-Sep	0.71	0.4%	0.189
	Oct-Apr	0.30	0.3%	0.290
	Oct-Sep	0.45	0.4%	0.096
	Annual	0.91	0.8%	0.294
Lake Mean Storage	1	-0.28	-0.4%	0.726
	2	-0.15	-0.2%	0.834
	3	0.81	1.3%	0.142
	4	1.35	2.1%	0.069
	5	0.52	0.8%	0.401
	6	-2.70	-2.4%	0.093
	7	-2.13	-1.0%	0.529
	8	4.85	2.2%	0.080
	9	4.35	2.3%	0.025
	10	0.88	0.6%	0.780
	11	-0.02	0.0%	1.000
	12	-0.41	-0.4%	0.624
	May-Sep	0.61	0.4%	0.260
	Oct-Apr	0.26	0.3%	0.355
	Oct-Sep	0.49	0.4%	0.149
	Annual	0.35	0.3%	0.675

Seasonal Kendall Trend Tests **Variable: TN Load (kg)**

Site	Months	Period 1992-2010 Trend Slope (units/yr)	Trend Slope (%/yr)	p-value
7mile_Dike	1	-0.60	-0.4%	0.834
	2	-0.52	-0.3%	0.944
	3	9.93	4.7%	0.042
	4	12.82	6.5%	0.004
	5	4.59	3.3%	0.294
	6	-2.72	-1.9%	0.484
	7	-5.54	-4.9%	0.162
	8	-6.16	-5.8%	0.025
	9	-0.86	-0.9%	0.726
	10	-1.16	-1.9%	0.484
	11	0.10	0.1%	1.000
	12	0.94	0.7%	0.675
	May-Sep	-2.37	-2.0%	0.097
	Oct-Apr	2.06	1.4%	0.101
	Oct-Sep	0.10	0.1%	0.864
	Annual	0.48	0.4%	0.834
Wood_Weed	1	0.74	0.7%	0.675
	2	-0.94	-0.8%	0.576
	3	0.06	0.1%	0.944
	4	-0.17	-0.2%	0.944
	5	0.14	0.2%	0.944
	6	0.50	0.8%	0.726
	7	-1.98	-3.7%	0.124
	8	-2.19	-4.3%	0.050
	9	0.16	0.3%	0.889
	10	-0.26	-0.5%	0.780
	11	0.64	0.8%	0.576
	12	1.06	1.1%	0.441
	May-Sep	-0.77	-1.4%	0.200
	Oct-Apr	0.13	0.1%	0.731
	Oct-Sep	-0.20	-0.3%	0.579
	Annual	-0.59	-0.8%	0.529
Wood_Dike-Wood_Weed	1	0.08	0.1%	1.000
	2	-0.17	-0.2%	0.944
	3	0.73	0.5%	0.780
	4	4.45	3.0%	0.294
	5	1.31	1.3%	0.529
	6	1.66	2.0%	0.484
	7	-0.30	-0.7%	0.834
	8	-0.17	-0.4%	0.861
	9	-0.80	-1.1%	0.780
	10	2.93	6.7%	0.016
	11	1.69	4.4%	0.151
	12	-1.17	-1.7%	0.649
	May-Sep	0.27	0.4%	0.790
	Oct-Apr	1.25	1.5%	0.074

Seasonal Kendall Trend Tests **Variable: TN Load (kg)**

Site	Months	Period 1992-2010 Trend Slope (units/yr)	Trend Slope (%/yr)	p-value
Wood_Dike-Wood_Weed	Oct-Sep	0.87	1.1%	0.122
	Annual	0.92	1.2%	0.401
Wood_Dike	1	-0.08	0.0%	1.000
	2	-1.44	-0.8%	0.726
	3	0.61	0.3%	0.889
	4	4.97	2.2%	0.529
	5	1.59	1.0%	0.484
	6	2.20	1.5%	0.441
	7	-1.80	-1.8%	0.363
	8	-2.73	-2.9%	0.080
	9	0.14	0.1%	0.944
	10	3.24	3.5%	0.021
	11	2.58	2.3%	0.263
	12	1.17	0.7%	0.780
	May-Sep	-0.50	-0.4%	0.639
	Oct-Apr	1.63	0.9%	0.113
	Oct-Sep	0.60	0.4%	0.369
	Annual	0.48	0.3%	0.834
Total Agency Inflows	1	-5.33	-1.6%	0.363
	2	-12.80	-3.0%	0.162
	3	-5.48	-0.9%	0.726
	4	10.19	1.9%	0.363
	5	2.41	0.5%	0.780
	6	28.10	3.2%	0.401
	7	-2.08	-0.5%	0.889
	8	-12.34	-4.1%	0.003
	9	-5.56	-2.1%	0.208
	10	-1.69	-0.9%	0.529
	11	-1.03	-0.4%	0.944
	12	-2.68	-0.8%	0.726
	May-Sep	-5.05	-1.1%	0.141
	Oct-Apr	-2.67	-0.7%	0.267
	Oct-Sep	-3.29	-0.8%	0.071
	Annual	3.63	0.9%	0.675
Sprague	1	-17.17	-3.0%	0.234
	2	-23.51	-3.3%	0.327
	3	-53.53	-4.8%	0.234
	4	-25.93	-2.5%	0.441
	5	4.69	0.5%	0.944
	6	7.76	1.7%	0.529
	7	-2.85	-1.7%	0.208
	8	-2.39	-2.1%	0.093
	9	-2.54	-2.0%	0.093
	10	-0.73	-0.6%	0.529
	11	-1.78	-1.3%	0.327
	12	0.21	0.1%	1.000

Seasonal Kendall Trend Tests **Variable: TN Load (kg)**

Site	Months	Period 1992-2010 Trend Slope (units/yr)	Trend Slope (%/yr)	p-value
Sprague	May-Sep	-2.11	-0.6%	0.080
	Oct-Apr	-2.96	-0.5%	0.026
	Oct-Sep	-2.46	-0.5%	0.005
	Annual	-24.57	-5.1%	0.162
Williamson-Sprague	1	2.53	0.6%	0.834
	2	1.89	0.4%	0.780
	3	7.14	1.0%	0.726
	4	-23.05	-2.3%	0.441
	5	11.17	2.1%	0.484
	6	0.00	0.0%	0.972
	7	2.80	3.0%	0.220
	8	1.34	2.1%	0.277
	9	2.40	3.5%	0.278
	10	2.99	4.4%	0.232
	11	1.20	1.4%	0.420
	12	-2.13	-1.5%	0.624
	May-Sep	2.39	1.2%	0.065
	Oct-Apr	1.12	0.3%	0.534
	Oct-Sep	1.76	0.5%	0.093
	Annual	-2.04	-0.6%	0.834
Williamson	1	-17.17	-1.7%	0.624
	2	-32.84	-2.8%	0.363
	3	-95.86	-5.2%	0.059
	4	-59.92	-2.9%	0.484
	5	9.92	0.6%	0.944
	6	4.35	0.6%	0.834
	7	0.94	0.4%	0.675
	8	0.66	0.4%	0.780
	9	-0.96	-0.5%	0.834
	10	1.35	0.7%	0.624
	11	-0.91	-0.4%	0.944
	12	-3.75	-1.0%	0.675
	May-Sep	0.66	0.1%	0.707
	Oct-Apr	-6.29	-0.6%	0.119
	Oct-Sep	-2.02	-0.2%	0.348
	Annual	-37.23	-4.6%	0.234
Total Pumped to Lake	1	-7.20	-5.6%	0.000
	2	-17.04	-5.9%	0.000
	3	-23.87	-4.3%	0.036
	4	-15.86	-3.6%	0.069
	5	-11.13	-3.0%	0.069
	6	9.04	1.1%	0.441
	7	-3.51	-0.9%	0.576
	8	-8.00	-3.8%	0.017
	9	-6.39	-4.7%	0.003
	10	-4.55	-4.3%	0.008

Seasonal Kendall Trend Tests **Variable: TN Load (kg)**

Site	Months	Period 1992-2010 Trend Slope (units/yr)	Trend Slope (%/yr)	p-value
Total Pumped to Lake	11	-4.01	-5.1%	0.001
	12	-4.24	-5.1%	0.002
	May-Sep	-5.62	-1.5%	0.002
	Oct-Apr	-6.01	-2.5%	0.000
	Oct-Sep	-5.96	-2.0%	0.000
	Annual	1.19	0.4%	0.624
Total Klamath Inflows	1	-23.70	-2.1%	0.484
	2	-43.49	-3.1%	0.108
	3	-113.65	-5.0%	0.030
	4	-77.29	-3.3%	0.327
	5	5.30	0.3%	1.000
	6	-2.54	-0.3%	0.889
	7	-4.93	-1.2%	0.108
	8	-3.68	-1.3%	0.184
	9	-4.45	-1.6%	0.363
	10	-0.86	-0.3%	0.726
	11	-3.32	-1.2%	0.529
	12	-6.21	-1.4%	0.441
	May-Sep	-4.10	-0.6%	0.070
	Oct-Apr	-9.81	-0.8%	0.005
	Oct-Sep	-5.89	-0.6%	0.001
	Annual	-42.77	-4.4%	0.234
Total Tributaries	1	-15.77	-1.2%	0.726
	2	-28.48	-1.8%	0.441
	3	-88.11	-3.8%	0.208
	4	-43.71	-1.8%	0.529
	5	10.54	0.6%	0.834
	6	1.48	0.2%	0.944
	7	-8.01	-1.7%	0.142
	8	-8.72	-2.3%	0.069
	9	-2.50	-0.6%	0.624
	10	2.80	0.8%	0.441
	11	4.61	1.1%	0.675
	12	0.43	0.1%	1.000
	May-Sep	-5.47	-0.7%	0.118
	Oct-Apr	-3.28	-0.3%	0.492
	Oct-Sep	-4.49	-0.4%	0.122
	Annual	-37.26	-3.4%	0.294
Ungauged Inflows	1	-2.43	-2.7%	0.327
	2	-2.98	-4.1%	0.157
	3	-2.84	-4.1%	0.205
	4	-5.20	-6.6%	0.007
	5	-3.50	-2.9%	0.132
	6	-1.22	-1.2%	0.834
	7	-0.33	-0.4%	0.834
	8	-2.10	-3.5%	0.069

Seasonal Kendall Trend Tests **Variable: TN Load (kg)**

Site	Months	Period 1992-2010 Trend Slope (units/yr)	Trend Slope (%/yr)	p-value
Ungauged Inflows	9	-3.60	-6.2%	0.025
	10	-2.22	-4.6%	0.050
	11	-0.17	-0.3%	0.889
	12	-1.98	-3.5%	0.124
	May-Sep	-2.08	-2.4%	0.006
	Oct-Apr	-2.46	-3.6%	0.000
	Oct-Sep	-2.27	-3.0%	0.000
	Annual	-3.45	-4.6%	0.008
Total External Inflows	1	-23.83	-1.5%	0.441
	2	-58.23	-3.0%	0.080
	3	-126.64	-4.3%	0.108
	4	-53.03	-1.8%	0.484
	5	0.23	0.0%	1.000
	6	43.24	2.3%	0.441
	7	-6.73	-0.7%	0.726
	8	-17.01	-2.6%	0.021
	9	-10.04	-1.7%	0.080
	10	-1.95	-0.4%	0.834
	11	0.41	0.1%	1.000
	12	-4.89	-0.6%	0.675
	May-Sep	-9.28	-0.7%	0.104
	Oct-Apr	-10.69	-0.7%	0.034
	Oct-Sep	-10.03	-0.7%	0.007
	Annual	-43.37	-2.9%	0.327
Net Inflow	1	-24.15	-1.4%	0.441
	2	-46.41	-2.3%	0.093
	3	-121.60	-4.0%	0.108
	4	-57.78	-1.9%	0.484
	5	0.78	0.0%	1.000
	6	44.89	2.3%	0.441
	7	-7.03	-0.7%	0.675
	8	-17.51	-2.5%	0.021
	9	-9.89	-1.5%	0.069
	10	-2.29	-0.4%	0.726
	11	0.92	0.1%	1.000
	12	-4.46	-0.5%	0.726
	May-Sep	-9.33	-0.7%	0.091
	Oct-Apr	-12.84	-0.8%	0.034
	Oct-Sep	-10.59	-0.7%	0.007
	Annual	-45.43	-2.9%	0.363
Anthropogenic Sources	1	-19.89	-1.9%	0.363
	2	-43.93	-3.1%	0.124
	3	-96.17	-4.1%	0.124
	4	-35.23	-1.5%	0.624
	5	10.03	0.6%	0.780
	6	30.66	2.1%	0.401

Seasonal Kendall Trend Tests **Variable: TN Load (kg)**

Site	Months	Period 1992-2010 Trend Slope (units/yr)	Trend Slope (%/yr)	p-value
Anthropogenic Sources	7	-4.15	-0.6%	0.834
	8	-16.22	-4.1%	0.017
	9	-10.22	-3.1%	0.080
	10	-3.93	-2.1%	0.484
	11	-2.59	-1.2%	0.675
	12	-4.28	-1.0%	0.529
	May-Sep	-8.45	-0.9%	0.150
	Oct-Apr	-10.38	-0.9%	0.015
	Oct-Sep	-9.44	-0.9%	0.005
	Annual	-36.52	-3.5%	0.208
Background Sources	1	-3.83	-0.8%	0.529
	2	-9.74	-1.9%	0.624
	3	-16.88	-2.8%	0.208
	4	-12.75	-2.0%	0.363
	5	-8.32	-1.3%	0.675
	6	1.32	0.3%	0.834
	7	-1.05	-0.4%	0.780
	8	-1.26	-0.5%	0.624
	9	-2.83	-1.0%	0.234
	10	-0.66	-0.2%	0.780
	11	1.43	0.4%	0.624
	12	-0.83	-0.2%	0.944
	May-Sep	-1.84	-0.5%	0.317
	Oct-Apr	-2.44	-0.5%	0.214
	Oct-Sep	-1.98	-0.5%	0.108
	Annual	-5.87	-1.4%	0.363
Lake Outflow	1	29.00	0.5%	0.834
	2	31.29	0.7%	0.889
	3	-86.97	-2.5%	0.576
	4	-12.17	-0.3%	0.889
	5	-35.21	-0.9%	0.529
	6	-175.29	-2.1%	0.162
	7	-131.66	-1.1%	0.401
	8	268.43	2.3%	0.050
	9	315.43	3.6%	0.080
	10	118.06	2.1%	0.327
	11	142.91	3.1%	0.042
	12	104.76	2.1%	0.263
	May-Sep	17.02	0.2%	0.731
	Oct-Apr	49.81	1.1%	0.146
	Oct-Sep	37.46	0.6%	0.179
	Annual	10.33	0.2%	0.944
Retention	1	-6.53	-0.4%	0.944
	2	108.46	5.7%	0.780
	3	-17.58	-0.6%	1.000
	4	137.57	4.6%	0.263

Seasonal Kendall Trend Tests **Variable: TN Load (kg)**

Site	Months	Period 1992-2010 Trend Slope (units/yr)	Trend Slope (%/yr)	p-value
Retention	5	549.64	23.3%	0.080
	6	730.38	39.0%	0.327
	7	-993.77	-104.7%	0.050
	8	-400.60	-62.1%	0.263
	9	-330.21	-54.4%	0.208
	10	80.25	16.2%	0.834
	11	-323.49	-56.5%	0.093
	12	-113.95	-13.9%	0.484
	May-Sep	-161.86	-12.6%	0.472
	Oct-Apr	-19.33	-1.2%	0.751
	Oct-Sep	-47.90	-3.2%	0.473
	Annual	-38.41	-2.6%	0.576

Seasonal Kendall Trend Tests **Variable: TN Concentration (ppb)**

Site	Months	Period 1992-2010 Trend Slope (units/yr)	Trend Slope (%/yr)	p-value
7mile_Dike	1	6.85	1.7%	0.529
	2	-3.23	-0.7%	0.576
	3	14.45	2.7%	0.042
	4	21.29	3.7%	0.030
	5	15.27	3.0%	0.142
	6	-3.87	-0.6%	0.624
	7	-16.43	-2.3%	0.124
	8	-27.22	-4.0%	0.021
	9	-4.64	-1.0%	0.234
	10	-2.48	-1.1%	0.576
	11	2.46	0.8%	0.675
	12	1.79	0.5%	1.000
	May-Sep	-5.84	-1.0%	0.065
	Oct-Apr	3.32	0.8%	0.113
	Oct-Sep	0.04	0.0%	0.992
	Annual	1.57	0.3%	0.363
Wood_Weed	1	0.34	0.3%	0.780
	2	-0.39	-0.3%	0.624
	3	-0.02	0.0%	0.944
	4	-1.38	-1.3%	0.529
	5	0.03	0.0%	1.000
	6	-2.55	-1.9%	0.080
	7	-1.90	-1.4%	0.050
	8	-7.17	-4.8%	0.021
	9	-0.70	-0.7%	0.576
	10	-0.95	-1.3%	0.327
	11	0.17	0.2%	0.834
	12	0.27	0.2%	0.726
	May-Sep	-1.85	-1.5%	0.003
	Oct-Apr	-0.24	-0.2%	0.615
	Oct-Sep	-1.01	-0.9%	0.021
	Annual	-1.70	-1.5%	0.017
Wood_Dike-Wood_Weed	1	-24.37	-4.9%	0.198
	2	-26.45	-5.4%	0.006
	3	-32.77	-3.1%	0.049
	4	-1.59	-0.2%	0.940
	5	-7.77	-1.5%	0.834
	6	2.24	0.6%	0.762
	7	-14.32	-3.9%	0.263
	8	-24.87	-8.0%	0.007
	9	-33.00	-7.7%	0.002
	10	2.97	1.1%	0.711
	11	2.15	0.8%	0.893
	12	-21.08	-2.9%	0.202
	May-Sep	-16.83	-4.2%	0.003
	Oct-Apr	-13.93	-2.3%	0.006

Seasonal Kendall Trend Tests **Variable: TN Concentration (ppb)**

Site	Months	Period 1992-2010 Trend Slope (units/yr)	Trend Slope (%/yr)	p-value
Wood_Dike-Wood_Weed	Oct-Sep	-15.74	-3.0%	0.000
	Annual	-12.43	-2.9%	0.005
Wood_Dike	1	-4.05	-2.3%	0.294
	2	-3.77	-2.1%	0.108
	3	0.15	0.1%	1.000
	4	1.94	0.9%	0.624
	5	2.07	1.1%	0.576
	6	-1.37	-0.7%	0.780
	7	-4.91	-2.7%	0.080
	8	-6.96	-3.9%	0.003
	9	-4.44	-2.5%	0.093
	10	1.30	1.3%	0.327
	11	0.18	0.2%	0.944
	12	-1.25	-0.8%	0.675
	May-Sep	-4.33	-2.3%	0.005
	Oct-Apr	-0.61	-0.4%	0.579
	Oct-Sep	-2.16	-1.2%	0.026
	Annual	-1.75	-1.0%	0.294
Total Agency Inflows	1	-6.89	-2.8%	0.142
	2	-13.18	-4.6%	0.010
	3	-7.77	-2.0%	0.142
	4	2.87	0.8%	0.780
	5	-1.62	-0.4%	0.780
	6	-0.07	0.0%	1.000
	7	-6.31	-1.2%	0.576
	8	-19.28	-4.8%	0.001
	9	-8.15	-2.9%	0.014
	10	-2.50	-1.5%	0.234
	11	-1.41	-0.8%	0.675
	12	-2.03	-0.9%	0.484
	May-Sep	-9.61	-2.1%	0.002
	Oct-Apr	-4.35	-1.6%	0.004
	Oct-Sep	-5.88	-1.7%	0.000
	Annual	-1.24	-0.4%	0.726
Sprague	1	-11.60	-4.0%	0.124
	2	-7.31	-2.2%	0.327
	3	-4.16	-1.1%	0.780
	4	2.63	0.8%	0.675
	5	5.27	1.5%	0.080
	6	5.99	1.9%	0.208
	7	0.54	0.2%	0.944
	8	-0.57	-0.2%	0.944
	9	-1.02	-0.3%	0.675
	10	0.07	0.0%	1.000
	11	-0.51	-0.3%	0.675
	12	-2.03	-1.0%	0.529

Seasonal Kendall Trend Tests **Variable: TN Concentration (ppb)**

Site	Months	Period 1992-2010 Trend Slope (units/yr)	Trend Slope (%/yr)	p-value
Sprague	May-Sep	1.86	0.6%	0.247
	Oct-Apr	-1.68	-0.6%	0.186
	Oct-Sep	-0.30	-0.1%	0.801
	Annual	-3.28	-1.0%	0.294
Williamson-Sprague	1	5.23	1.4%	0.624
	2	-0.95	-0.2%	0.880
	3	-4.10	-0.7%	0.544
	4	-13.94	-1.9%	0.327
	5	8.87	1.9%	0.484
	6	-4.22	-1.4%	0.685
	7	0.13	0.1%	1.000
	8	-0.67	-0.6%	0.558
	9	-1.02	-1.0%	0.902
	10	2.95	2.8%	0.373
	11	-0.51	-0.5%	0.822
	12	-4.68	-2.9%	0.363
	May-Sep	-0.32	-0.1%	0.913
	Oct-Apr	-1.88	-0.5%	0.490
	Oct-Sep	-0.71	-0.2%	0.536
	Annual	-2.11	-0.6%	0.624
Williamson	1	-4.67	-1.5%	0.484
	2	-4.97	-1.4%	0.624
	3	-2.76	-0.6%	0.675
	4	-1.60	-0.3%	0.834
	5	7.75	2.0%	0.080
	6	3.85	1.4%	0.624
	7	-0.24	-0.1%	0.944
	8	0.65	0.4%	0.726
	9	0.18	0.1%	0.944
	10	0.73	0.6%	0.780
	11	-1.00	-0.7%	0.675
	12	-3.29	-1.8%	0.529
	May-Sep	1.45	0.6%	0.234
	Oct-Apr	-1.45	-0.5%	0.302
	Oct-Sep	-0.01	0.0%	0.992
	Annual	-5.39	-1.6%	0.184
Total Pumped to Lake	1	11.30	0.5%	0.013
	2	11.30	0.5%	0.013
	3	0.00	0.0%	0.127
	4	0.00	0.0%	0.464
	5	13.72	0.6%	0.048
	6	14.78	0.6%	0.058
	7	24.01	1.0%	0.002
	8	12.81	0.5%	0.017
	9	11.30	0.5%	0.013
	10	12.01	0.5%	0.031

Seasonal Kendall Trend Tests **Variable: TN Concentration (ppb)**

Site	Months	Period 1992-2010 Trend Slope (units/yr)	Trend Slope (%/yr)	p-value
Total Pumped to Lake	11	11.30	0.5%	0.013
	12	11.30	0.5%	0.013
	May-Sep	13.72	0.6%	0.000
	Oct-Apr	10.67	0.5%	0.000
	Oct-Sep	12.25	0.5%	0.000
	Annual	12.81	0.5%	0.184
Total Klamath Inflows	1	-6.59	-1.9%	0.441
	2	-7.93	-1.8%	0.234
	3	-4.88	-0.9%	0.184
	4	-2.19	-0.4%	0.675
	5	4.12	1.0%	0.030
	6	-1.50	-0.4%	0.726
	7	-6.12	-2.0%	0.059
	8	-3.32	-1.3%	0.006
	9	-2.54	-1.1%	0.069
	10	-0.82	-0.5%	0.401
	11	-2.84	-1.7%	0.363
	12	-3.61	-1.7%	0.441
	May-Sep	-1.99	-0.6%	0.036
	Oct-Apr	-3.61	-1.0%	0.015
	Oct-Sep	-2.84	-0.8%	0.001
	Annual	-6.25	-1.6%	0.142
Total Tributaries	1	-3.82	-1.3%	0.529
	2	-5.29	-1.7%	0.401
	3	-3.66	-0.9%	0.624
	4	1.05	0.2%	0.889
	5	7.46	2.1%	0.162
	6	-0.97	-0.3%	0.889
	7	-5.94	-2.6%	0.080
	8	-5.78	-2.8%	0.003
	9	-2.71	-1.4%	0.069
	10	0.38	0.3%	0.834
	11	-0.74	-0.5%	0.889
	12	0.08	0.0%	0.944
	May-Sep	-3.11	-1.2%	0.017
	Oct-Apr	-0.95	-0.3%	0.526
	Oct-Sep	-1.96	-0.7%	0.042
	Annual	-6.20	-2.0%	0.093
Total External Inflows	1	-4.32	-1.5%	0.529
	2	-7.25	-2.1%	0.108
	3	-4.75	-1.0%	0.441
	4	3.14	0.7%	0.576
	5	5.58	1.5%	0.069
	6	3.81	0.9%	0.529
	7	-3.45	-1.1%	0.675
	8	-6.31	-2.4%	0.014

Seasonal Kendall Trend Tests **Variable: TN Concentration (ppb)**

Site	Months	Period 1992-2010 Trend Slope (units/yr)	Trend Slope (%/yr)	p-value
Total External Inflows	9	-3.11	-1.4%	0.080
	10	-1.08	-0.7%	0.441
	11	-1.55	-1.0%	0.624
	12	-1.42	-0.7%	0.624
	May-Sep	-2.09	-0.7%	0.332
	Oct-Apr	-1.88	-0.6%	0.101
	Oct-Sep	-2.01	-0.7%	0.059
	Annual	-1.75	-0.5%	0.401
Net Inflow	1	-3.43	-1.3%	0.484
	2	-5.95	-1.8%	0.080
	3	-3.00	-0.6%	0.363
	4	2.74	0.5%	0.263
	5	4.79	1.1%	0.234
	6	2.51	0.4%	0.834
	7	3.24	0.4%	0.624
	8	-6.47	-1.0%	0.294
	9	-3.05	-0.9%	0.142
	10	-1.63	-0.8%	0.363
	11	-1.45	-0.8%	0.529
	12	-1.64	-0.8%	0.529
	May-Sep	-0.85	-0.1%	0.802
	Oct-Apr	-1.71	-0.6%	0.086
	Oct-Sep	-1.37	-0.3%	0.138
	Annual	-0.39	-0.1%	1.000
Anthropogenic Sources	1	-4.32	-2.4%	0.529
	2	-7.25	-3.0%	0.108
	3	-4.75	-1.3%	0.441
	4	3.14	0.9%	0.576
	5	5.58	2.1%	0.069
	6	3.81	1.2%	0.529
	7	-3.45	-1.7%	0.675
	8	-6.31	-3.9%	0.014
	9	-3.11	-2.6%	0.080
	10	-1.08	-1.8%	0.441
	11	-1.55	-2.4%	0.649
	12	-1.42	-1.4%	0.624
	May-Sep	-2.09	-1.0%	0.332
	Oct-Apr	-1.88	-1.0%	0.103
	Oct-Sep	-2.01	-1.0%	0.060
	Annual	-1.78	-0.8%	0.401
Lake Outflow	1	48.62	3.1%	0.021
	2	44.81	3.1%	0.030
	3	30.97	3.0%	0.050
	4	21.27	2.7%	0.093
	5	8.56	1.2%	0.184
	6	-44.86	-2.7%	0.208

Seasonal Kendall Trend Tests **Variable: TN Concentration (ppb)**

Site	Months	Period 1992-2010 Trend Slope (units/yr)	Trend Slope (%/yr)	p-value
Lake Outflow	7	-46.29	-1.8%	0.184
	8	58.64	2.2%	0.080
	9	78.15	3.0%	0.021
	10	55.11	2.4%	0.093
	11	60.67	2.9%	0.021
	12	45.53	2.2%	0.124
	May-Sep	10.88	0.5%	0.211
	Oct-Apr	39.92	2.5%	0.000
	Oct-Sep	26.11	1.5%	0.000
	Annual	28.98	1.7%	0.036
Lake Mean Storage	1	54.09	3.4%	0.001
	2	44.32	3.4%	0.001
	3	35.56	3.6%	0.003
	4	21.94	2.7%	0.012
	5	6.42	0.9%	0.363
	6	-48.95	-3.2%	0.059
	7	-14.18	-0.6%	0.484
	8	29.34	1.2%	0.108
	9	60.15	2.7%	0.010
	10	46.92	2.2%	0.124
	11	61.06	3.2%	0.002
	12	49.62	2.8%	0.004
	May-Sep	7.81	0.4%	0.260
	Oct-Apr	42.46	2.8%	0.000
	Oct-Sep	29.60	1.8%	0.000
	Annual	29.06	1.8%	0.006

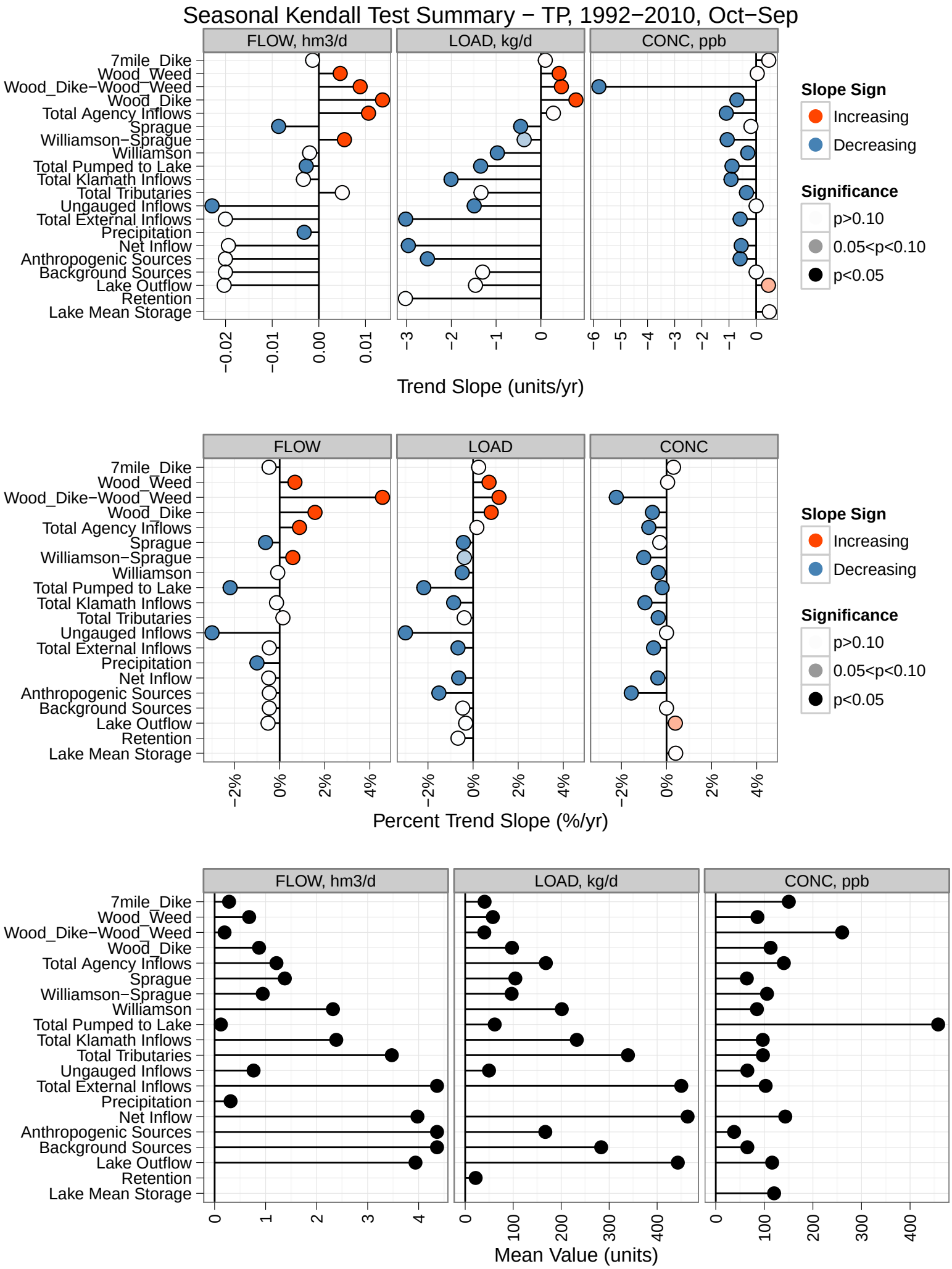
Figure G1: Summary of Seasonal Kendall Trend Test

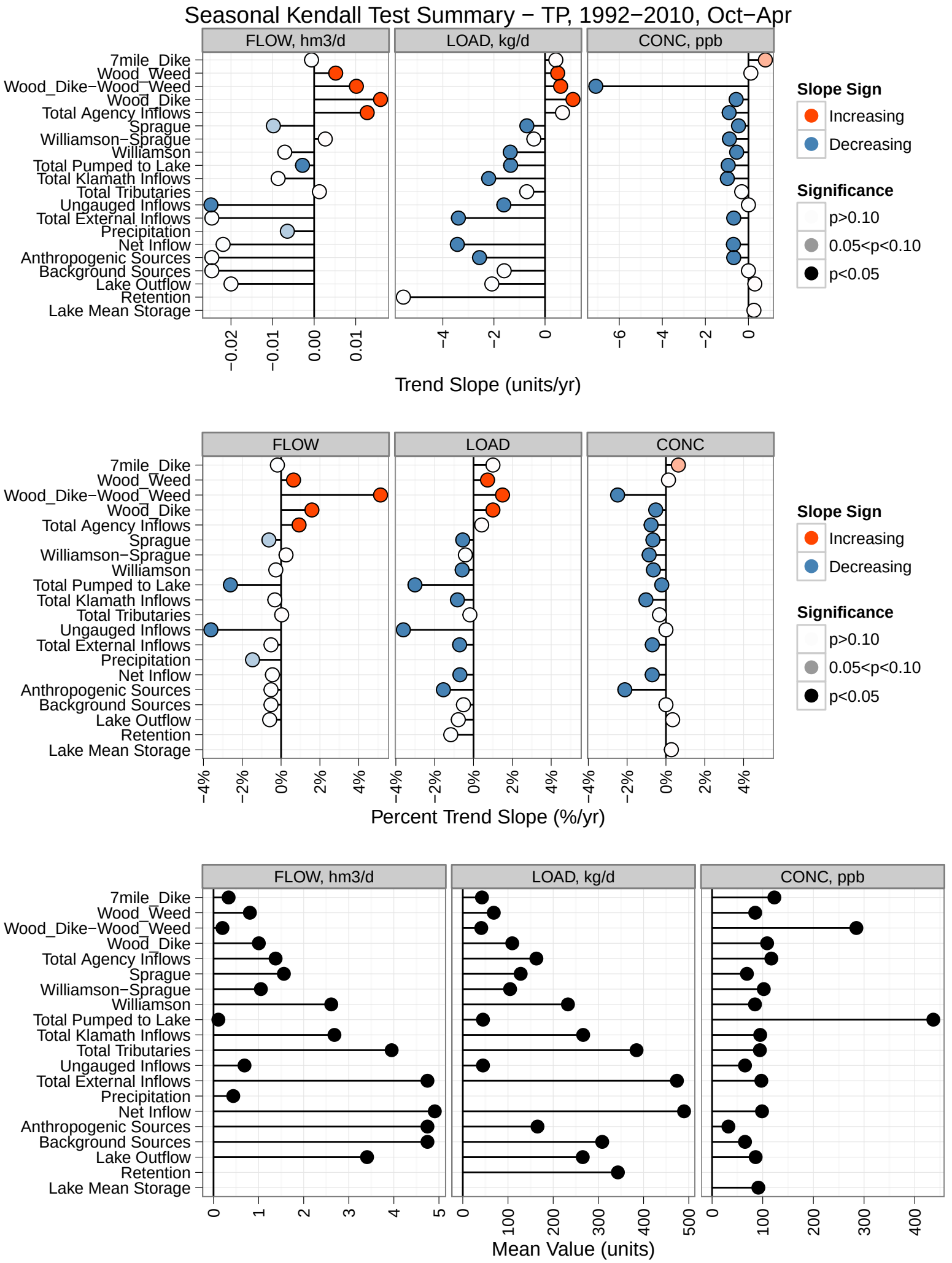
Description: Trend slopes and significance (p-value) for flow, nutrient load and concentration using Seasonal Kendall test over period of record (WY 1992-2010)

Panels: Trend Slope in original units (e.g. ppb/yr for concentration)
Percent Trend Slope computed by dividing trend slope in original units by mean value over the period, except for retention which is computed relative to Total External Inflows
Mean values for each term and variable for aiding interpretation of the relative magnitude of trend slopes between terms

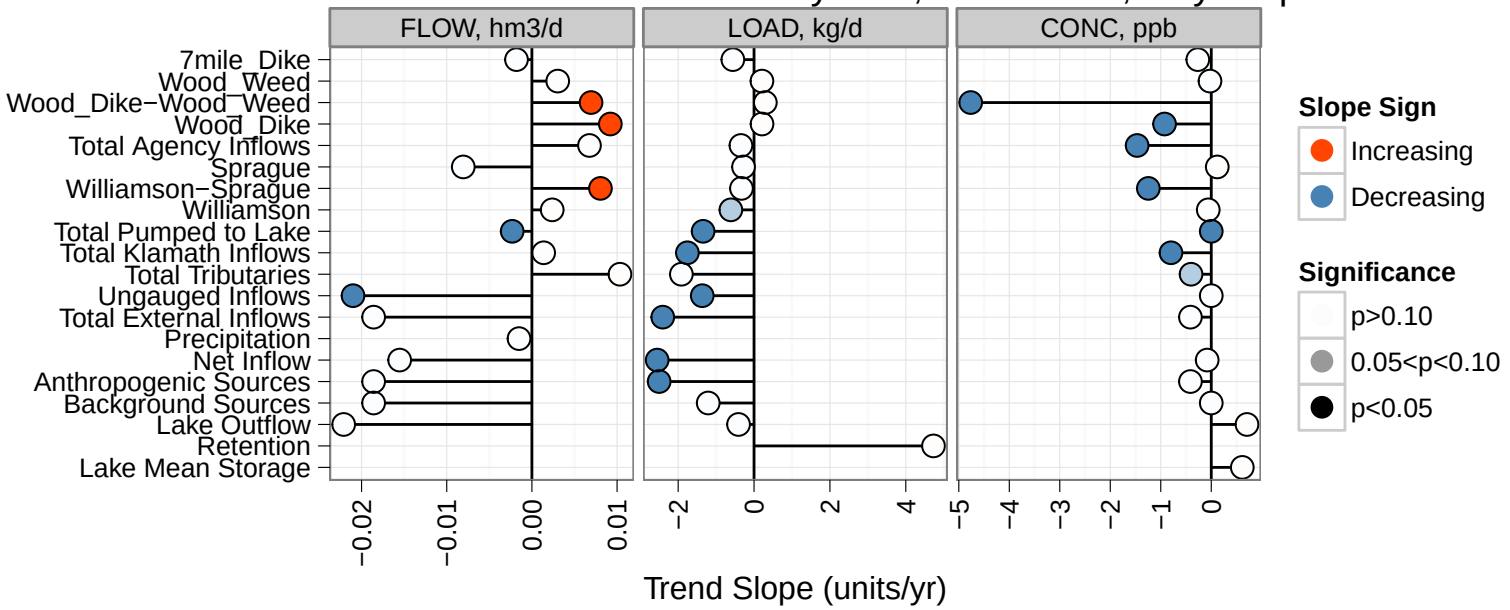
Variables: Flow, Total P, Total N

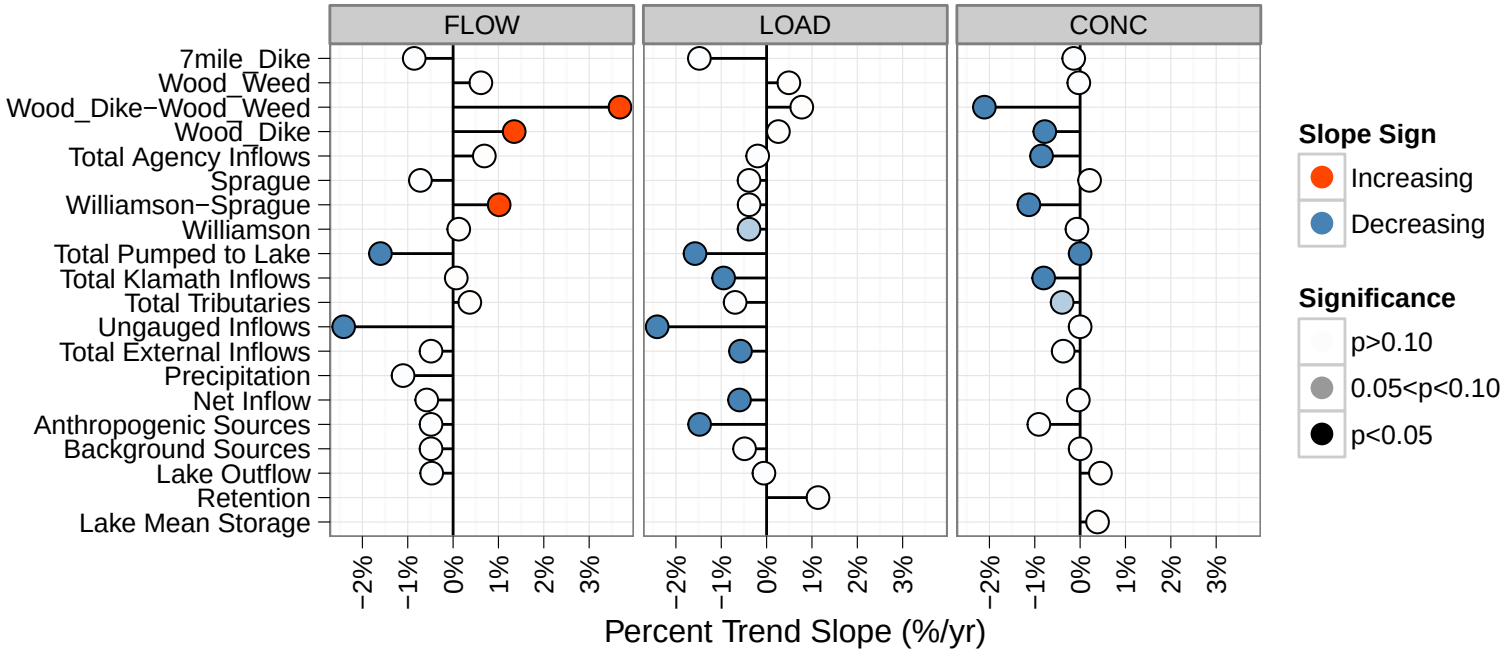
Total Pages: 6

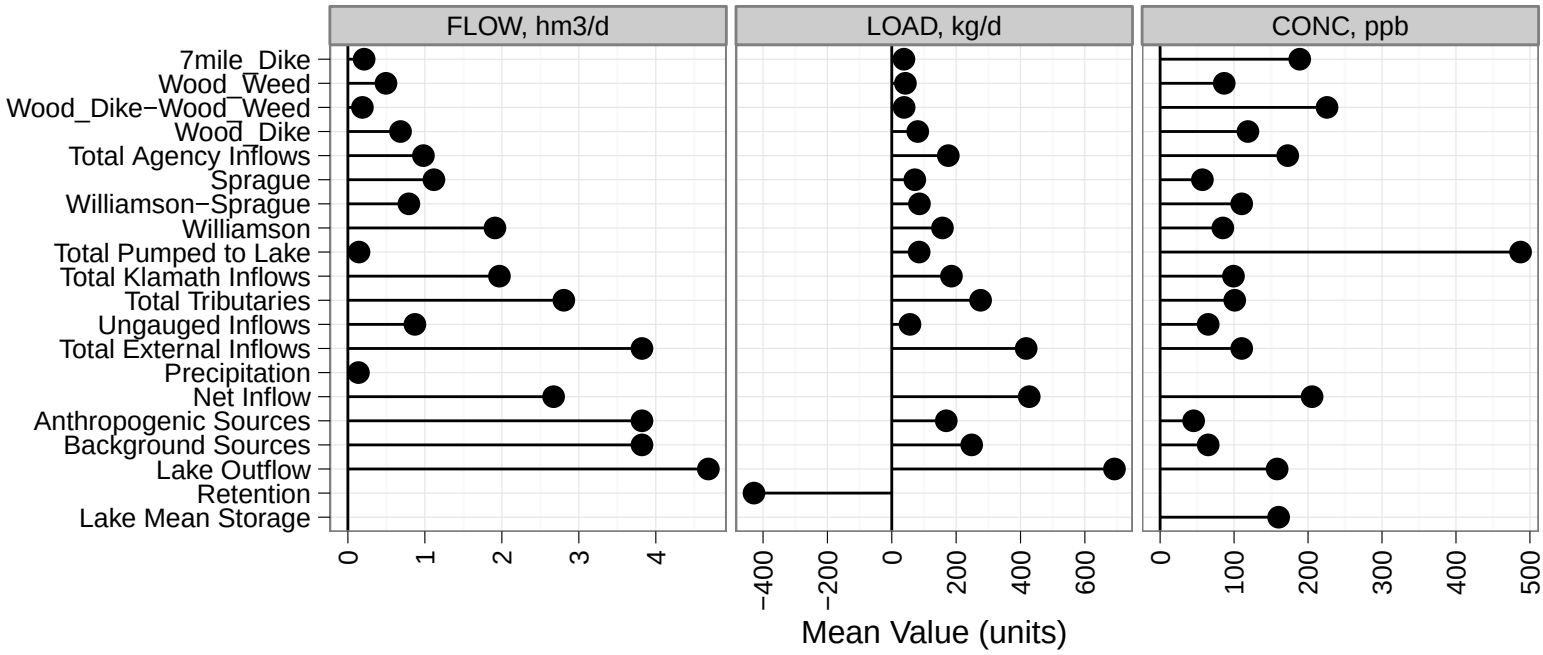

Seasonal Kendall Test Summary − TP, 1992−2010, Oct−Sep
FLOW, hm3/d
LOAD, kg/d
CONC, ppb
7mile_Dike
Wood_Weed
Wood_Dike−Wood_Weed
Wood_Dike
Total Agency Inflows
Sprague
Williamson−Sprague
Williamson
Total Pumped to Lake
Total Klamath Inflows
Total Tributaries
Ungauged Inflows
Total External Inflows
Precipitation
Net Inflow
Anthropogenic Sources
Background Sources
Lake Outflow
Retention
Lake Mean Storage
−0.02
−0.01
0.00
0.01
−3
−2
−1
0
−6
−5
−4
−3
−2
−1
0
Trend Slope (units/yr)
Slope Sign
Increasing
Decreasing
Significance
p>0.10
0.05<p<0.10
p<0.05
FLOW
LOAD
CONC
−2%
0%
2%
4%
Percent Trend Slope (%/yr)
0
1
2
3
4
100
200
300
400
Mean Value (units)


Seasonal Kendall Test Summary − TP, 1992−2010, Oct−Apr
FLOW, hm3/d
LOAD, kg/d
CONC, ppb
7mile_Dike
Wood_Weed
Wood_Dike−Wood_Weed
Wood_Dike
Total Agency Inflows
Sprague
Williamson−Sprague
Williamson
Total Pumped to Lake
Total Klamath Inflows
Total Tributaries
Ungauged Inflows
Total External Inflows
Precipitation
Net Inflow
Anthropogenic Sources
Background Sources
Lake Outflow
Retention
Lake Mean Storage
−0.02
−0.01
0.00
0.01
−4
−2
0
−6
−4
−2
0
Trend Slope (units/yr)
Slope Sign
Increasing
Decreasing
Significance
p>0.10
0.05<p<0.10
p<0.05
FLOW
LOAD
CONC
−4%
−2%
0%
2%
4%
Percent Trend Slope (%/yr)
FLOW, hm3/d
LOAD, kg/d
CONC, ppb
0
1
2
3
4
5
0
100
200
300
400
500
0
100
200
300
400
Mean Value (units)

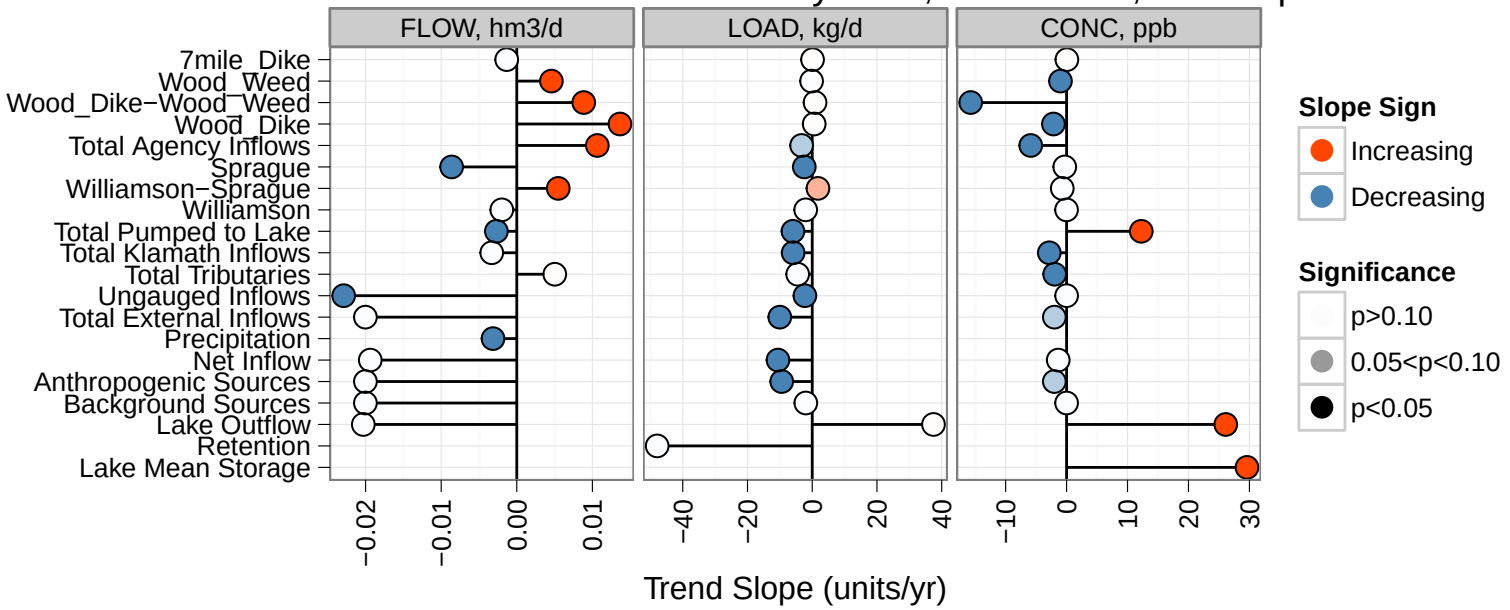
Seasonal Kendall Test Summary − TP, 1992−2010, May−Sep

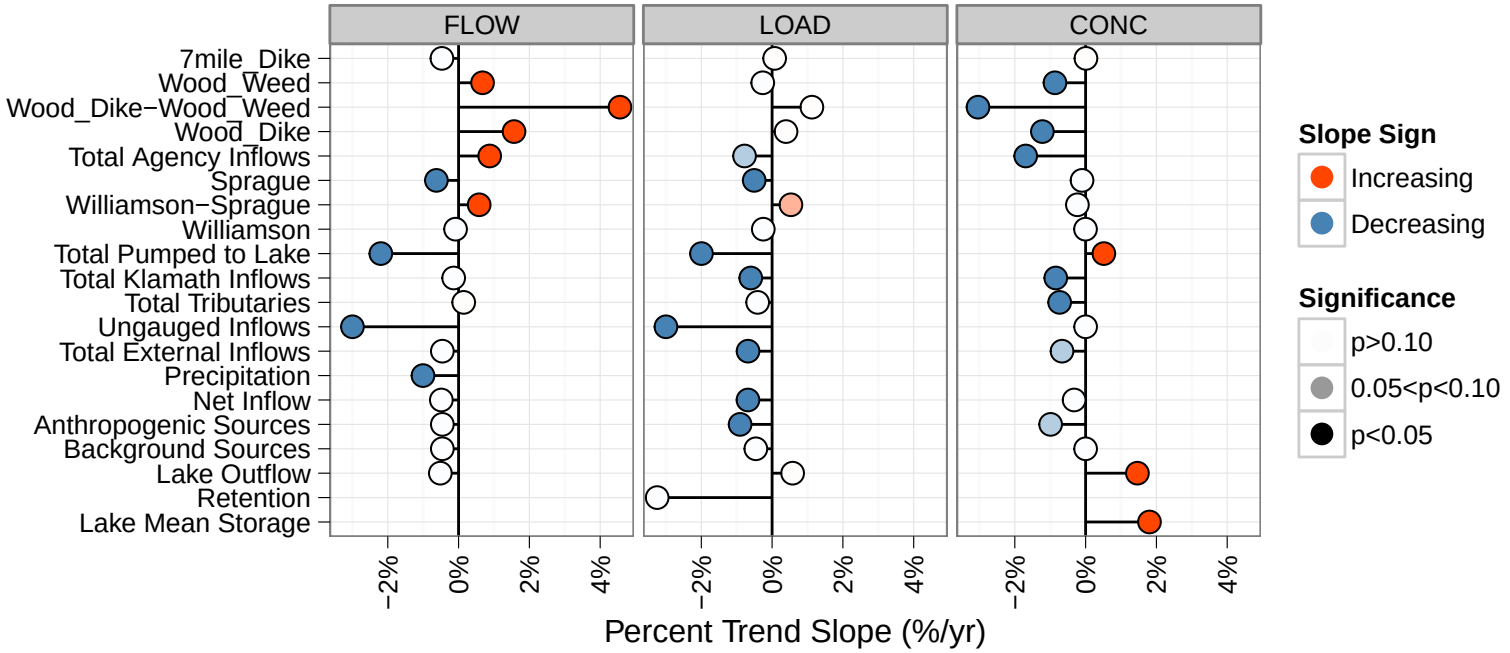


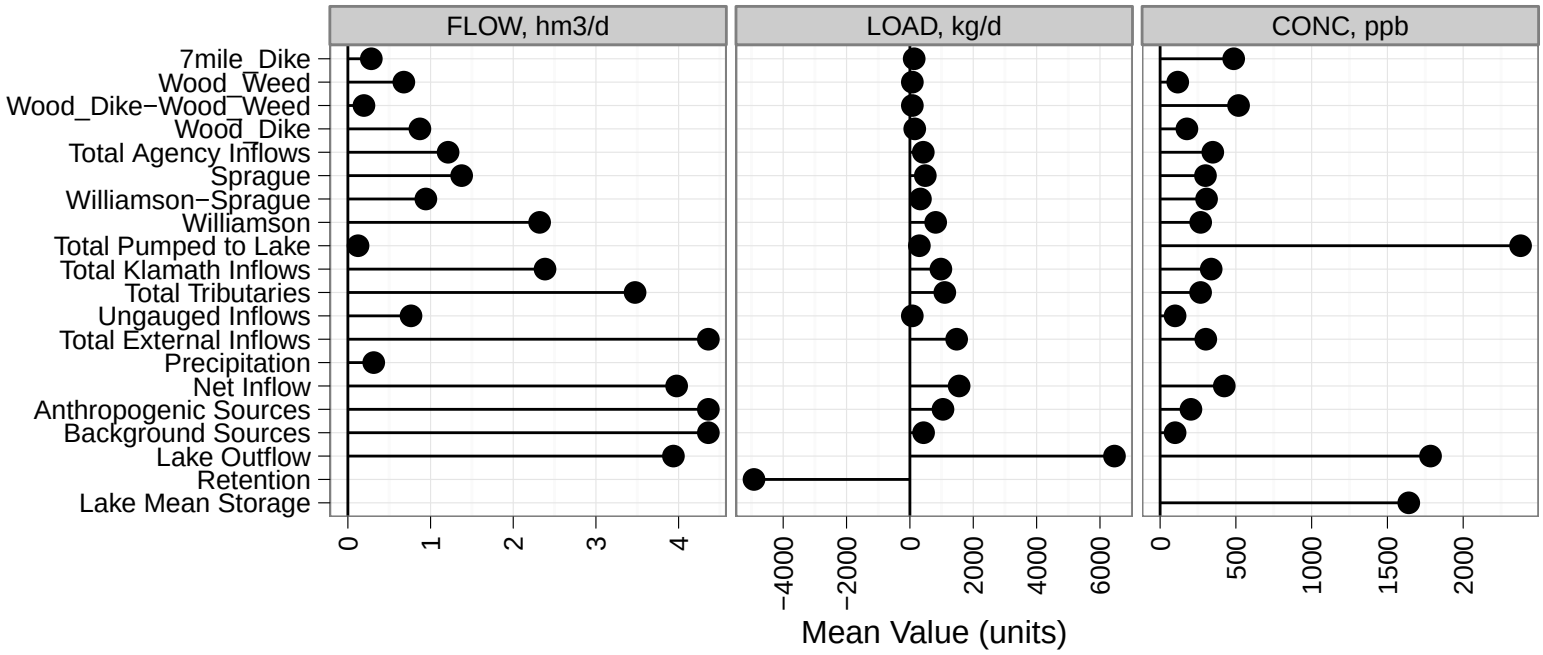


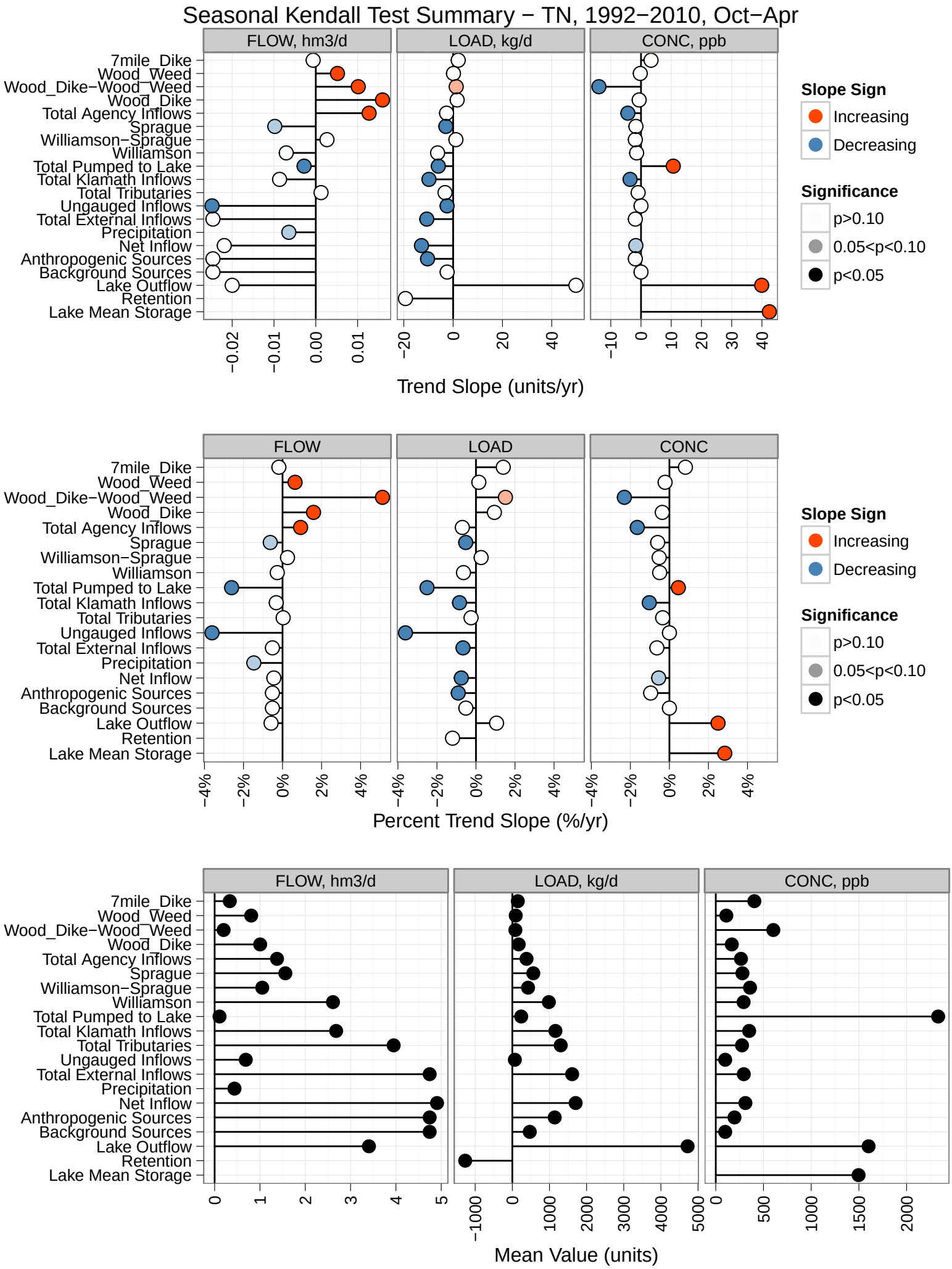


Seasonal Kendall Test Summary − TN, 1992−2010, Oct−Sep








Seasonal Kendall Test Summary − TN, 1992−2010, Oct−Apr
FLOW, hm3/d
LOAD, kg/d
CONC, ppb
7mile_Dike
Wood_Weed
Wood_Dike−Wood_Weed
Wood_Dike
Total Agency Inflows
Sprague
Williamson−Sprague
Williamson
Total Pumped to Lake
Total Klamath Inflows
Total Tributaries
Ungauged Inflows
Total External Inflows
Precipitation
Net Inflow
Anthropogenic Sources
Background Sources
Lake Outflow
Retention
Lake Mean Storage
−0.02
−0.01
0.00
0.01
−20
0
20
40
−10
0
10
20
30
40
Trend Slope (units/yr)
Slope Sign
Increasing
Decreasing
Significance
p>0.10
0.05<p<0.10
p<0.05
FLOW
LOAD
CONC
−4%
−2%
0%
2%
4%
Percent Trend Slope (%/yr)
FLOW, hm3/d
LOAD, kg/d
CONC, ppb
0
1
2
3
4
5
−1000
0
1000
2000
3000
4000
5000
0
500
1000
1500
2000
Mean Value (units)

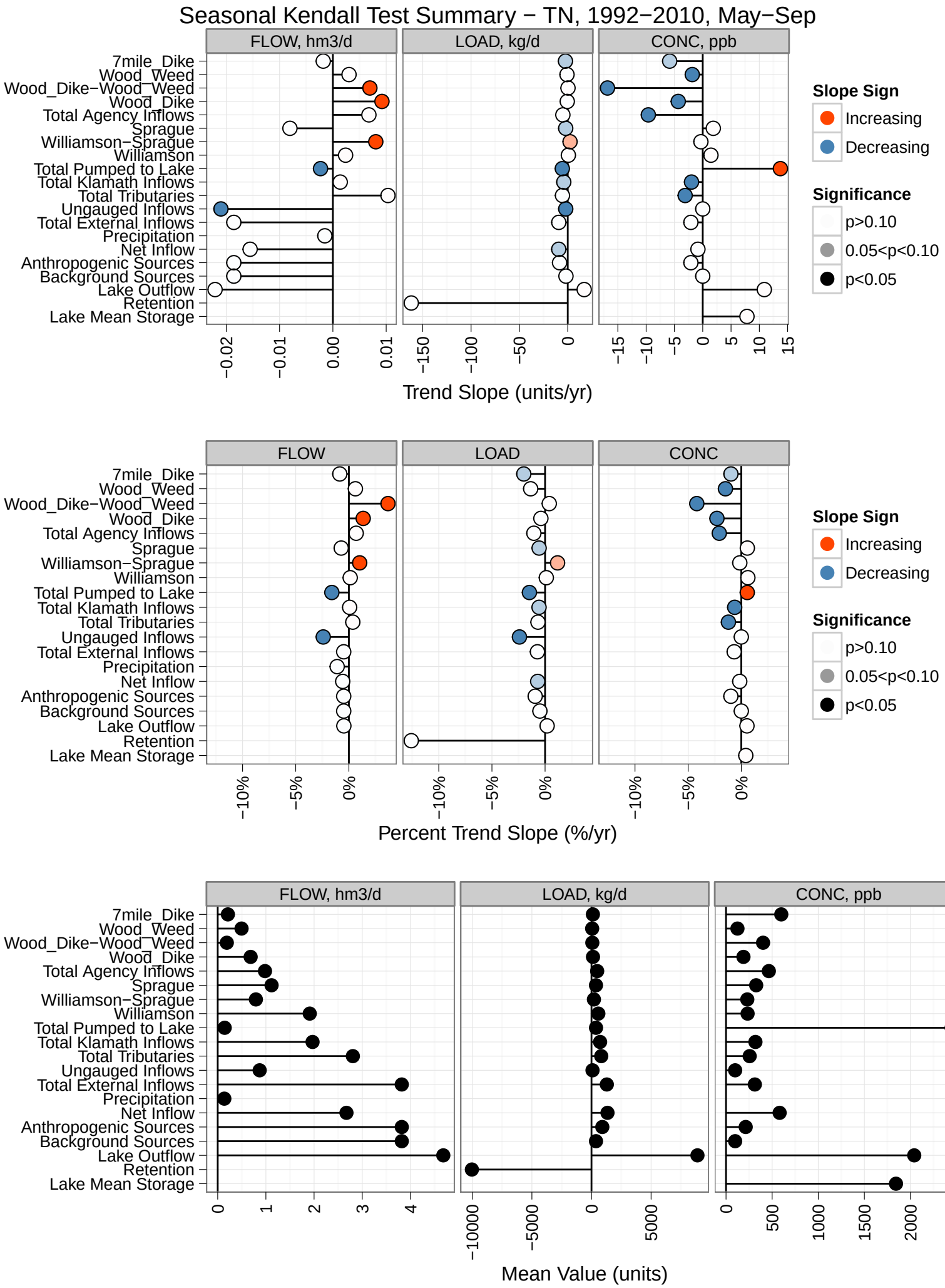

Seasonal Kendall Test Summary − TN, 1992−2010, May−Sep
FLOW, hm3/d
LOAD, kg/d
CONC, ppb
7mile_Dike
Wood_Weed
Wood_Dike−Wood_Weed
Wood_Dike
Total Agency Inflows
Sprague
Williamson−Sprague
Williamson
Total Pumped to Lake
Total Klamath Inflows
Total Tributaries
Ungauged Inflows
Total External Inflows
Precipitation
Net Inflow
Anthropogenic Sources
Background Sources
Lake Outflow
Retention
Lake Mean Storage
−0.02
−0.01
0.00
0.01
−150
−100
−50
0
−15
−10
−5
0
5
10
15
Trend Slope (units/yr)
Slope Sign
Increasing
Decreasing
Significance
p>0.10
0.05<p<0.10
p<0.05
FLOW
LOAD
CONC
−10%
−5%
0%
Percent Trend Slope (%/yr)
0
1
2
3
4
−10000
−5000
0
5000
0
500
1000
1500
2000
2500
Mean Value (units)

Figure G2: Seasonal Kendall Trend Tests by Term

Description: Monthly and annual time series of flow, nutrient load and concentration for each term and variable (TP and TN), percent trend slope relative to long-term mean value (for retention computed relative to mean total external inflows), and trend slopes in original units (e.g. ppb/yr for concentration)

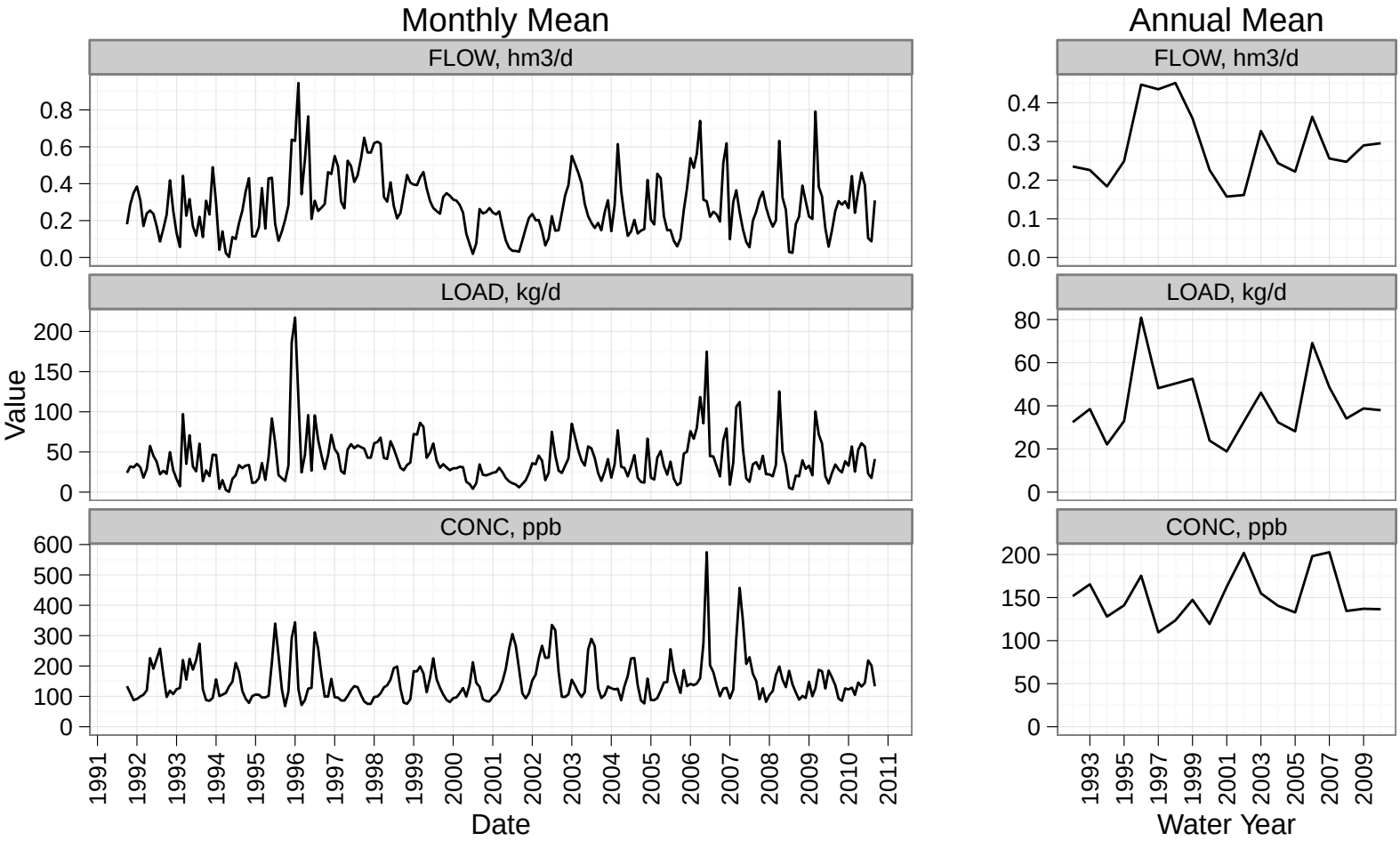
Variables: Flow, Total P, Total N

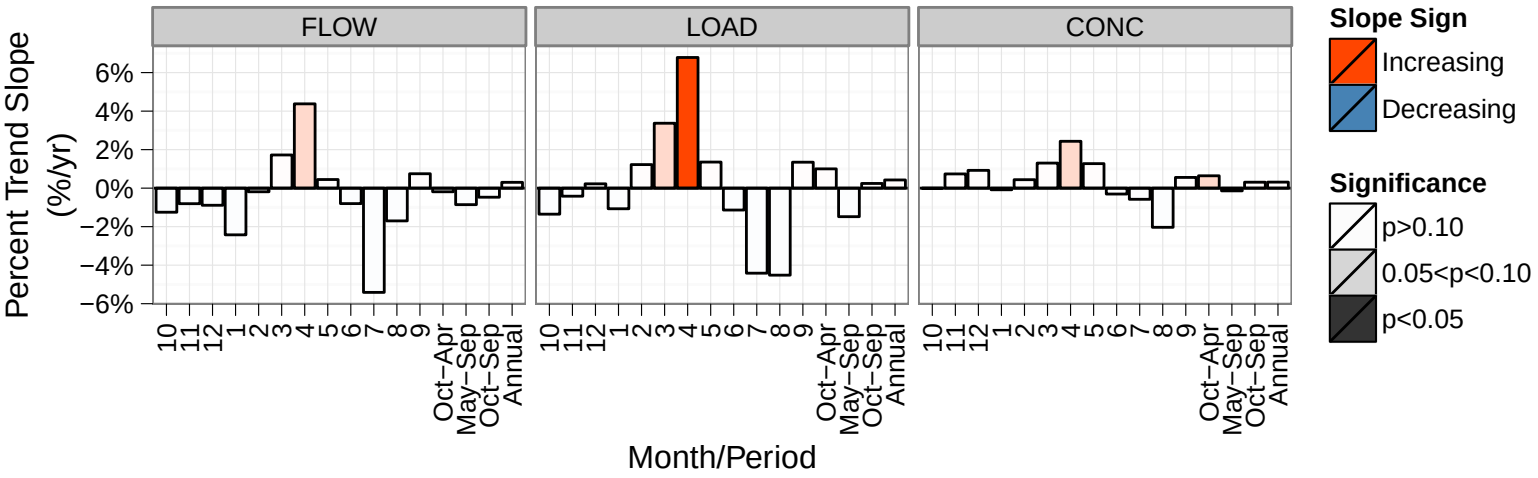
Seasons: October-March (Non-growing Season)
April-September (Growing Season)
October-September (Water Year)
Annual (Trend in Annual Mean Flow, Load and FWM Concentration)

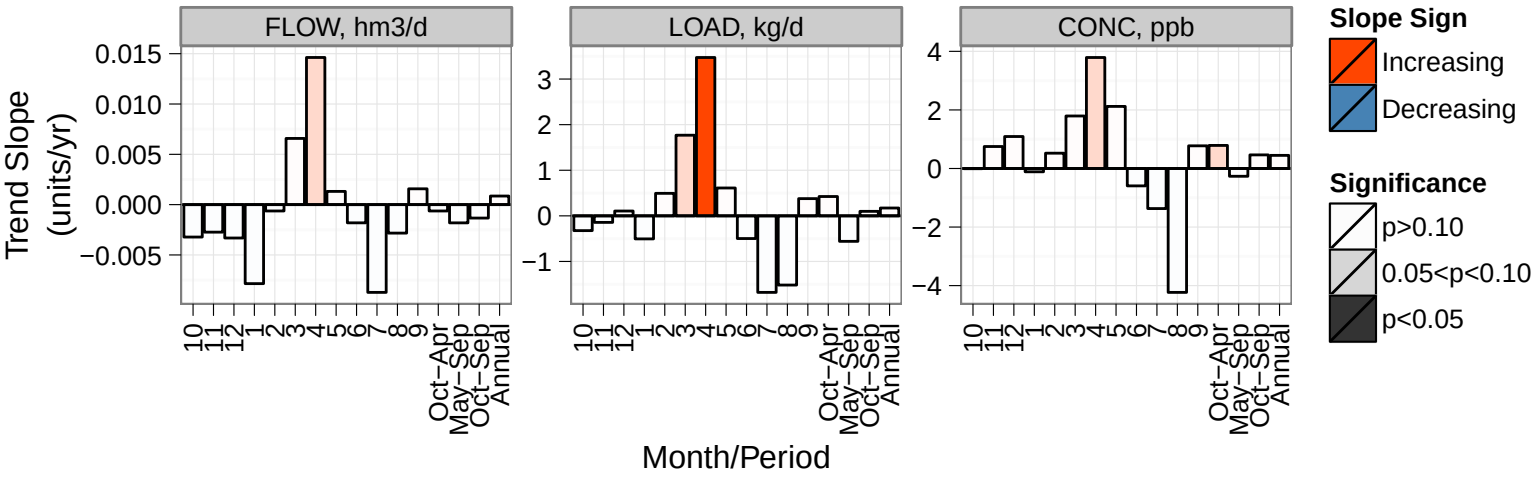
Note: Trends shown in these plots computed over entire period of record (1992-2010)
Trends for "Annual" denotes Mann-Kendall Test applied to annual mean flow, load, and FWM concentration

Total Pages: 40

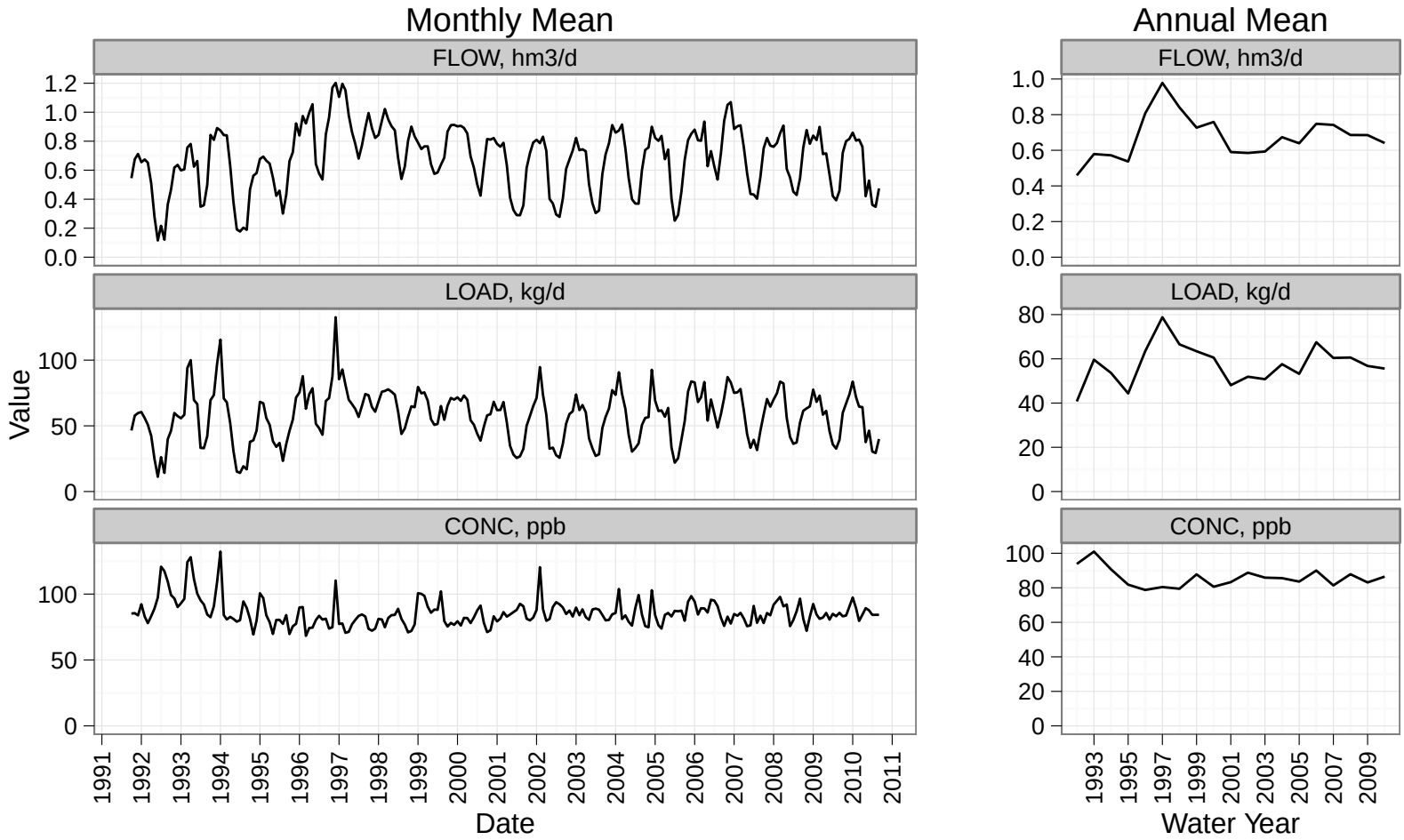
Trend Tests: 7mile_Dike, TP

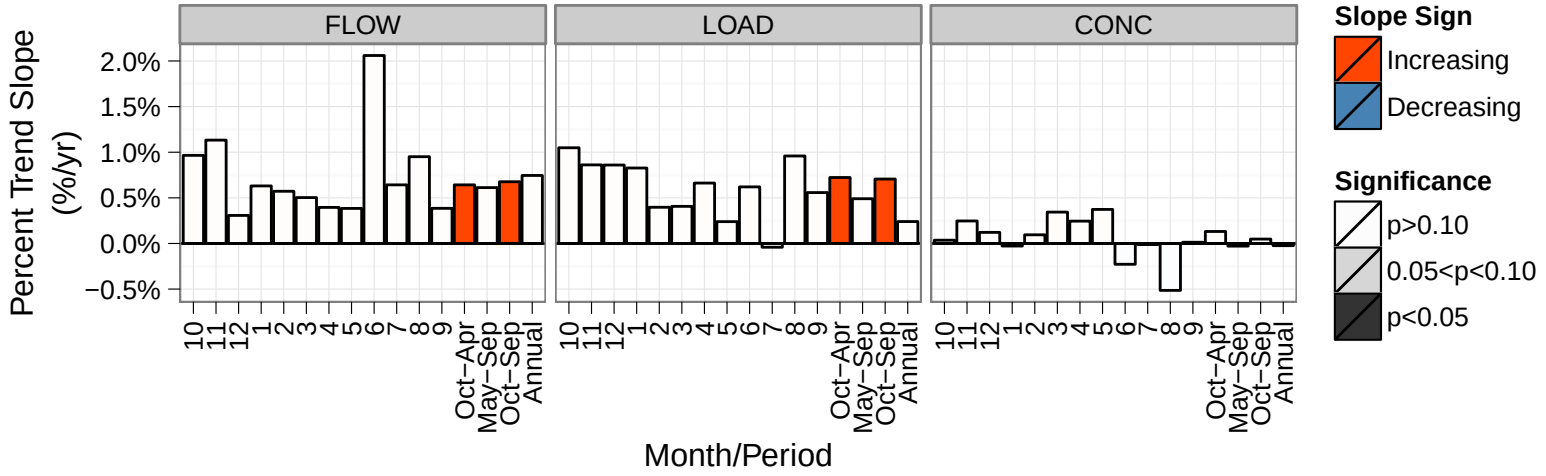


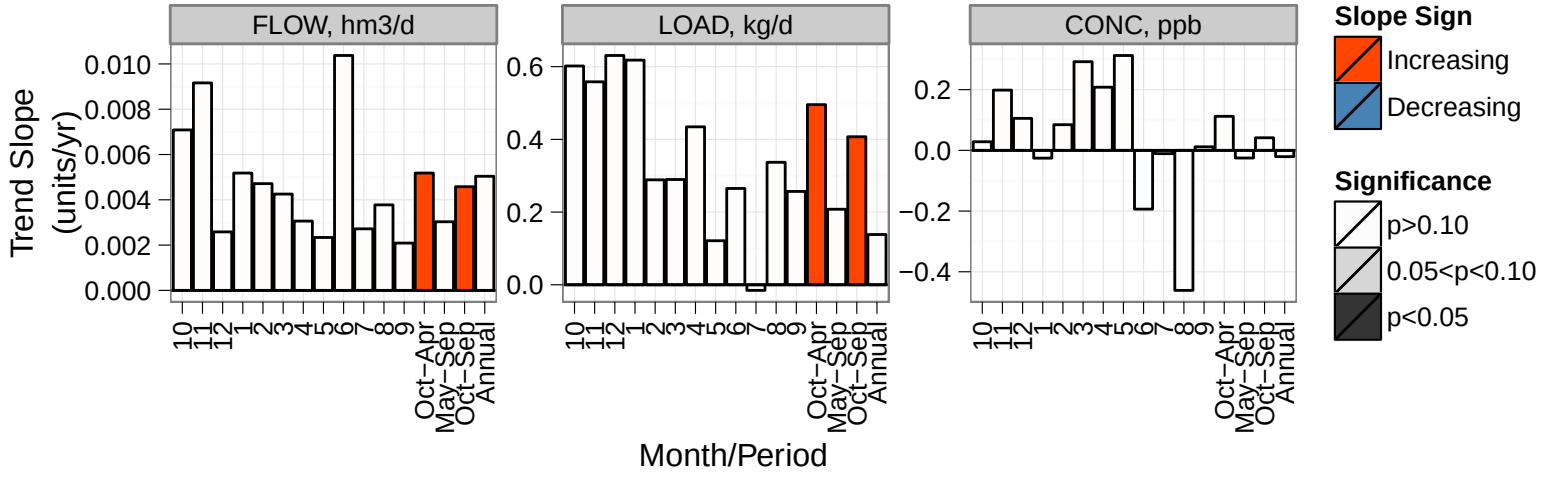




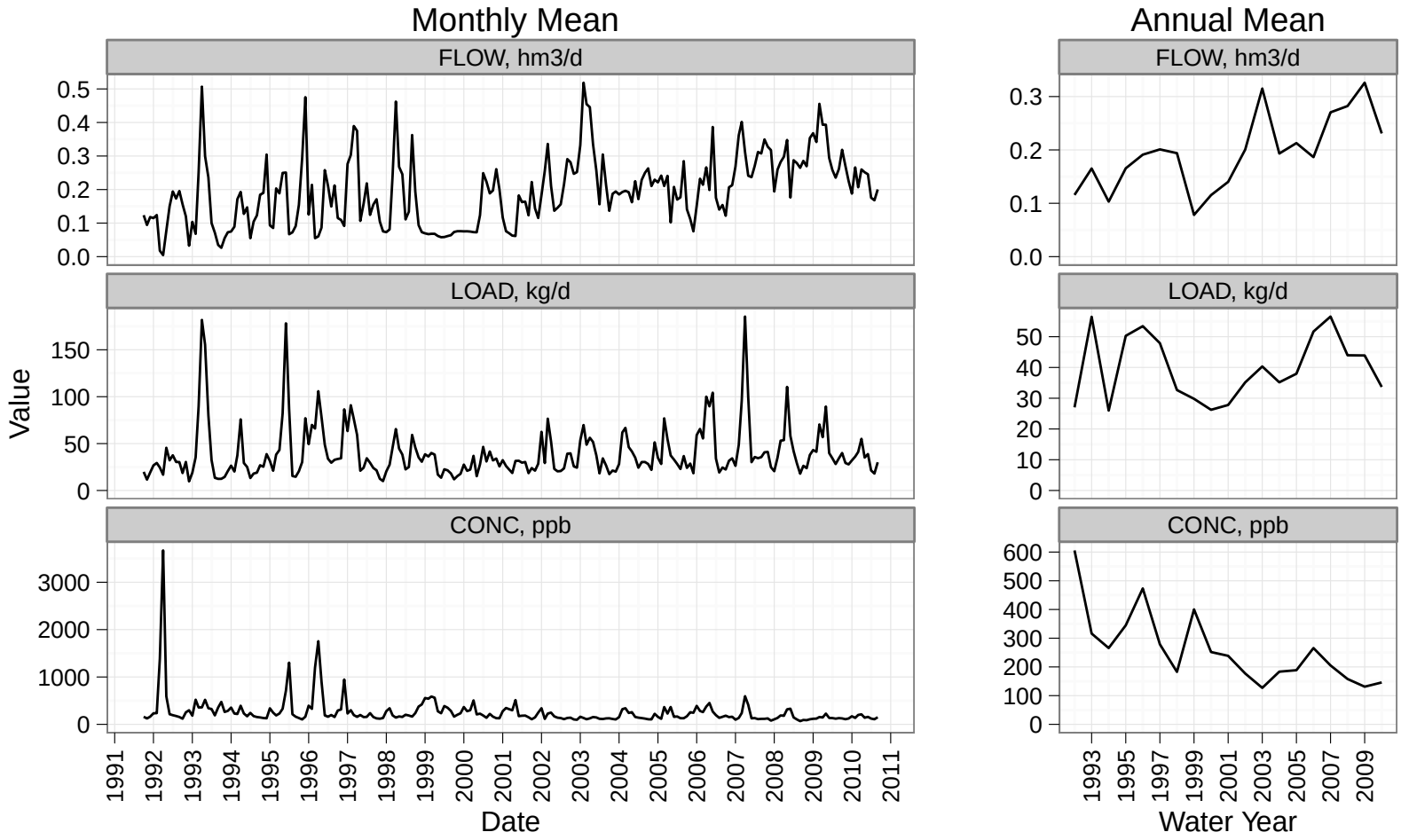
Trend Tests: Wood_Weed, TP

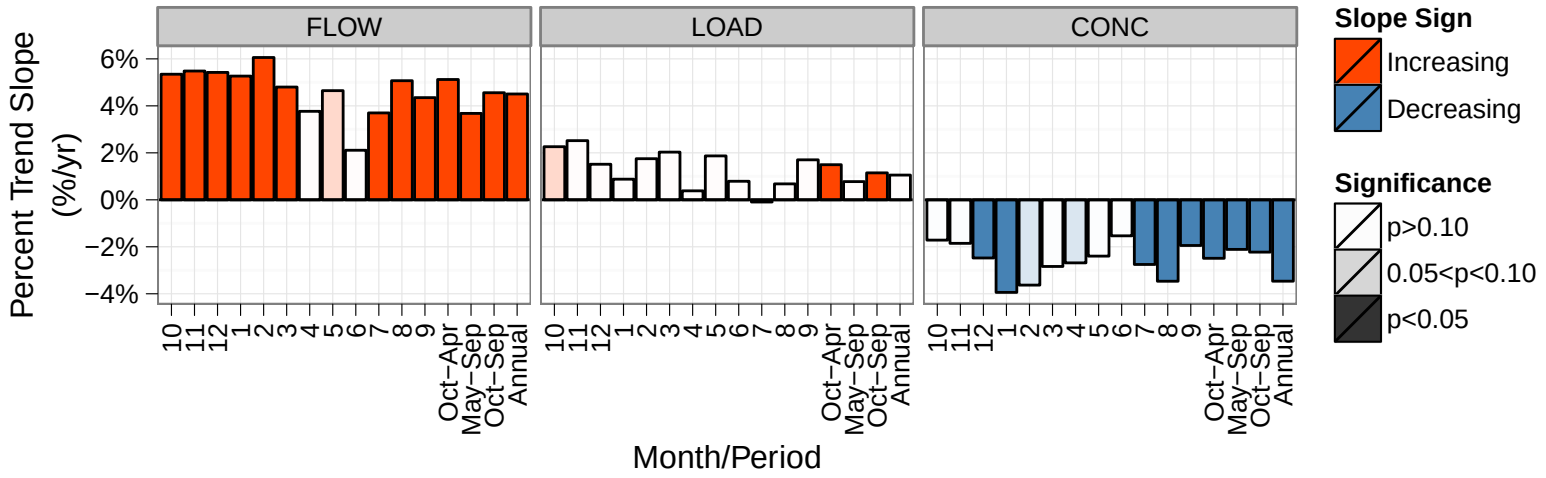


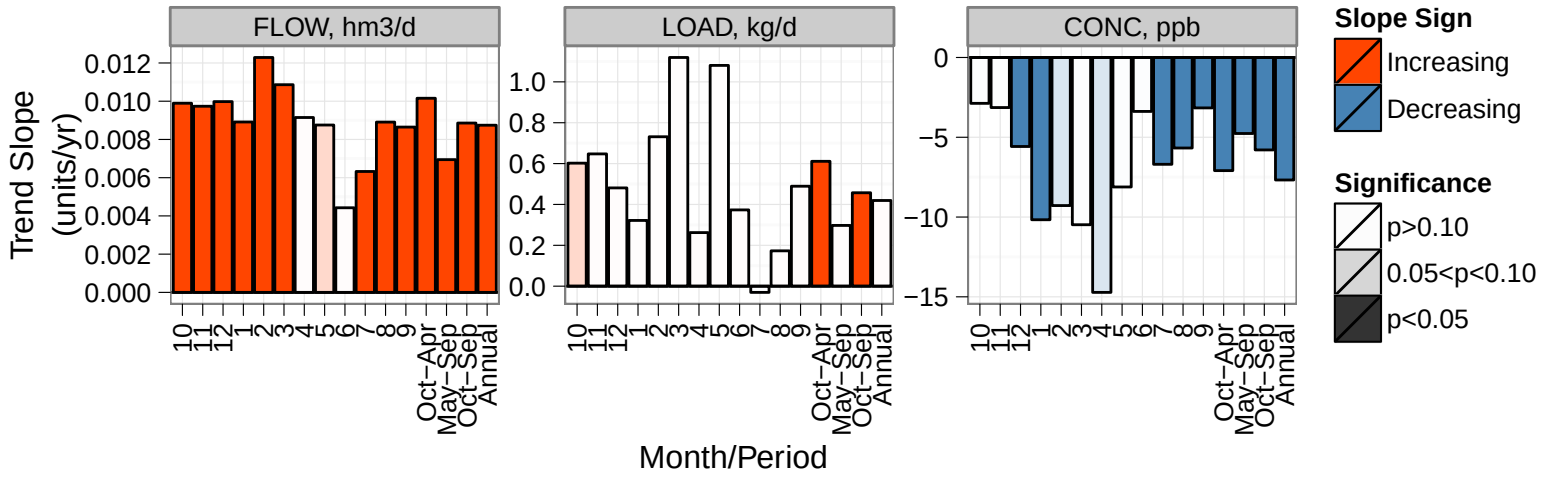




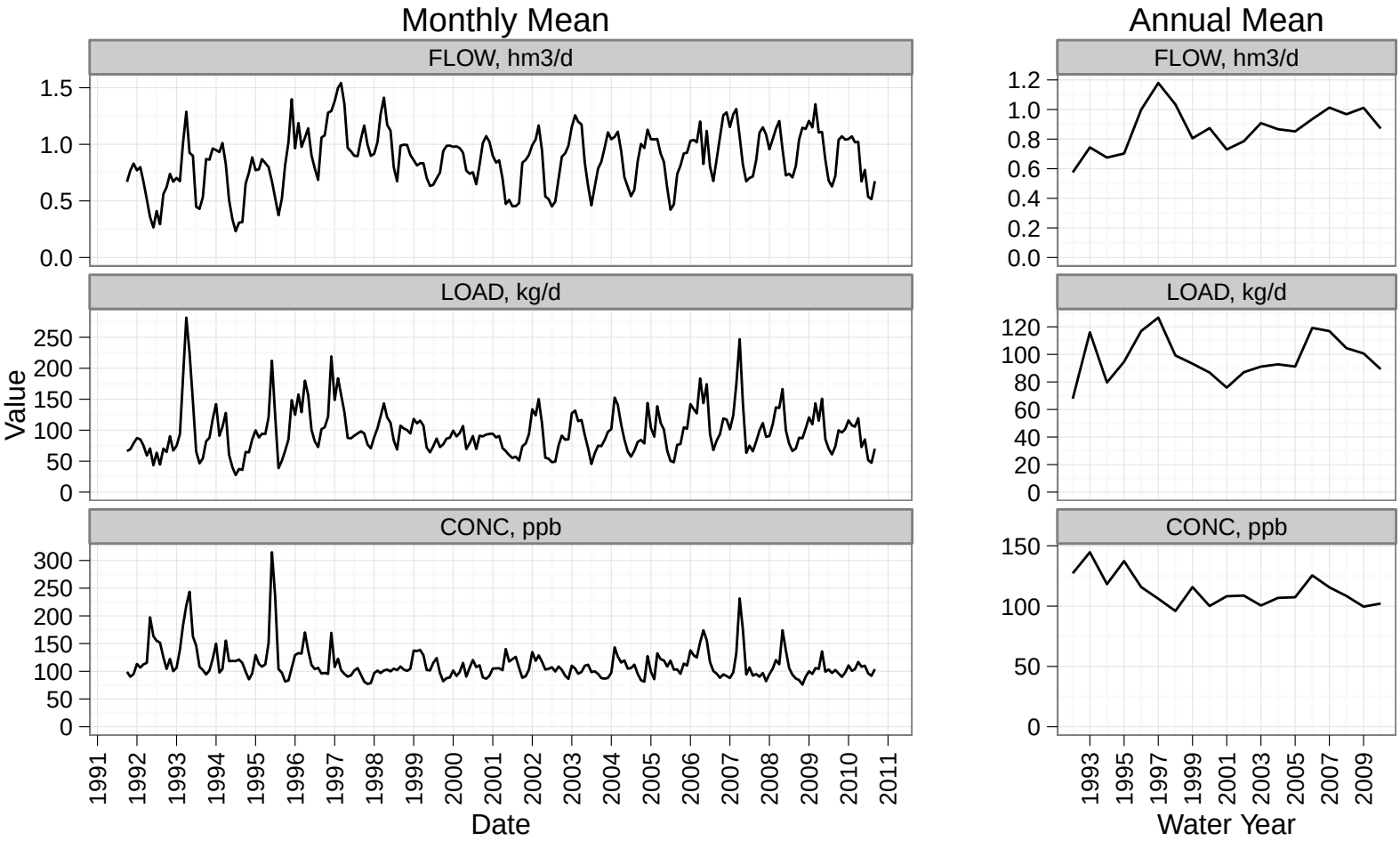
Trend Tests: Wood_Dike−Wood_Weed, TP

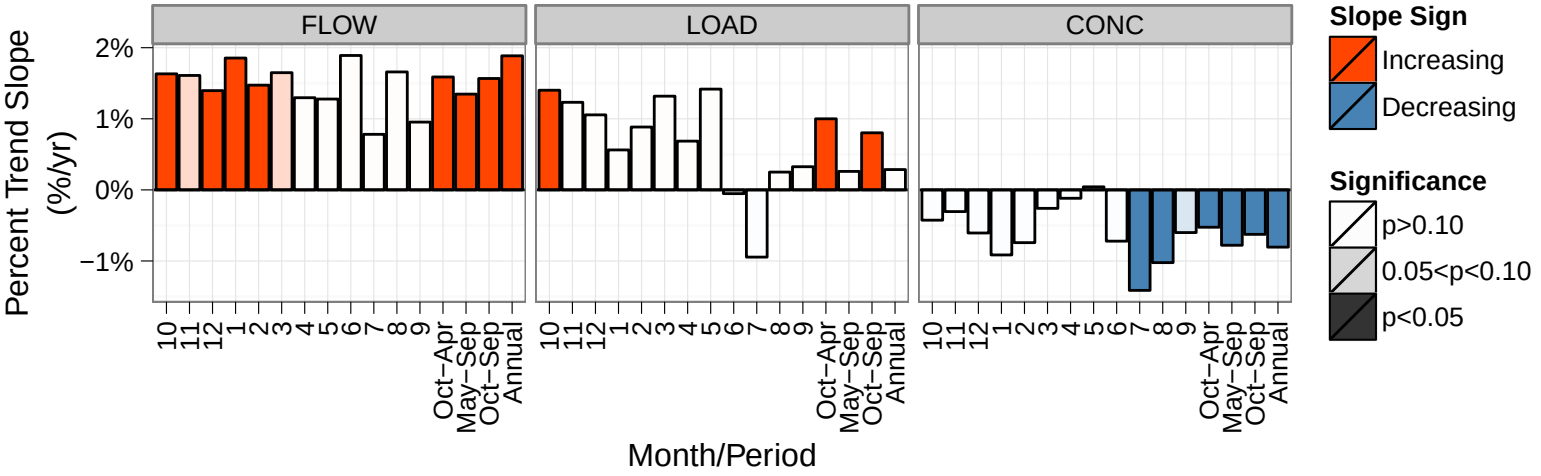


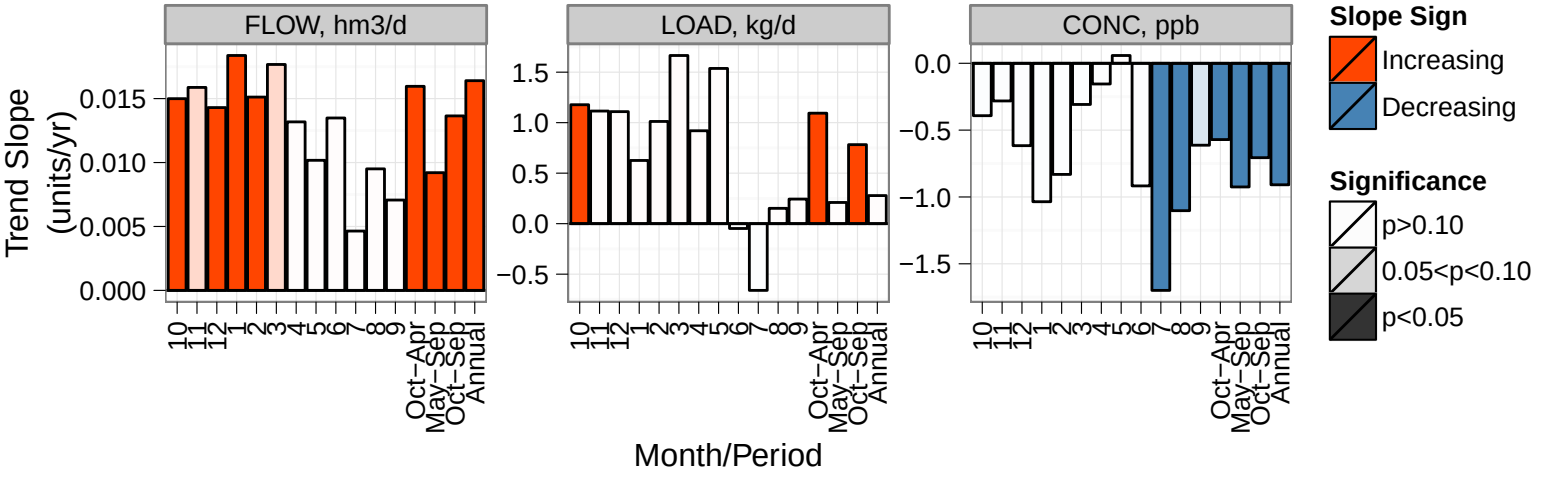




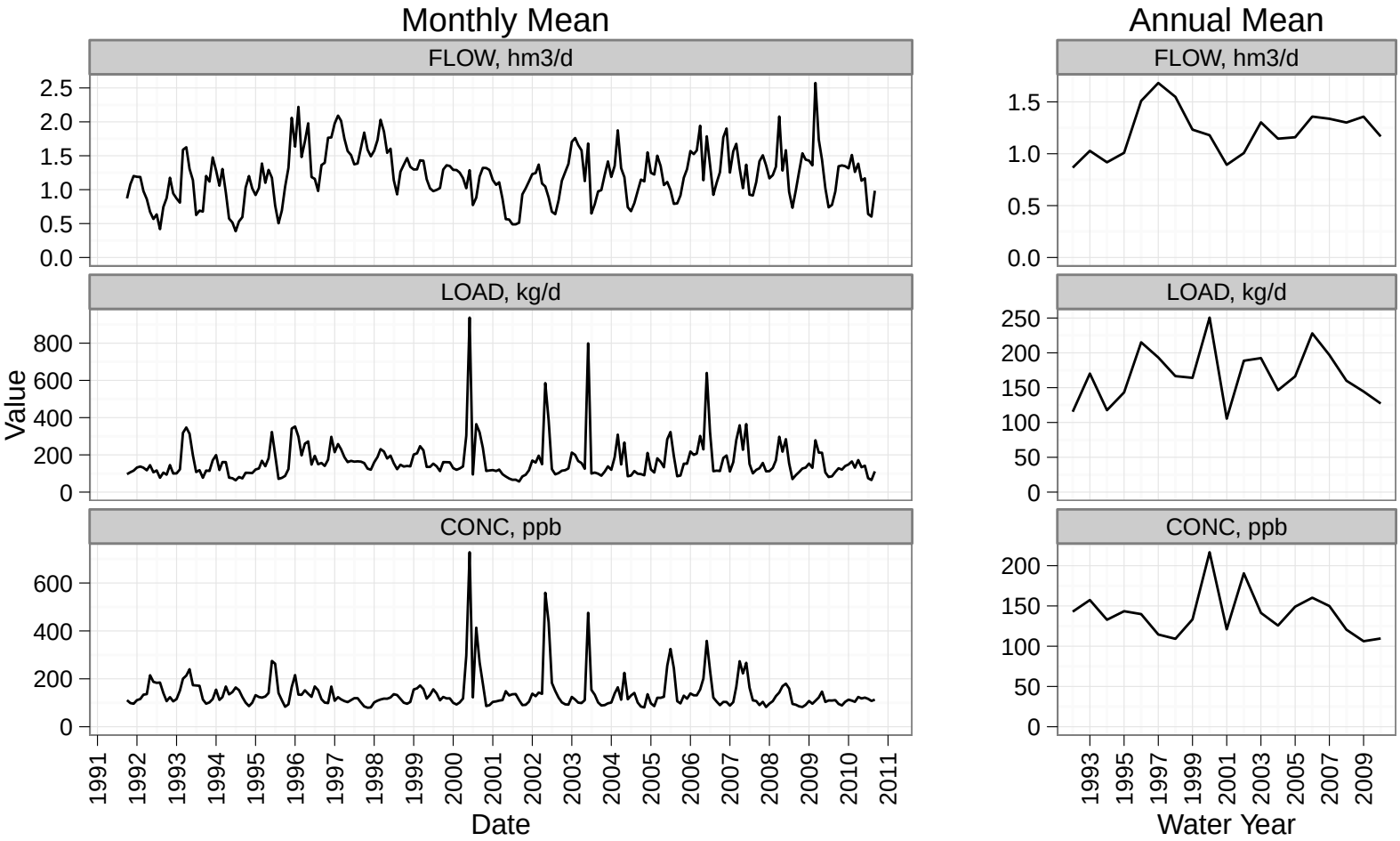
Trend Tests: Wood_Dike, TP

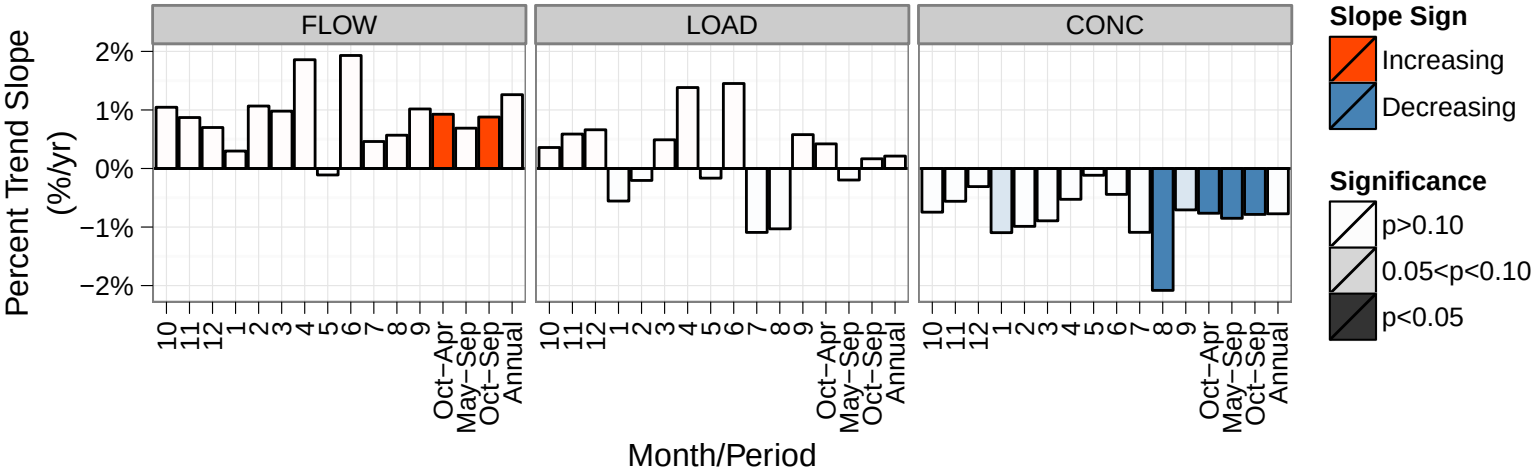


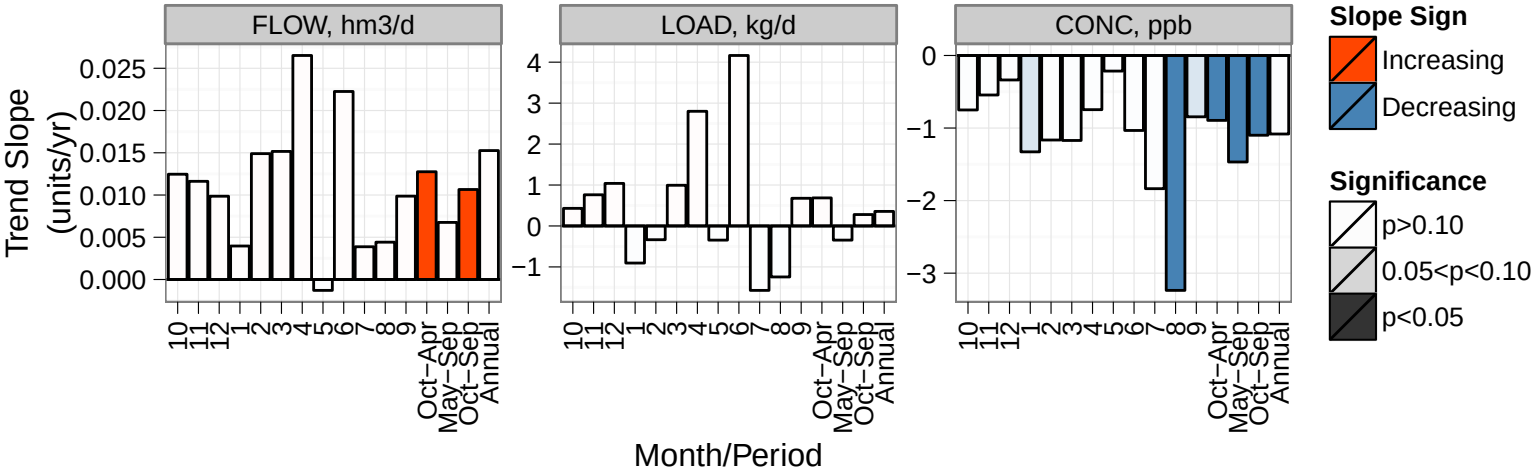




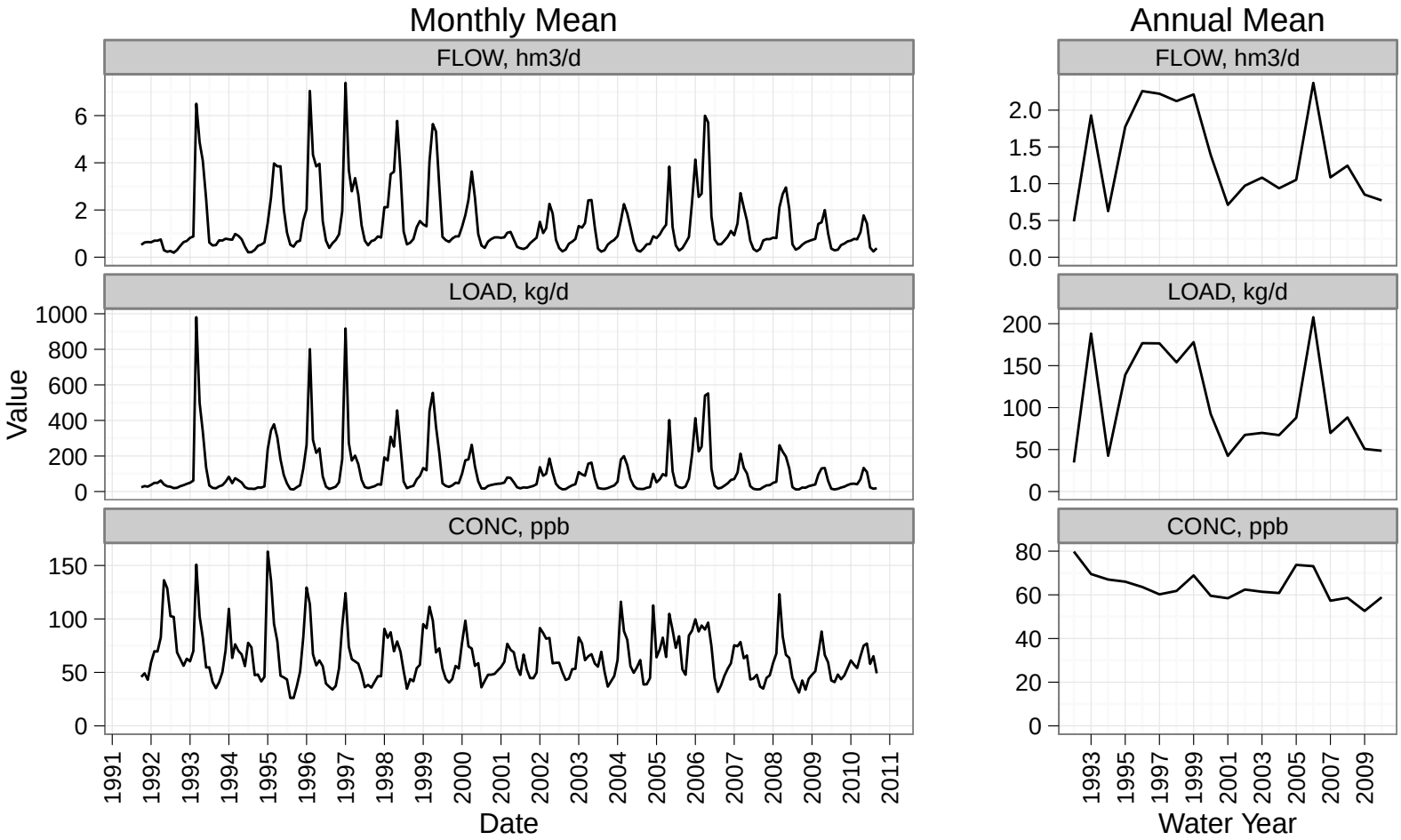
Trend Tests: Total Agency Inflows, TP

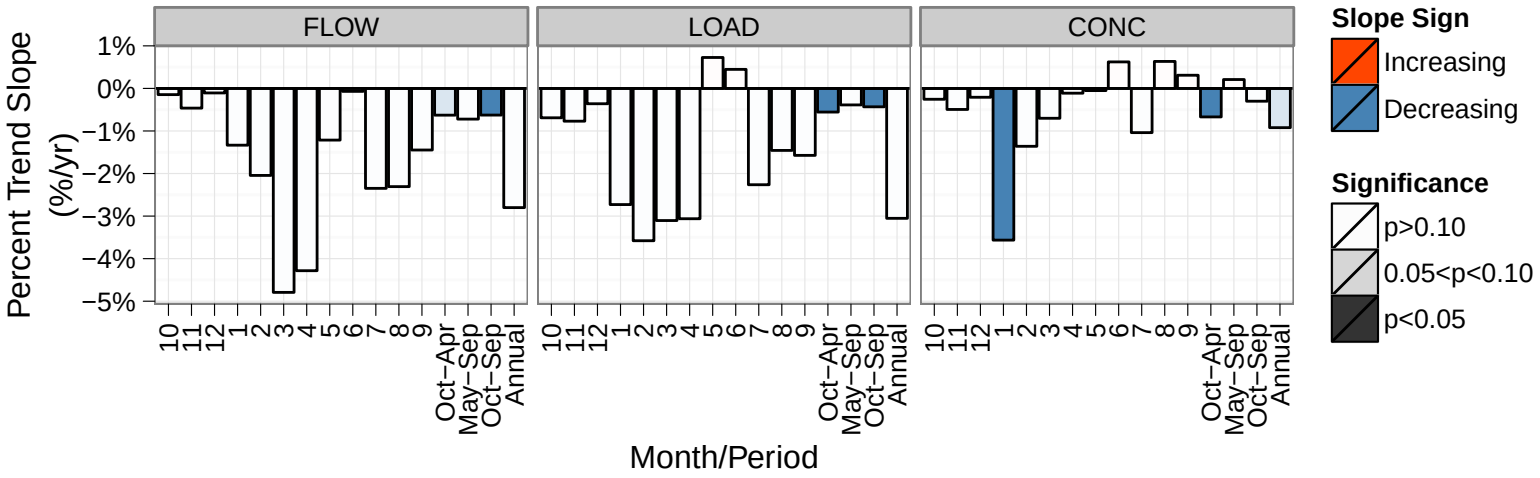


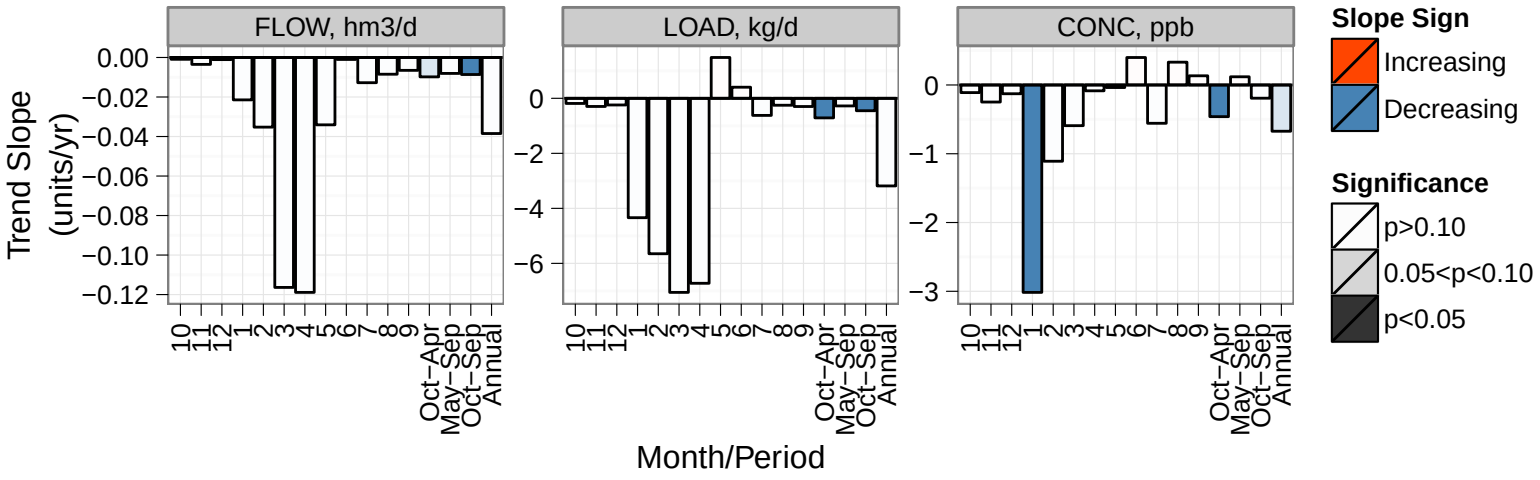




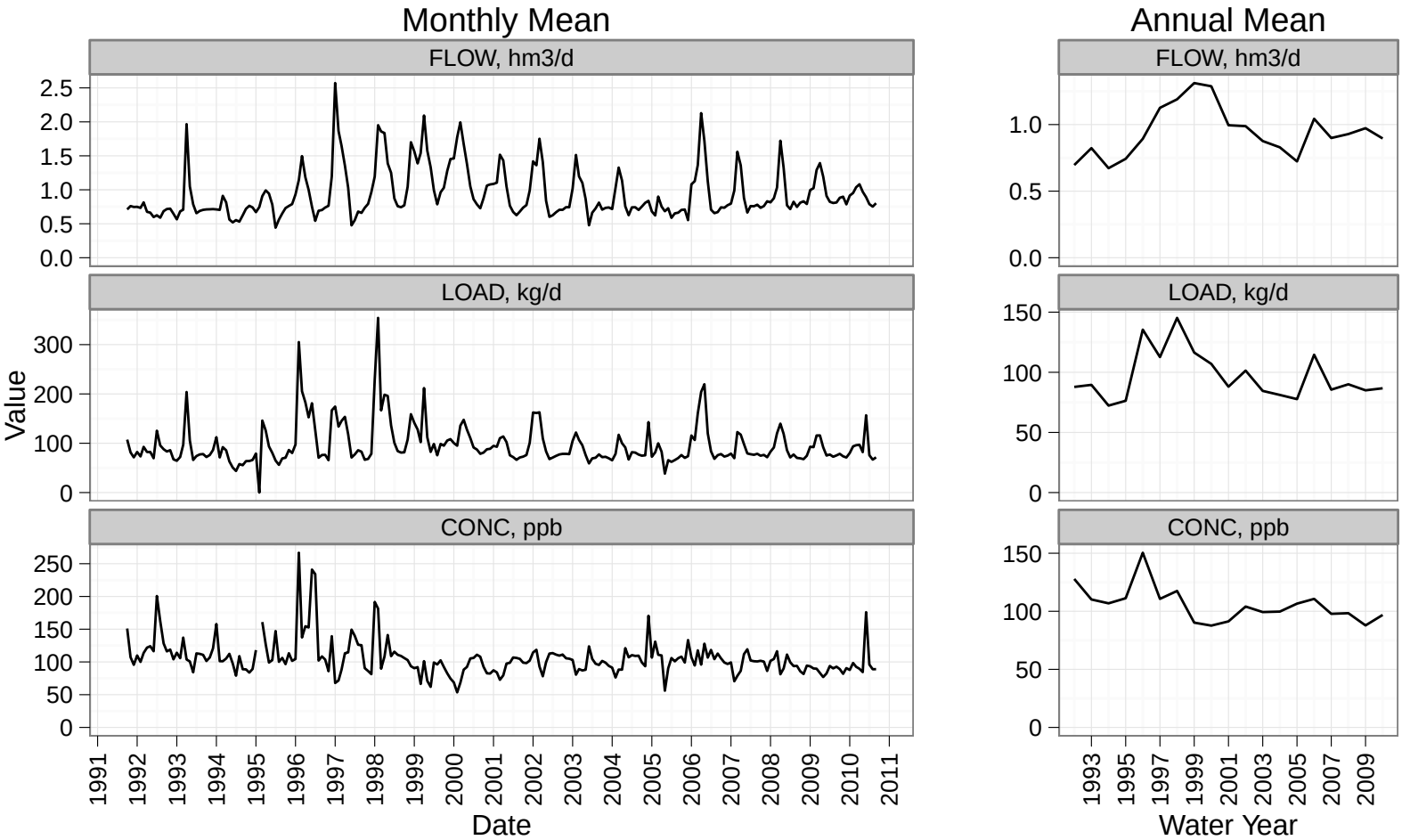
Trend Tests: Sprague, TP

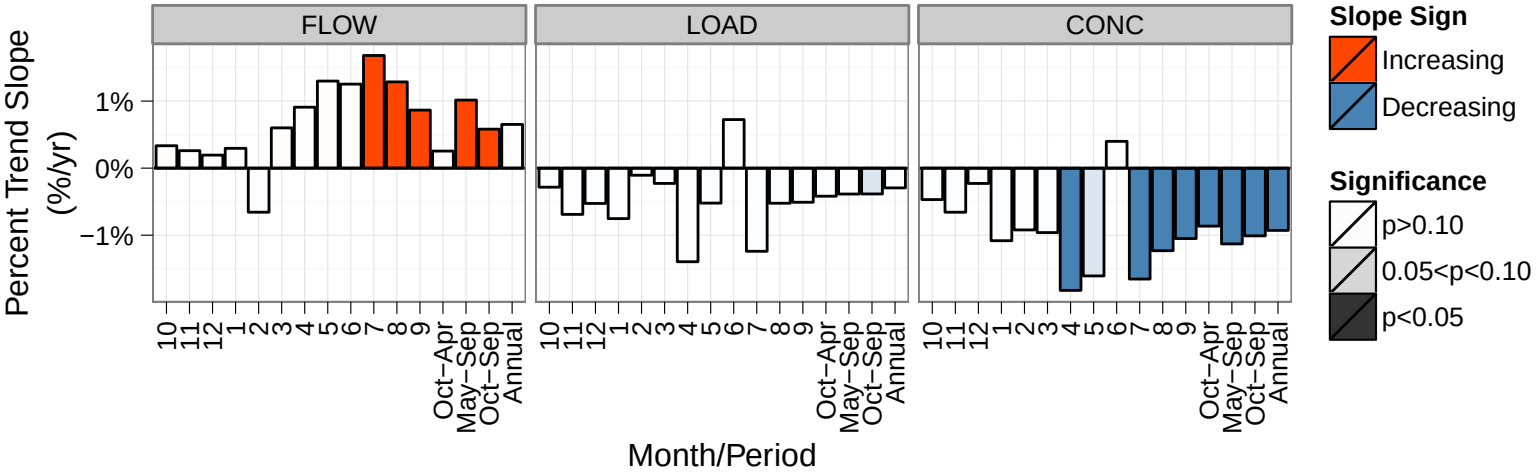


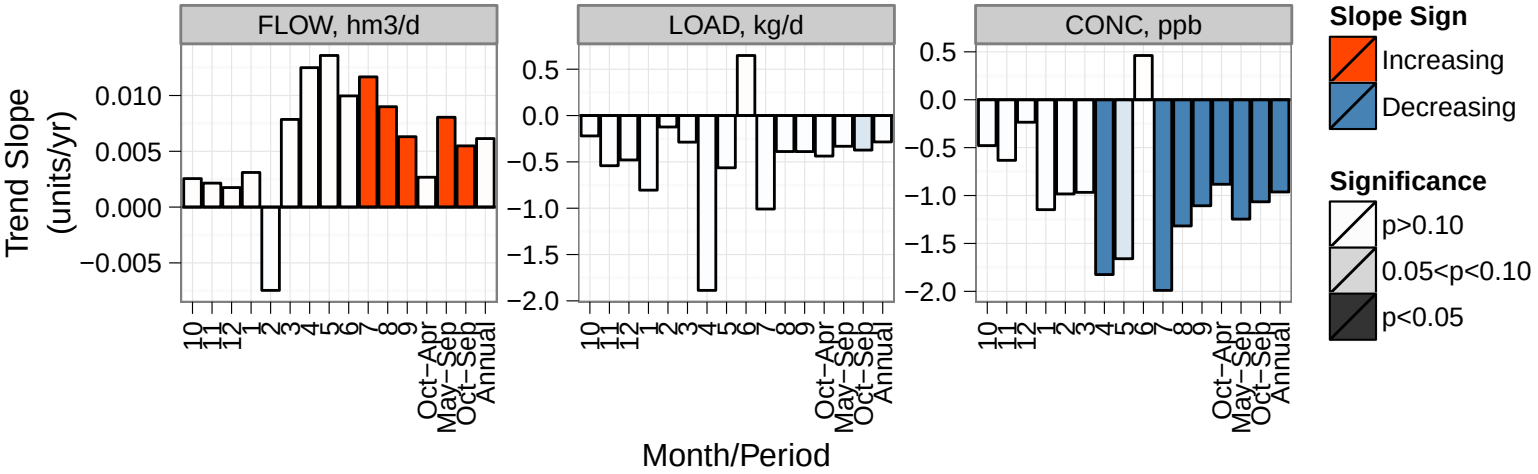




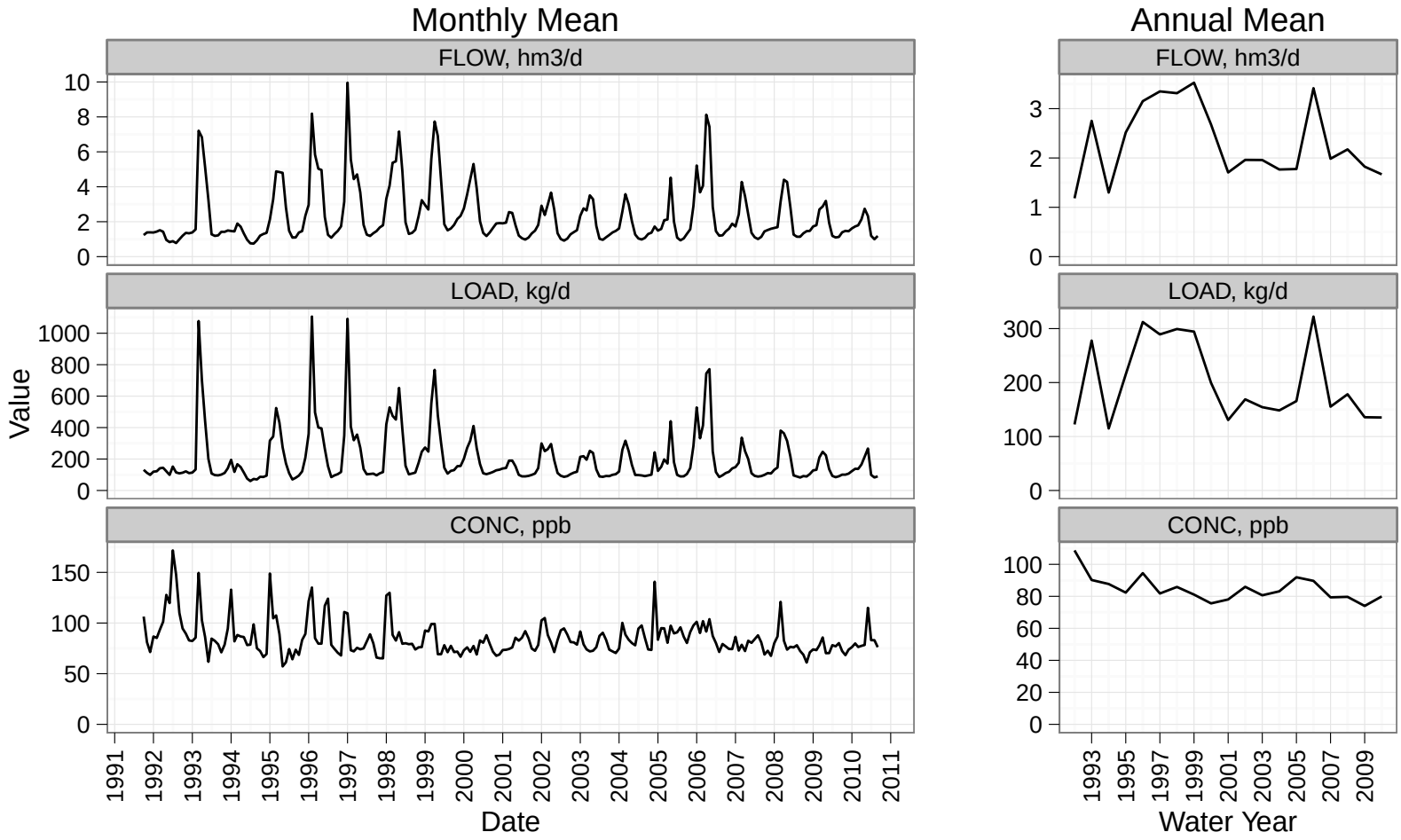
Trend Tests: Williamson−Sprague, TP

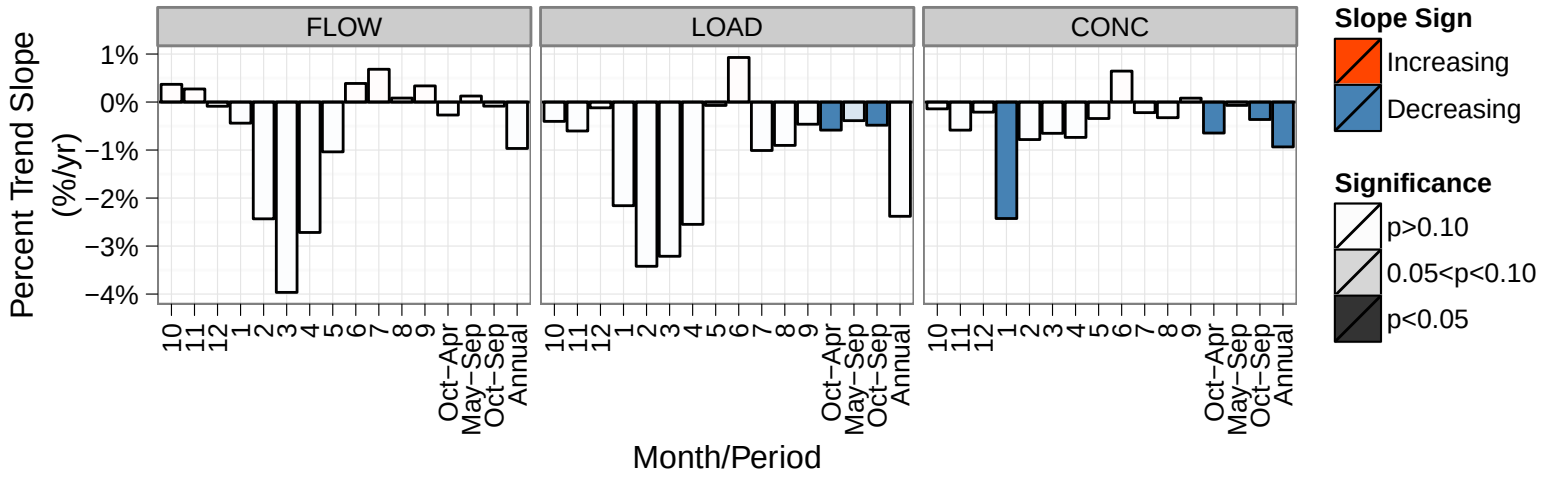


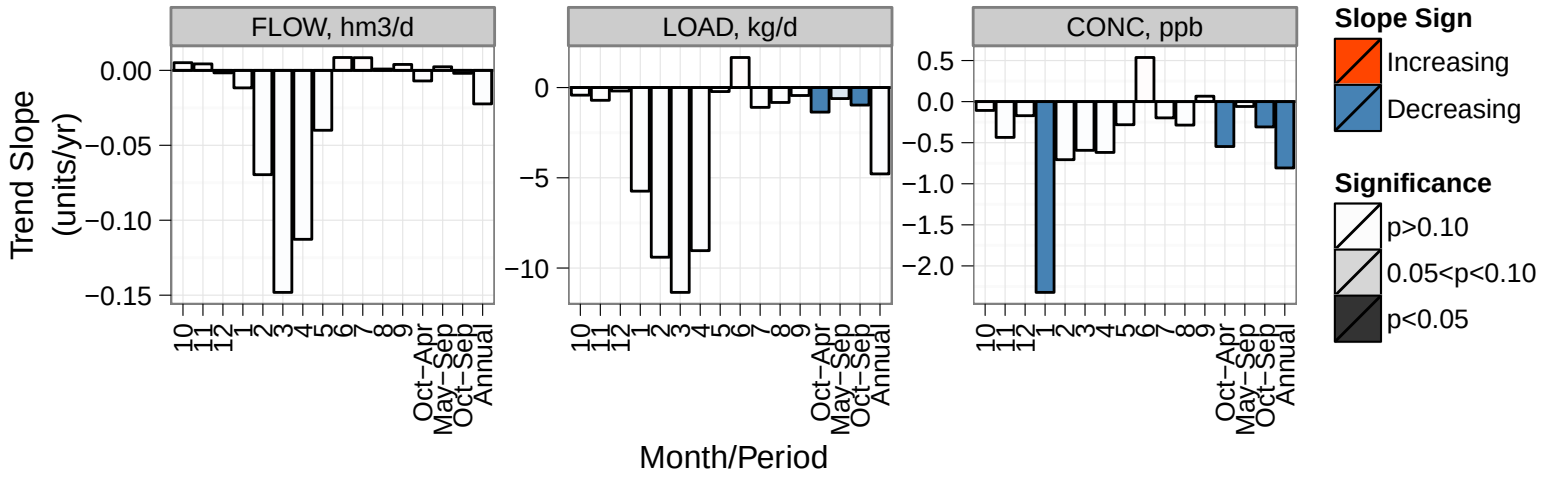




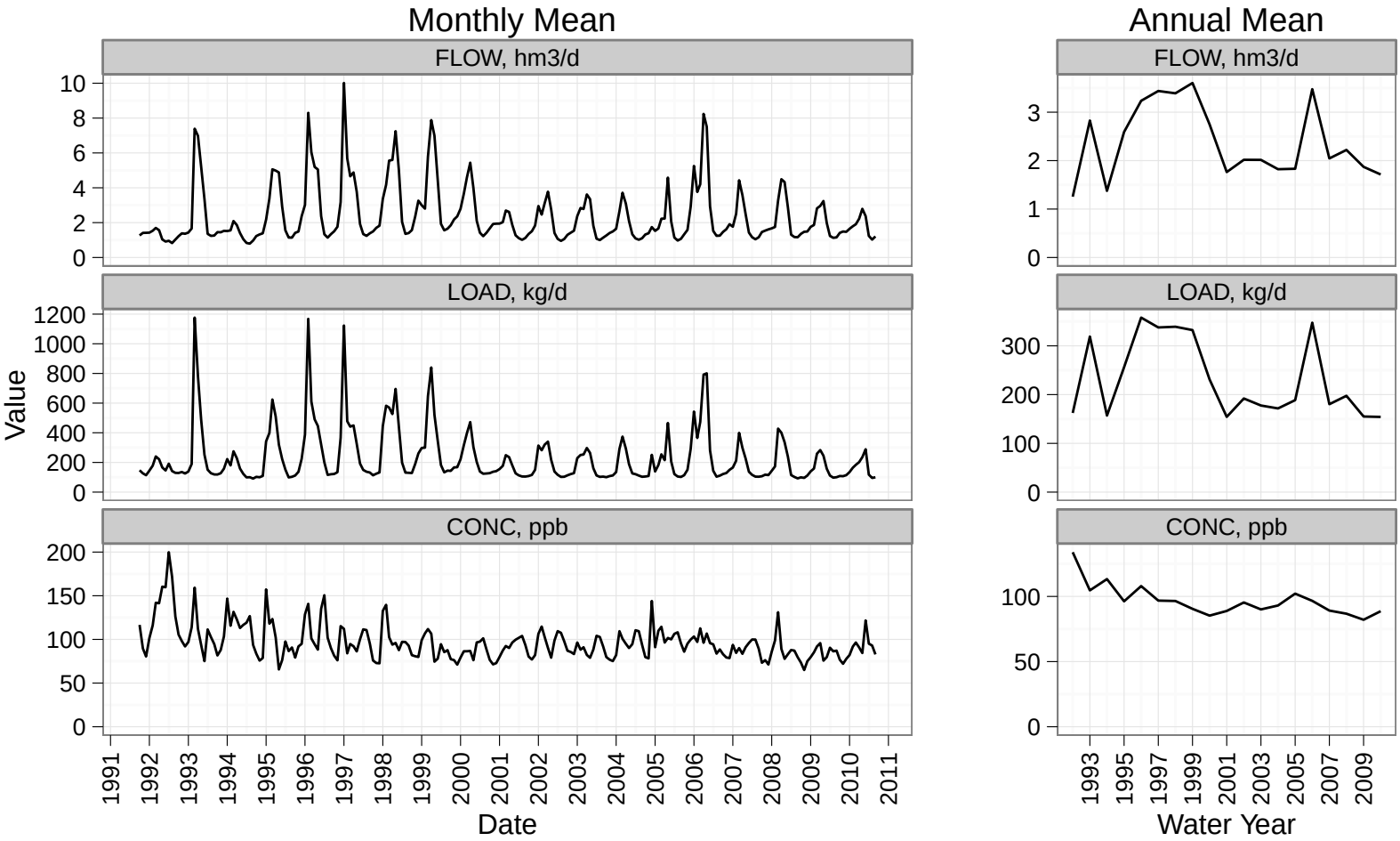
Trend Tests: Williamson, TP

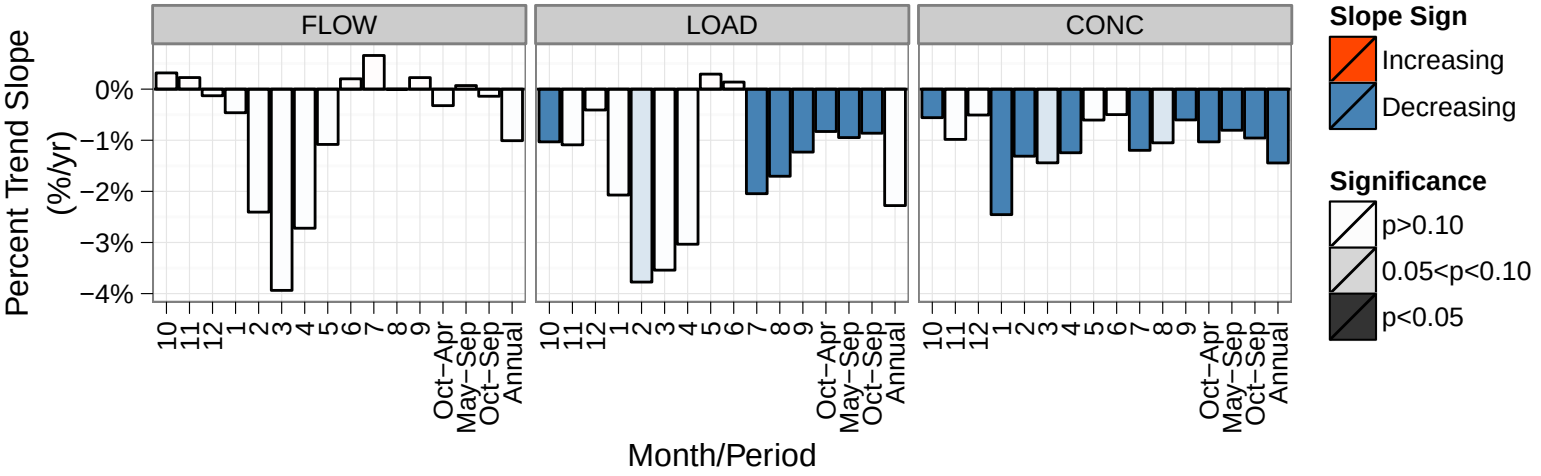


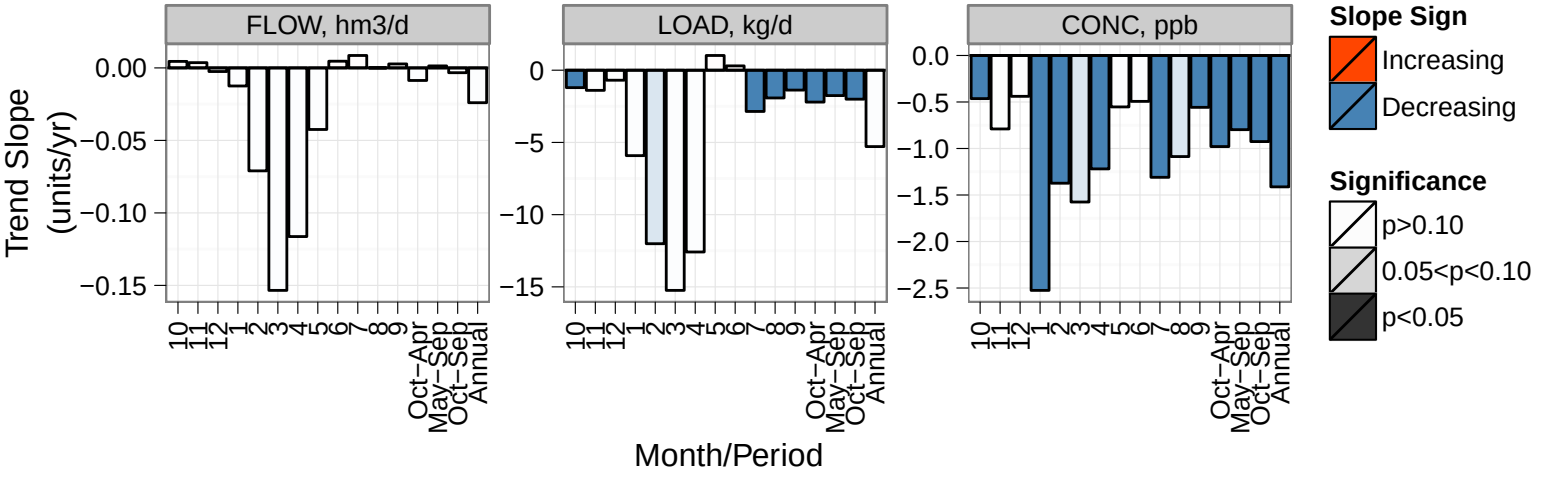




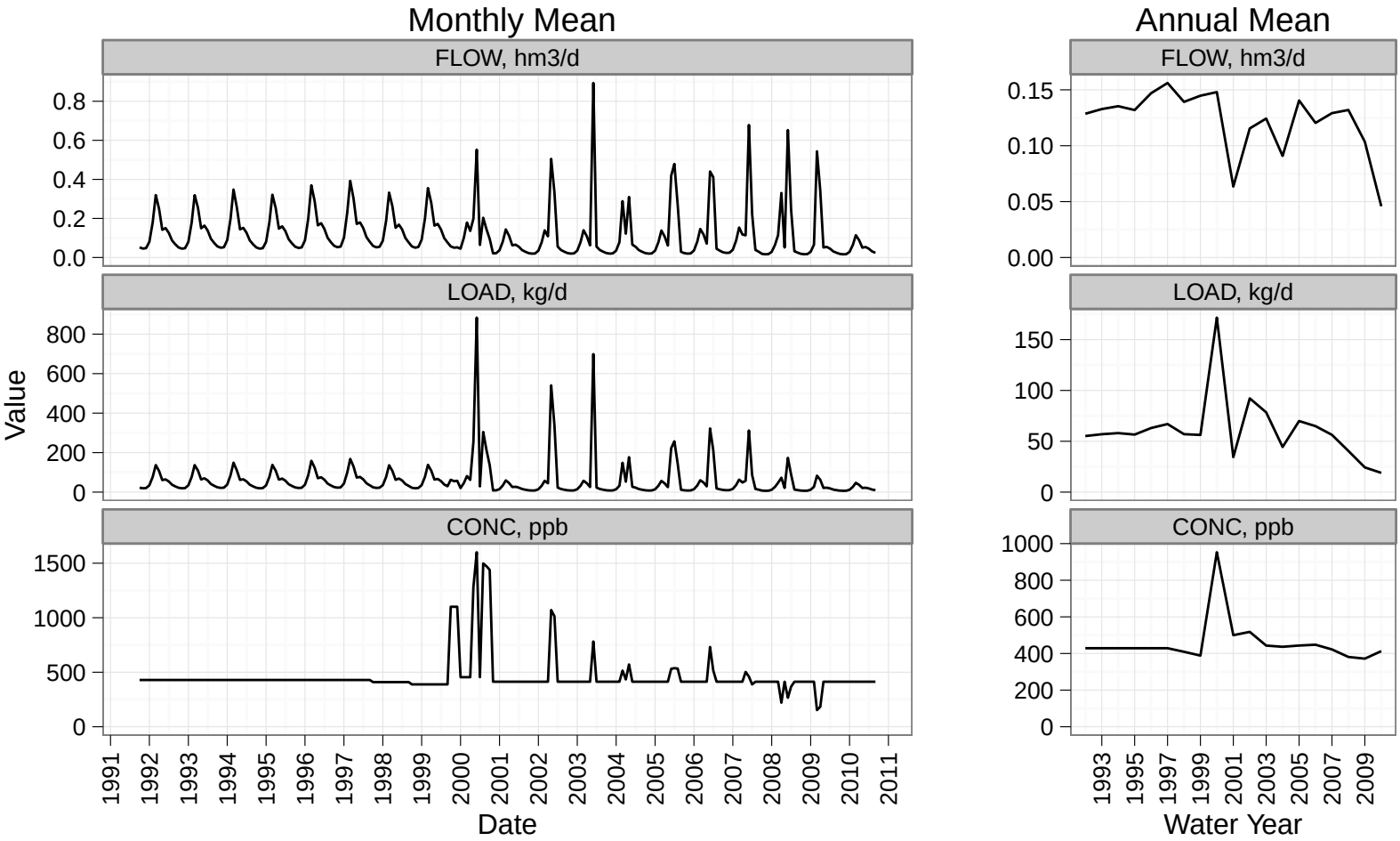
Trend Tests: Total Klamath Inflows, TP

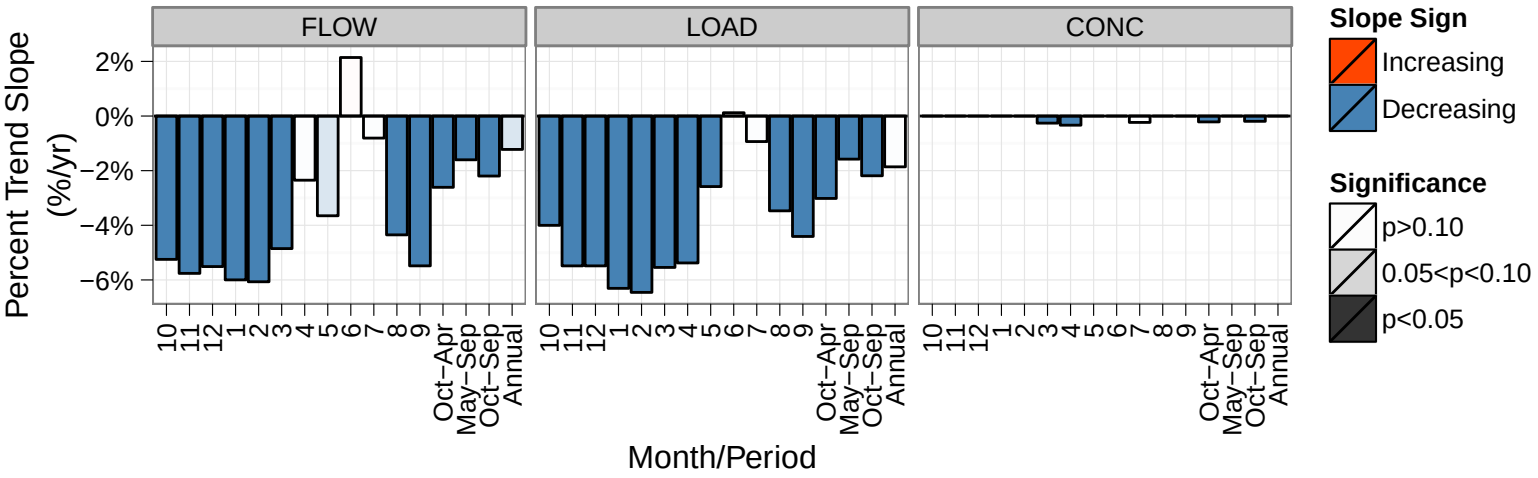


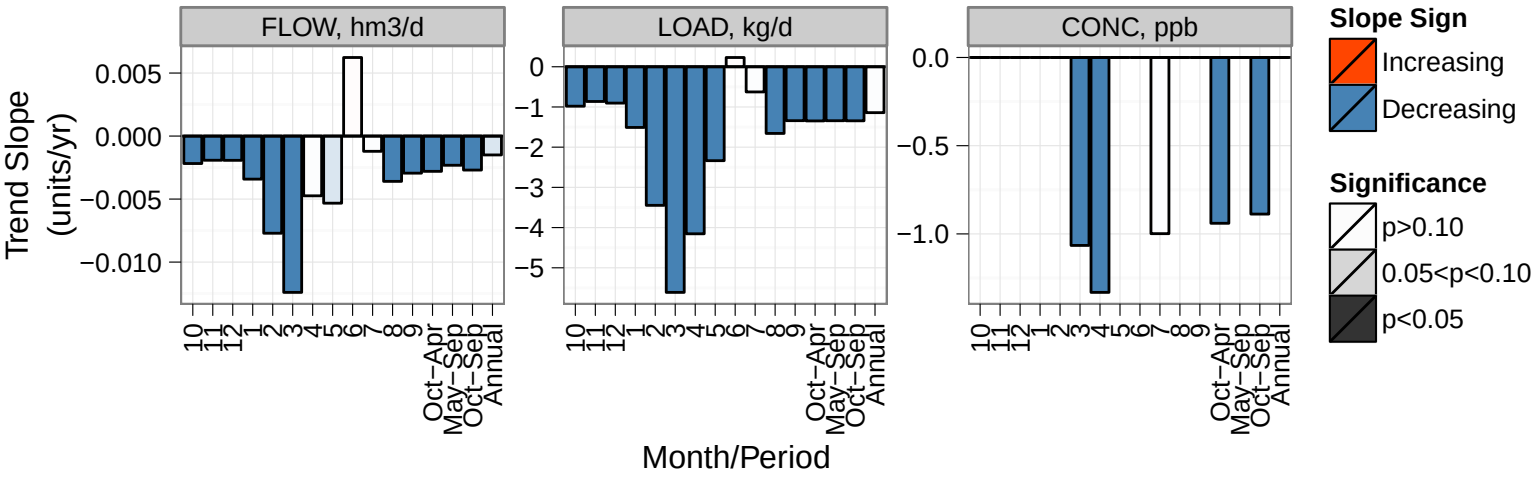




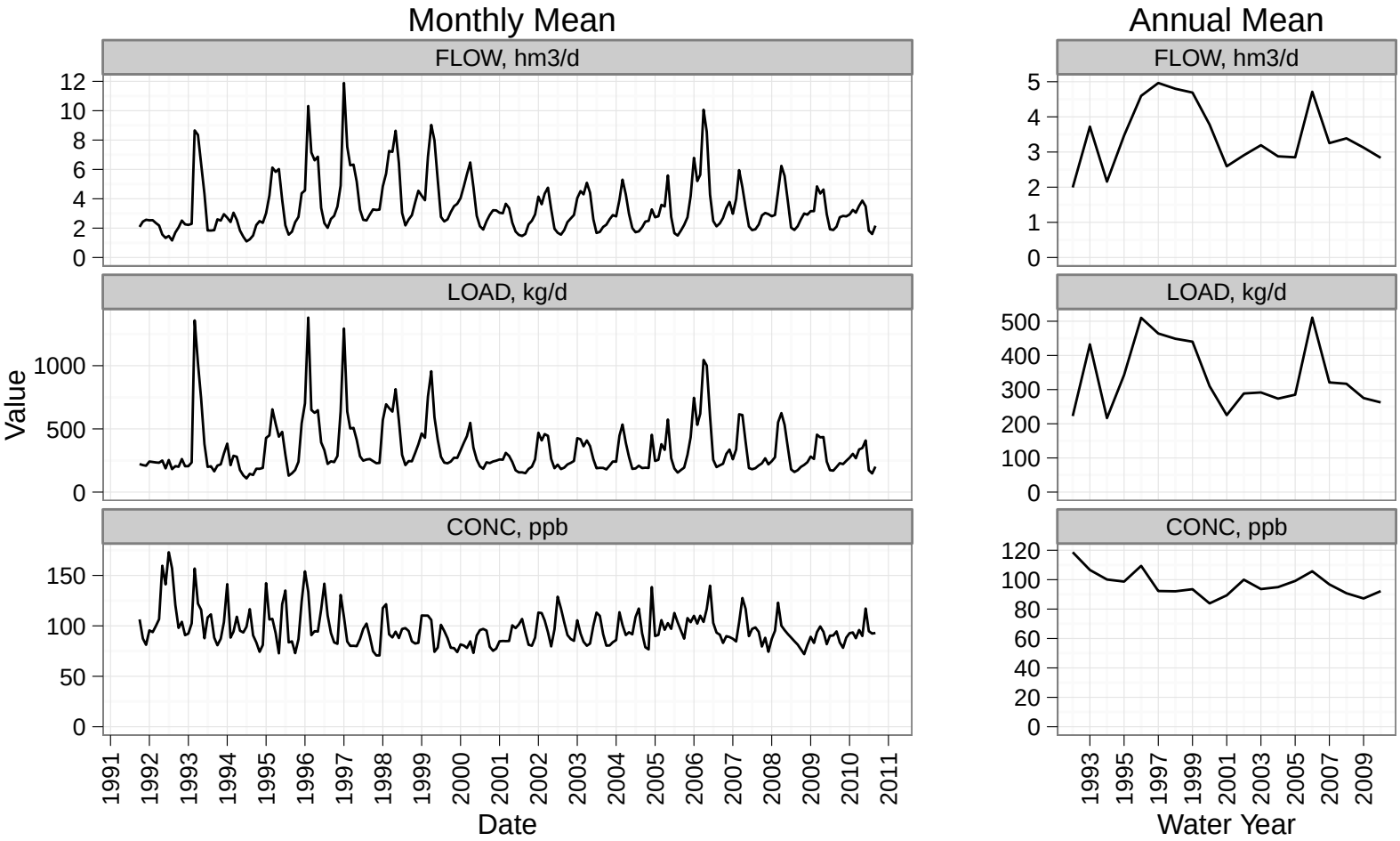
Trend Tests: Total Pumped to Lake, TP

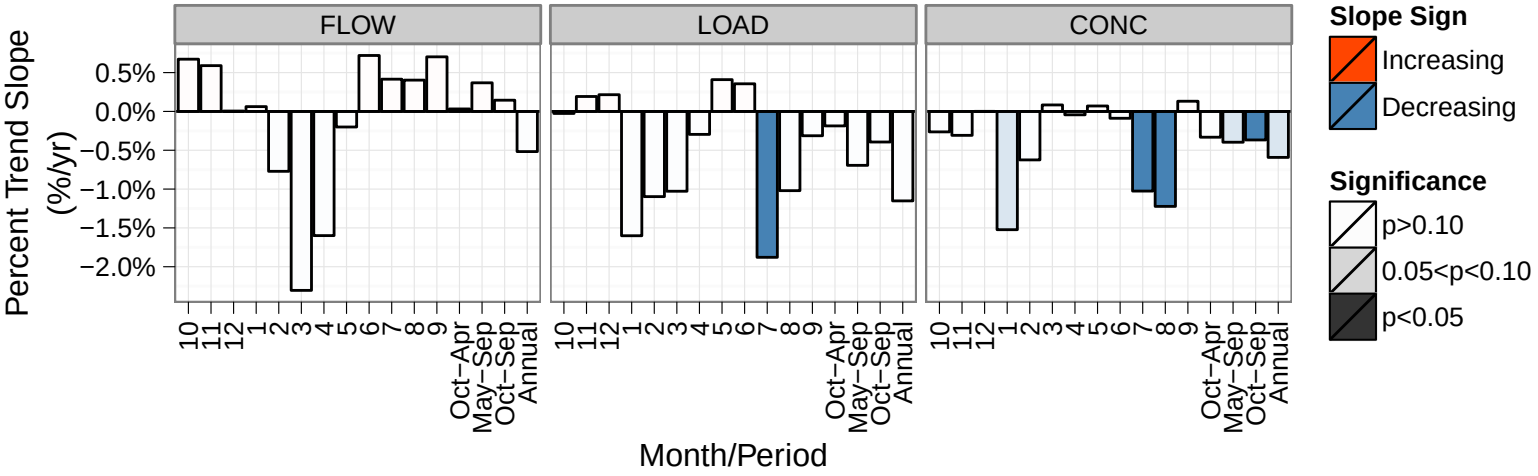


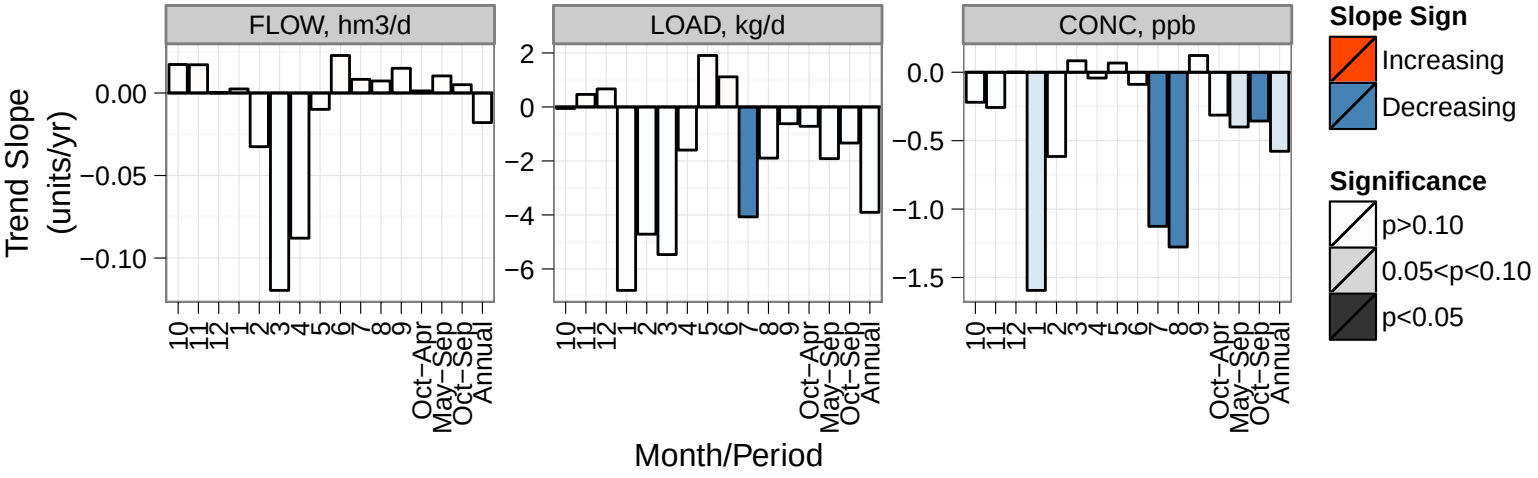




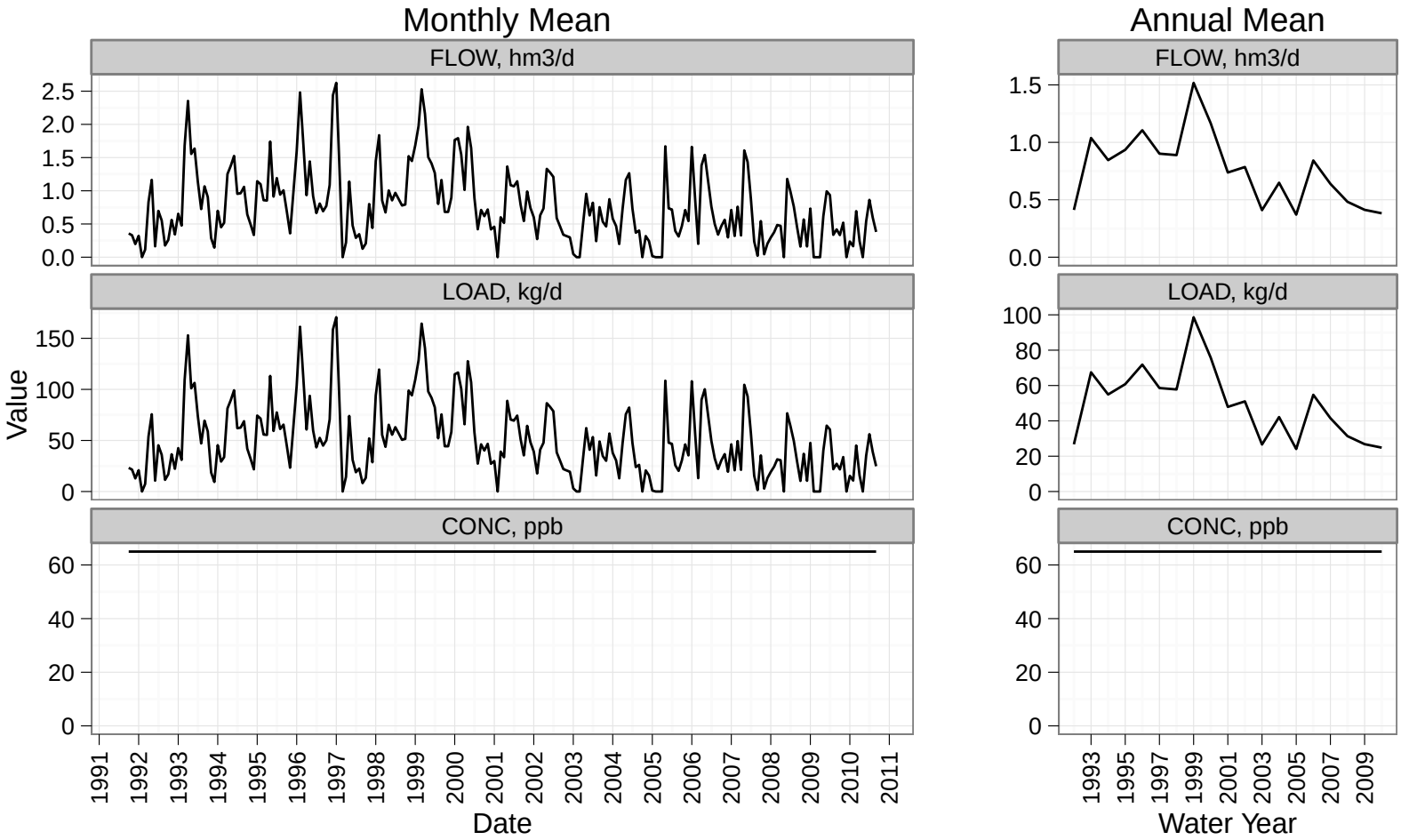
Trend Tests: Total Tributaries, TP

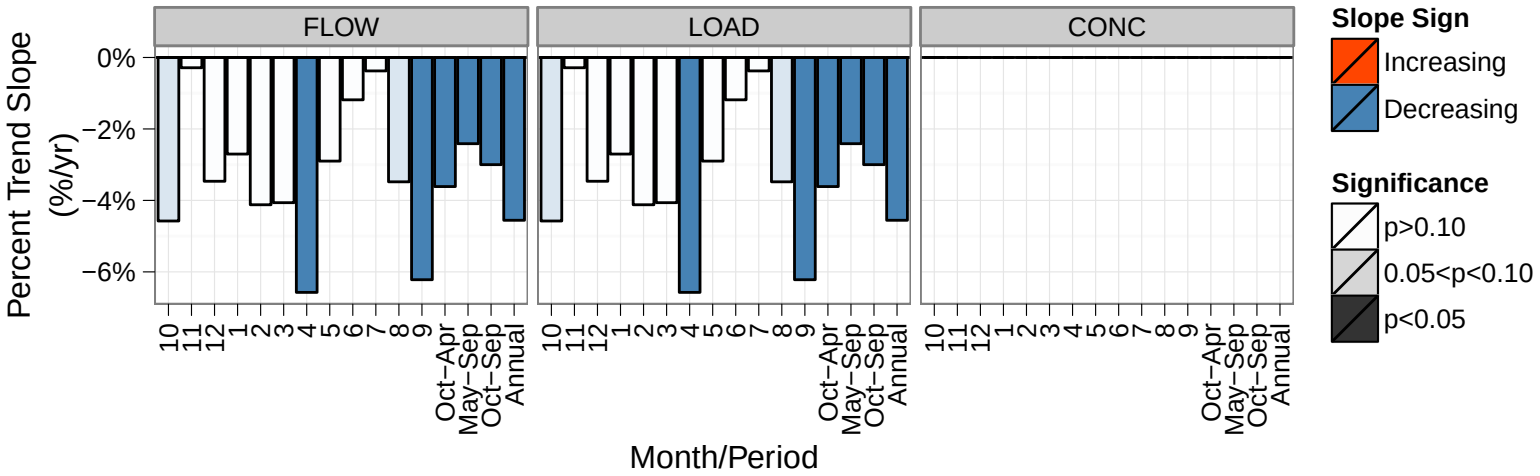


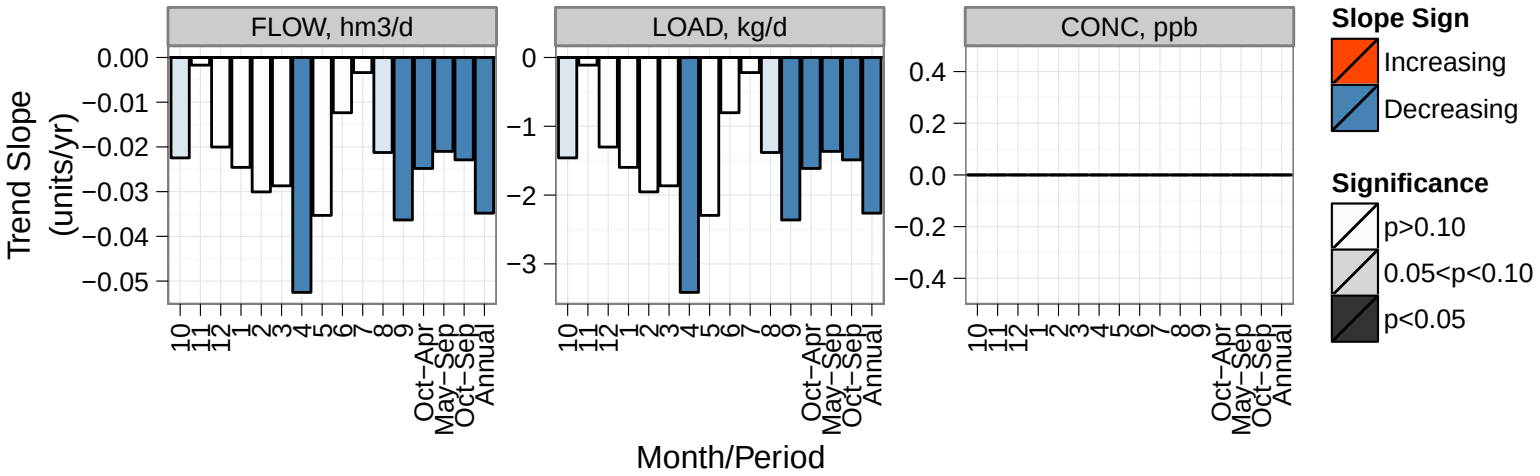




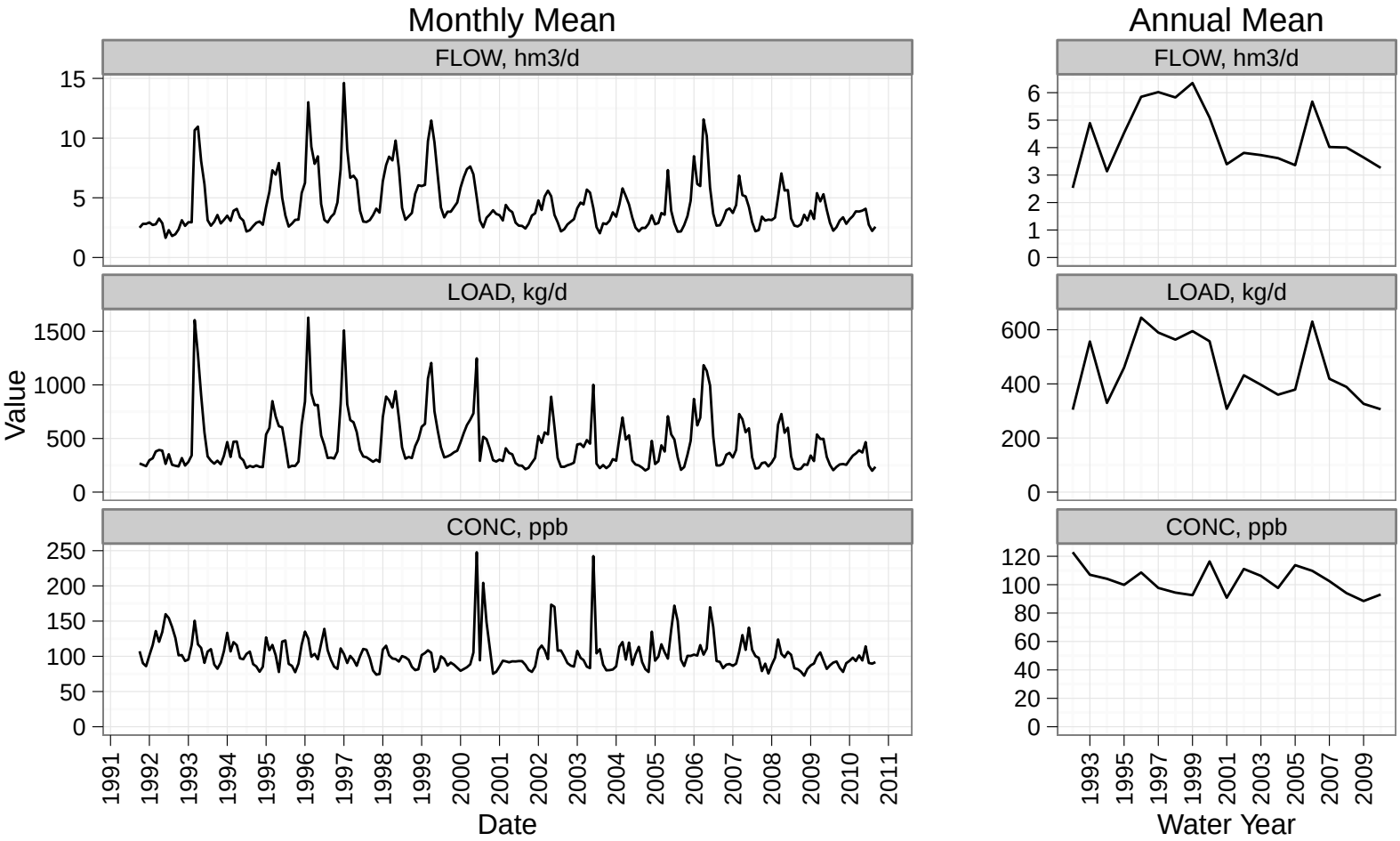
Trend Tests: Ungauged Inflows, TP

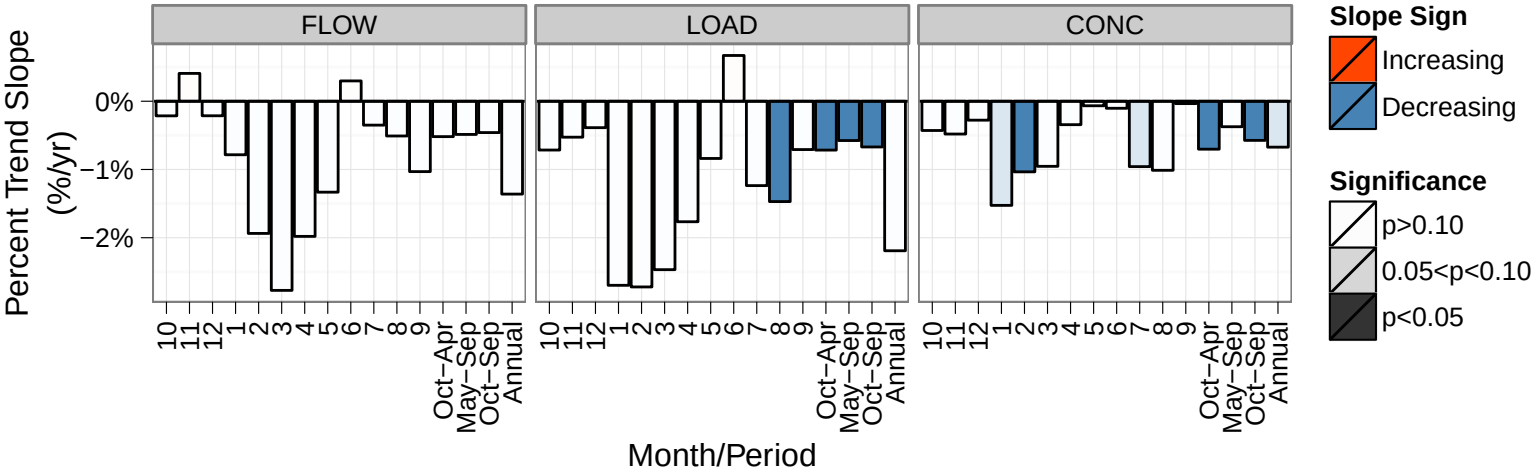


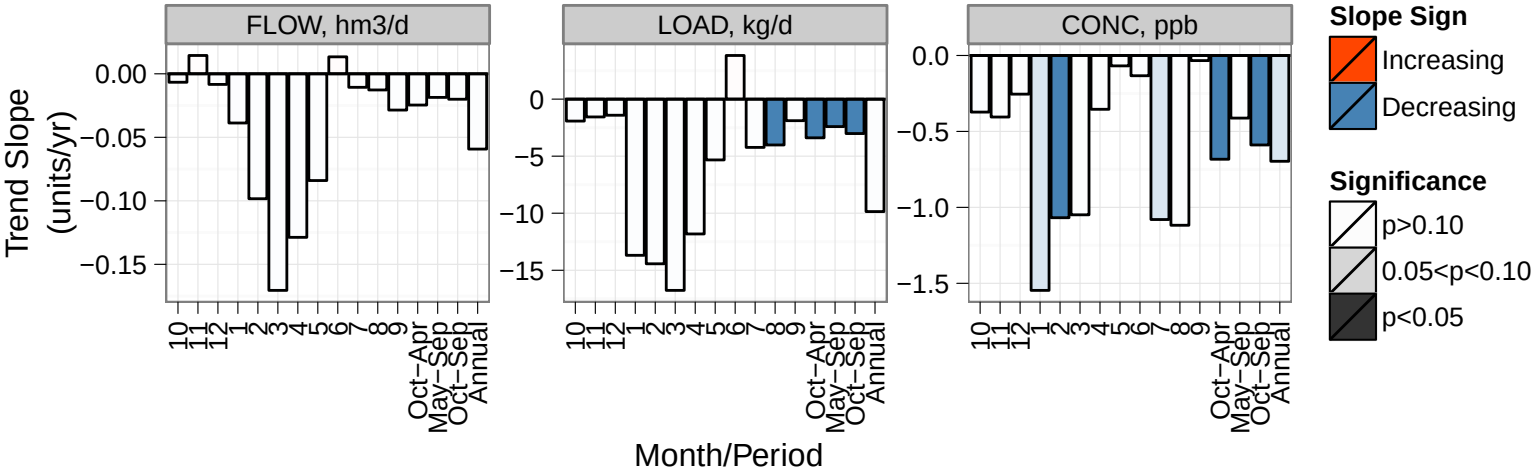




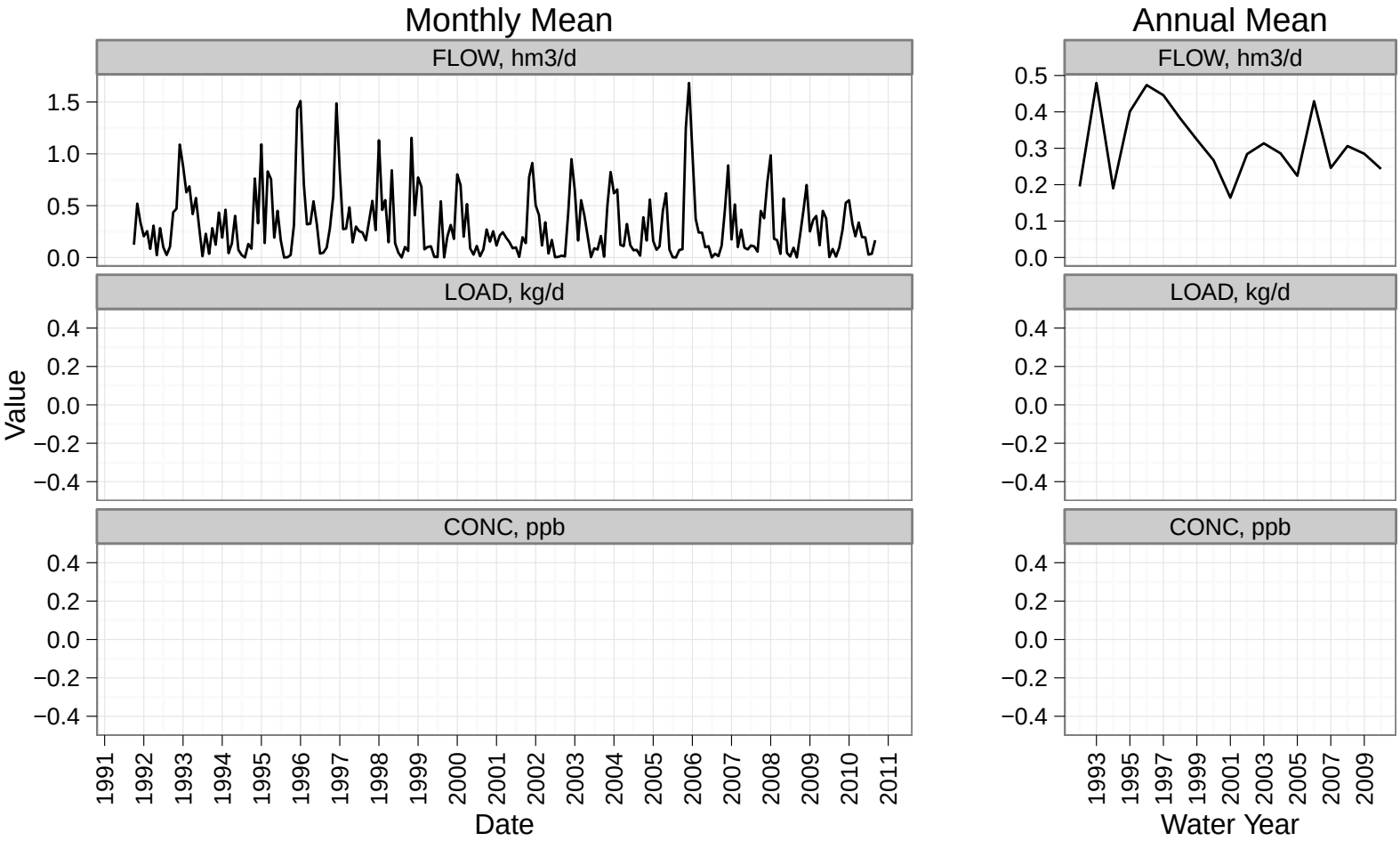
Trend Tests: Total External Inflows, TP

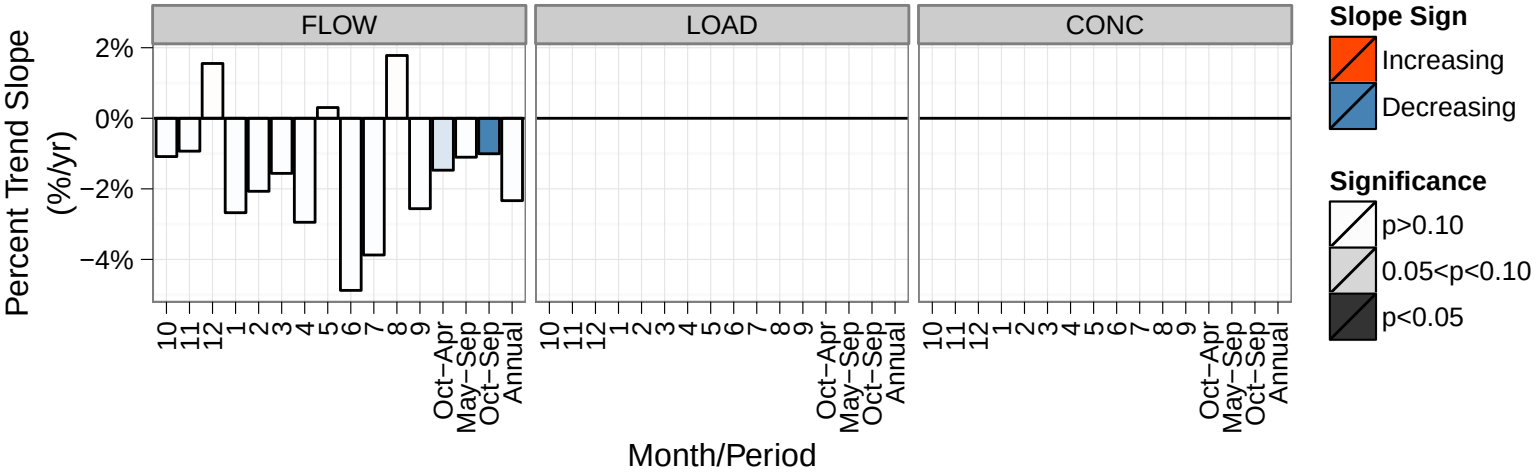


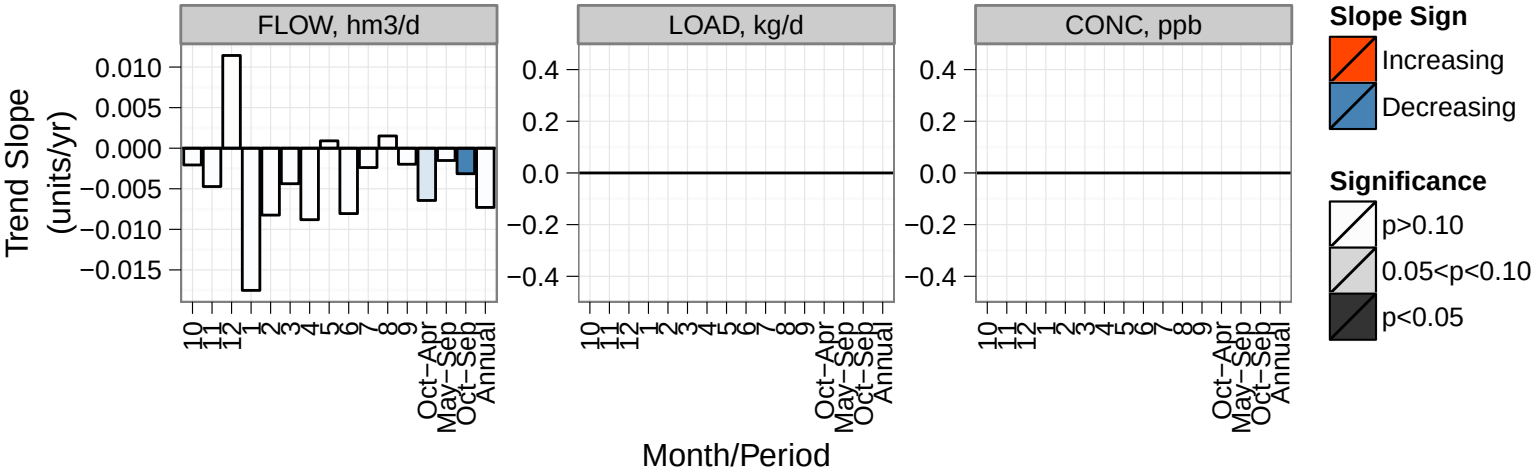


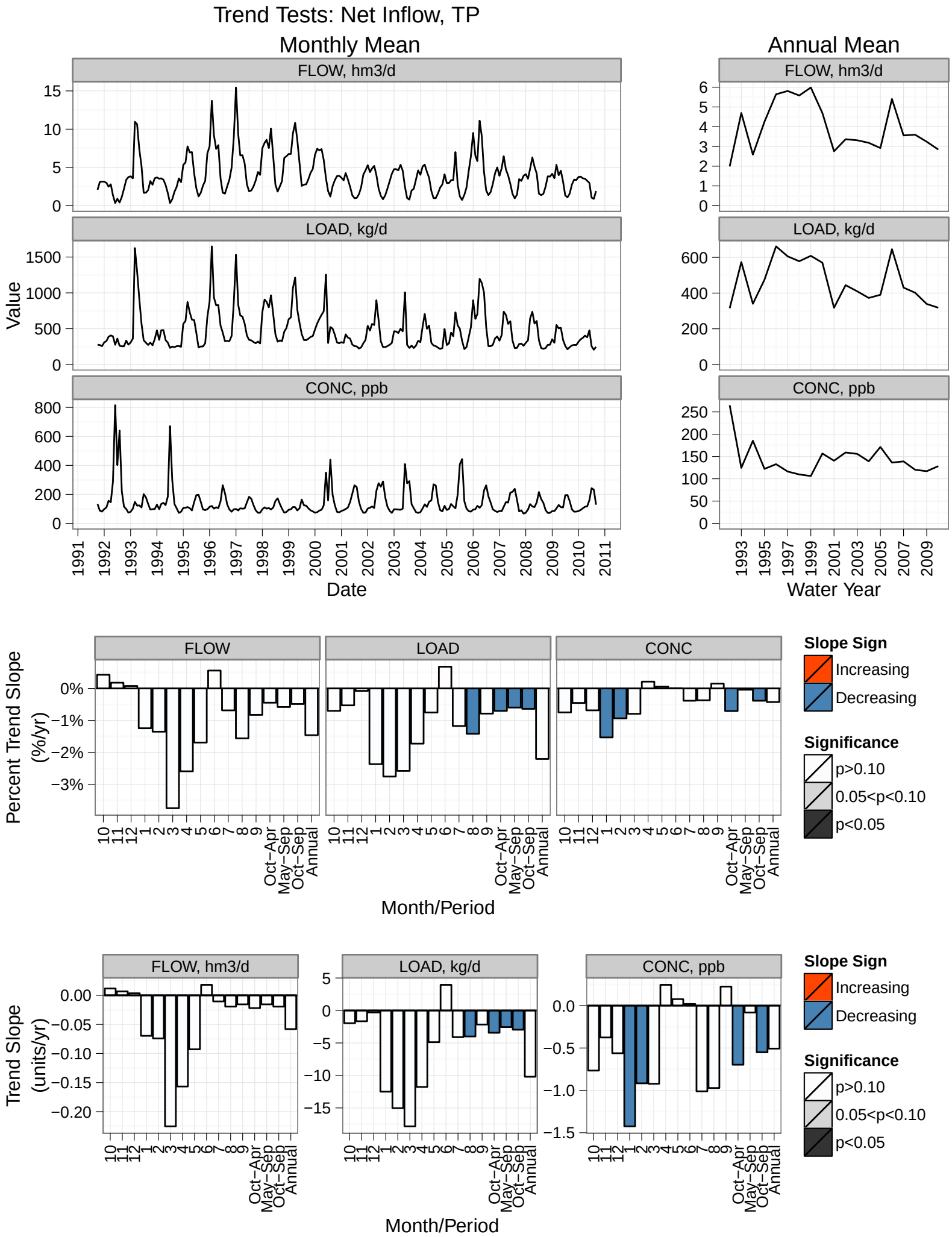


Trend Tests: Precipitation, TP

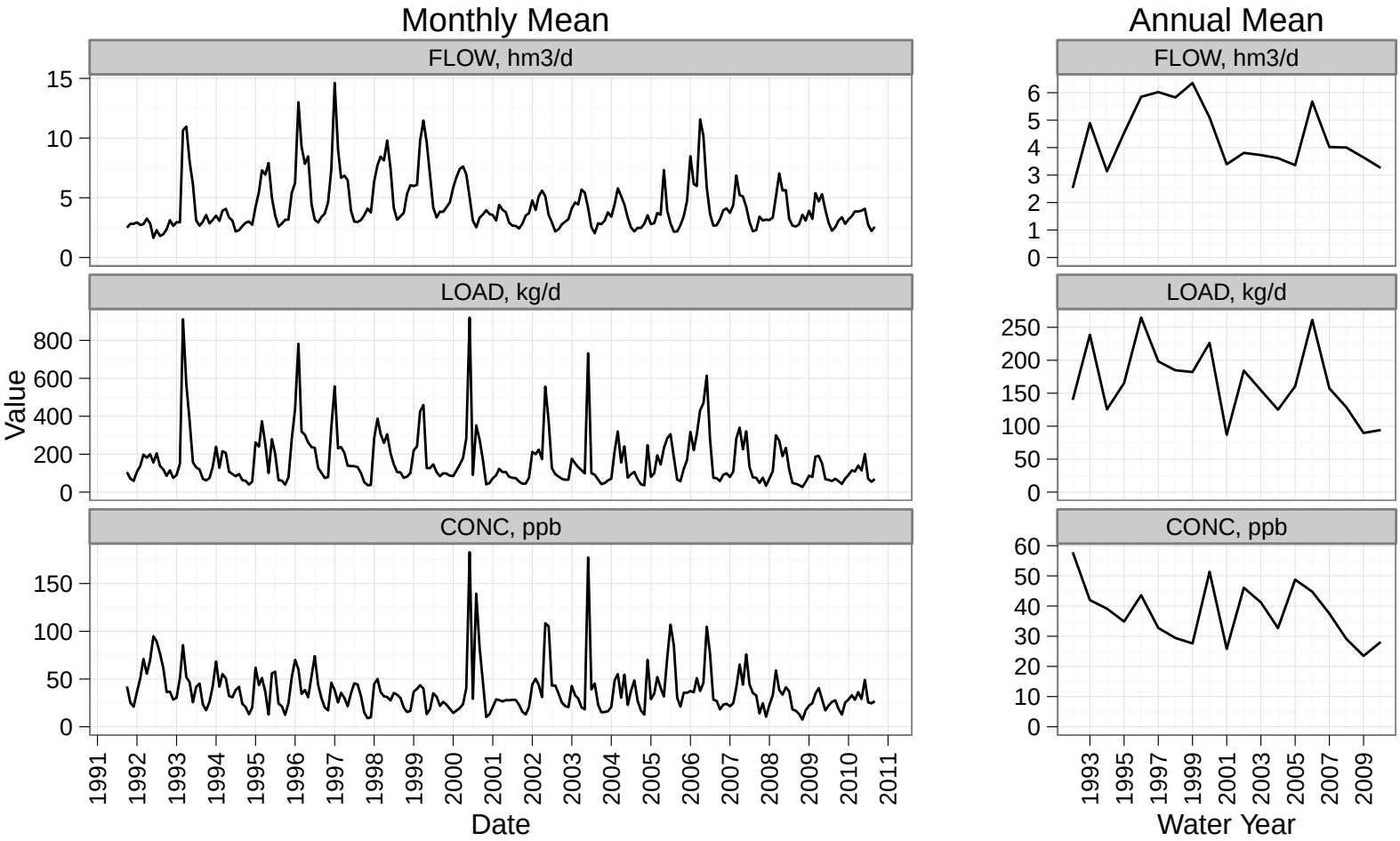


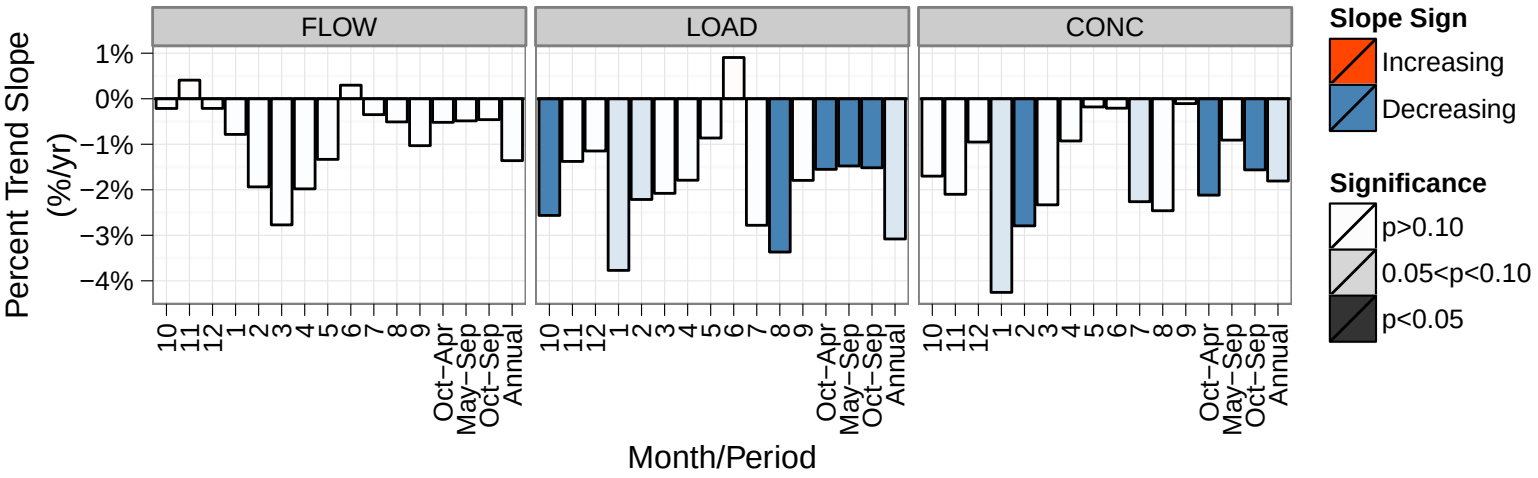


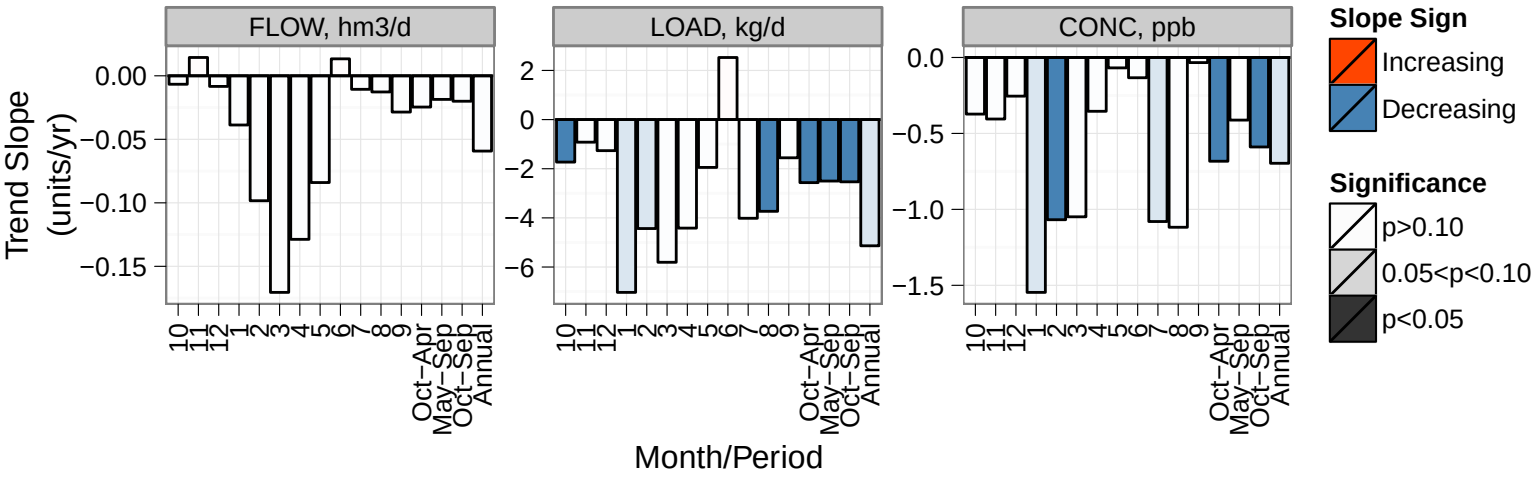



Trend Tests: Net Inflow, TP
Monthly Mean
Annual Mean
FLOW, hm3/d
LOAD, kg/d
CONC, ppb
Value
Date
Water Year
FLOW
LOAD
CONC
Percent Trend Slope (%/yr)
Month/Period
Trend Slope (units/yr)
Slope Sign
Increasing
Decreasing
Significance
p>0.10
0.05<p<0.10
p<0.05

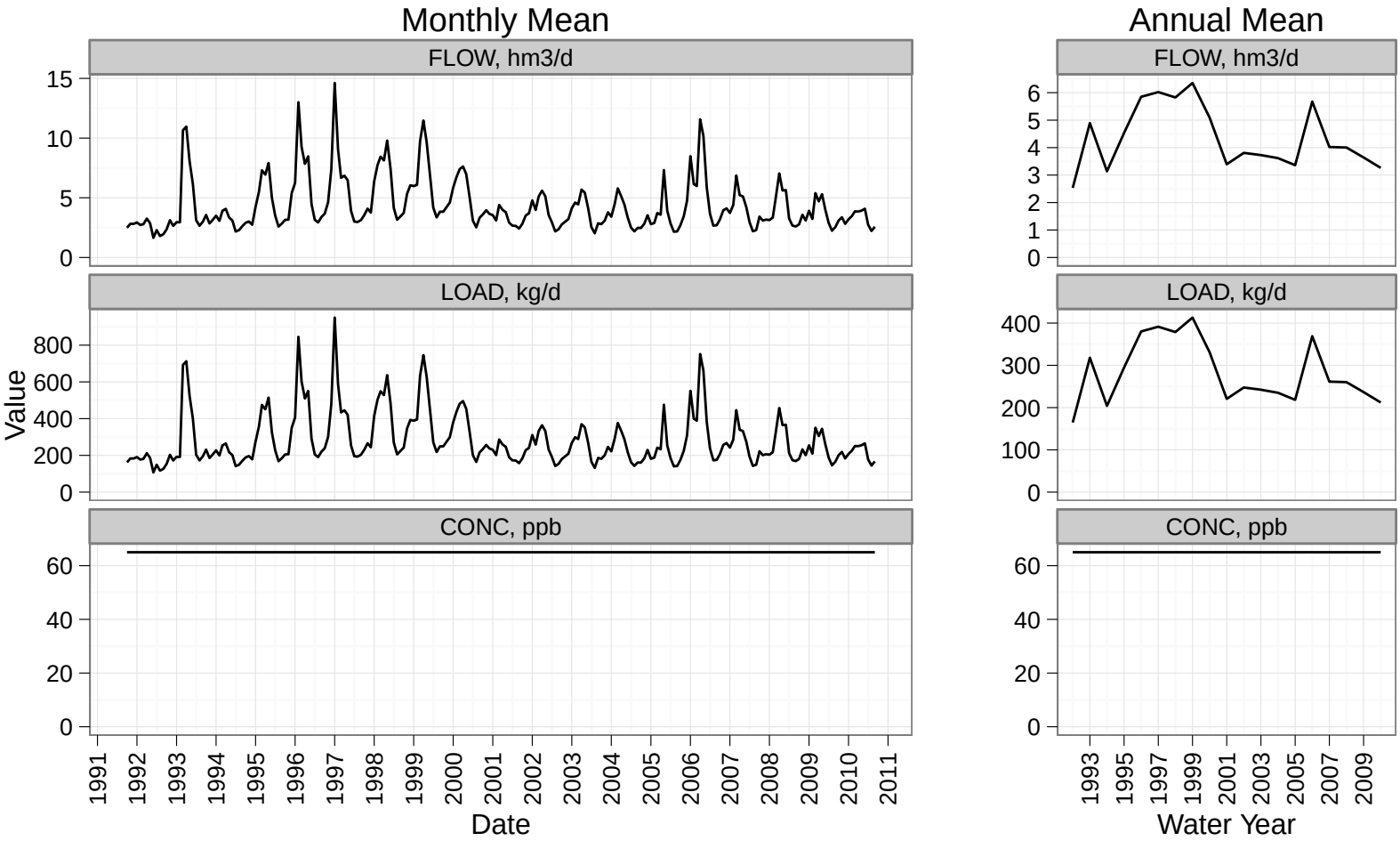
Trend Tests: Anthropogenic Sources, TP

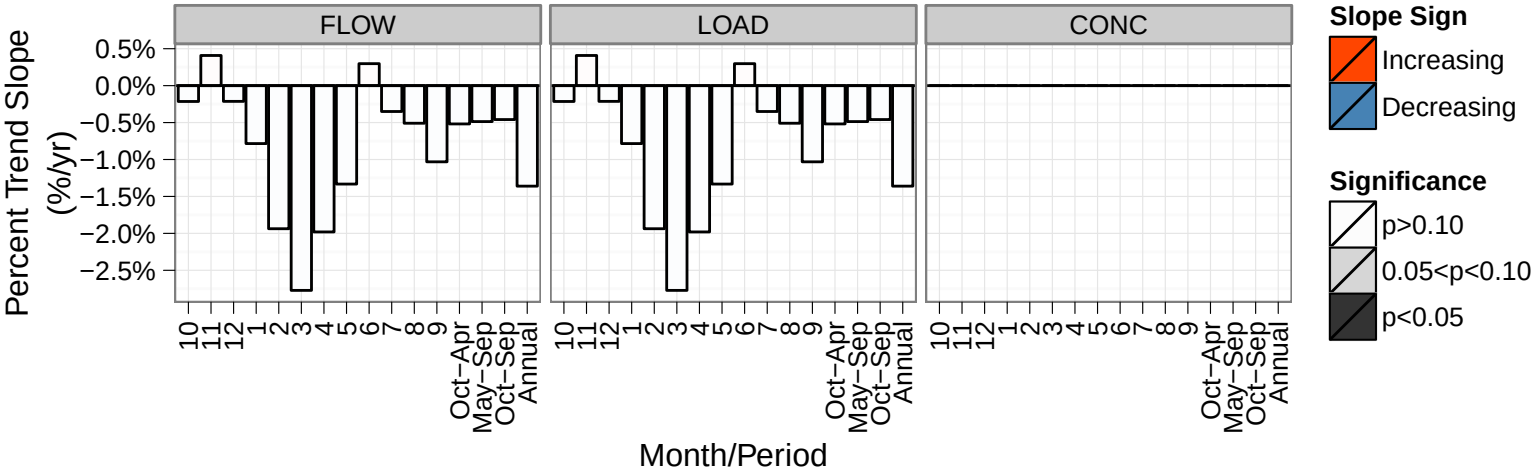


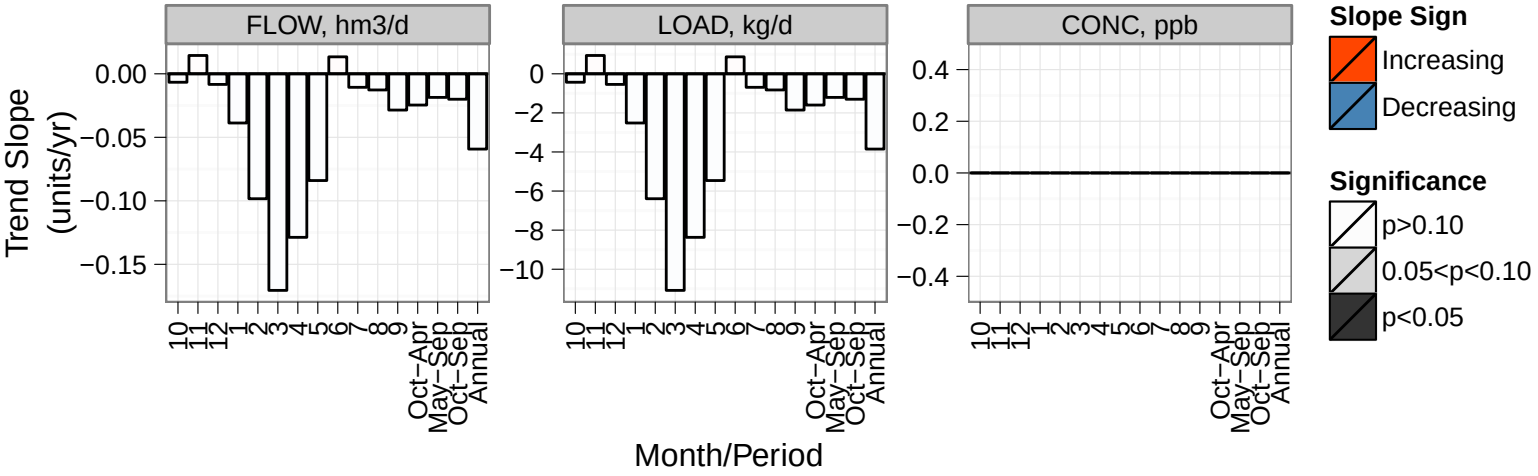




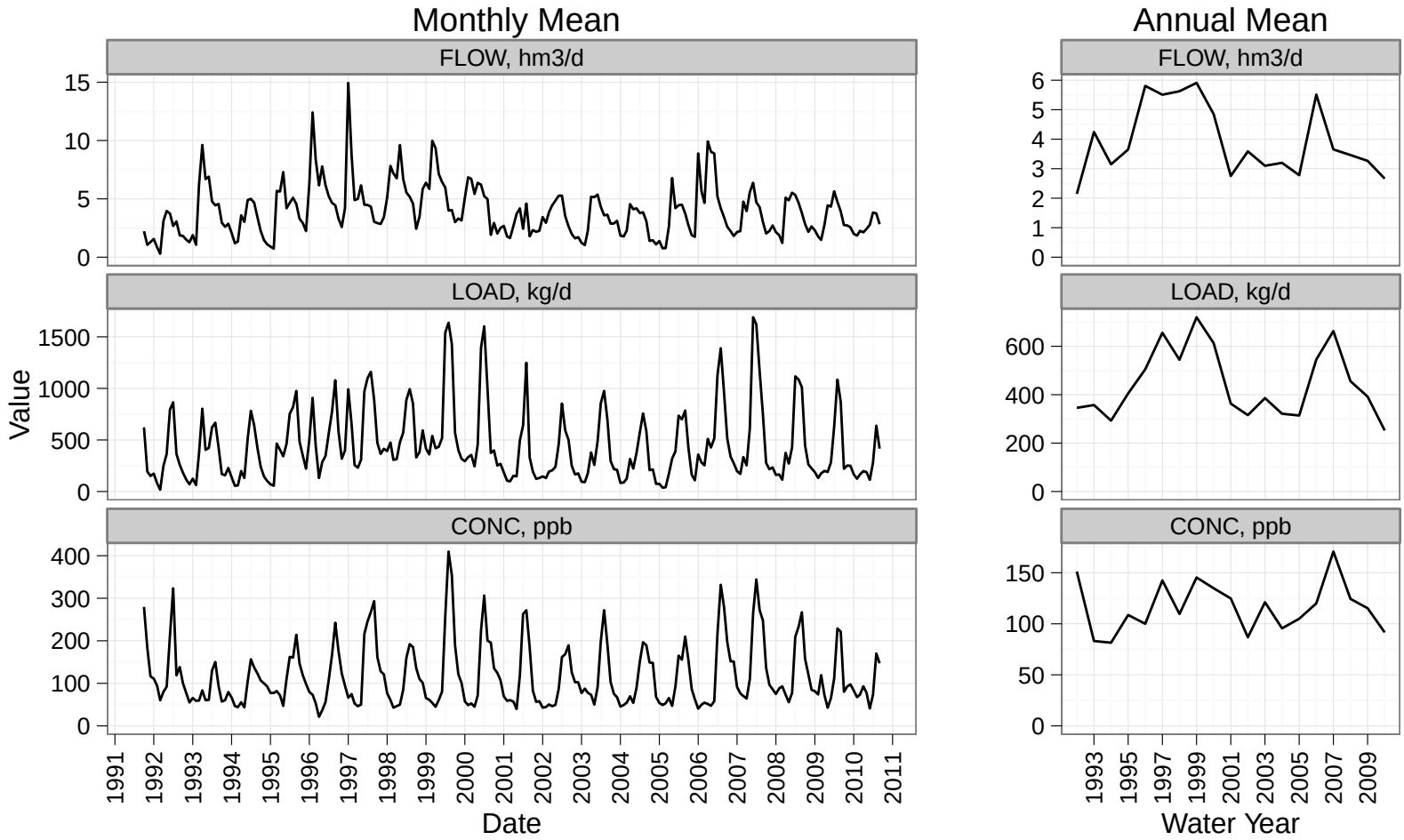
Trend Tests: Background Sources, TP

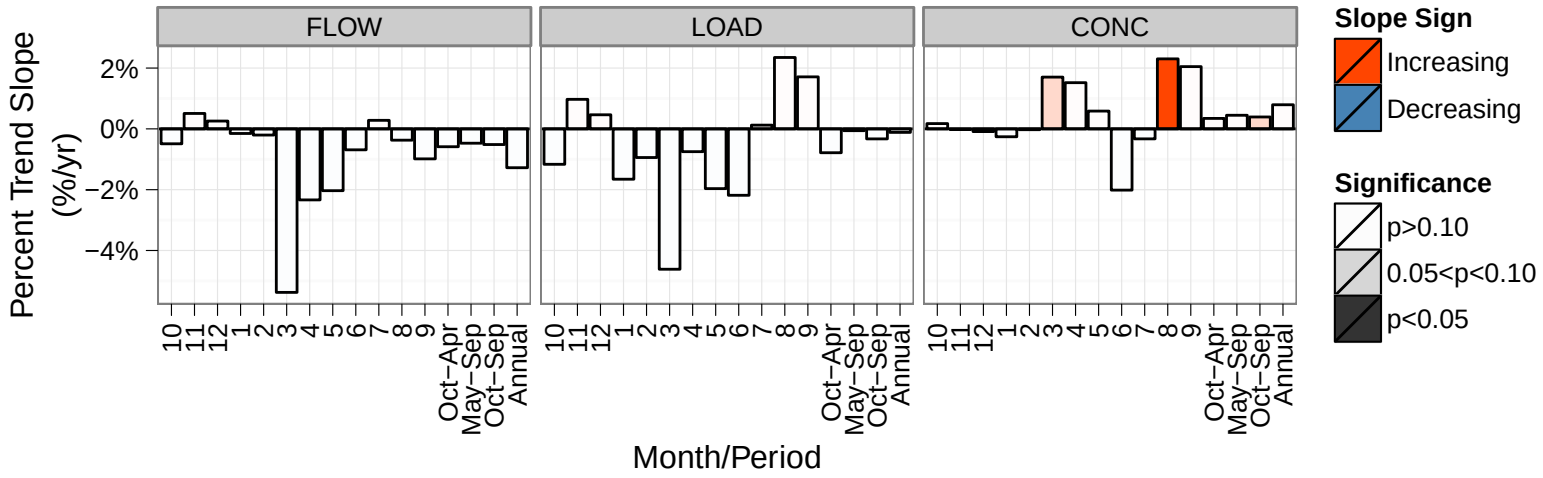


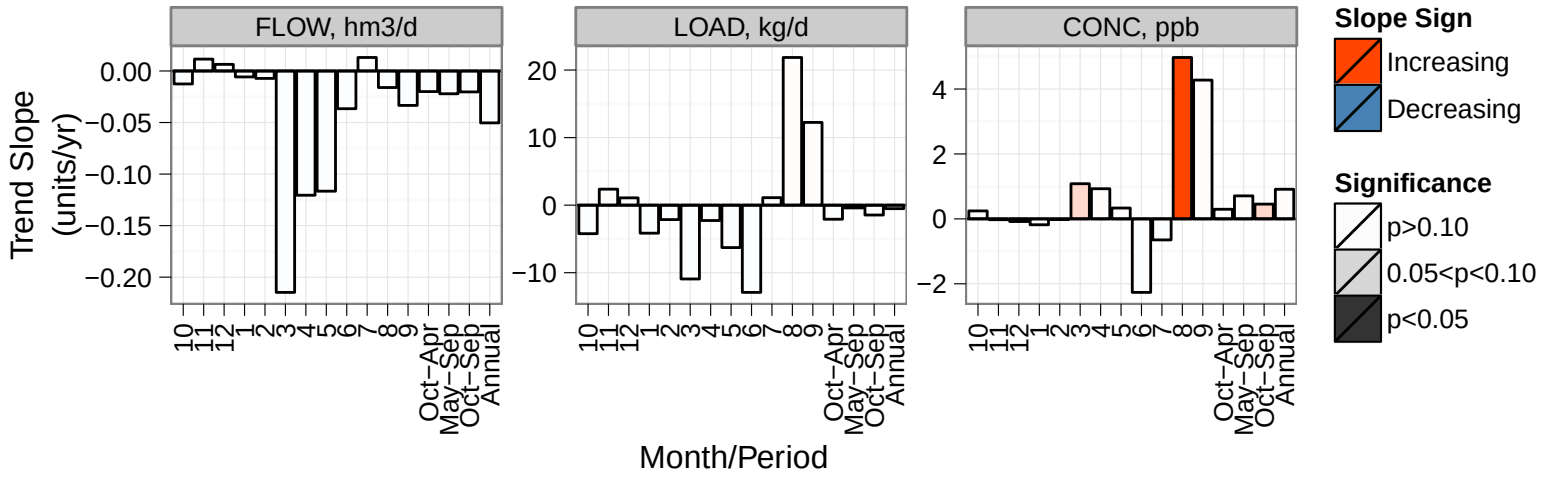




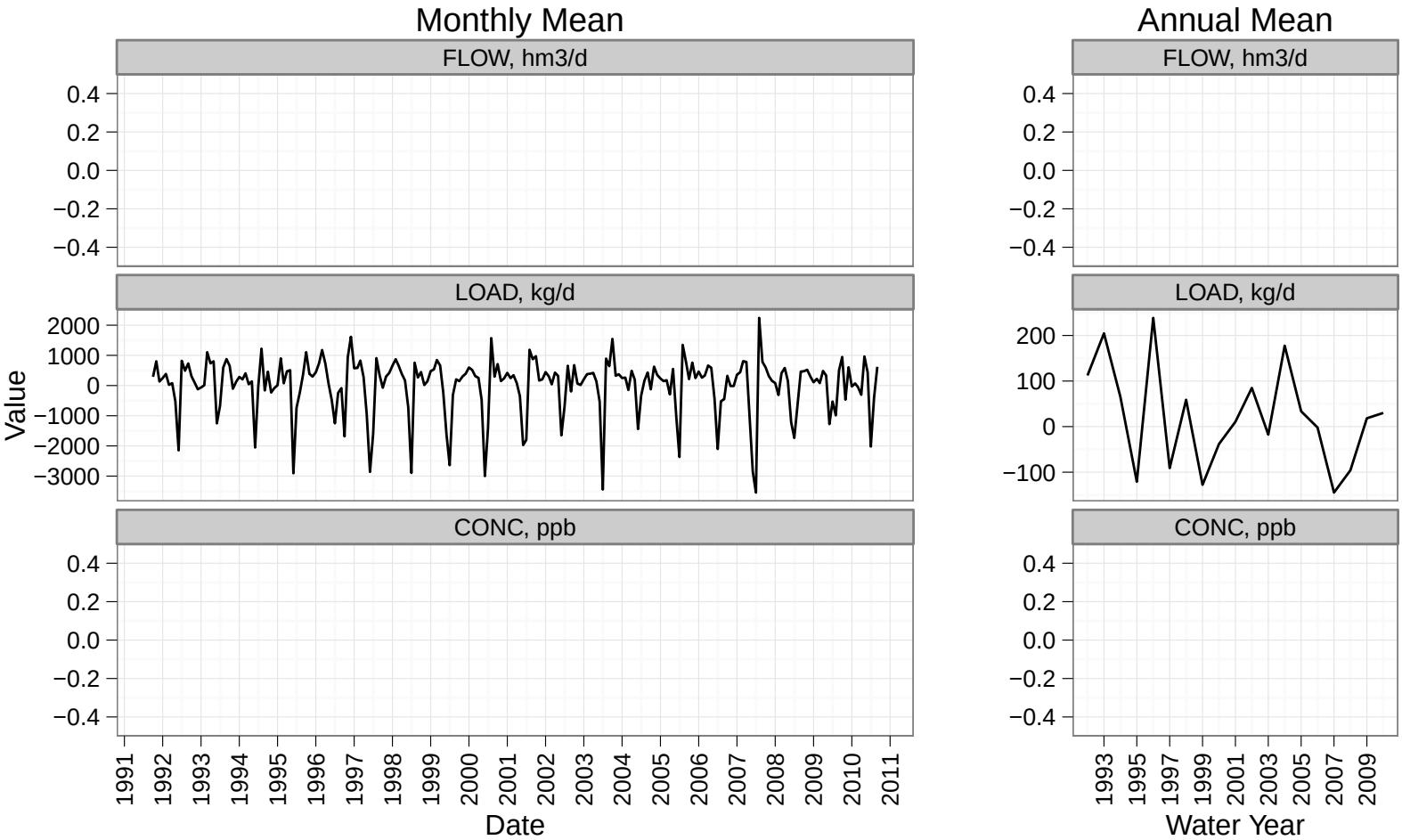
Trend Tests: Lake Outflow, TP

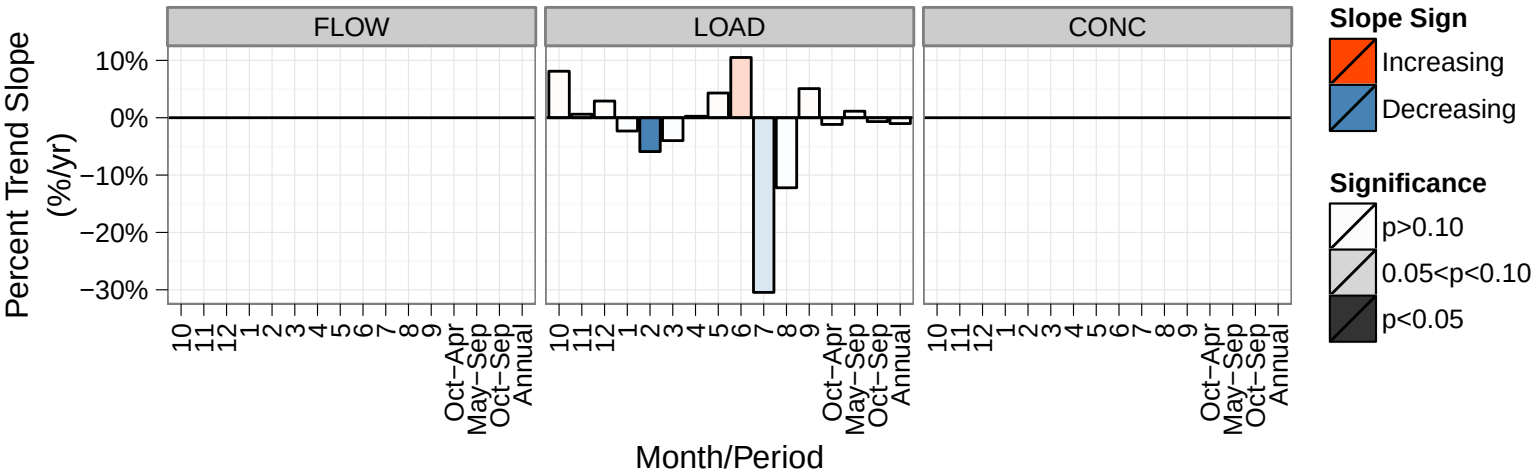


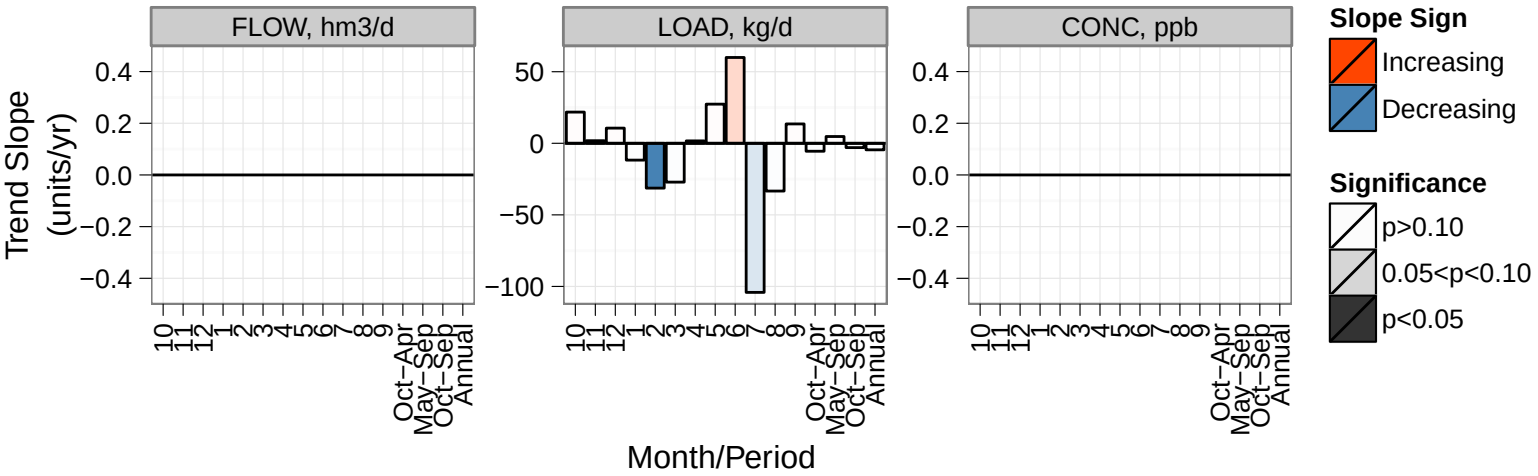




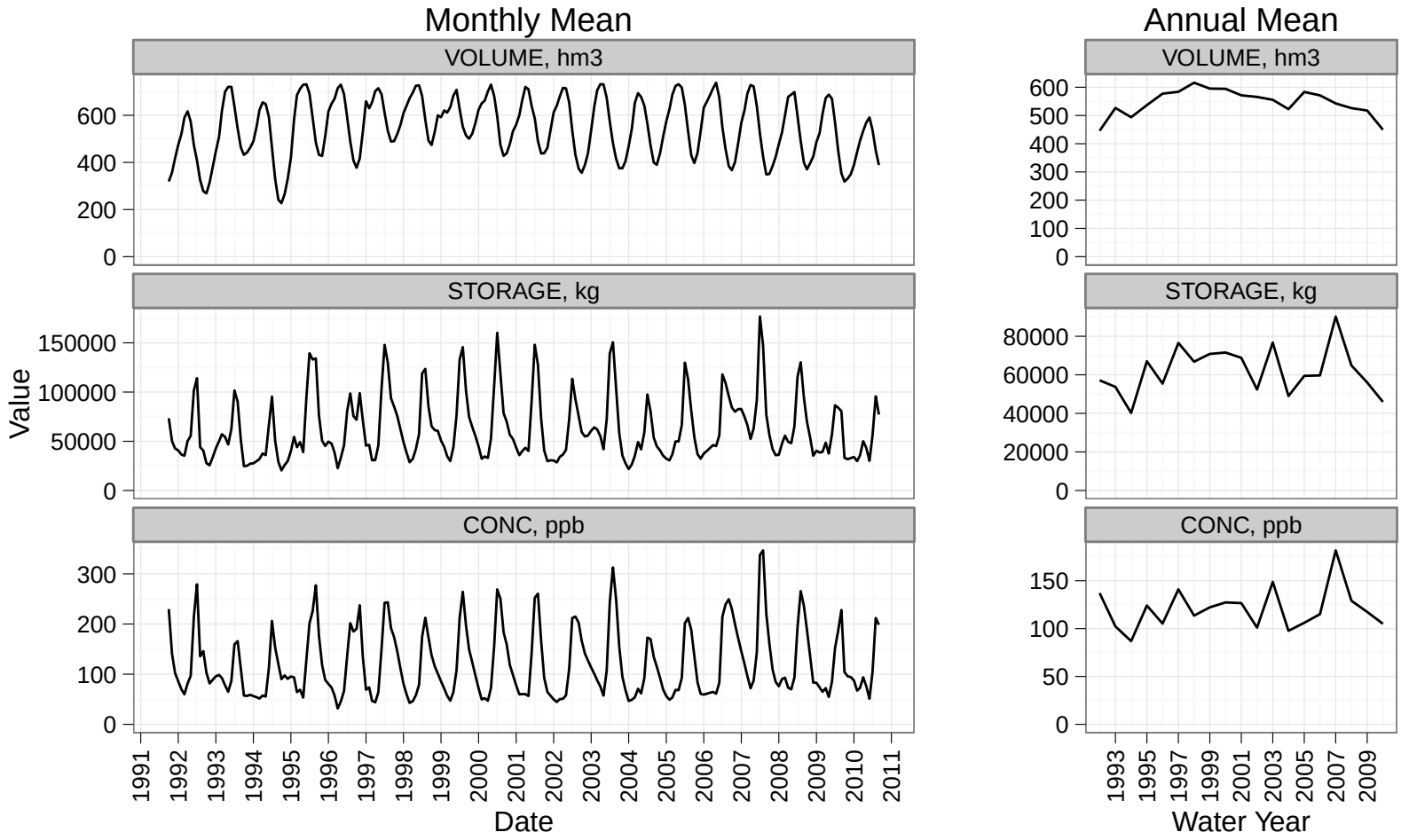
Trend Tests: Retention, TP

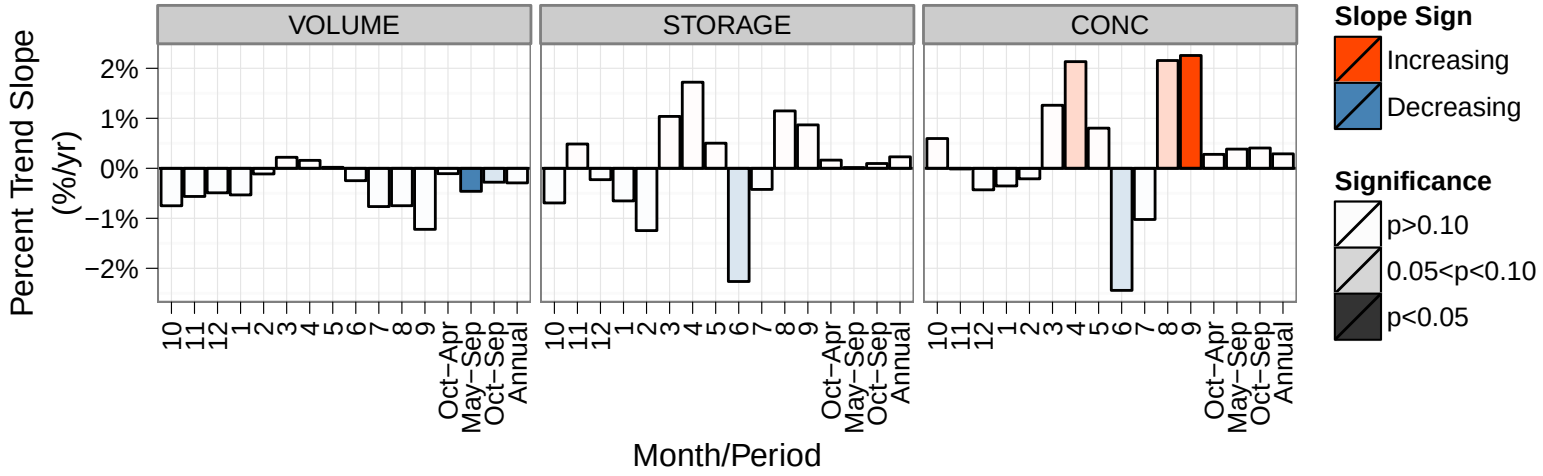


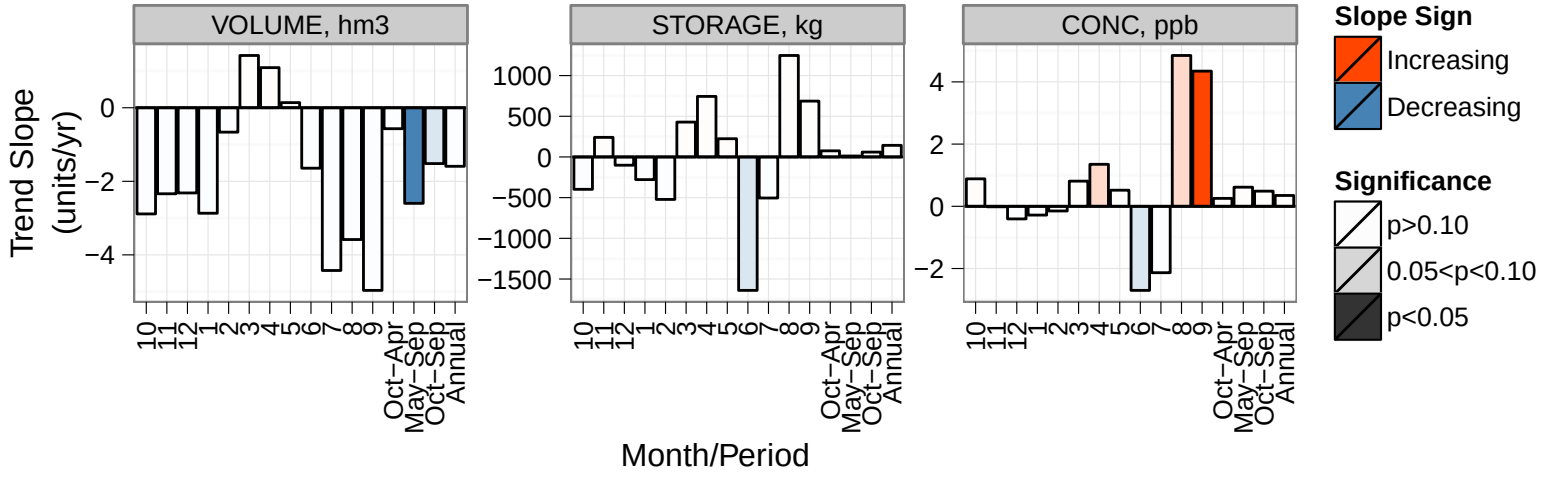




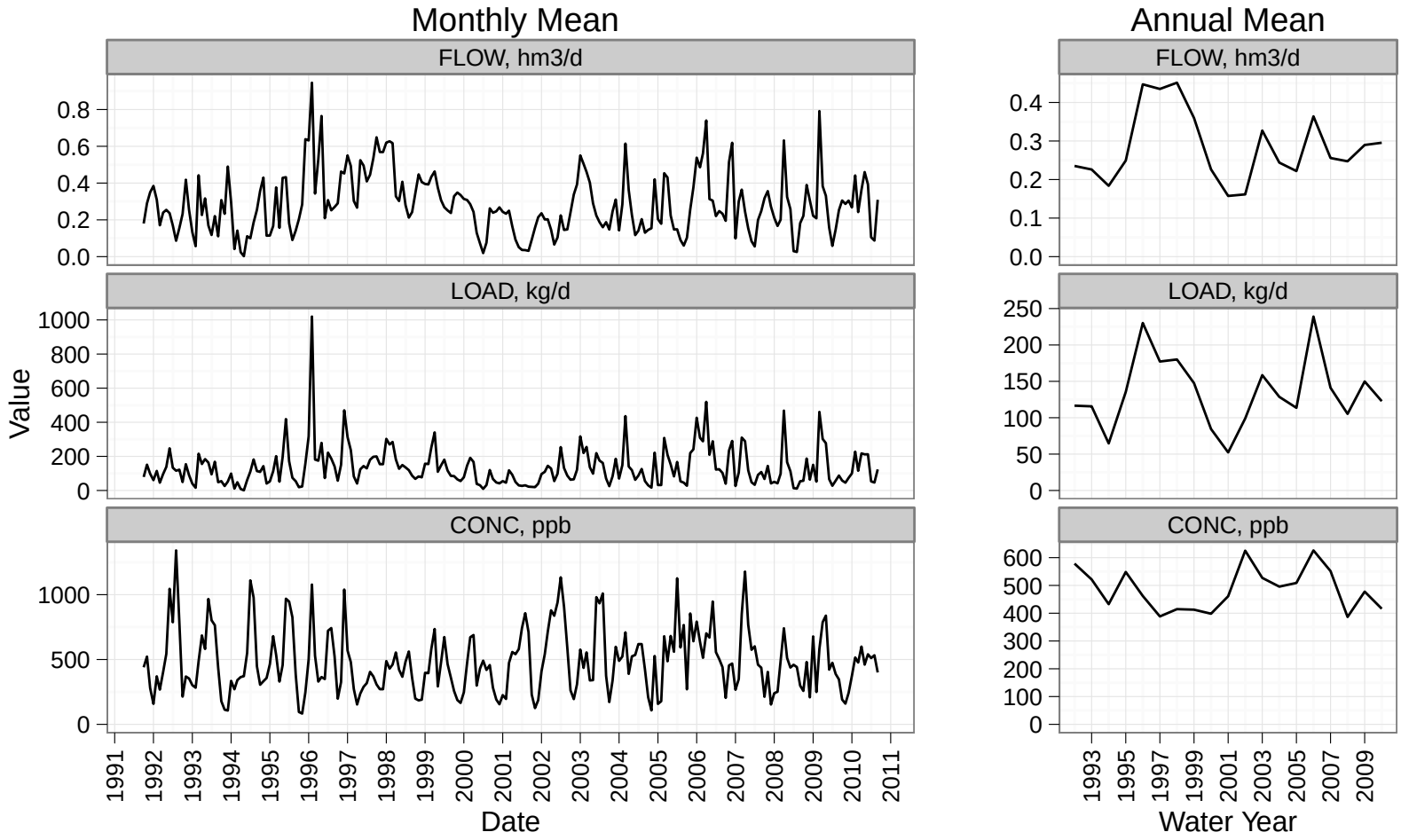
Trend Tests: Lake Mean Storage, TP

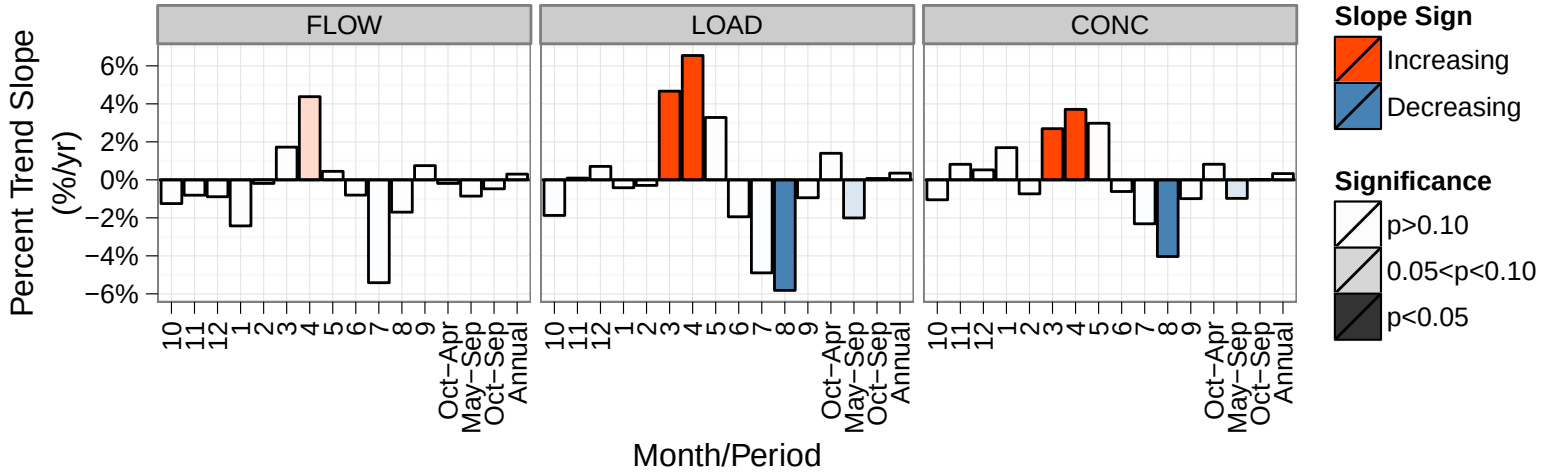


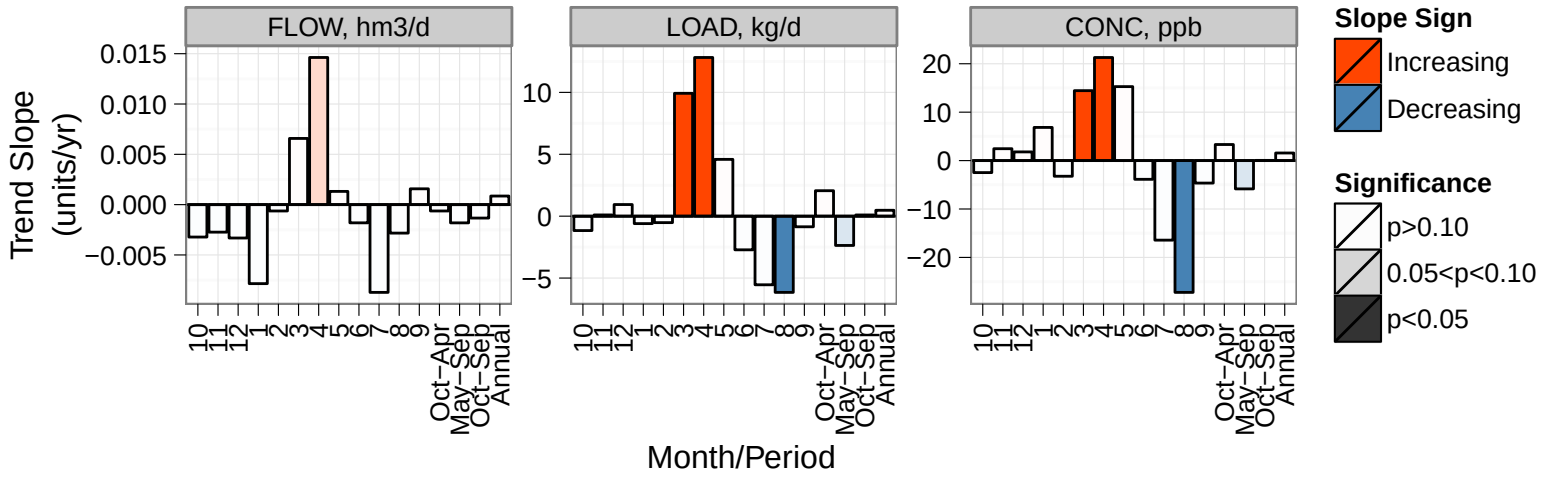




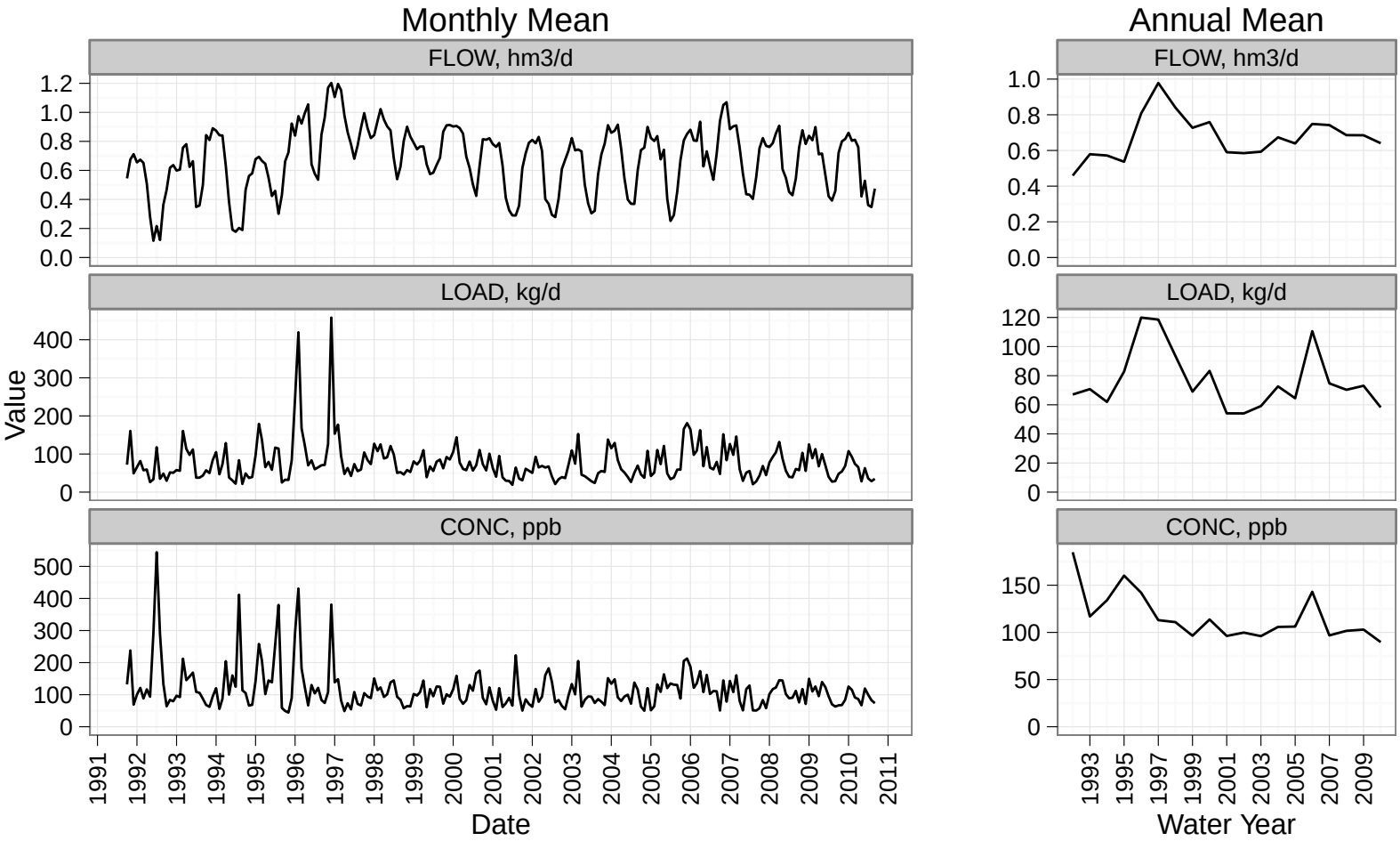
Trend Tests: 7mile_Dike, TN

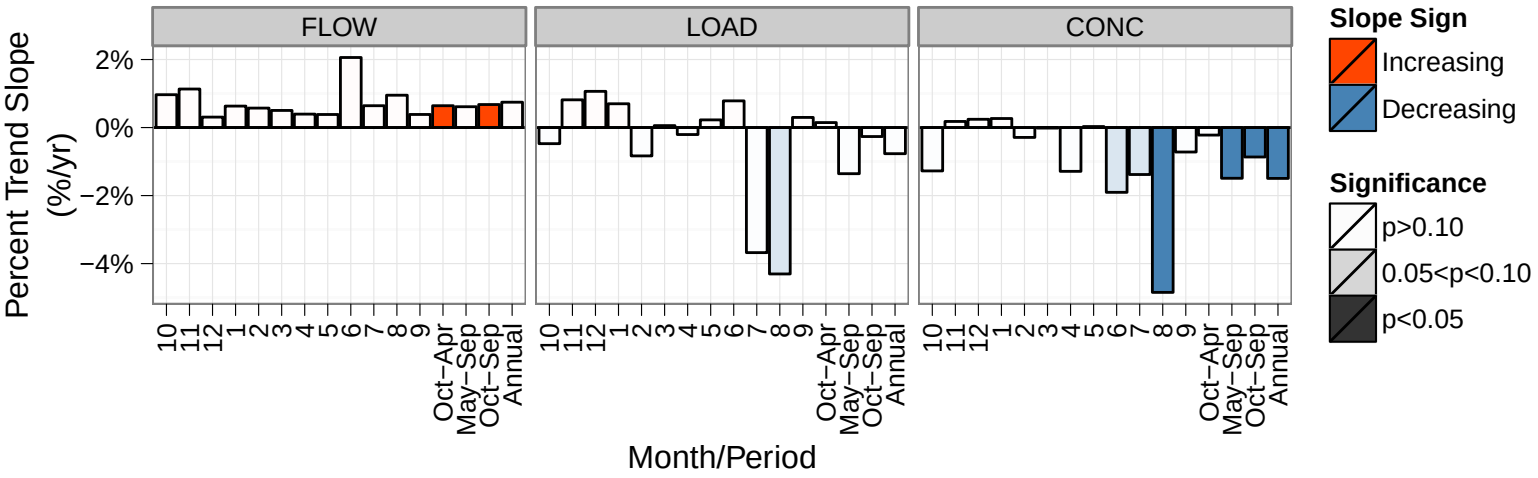


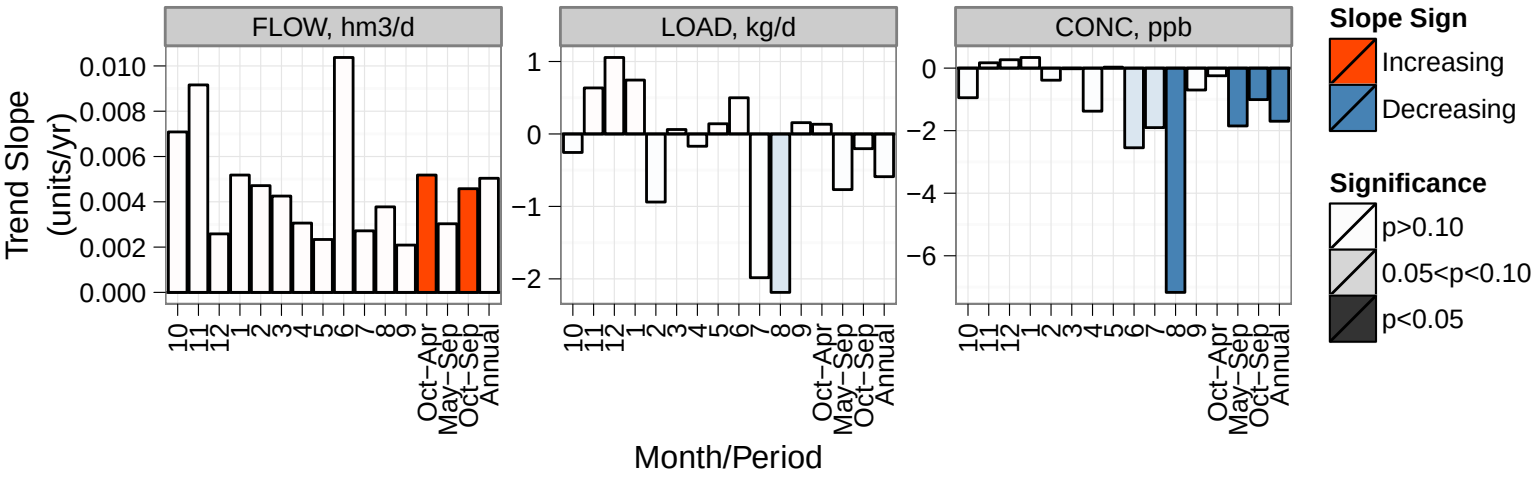




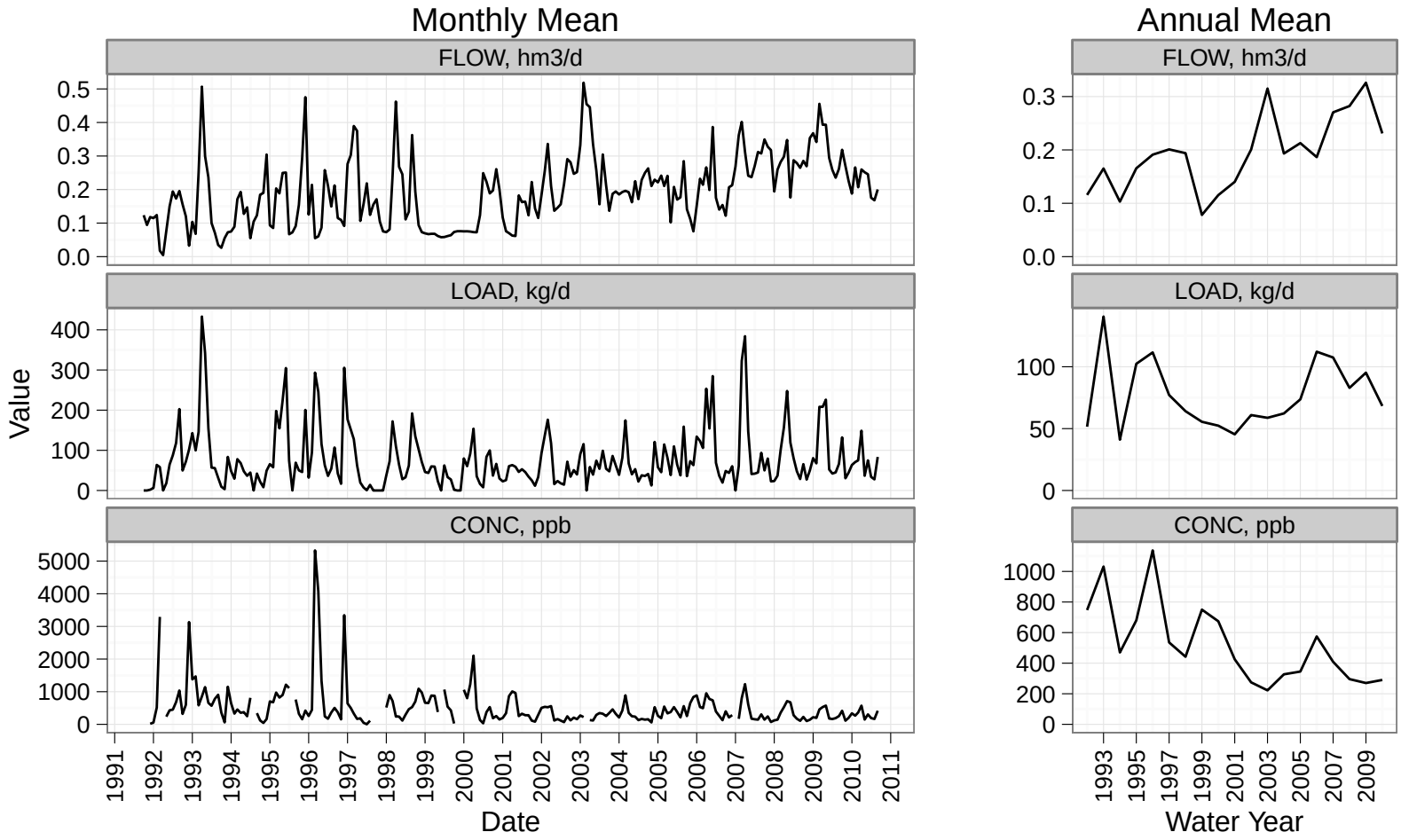
Trend Tests: Wood_Weed, TN

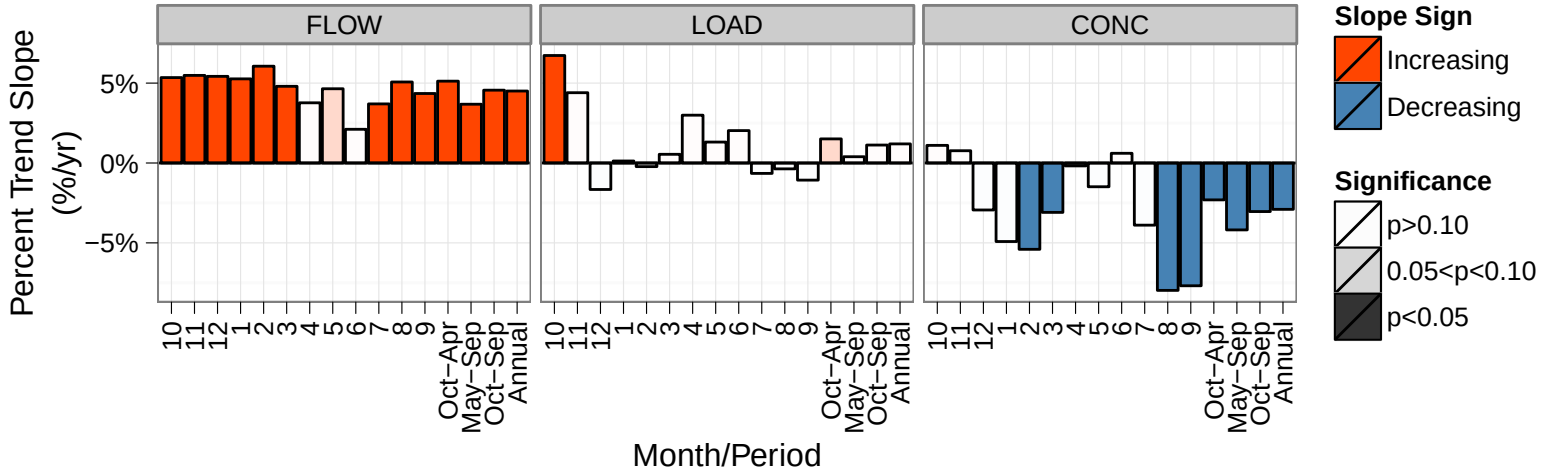


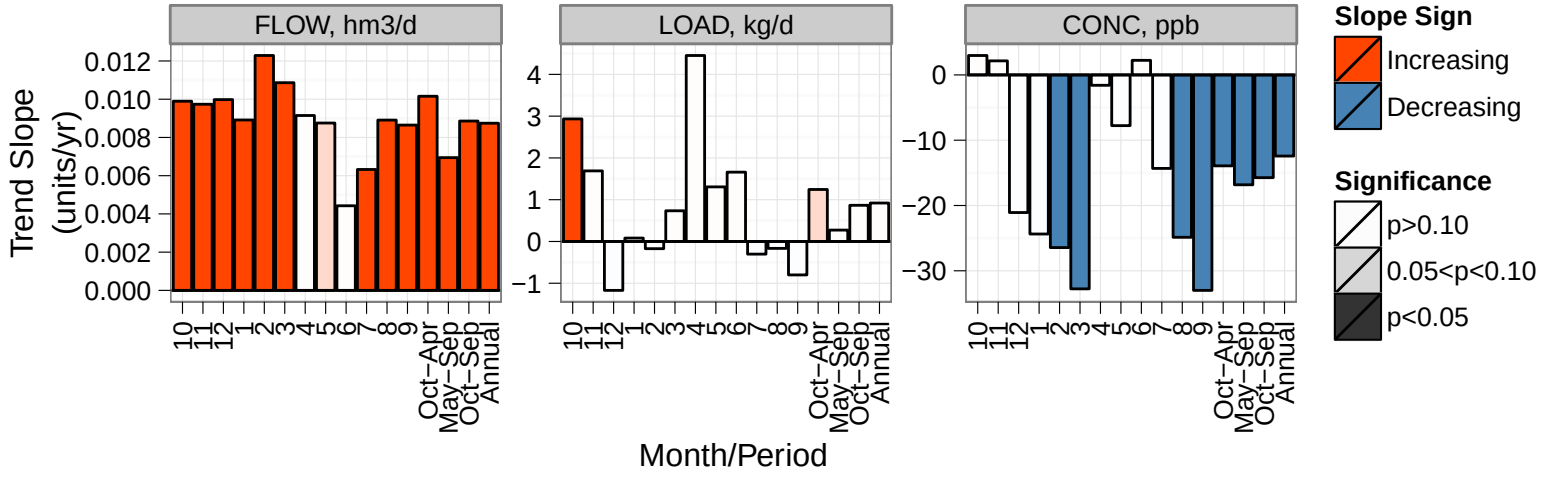




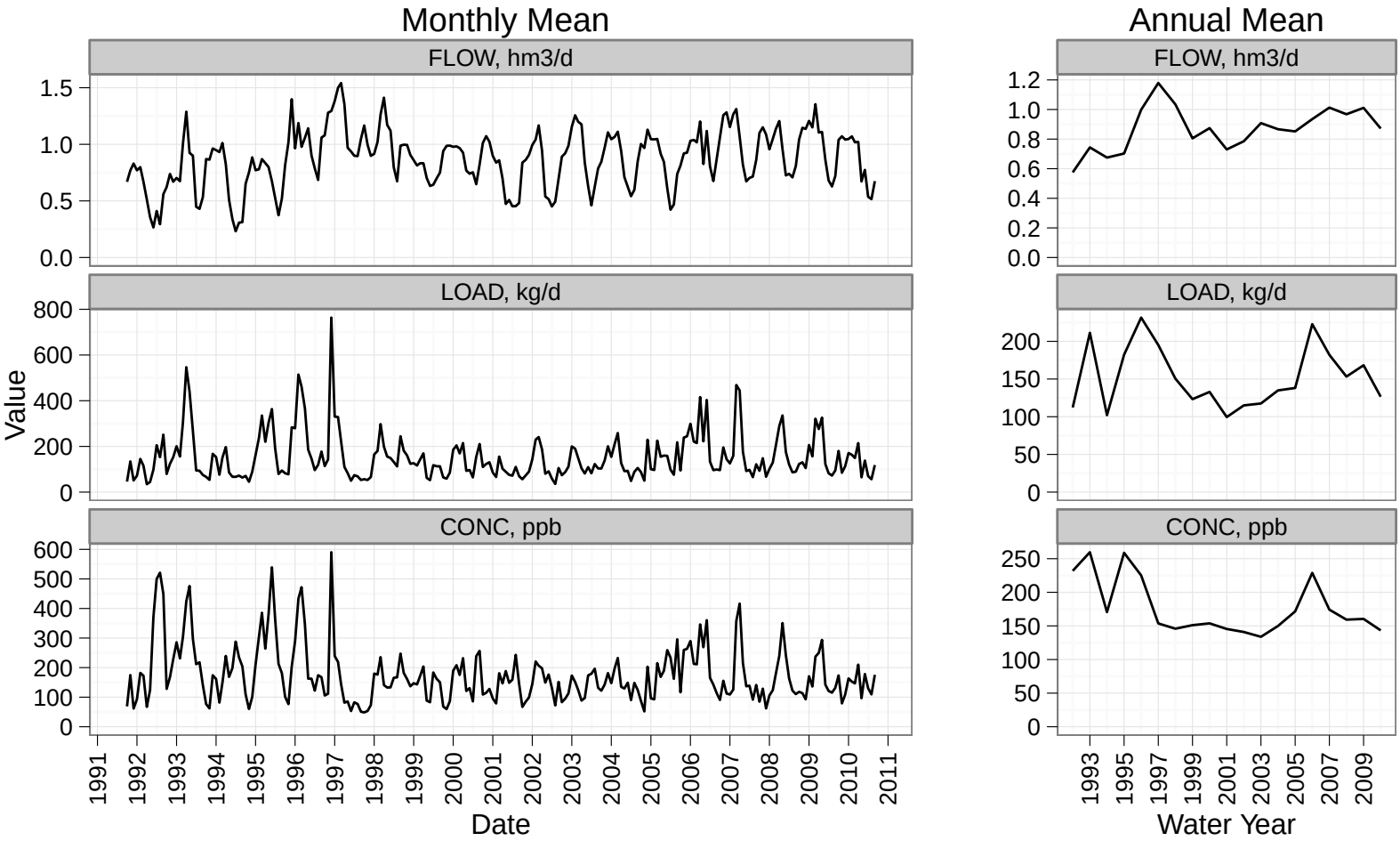
Trend Tests: Wood_Dike−Wood_Weed, TN

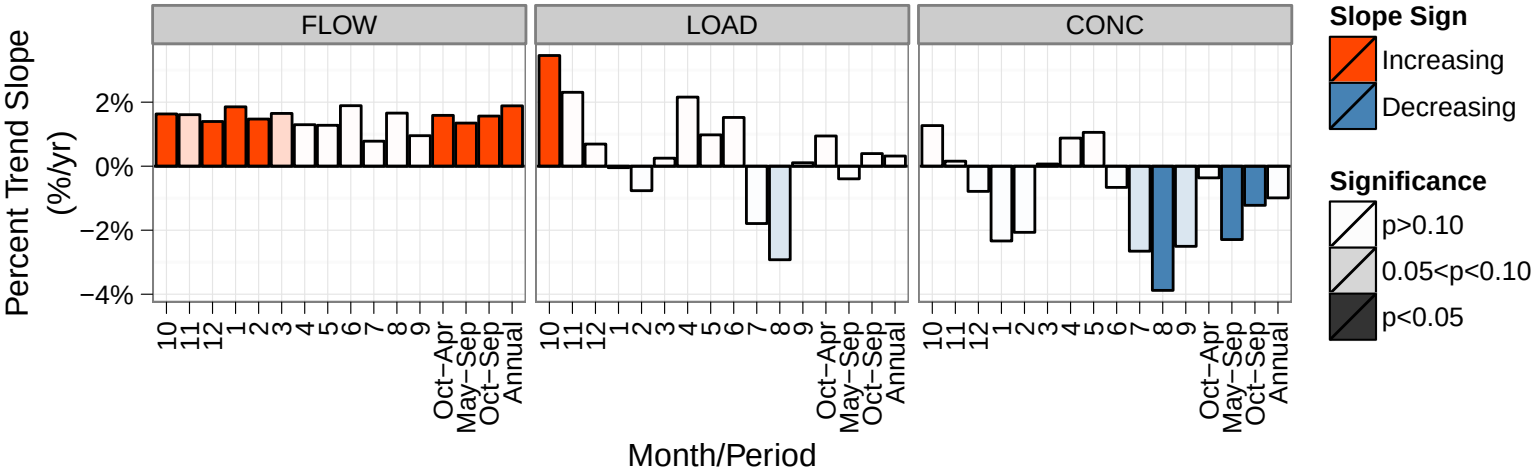


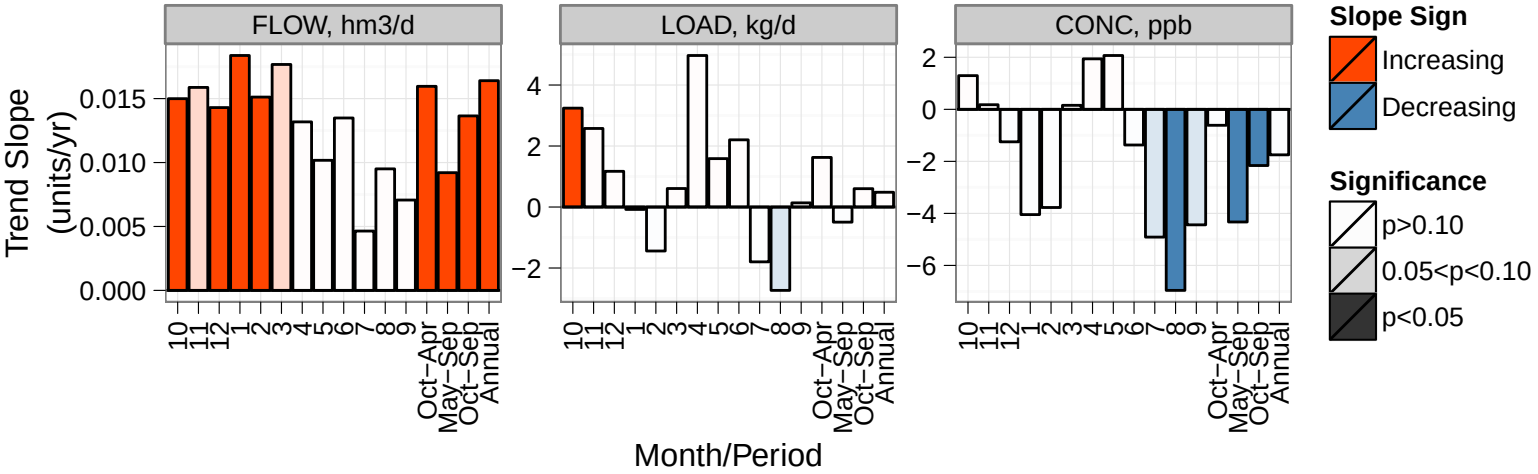




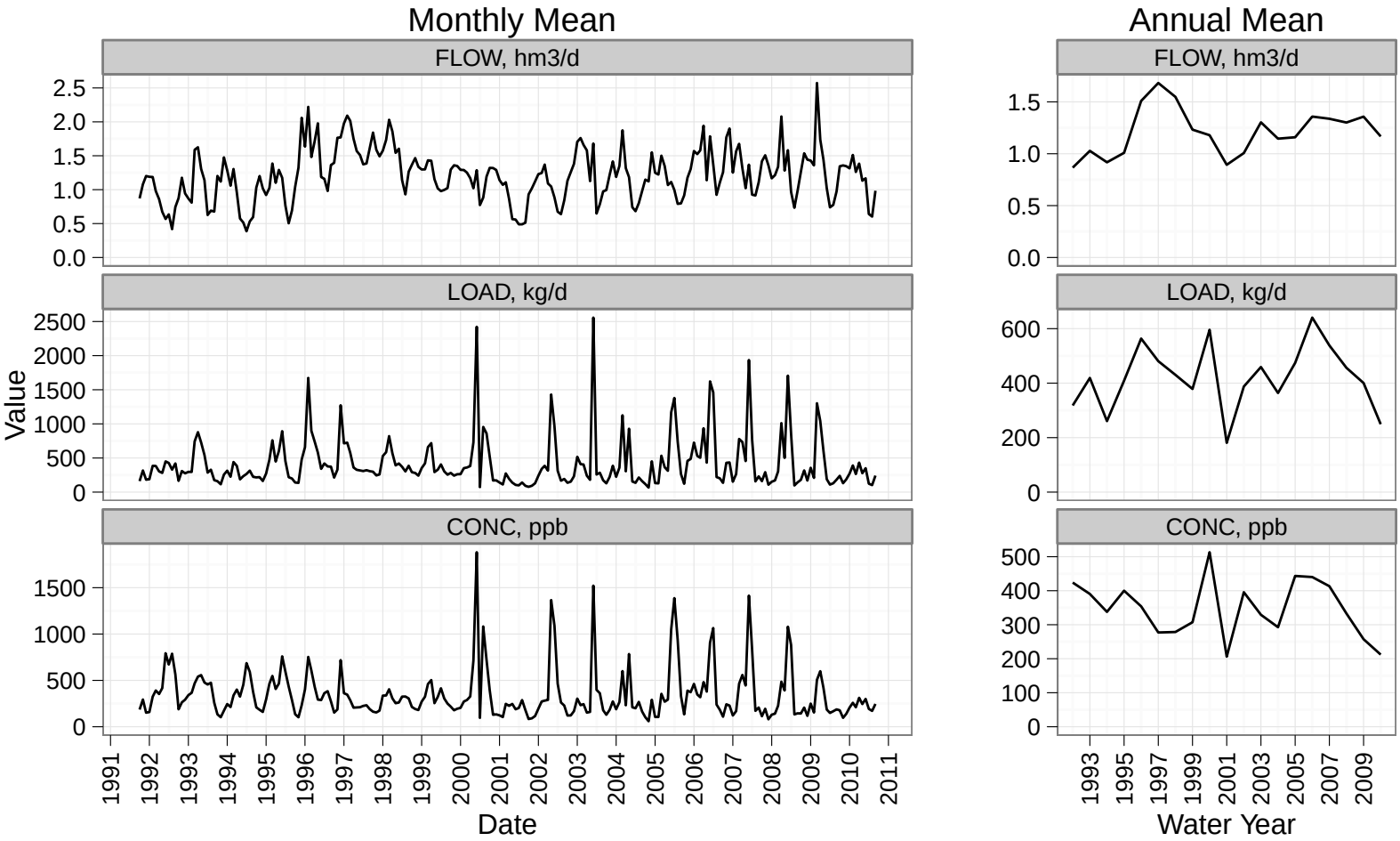
Trend Tests: Wood_Dike, TN

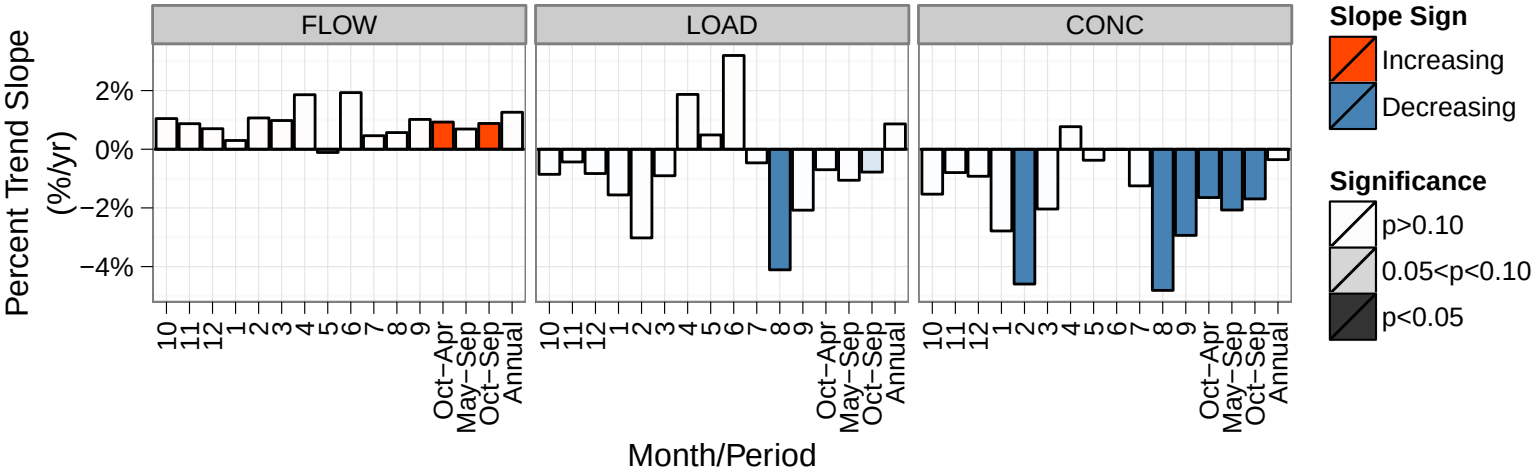


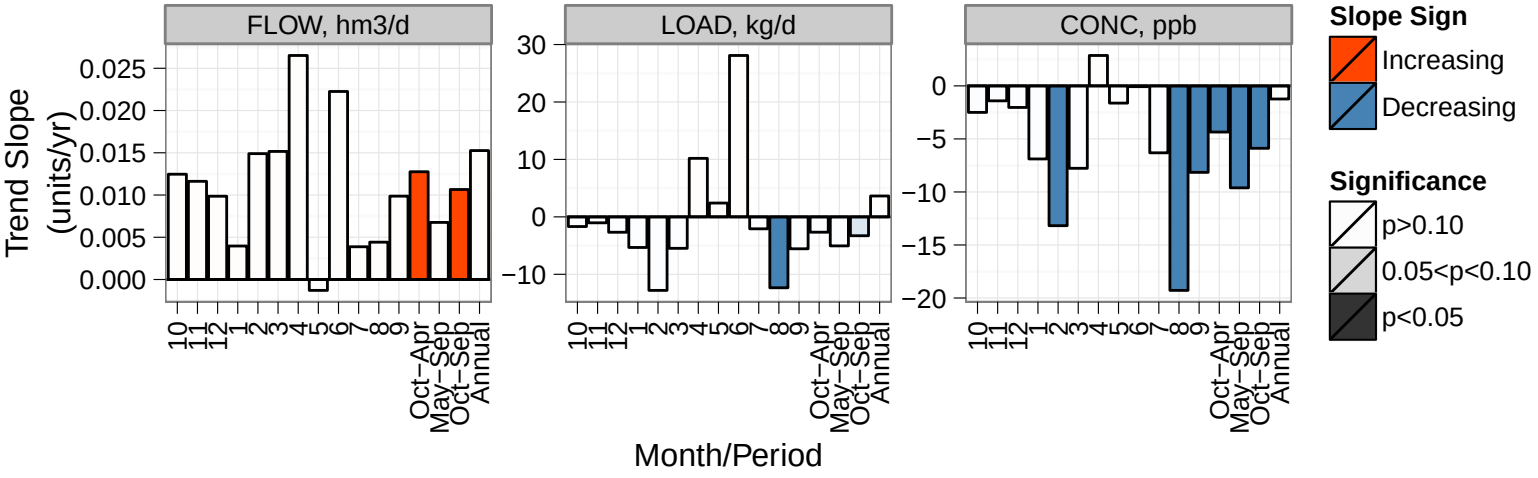




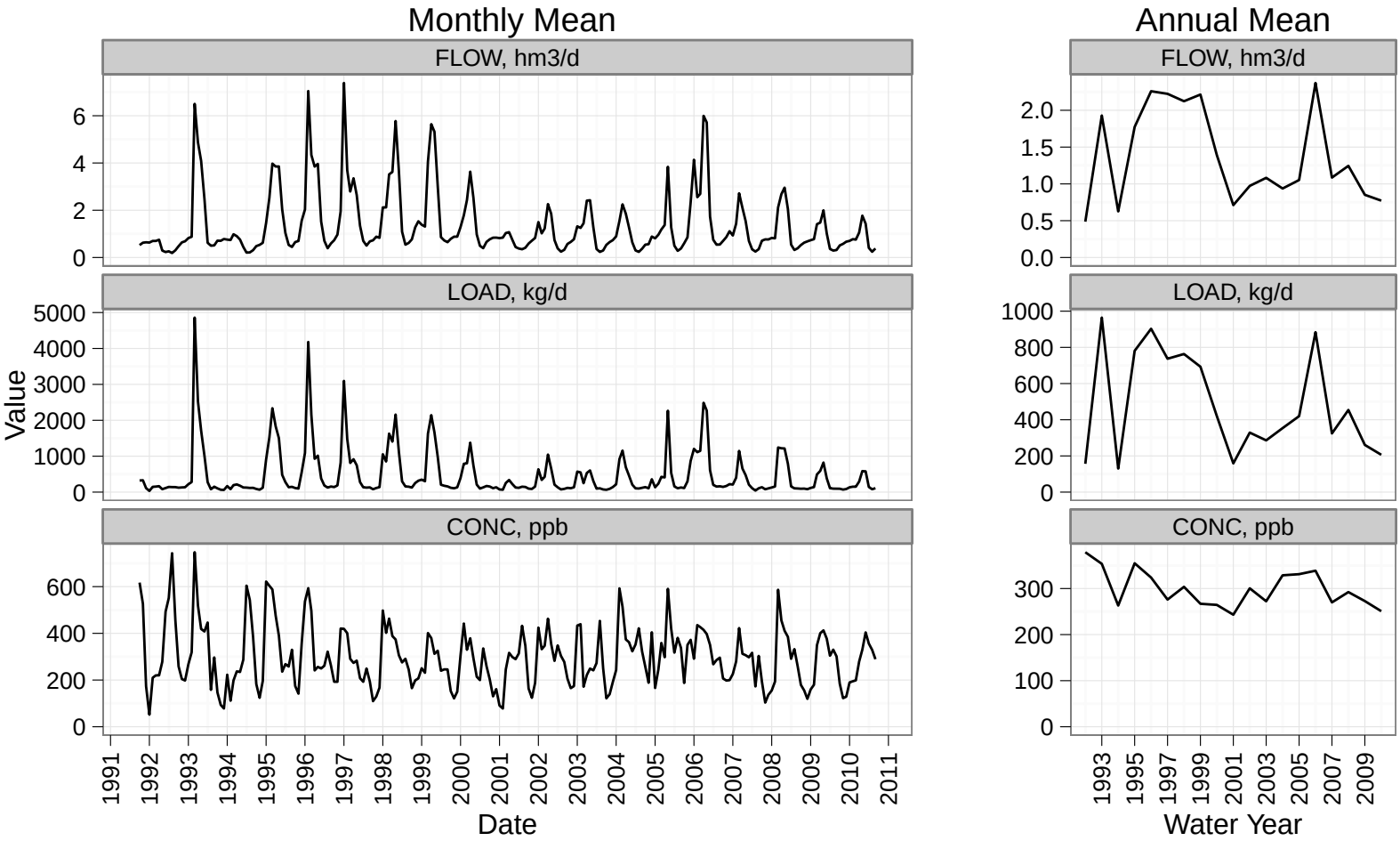
Trend Tests: Total Agency Inflows, TN

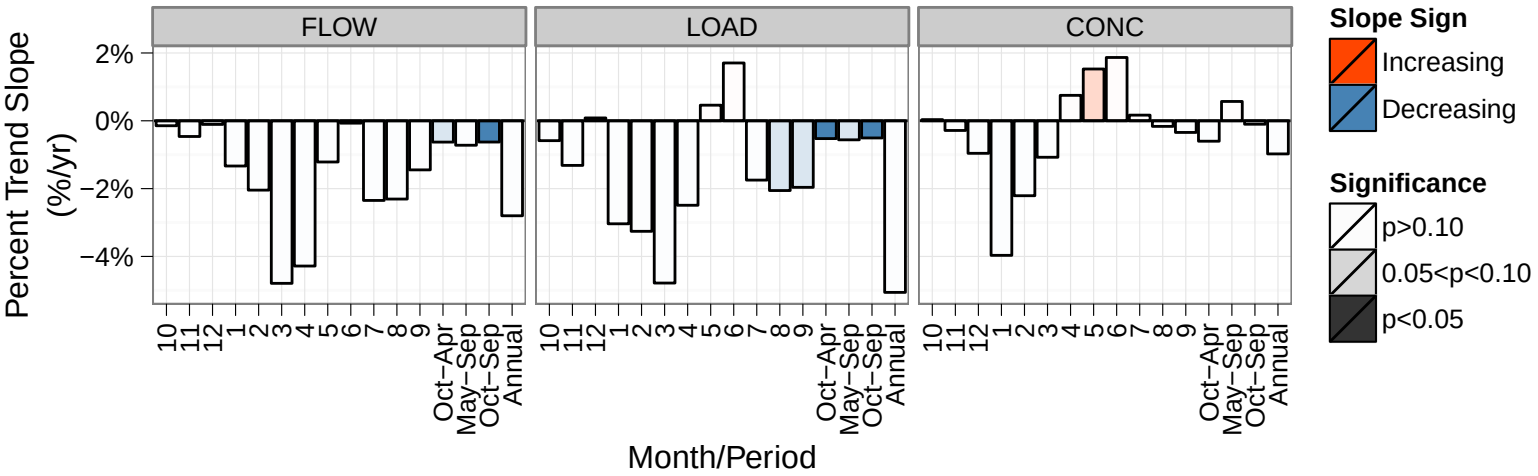


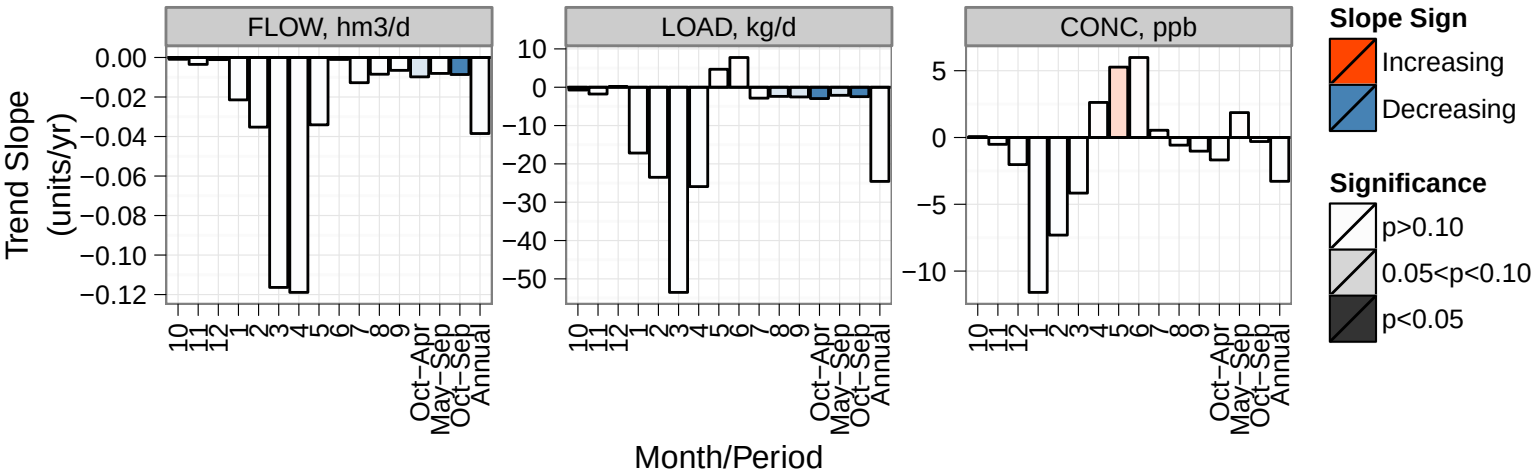




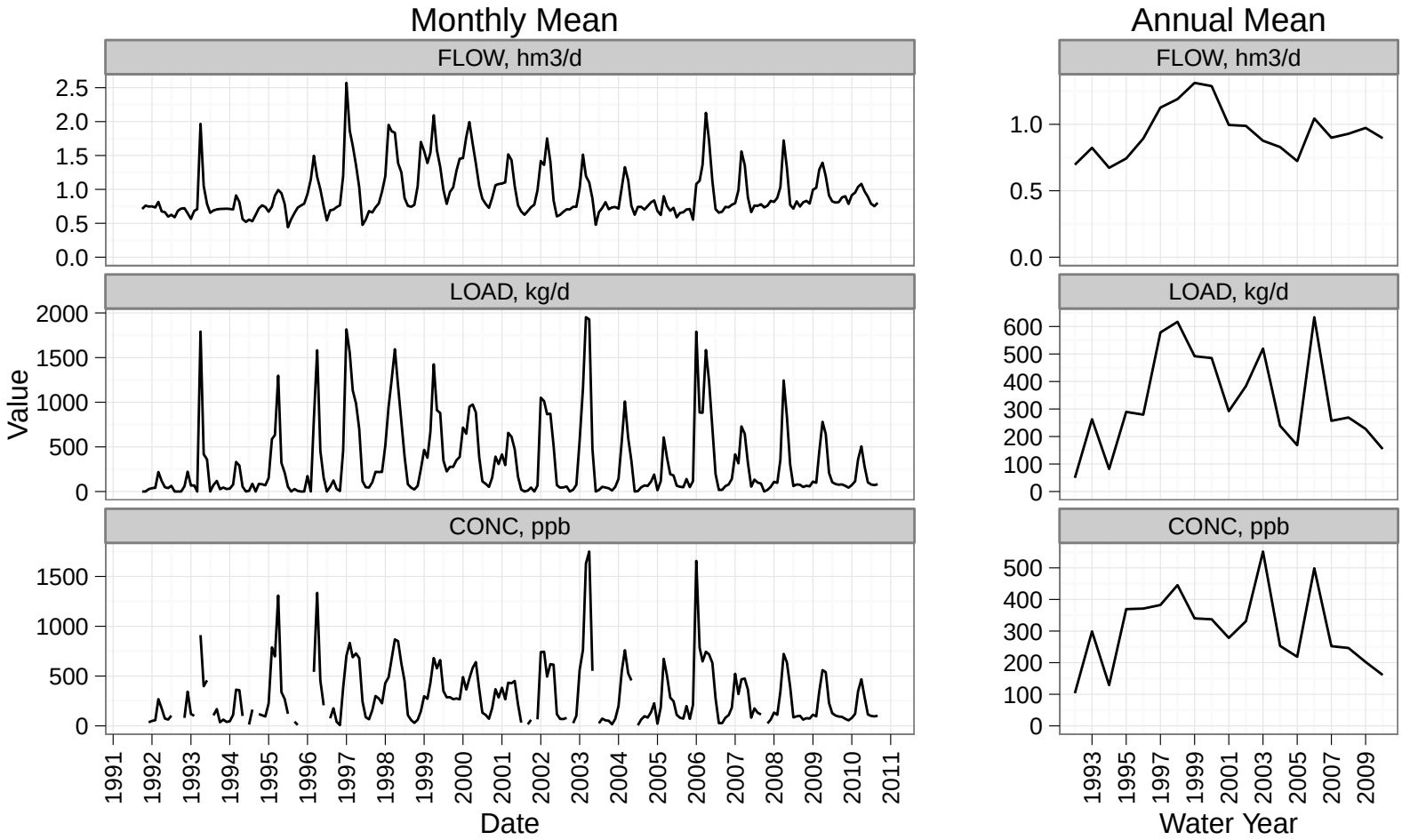
Trend Tests: Sprague, TN

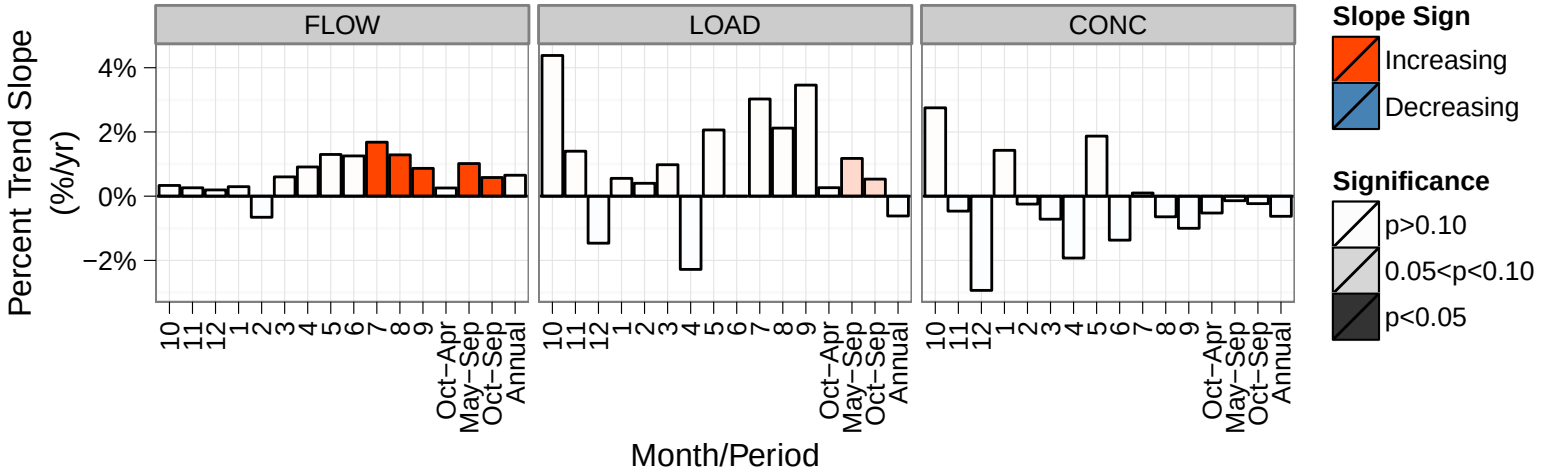


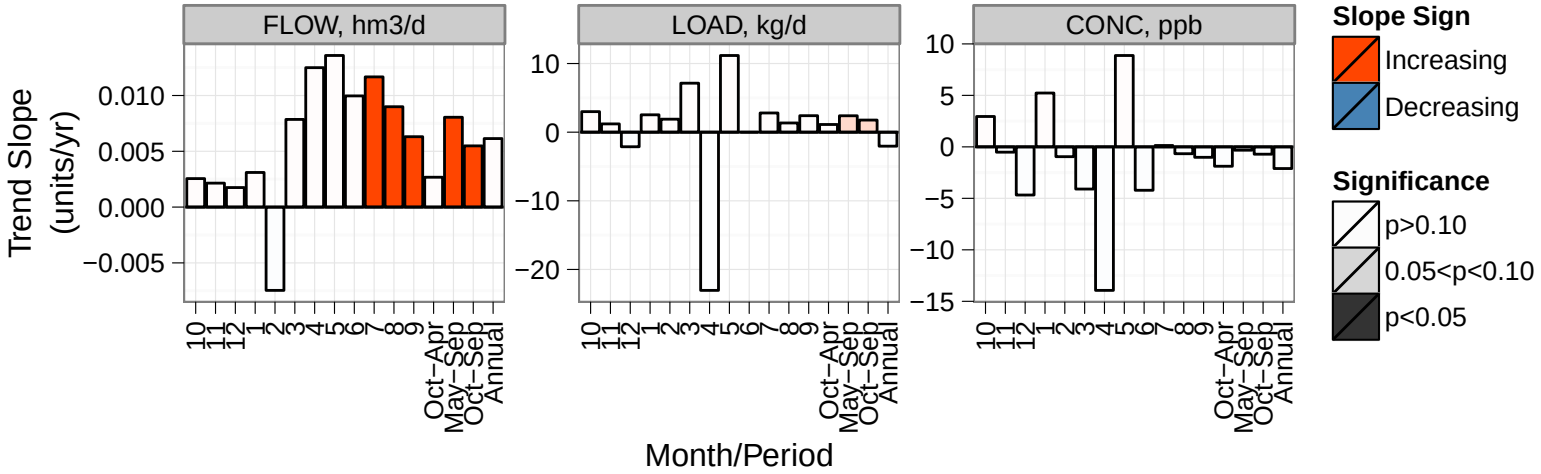




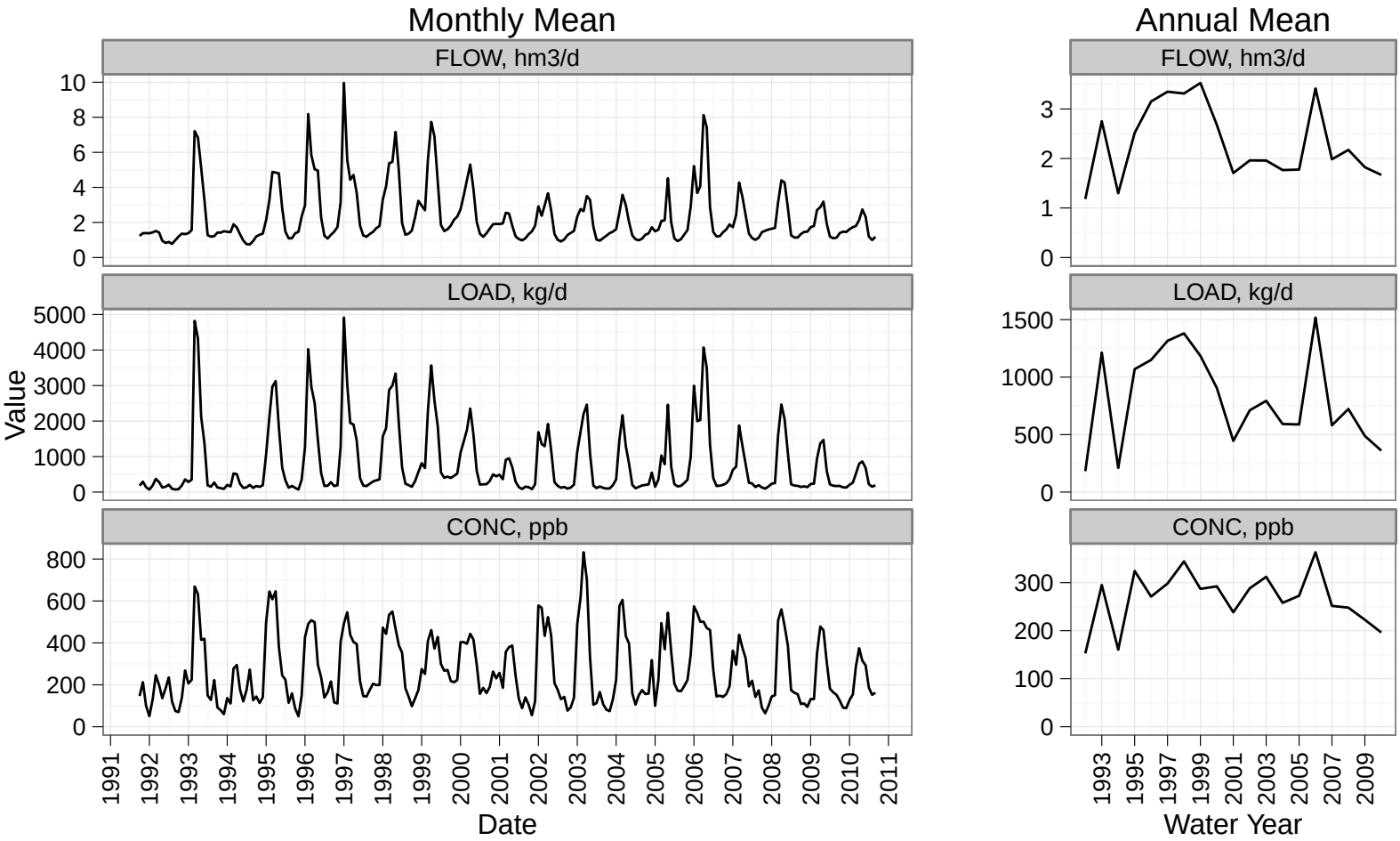
Trend Tests: Williamson−Sprague, TN

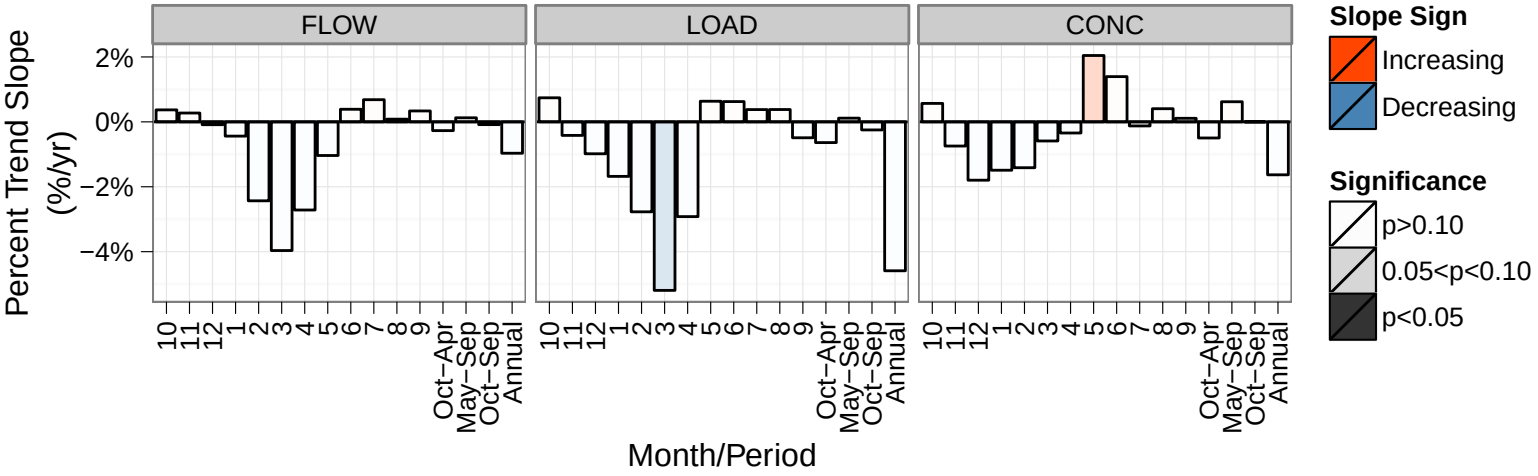


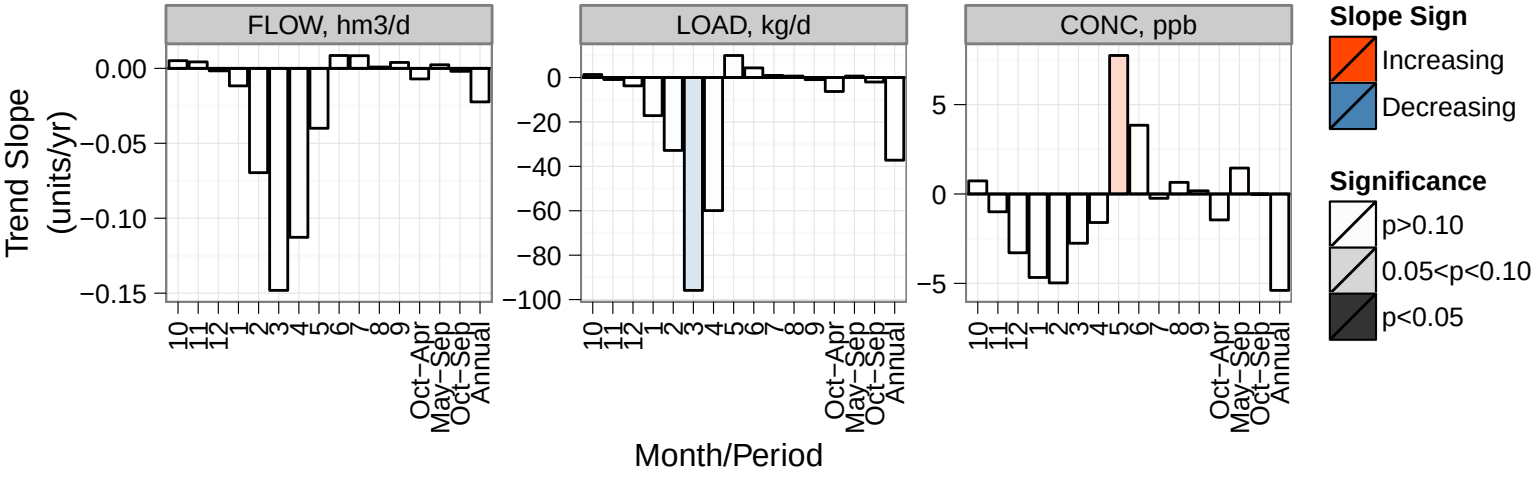




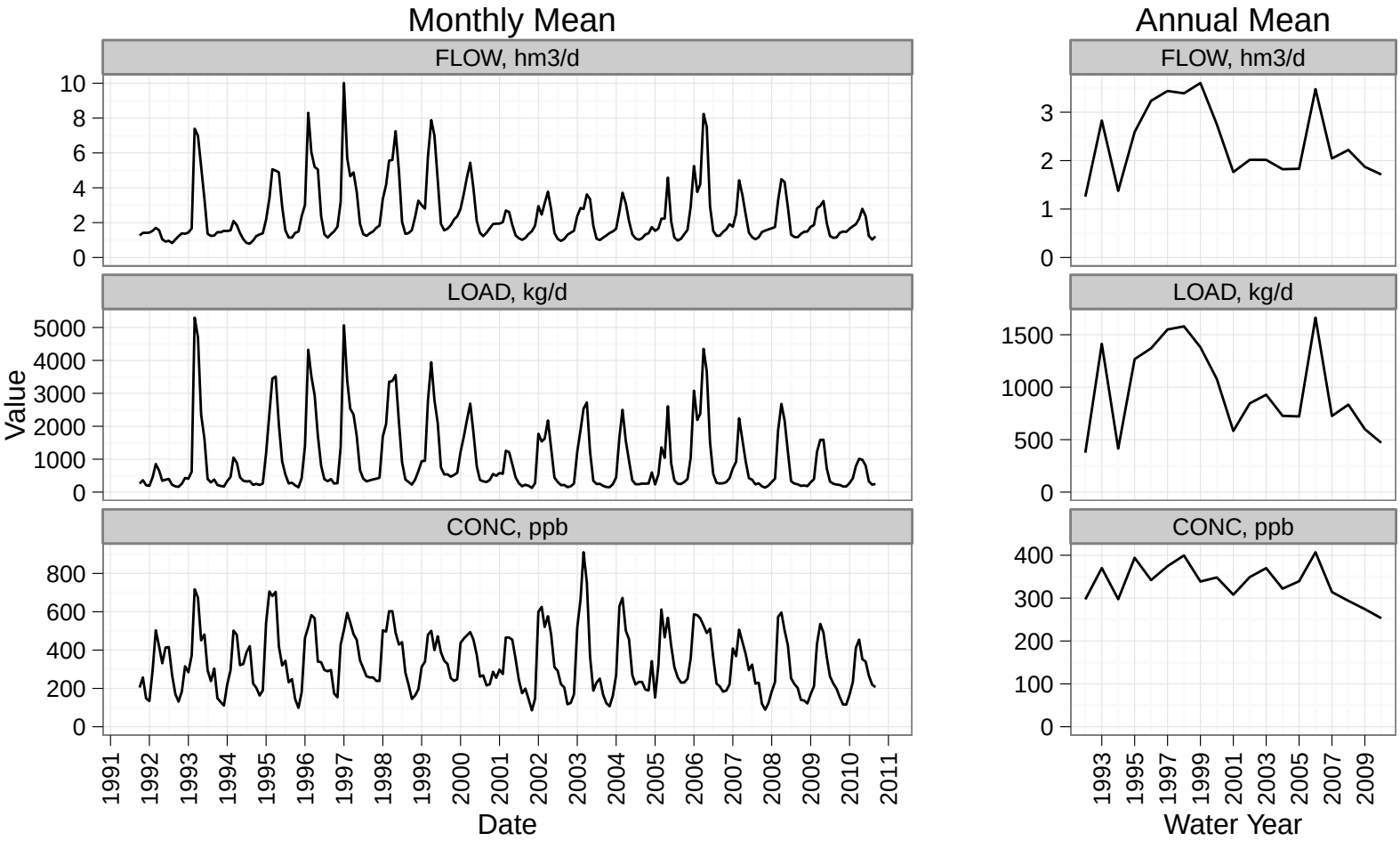
Trend Tests: Williamson, TN

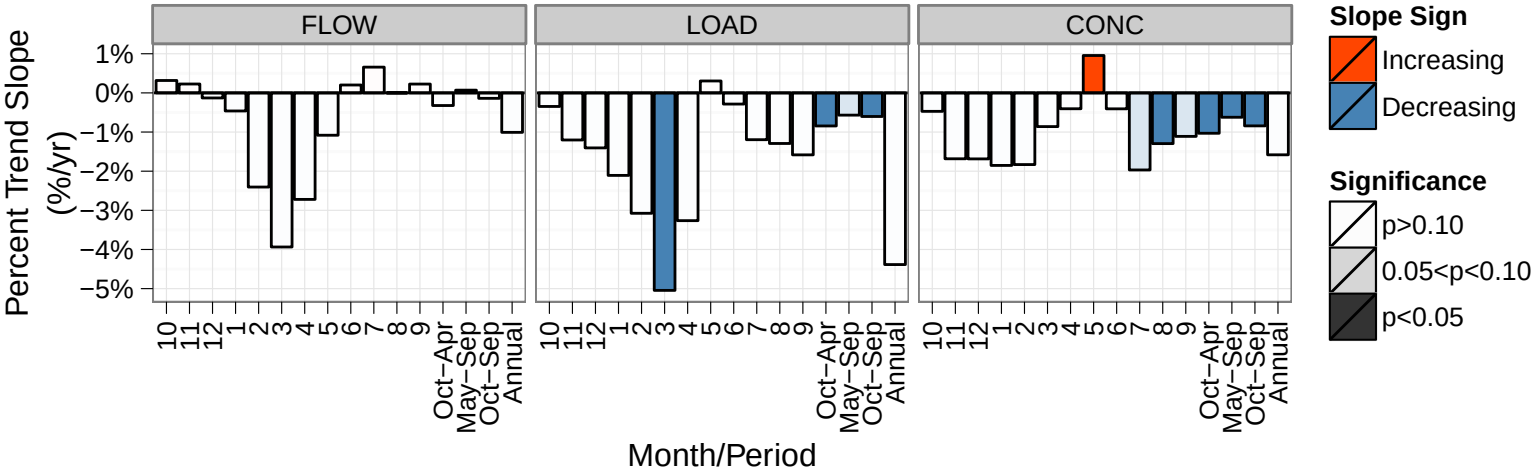


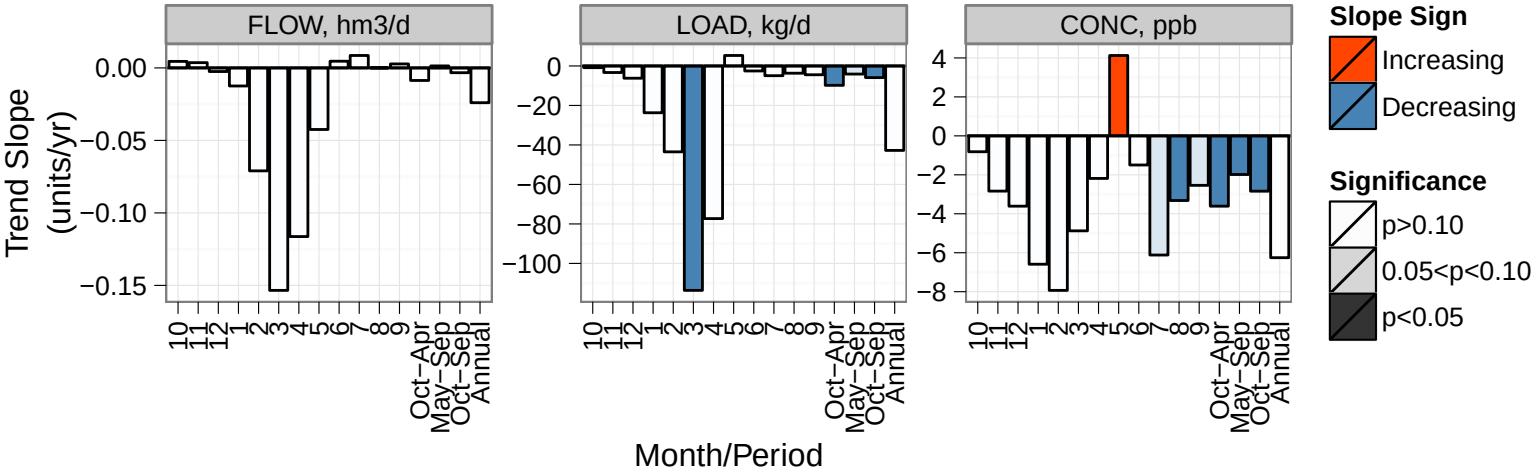




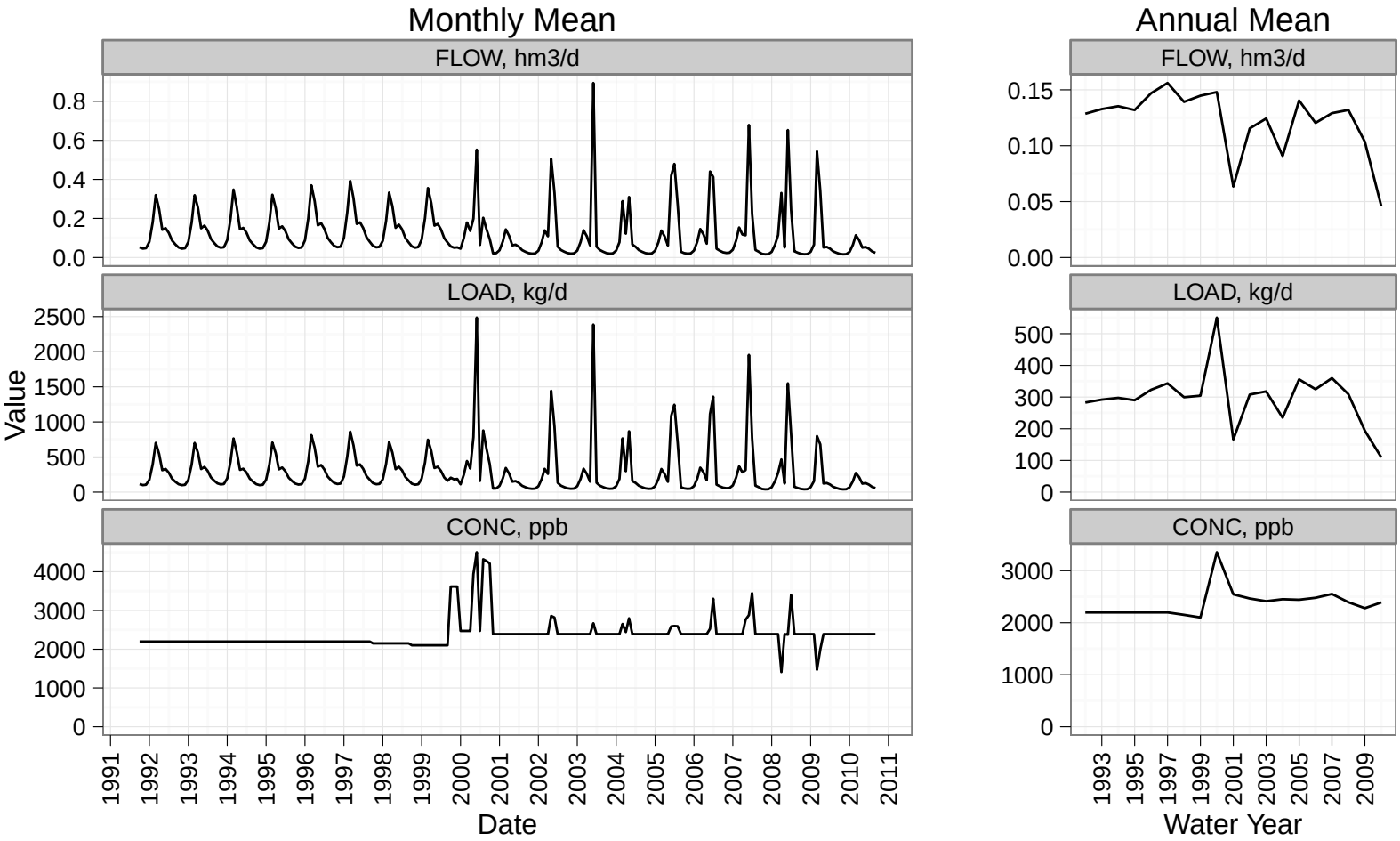
Trend Tests: Total Klamath Inflows, TN

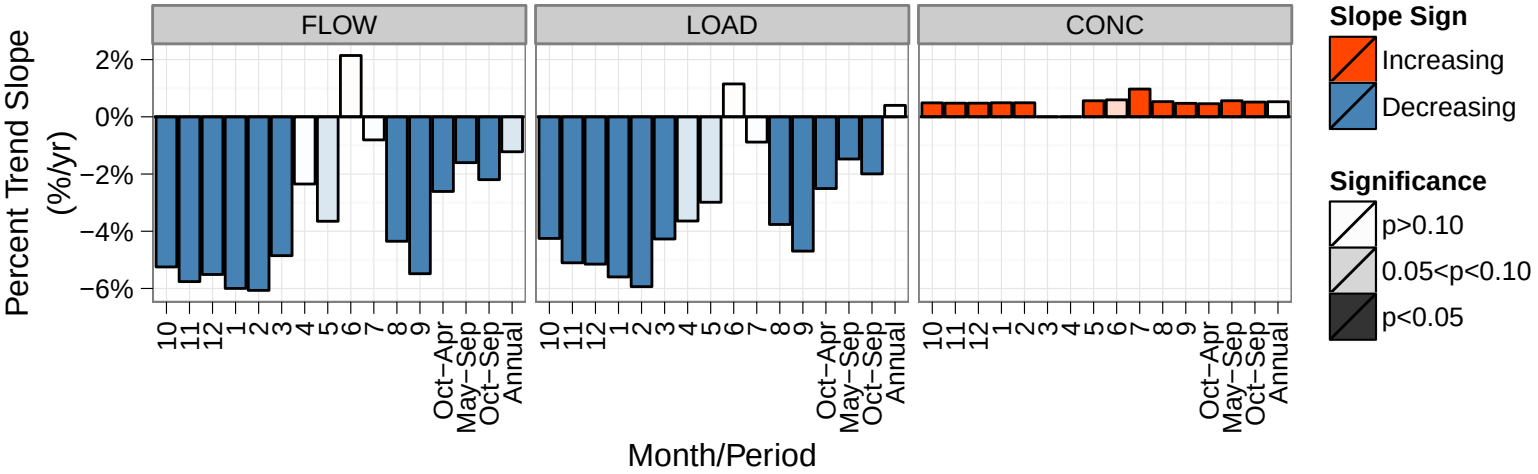


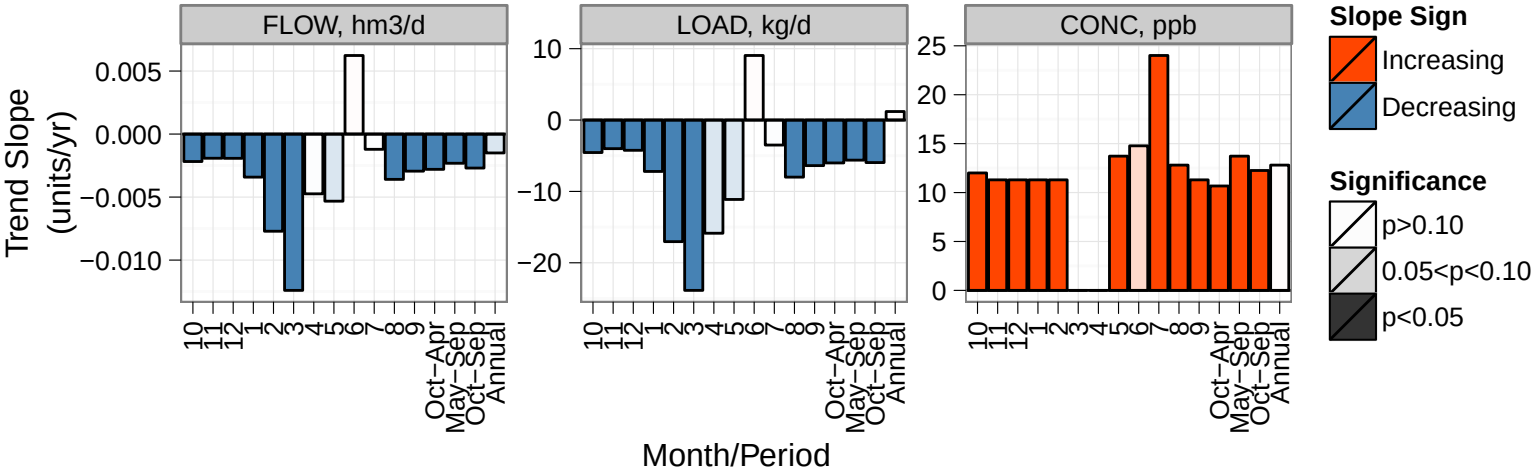




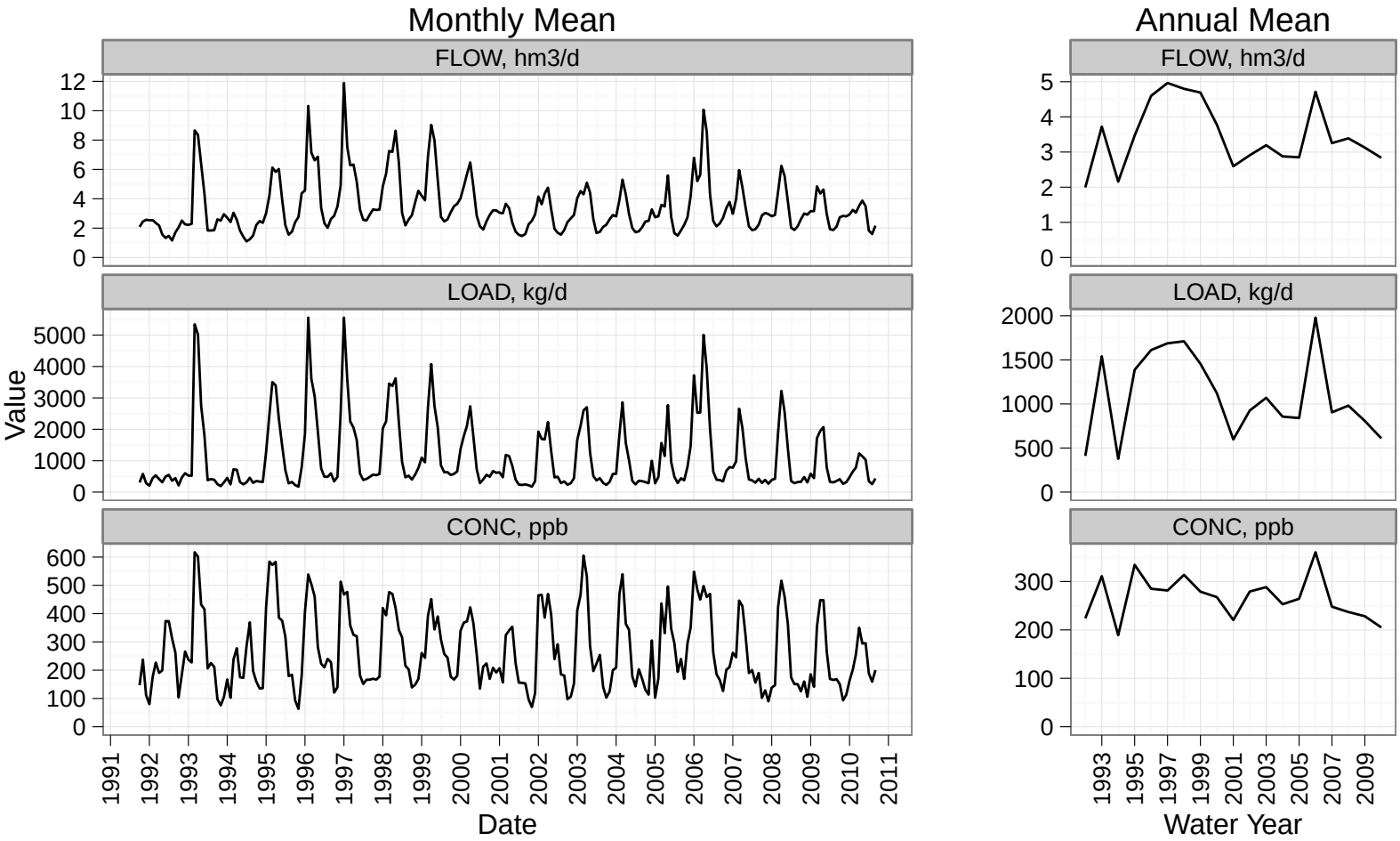
Trend Tests: Total Pumped to Lake, TN

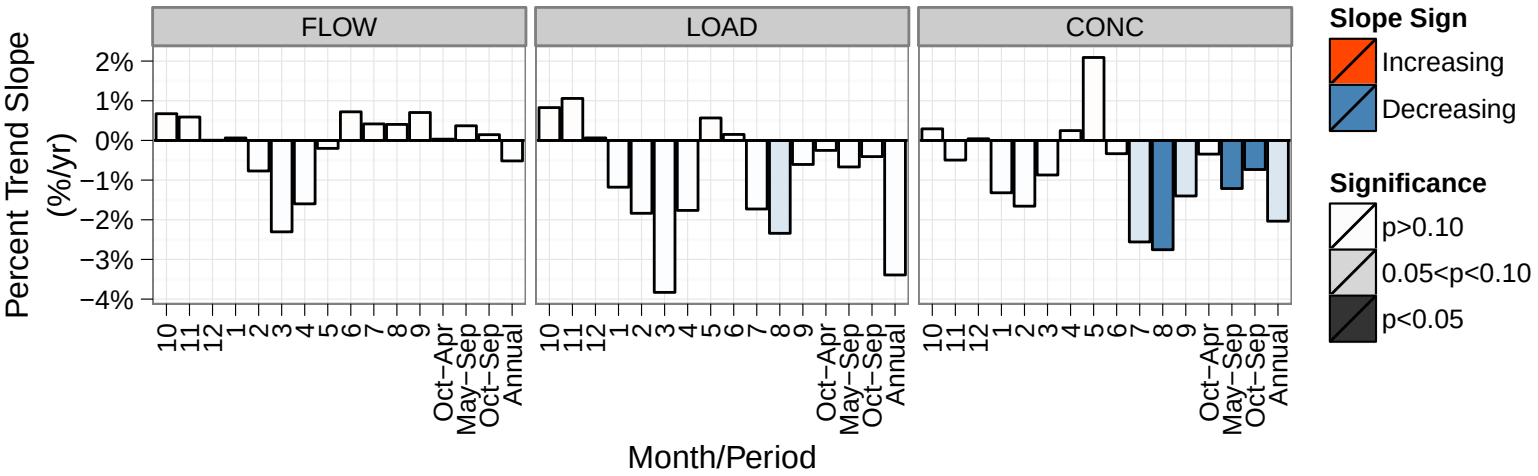


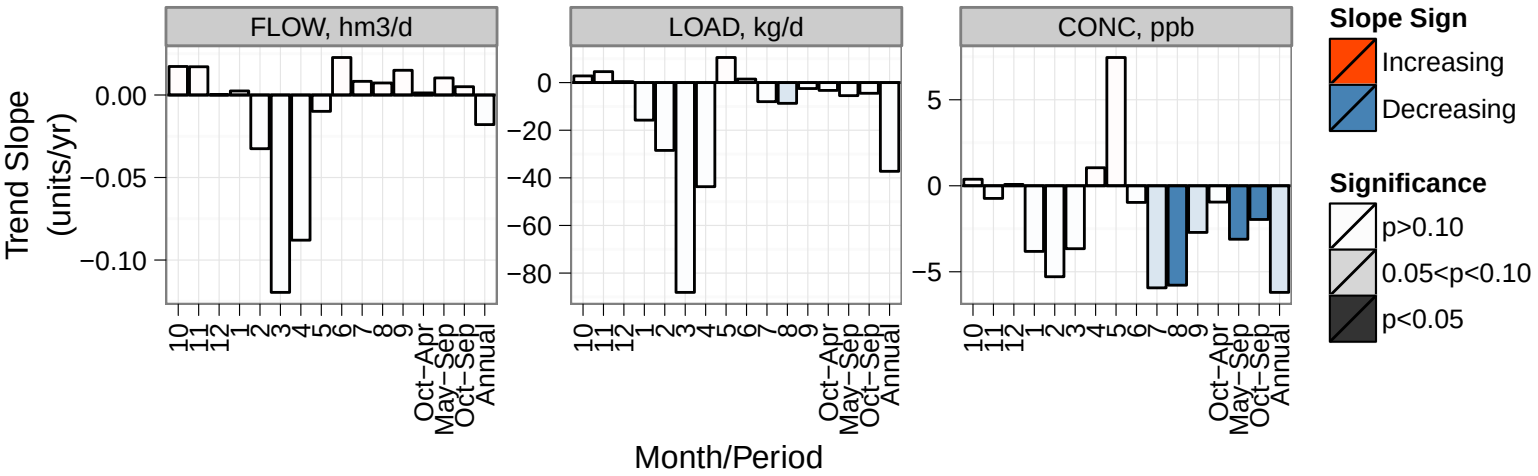




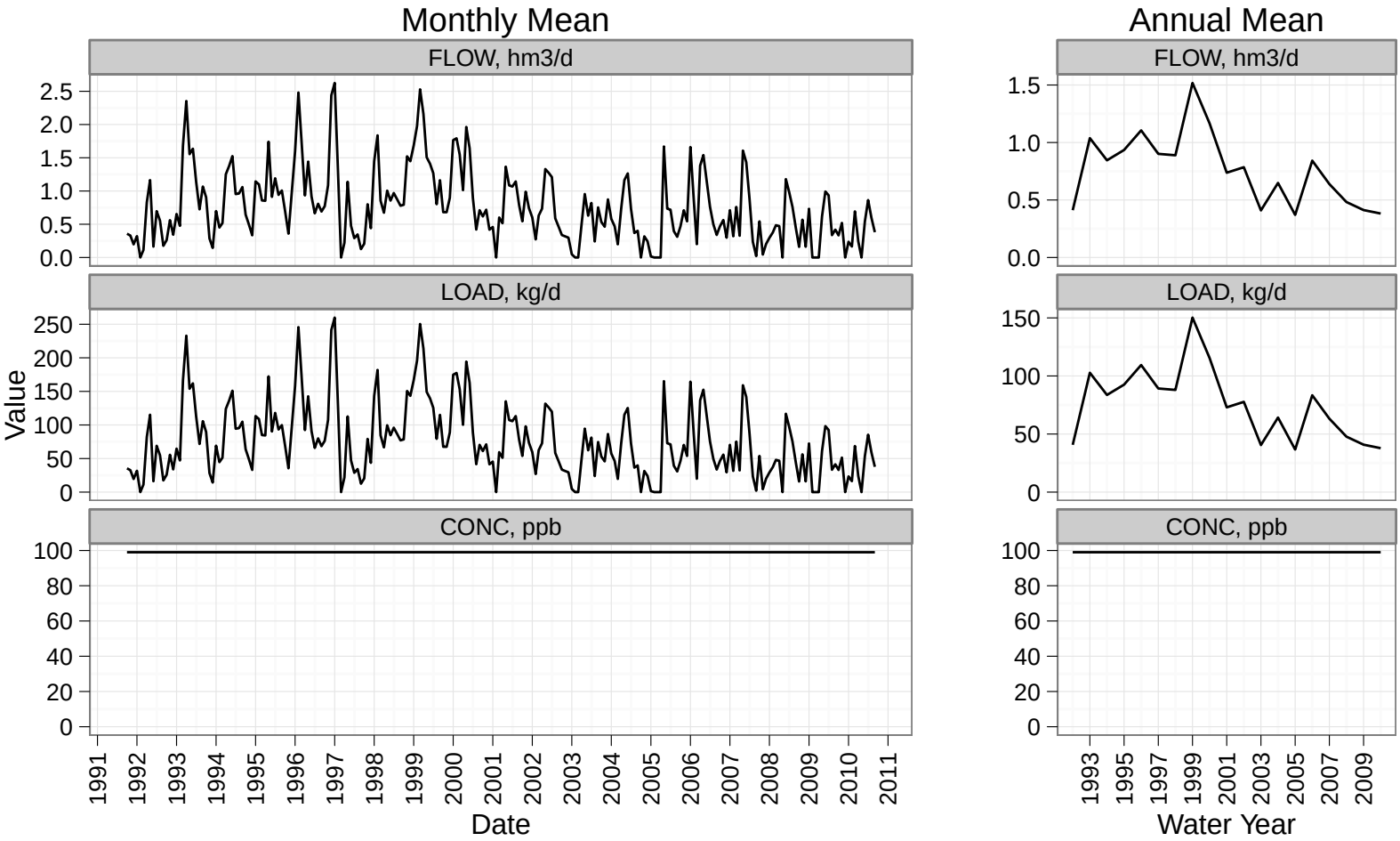
Trend Tests: Total Tributaries, TN

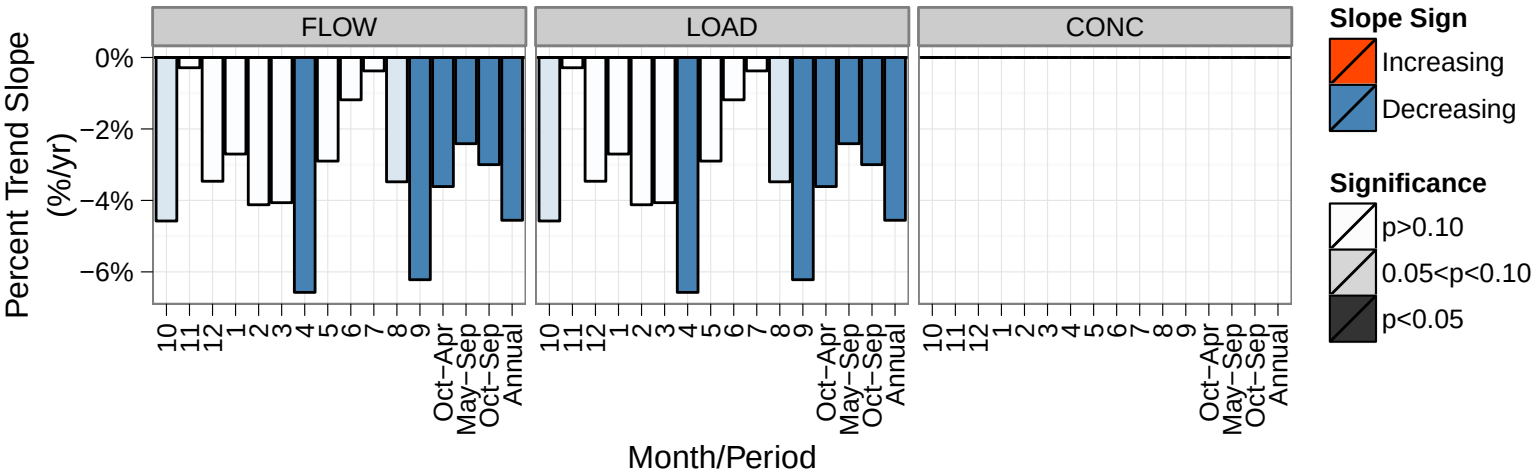


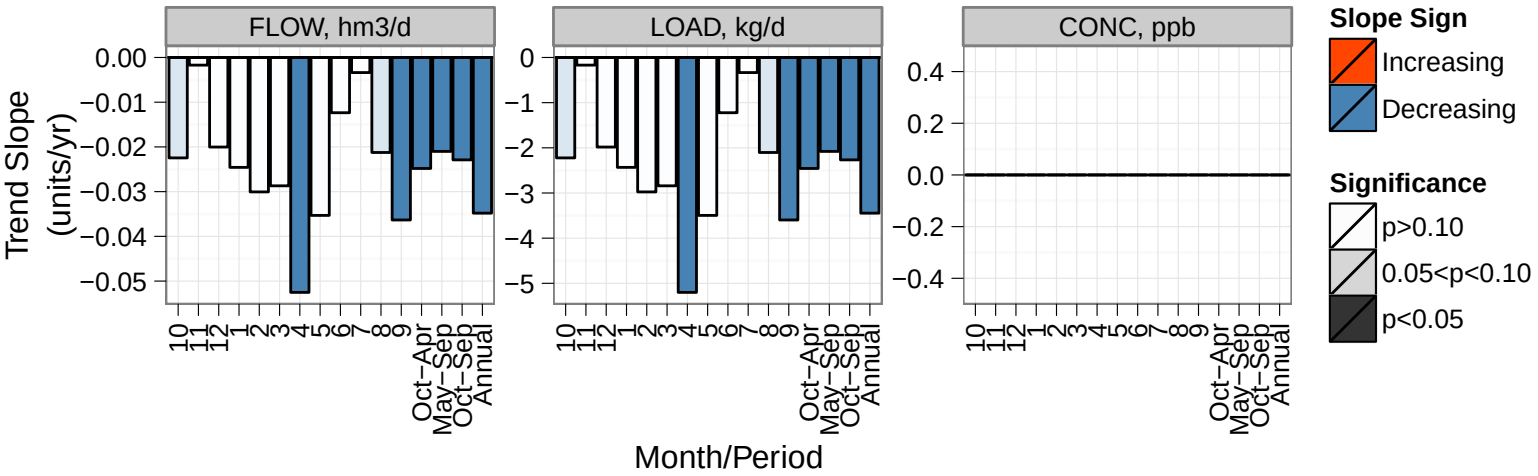




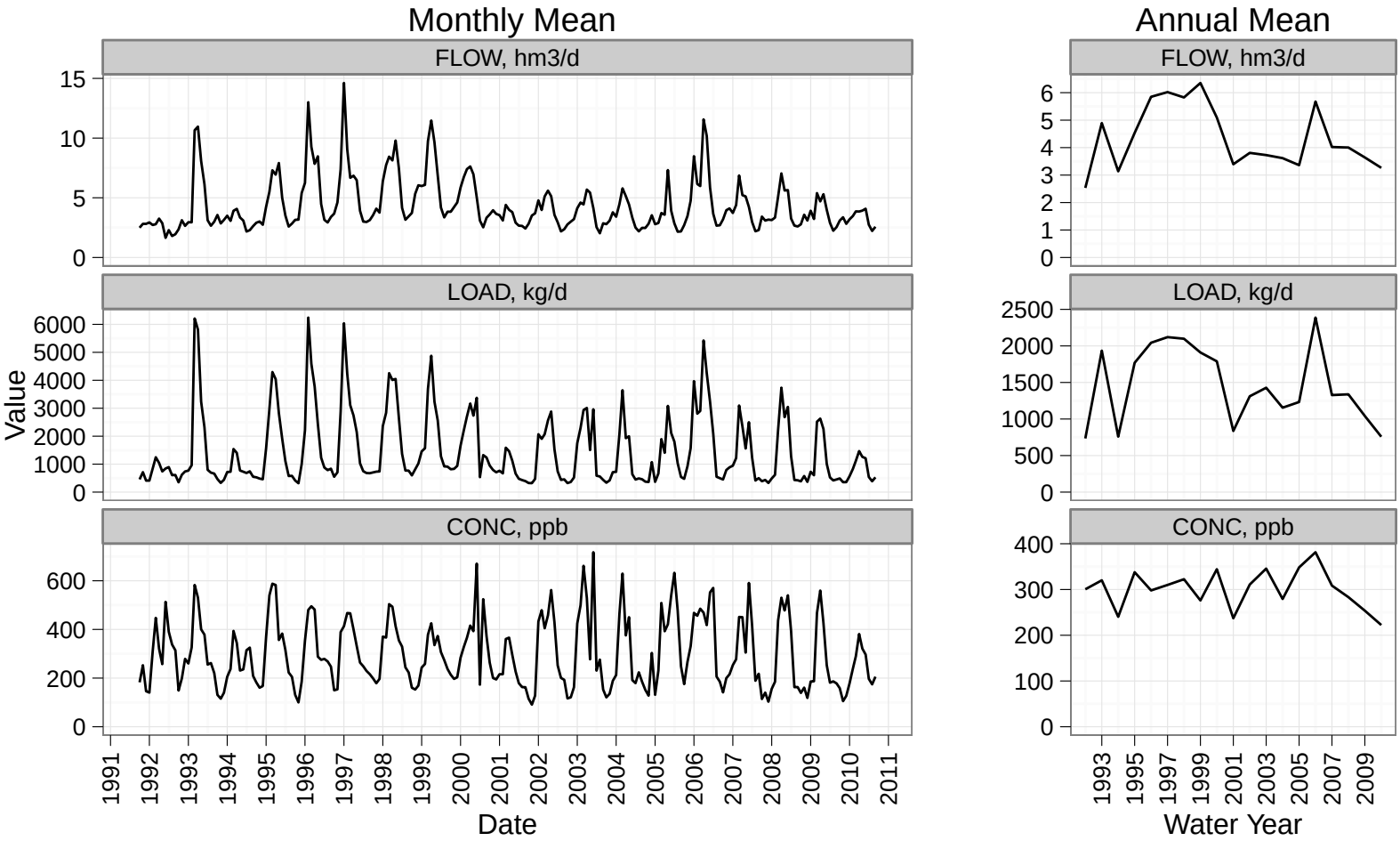
Trend Tests: Ungauged Inflows, TN

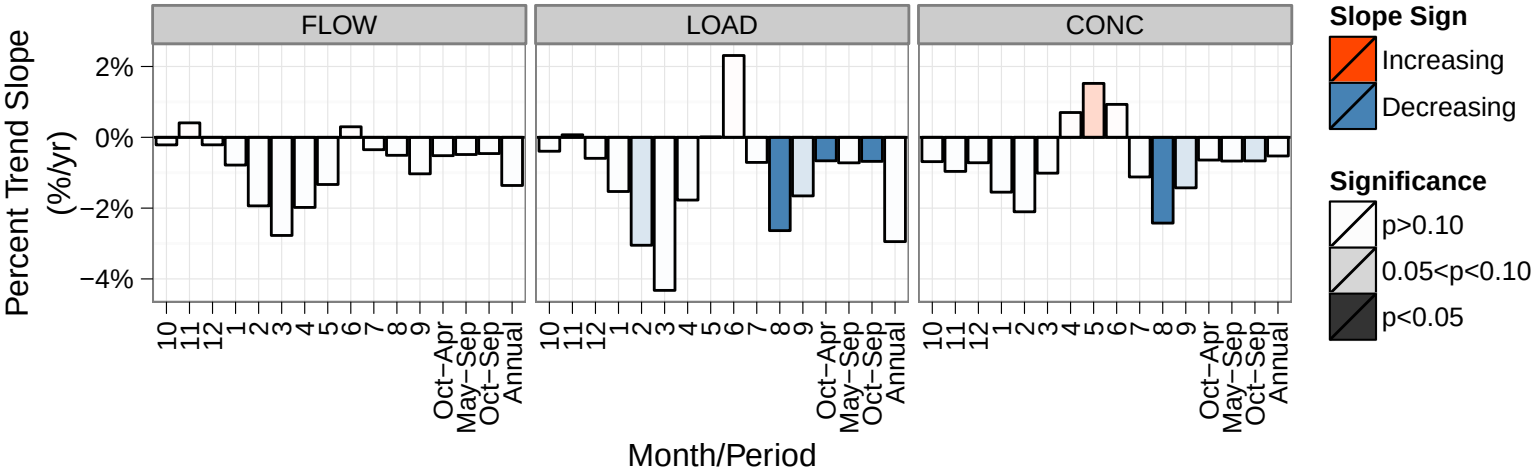


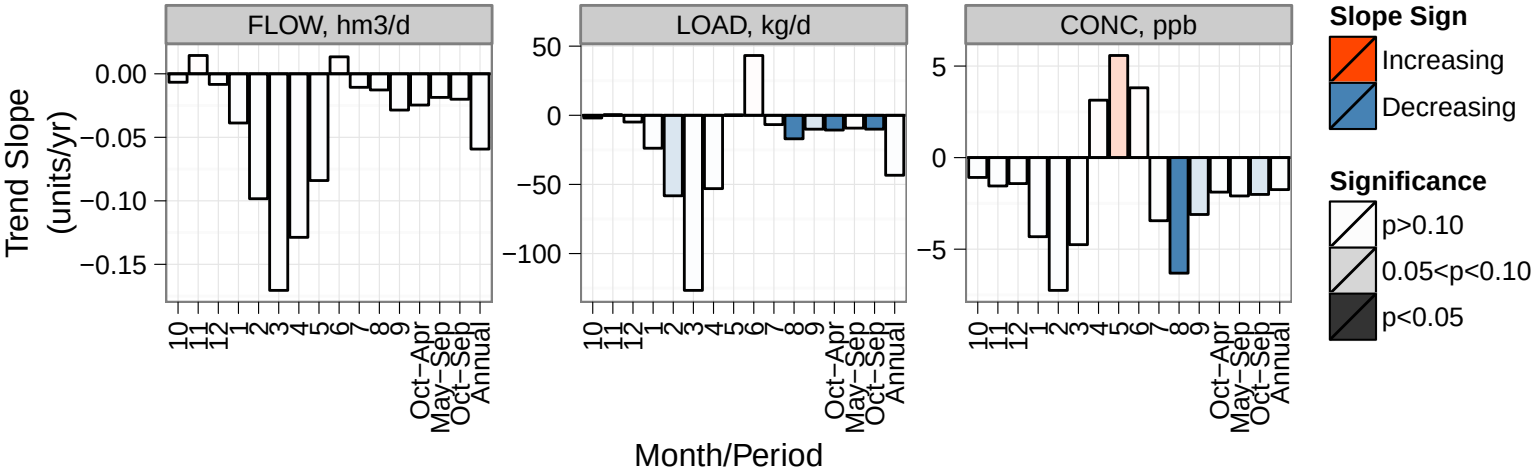




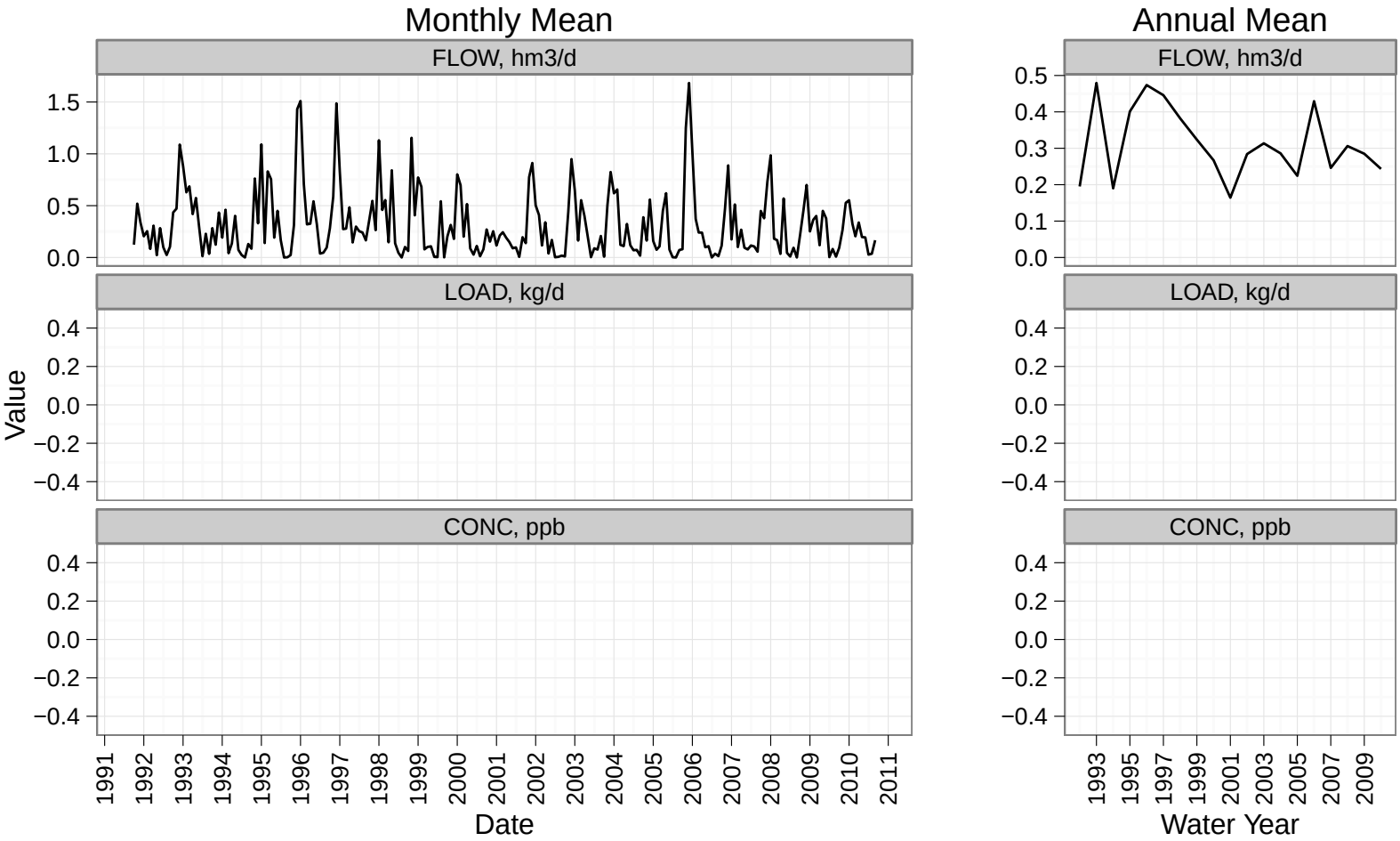
Trend Tests: Total External Inflows, TN

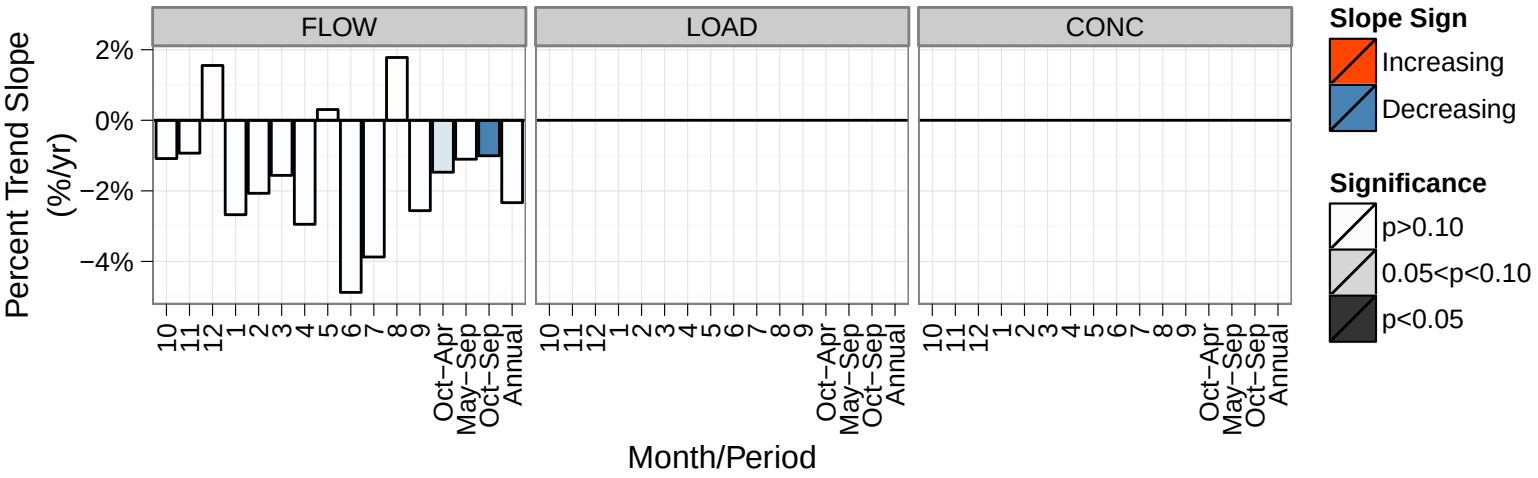


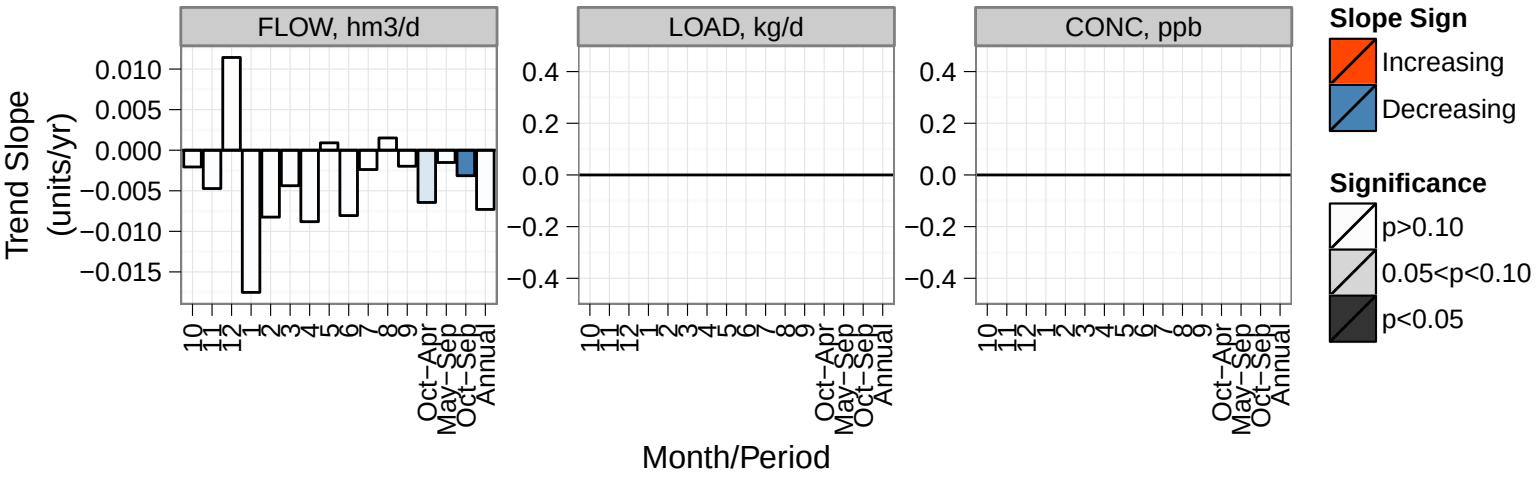


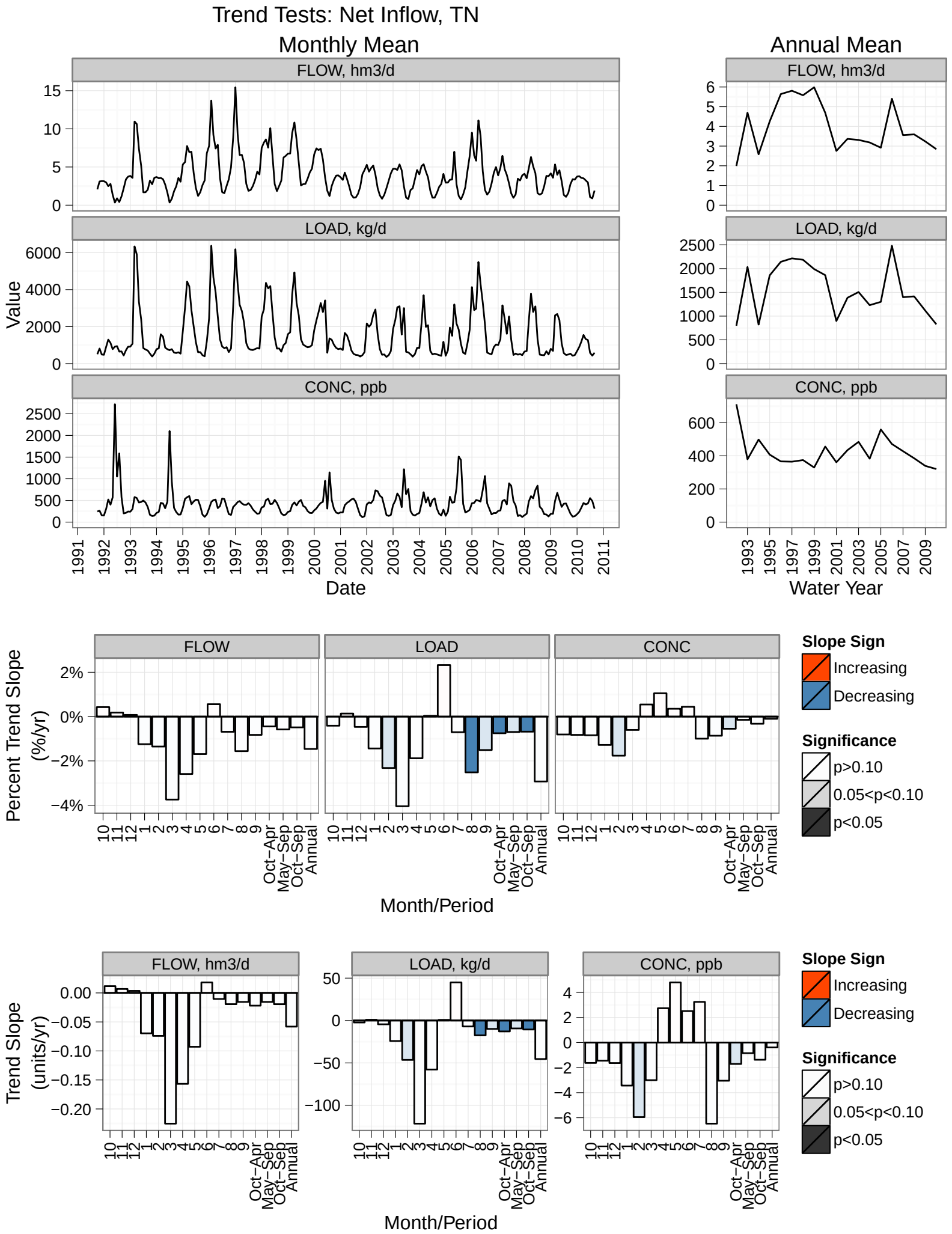


Trend Tests: Precipitation, TN

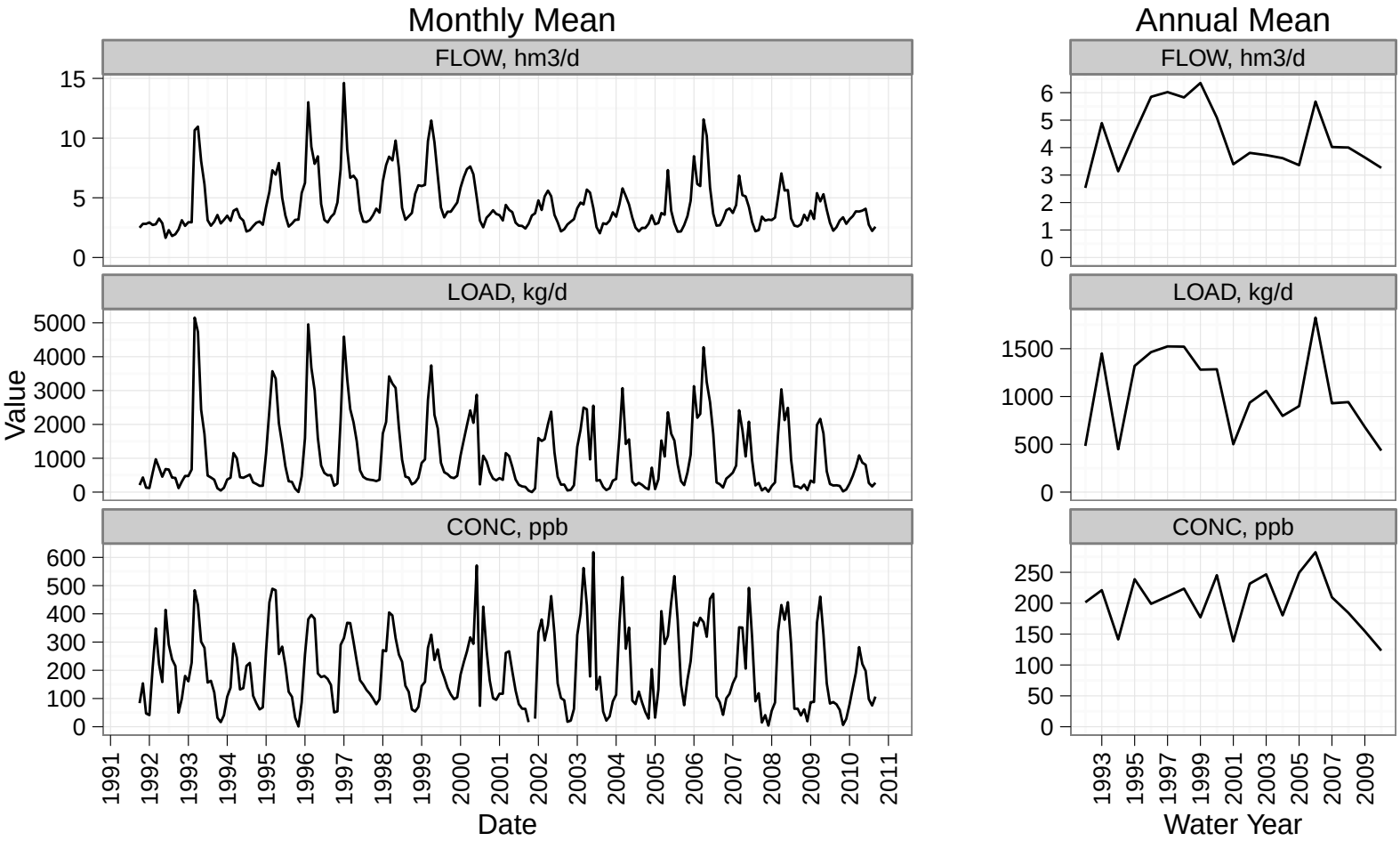


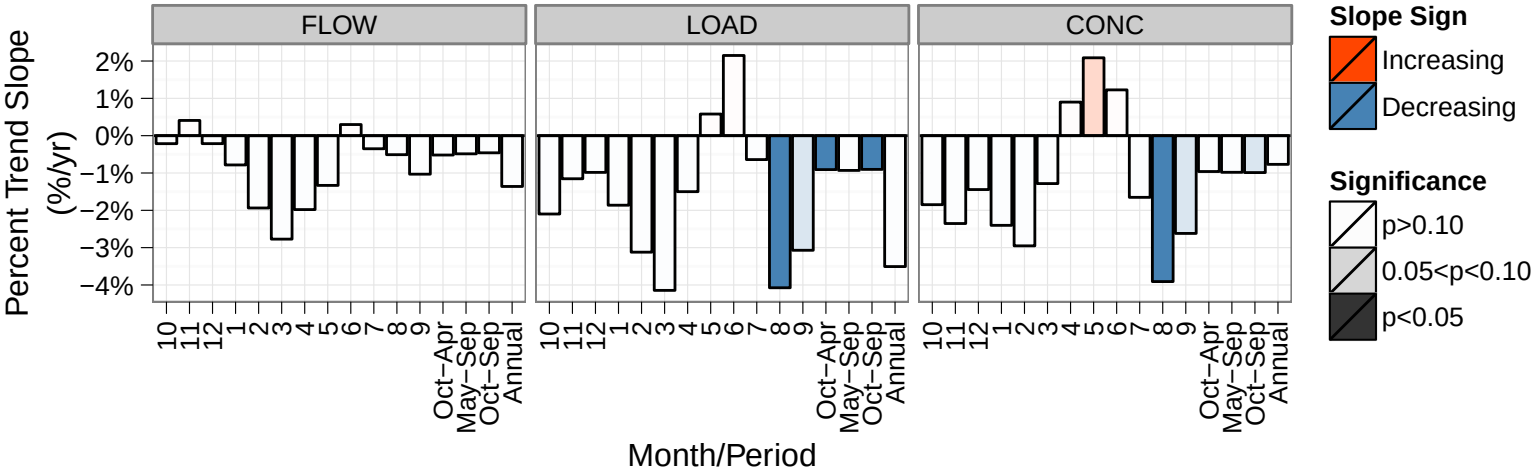


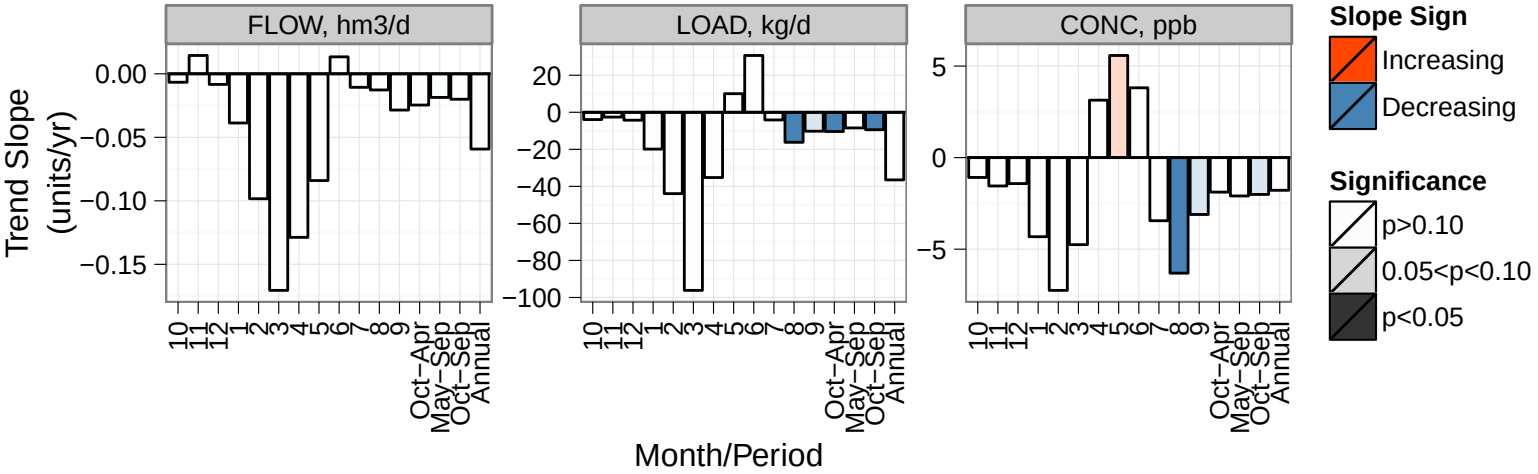



Trend Tests: Net Inflow, TN
Monthly Mean
Annual Mean
FLOW, hm3/d
LOAD, kg/d
CONC, ppb
Value
Date
Water Year
FLOW
LOAD
CONC
Percent Trend Slope (%/yr)
Month/Period
Trend Slope (units/yr)
Slope Sign
Increasing
Decreasing
Significance
p>0.10
0.05<p<0.10
p<0.05

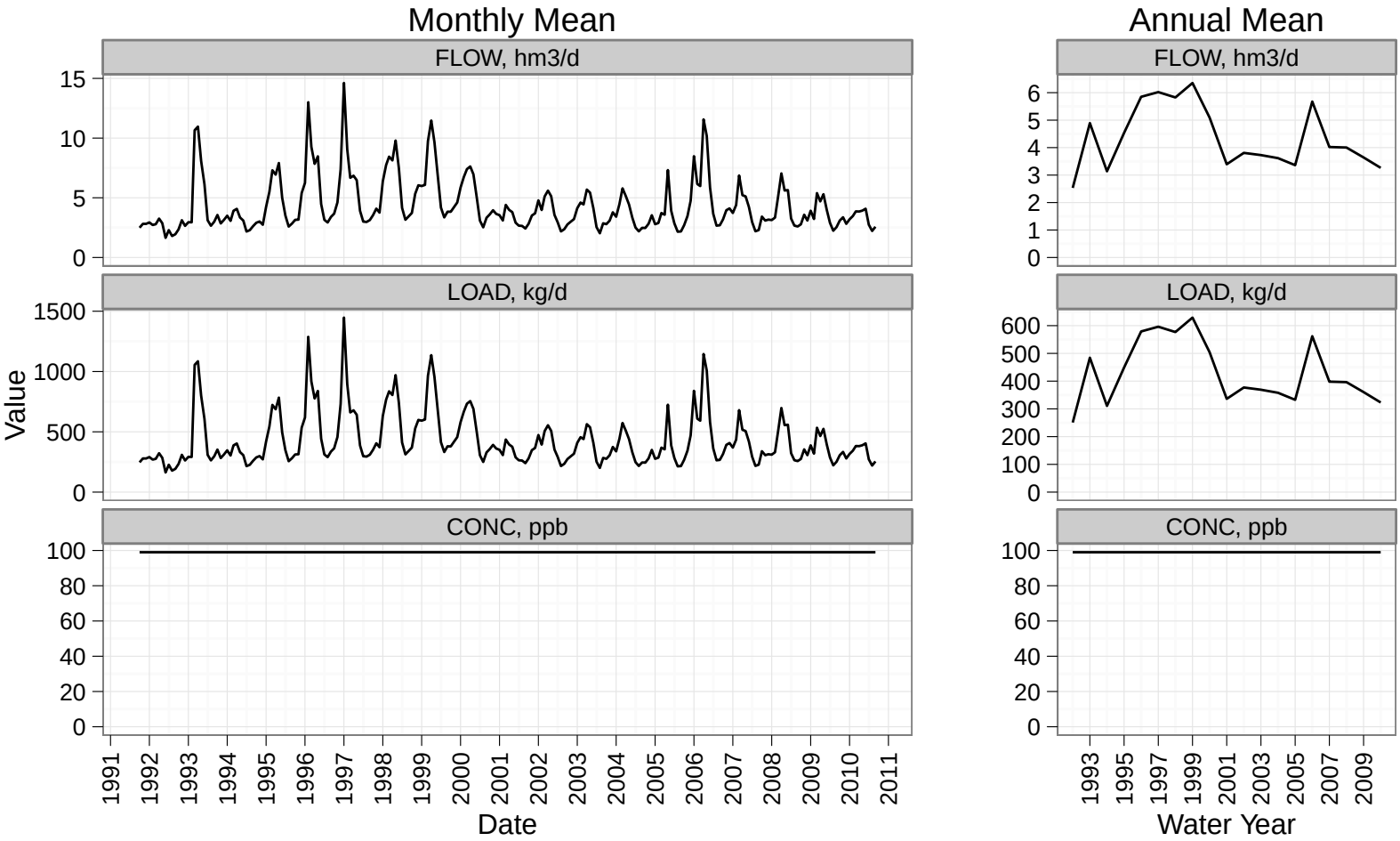
Trend Tests: Anthropogenic Sources, TN

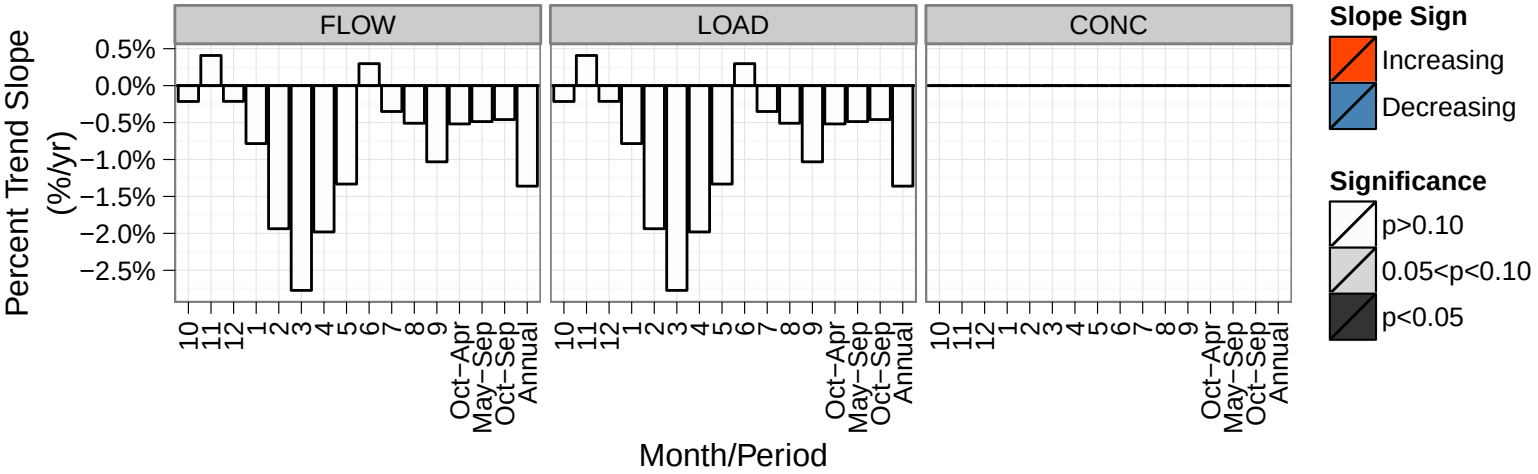


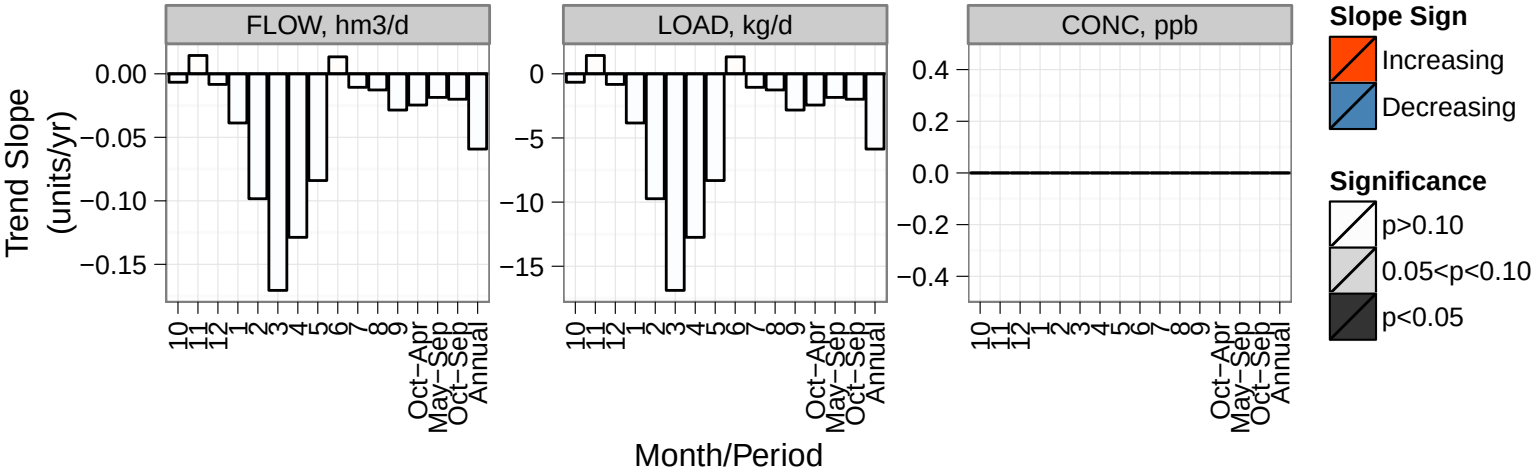




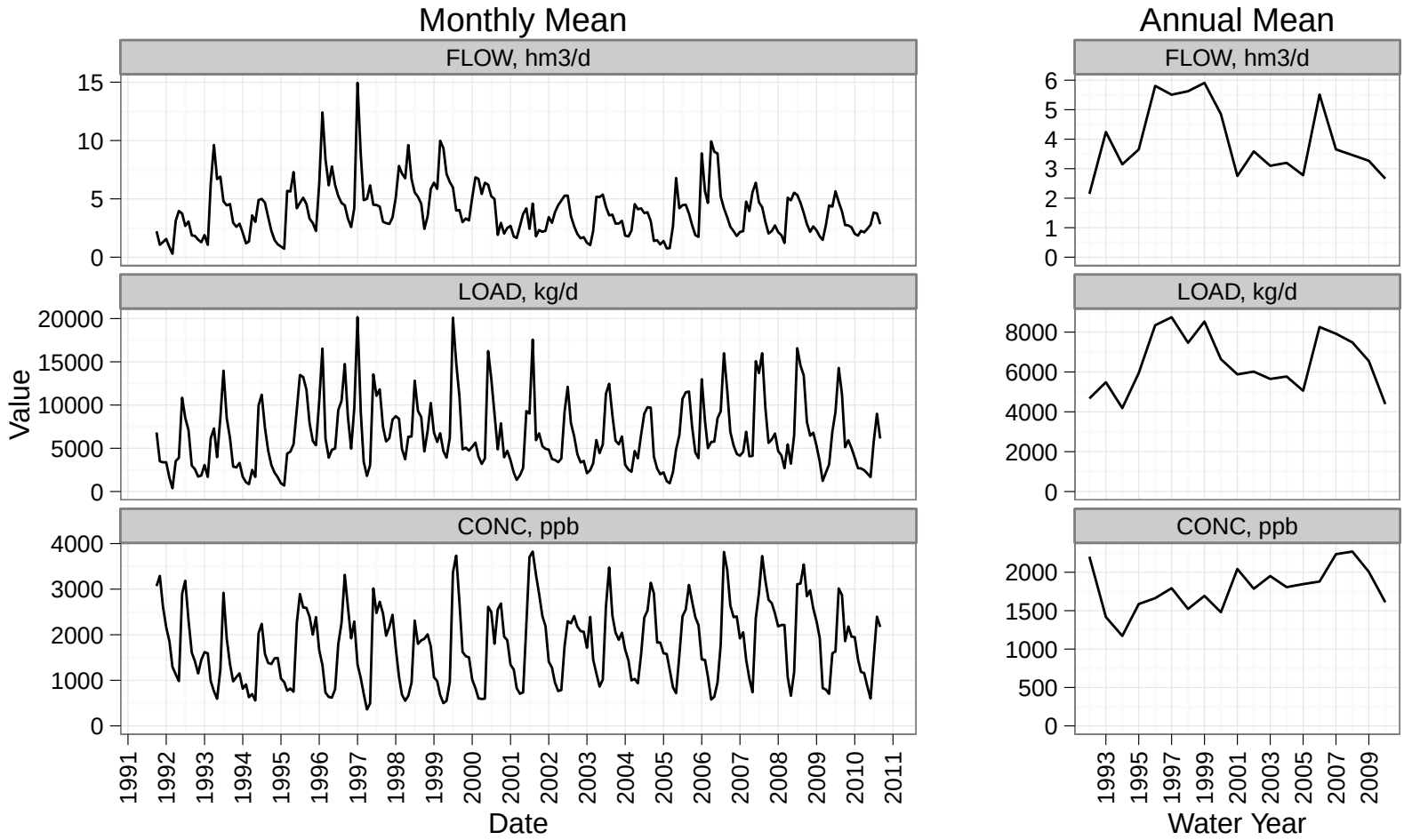
Trend Tests: Background Sources, TN

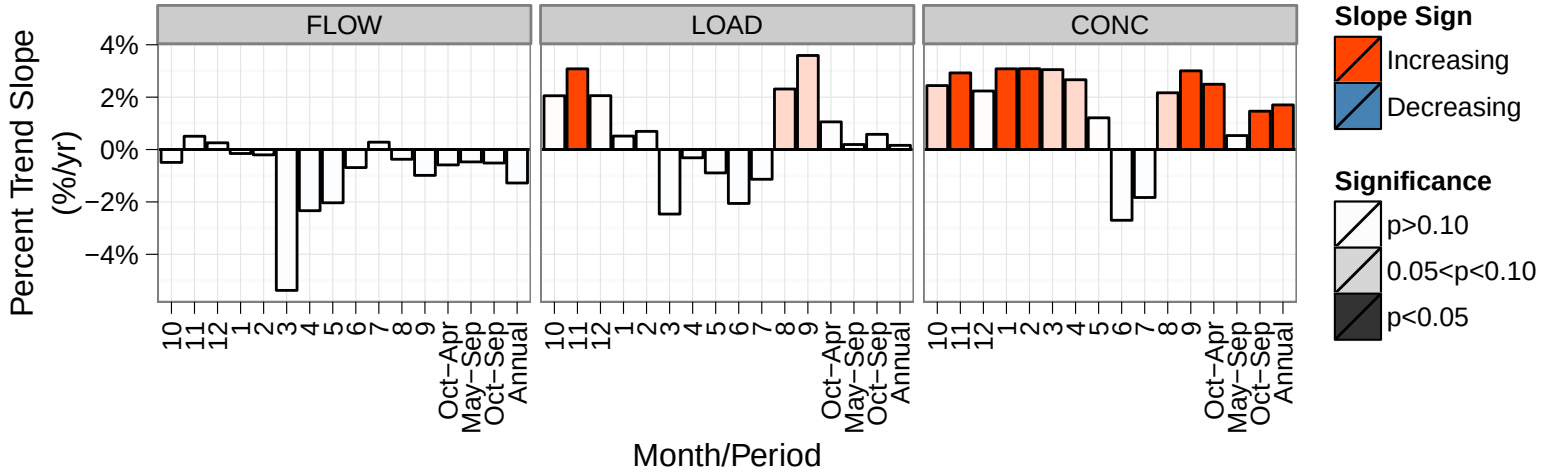


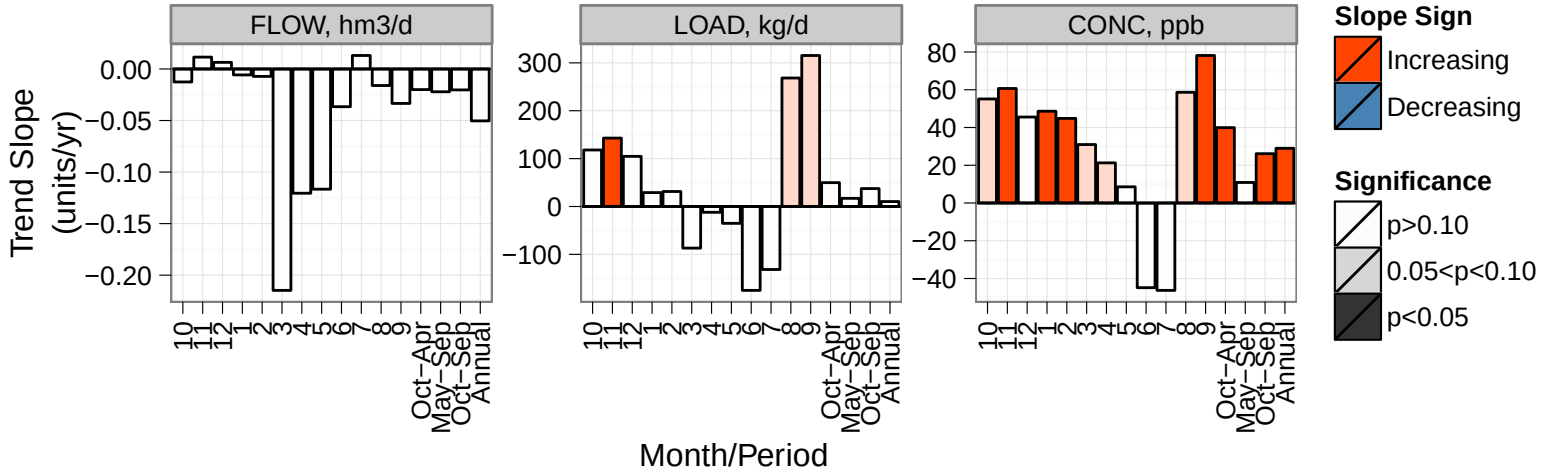




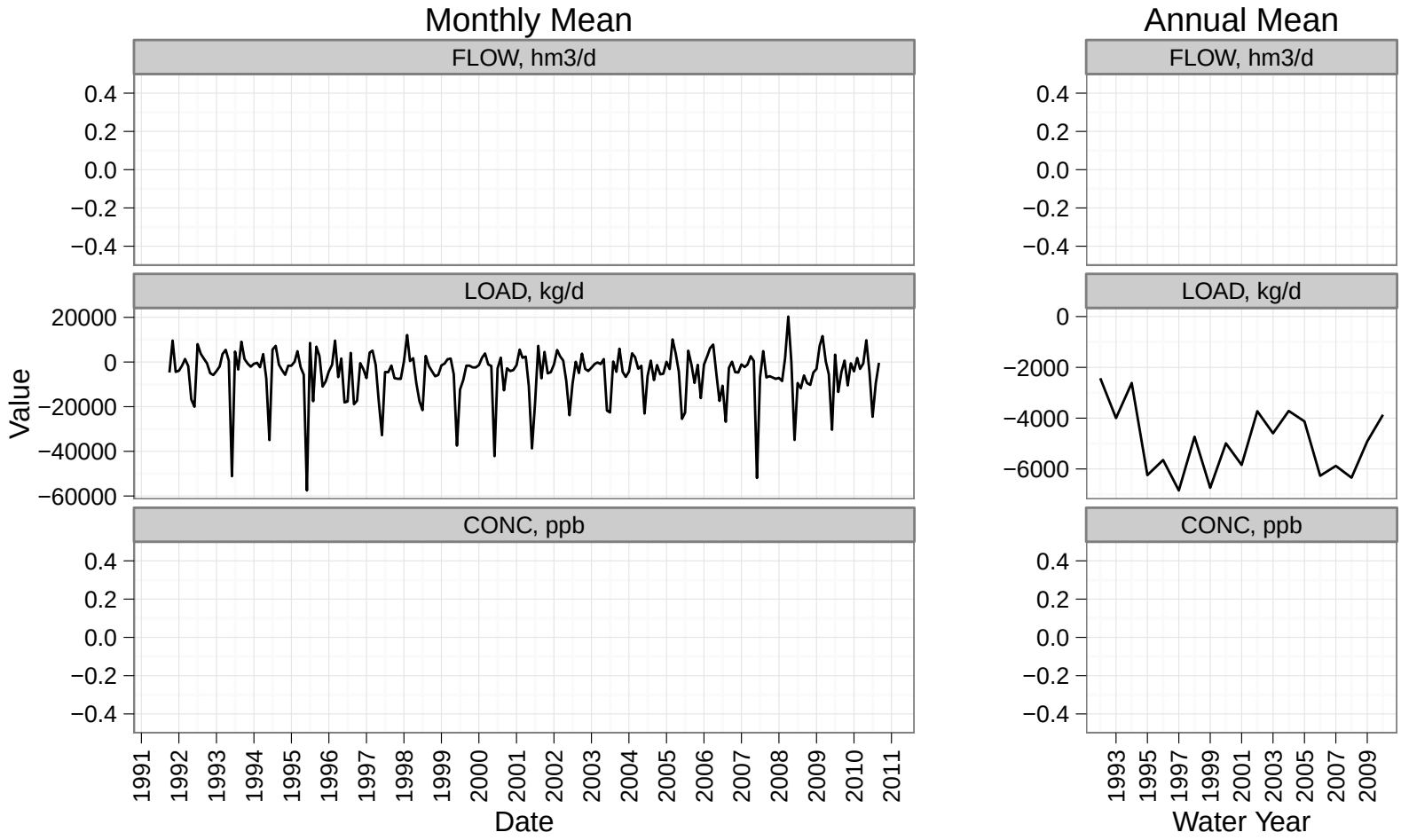
Trend Tests: Lake Outflow, TN

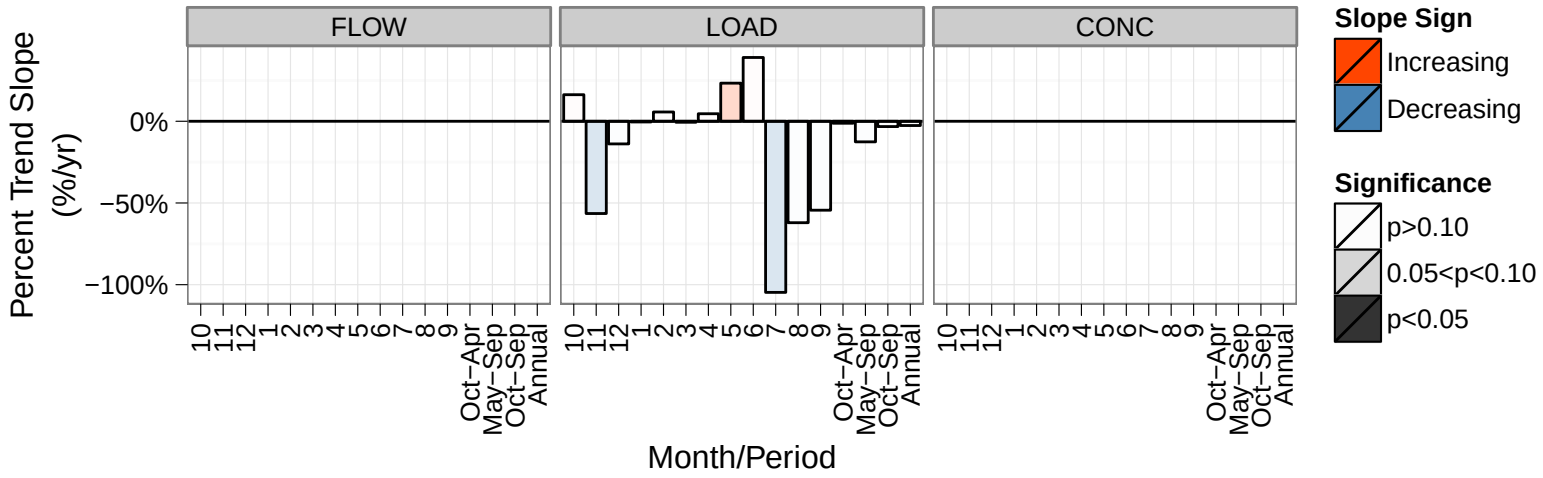


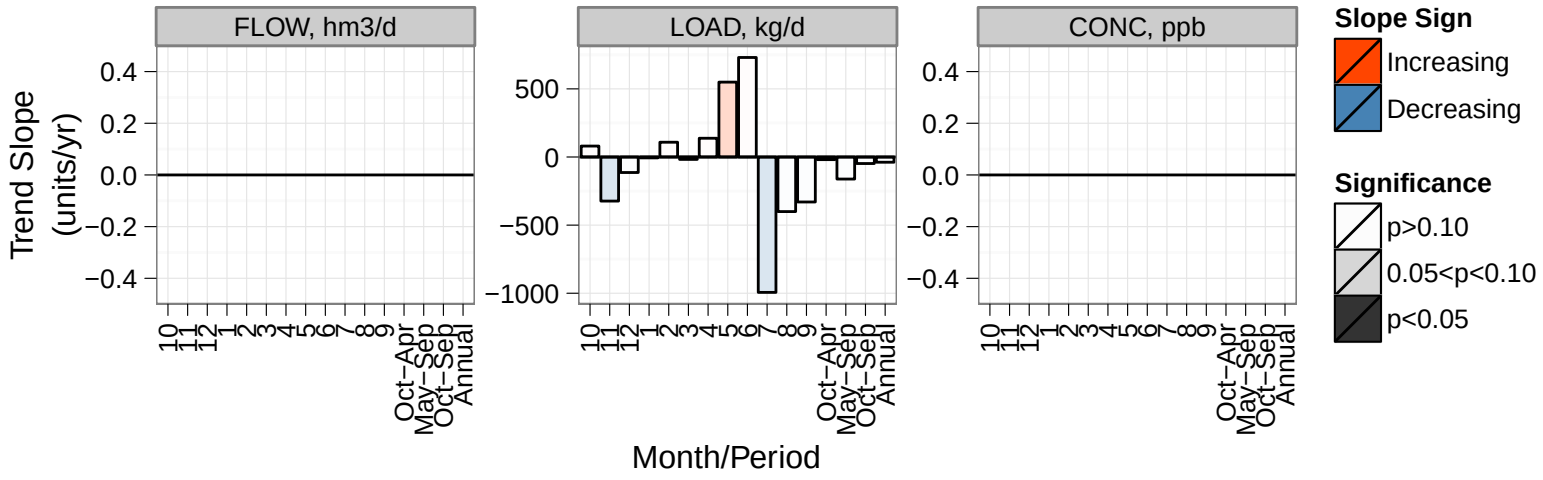




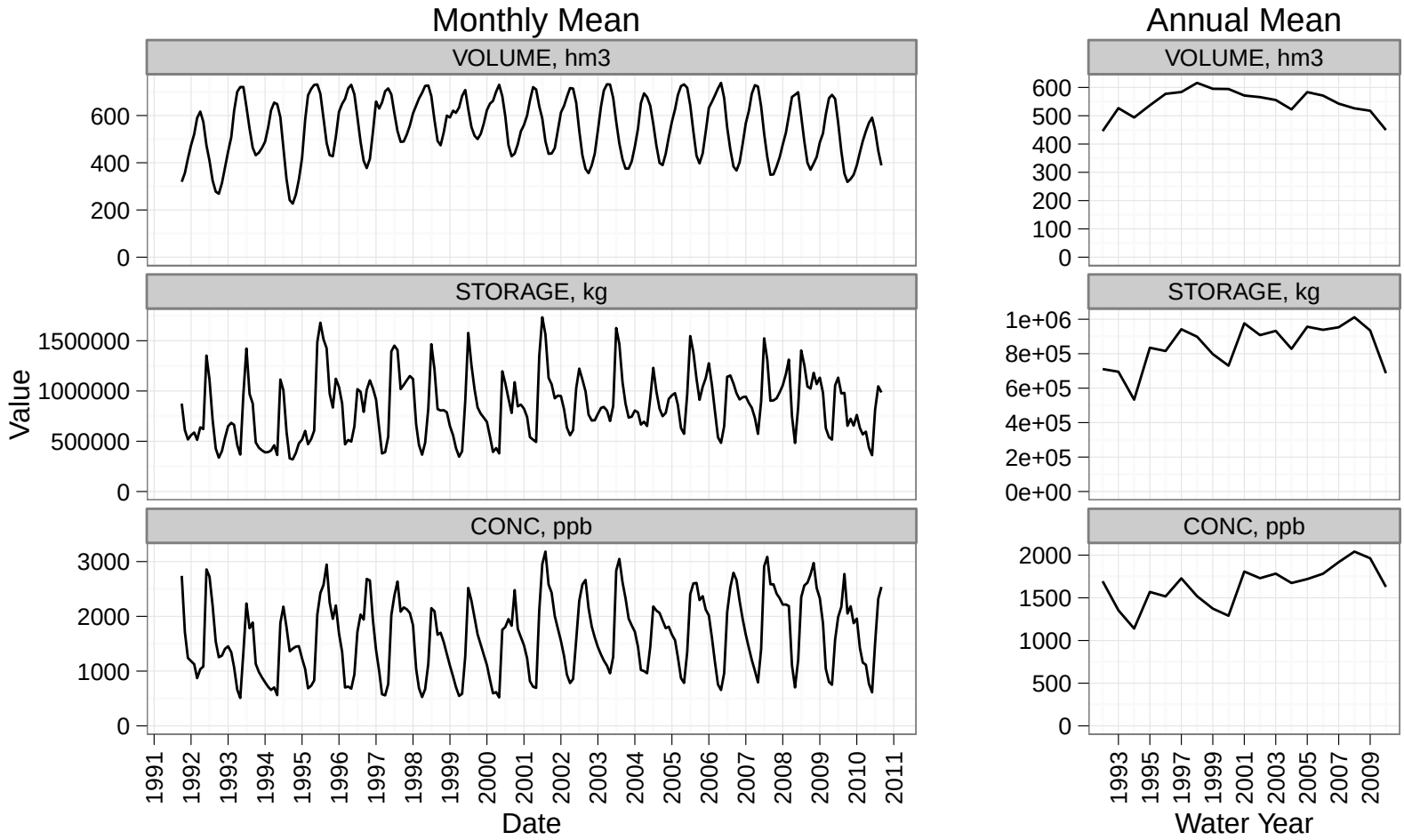
Trend Tests: Retention, TN

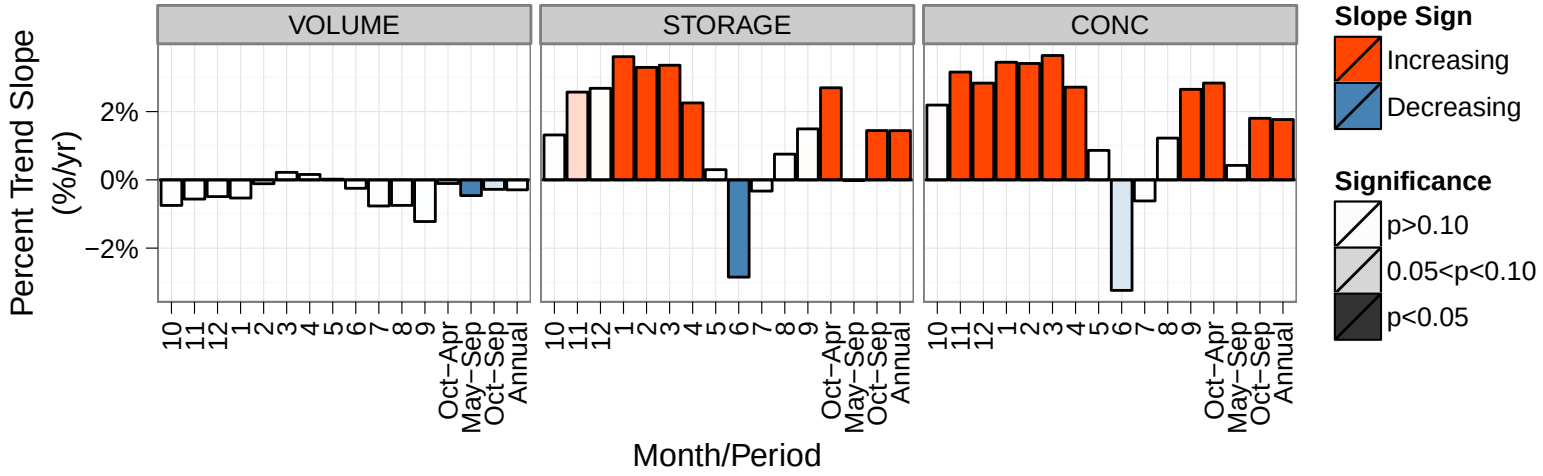






Trend Tests: Lake Mean Storage, TN





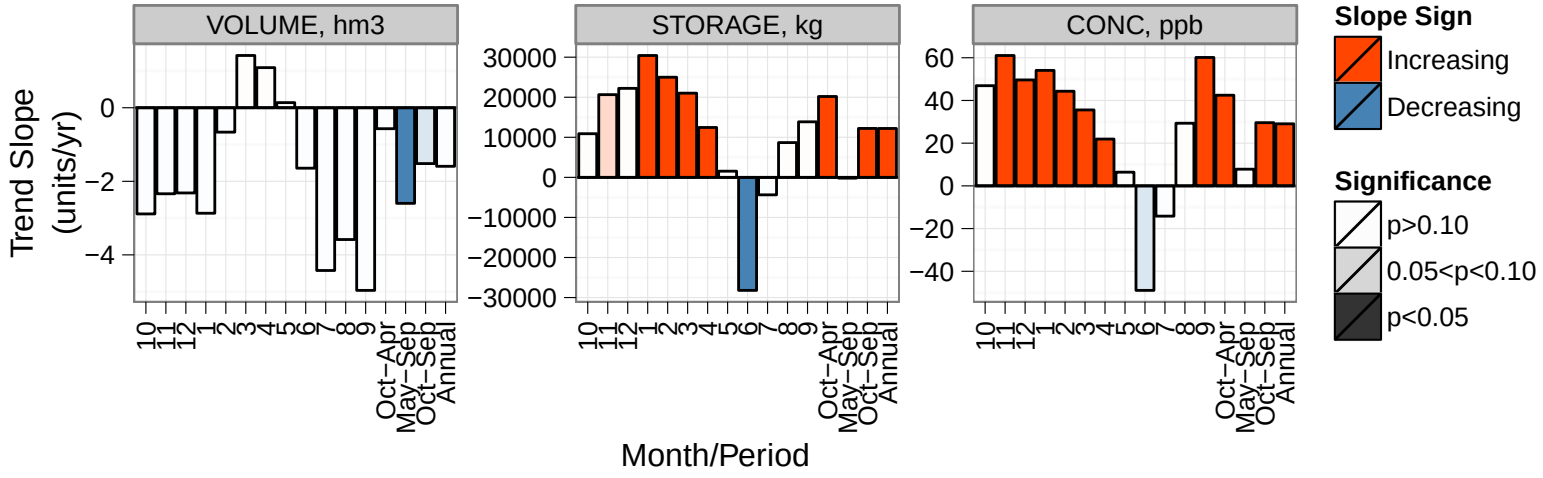


Figure G3: Diagnostic Plots of Seasonal Kendall Trend Tests by Term and Variable

Description: Monthly and annual time series of flow, nutrient load and concentration for each term
Time series grouped by month over the period of record
Percent trend slope relative to long-term mean value (for retention computed relative to mean total external inflows)
Trend slopes in original units (e.g. ppb/yr for concentration)

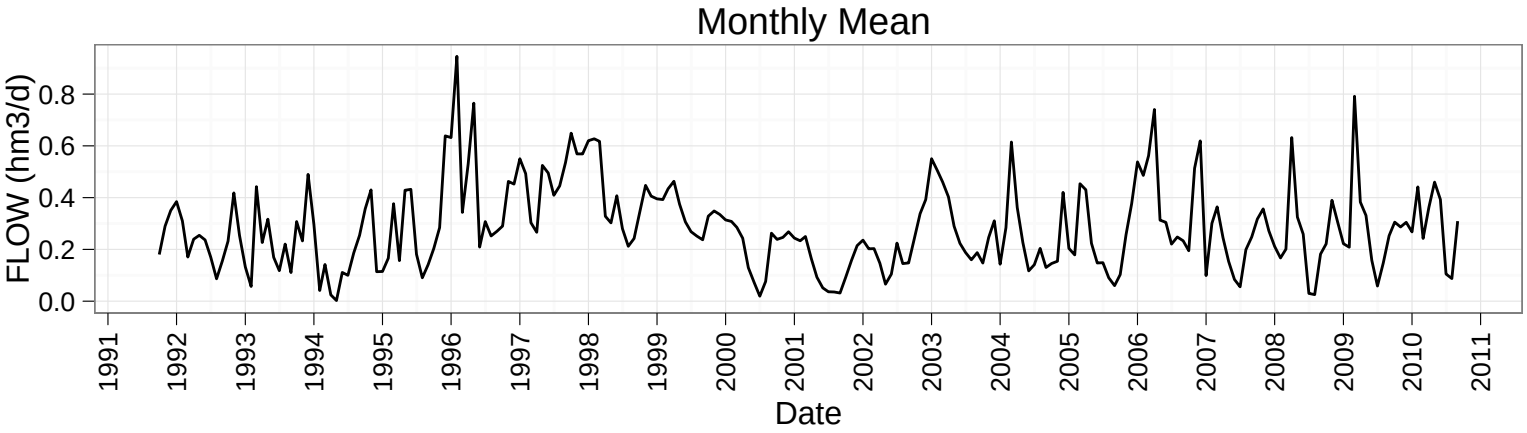
Variables: Flow, Total P Load and Concentration, Total N Load and Concentration

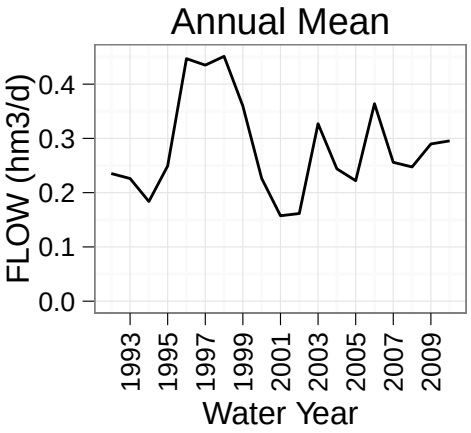
Seasons: October-March (Non-growing Season)
April-September (Growing Season)
October-September (Water Year)
Annual (Trend in Annual Mean Flow, Load and FWM Concentration)

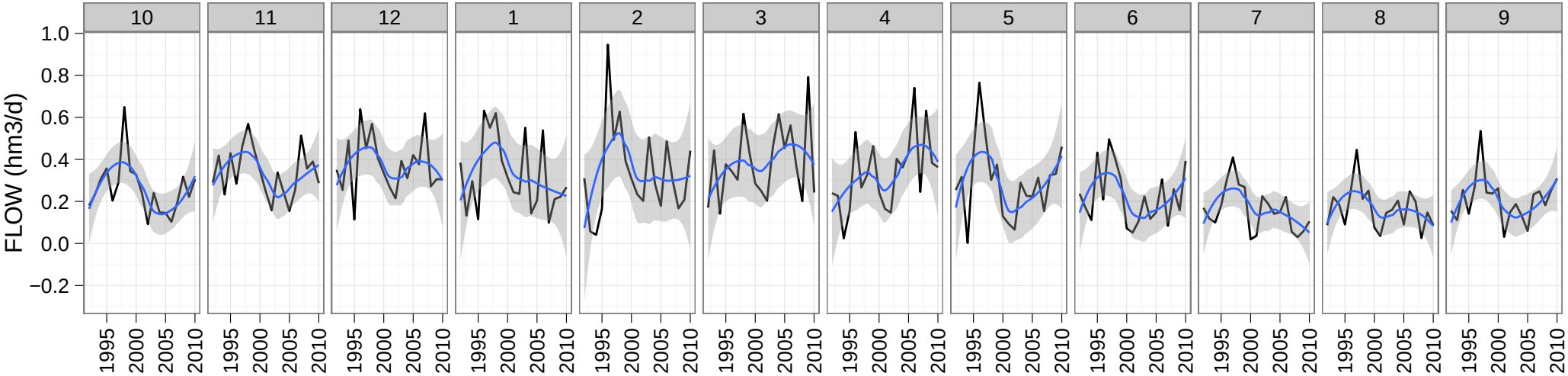
Note: Trends shown in these plots computed over entire period of record (1992-2010)
Trends for "Annual" denotes Mann-Kendall Test applied to annual mean flow, load, and FWM concentration

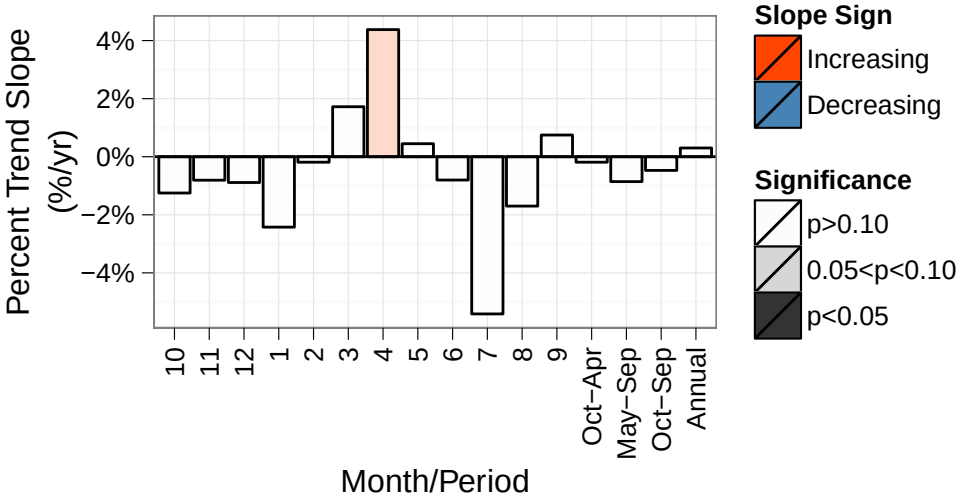
Total Pages: 93

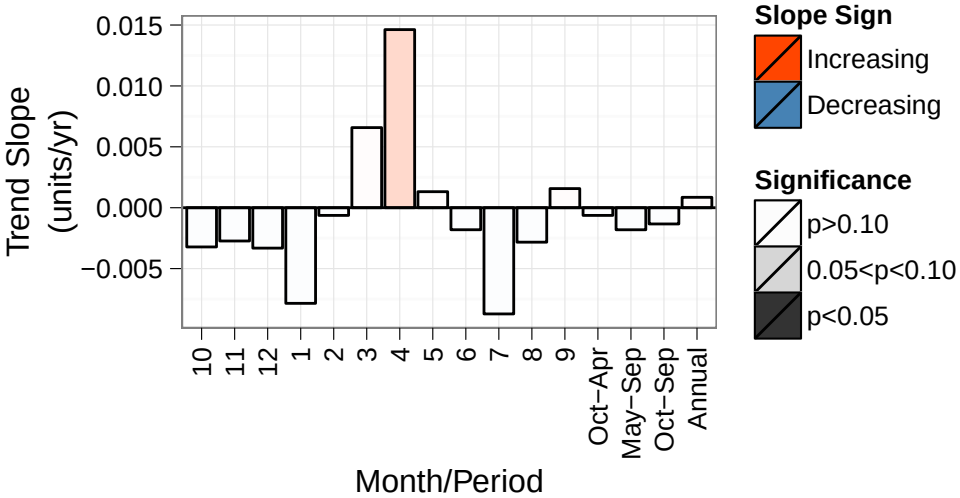
Trend Tests: 7mile_Dike, FLOW

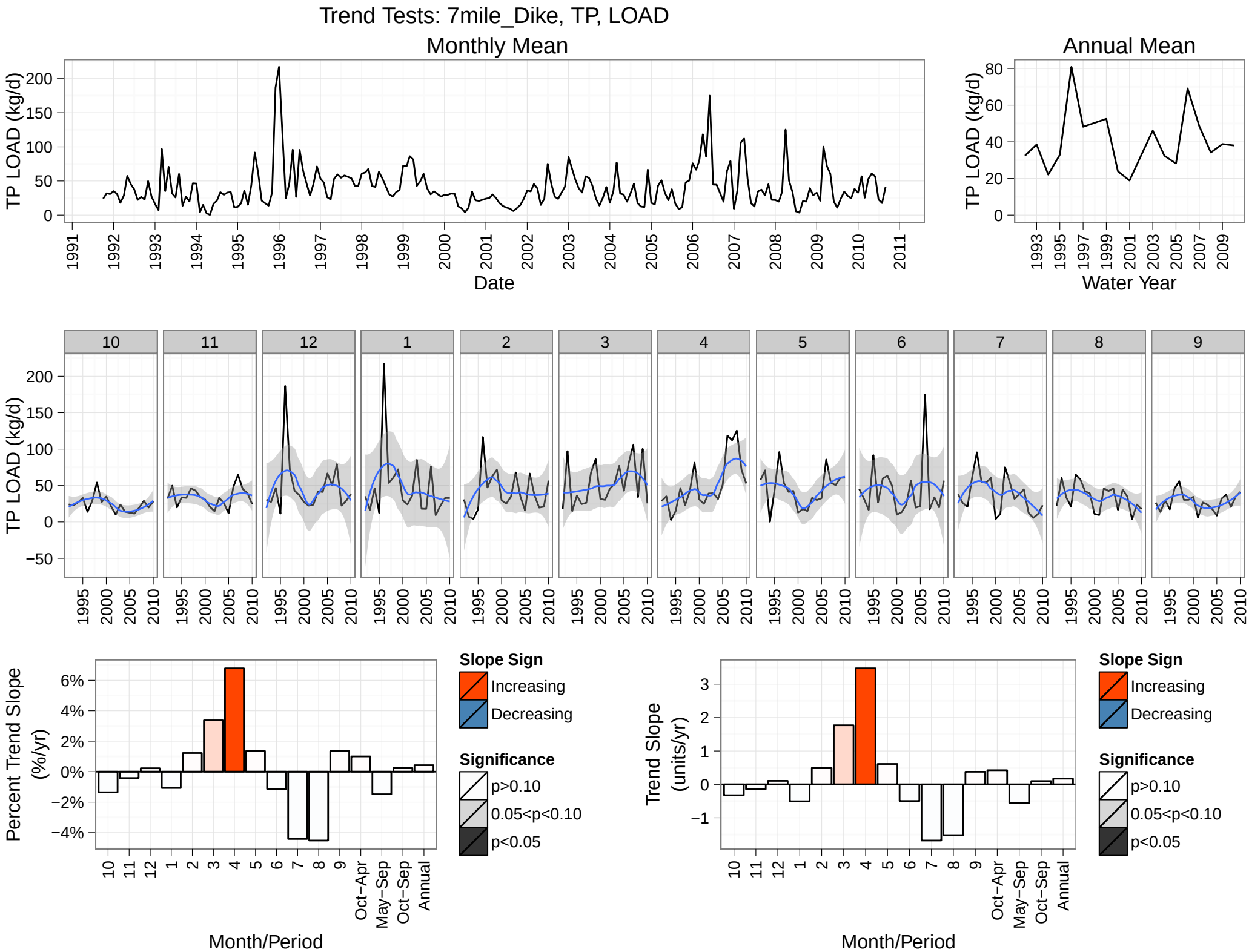


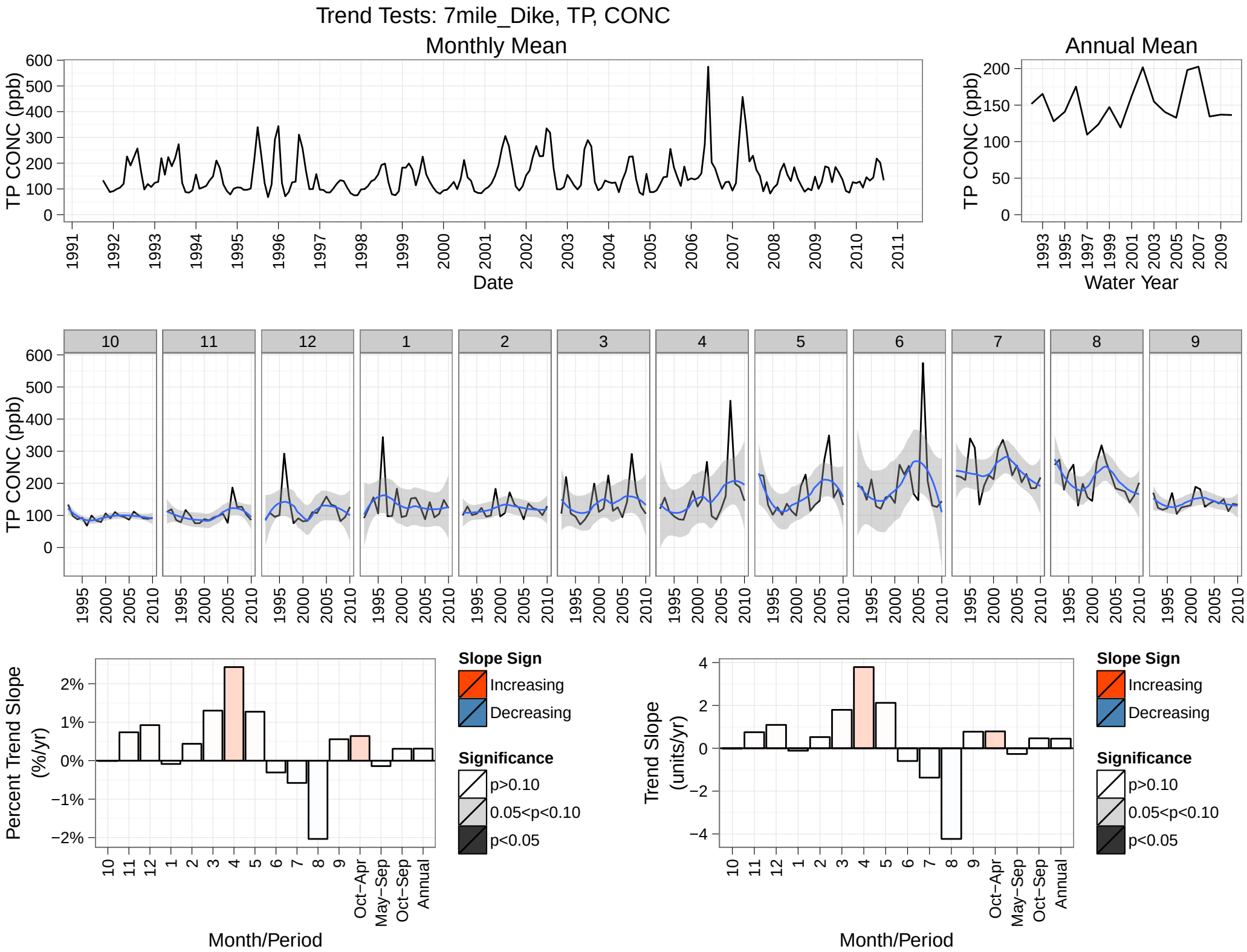




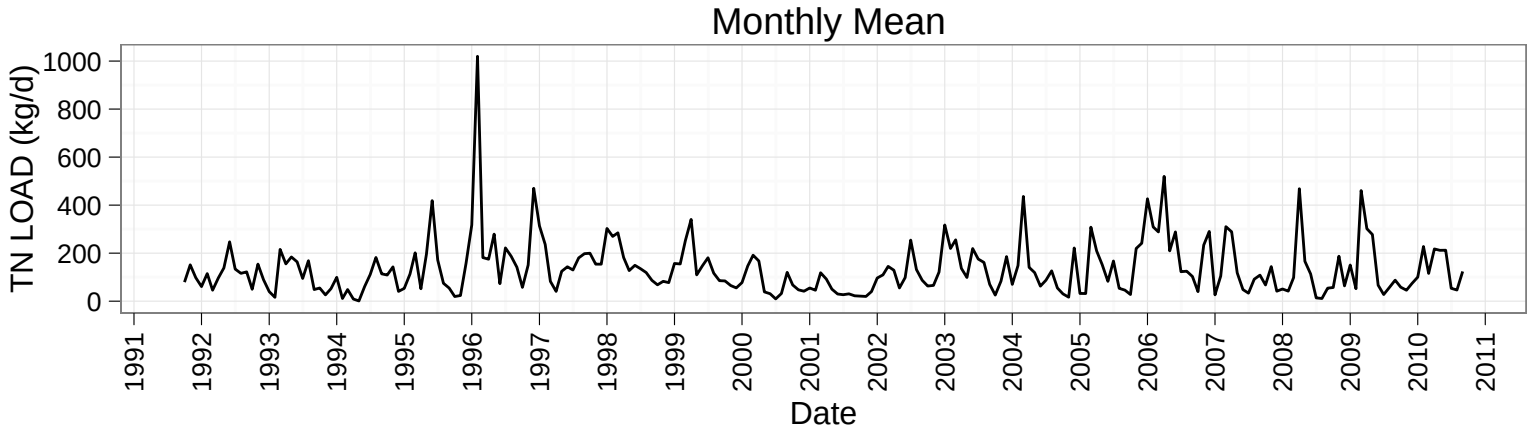


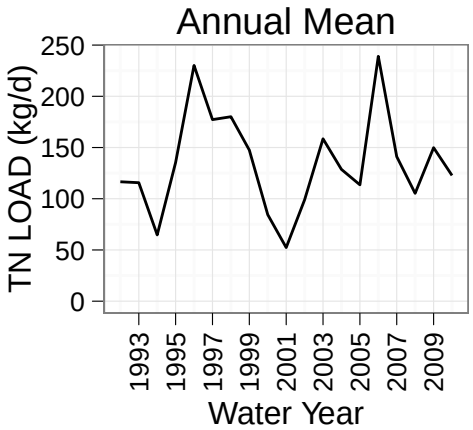


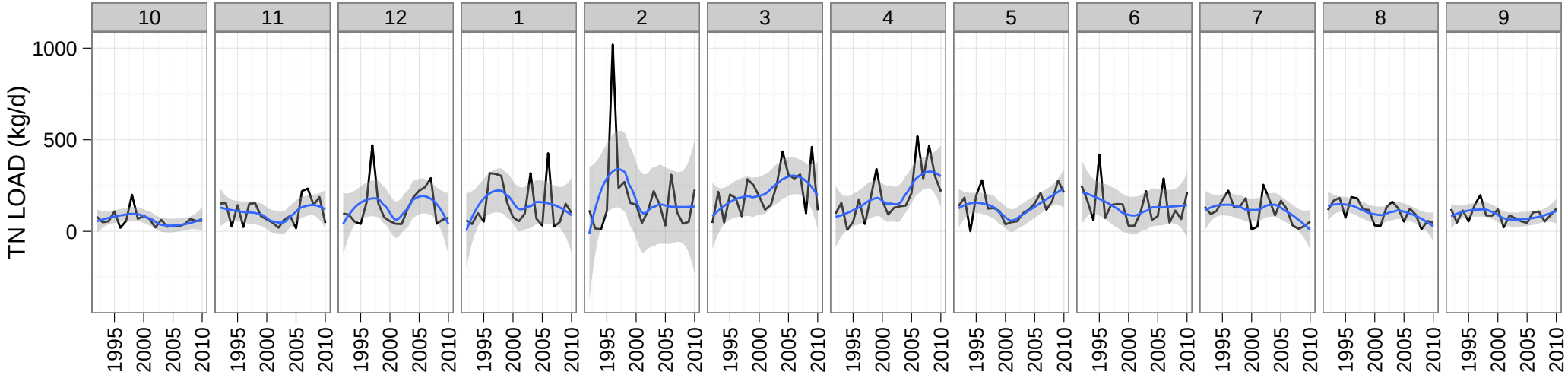

Trend Tests: 7mile_Dike, TP, LOAD
Monthly Mean
TP LOAD (kg/d)
Date
Annual Mean
TP LOAD (kg/d)
Water Year
Percent Trend Slope (%/yr)
Month/Period
Trend Slope (units/yr)
Month/Period
Slope Sign
Increasing
Decreasing
Significance
p>0.10
0.05<p<0.10
p<0.05

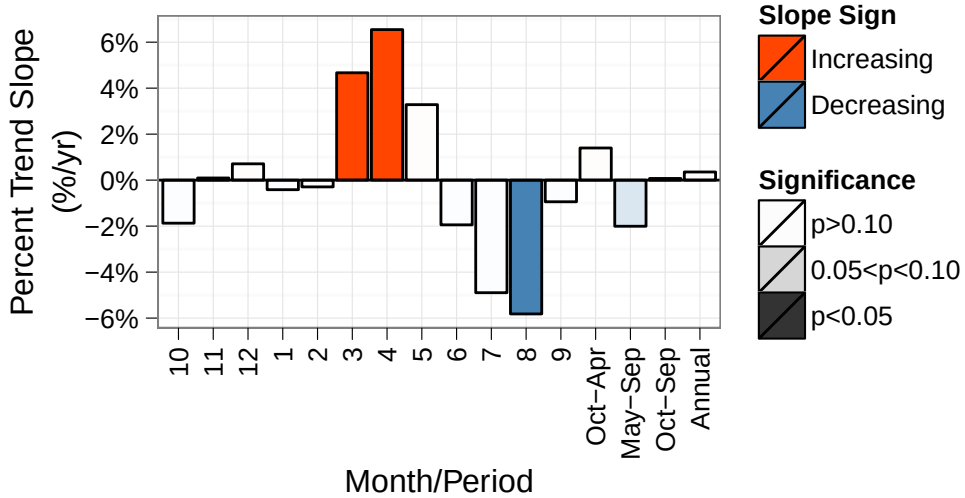

Trend Tests: 7mile_Dike, TP, CONC
Monthly Mean
TP CONC (ppb)
Date
Annual Mean
TP CONC (ppb)
Water Year
Percent Trend Slope (%/yr)
Month/Period
Trend Slope (units/yr)
Month/Period
Slope Sign
Increasing
Decreasing
Significance
p>0.10
0.05<p<0.10
p<0.05

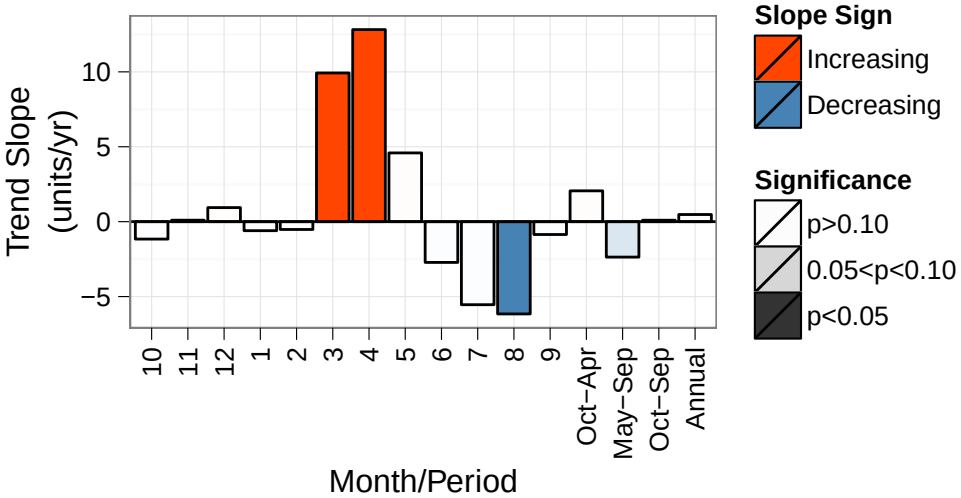
Trend Tests: 7mile_Dike, TN, LOAD



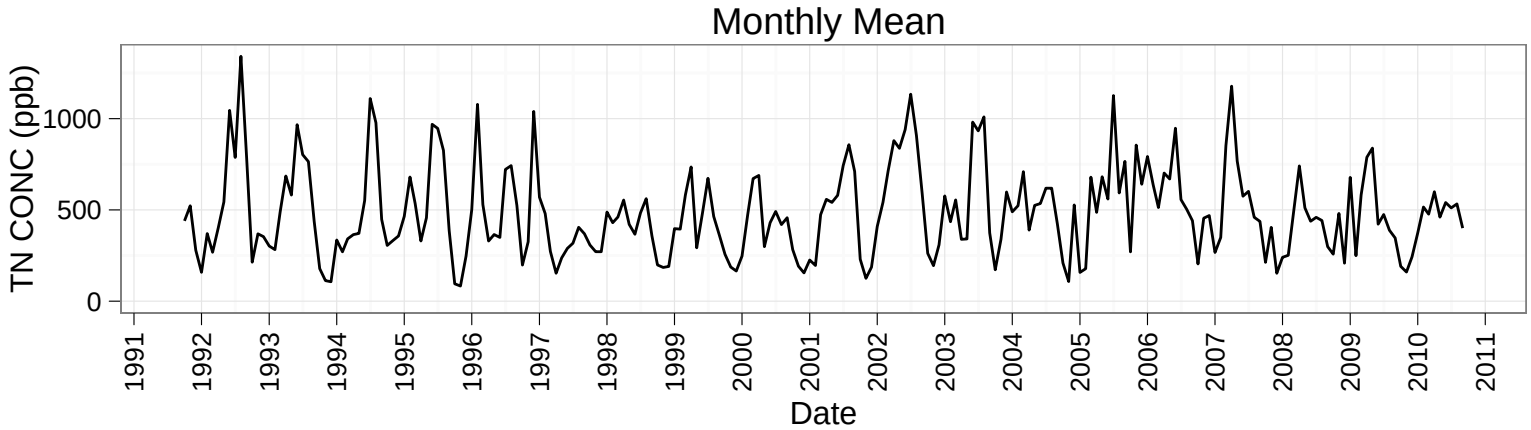


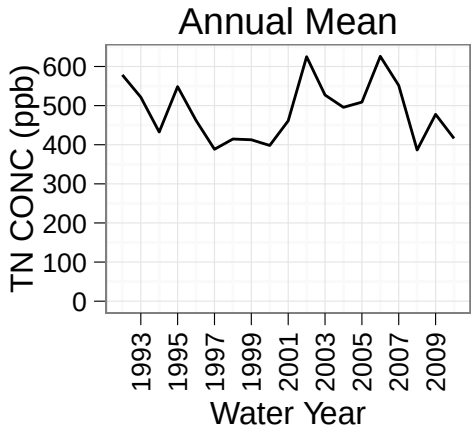


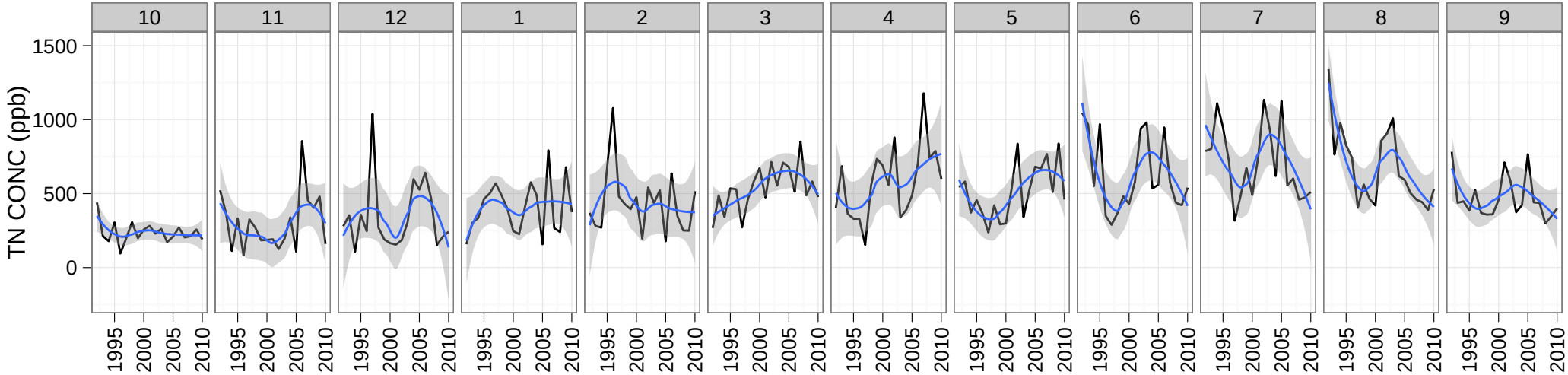


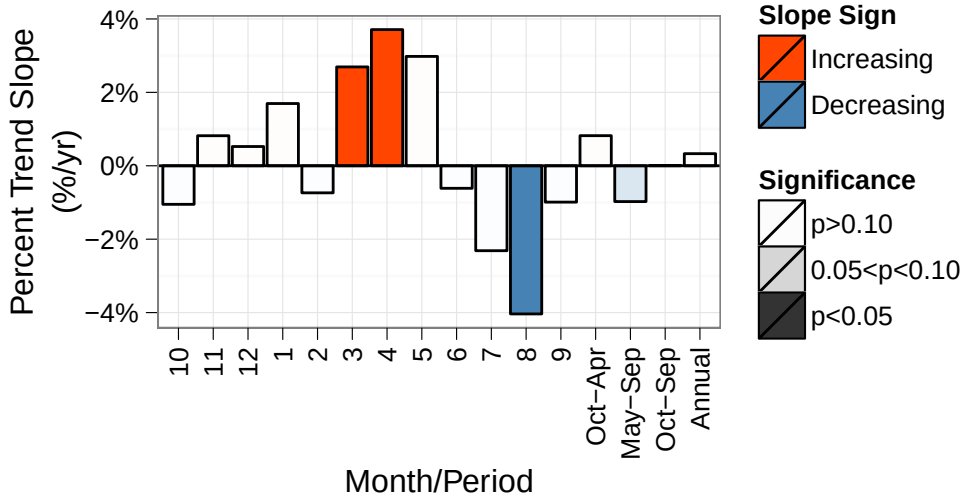


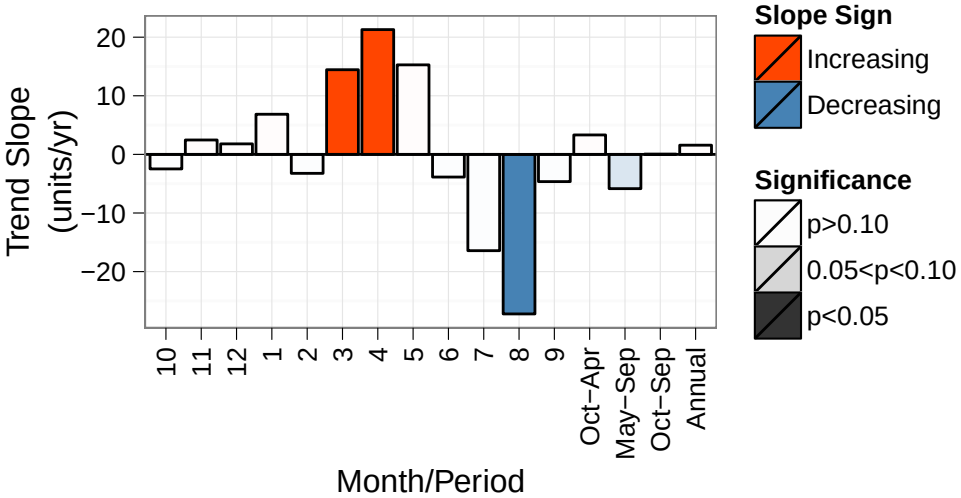
Trend Tests: 7mile_Dike, TN, CONC



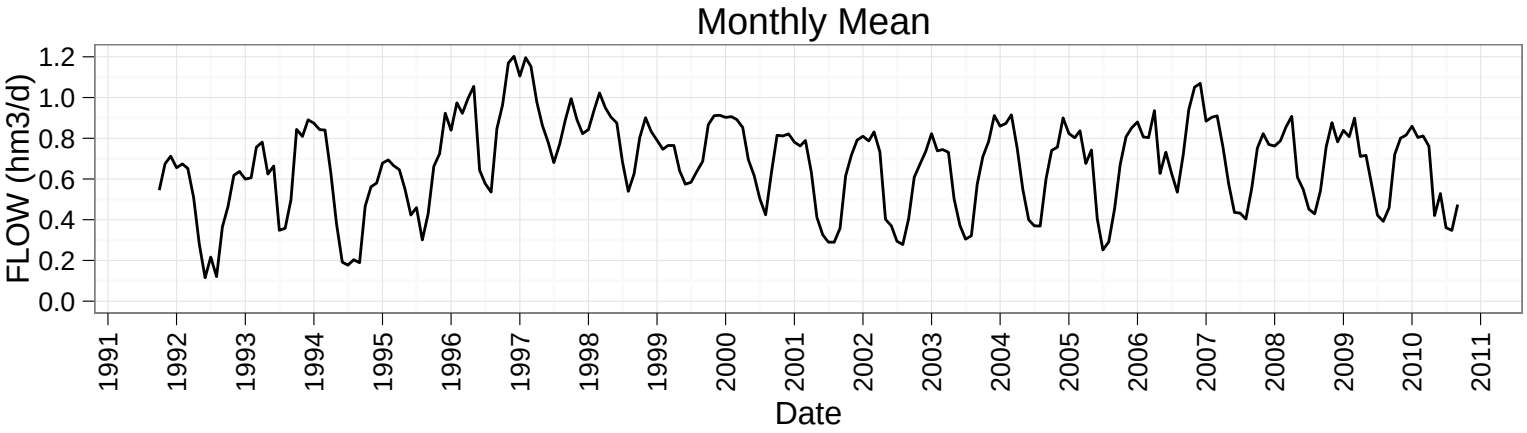


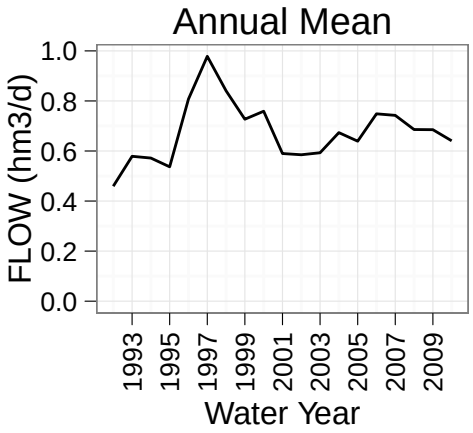


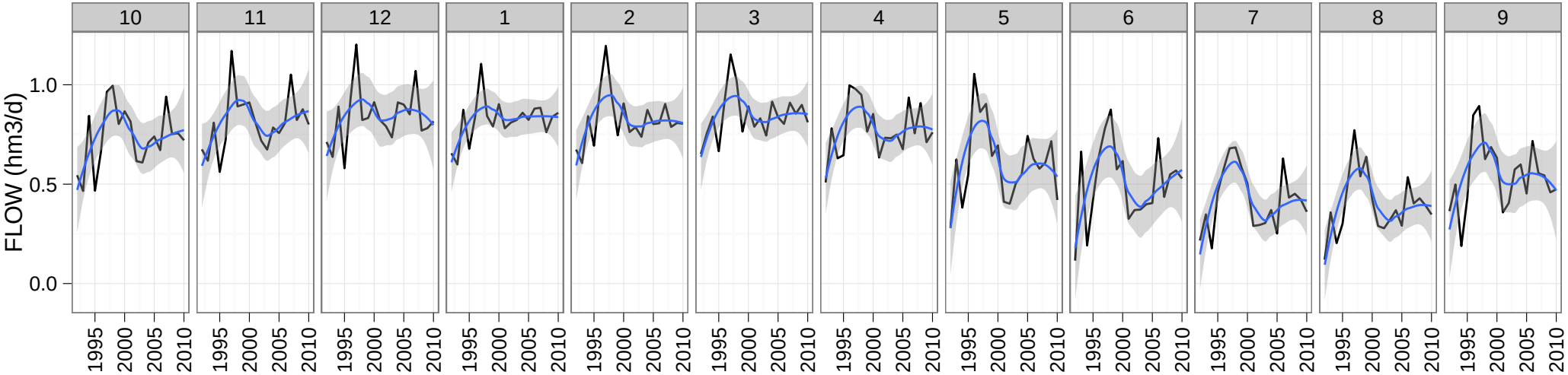


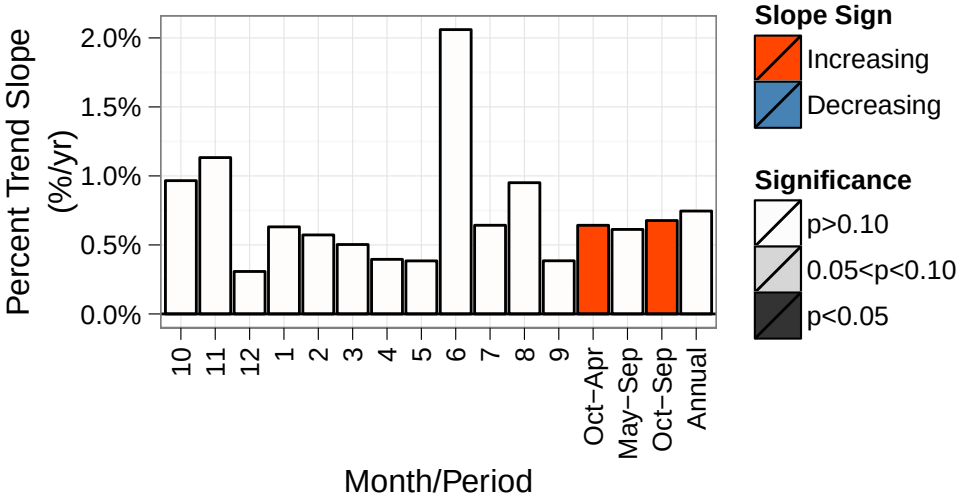


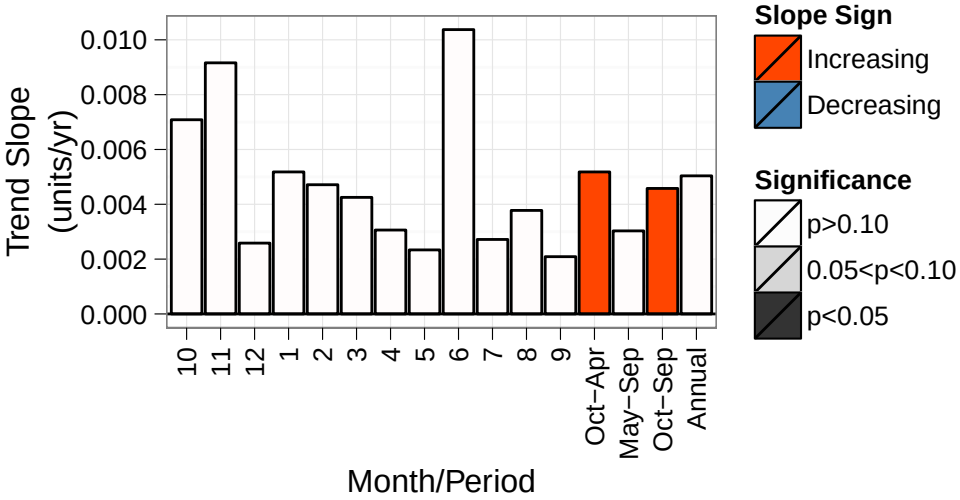
Trend Tests: Wood_Weed, FLOW



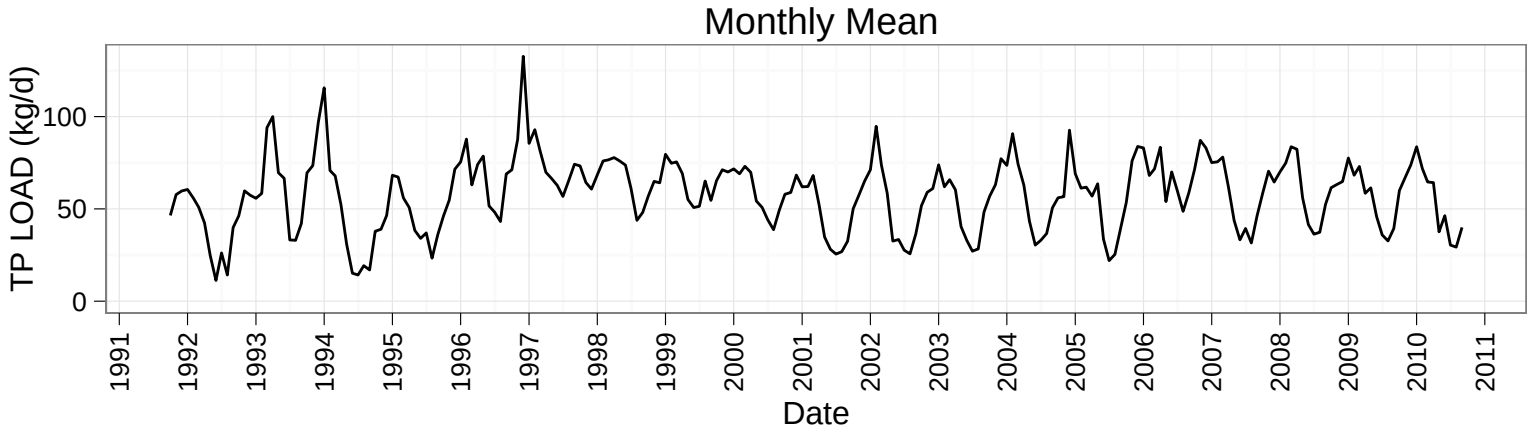


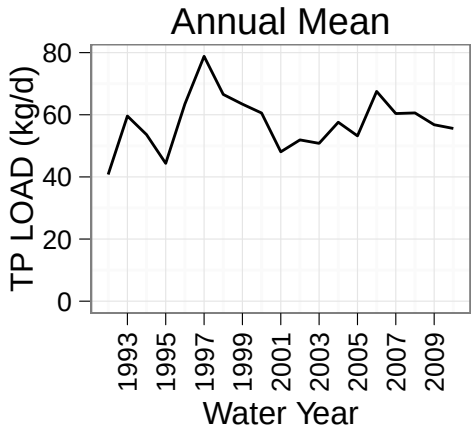


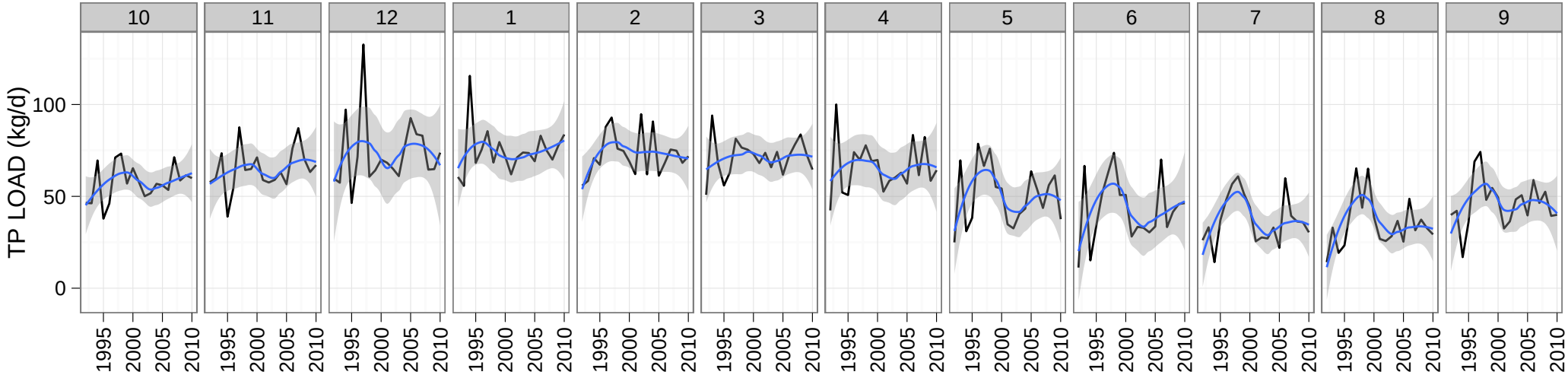


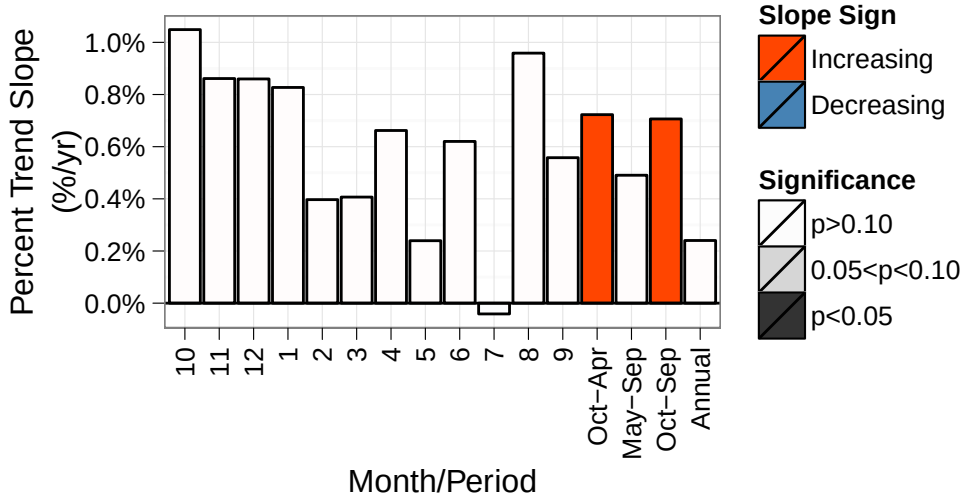


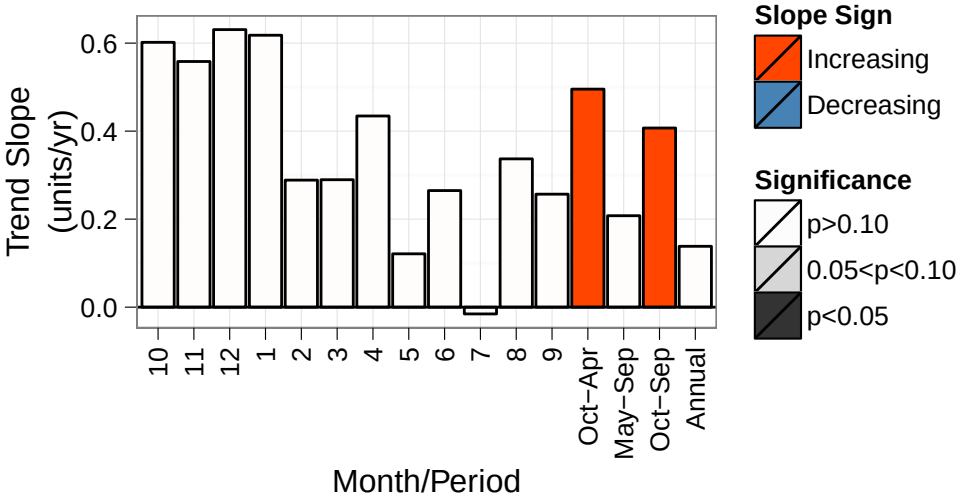
Trend Tests: Wood_Weed, TP, LOAD

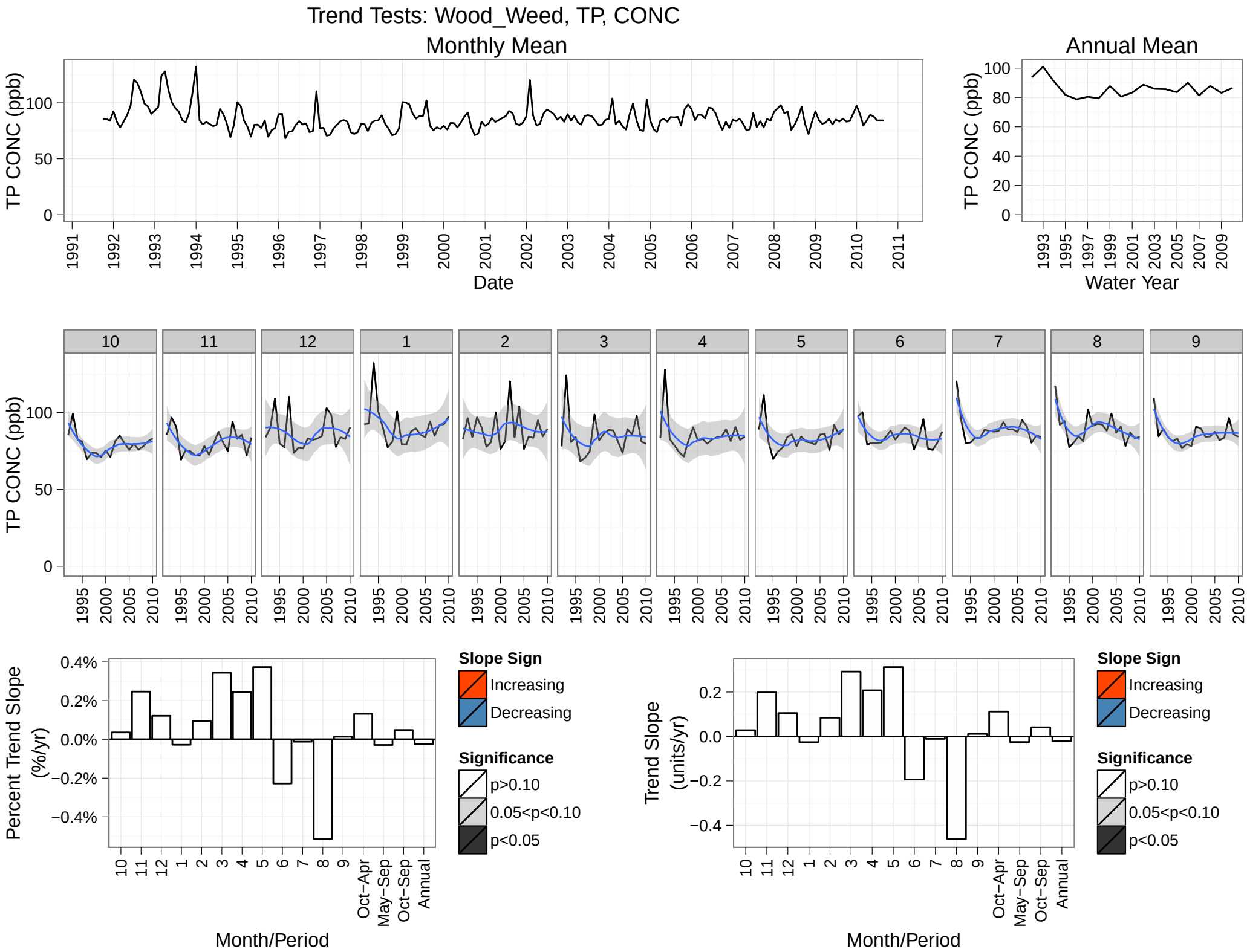


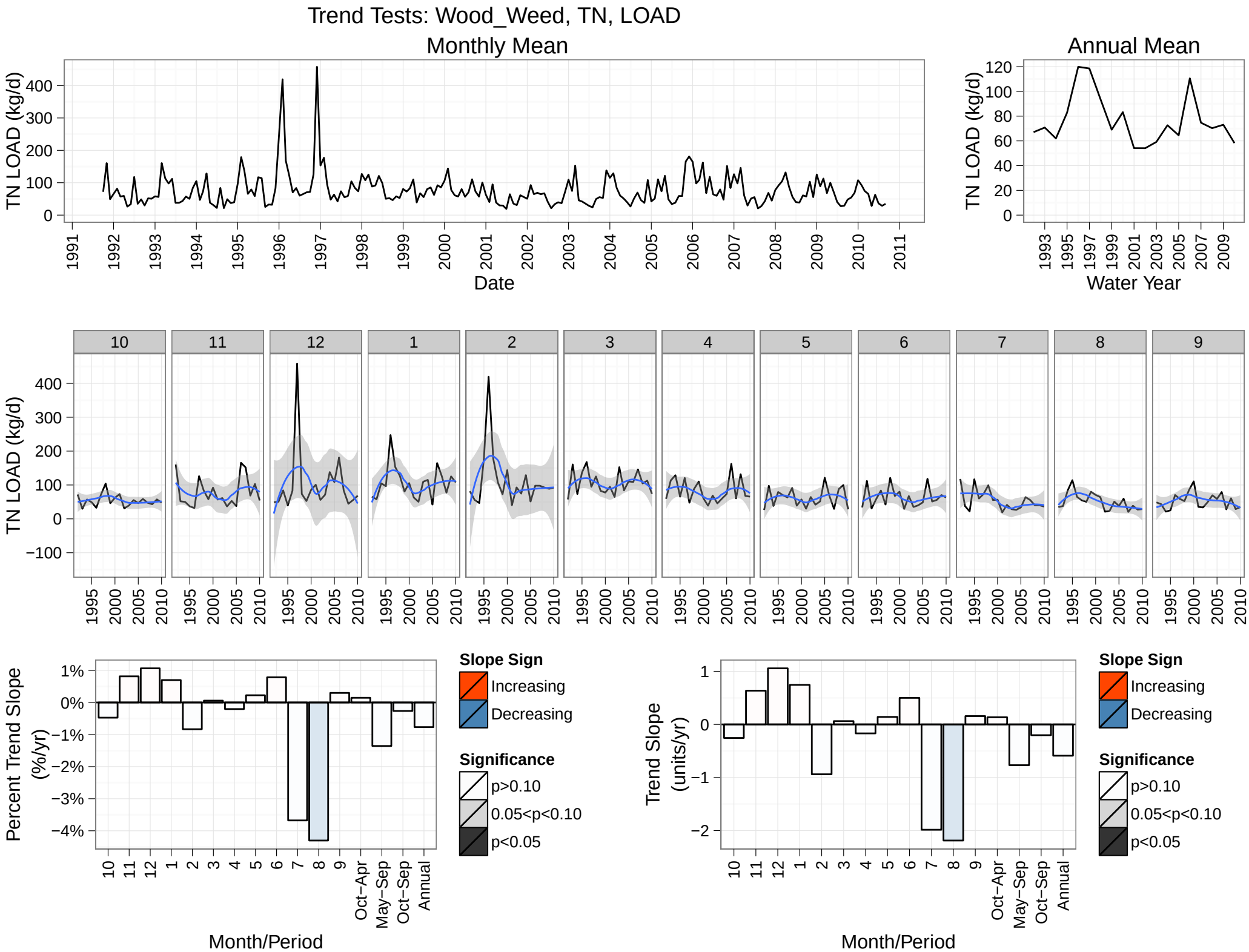




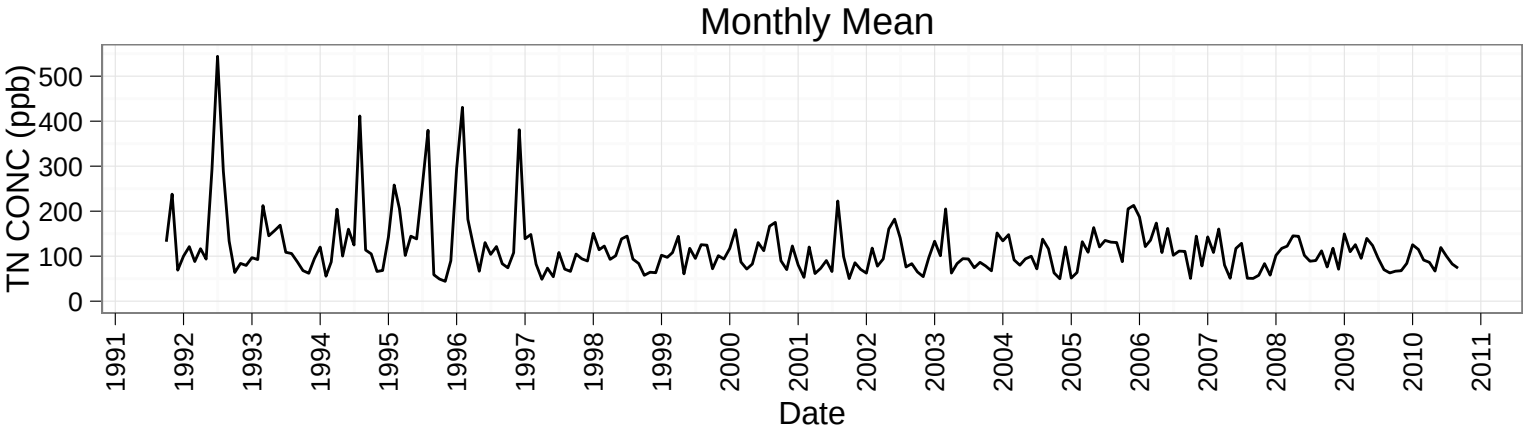


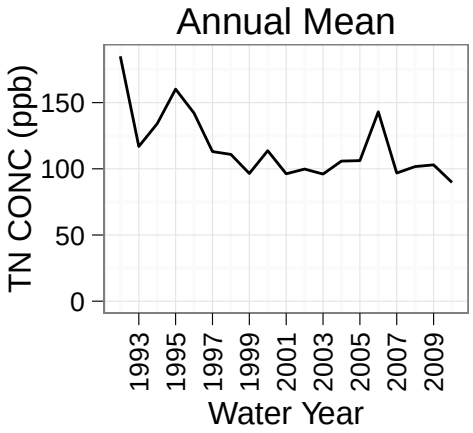


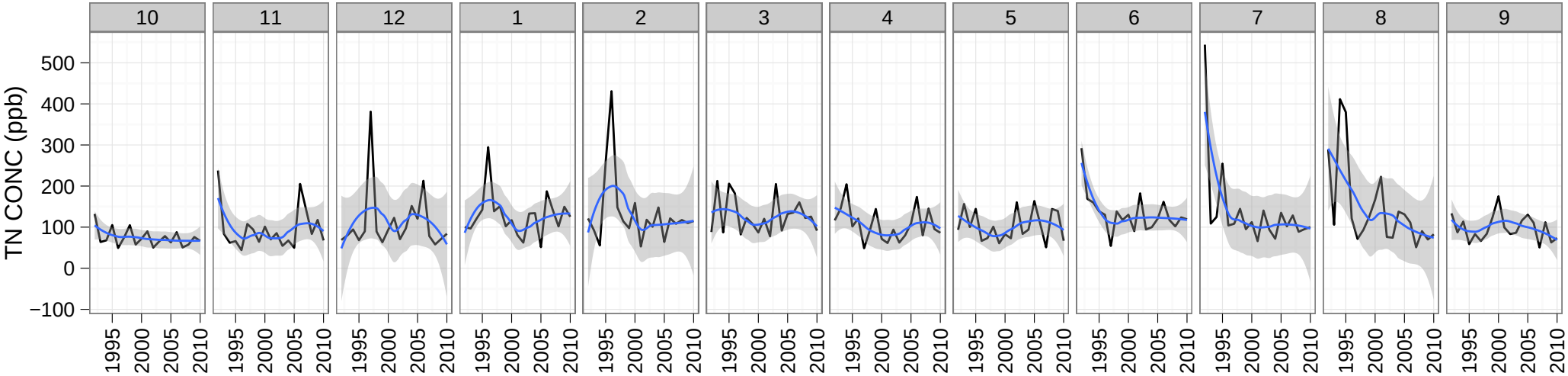

Trend Tests: Wood_Weed, TP, CONC
Monthly Mean
TP CONC (ppb)
Date
Annual Mean
TP CONC (ppb)
Water Year
Percent Trend Slope (%/yr)
Month/Period
Trend Slope (units/yr)
Month/Period
Slope Sign
Increasing
Decreasing
Significance
p>0.10
0.05<p<0.10
p<0.05

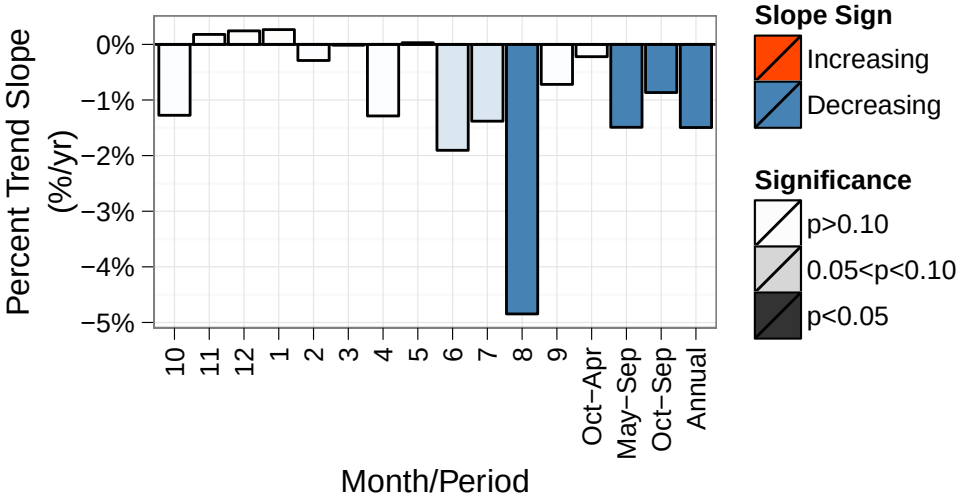

Trend Tests: Wood_Weed, TN, LOAD
Monthly Mean
TN LOAD (kg/d)
Date
Annual Mean
TN LOAD (kg/d)
Water Year
10
11
12
1
2
3
4
5
6
7
8
9
TN LOAD (kg/d)
Percent Trend Slope (%/yr)
Month/Period
Slope Sign
Increasing
Decreasing
Significance
p>0.10
0.05<p<0.10
p<0.05
Trend Slope (units/yr)
Month/Period
Slope Sign
Increasing
Decreasing
Significance
p>0.10
0.05<p<0.10
p<0.05

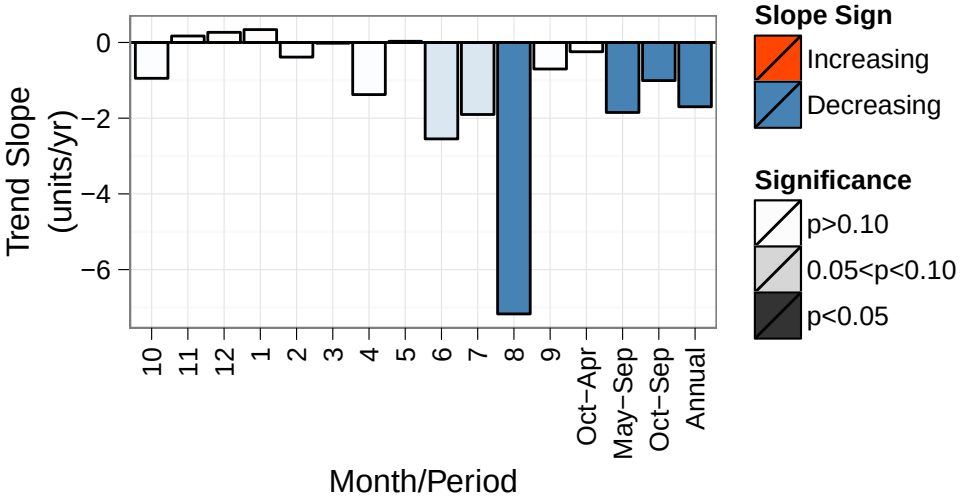
Trend Tests: Wood_Weed, TN, CONC

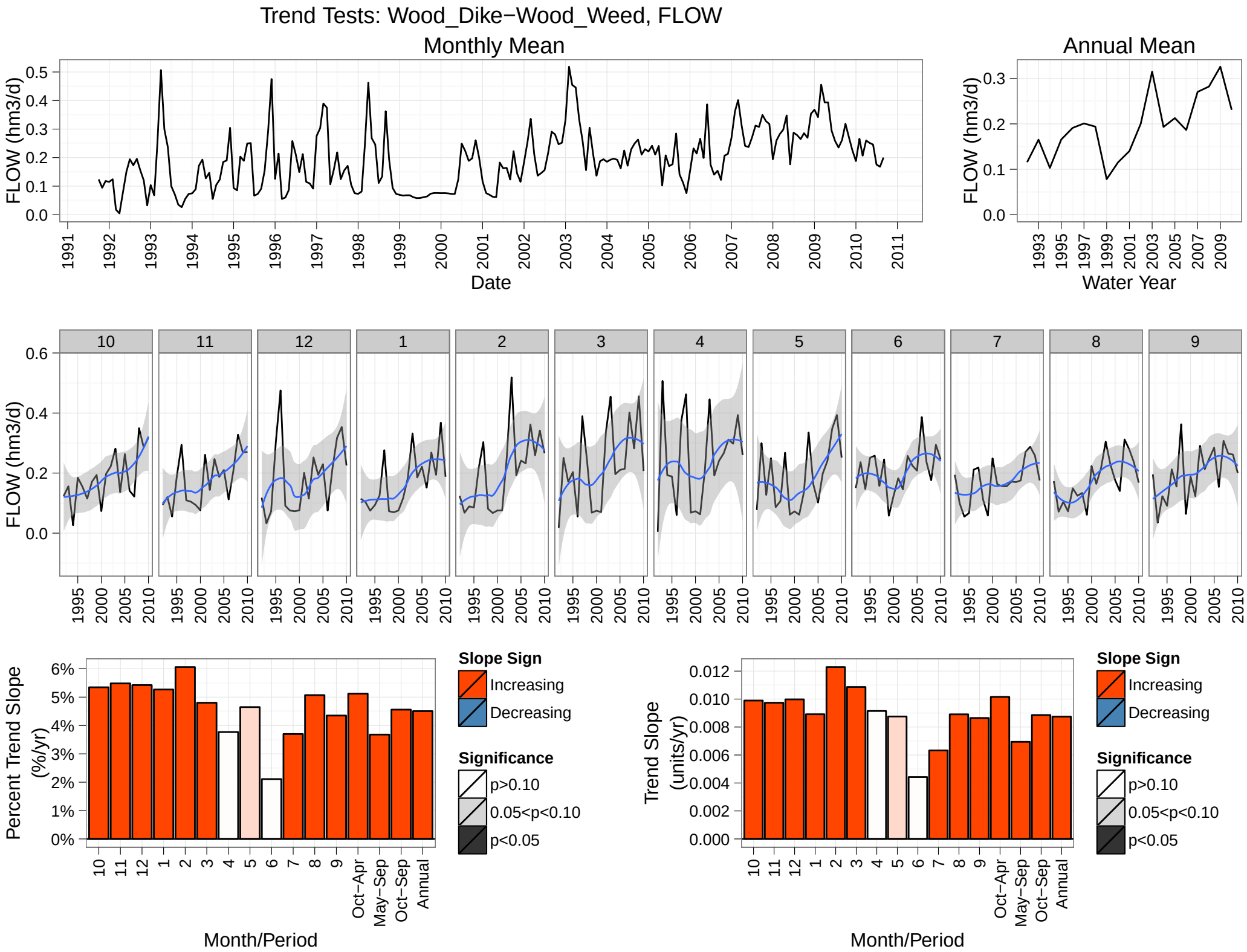


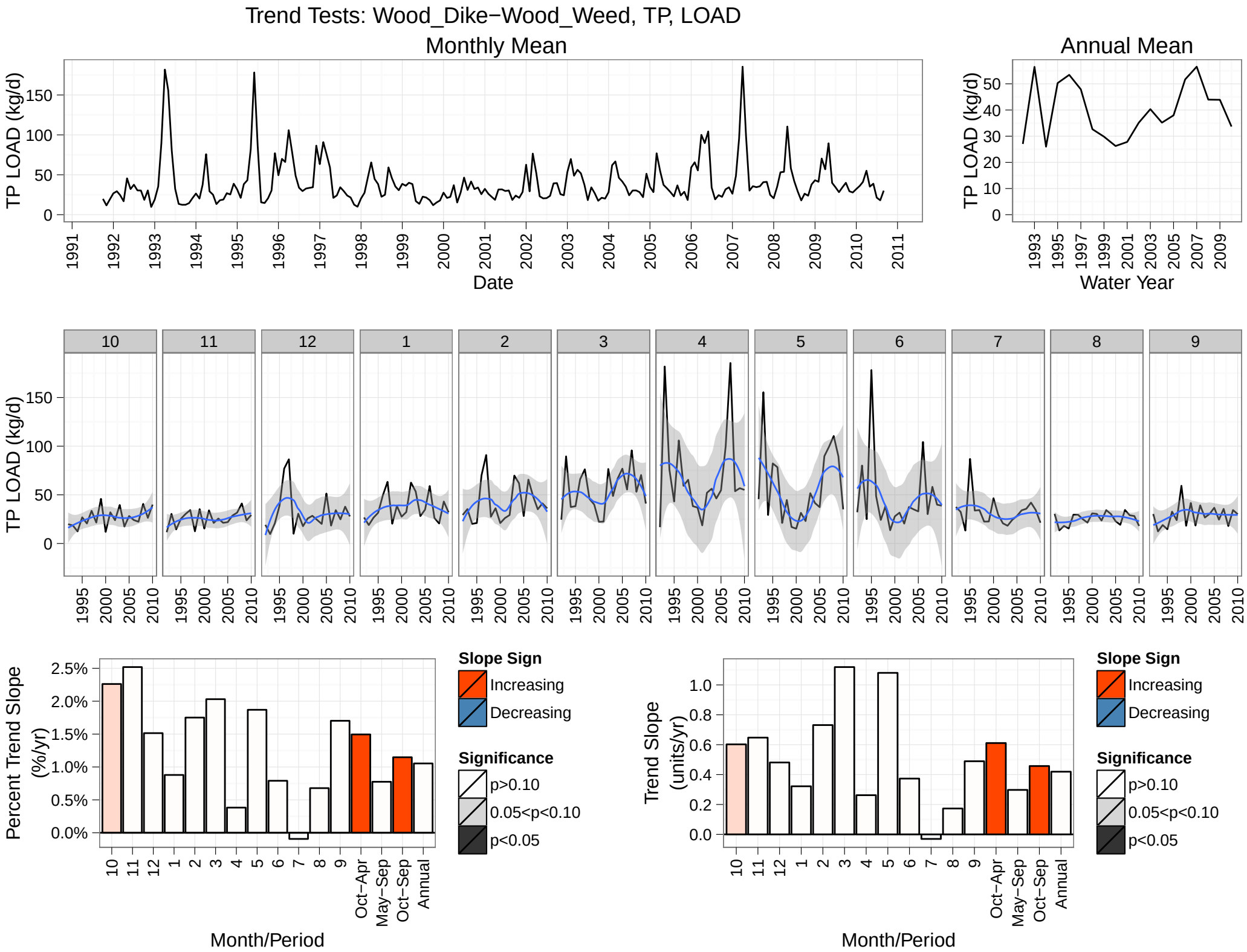


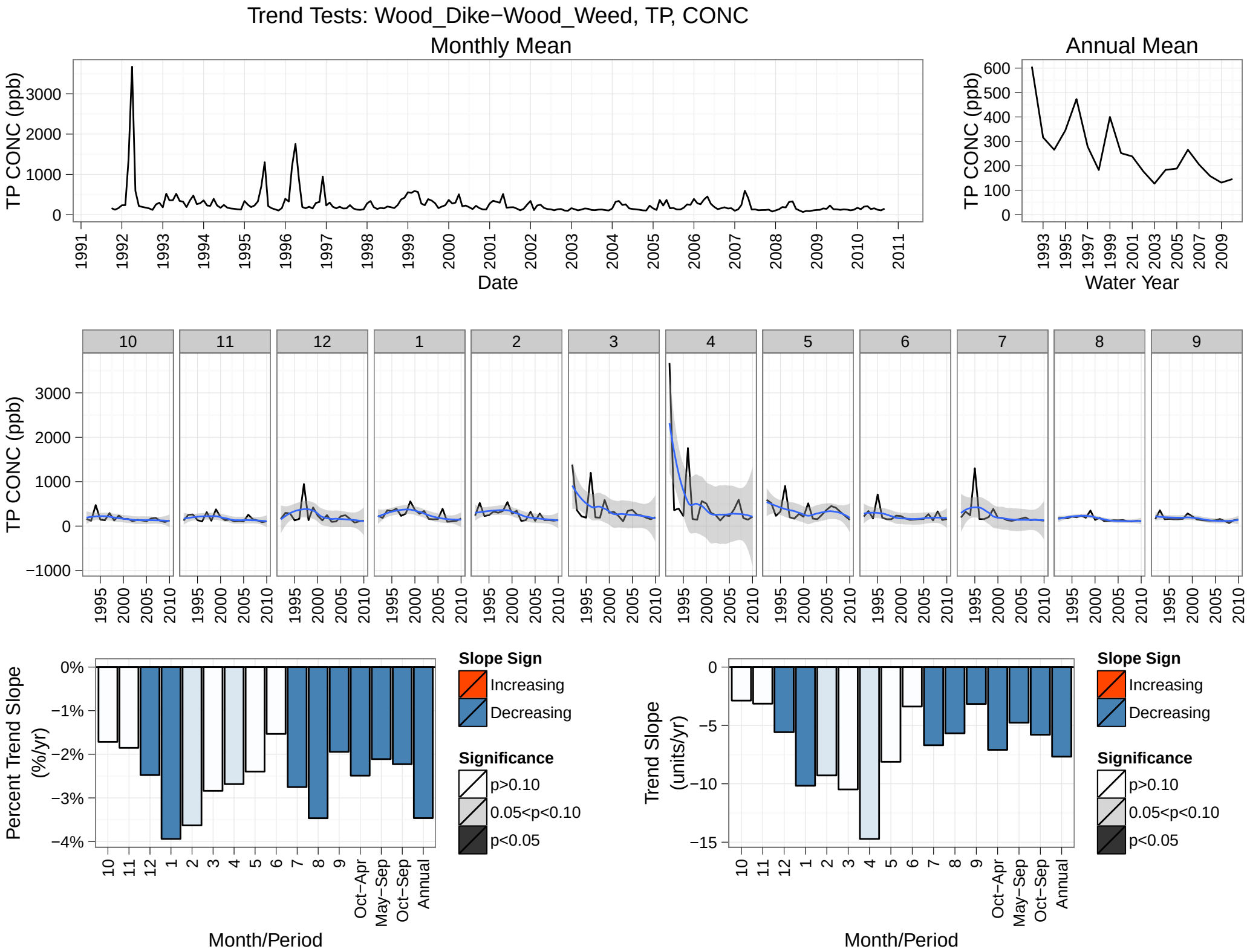




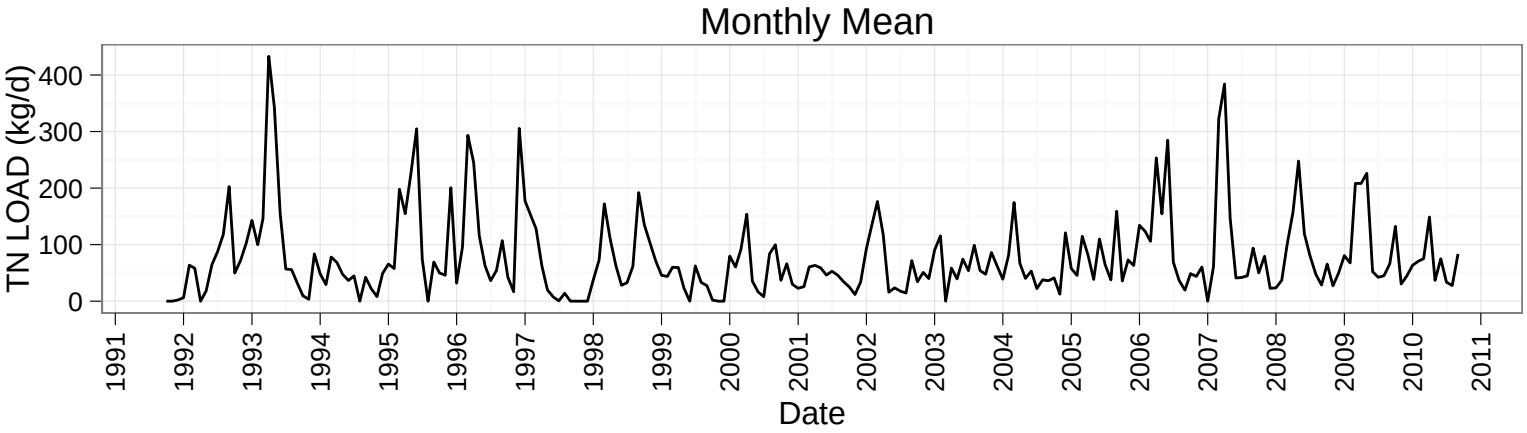


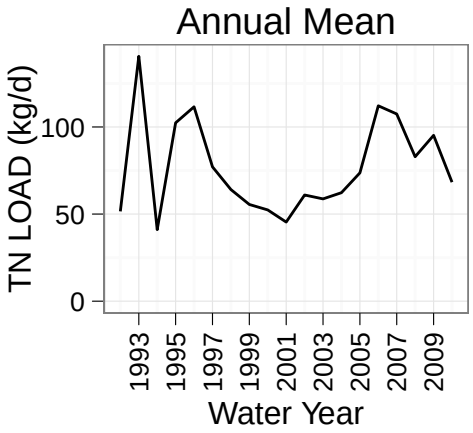

Trend Tests: Wood_Dike−Wood_Weed, FLOW
Monthly Mean
FLOW (hm3/d)
Date
Annual Mean
FLOW (hm3/d)
Water Year
10
11
12
1
2
3
4
5
6
7
8
9
FLOW (hm3/d)
Percent Trend Slope (%/yr)
Month/Period
Slope Sign
Increasing
Decreasing
Significance
p>0.10
0.05<p<0.10
p<0.05
Trend Slope (units/yr)
Month/Period
Slope Sign
Increasing
Decreasing
Significance
p>0.10
0.05<p<0.10
p<0.05

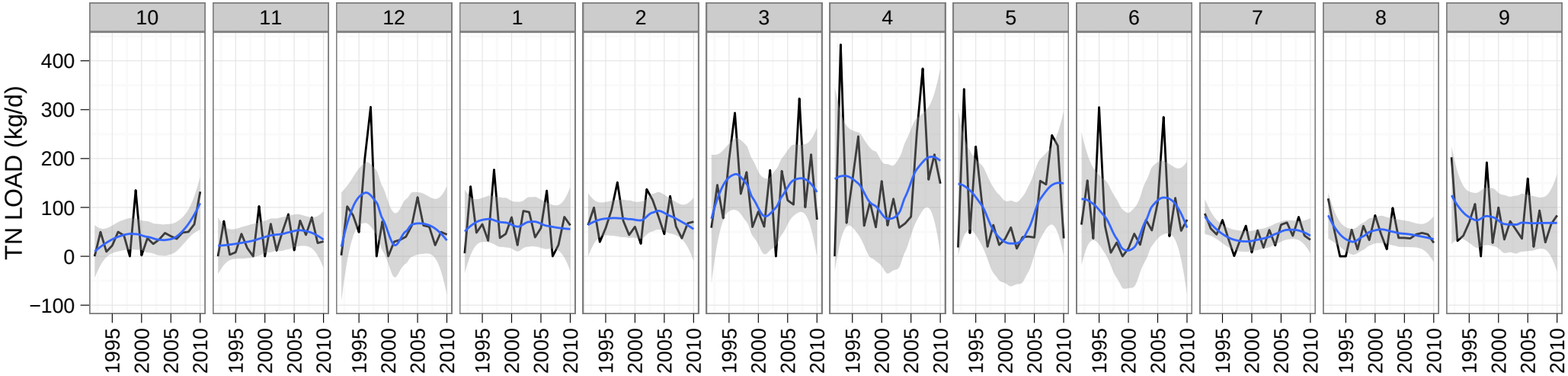

Trend Tests: Wood_Dike−Wood_Weed, TP, LOAD
Monthly Mean
TP LOAD (kg/d)
Date
Annual Mean
TP LOAD (kg/d)
Water Year
10
11
12
1
2
3
4
5
6
7
8
9
TP LOAD (kg/d)
Percent Trend Slope (%/yr)
Month/Period
Oct−Apr
May−Sep
Oct−Sep
Annual
Slope Sign
Increasing
Decreasing
Significance
p>0.10
0.05<p<0.10
p<0.05
Trend Slope (units/yr)
Month/Period

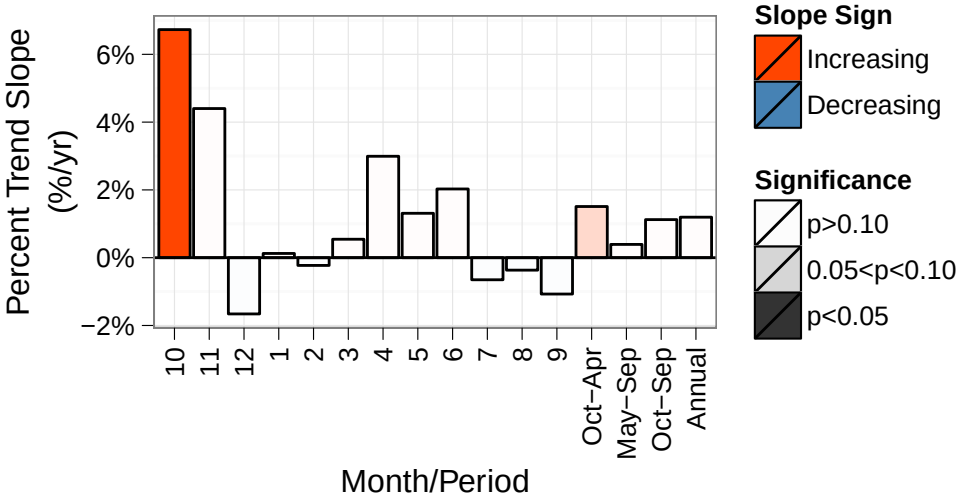

Trend Tests: Wood_Dike−Wood_Weed, TP, CONC
Monthly Mean
TP CONC (ppb)
Date
Annual Mean
TP CONC (ppb)
Water Year
Percent Trend Slope (%/yr)
Month/Period
Trend Slope (units/yr)
Month/Period
Slope Sign
Increasing
Decreasing
Significance
p>0.10
0.05<p<0.10
p<0.05

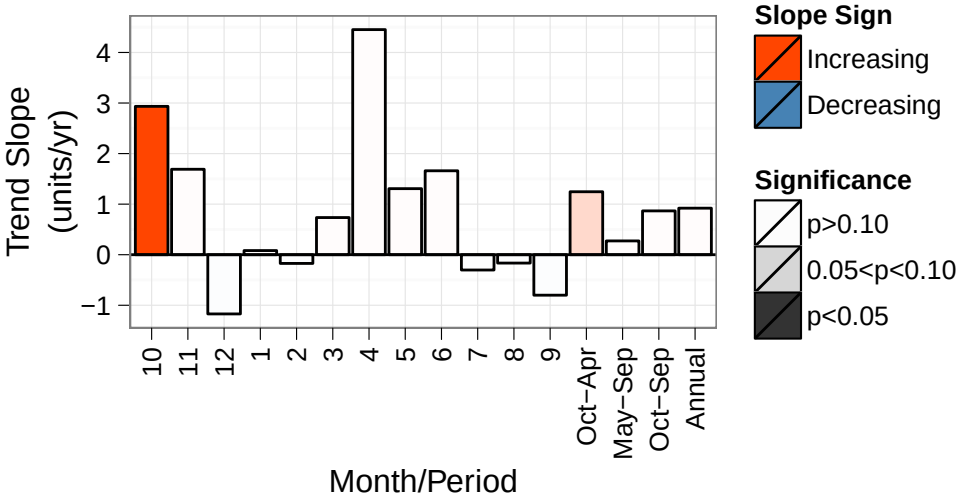
Trend Tests: Wood_Dike−Wood_Weed, TN, LOAD



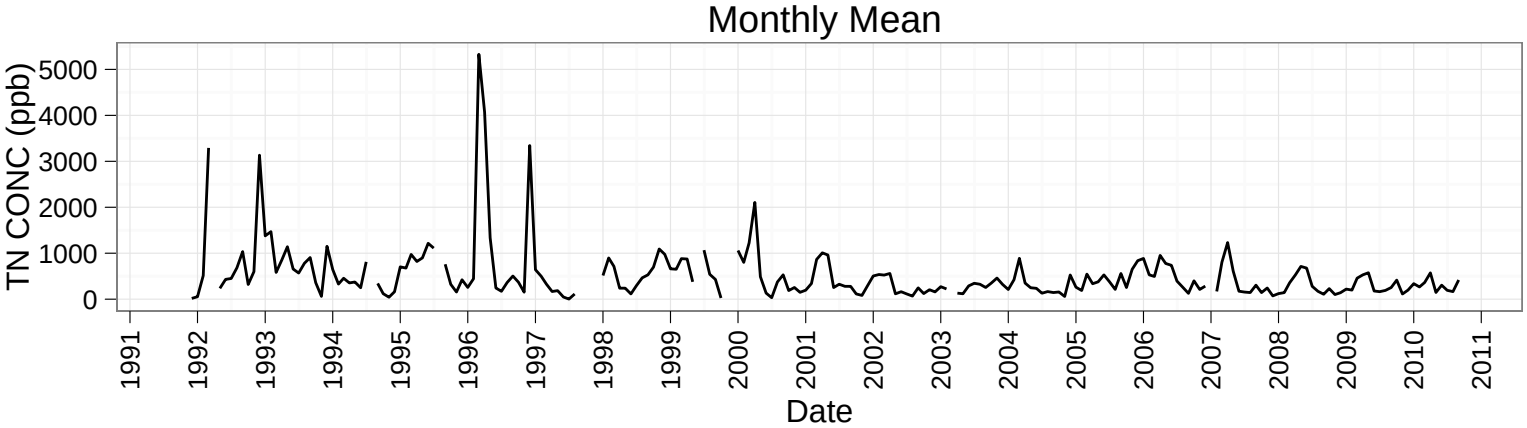


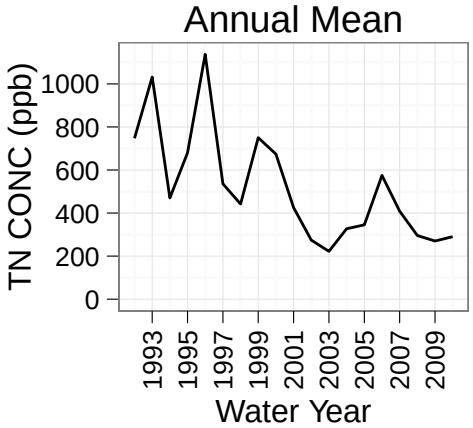


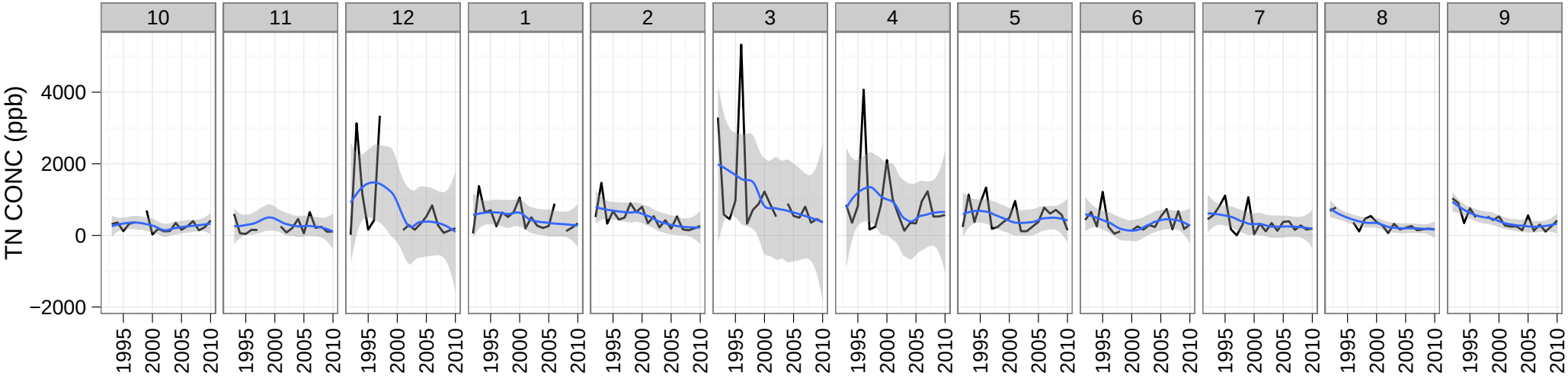


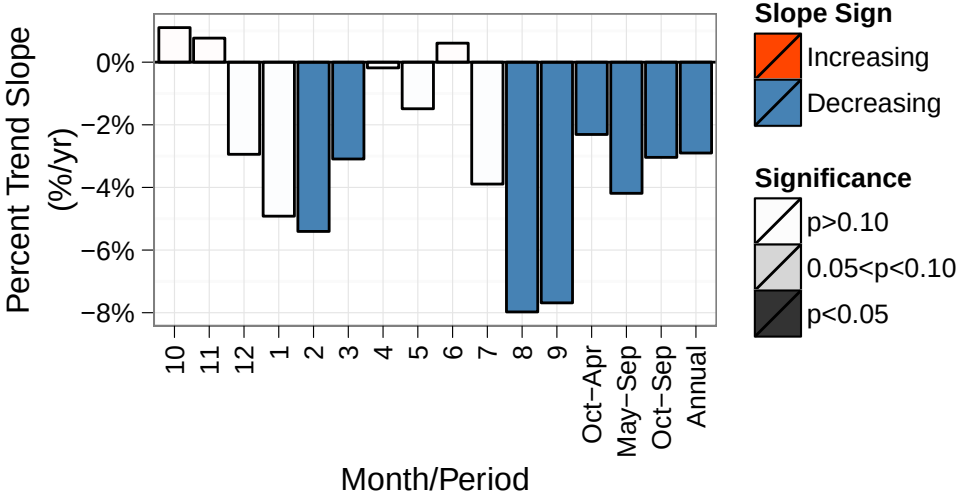


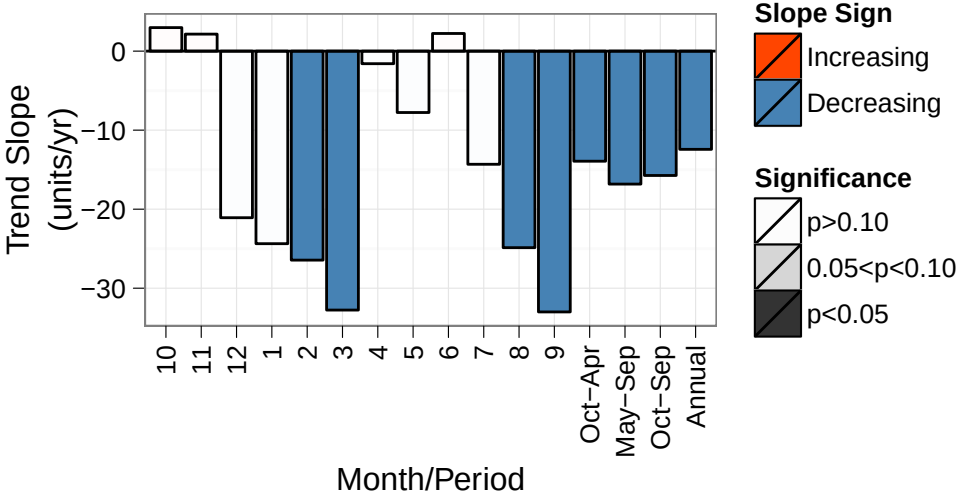
Trend Tests: Wood_Dike−Wood_Weed, TN, CONC



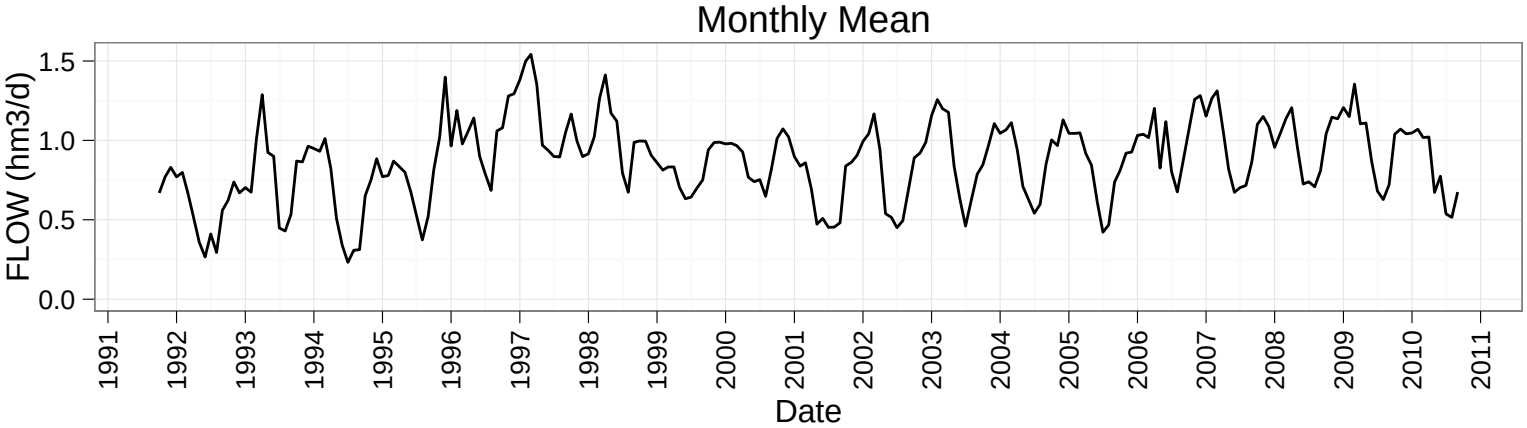


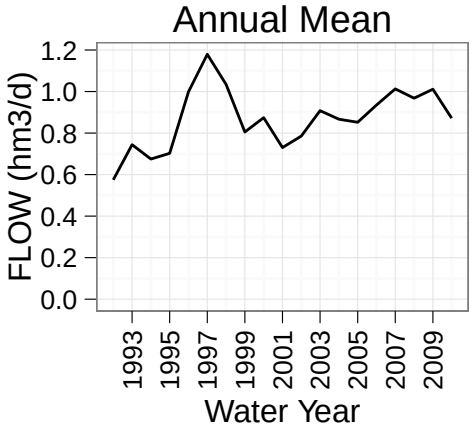


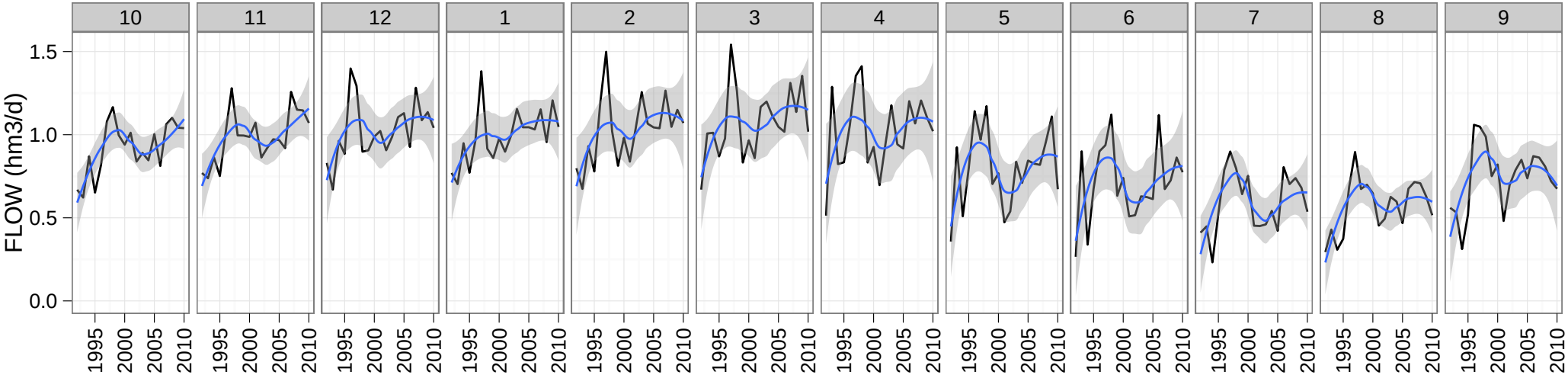


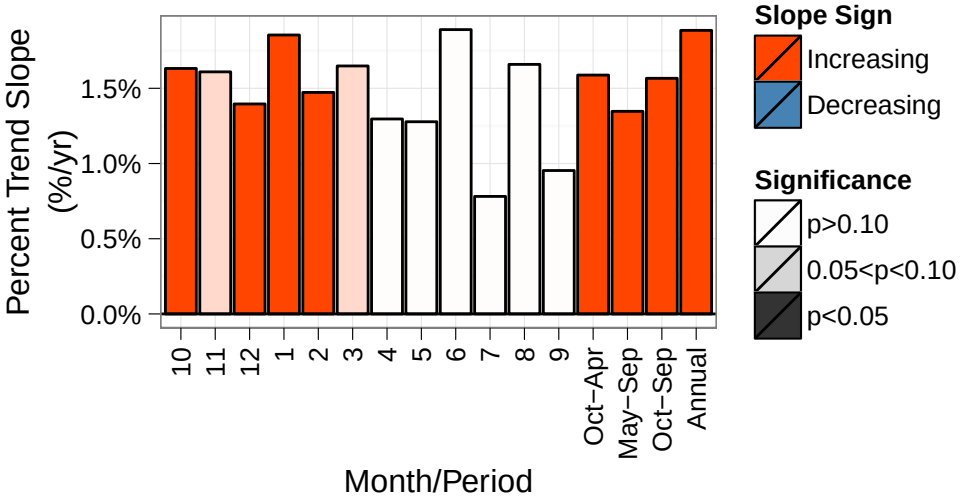


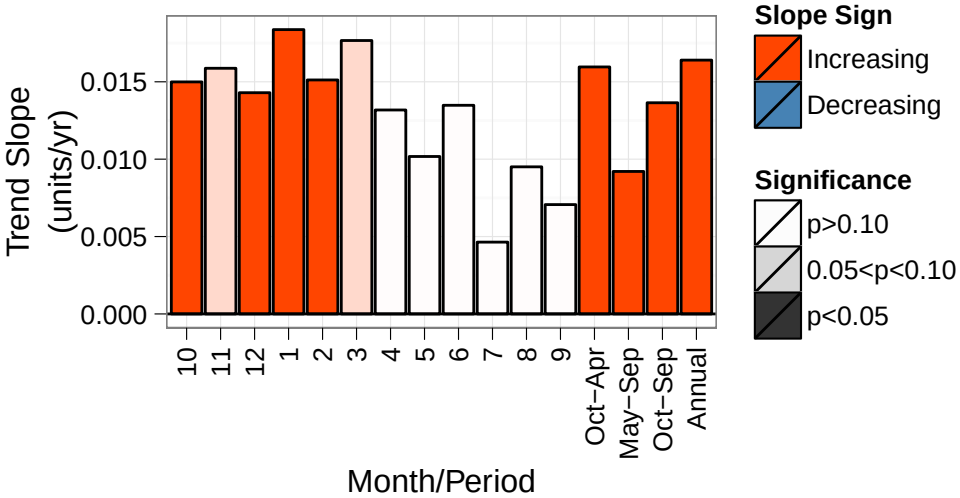
Trend Tests: Wood_Dike, FLOW

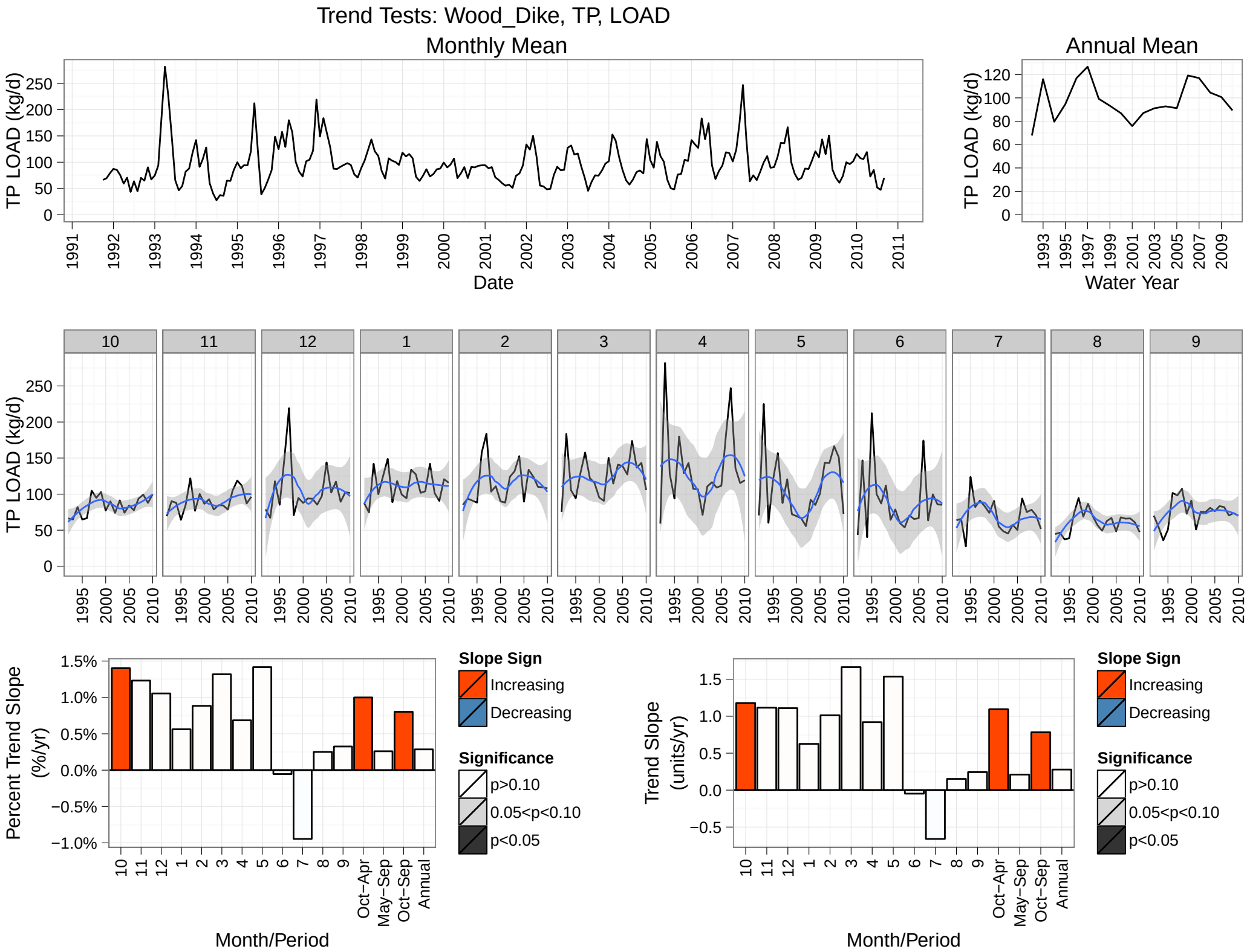




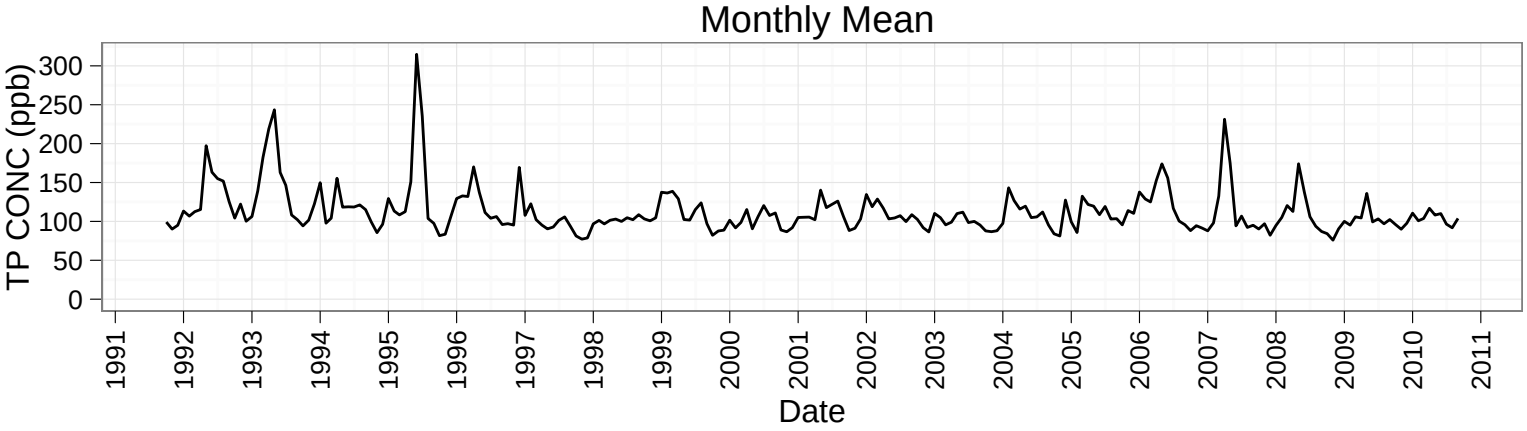


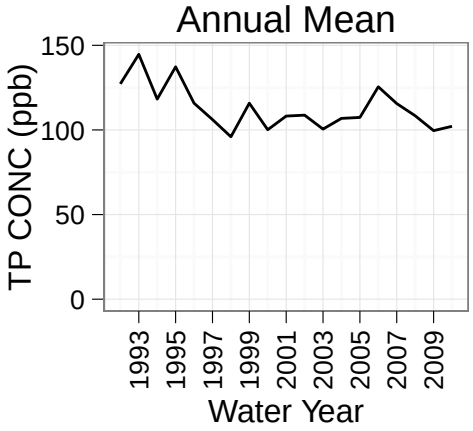


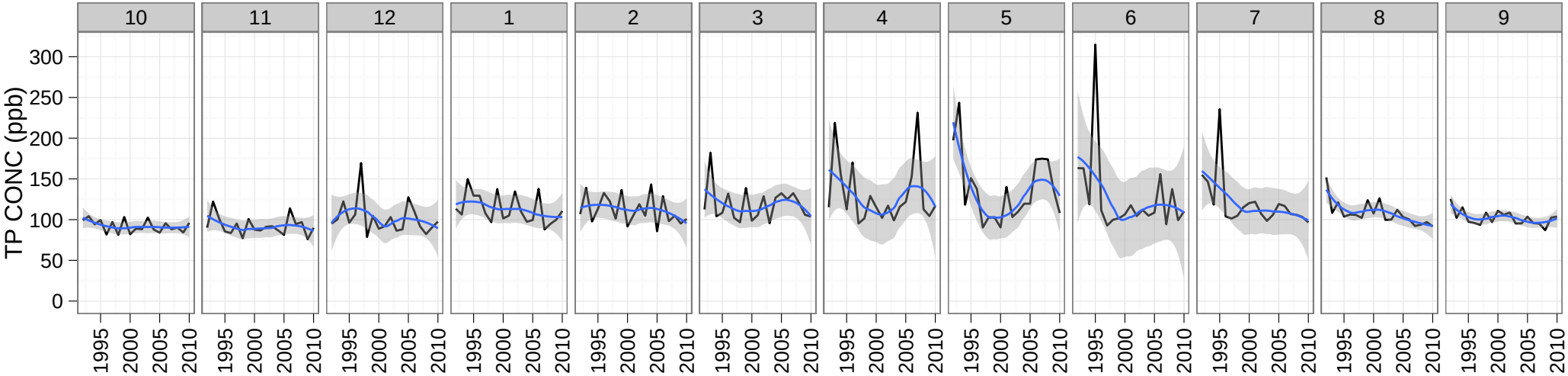


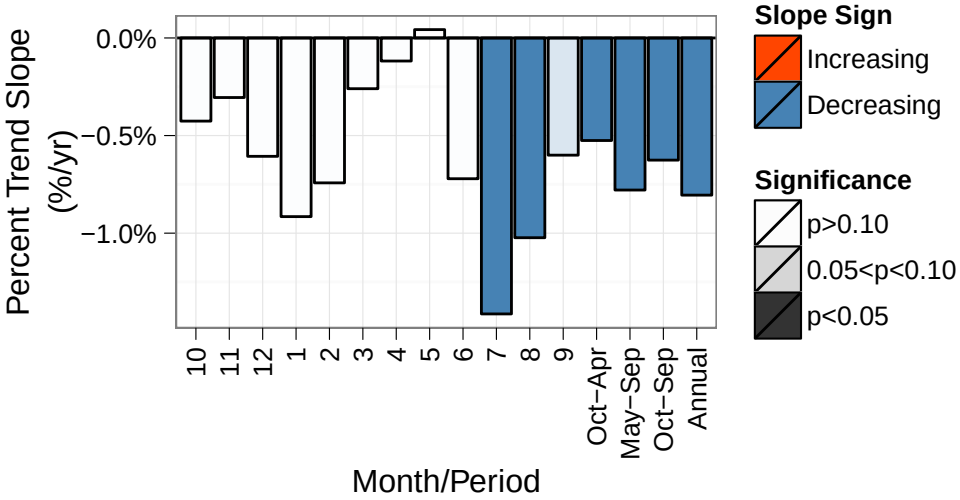

Trend Tests: Wood_Dike, TP, LOAD
Monthly Mean
TP LOAD (kg/d)
Date
Annual Mean
TP LOAD (kg/d)
Water Year
10
11
12
1
2
3
4
5
6
7
8
9
TP LOAD (kg/d)
Percent Trend Slope (%/yr)
Month/Period
Slope Sign
Increasing
Decreasing
Significance
p>0.10
0.05<p<0.10
p<0.05
Trend Slope (units/yr)
Month/Period
Slope Sign
Increasing
Decreasing
Significance
p>0.10
0.05<p<0.10
p<0.05

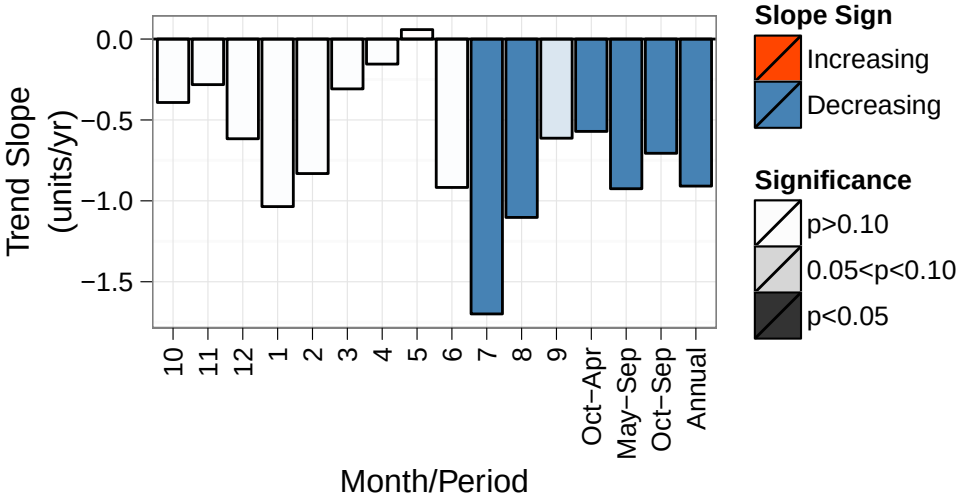
Trend Tests: Wood_Dike, TP, CONC

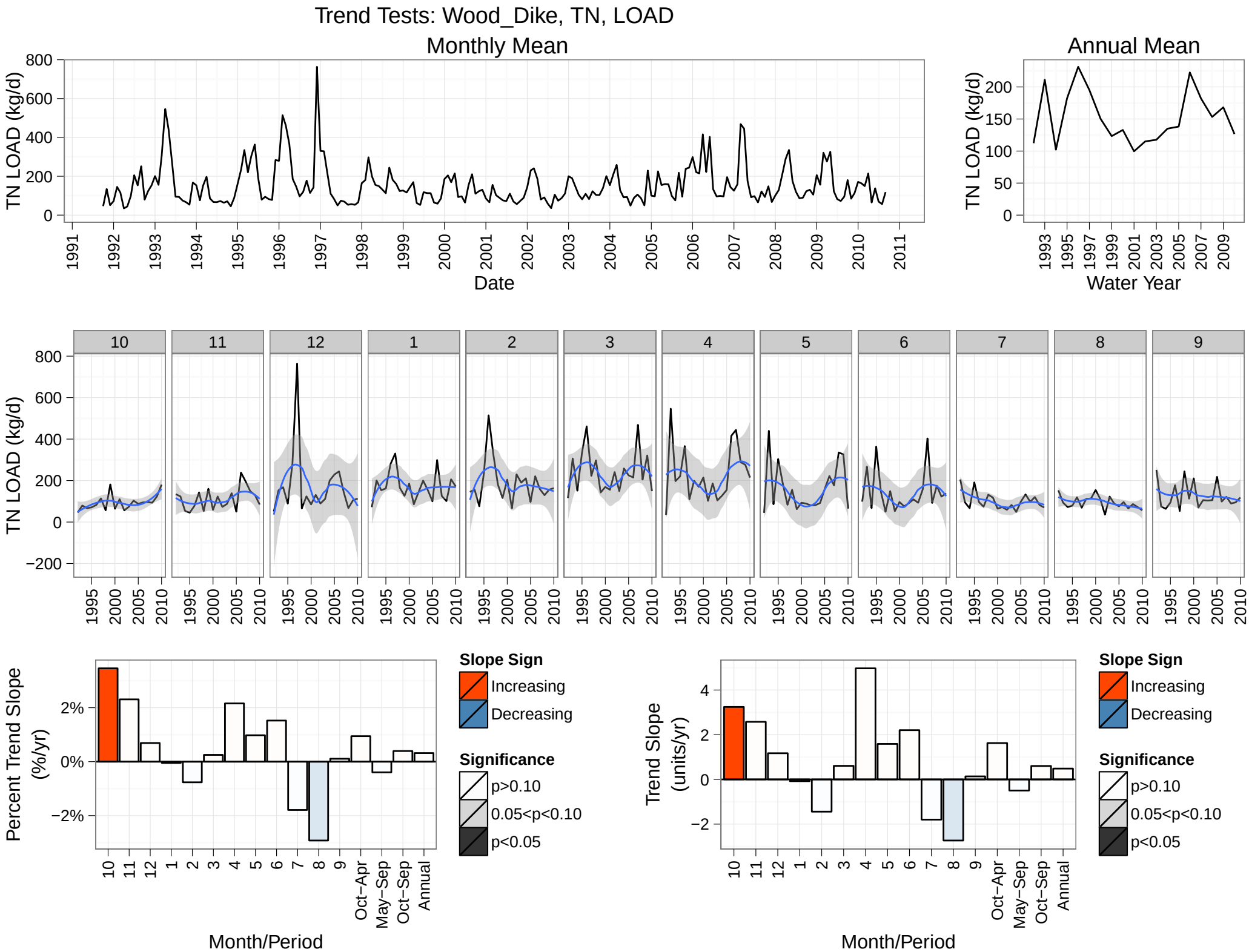




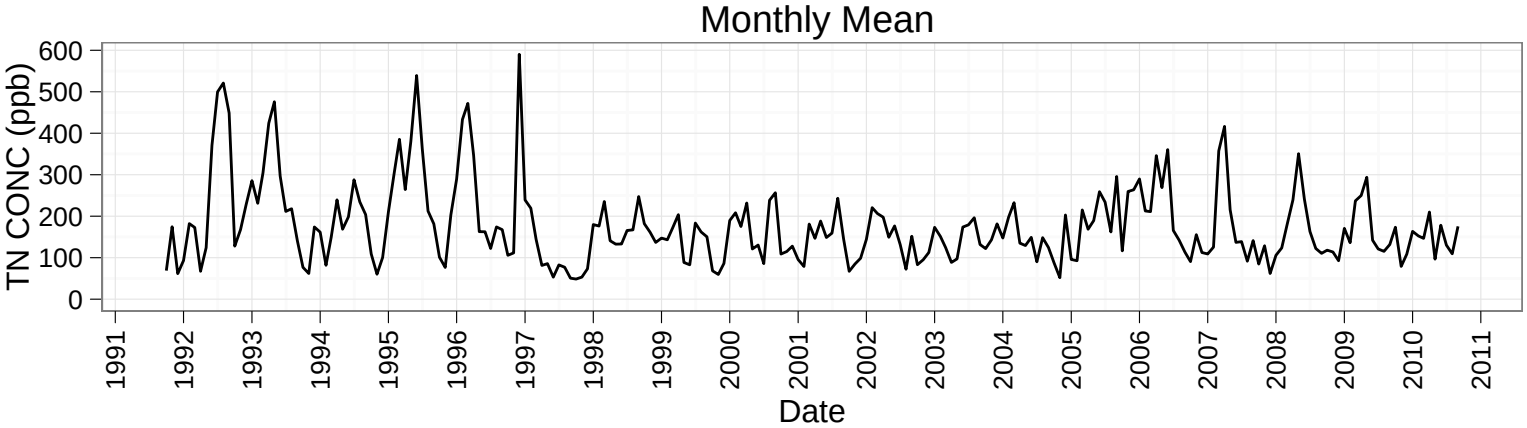


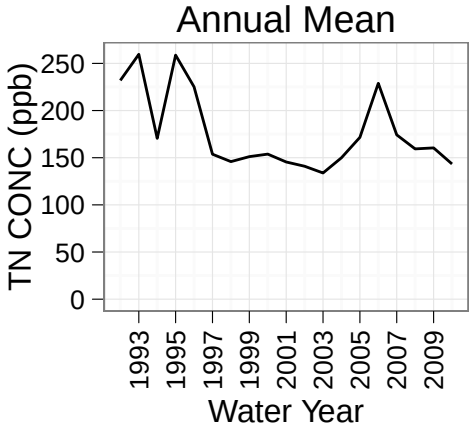


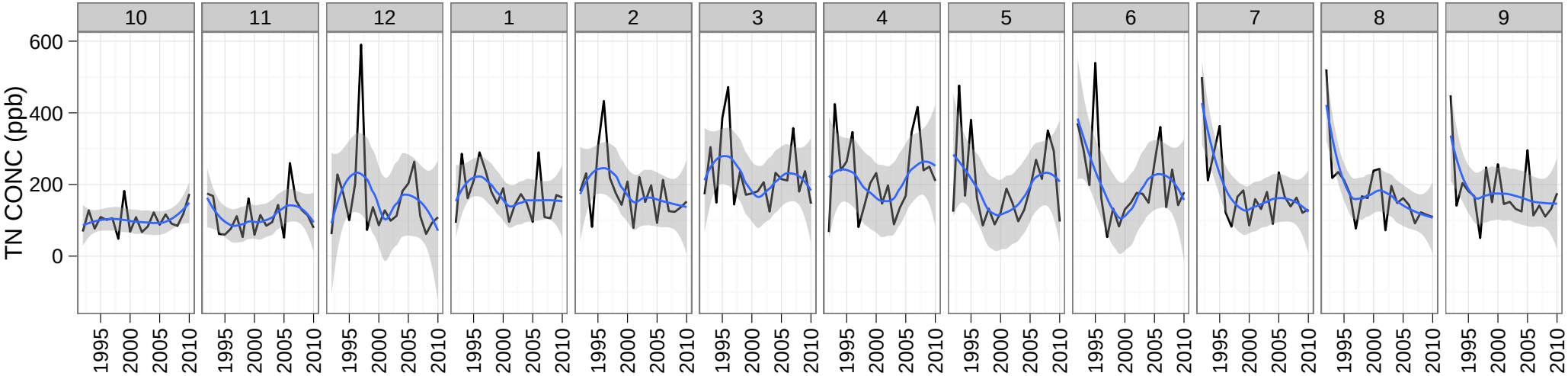


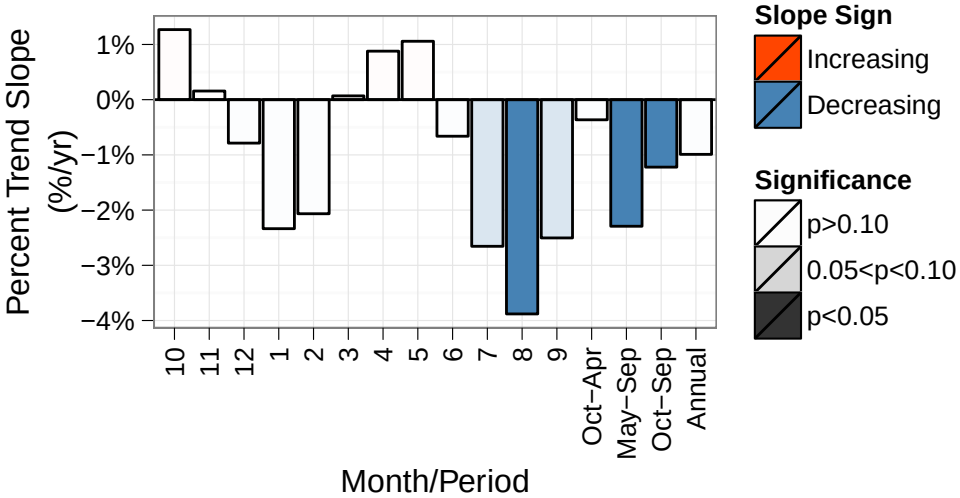

Trend Tests: Wood_Dike, TN, LOAD
Monthly Mean
TN LOAD (kg/d)
Date
Annual Mean
TN LOAD (kg/d)
Water Year
Percent Trend Slope (%/yr)
Month/Period
Trend Slope (units/yr)
Month/Period
Slope Sign
Increasing
Decreasing
Significance
p>0.10
0.05<p<0.10
p<0.05
Oct−Apr
May−Sep
Oct−Sep
Annual

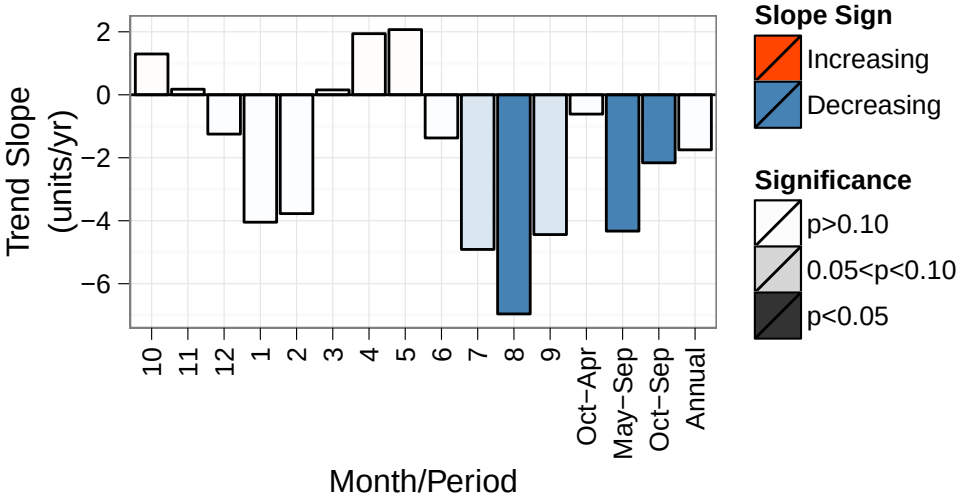
Trend Tests: Wood_Dike, TN, CONC



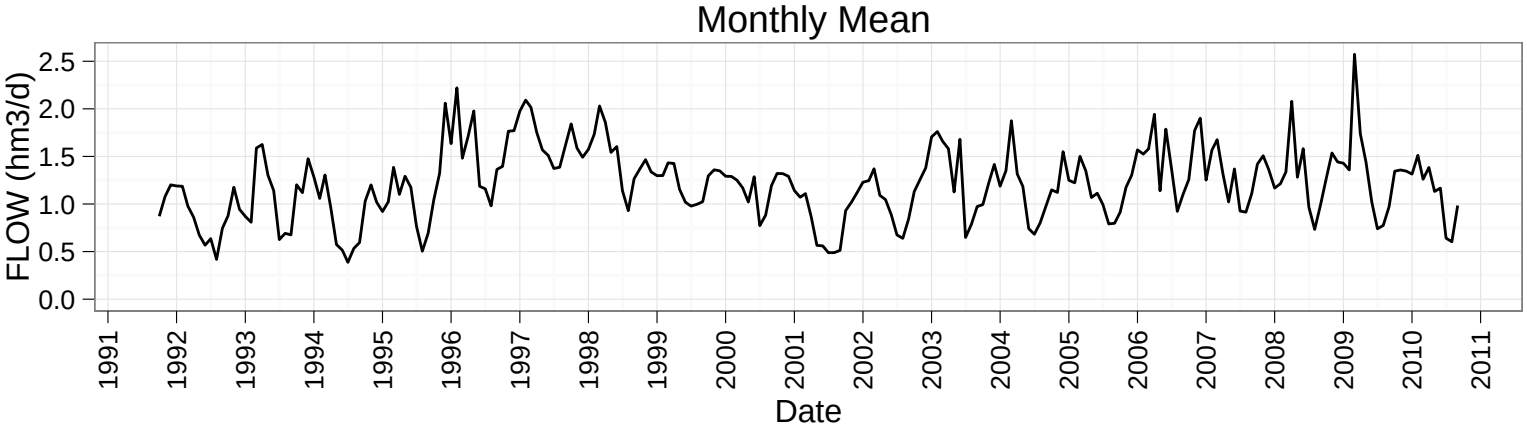


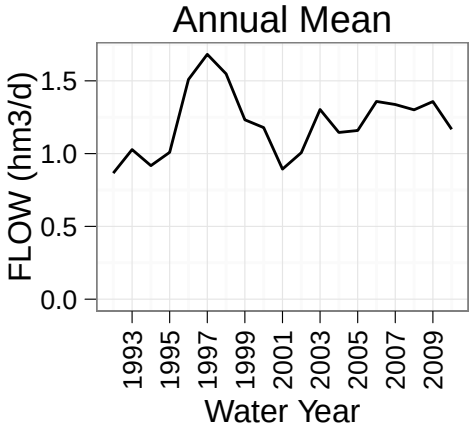


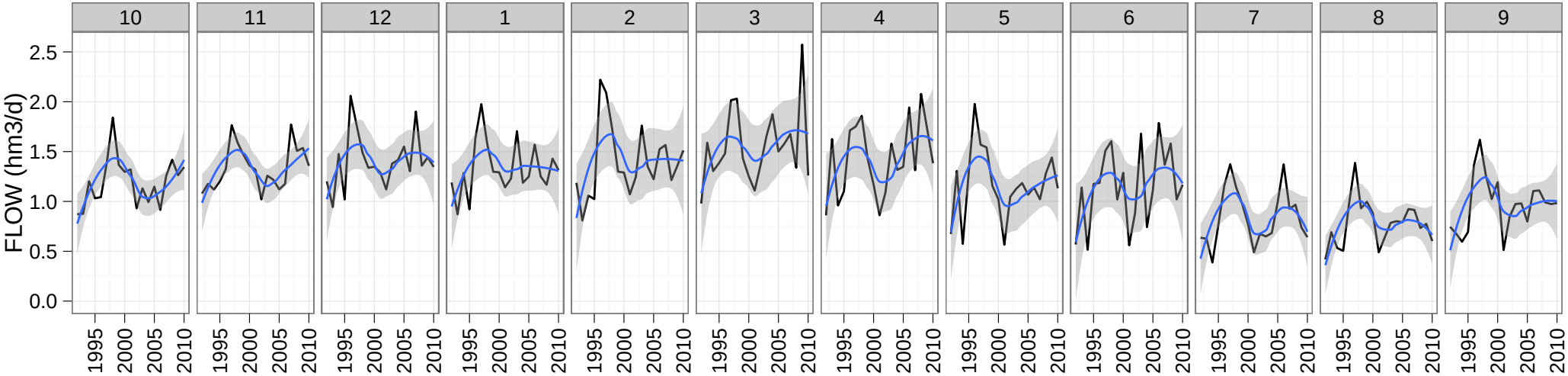


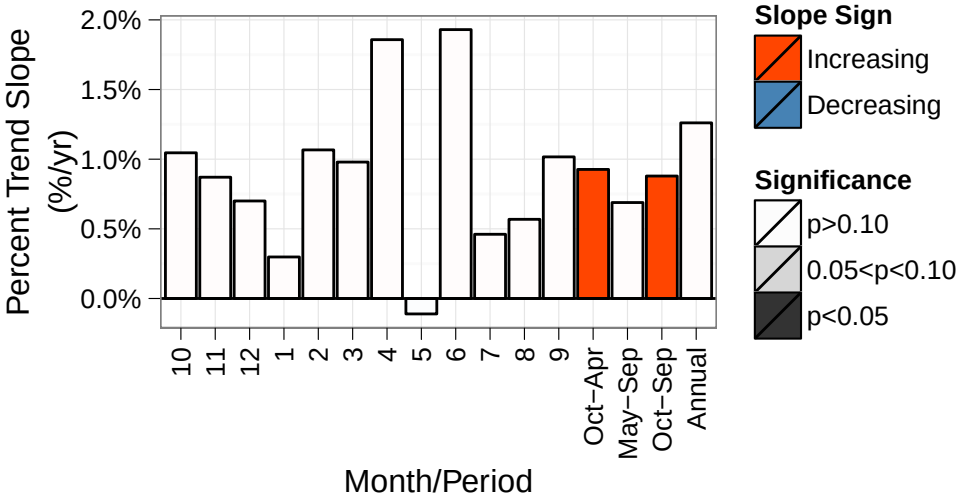


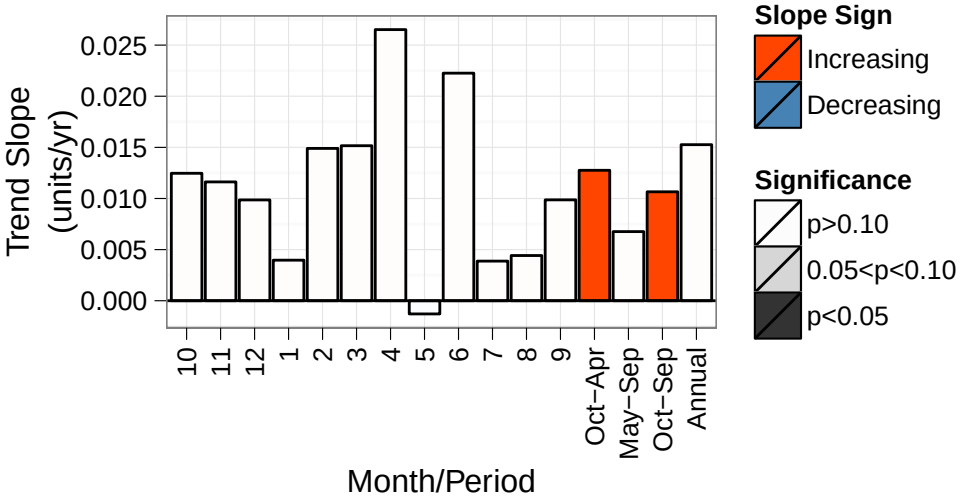
Trend Tests: Total Agency Inflows, FLOW



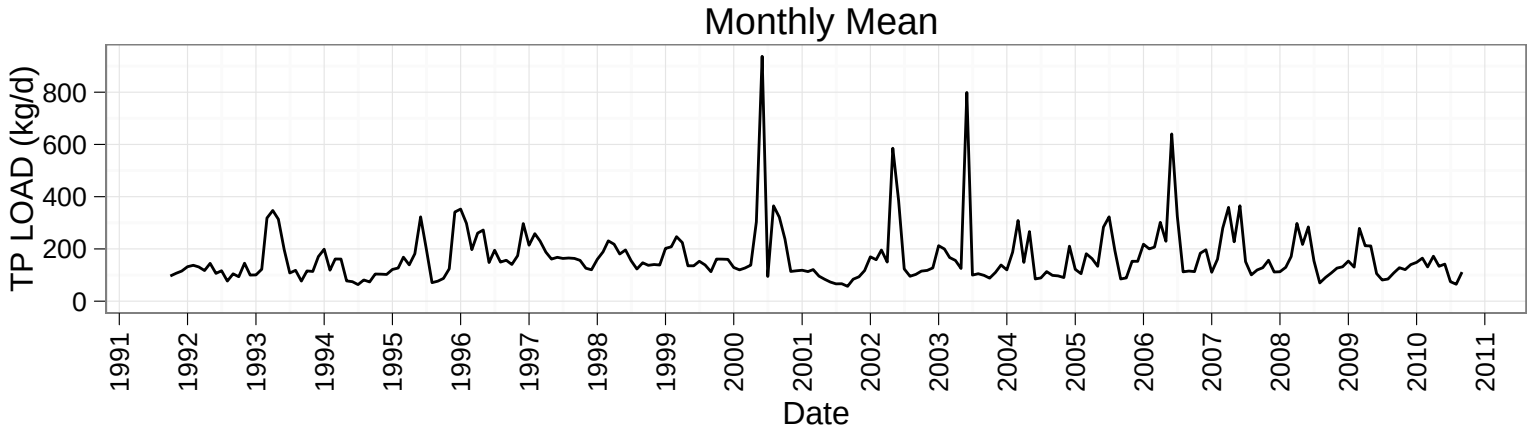


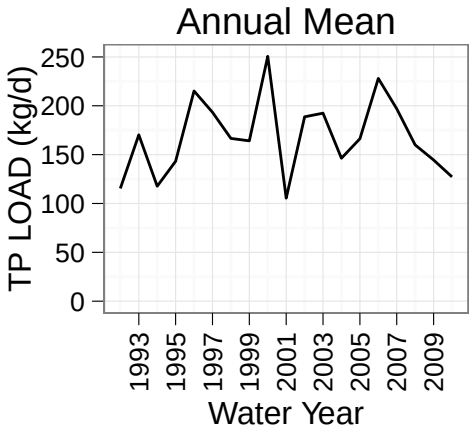


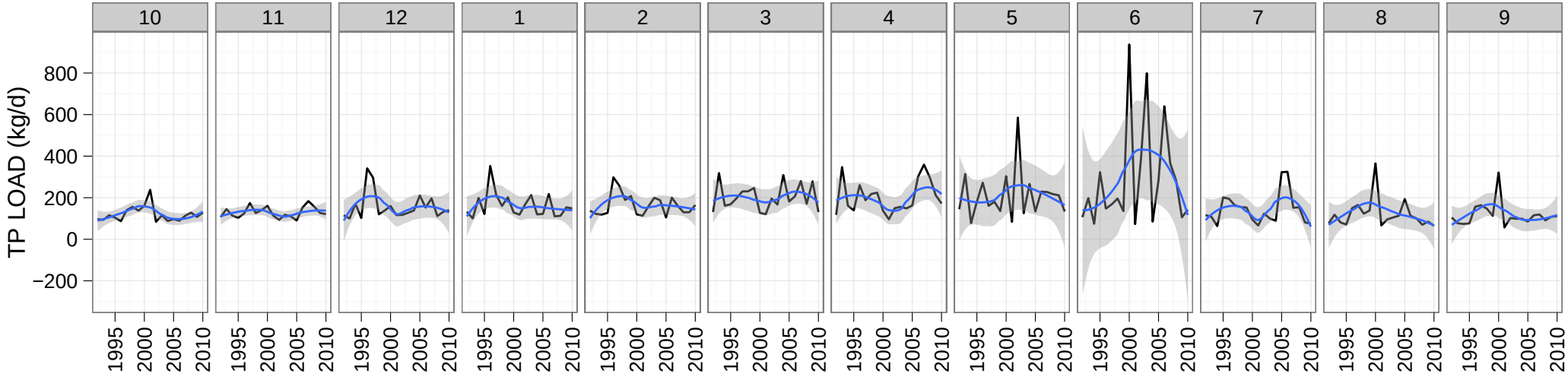


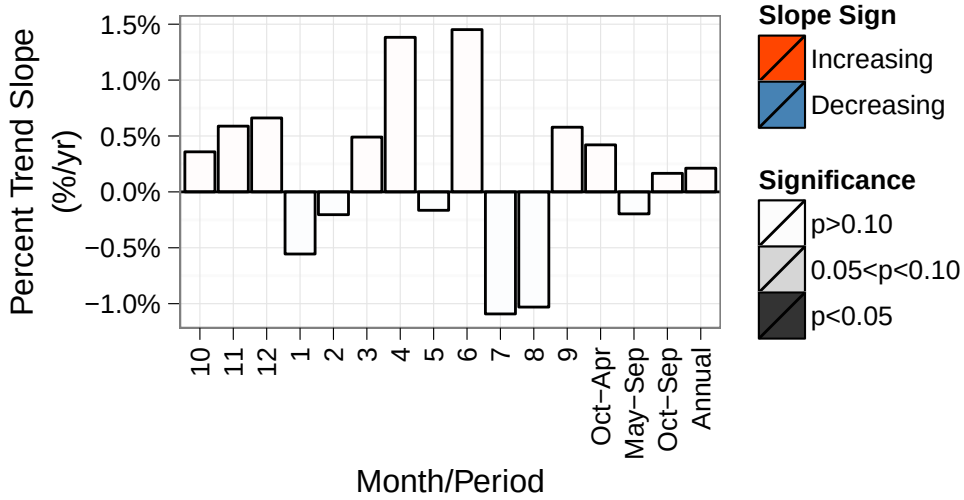


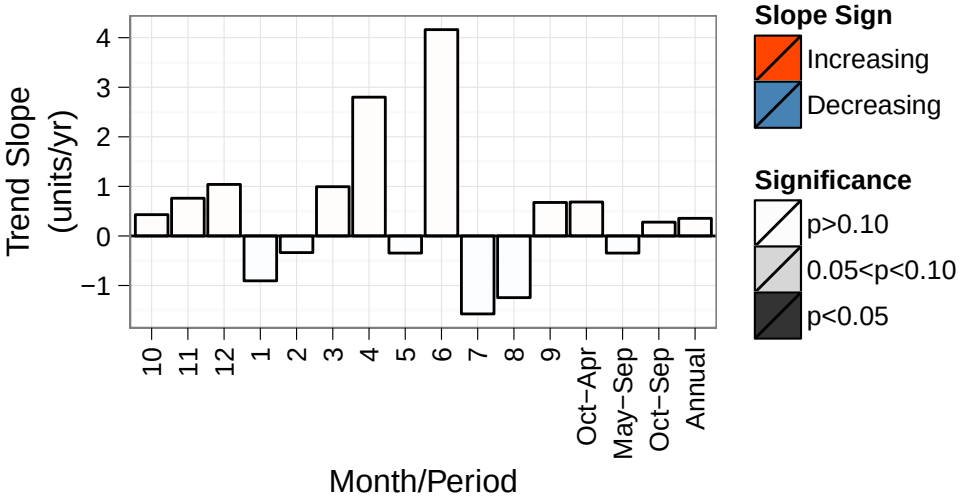
Trend Tests: Total Agency Inflows, TP, LOAD



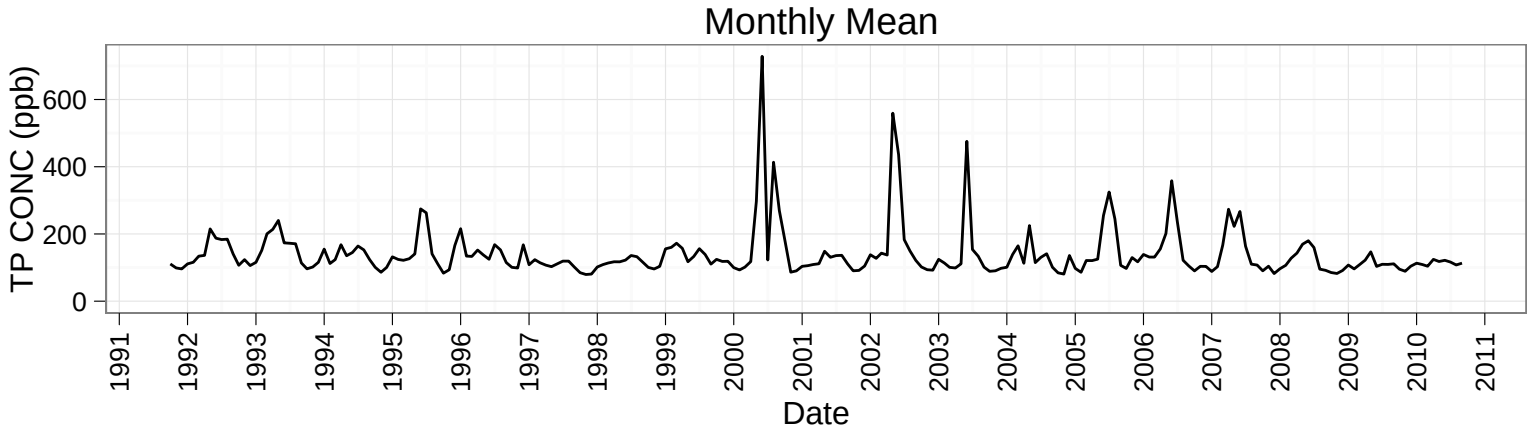


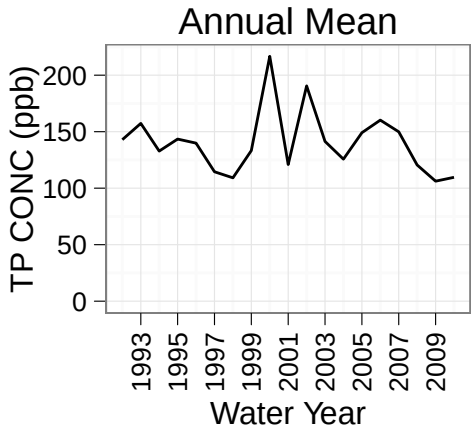


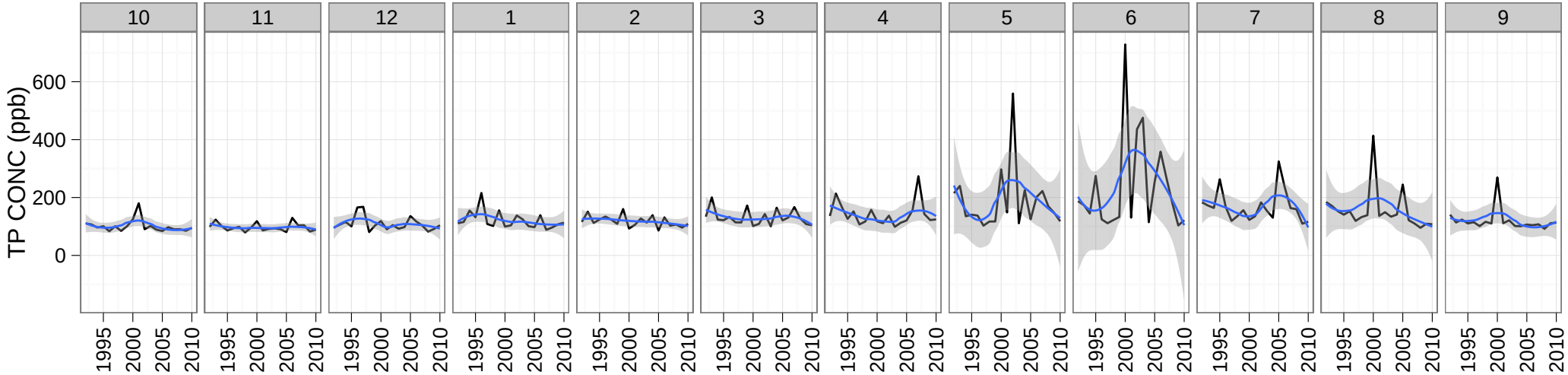


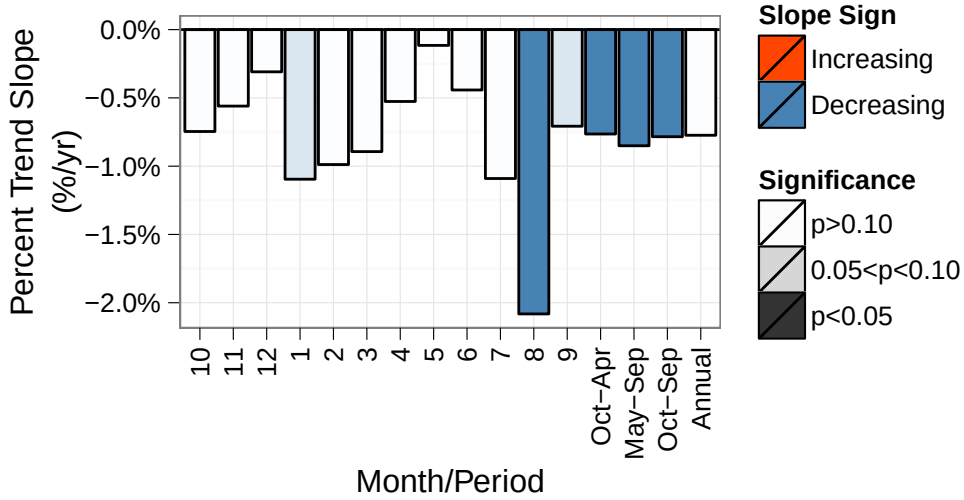


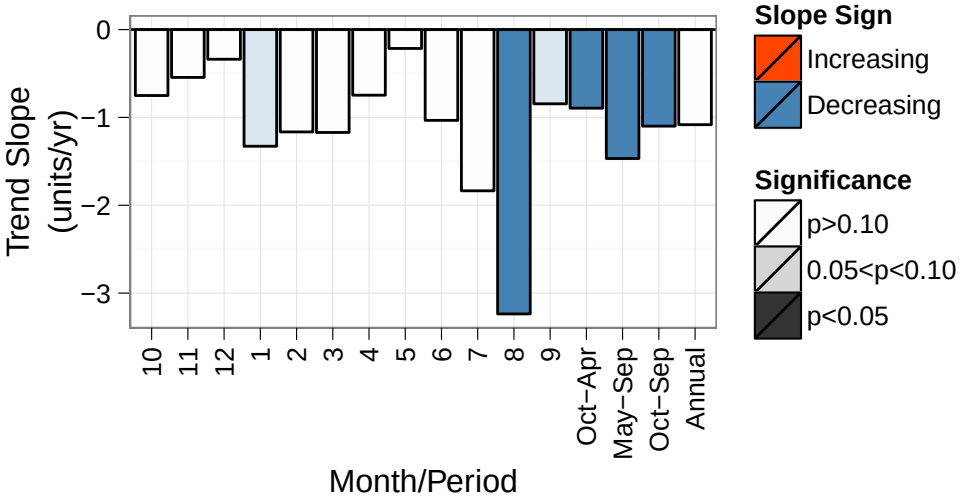
Trend Tests: Total Agency Inflows, TP, CONC



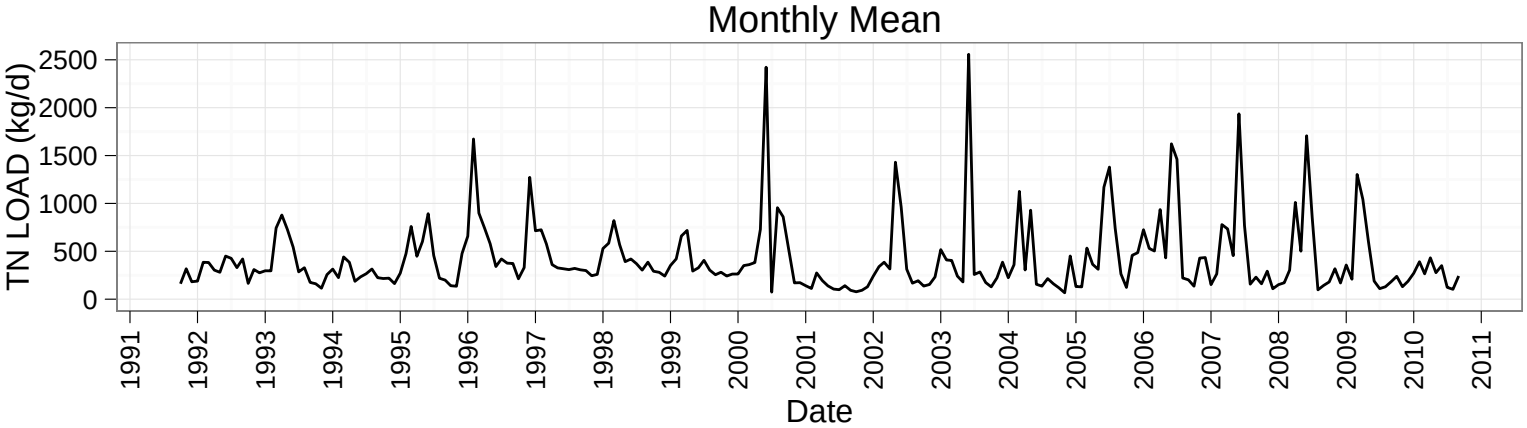


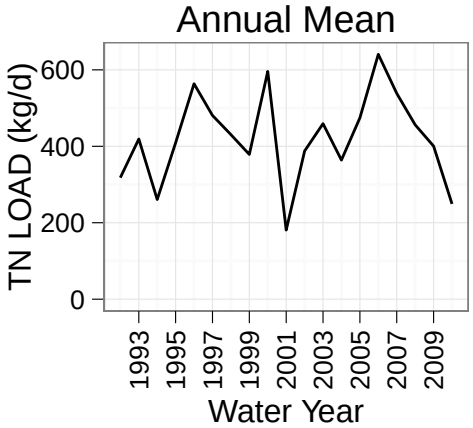


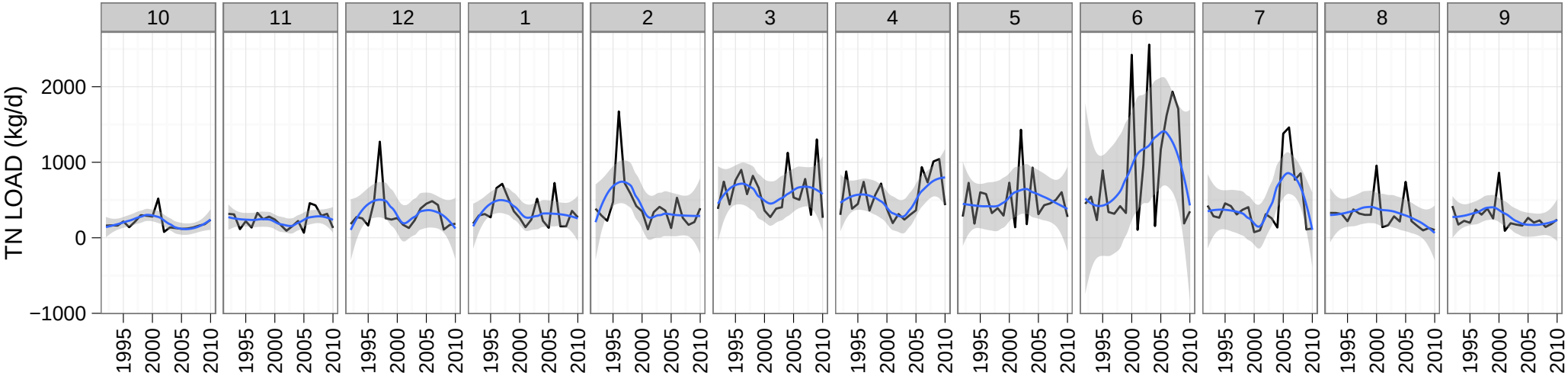


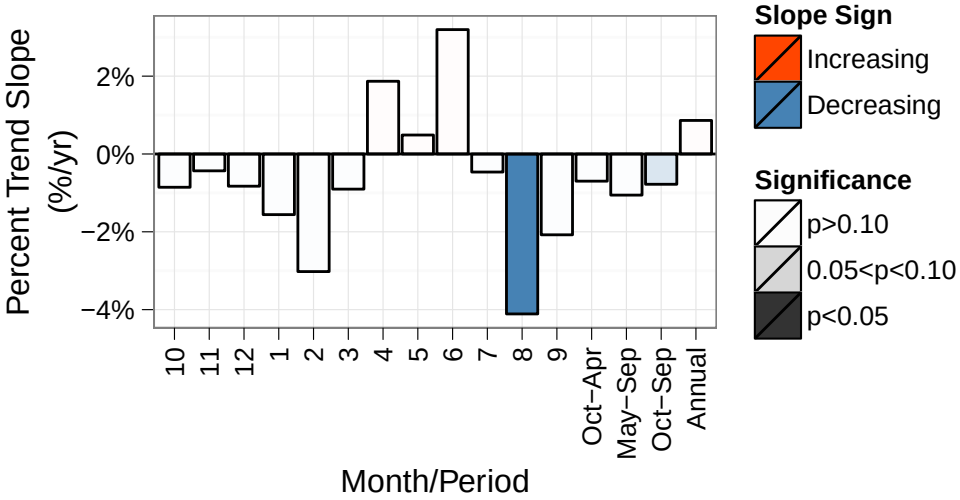


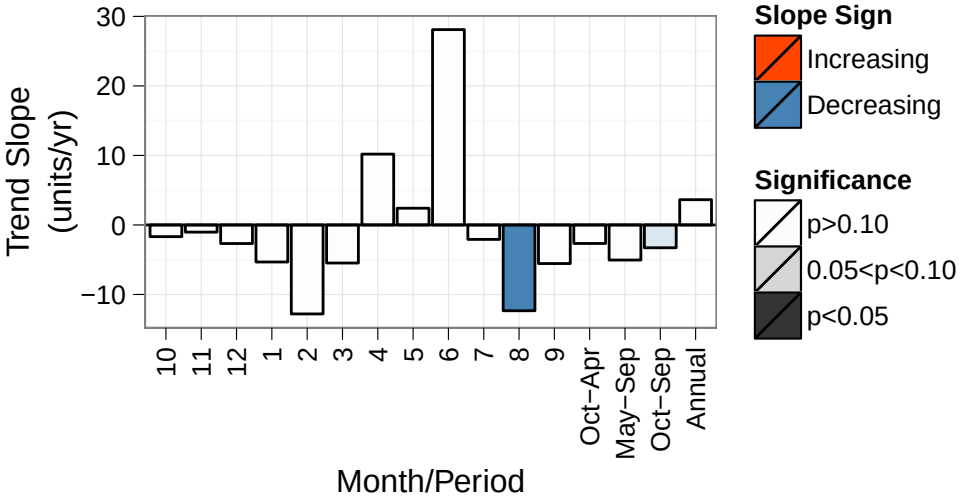
Trend Tests: Total Agency Inflows, TN, LOAD



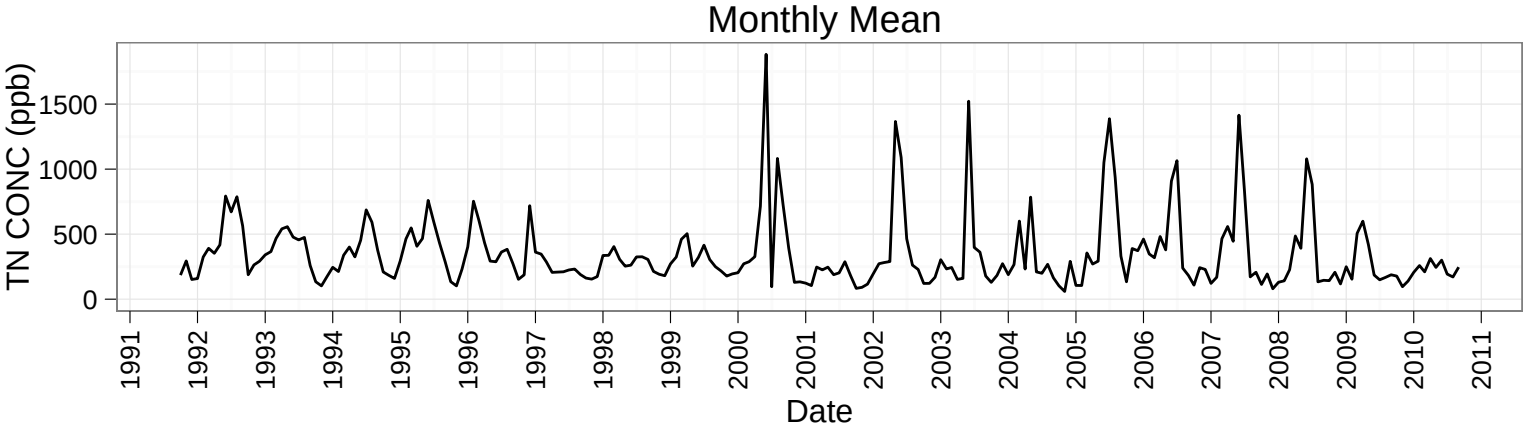


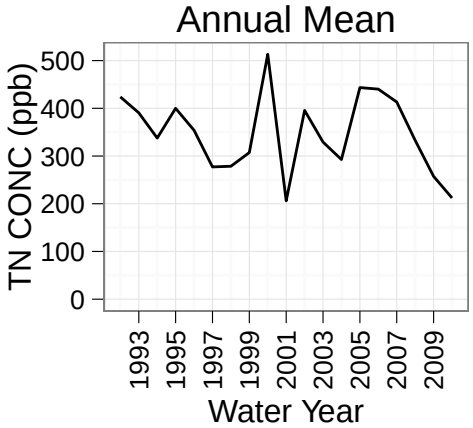


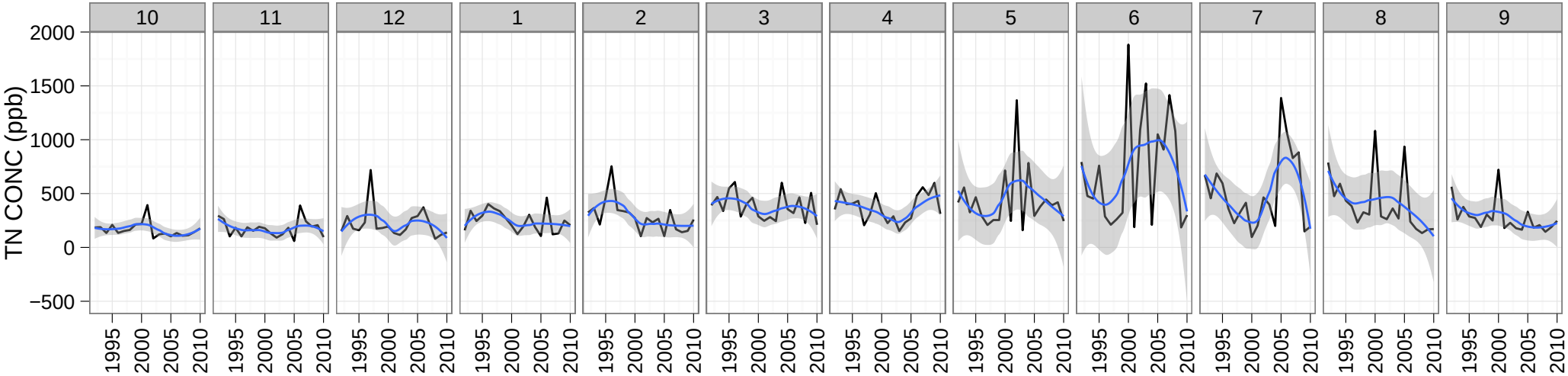


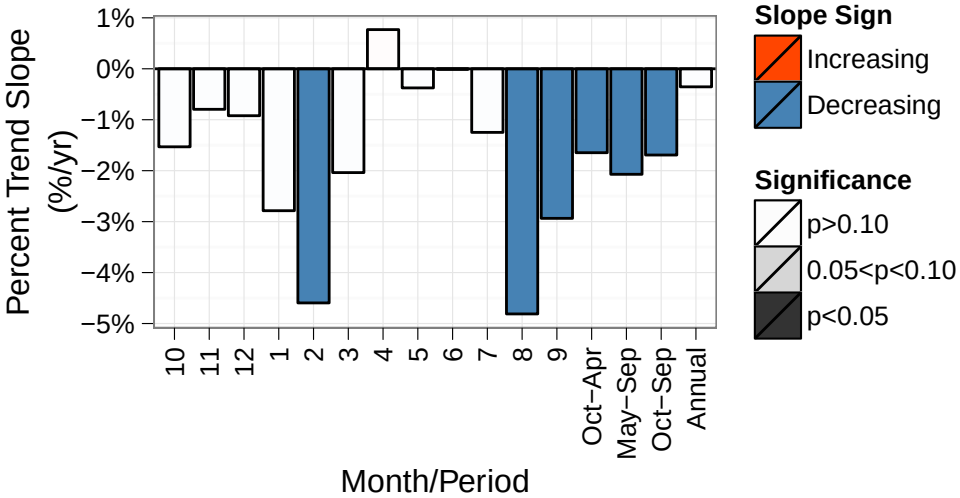


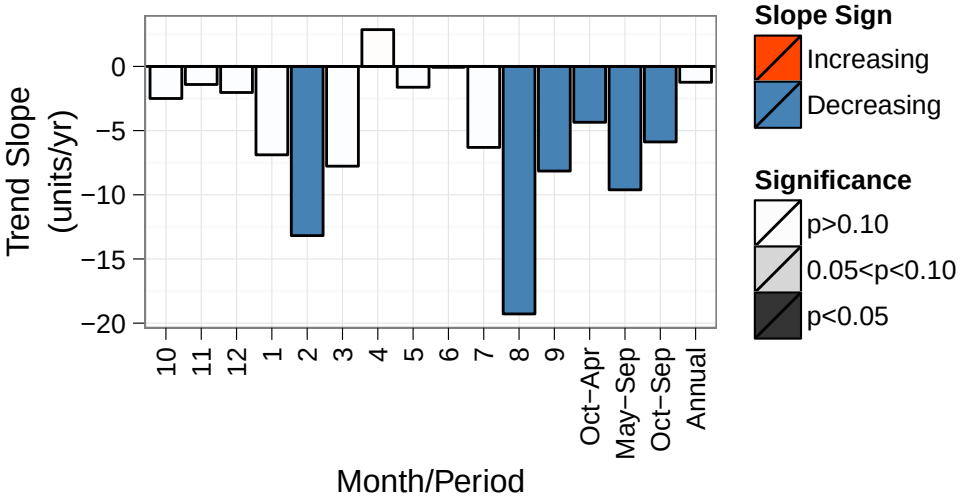
Trend Tests: Total Agency Inflows, TN, CONC

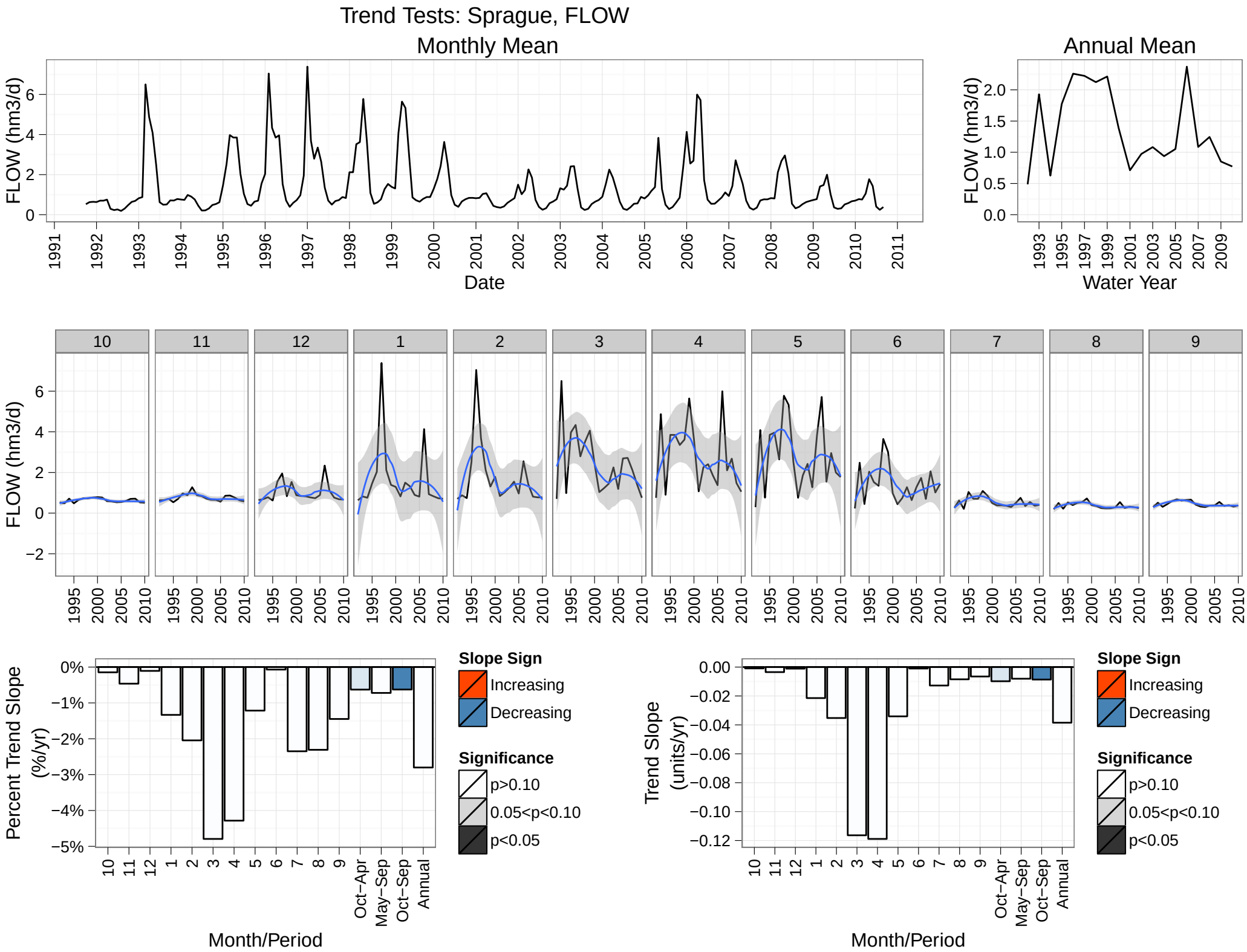




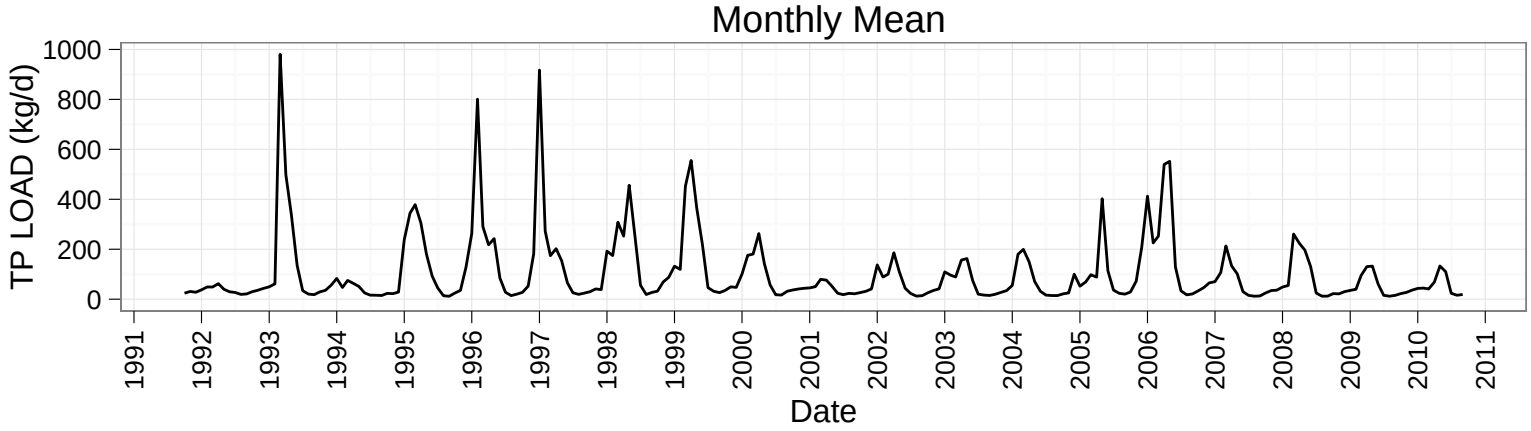


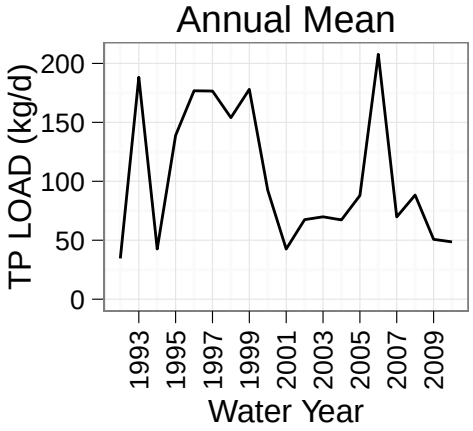


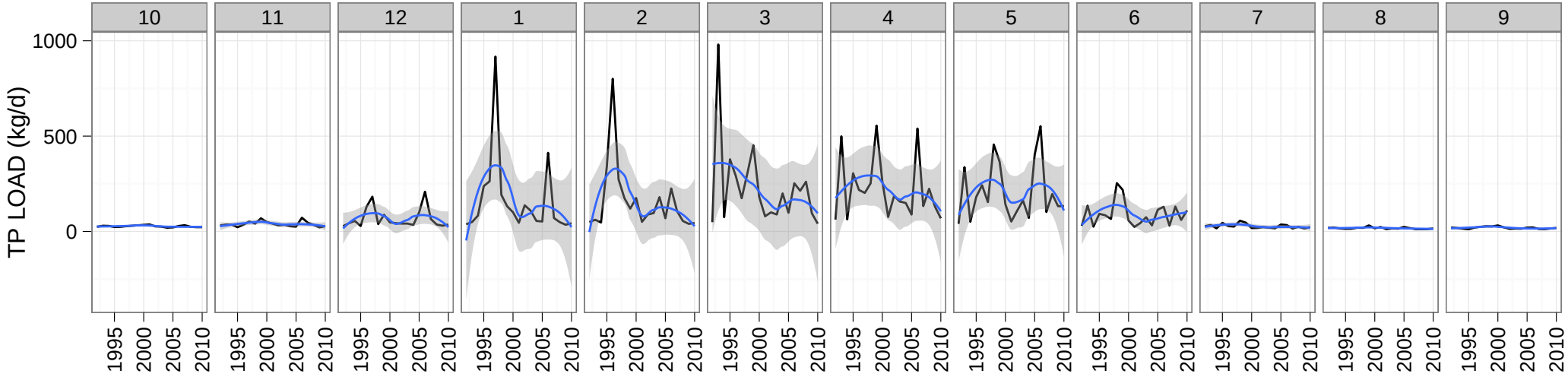


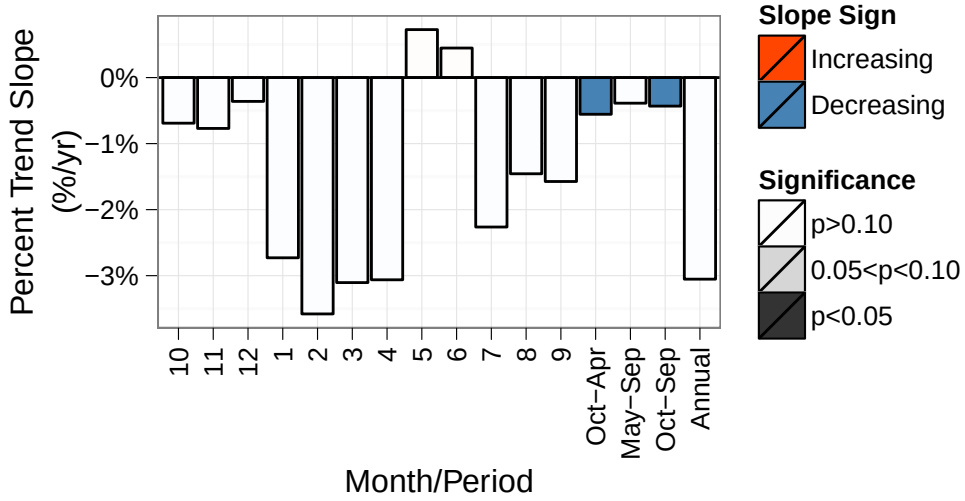

Trend Tests: Sprague, FLOW
Monthly Mean
FLOW (hm3/d)
Date
Annual Mean
FLOW (hm3/d)
Water Year
10
11
12
1
2
3
4
5
6
7
8
9
FLOW (hm3/d)
Percent Trend Slope (%/yr)
Month/Period
Slope Sign
Increasing
Decreasing
Significance
p>0.10
0.05<p<0.10
p<0.05
Trend Slope (units/yr)
Month/Period
Slope Sign
Increasing
Decreasing
Significance
p>0.10
0.05<p<0.10
p<0.05

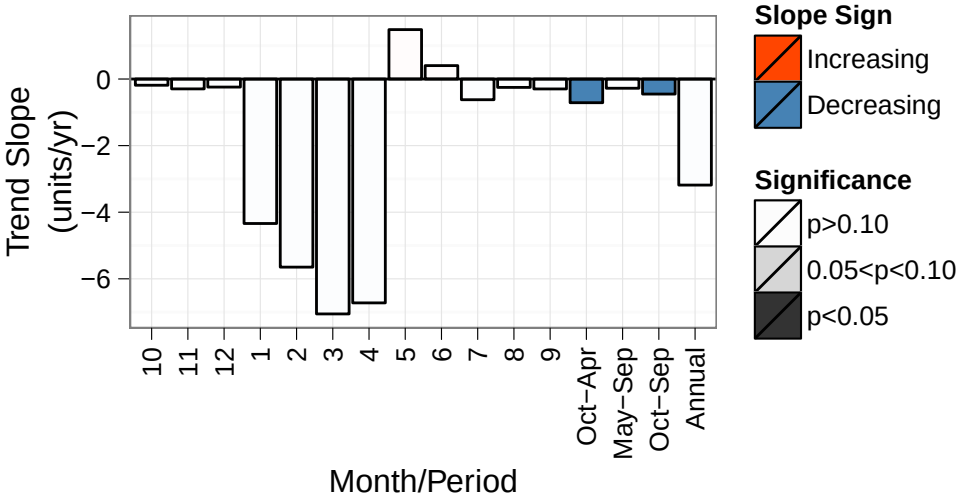
Trend Tests: Sprague, TP, LOAD



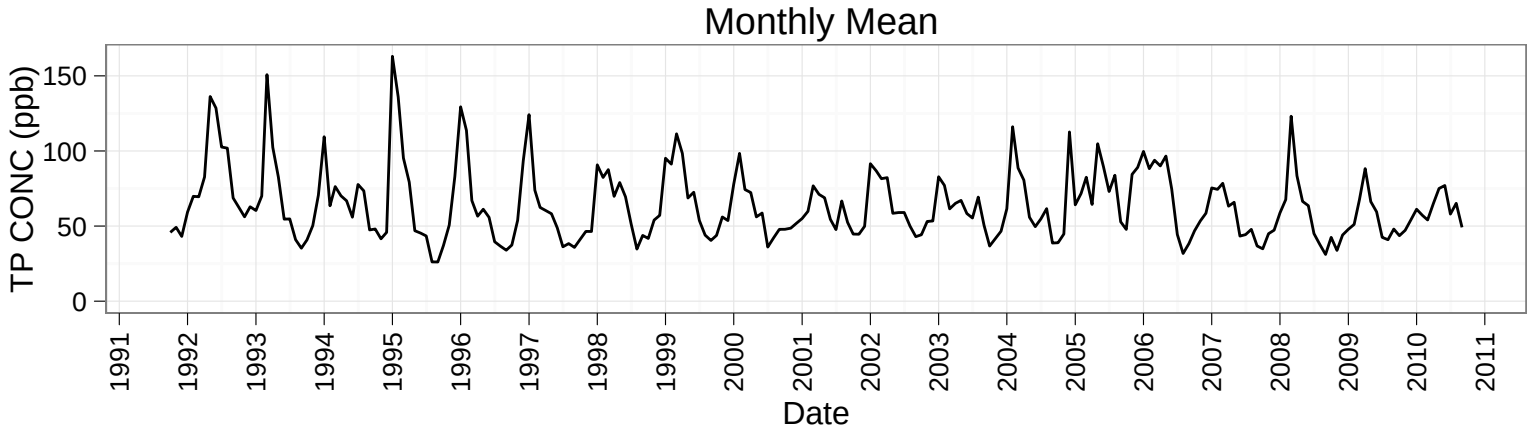


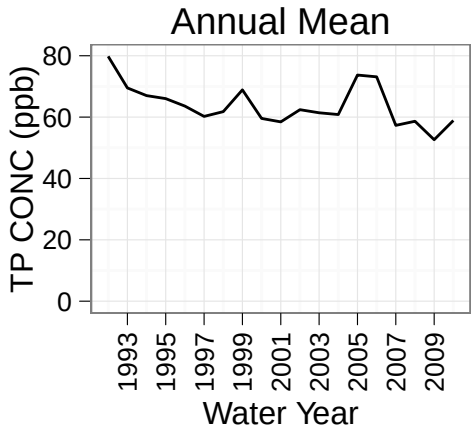


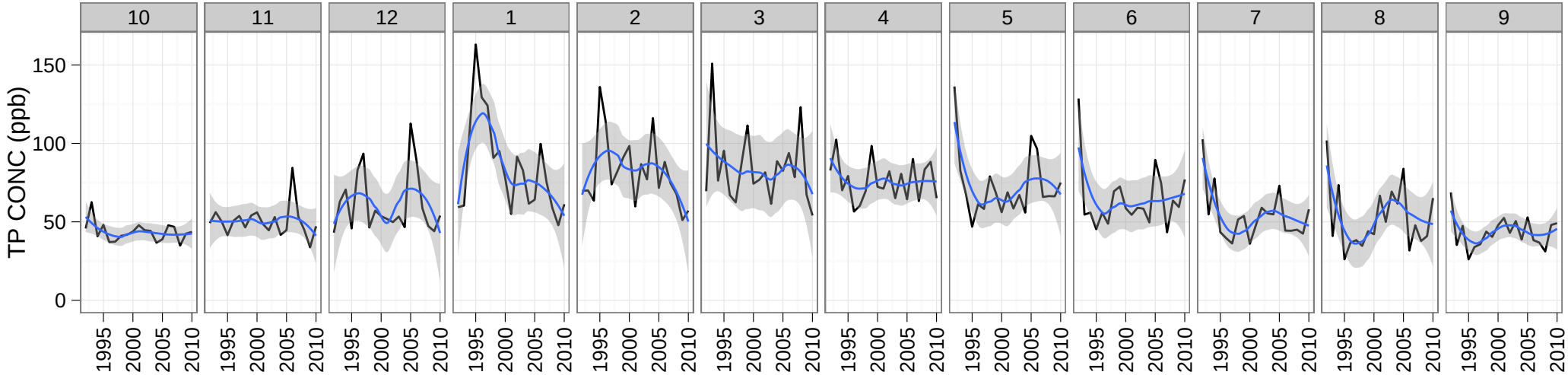


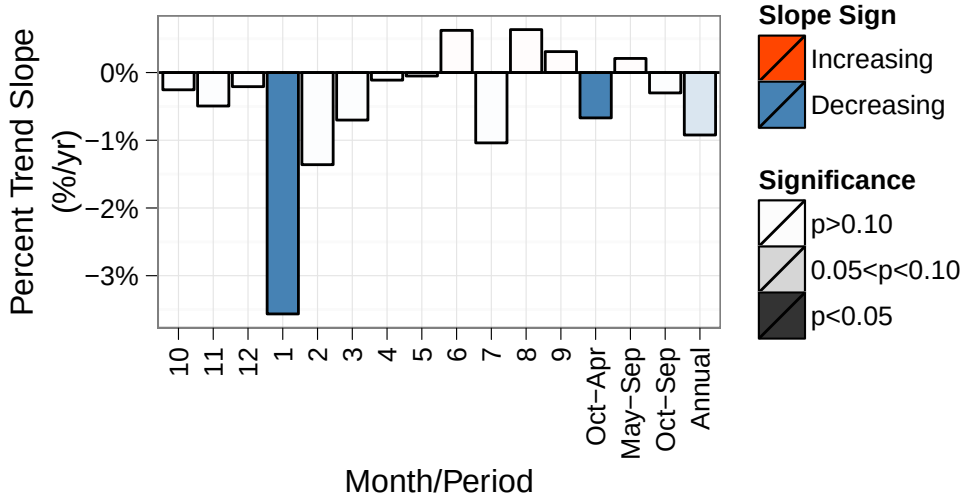


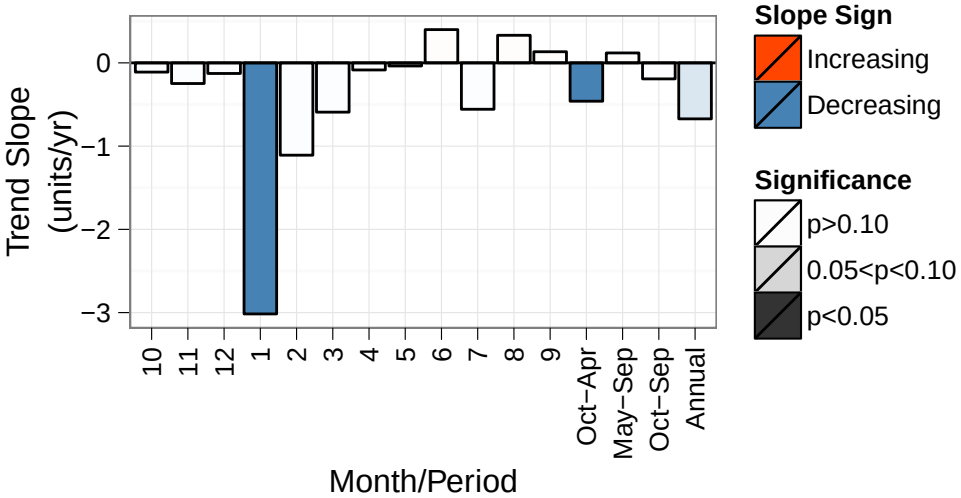
Trend Tests: Sprague, TP, CONC



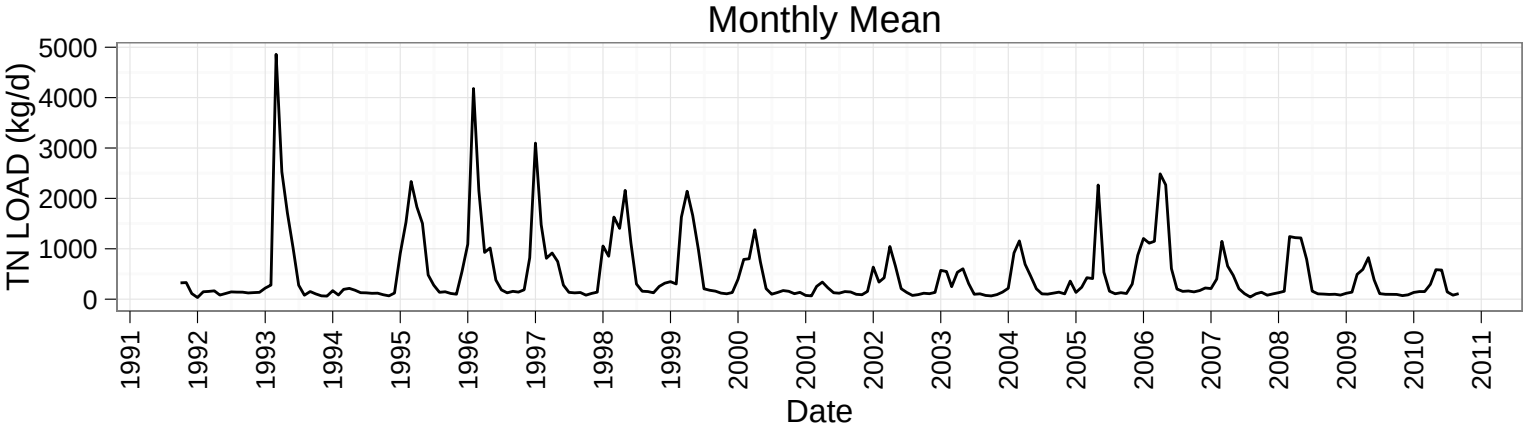


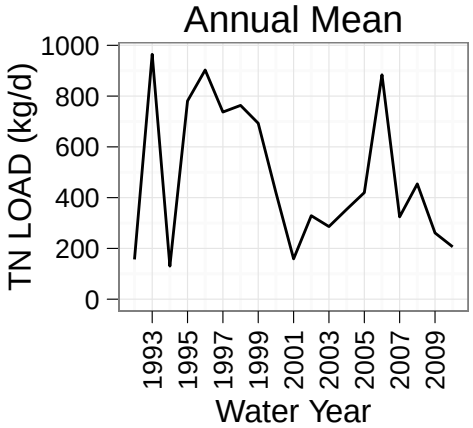


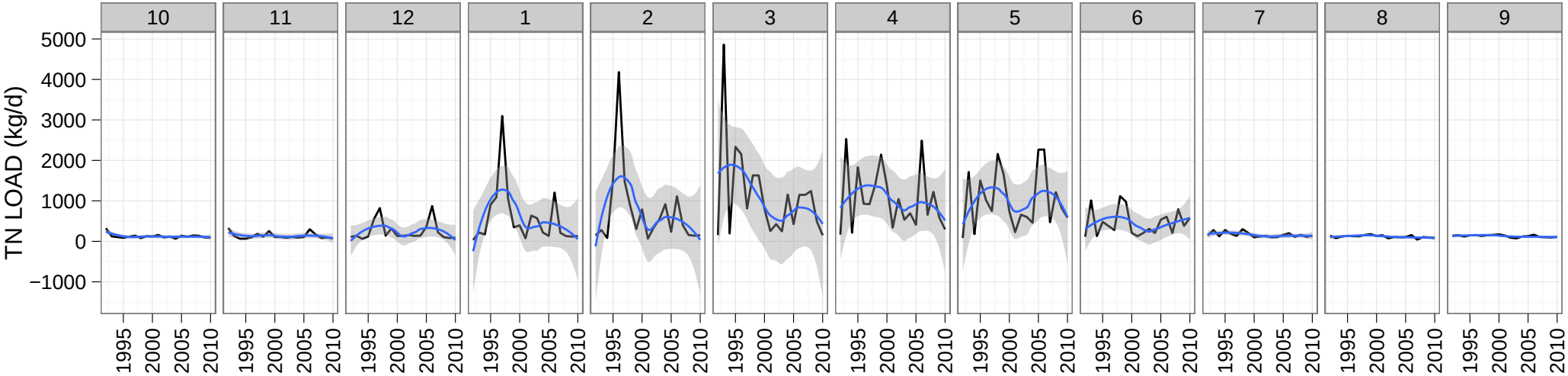


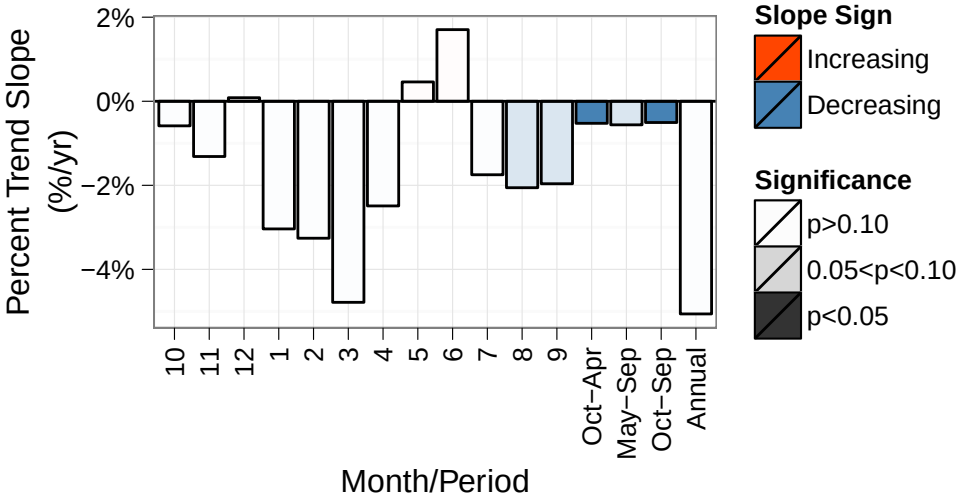


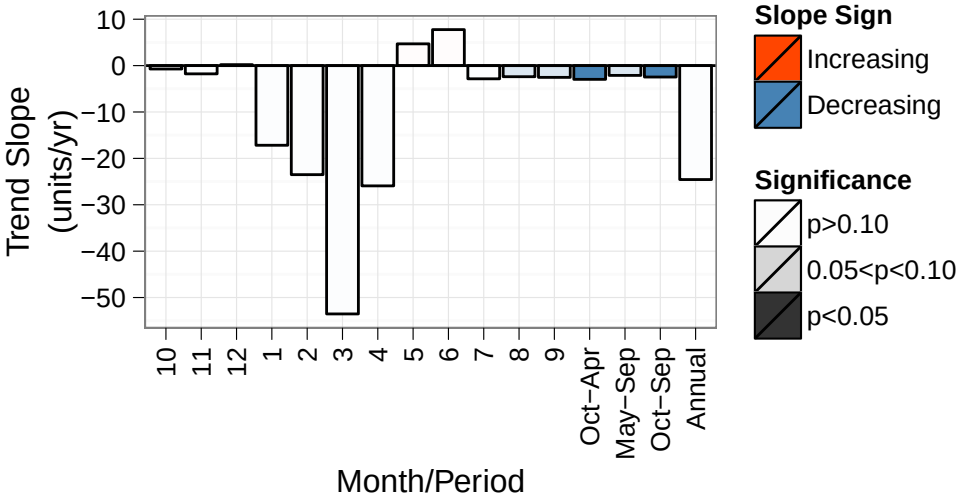
Trend Tests: Sprague, TN, LOAD



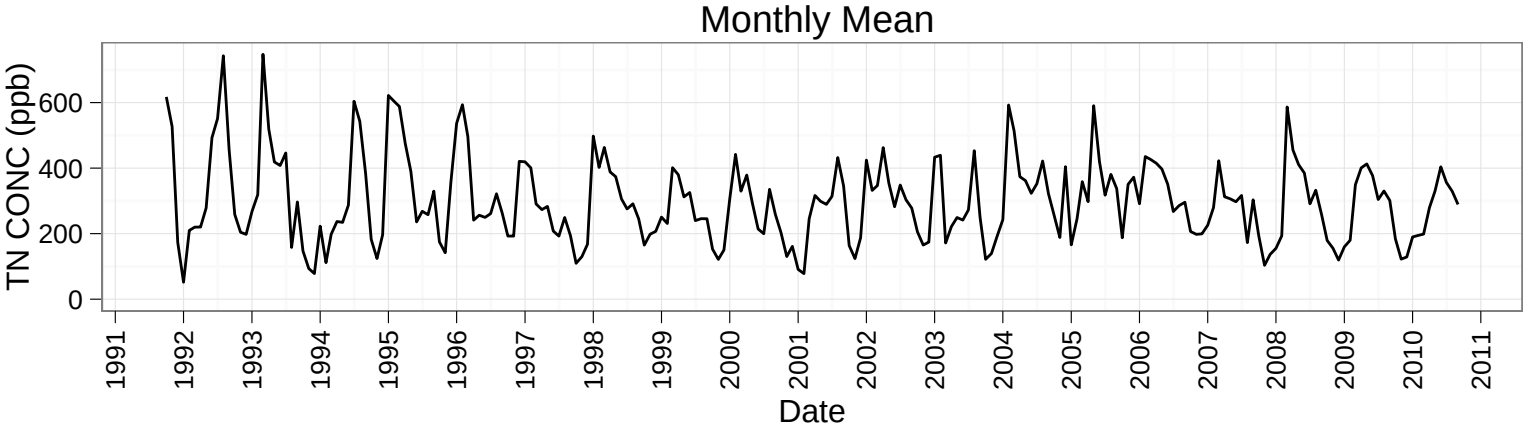


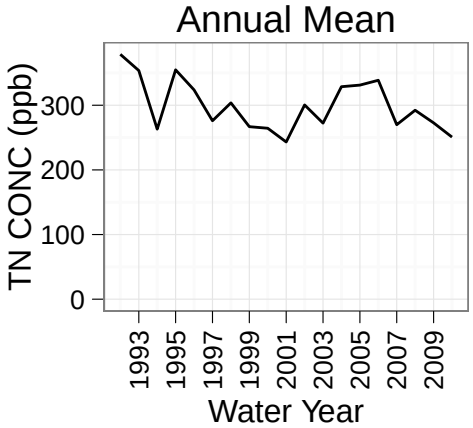


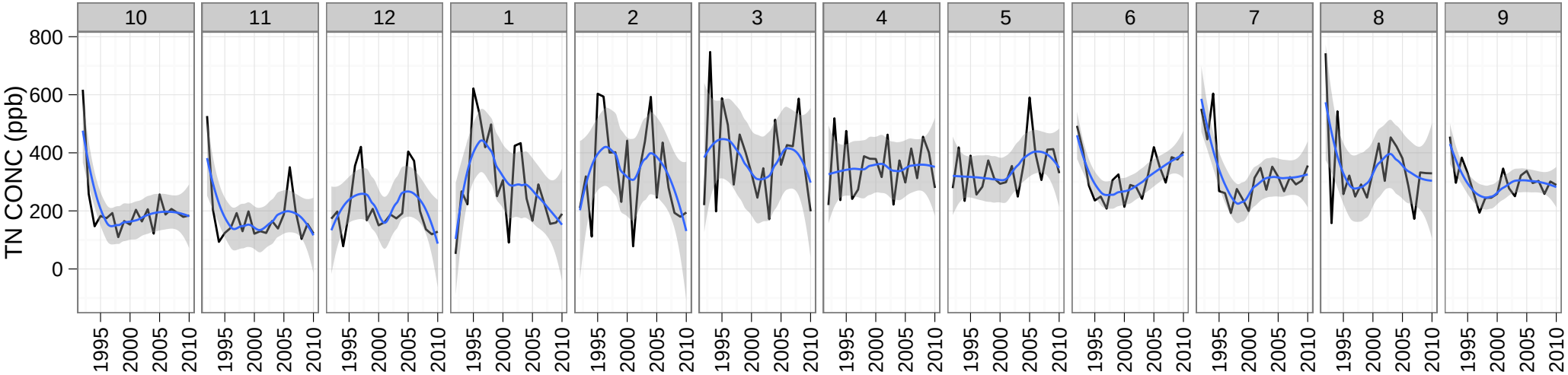


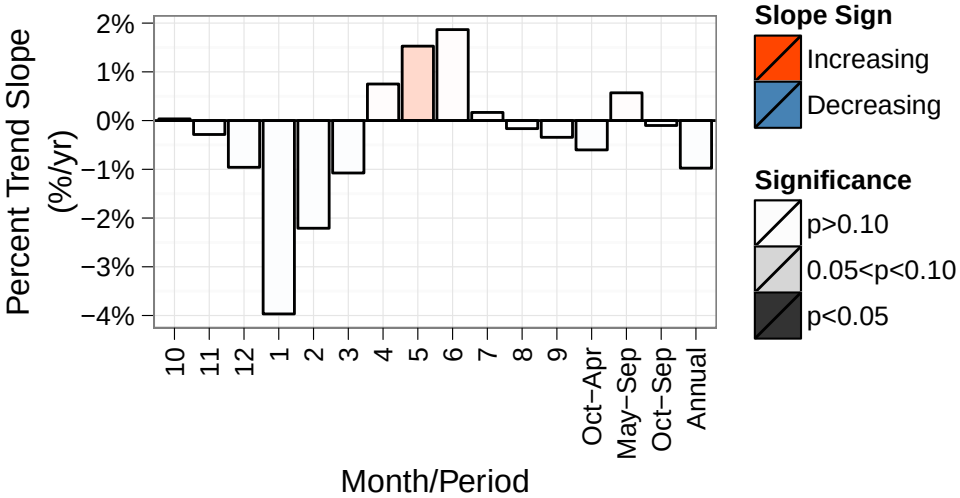


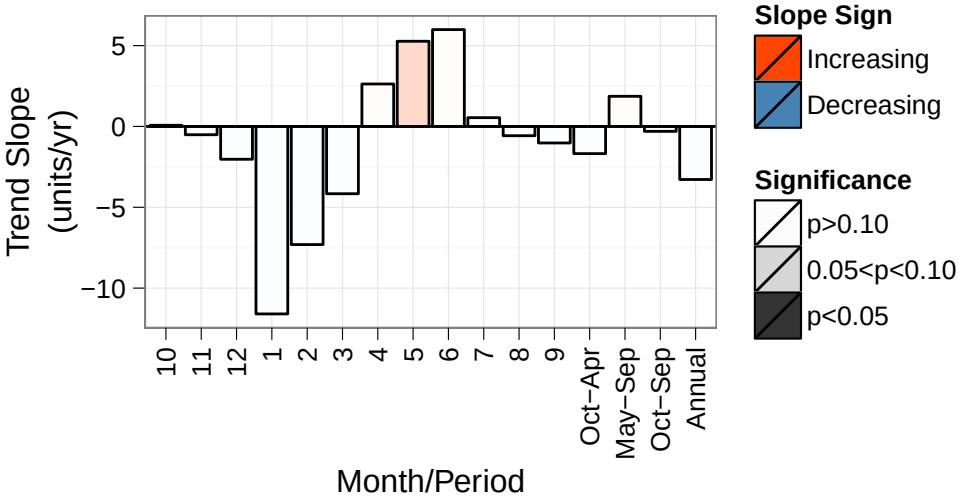
Trend Tests: Sprague, TN, CONC

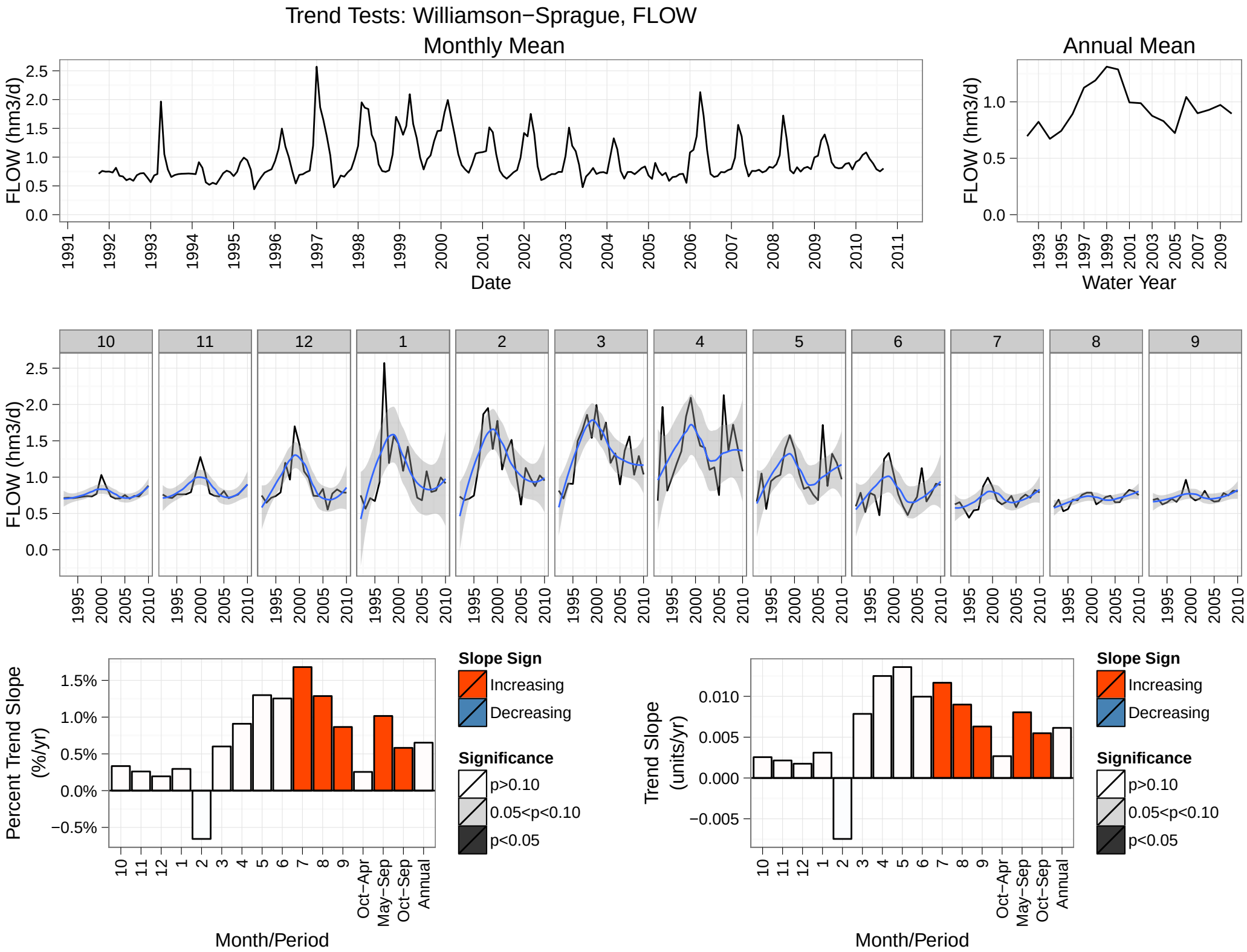


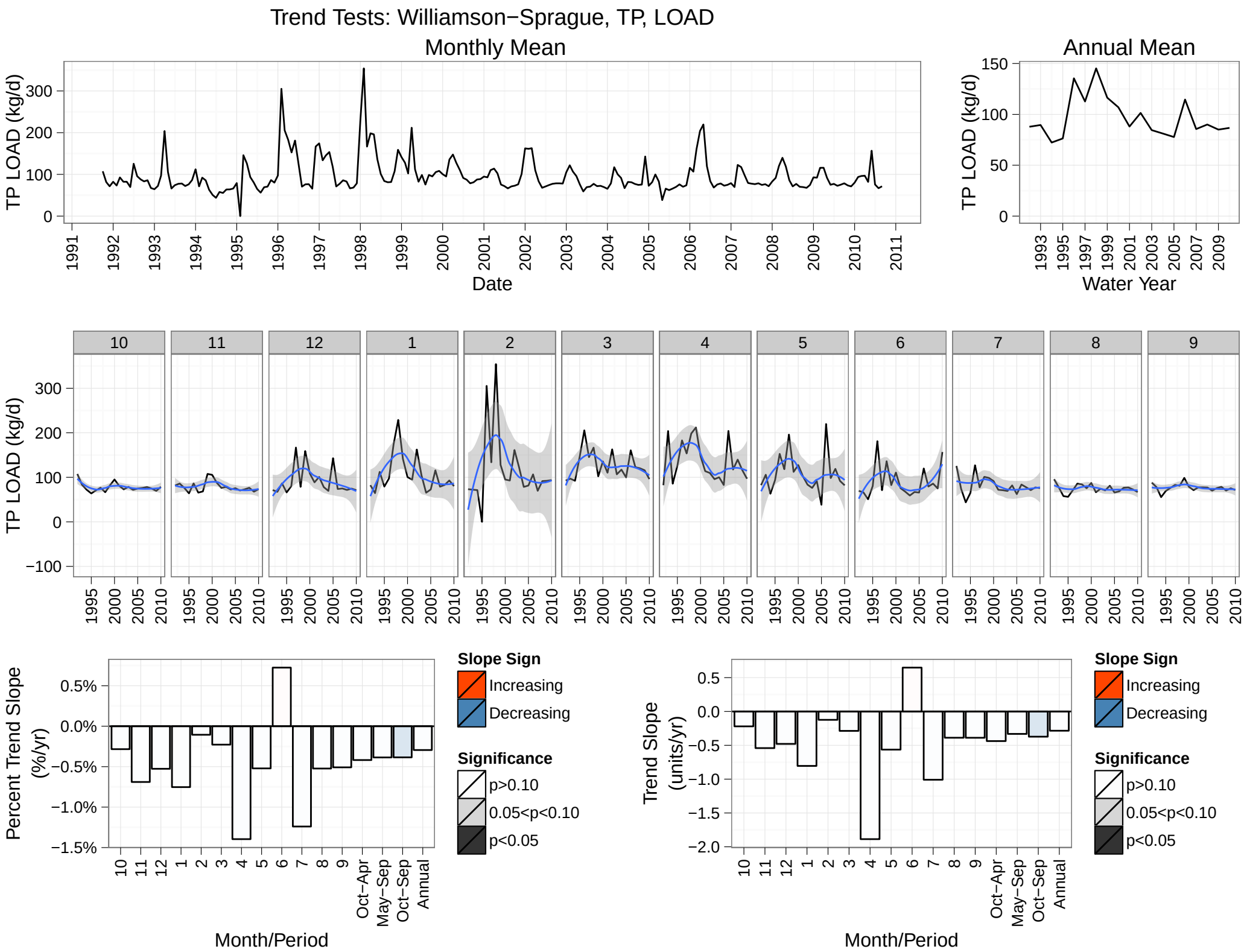




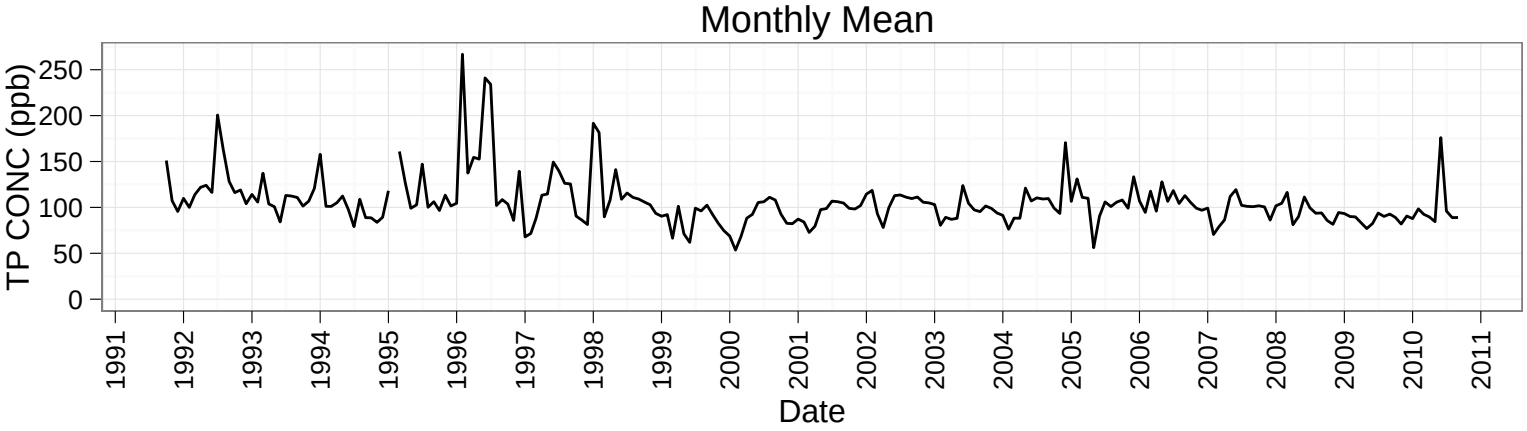


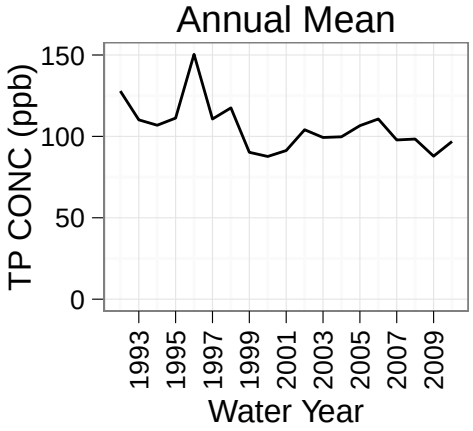


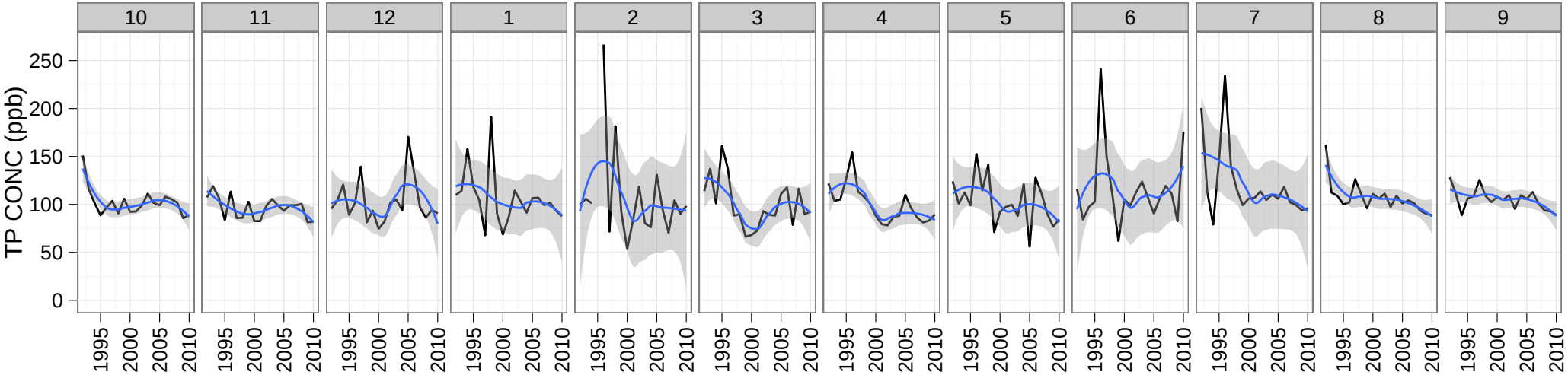

Trend Tests: Williamson−Sprague, FLOW
Monthly Mean
FLOW (hm3/d)
Date
Annual Mean
FLOW (hm3/d)
Water Year
Percent Trend Slope (%/yr)
Month/Period
Trend Slope (units/yr)
Month/Period
Slope Sign
Increasing
Decreasing
Significance
p>0.10
0.05<p<0.10
p<0.05

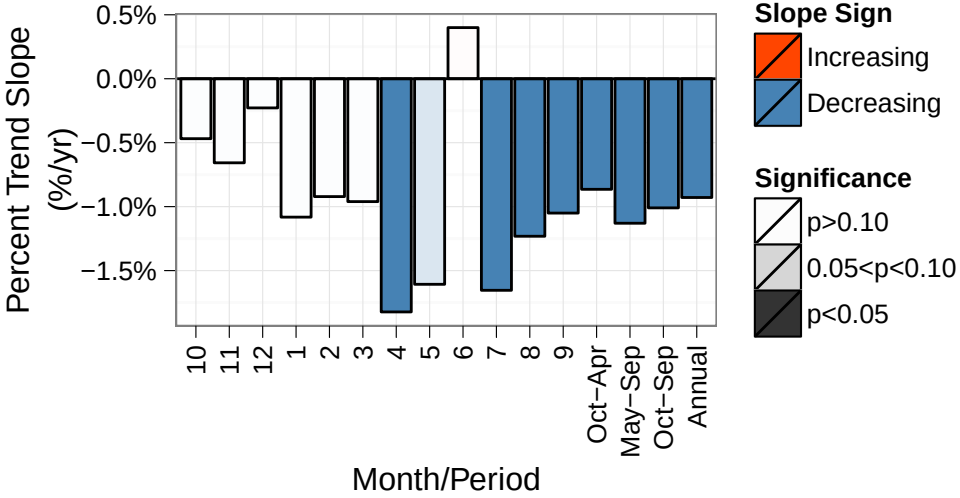

Trend Tests: Williamson−Sprague, TP, LOAD
Monthly Mean
TP LOAD (kg/d)
Date
Annual Mean
TP LOAD (kg/d)
Water Year
Percent Trend Slope (%/yr)
Month/Period
Trend Slope (units/yr)
Month/Period
Slope Sign
Increasing
Decreasing
Significance
p>0.10
0.05<p<0.10
p<0.05

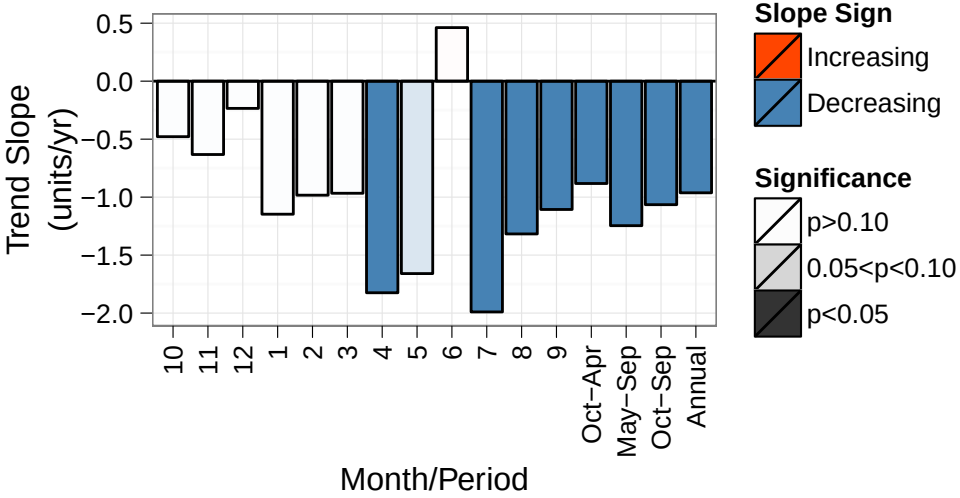
Trend Tests: Williamson−Sprague, TP, CONC



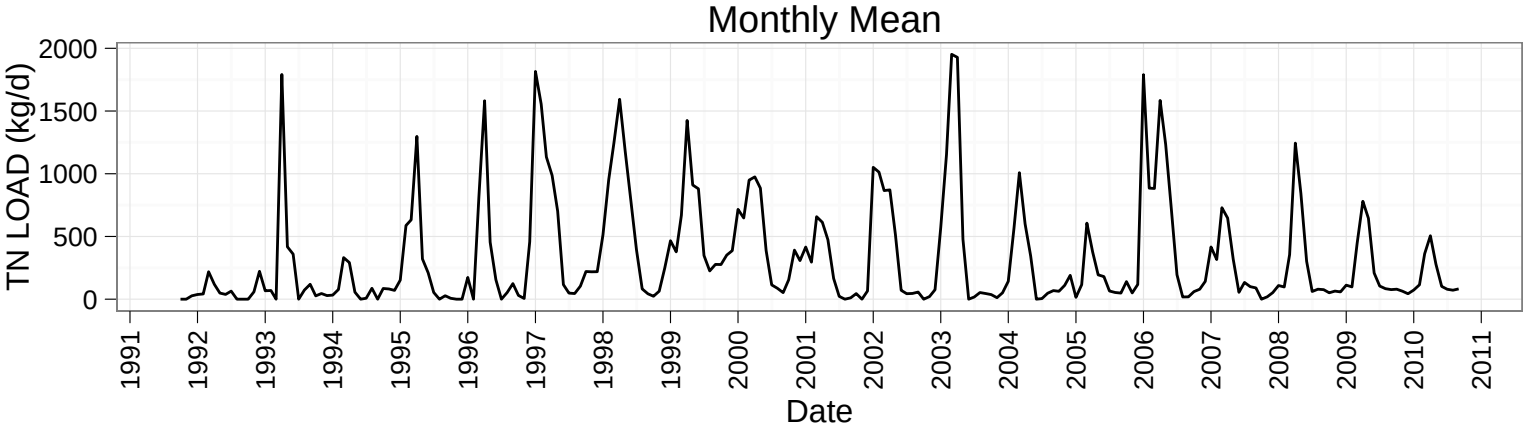


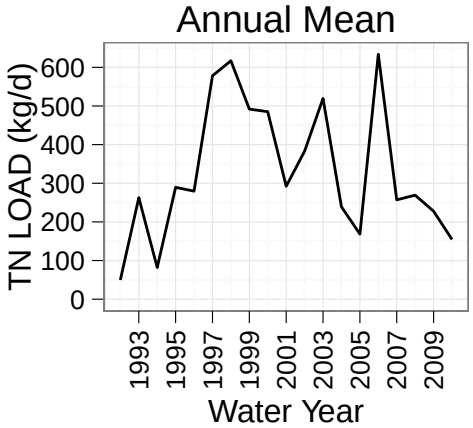


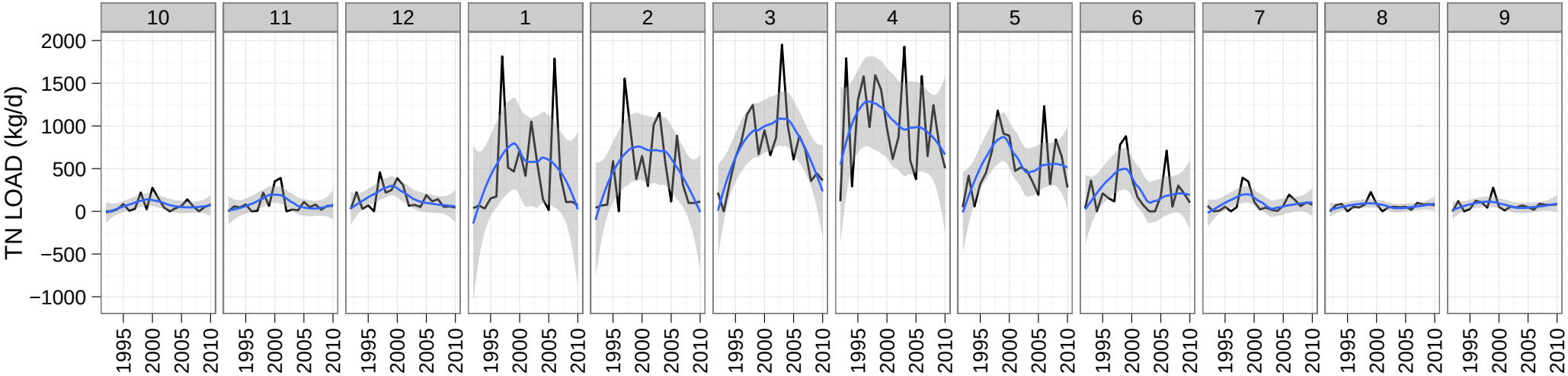


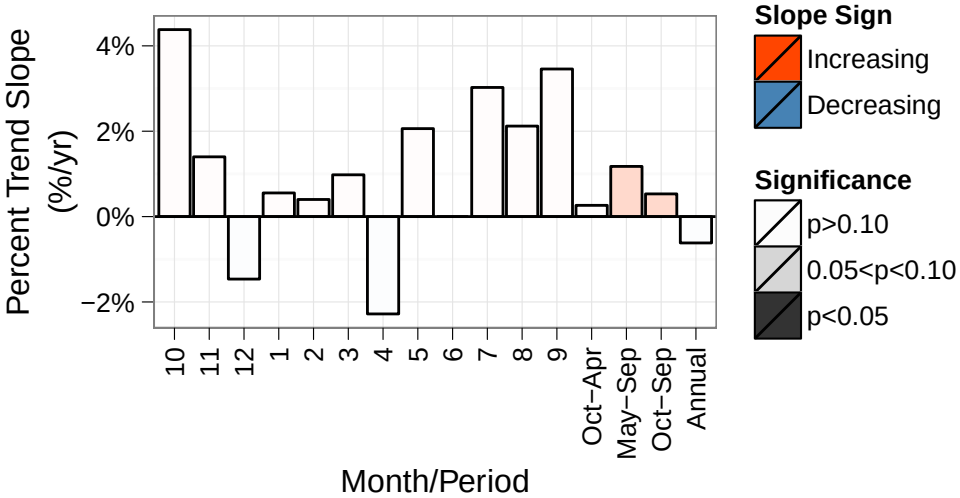


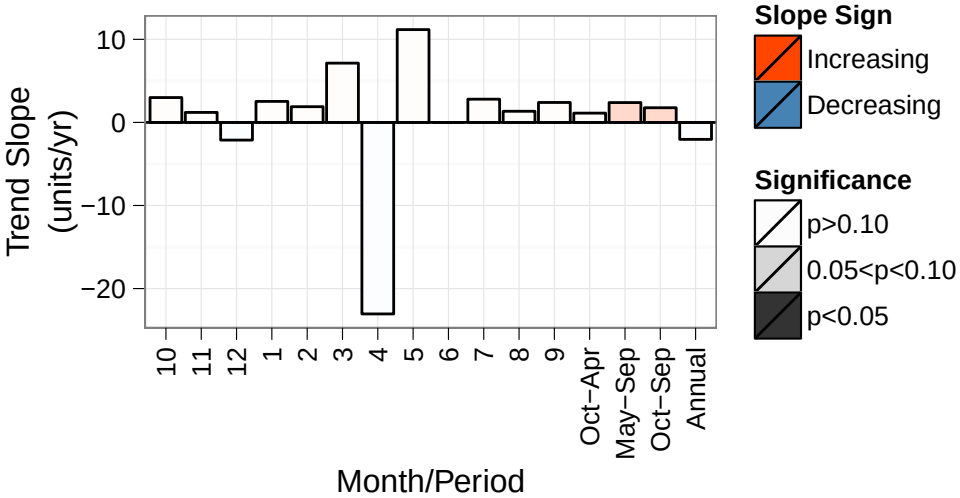
Trend Tests: Williamson−Sprague, TN, LOAD



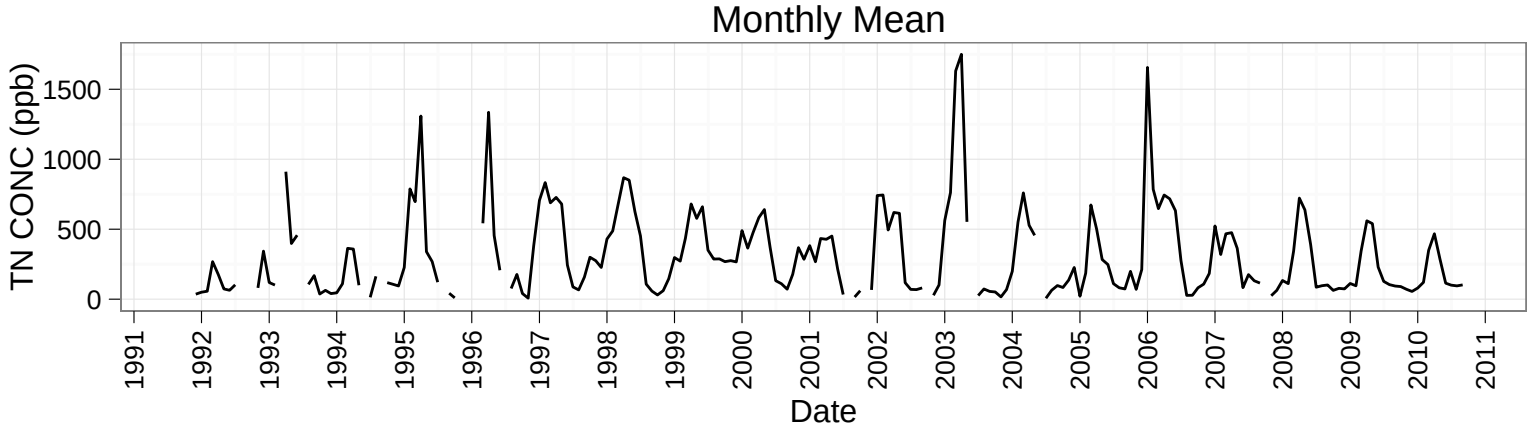


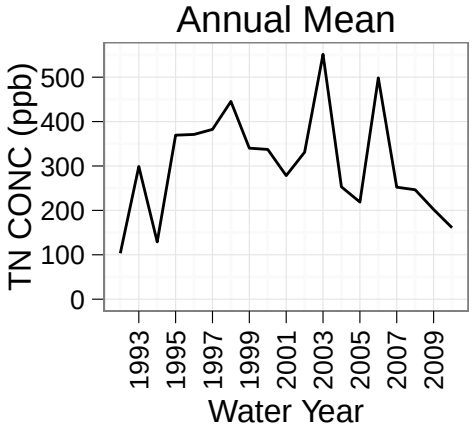


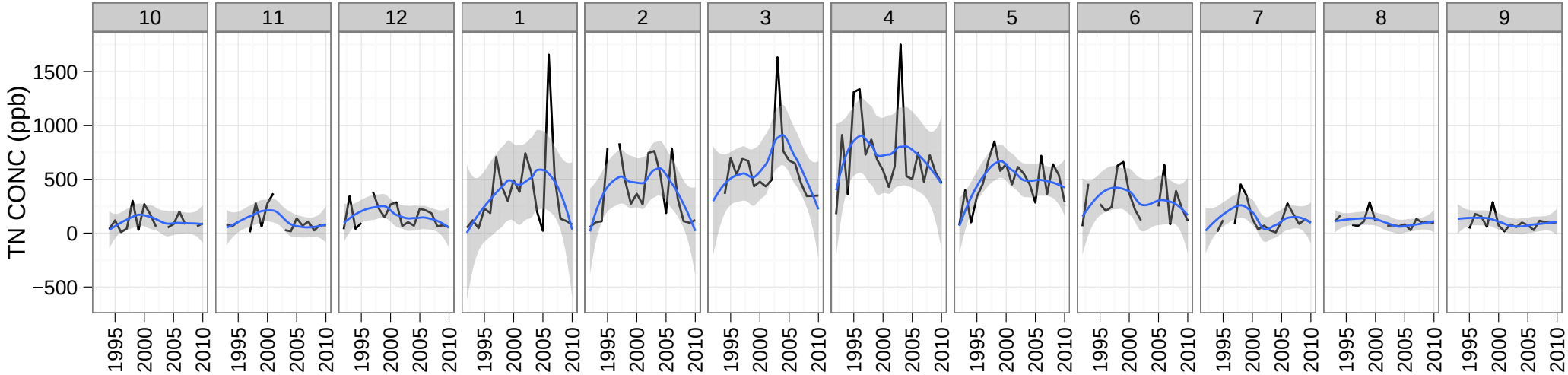


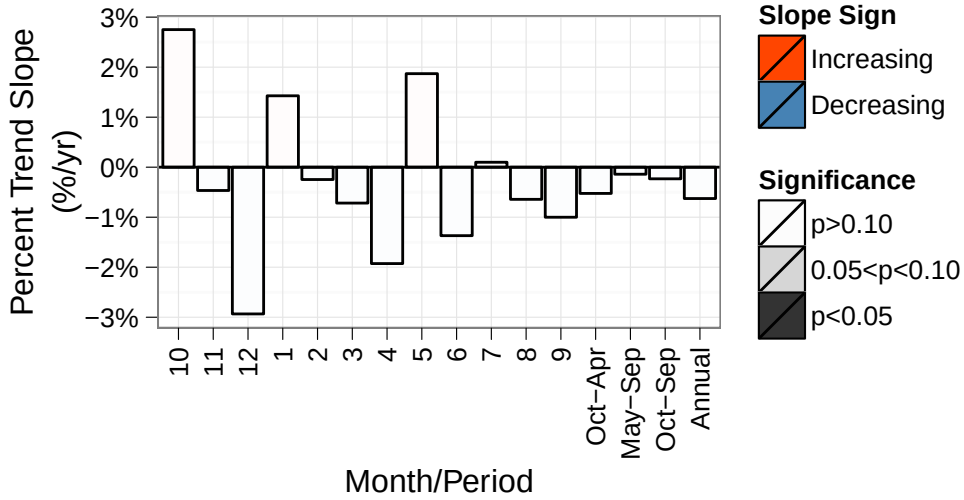


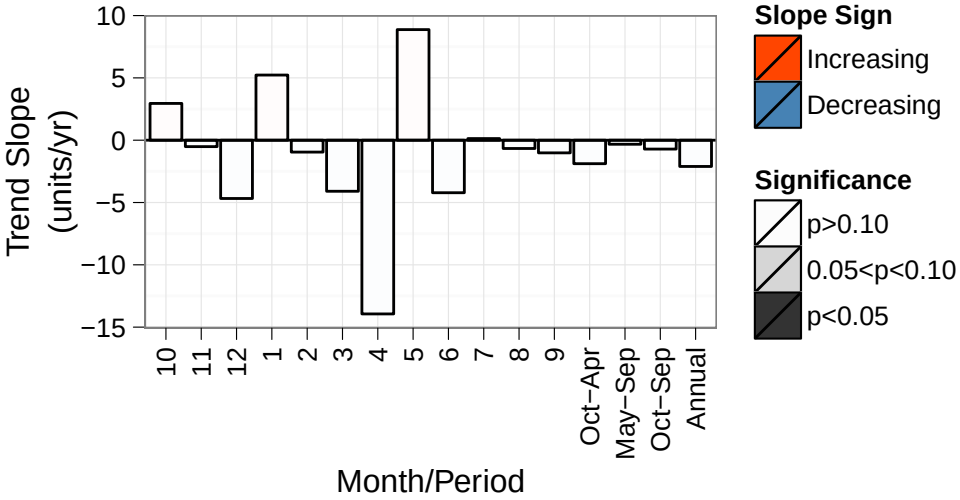
Trend Tests: Williamson−Sprague, TN, CONC



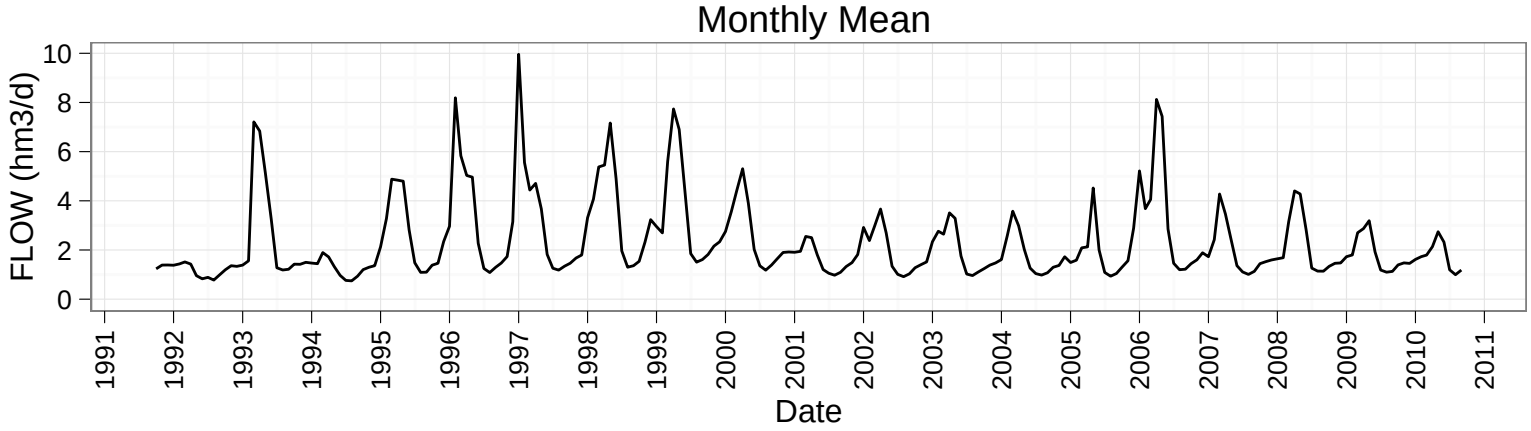


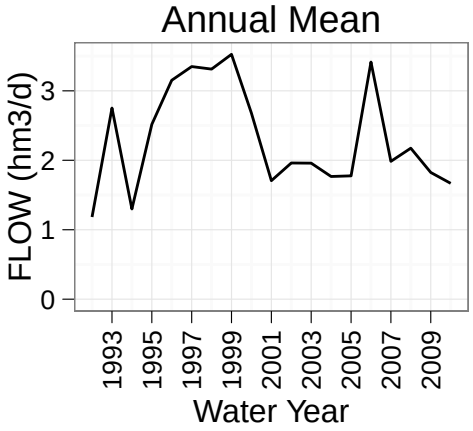


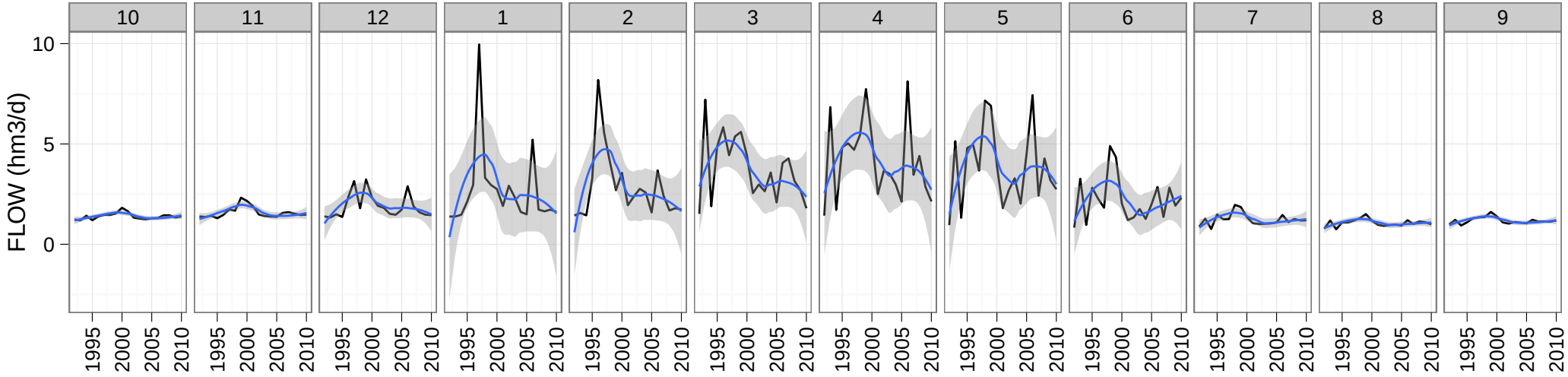


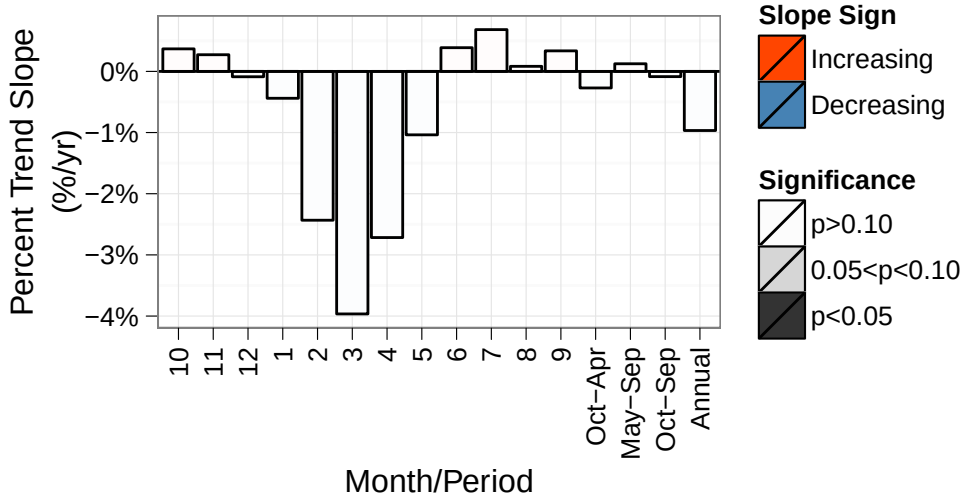


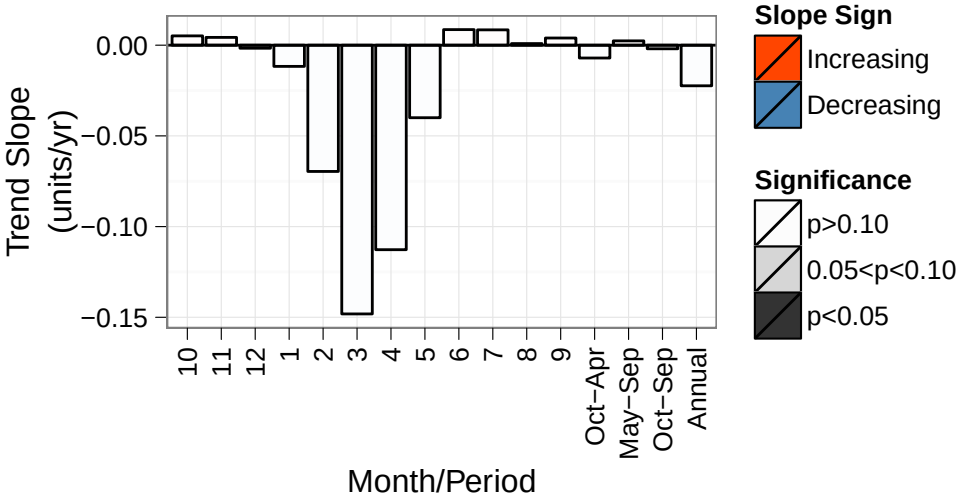
Trend Tests: Williamson, FLOW



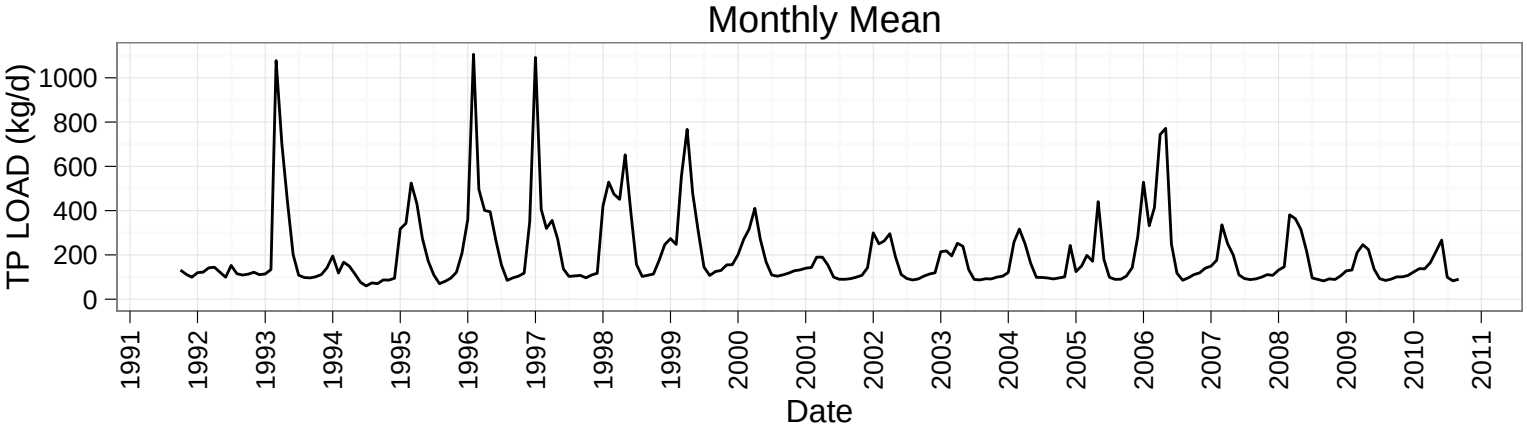


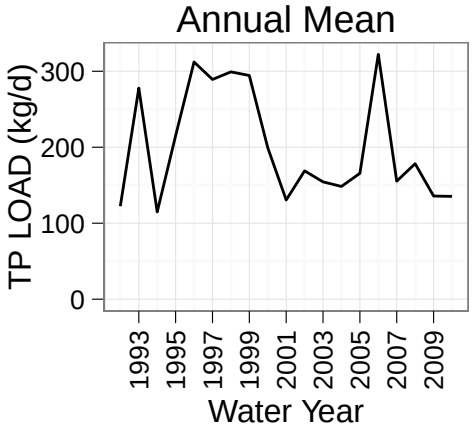


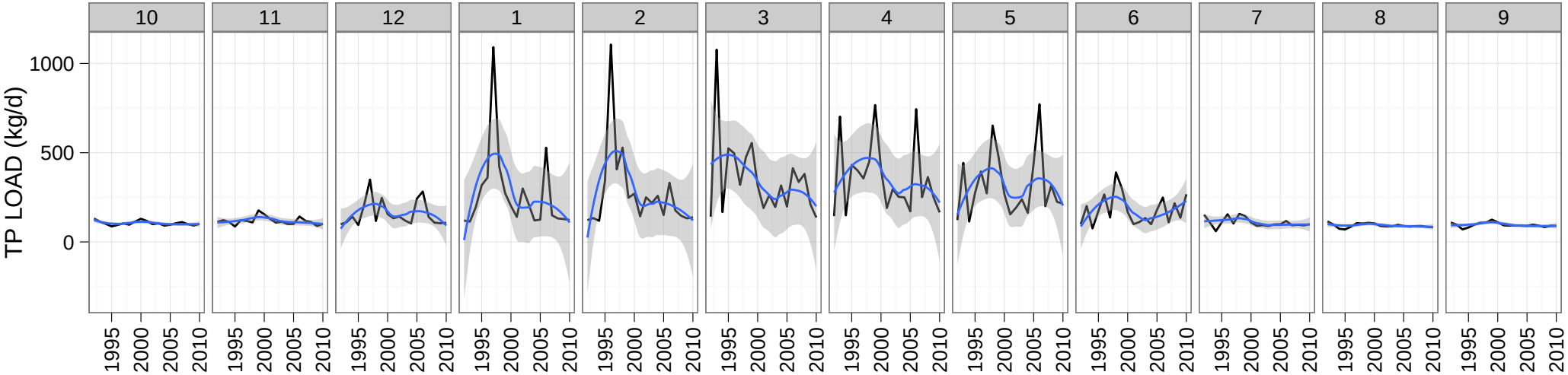


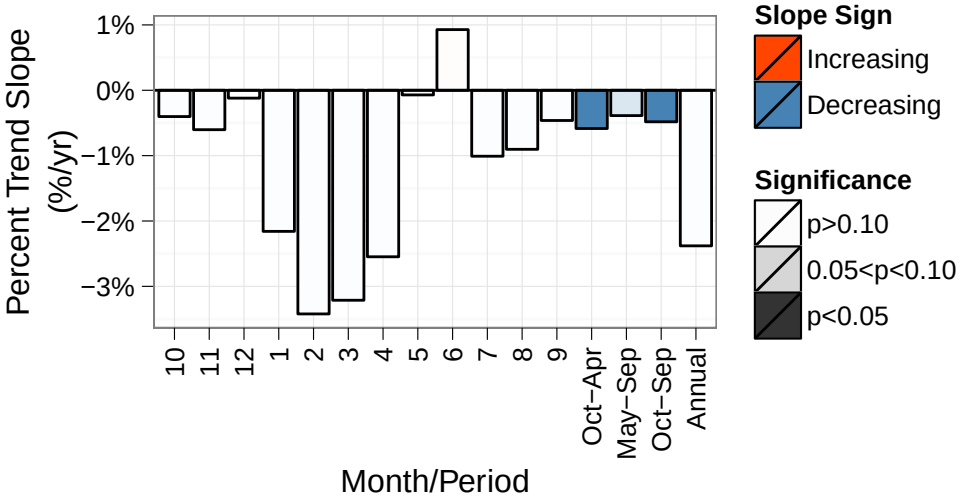


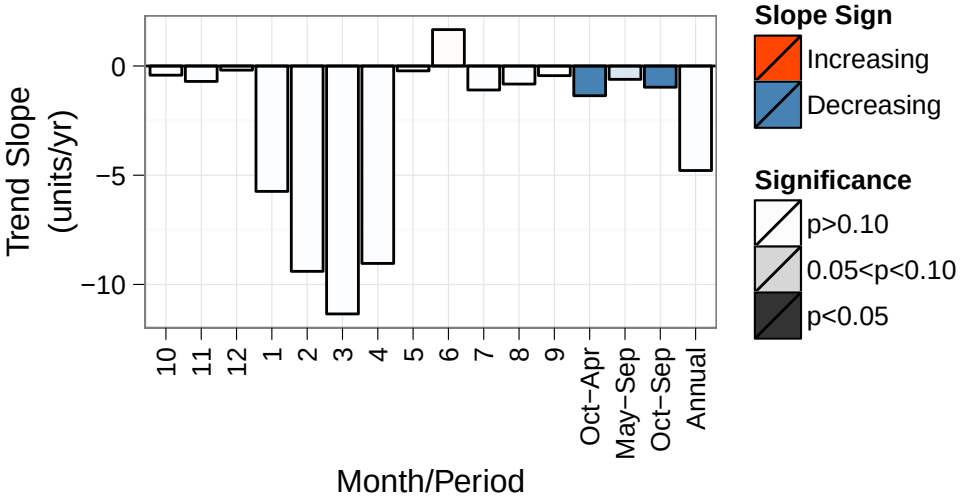
Trend Tests: Williamson, TP, LOAD



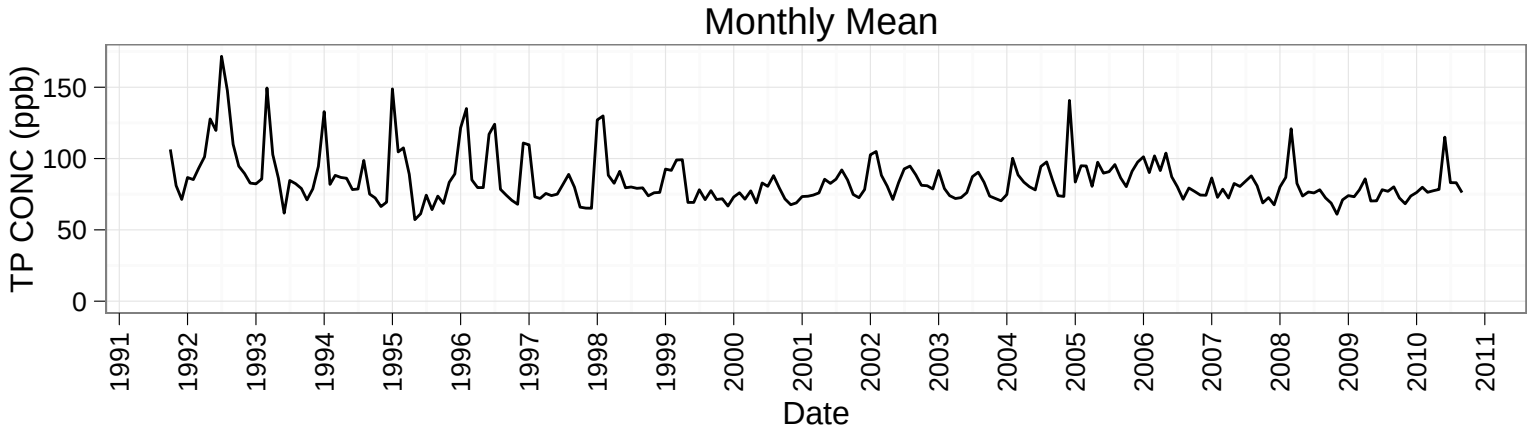


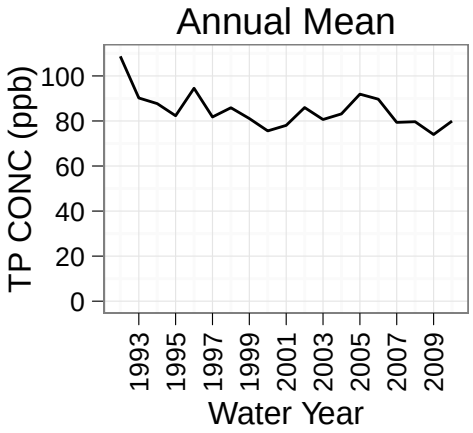


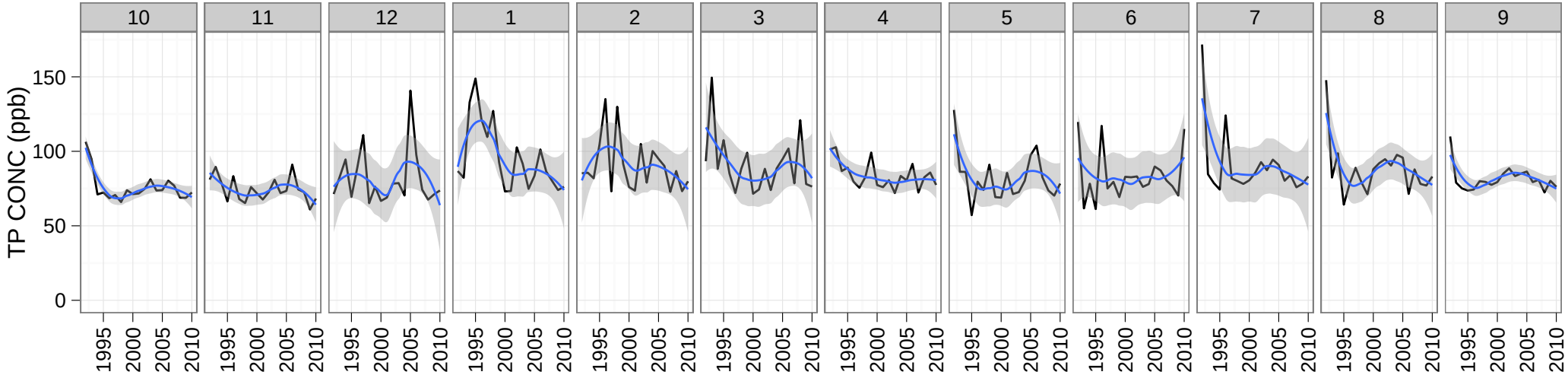


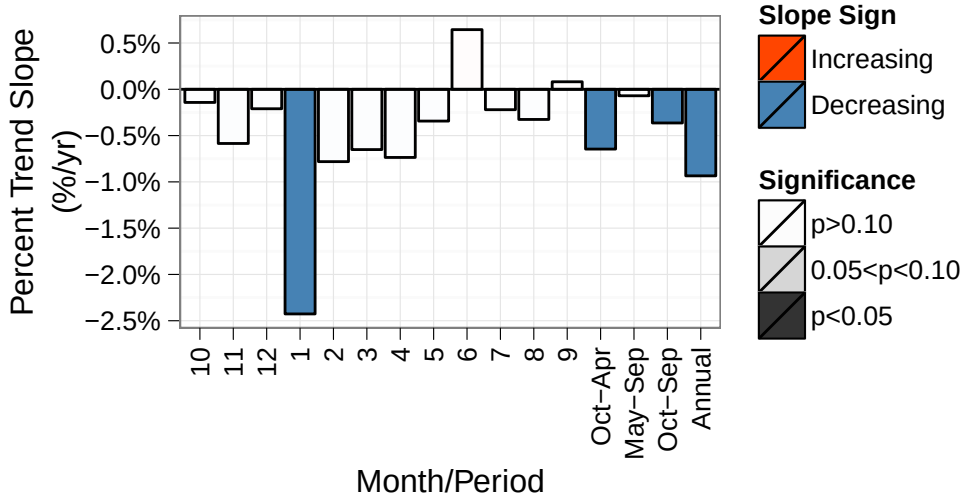


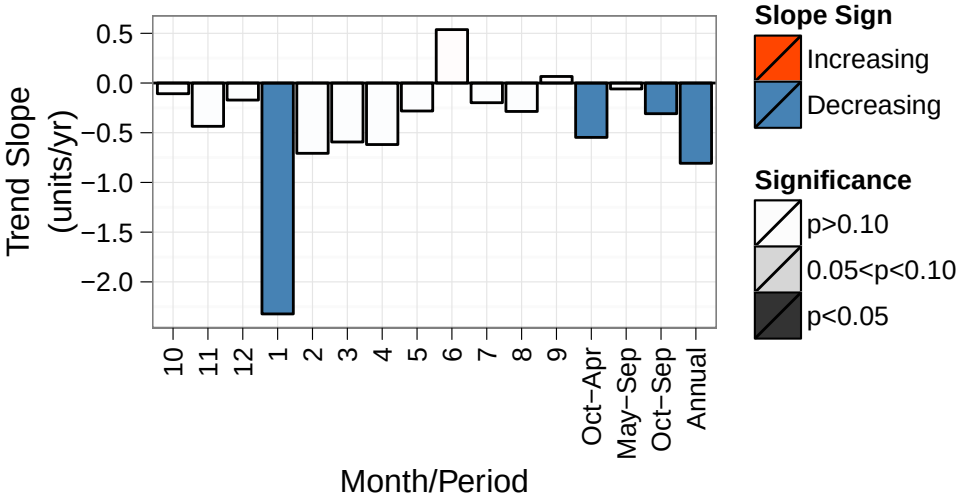
Trend Tests: Williamson, TP, CONC



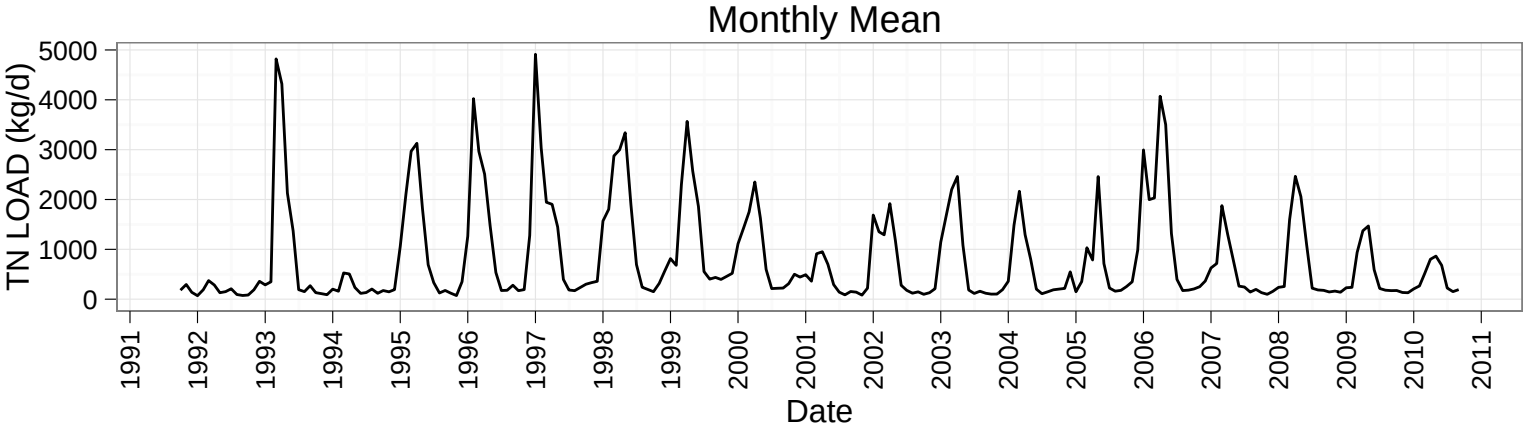


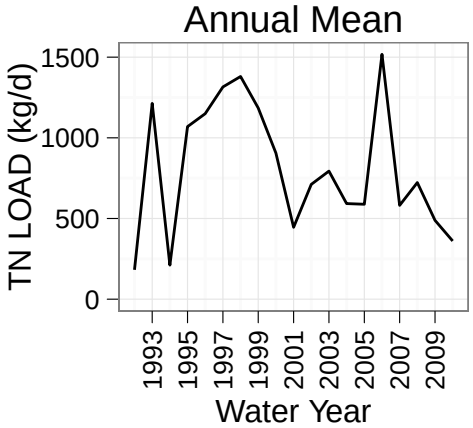


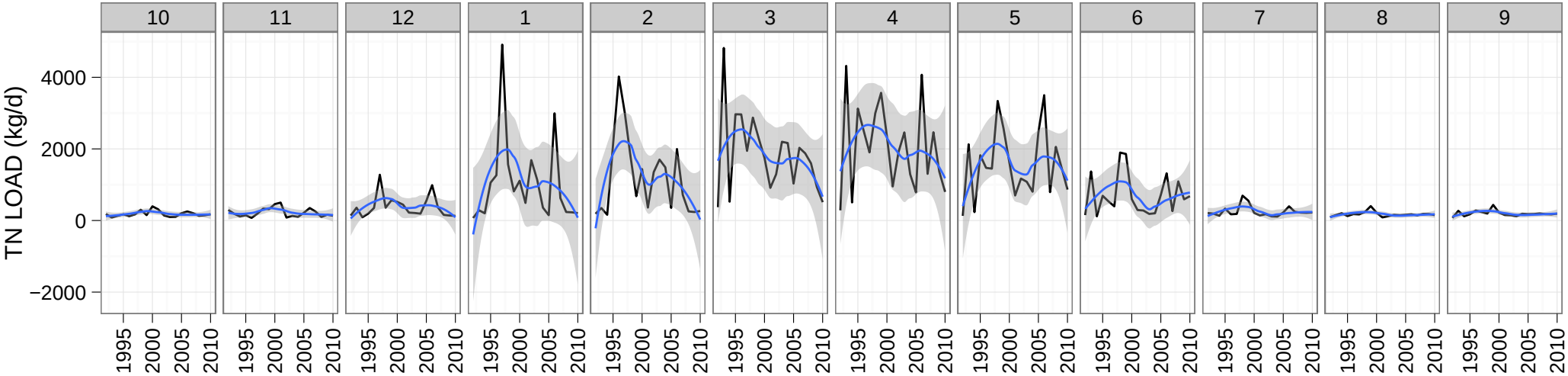


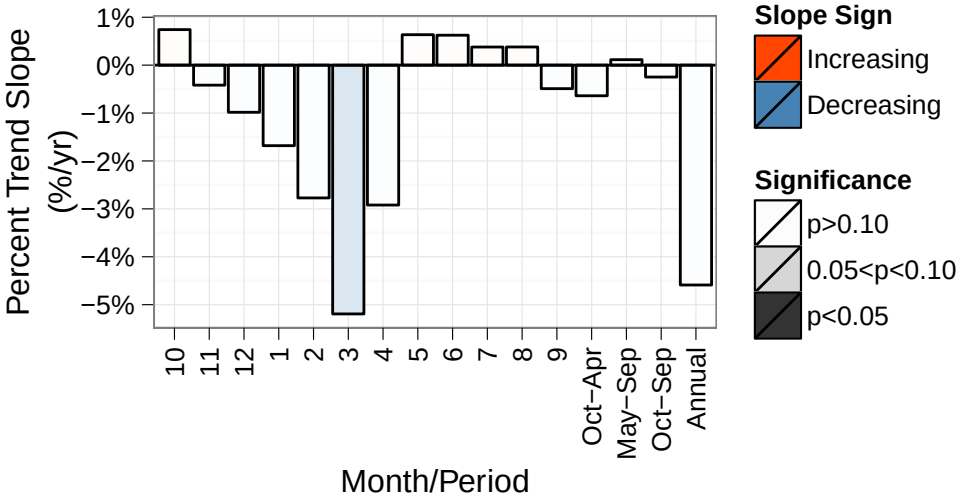


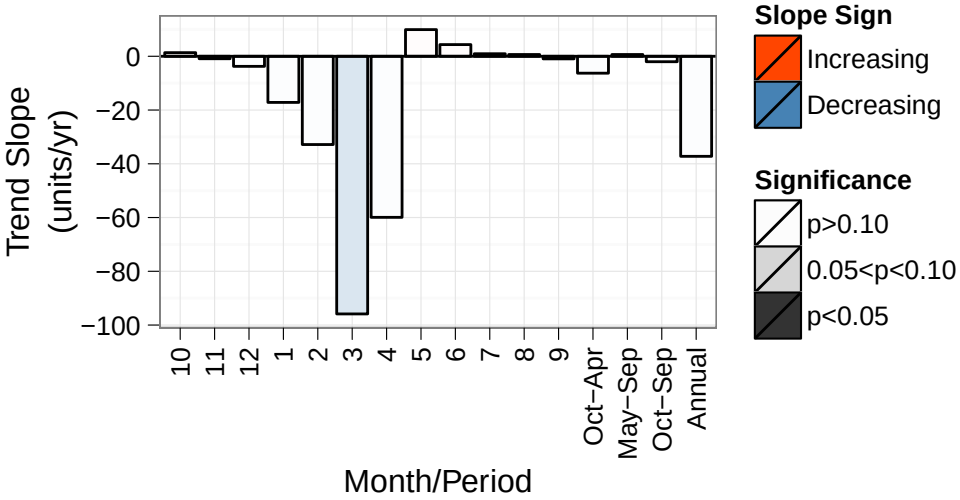
Trend Tests: Williamson, TN, LOAD



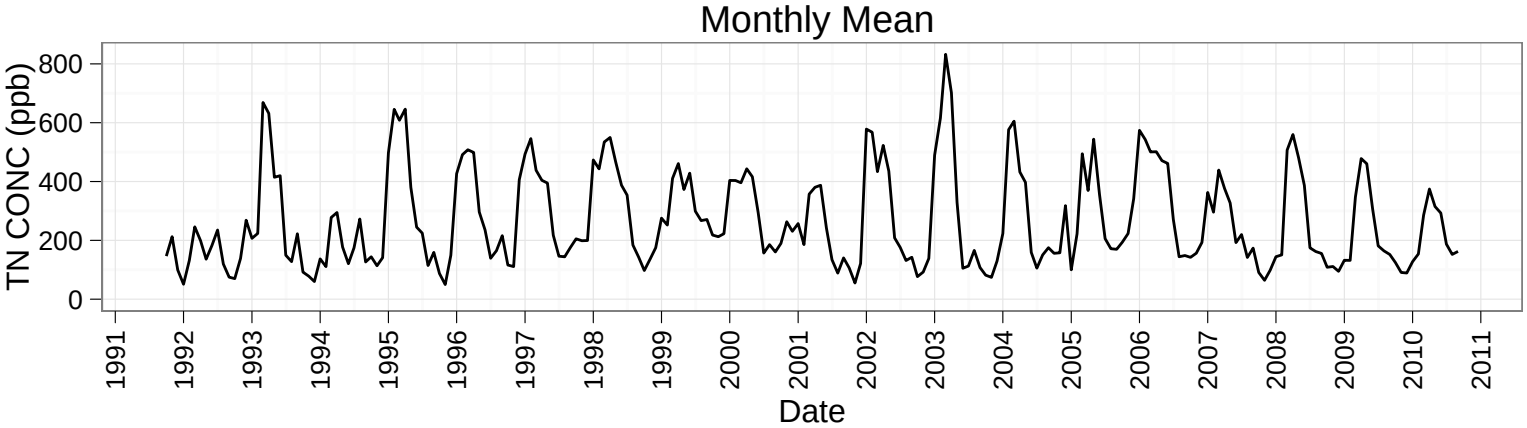


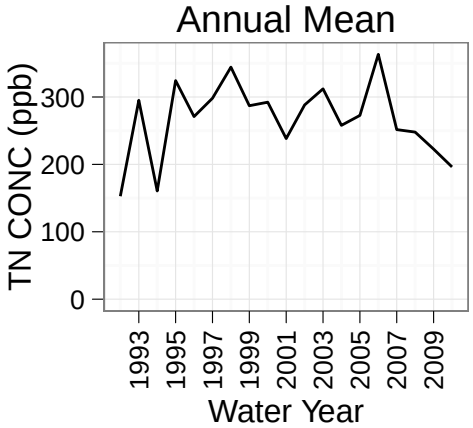


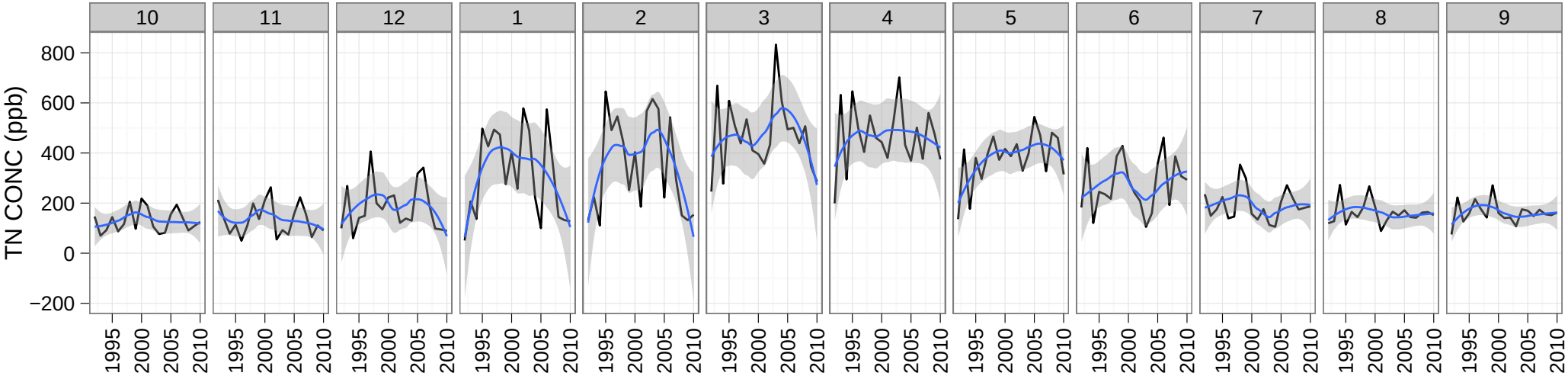


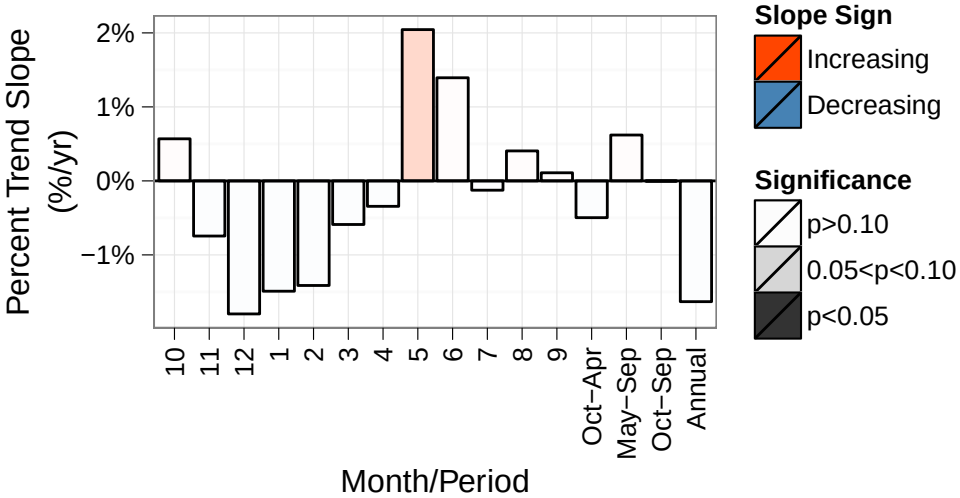


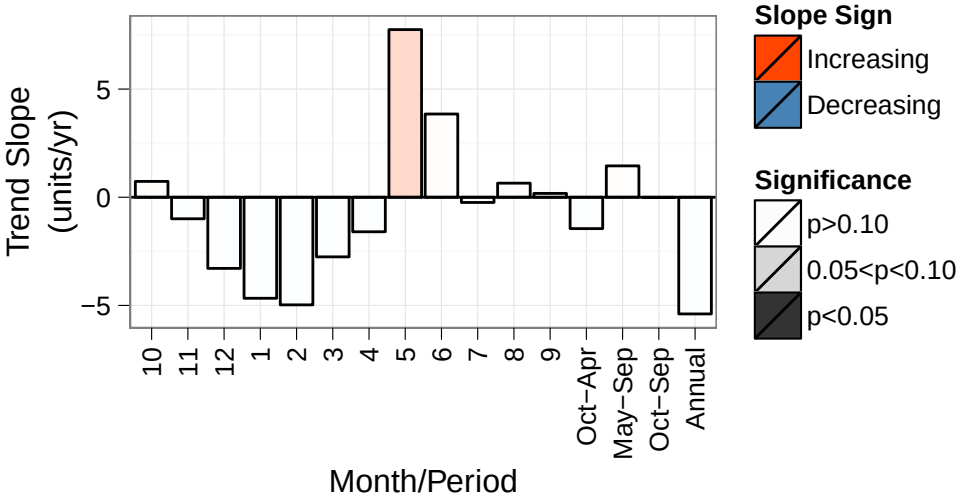
Trend Tests: Williamson, TN, CONC



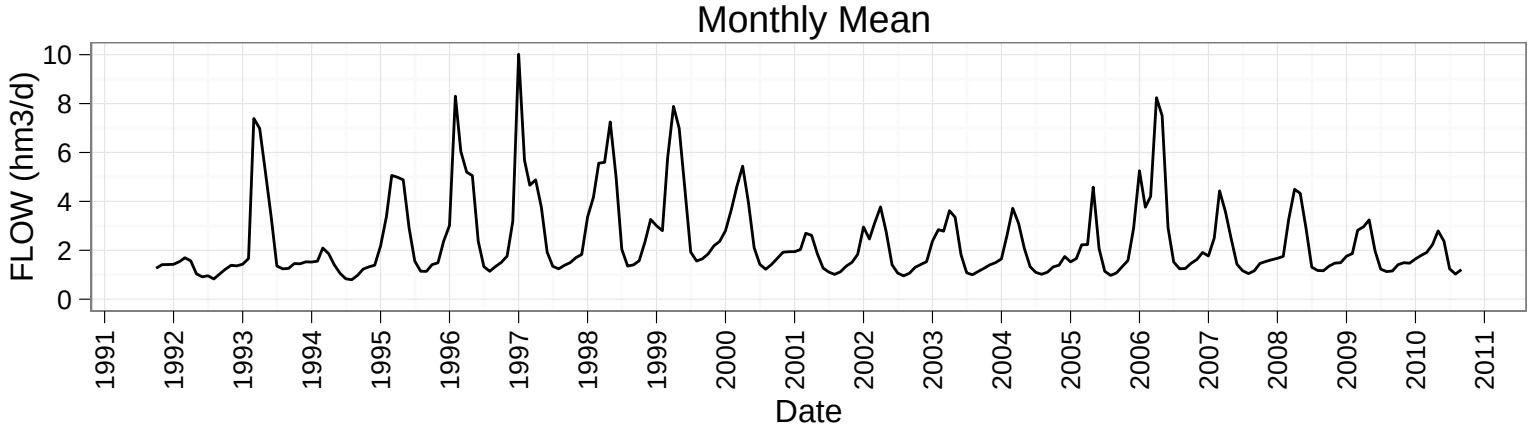


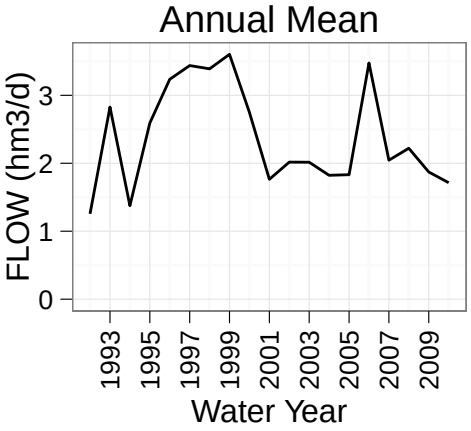


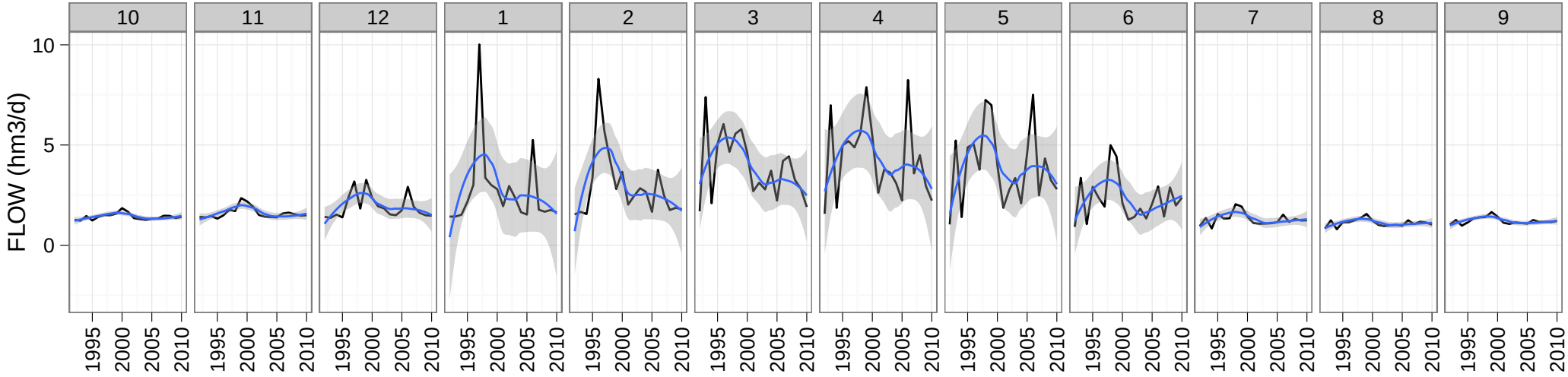


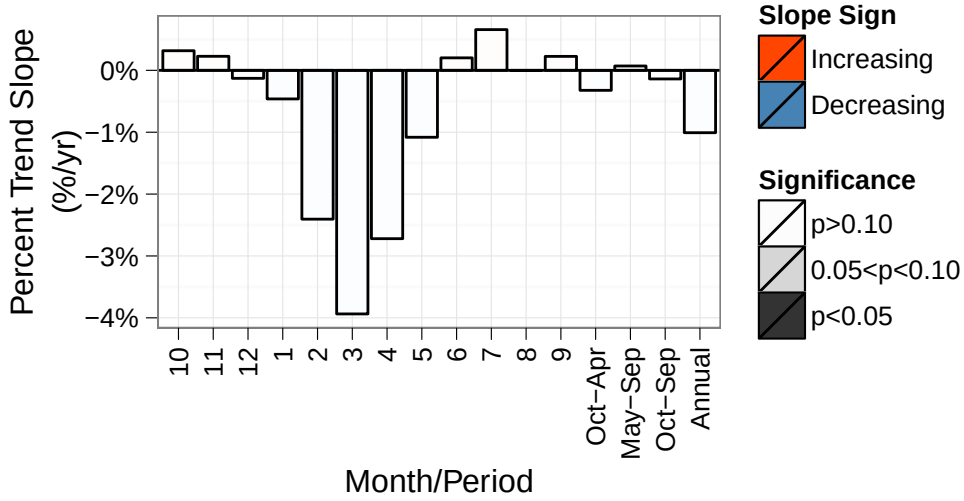


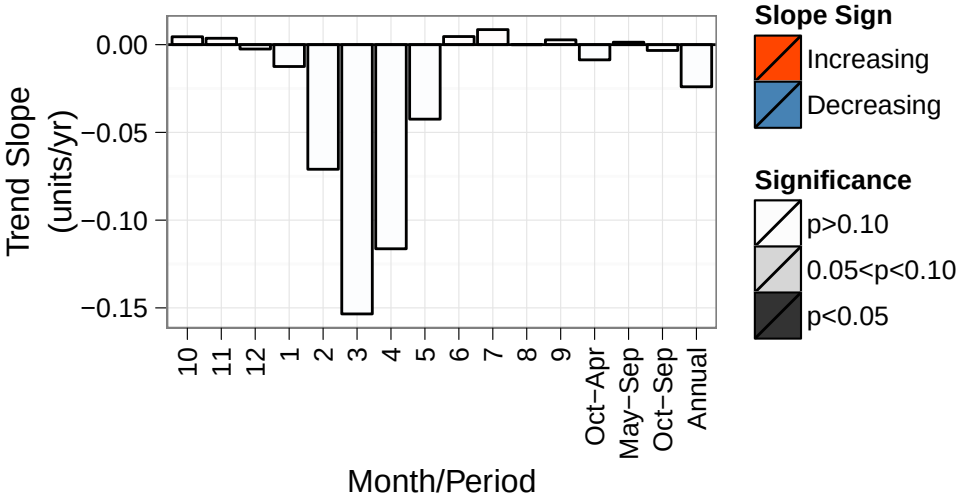
Trend Tests: Total Klamath Inflows, FLOW



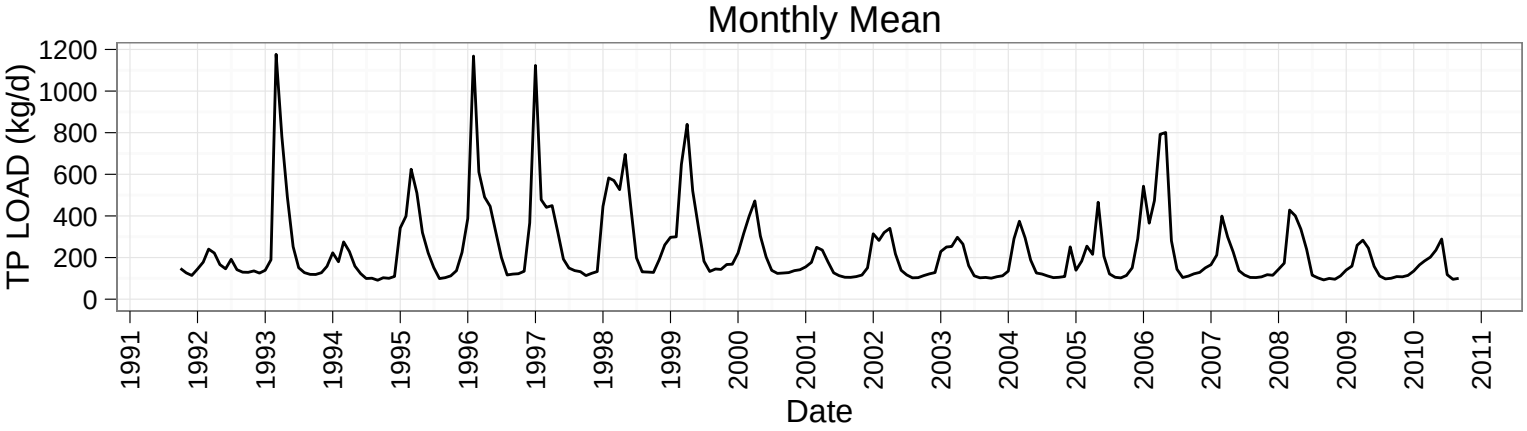


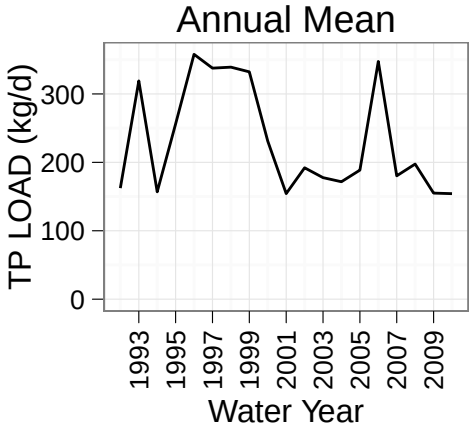


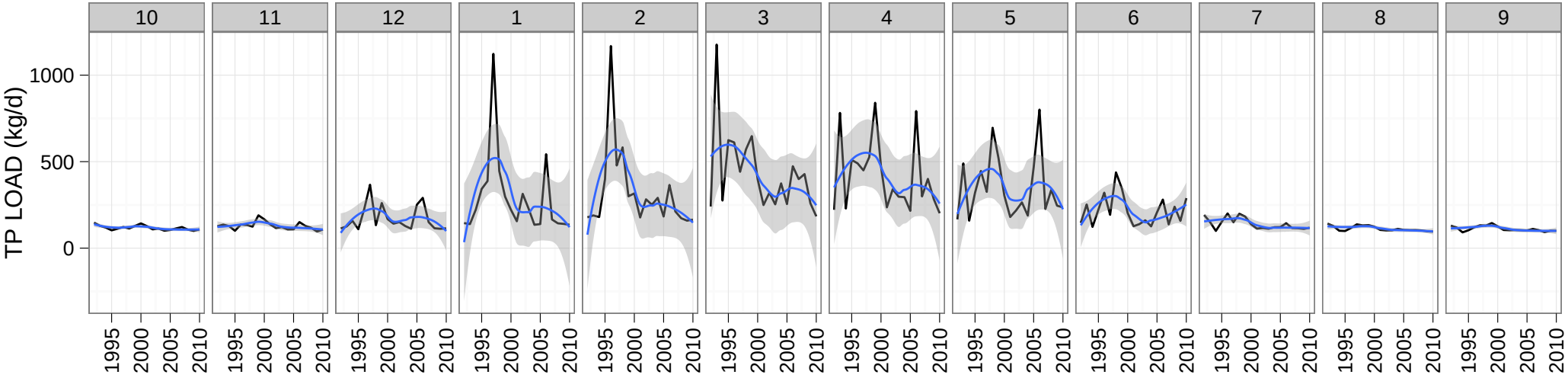


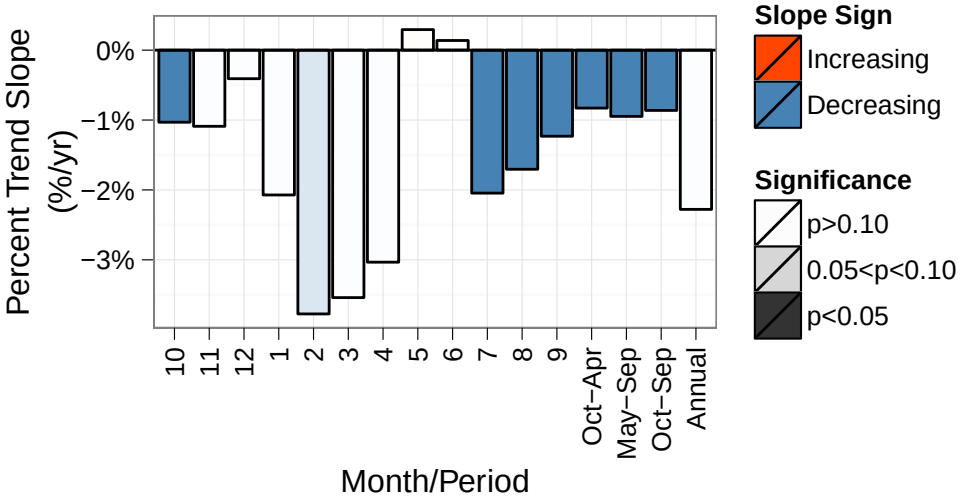


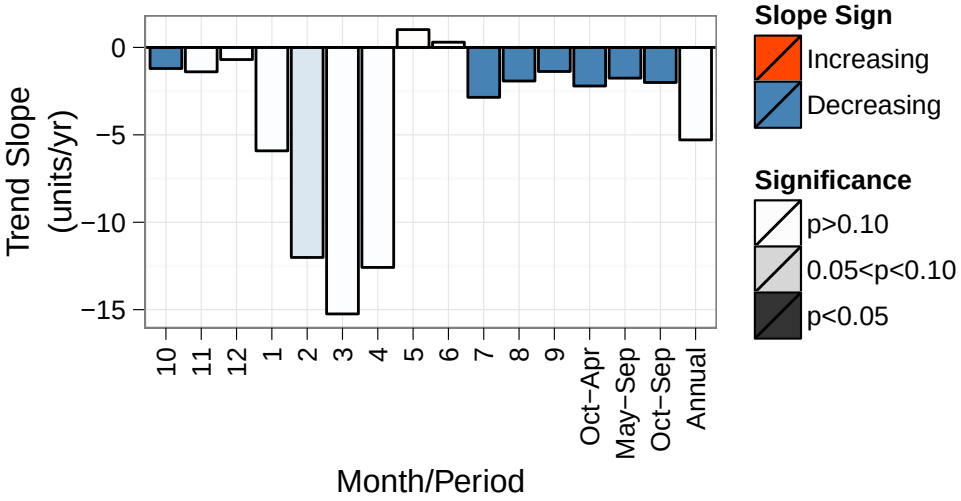
Trend Tests: Total Klamath Inflows, TP, LOAD



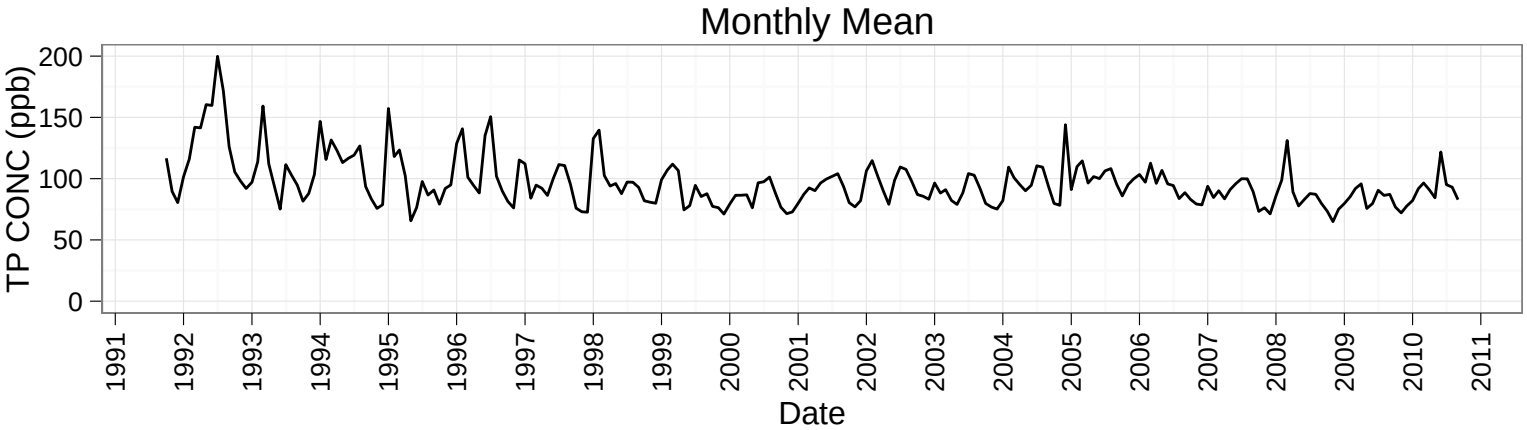


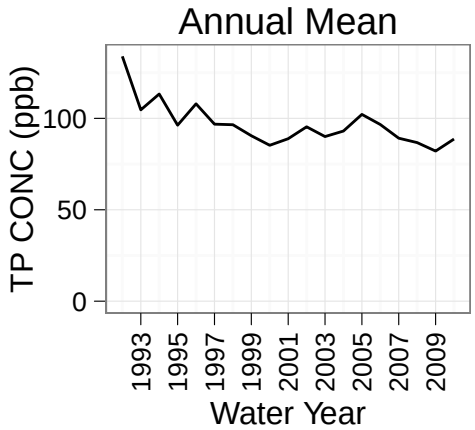


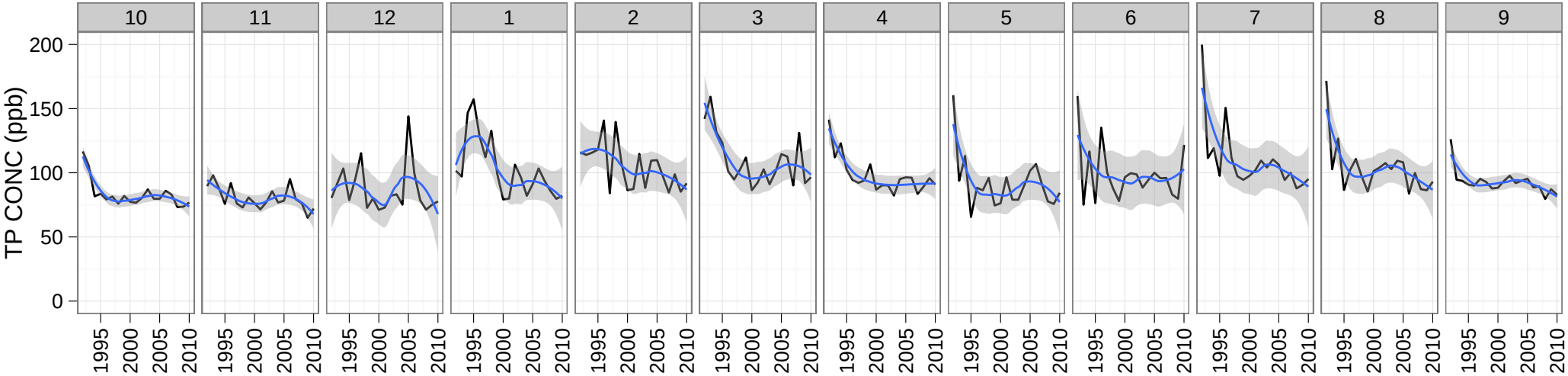


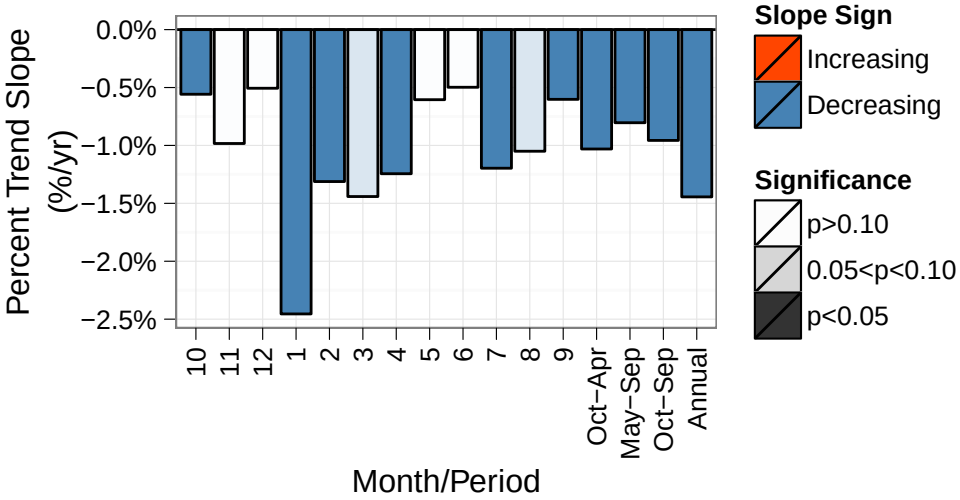


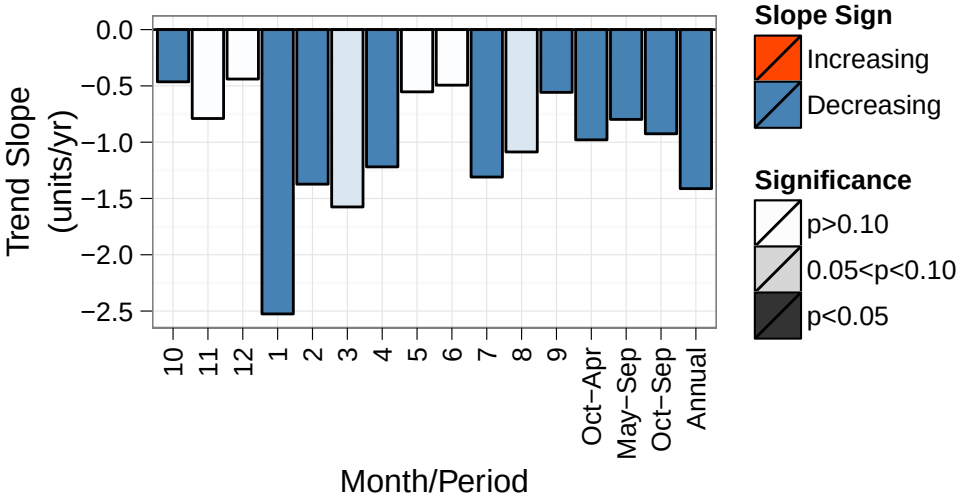
Trend Tests: Total Klamath Inflows, TP, CONC



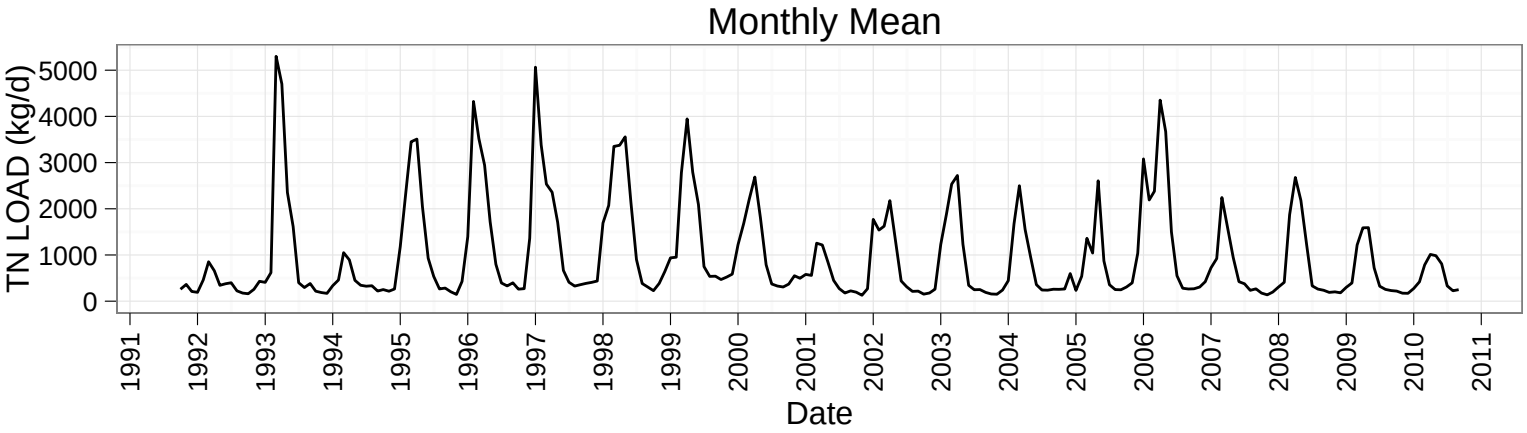


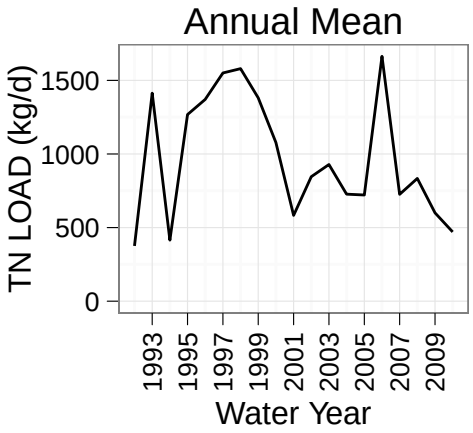


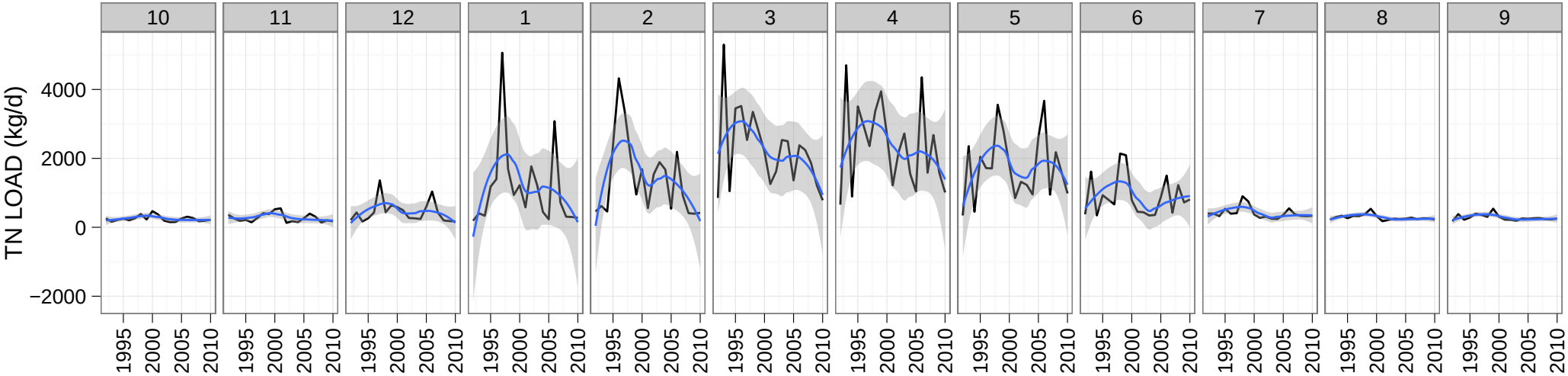


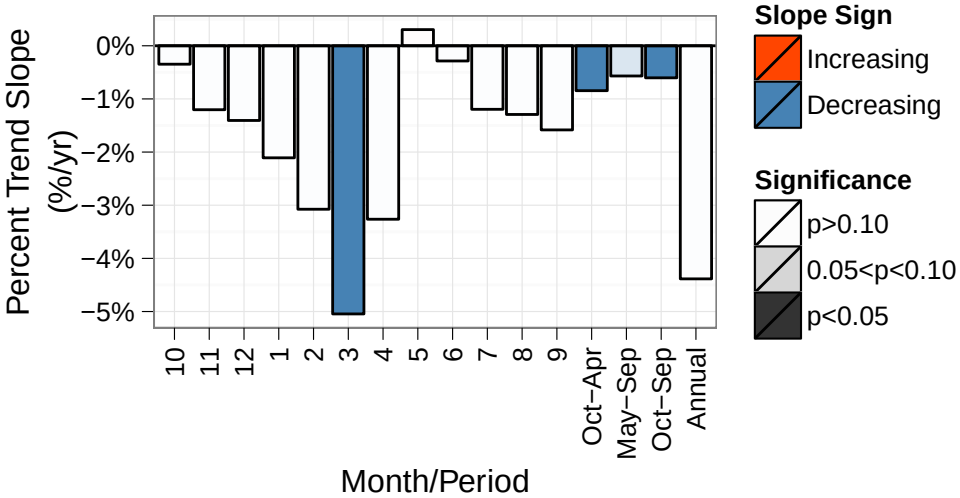


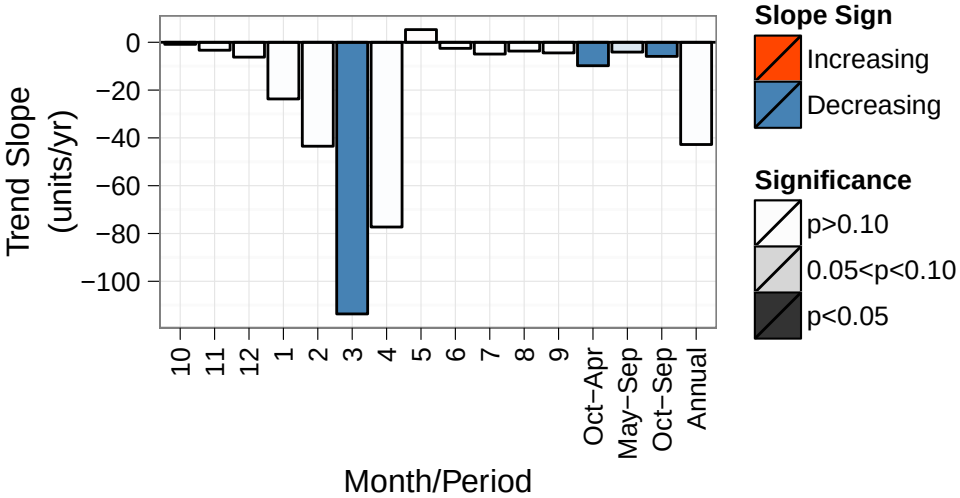
Trend Tests: Total Klamath Inflows, TN, LOAD



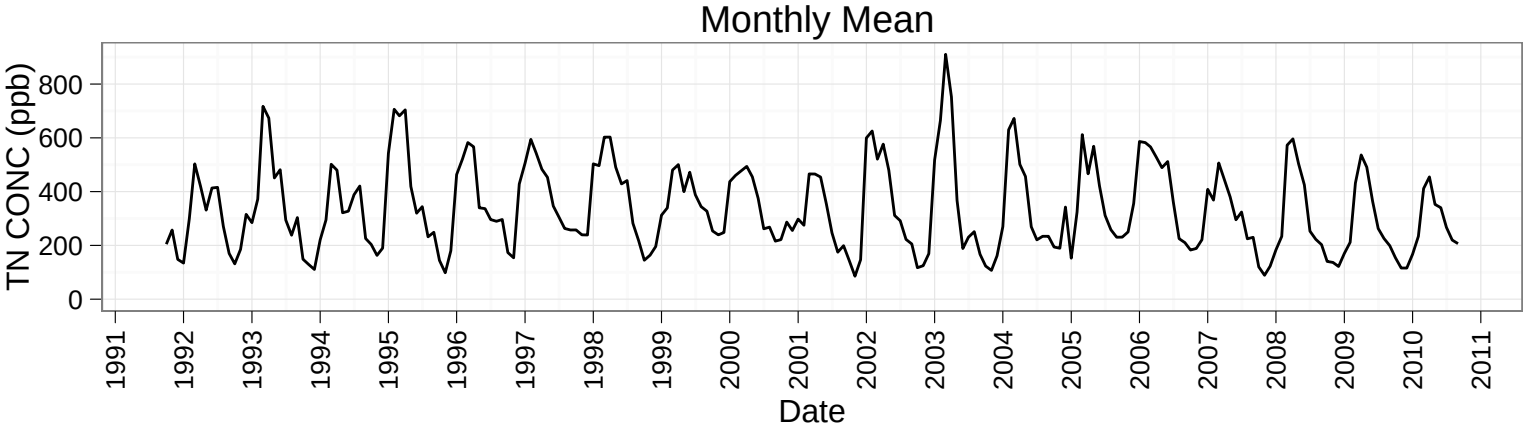


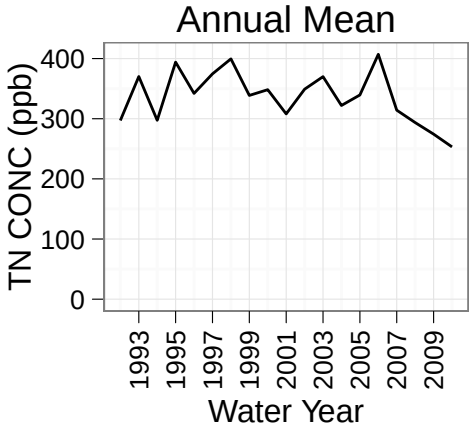


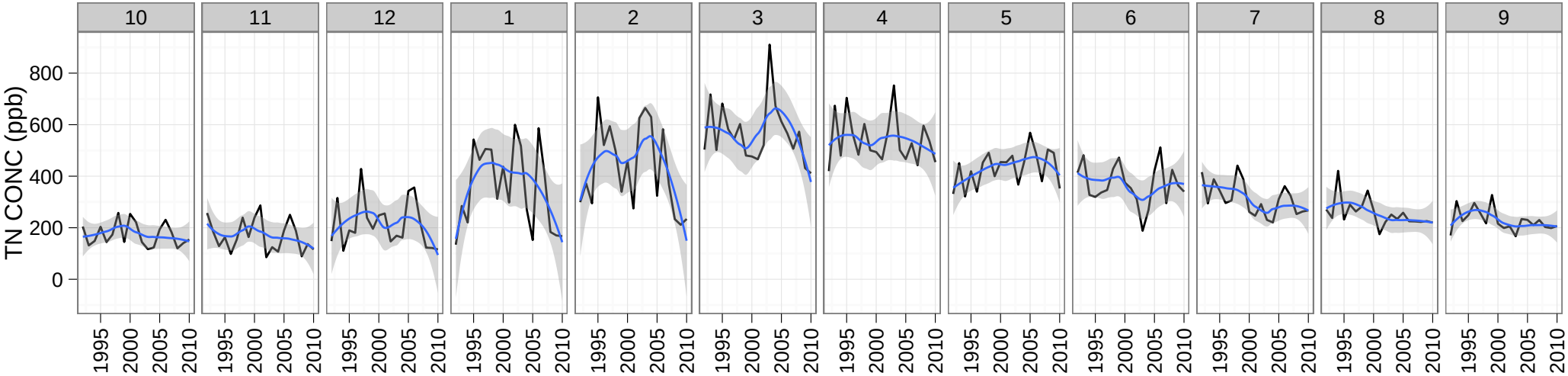


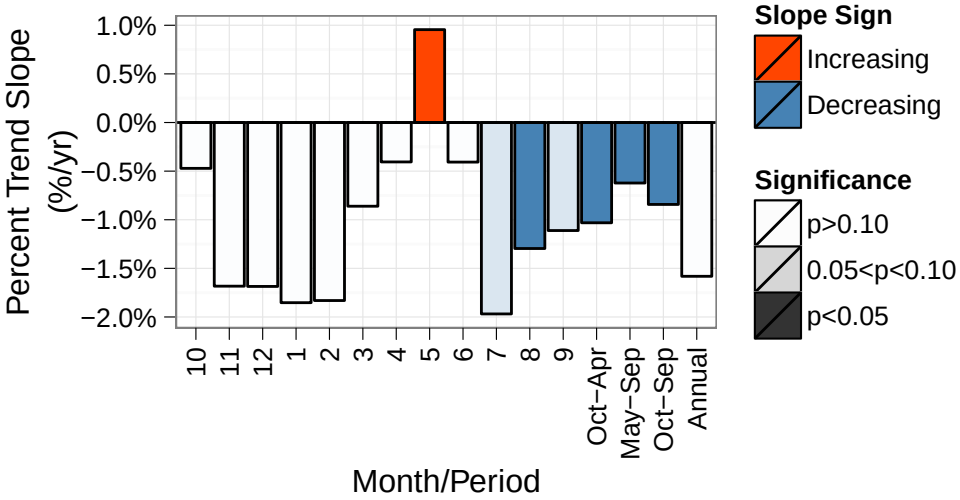


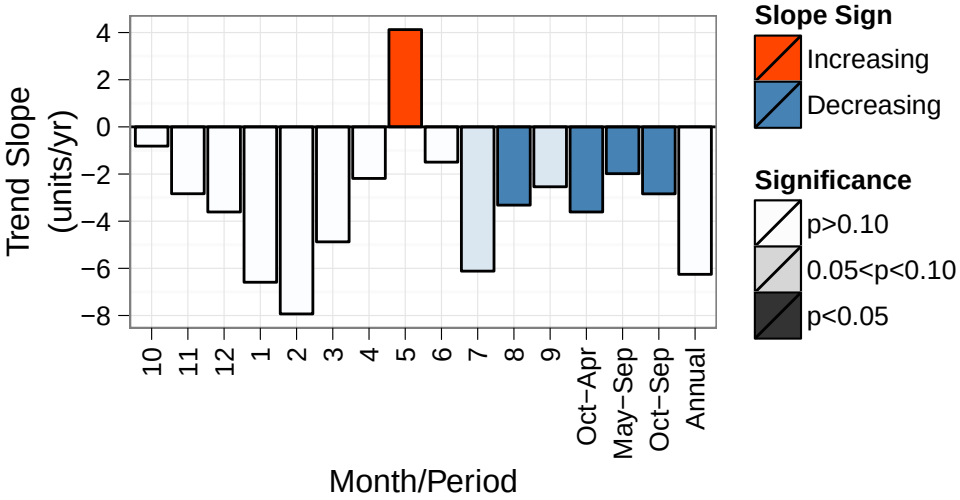
Trend Tests: Total Klamath Inflows, TN, CONC



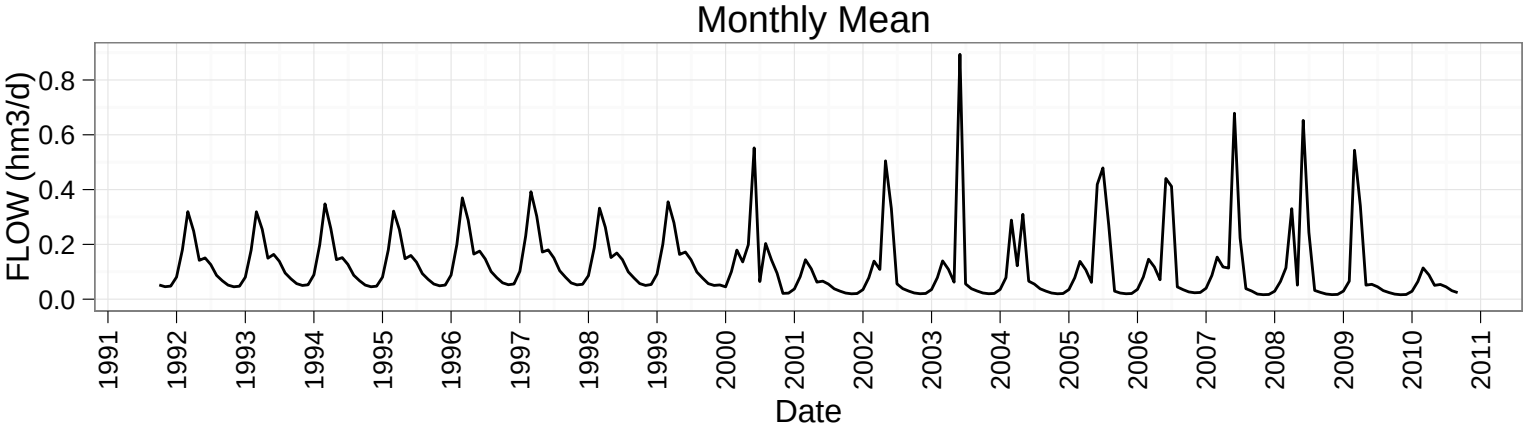


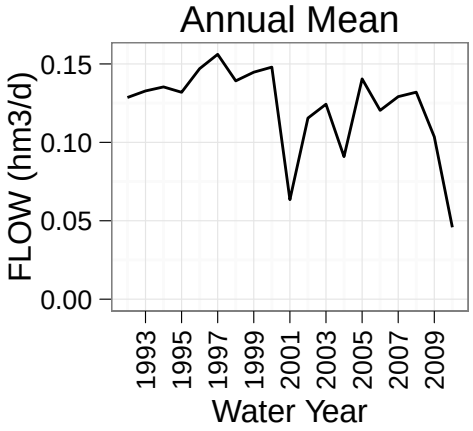


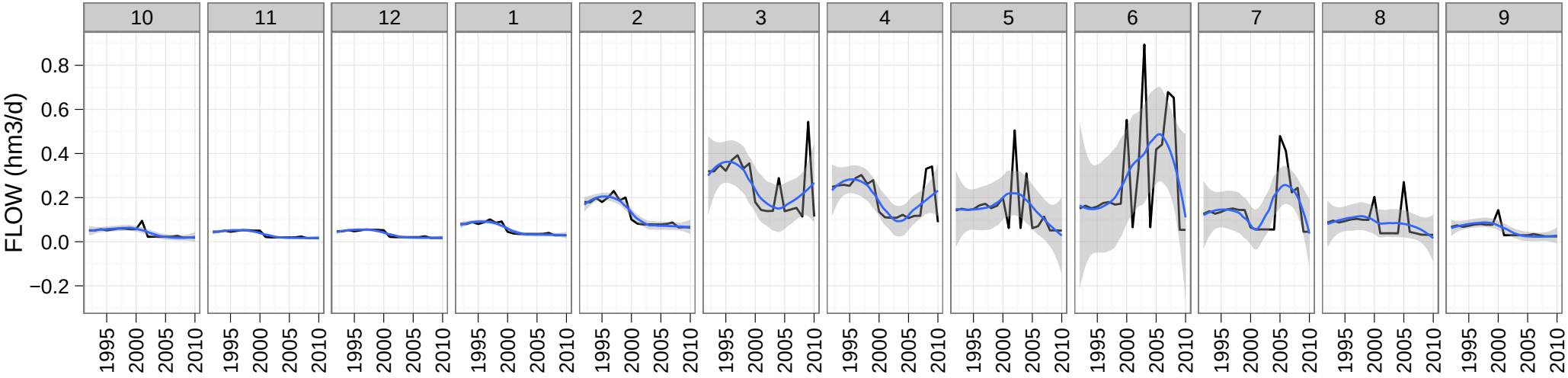


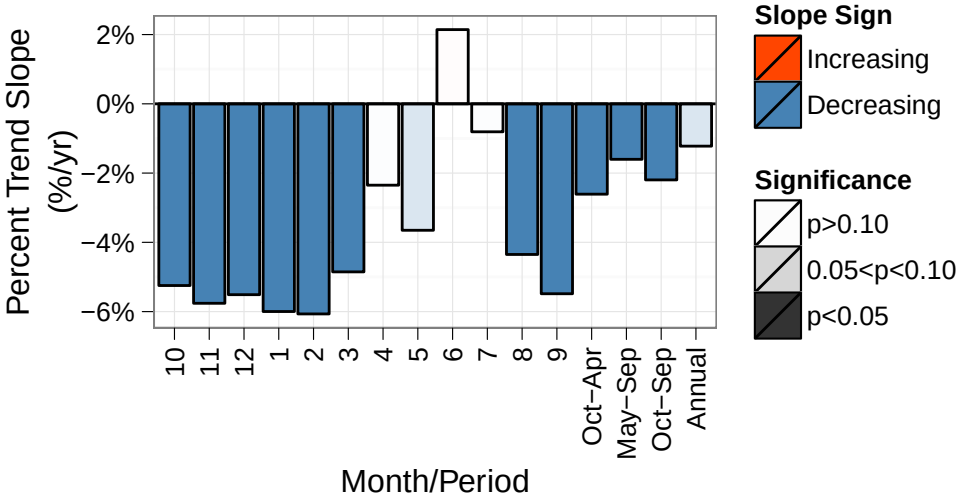


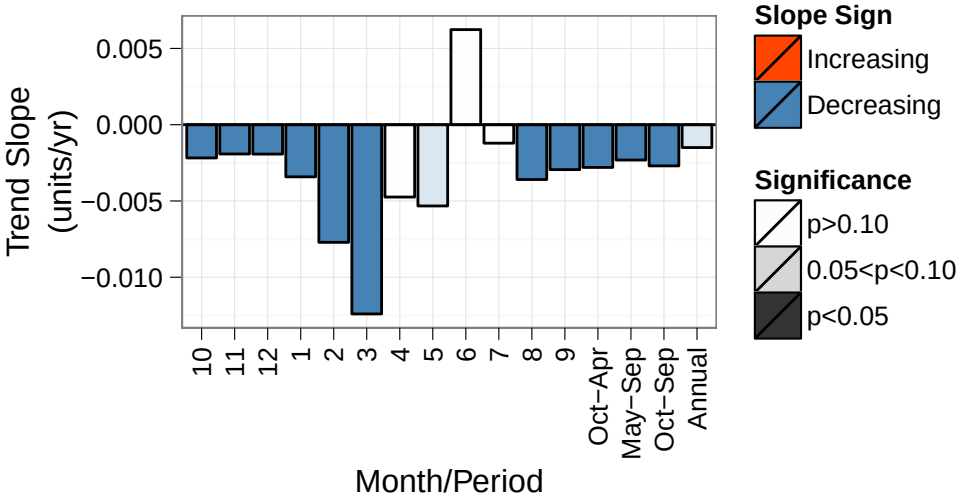
Trend Tests: Total Pumped to Lake, FLOW



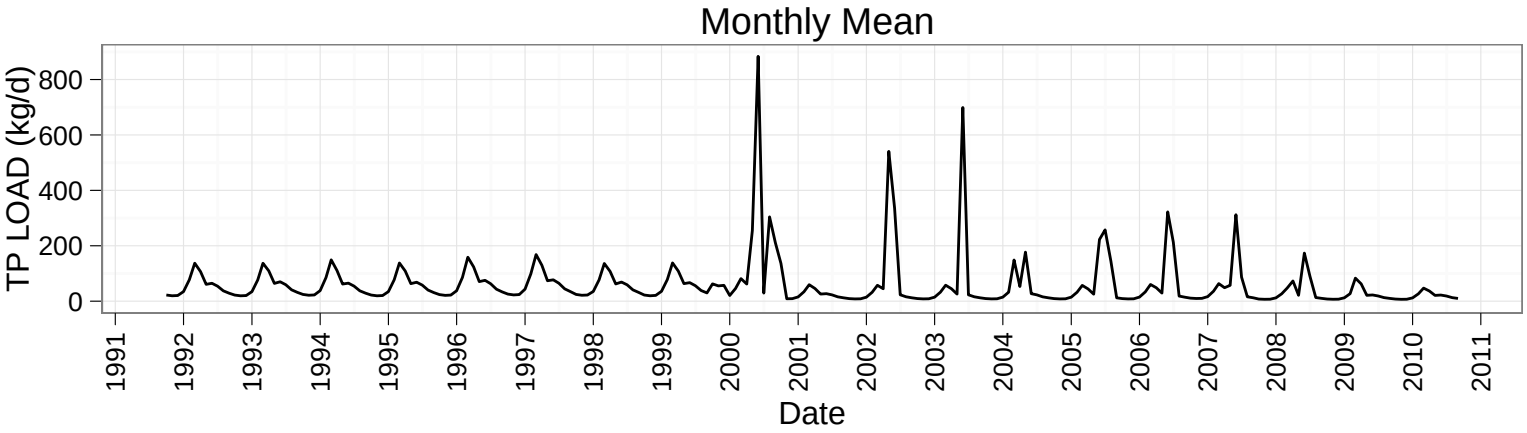


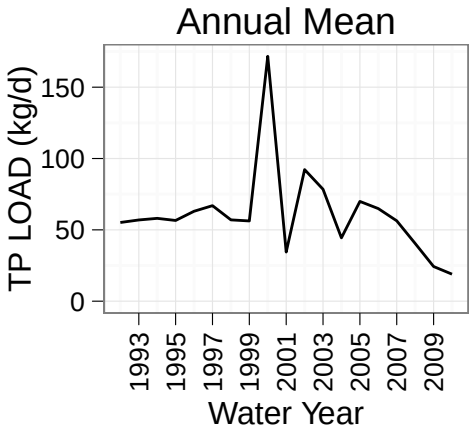


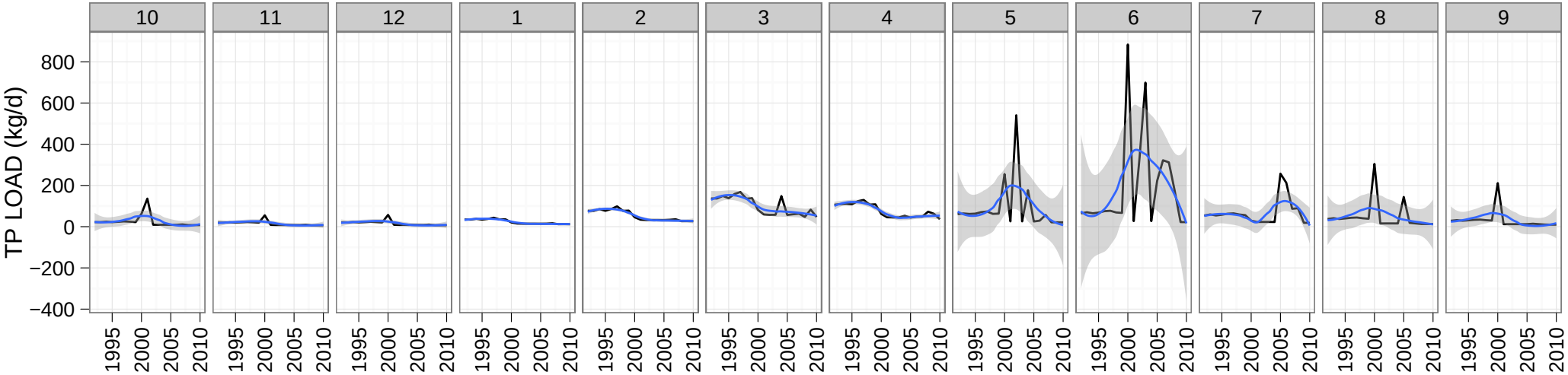


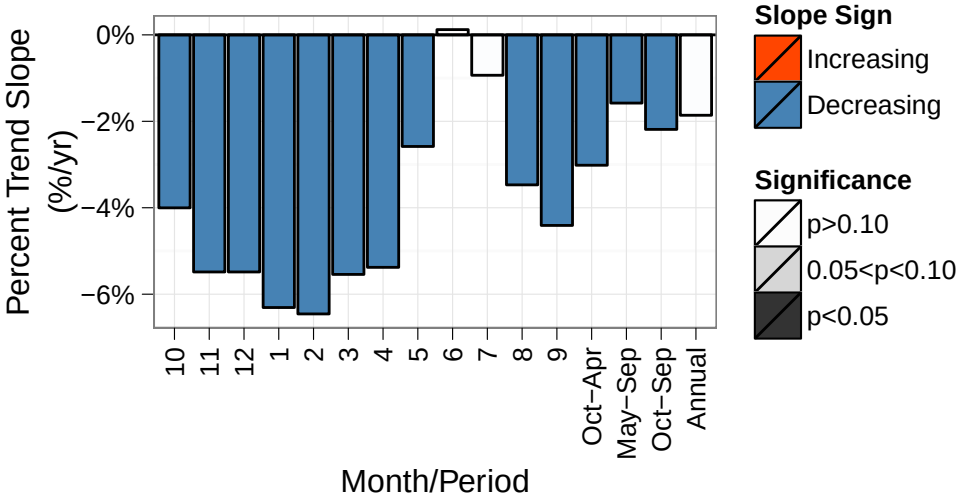


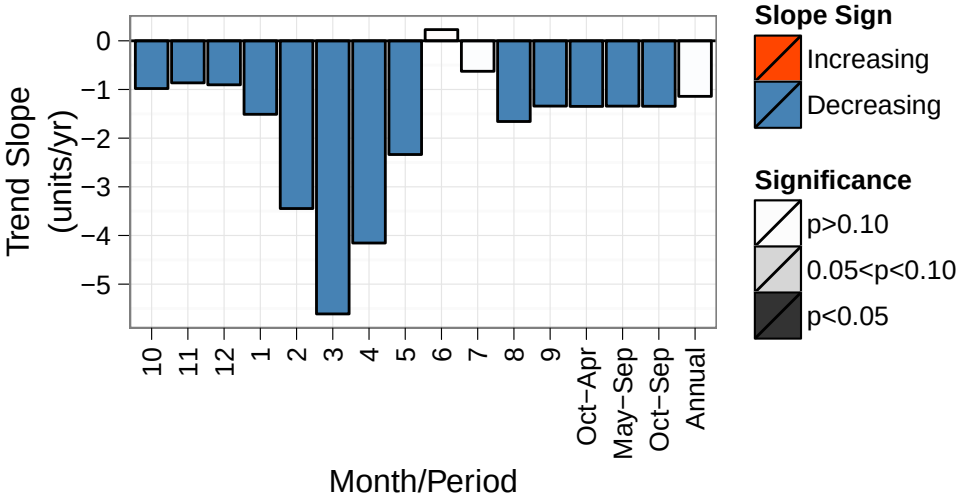
Trend Tests: Total Pumped to Lake, TP, LOAD



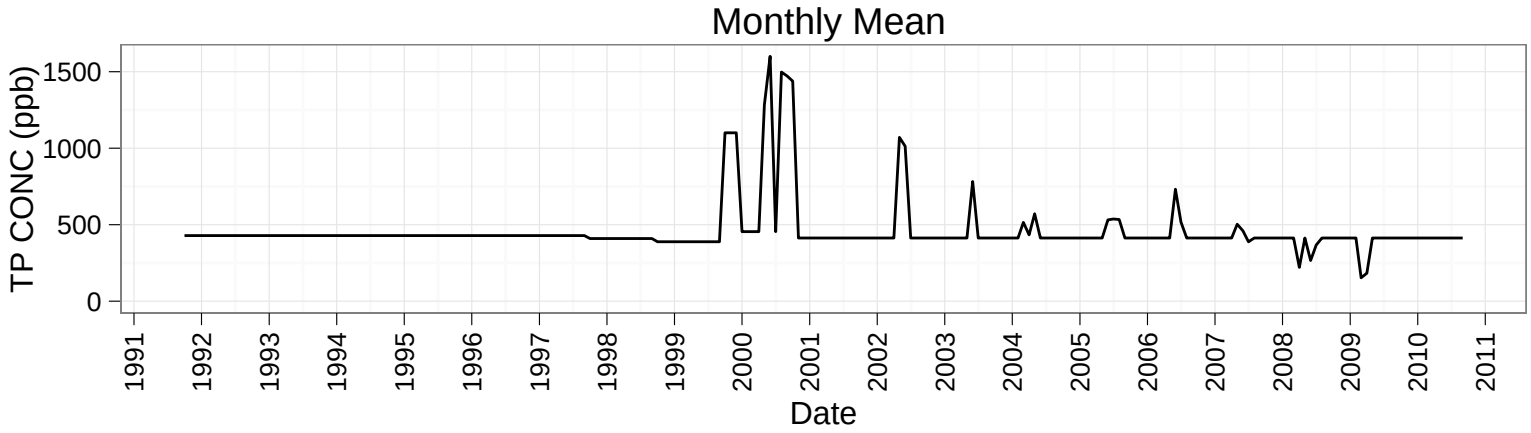


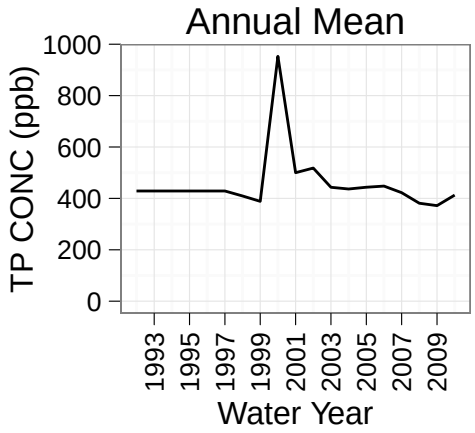


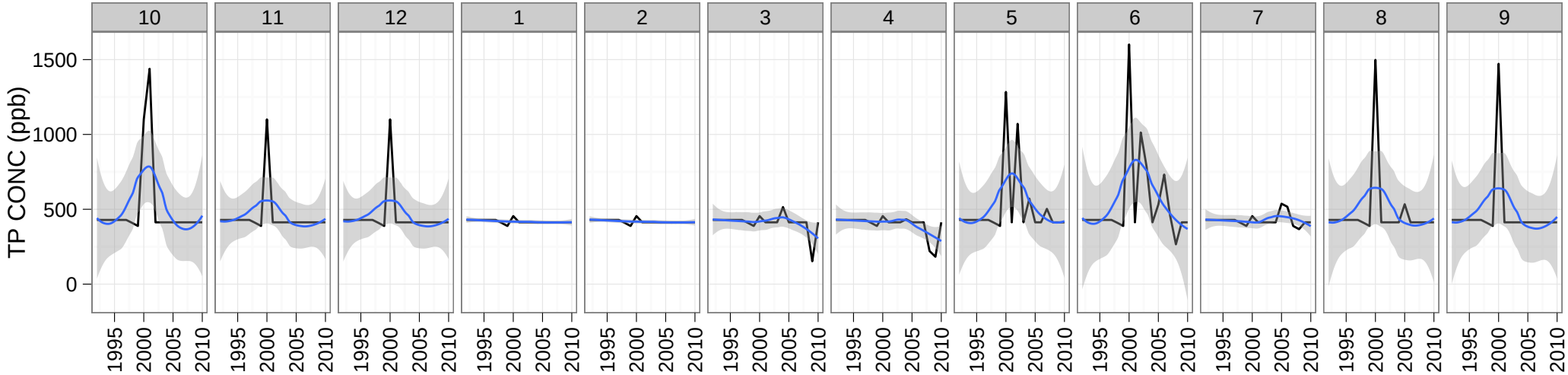


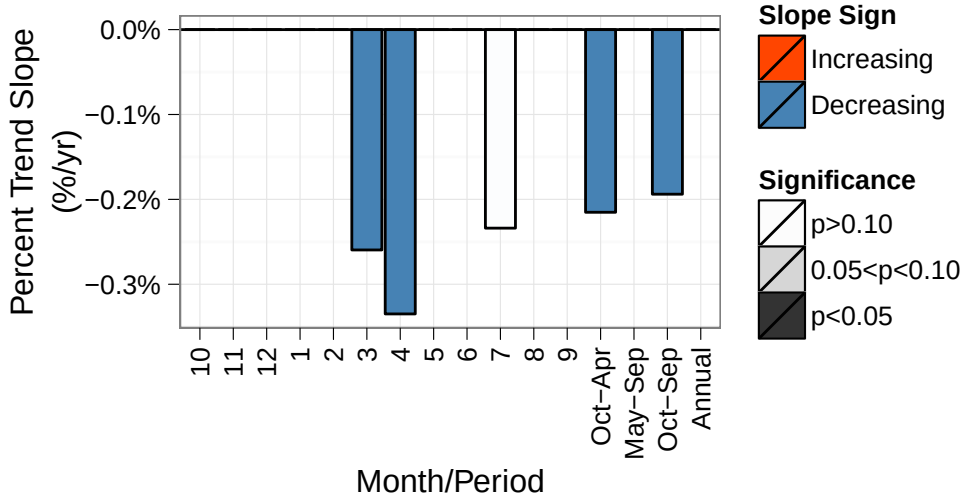


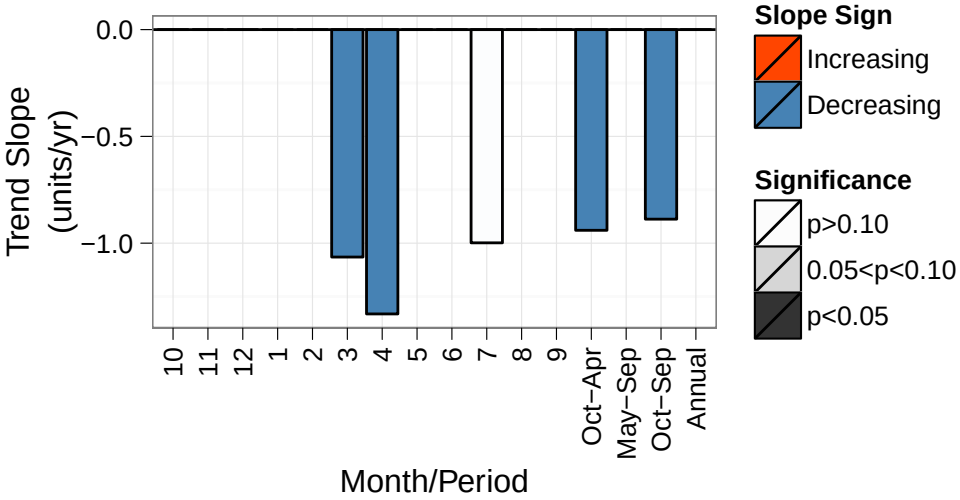
Trend Tests: Total Pumped to Lake, TP, CONC



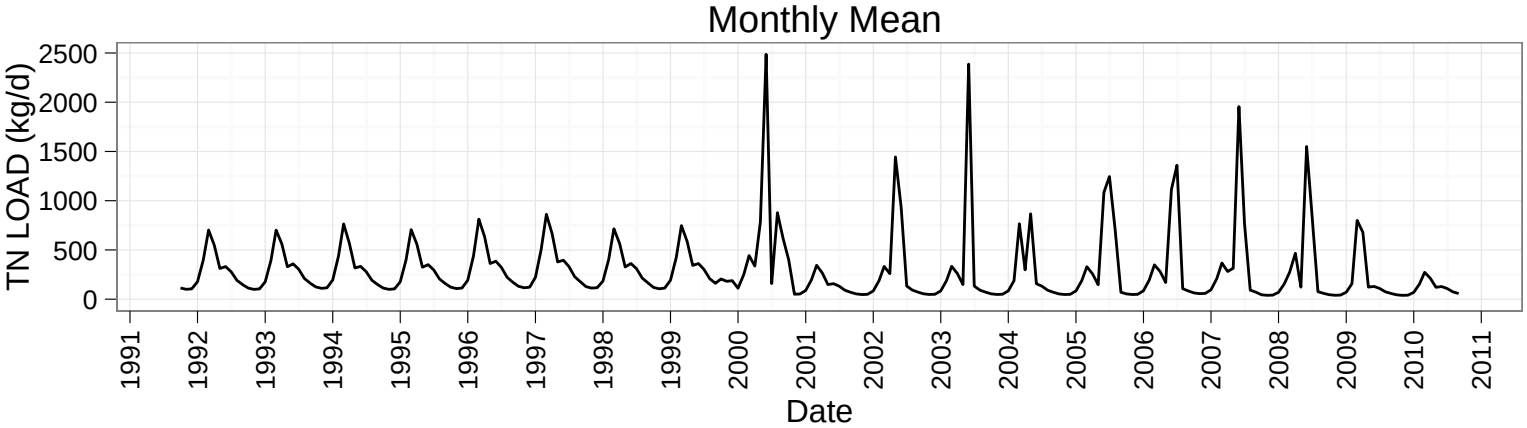


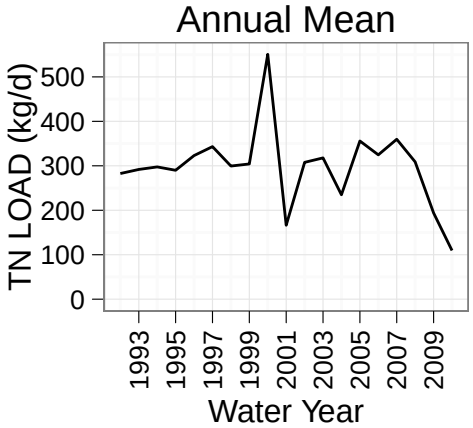


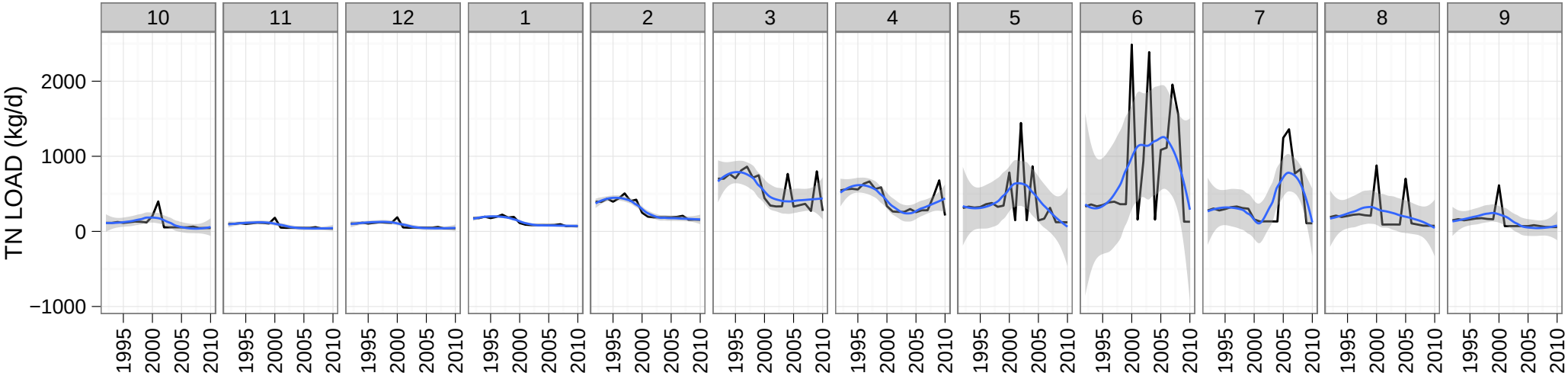


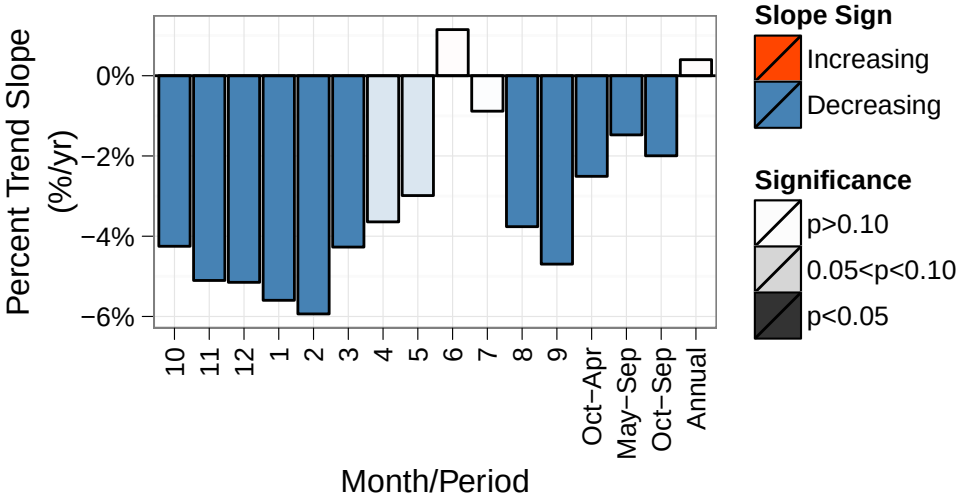


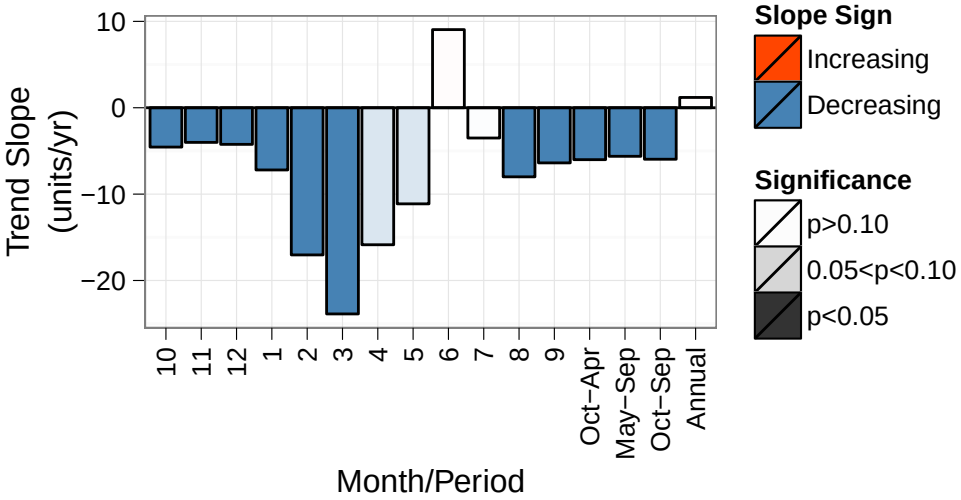
Trend Tests: Total Pumped to Lake, TN, LOAD



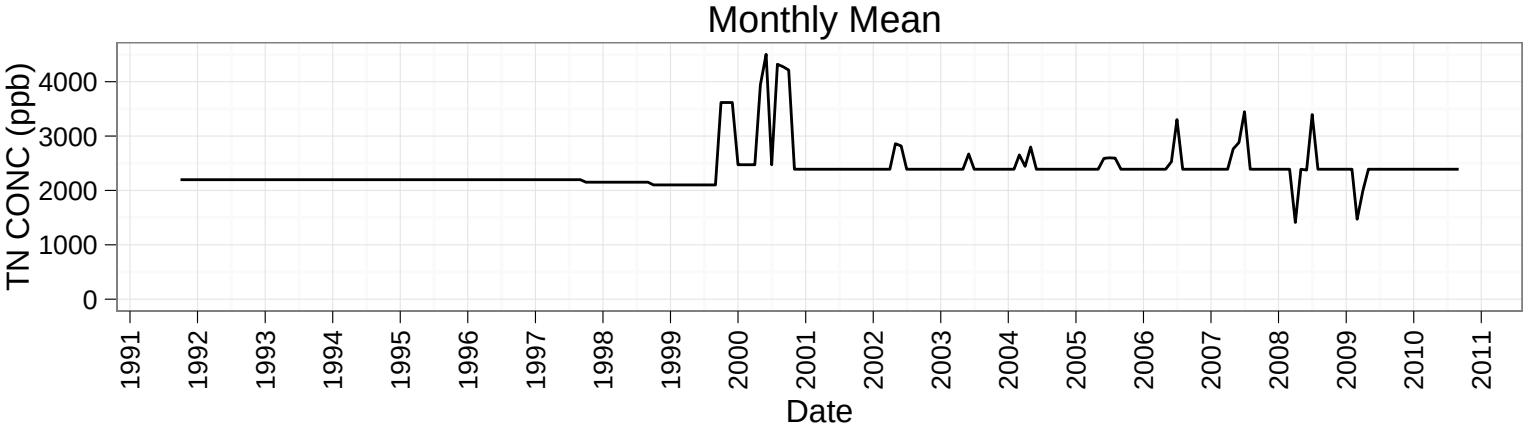


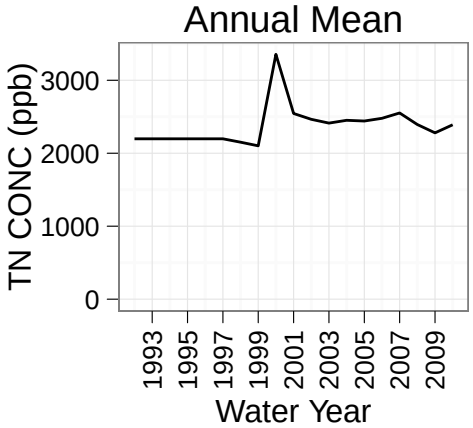


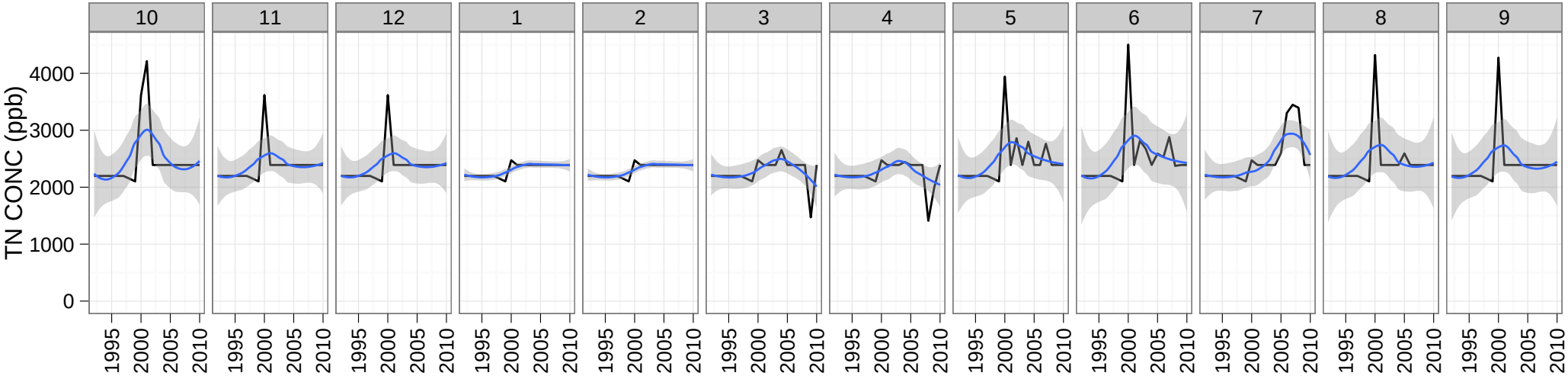


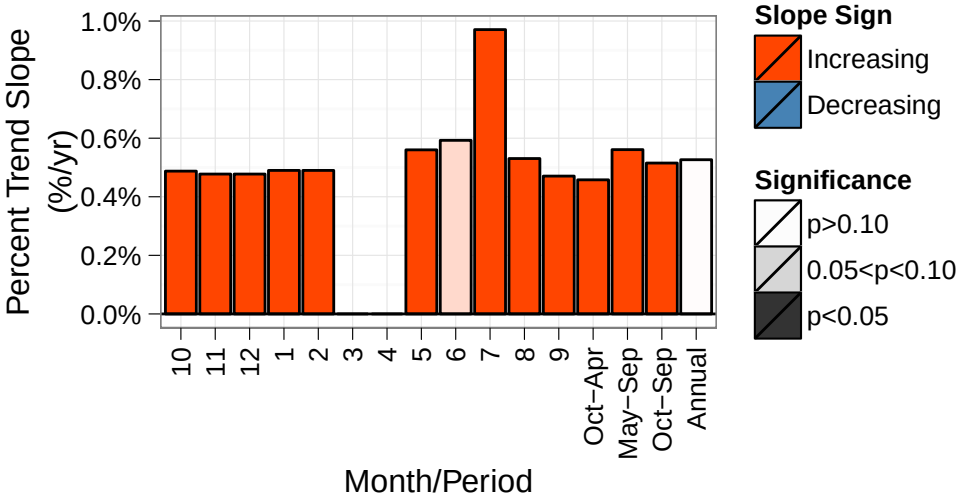


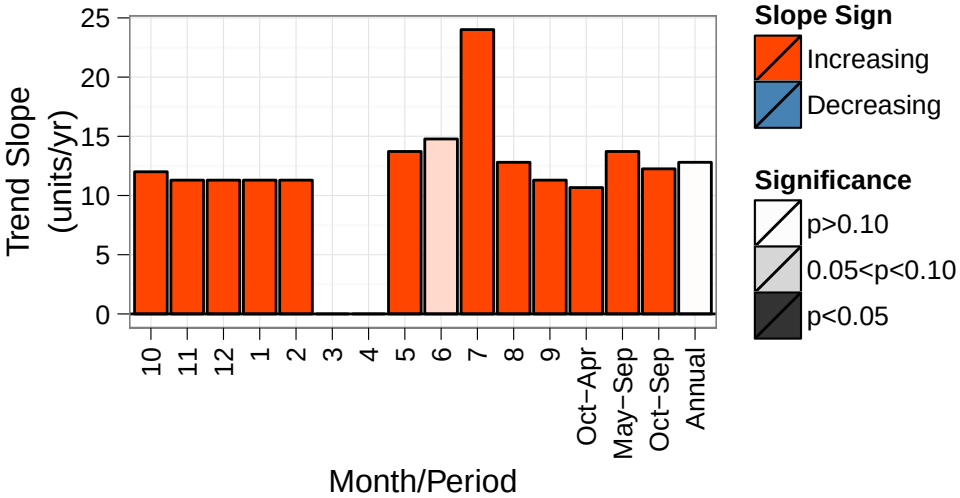
Trend Tests: Total Pumped to Lake, TN, CONC



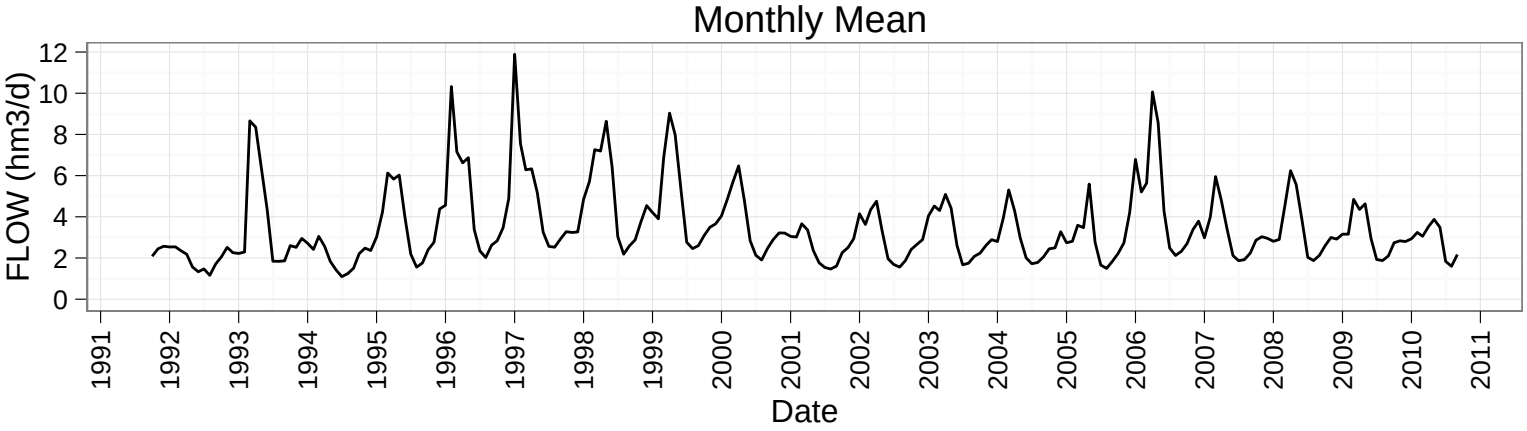


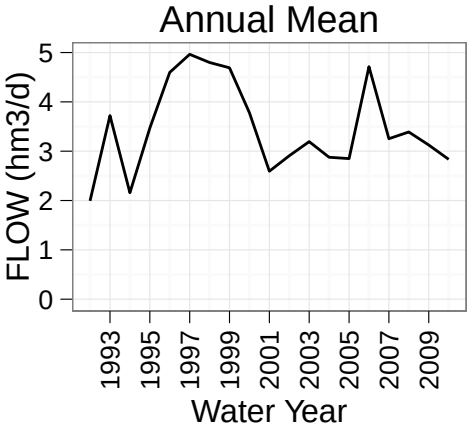


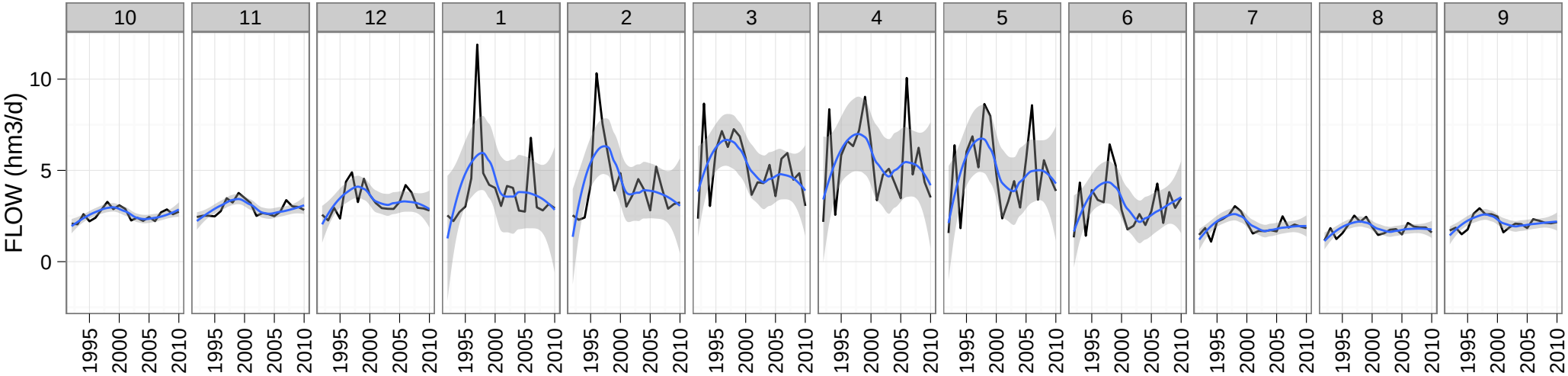


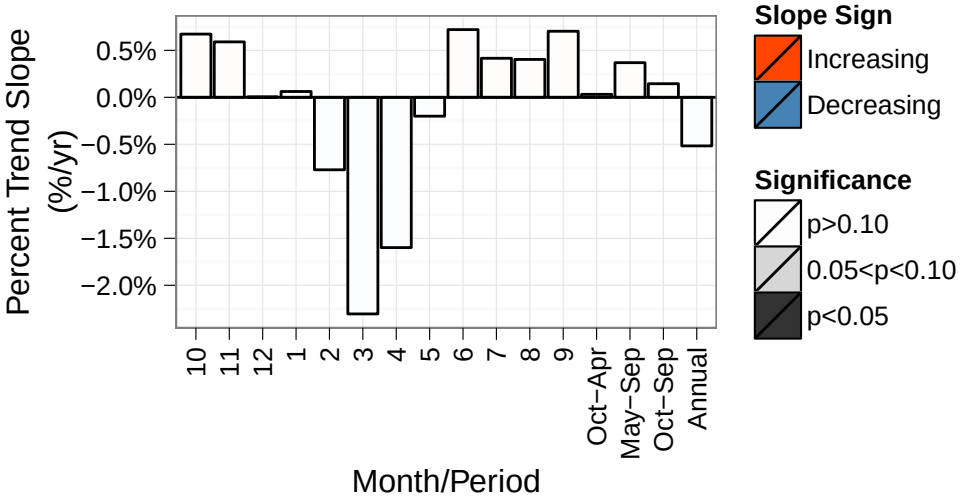


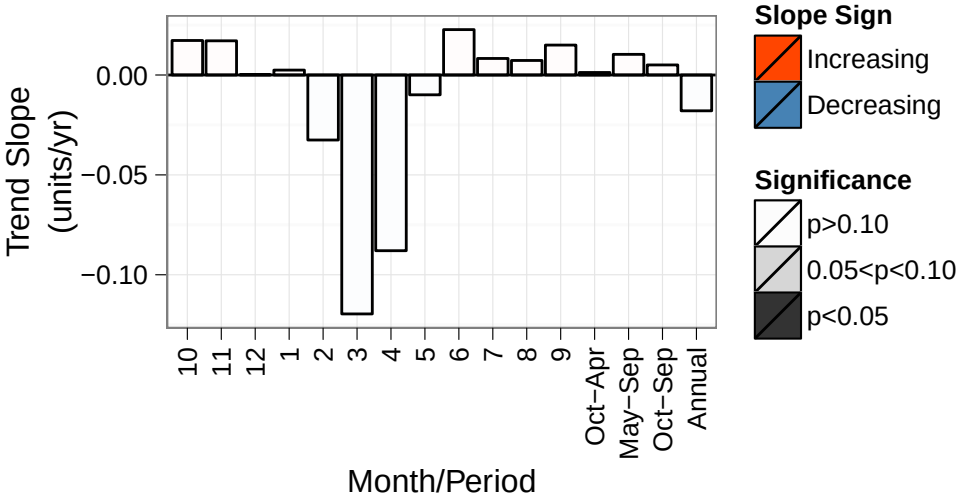
Trend Tests: Total Tributaries, FLOW



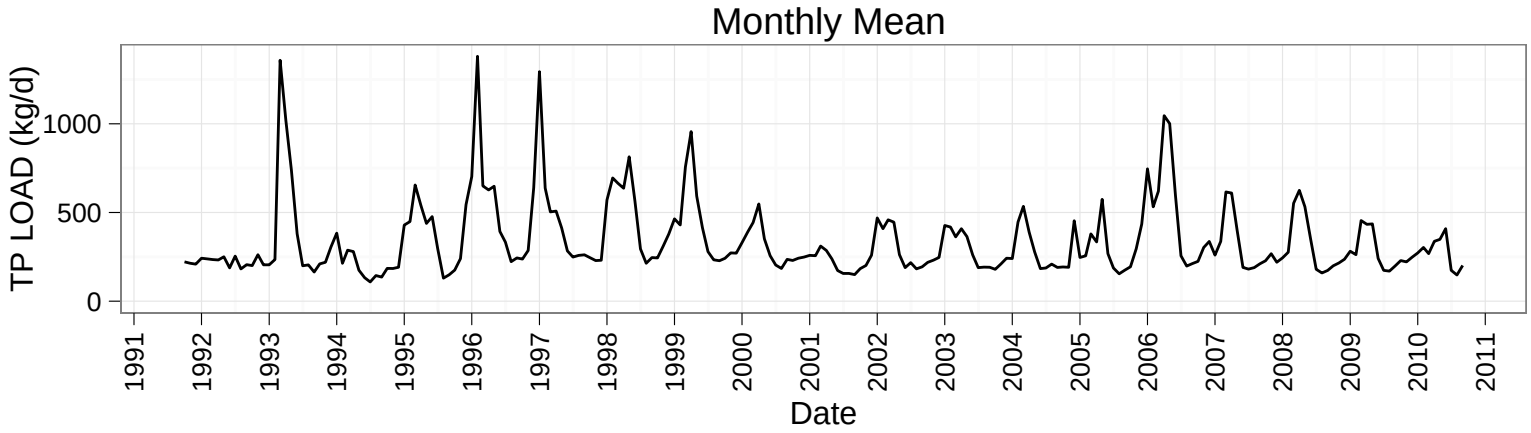


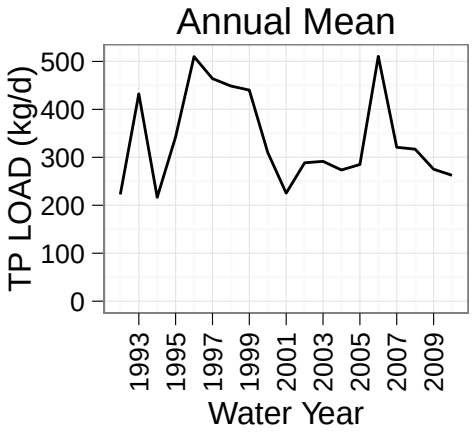


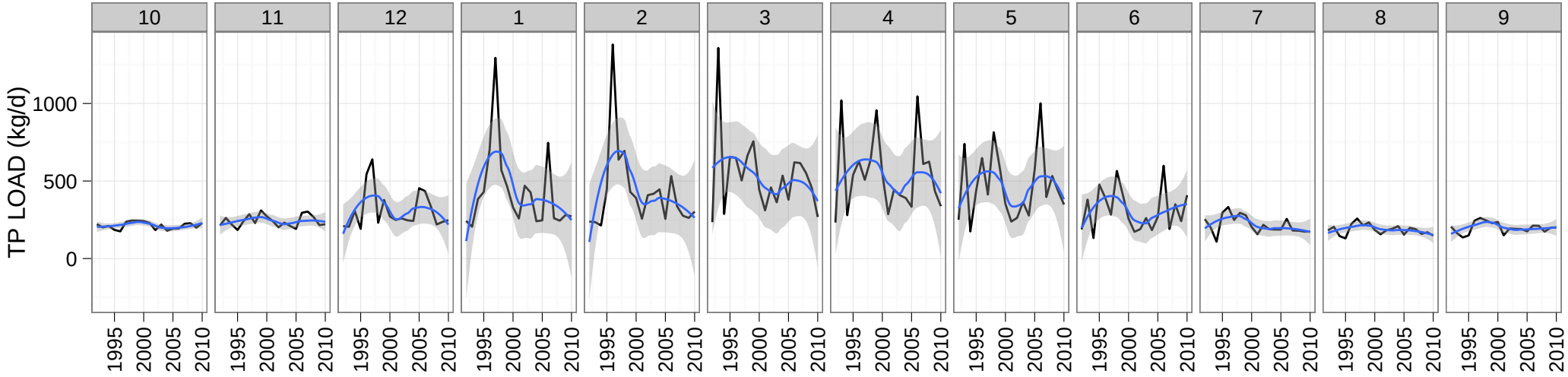


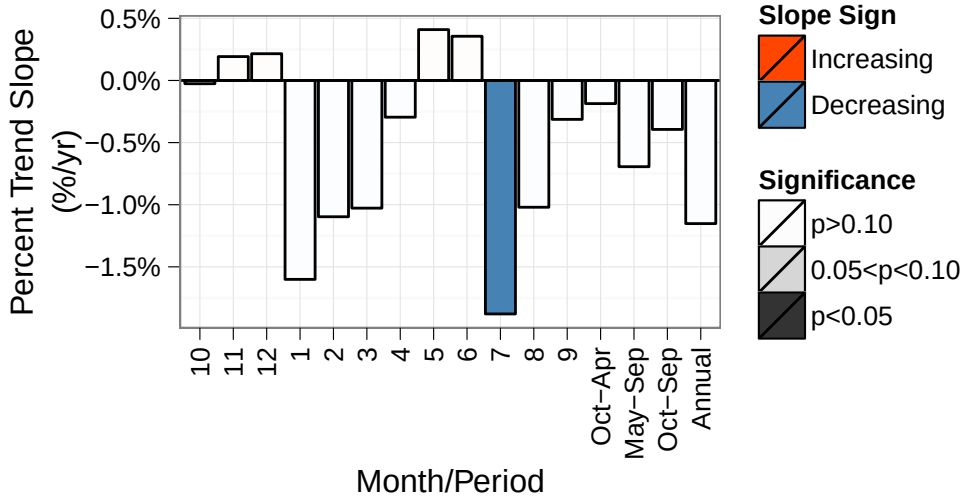


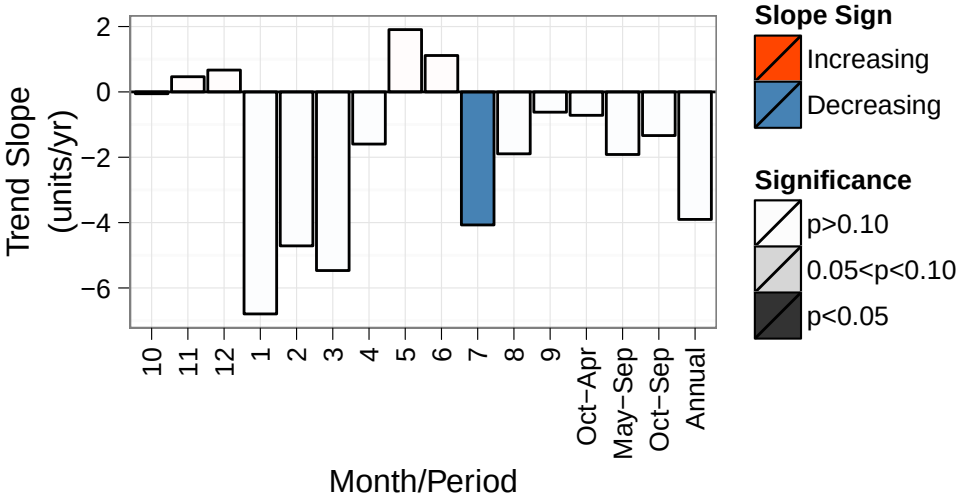
Trend Tests: Total Tributaries, TP, LOAD



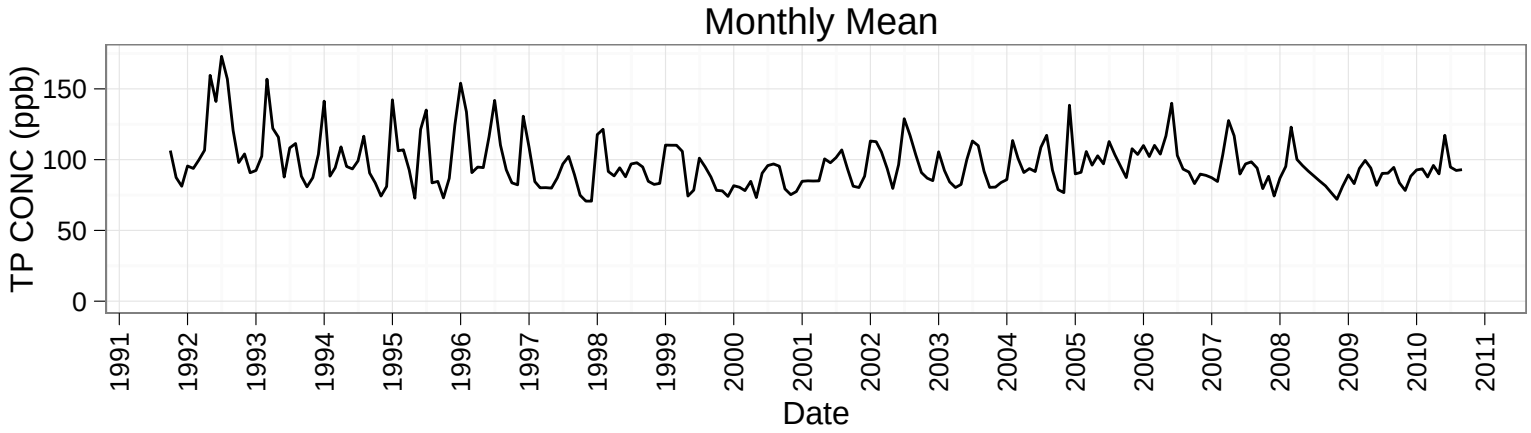


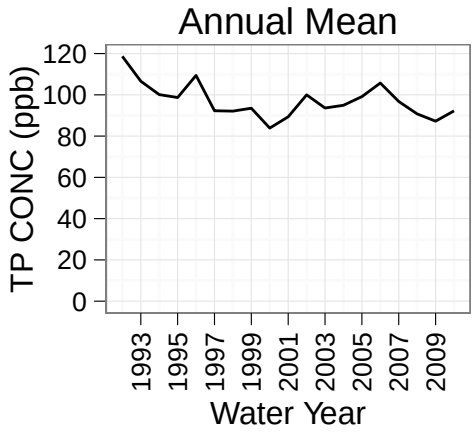


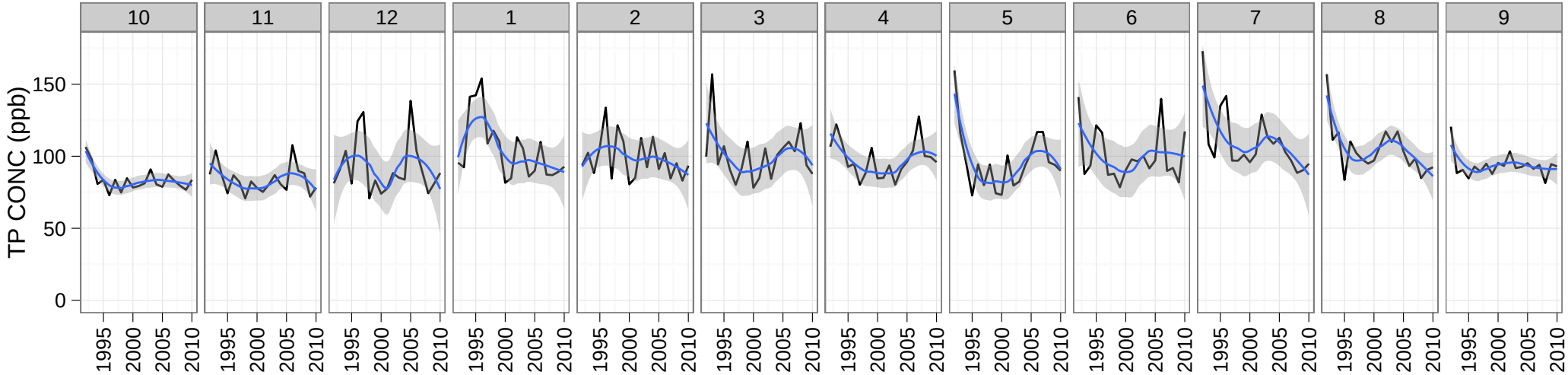


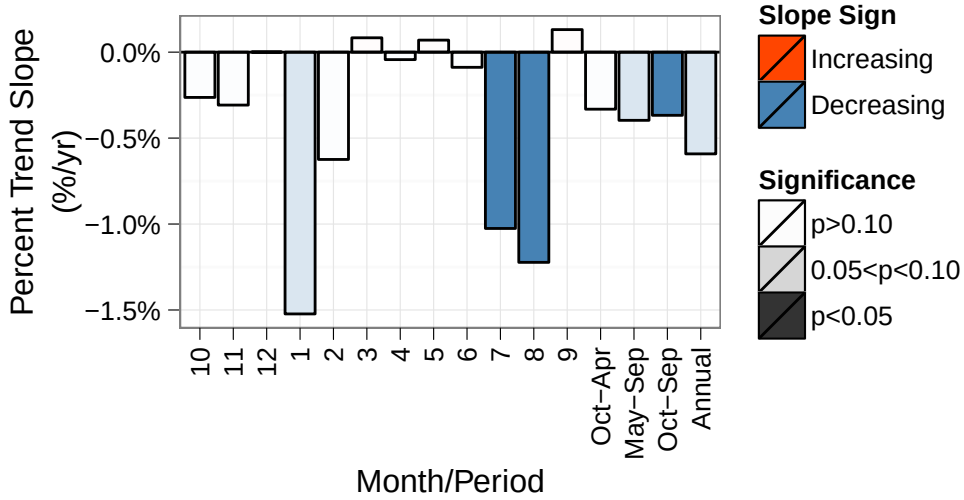


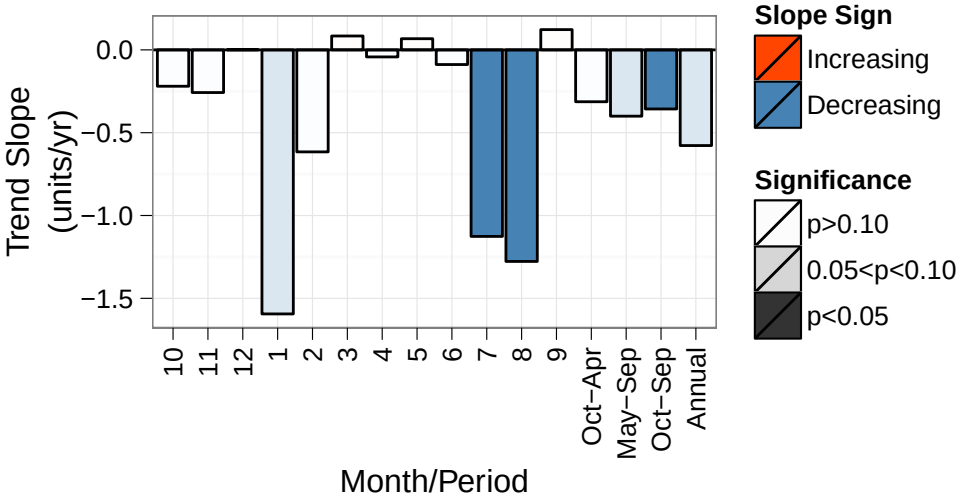
Trend Tests: Total Tributaries, TP, CONC



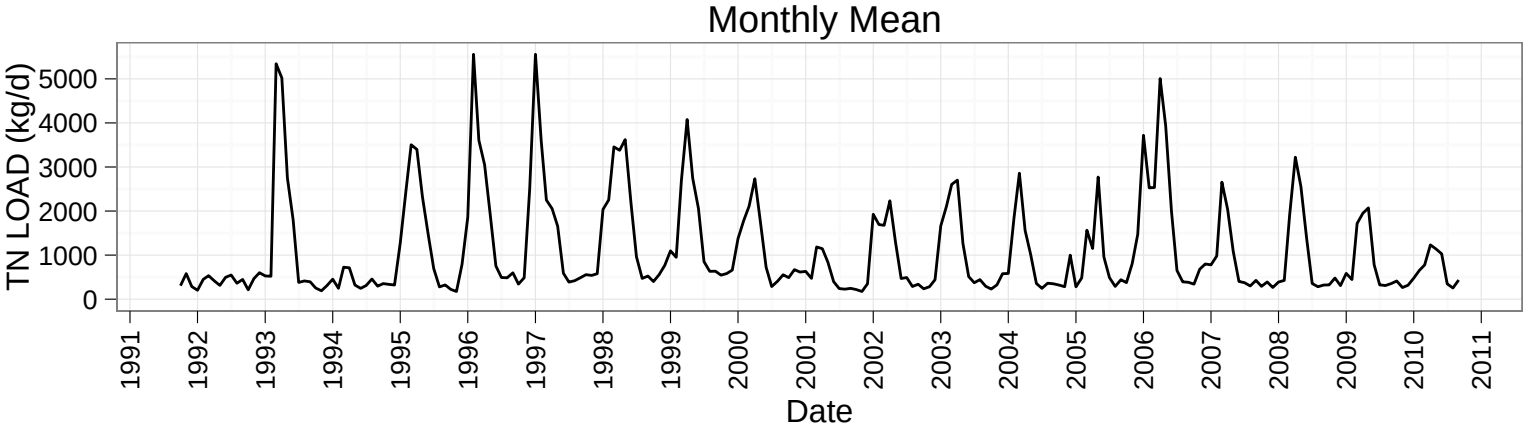


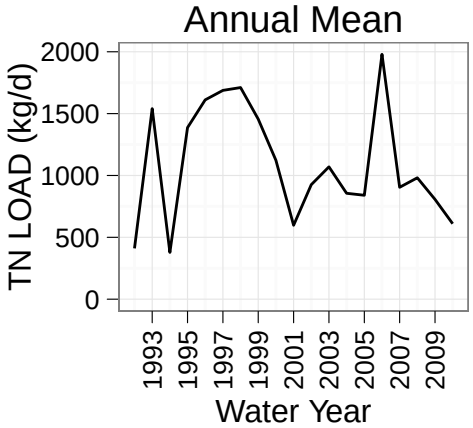


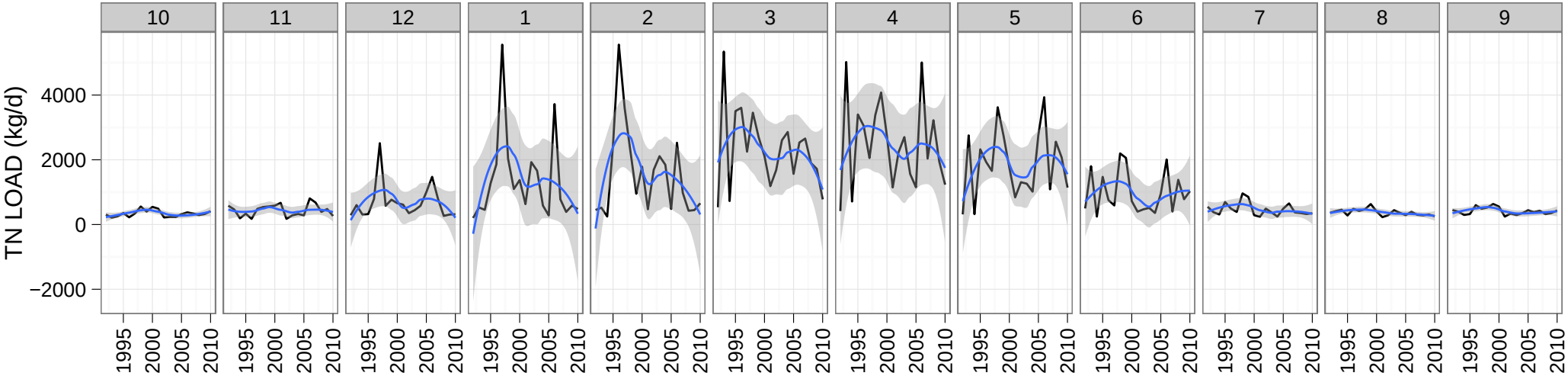


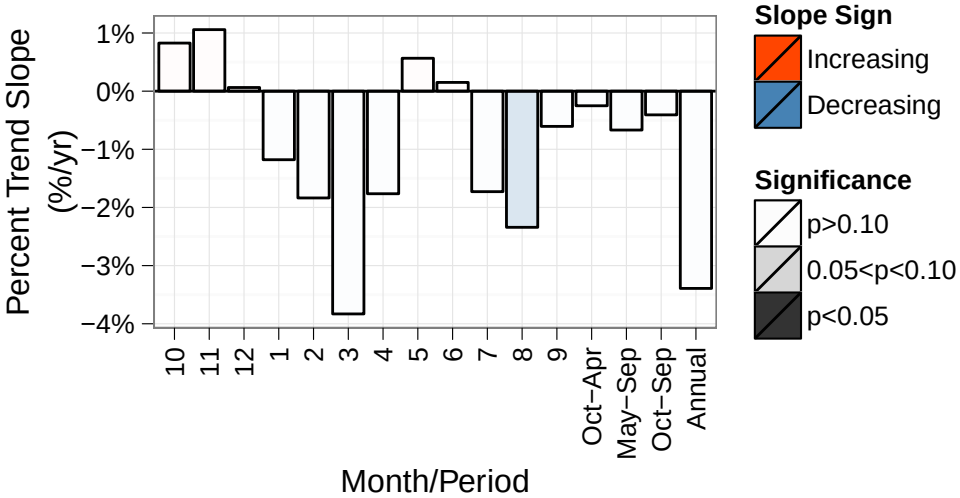


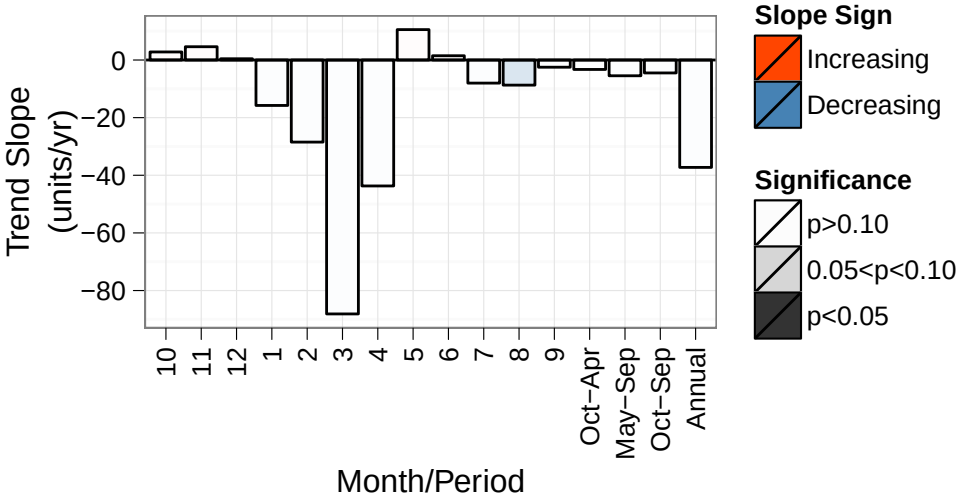
Trend Tests: Total Tributaries, TN, LOAD



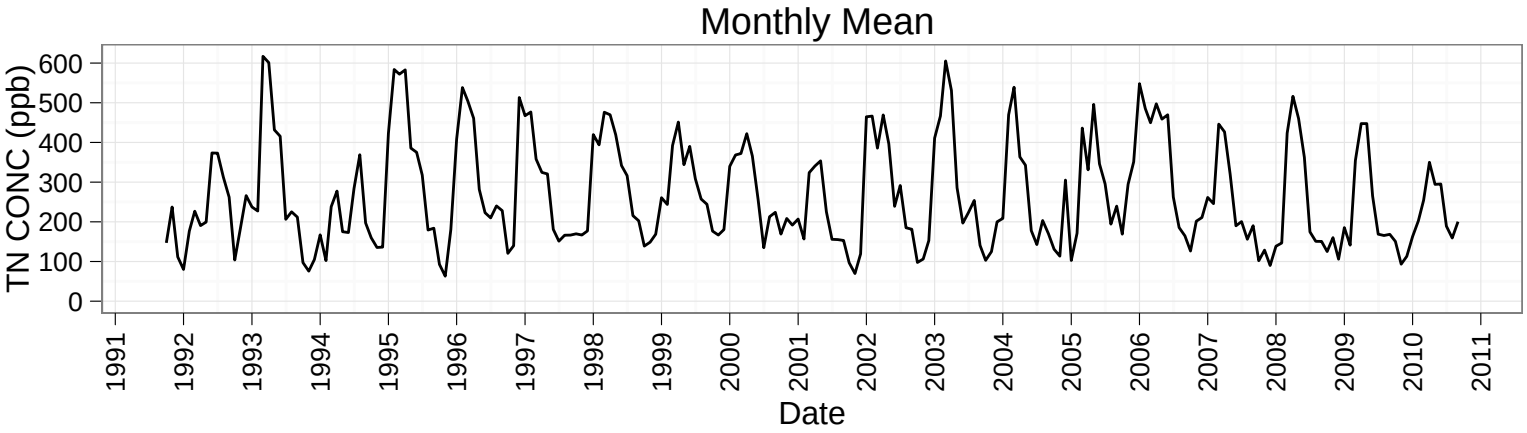


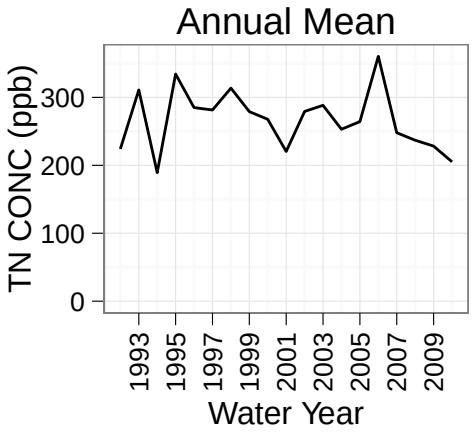


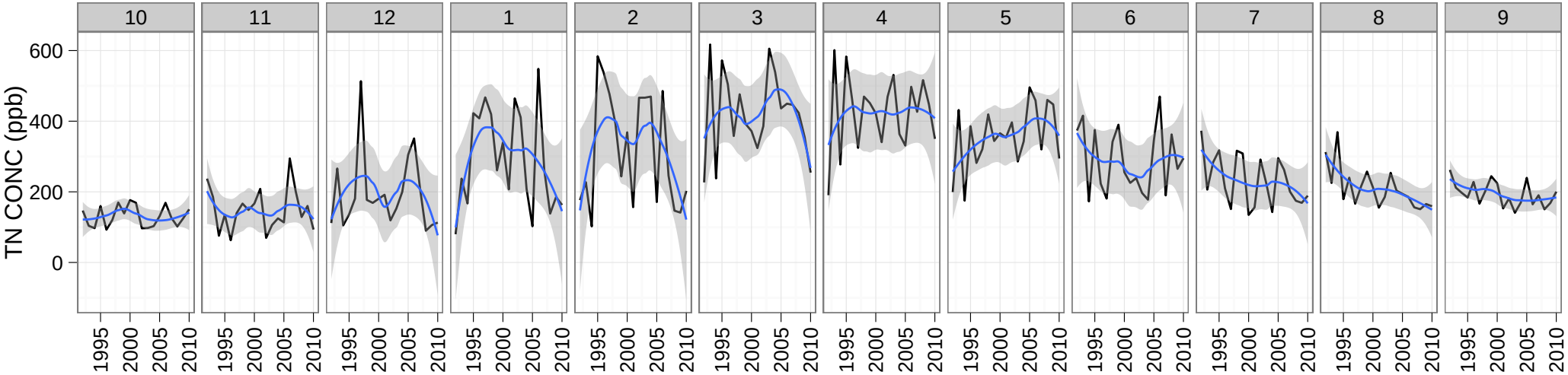


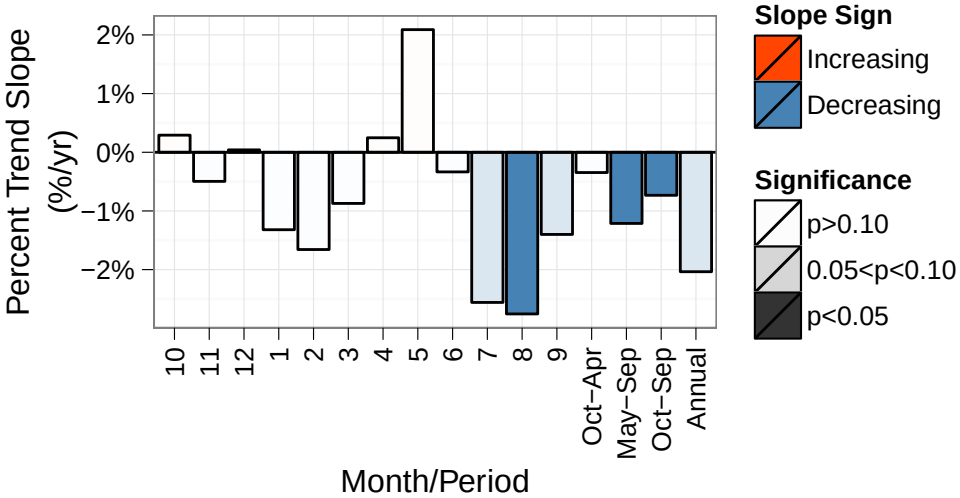


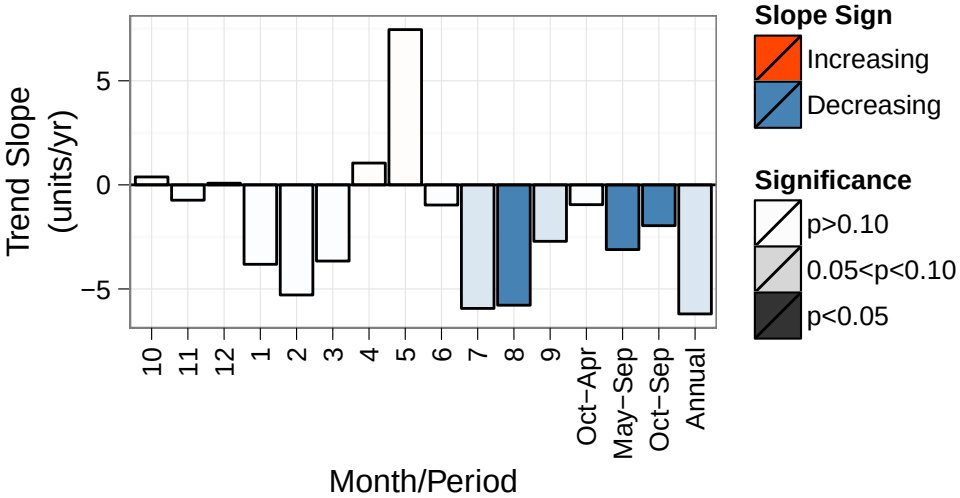
Trend Tests: Total Tributaries, TN, CONC



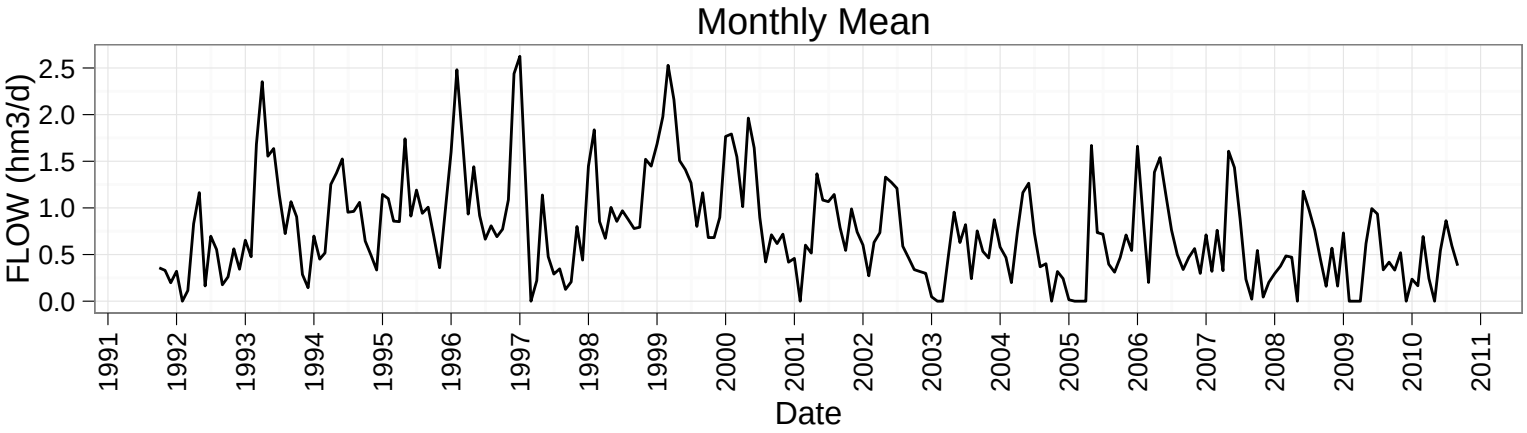


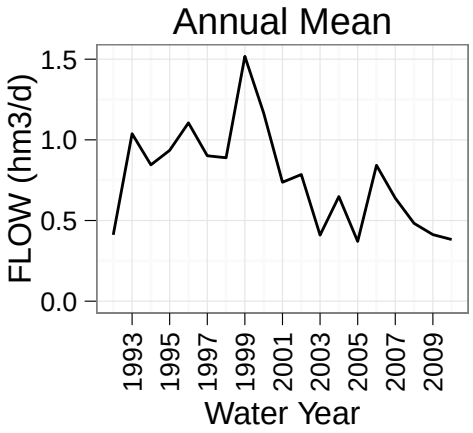


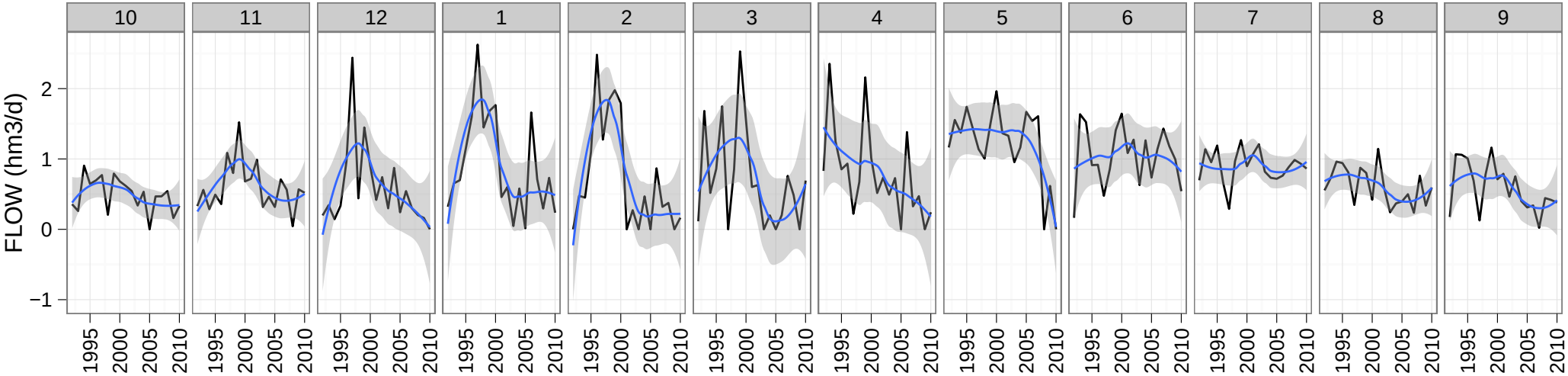


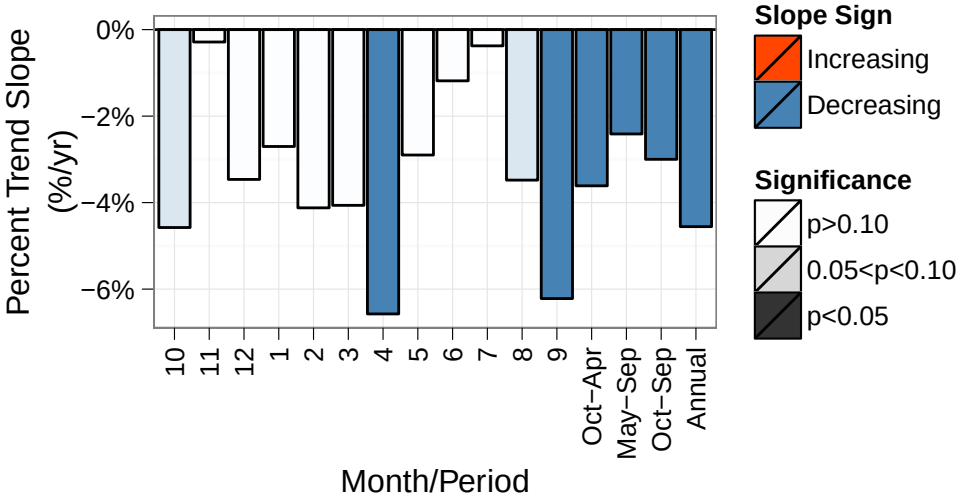


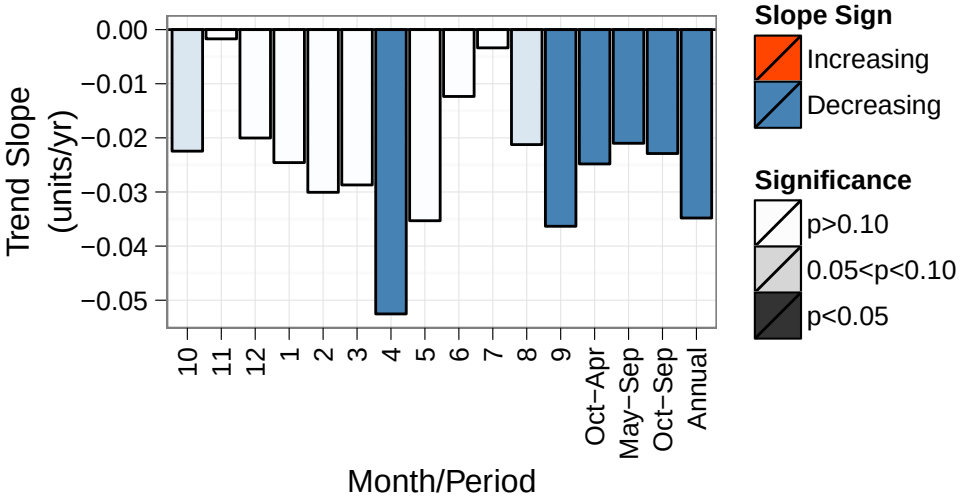
Trend Tests: Ungauged Inflows, FLOW

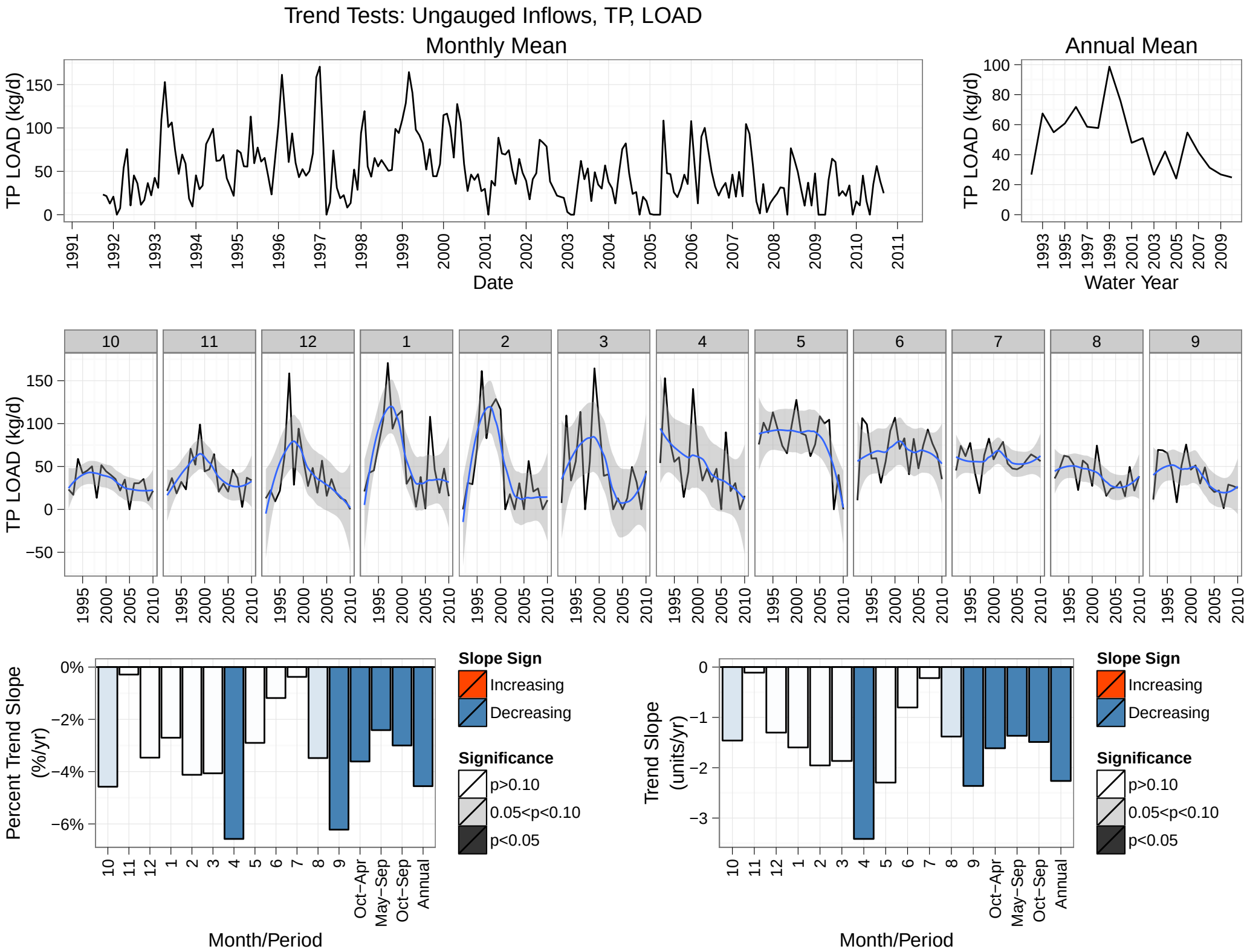




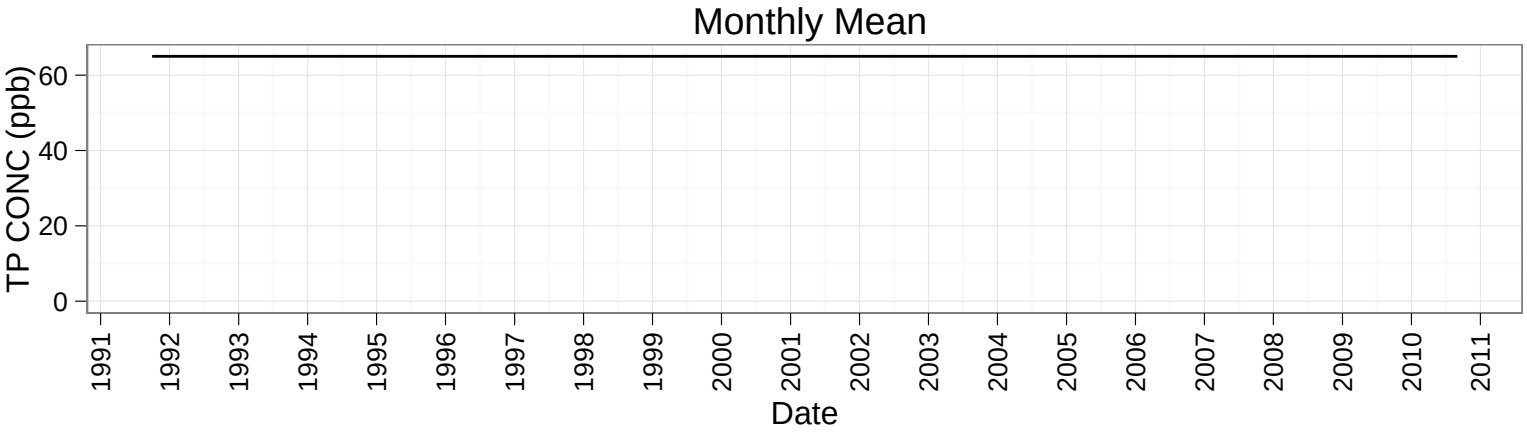


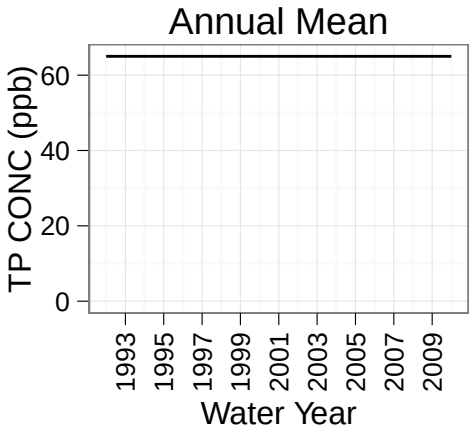


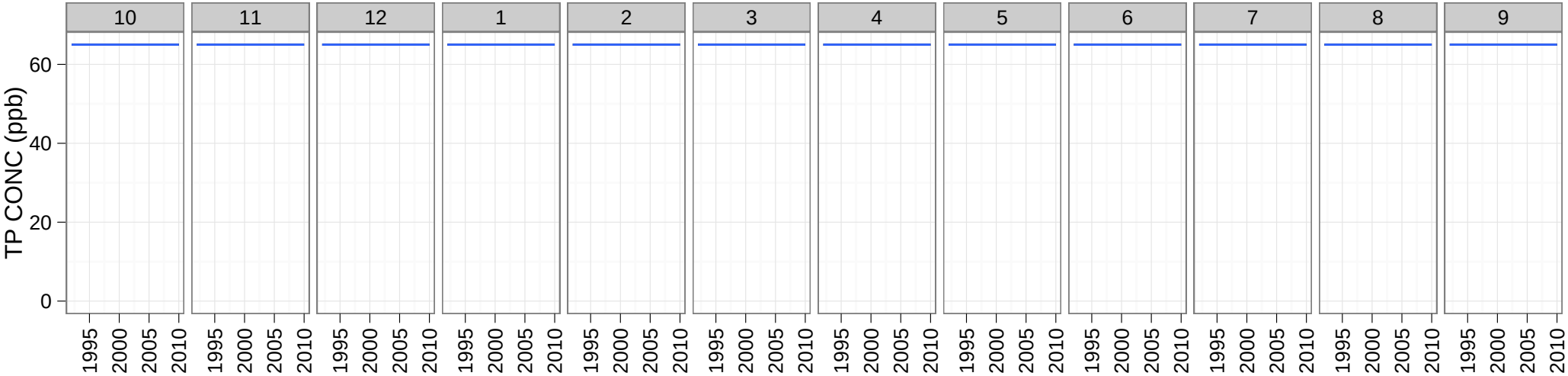


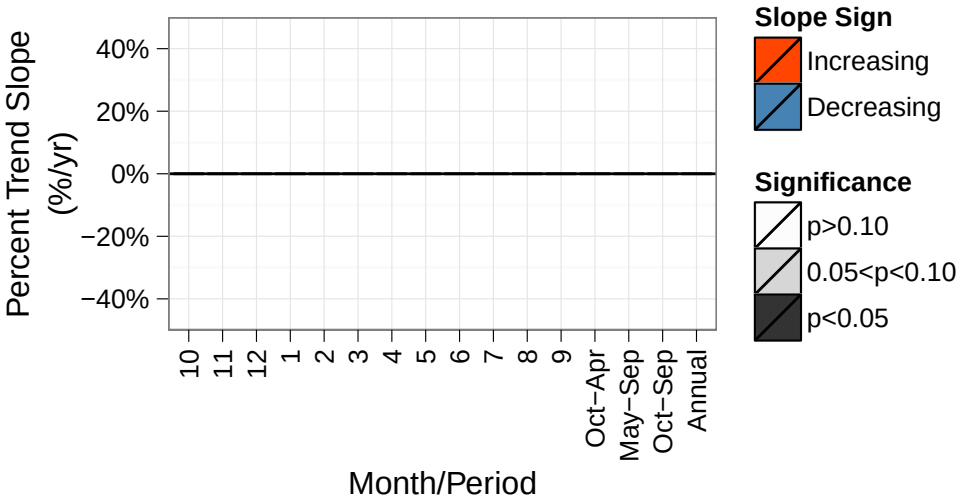

Trend Tests: Ungauged Inflows, TP, LOAD
Monthly Mean
TP LOAD (kg/d)
Date
Annual Mean
TP LOAD (kg/d)
Water Year
10
11
12
1
2
3
4
5
6
7
8
9
TP LOAD (kg/d)
Percent Trend Slope (%/yr)
Month/Period
Slope Sign
Increasing
Decreasing
Significance
p>0.10
0.05<p<0.10
p<0.05
Trend Slope (units/yr)
Month/Period
Slope Sign
Increasing
Decreasing
Significance
p>0.10
0.05<p<0.10
p<0.05

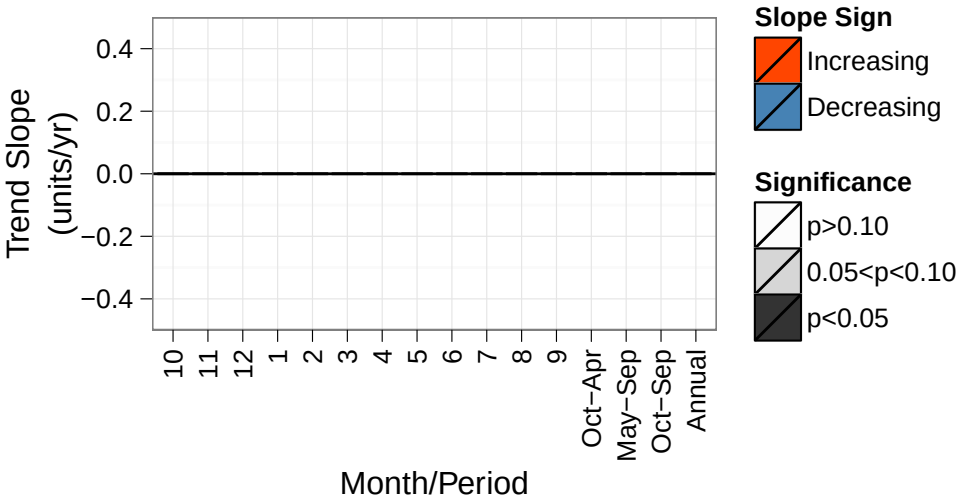
Trend Tests: Ungauged Inflows, TP, CONC

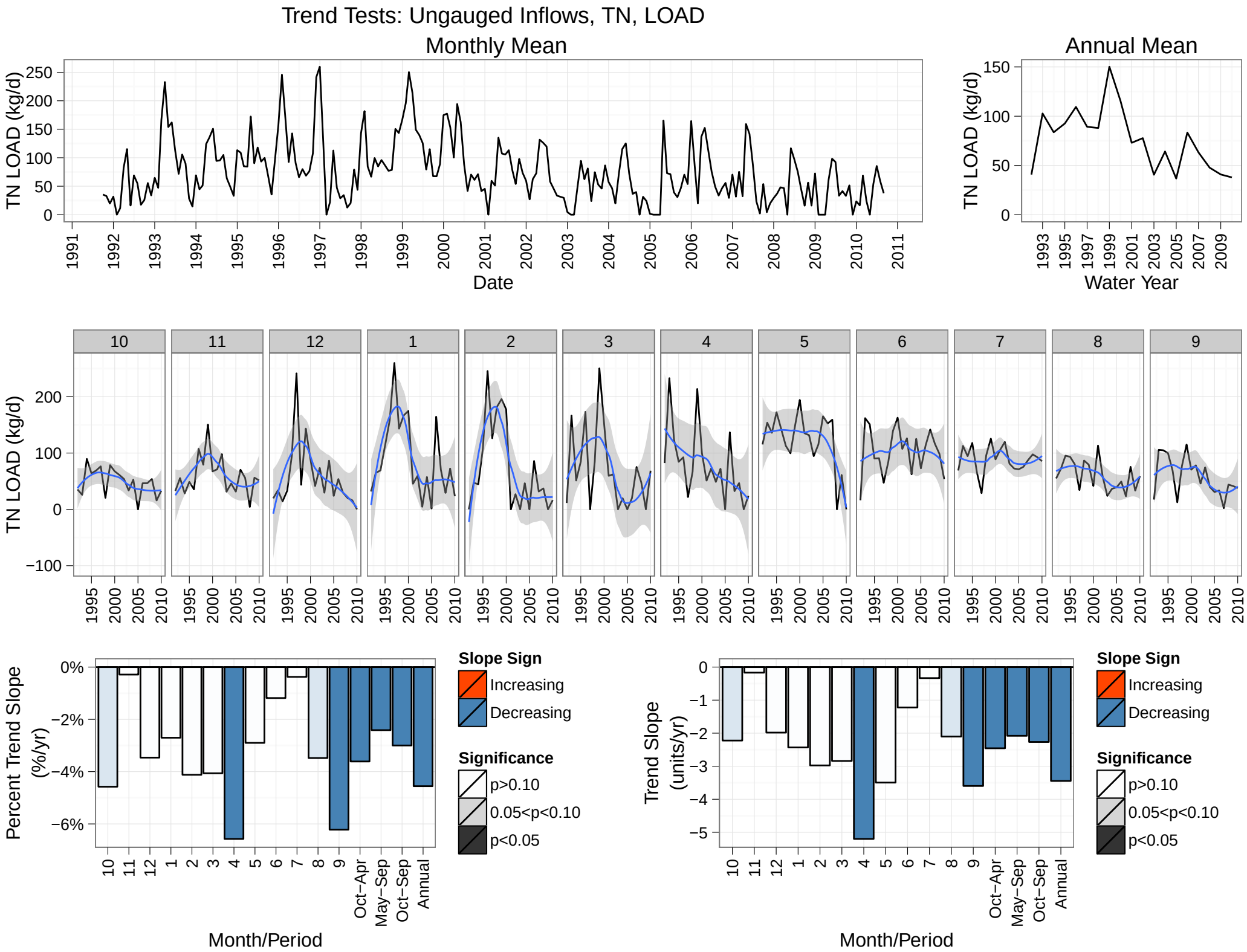




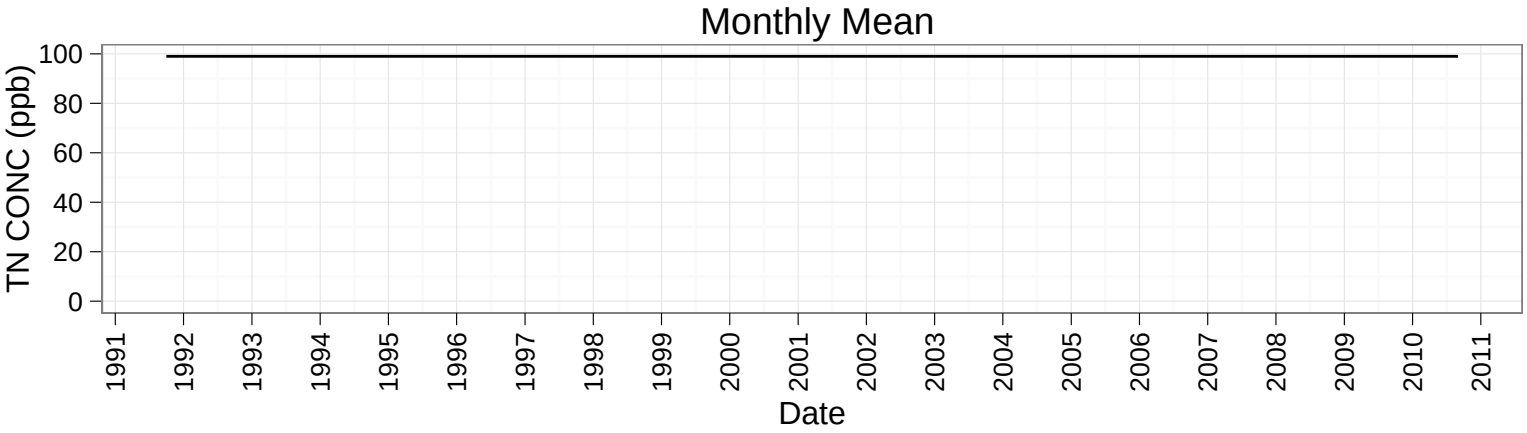


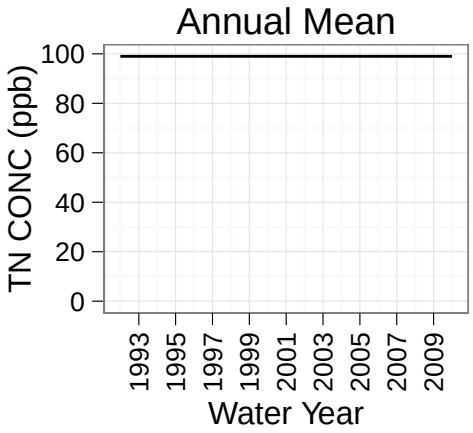


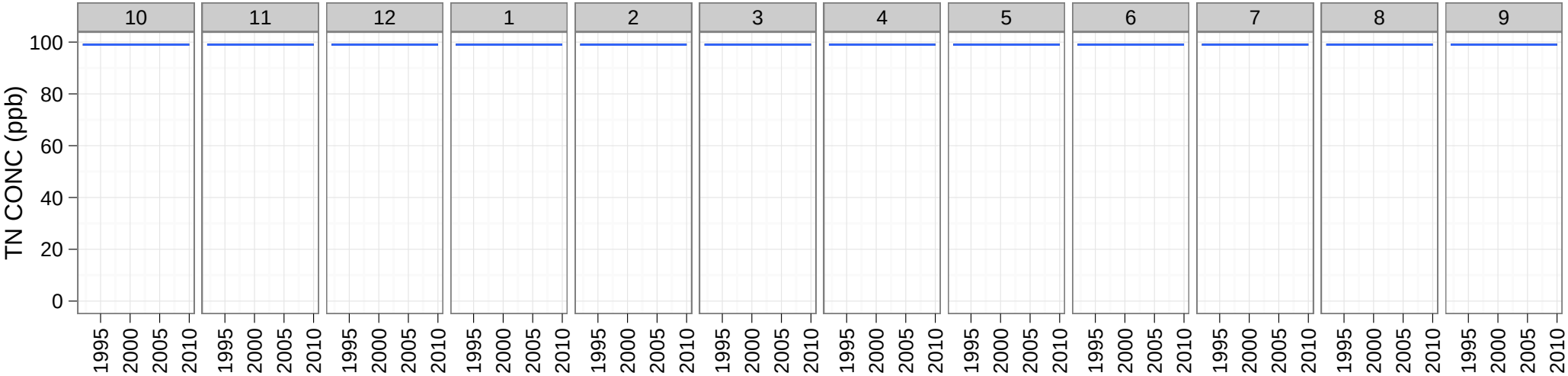


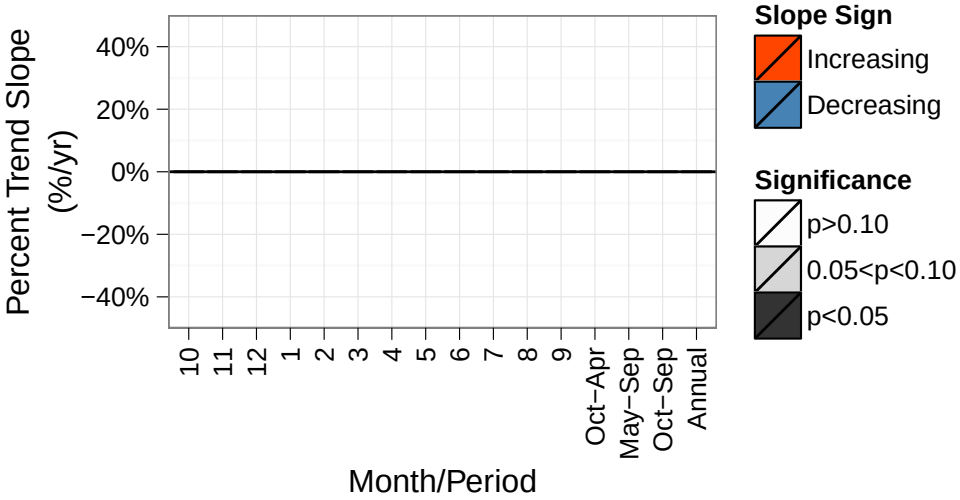

Trend Tests: Ungauged Inflows, TN, LOAD
Monthly Mean
TN LOAD (kg/d)
Date
Annual Mean
TN LOAD (kg/d)
Water Year
10
11
12
1
2
3
4
5
6
7
8
9
TN LOAD (kg/d)
Percent Trend Slope (%/yr)
Month/Period
Oct−Apr
May−Sep
Oct−Sep
Annual
Slope Sign
Increasing
Decreasing
Significance
p>0.10
0.05<p<0.10
p<0.05
Trend Slope (units/yr)
Month/Period

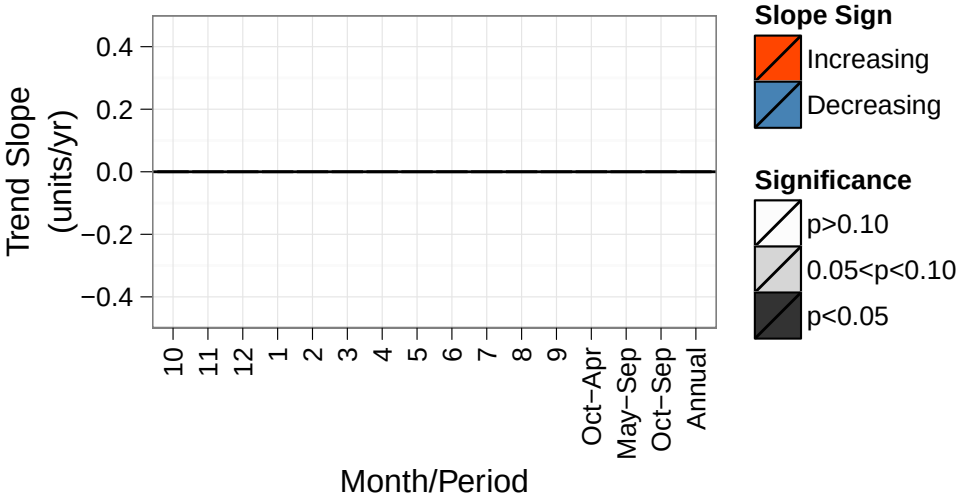
Trend Tests: Ungauged Inflows, TN, CONC



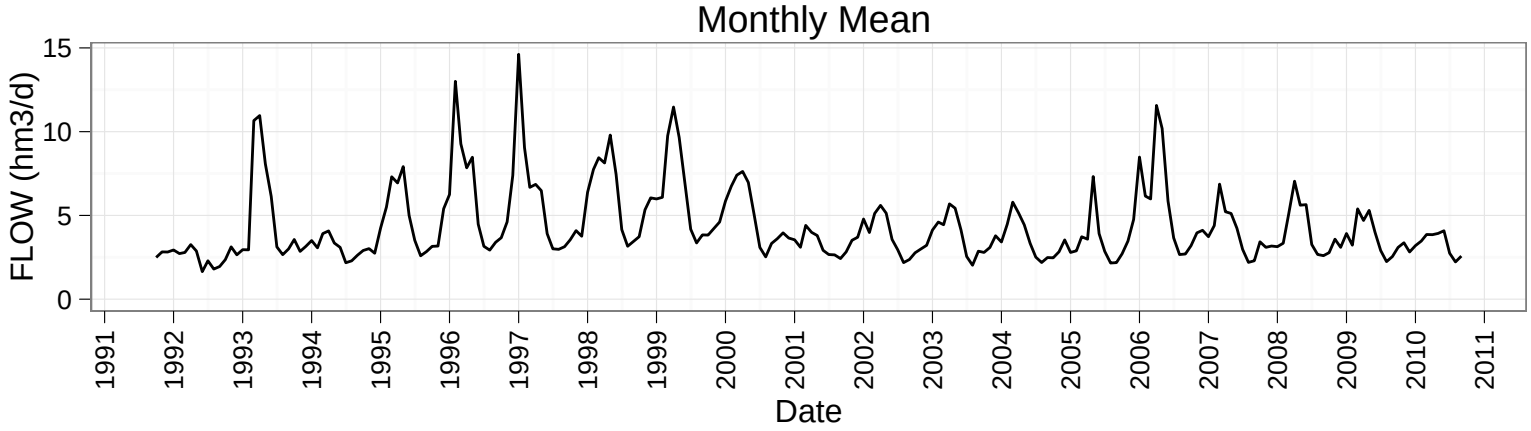


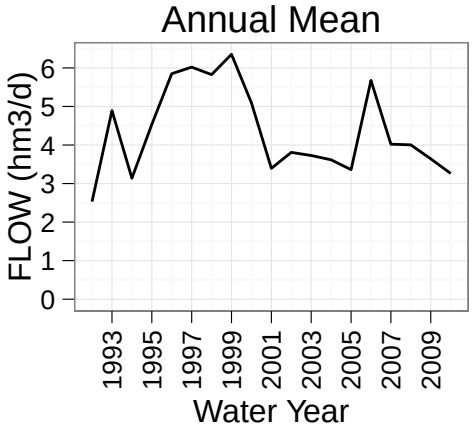


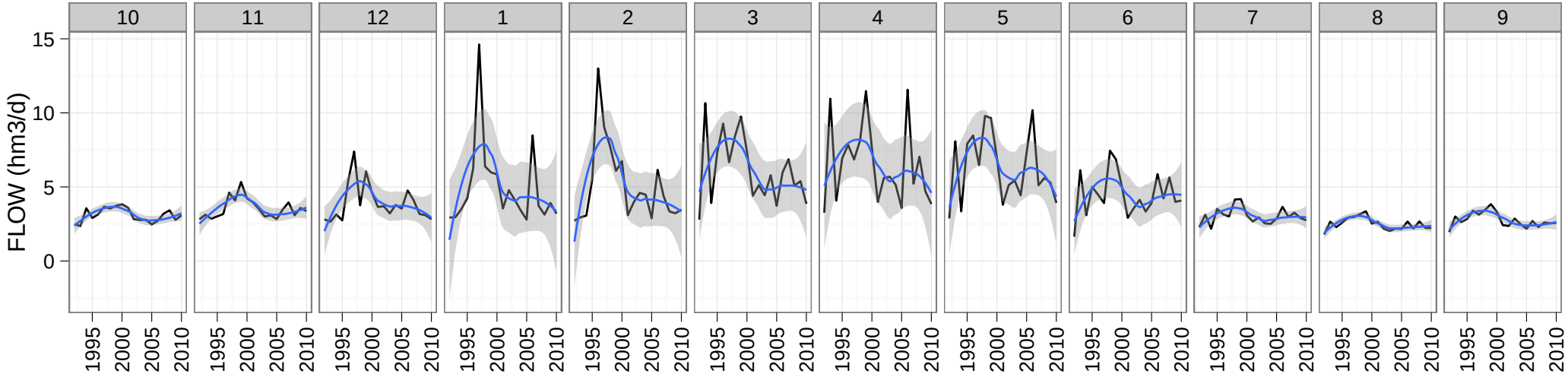


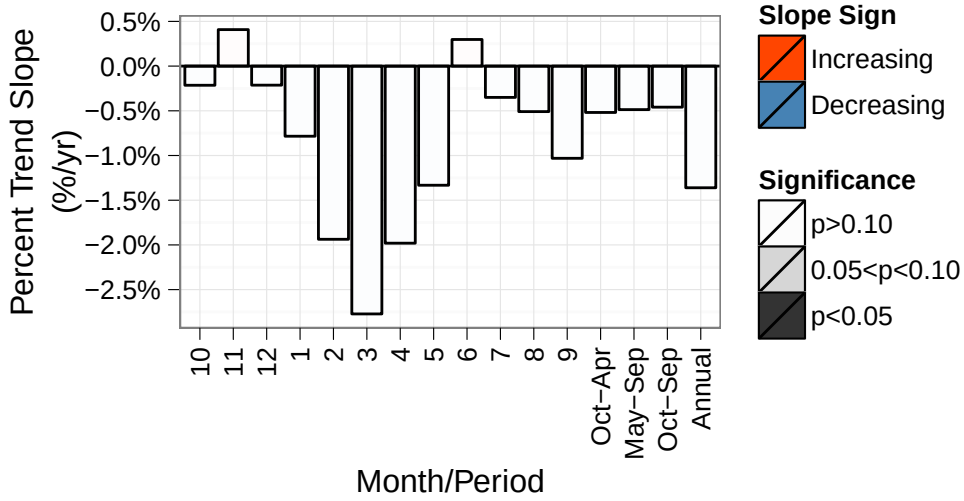


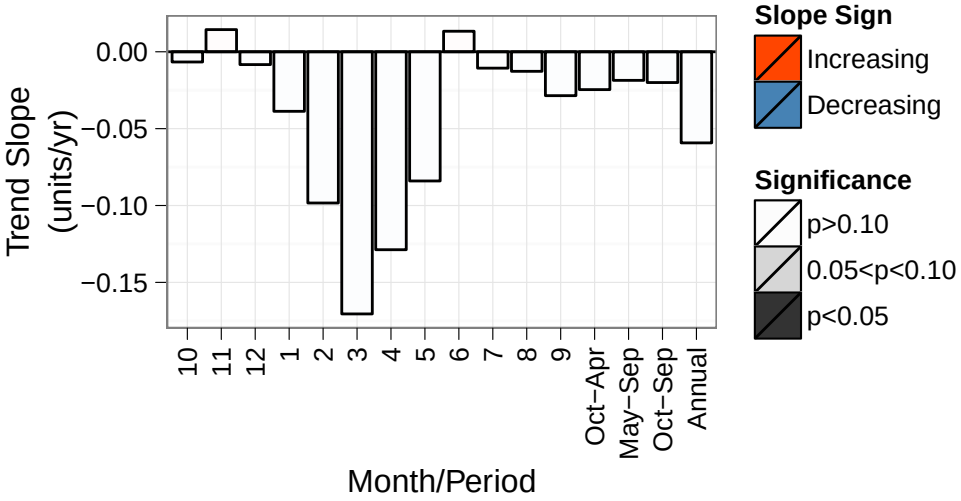
Trend Tests: Total External Inflows, FLOW



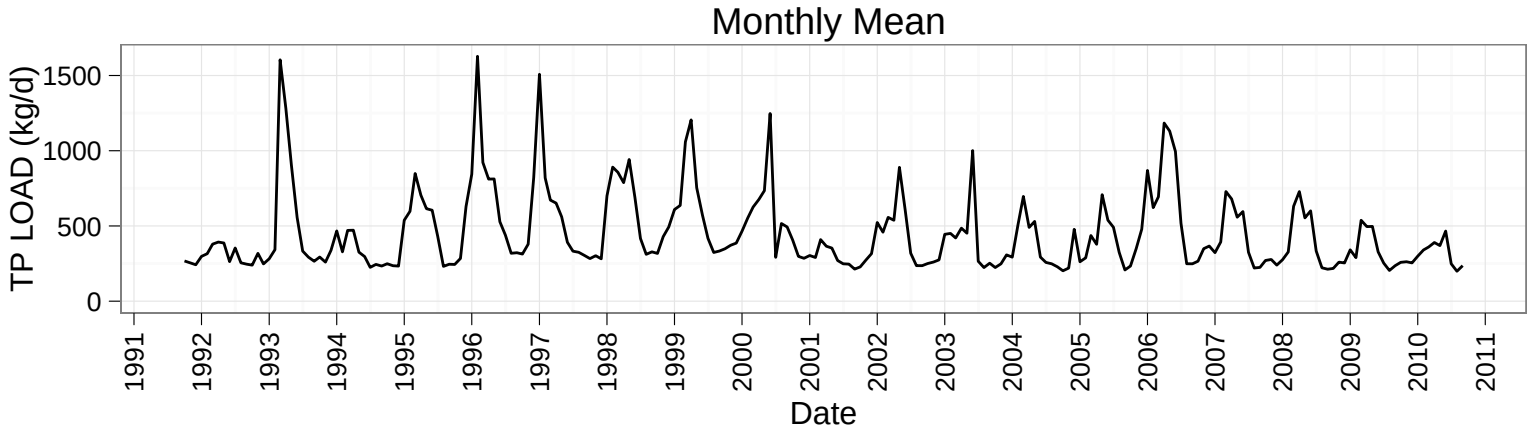


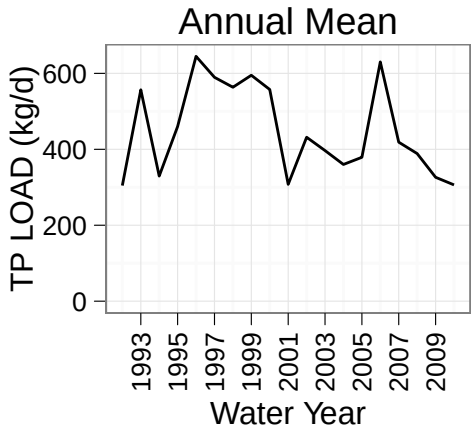


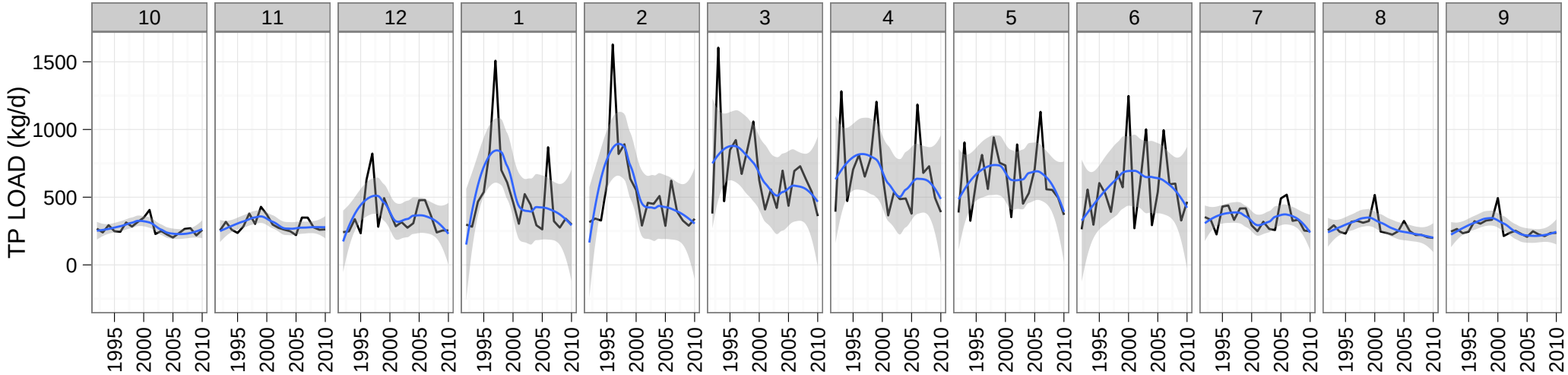


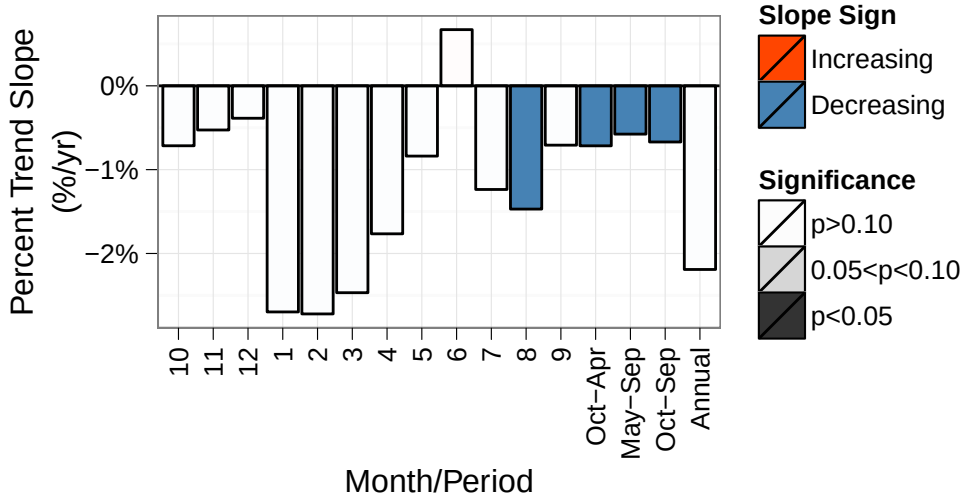


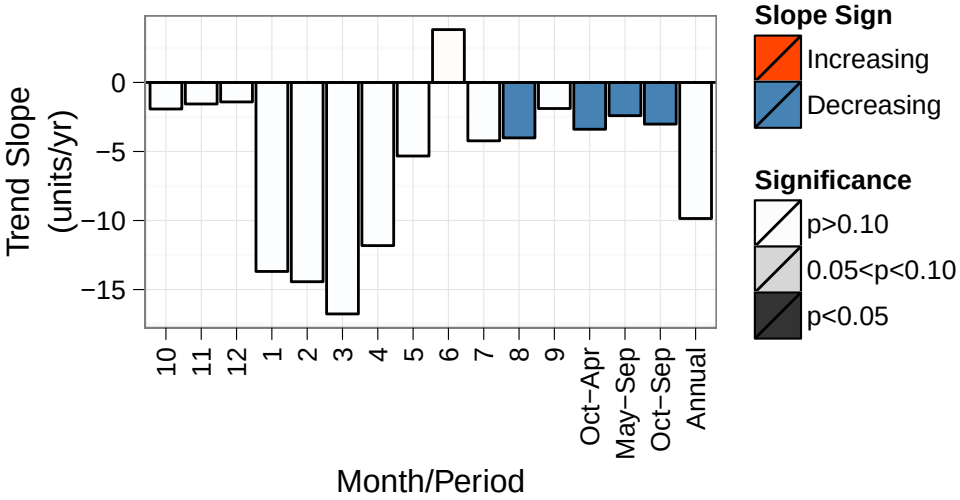
Trend Tests: Total External Inflows, TP, LOAD



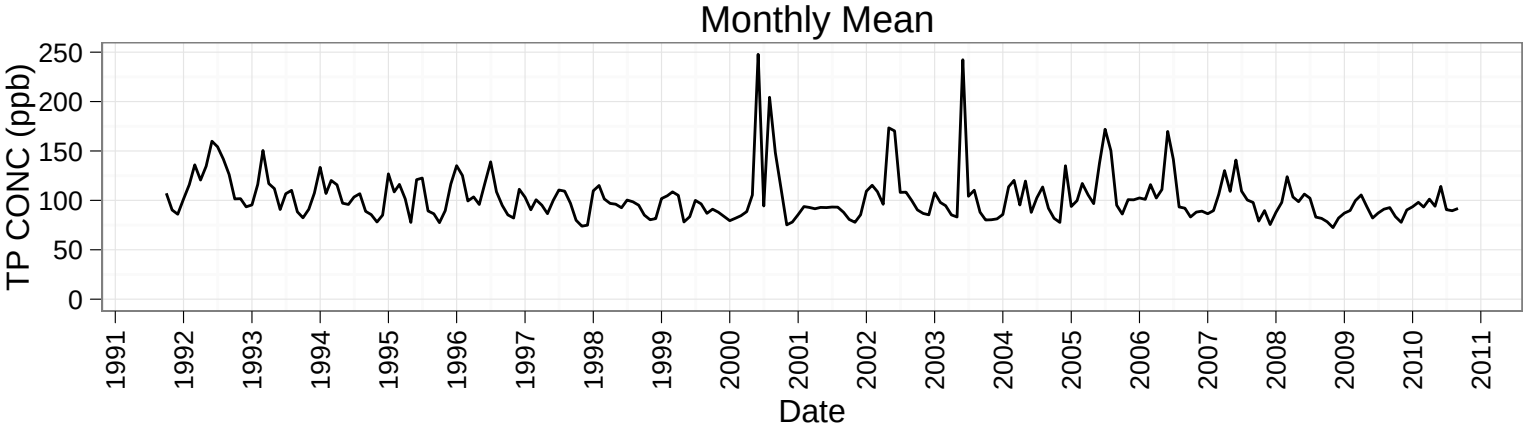


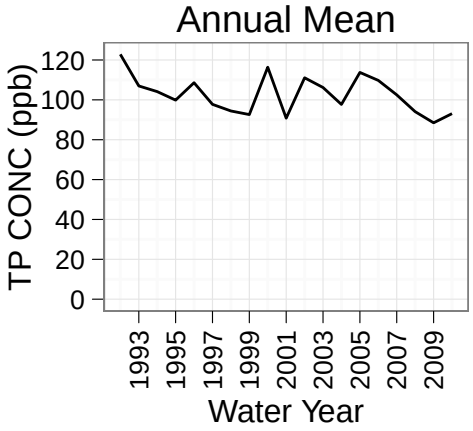


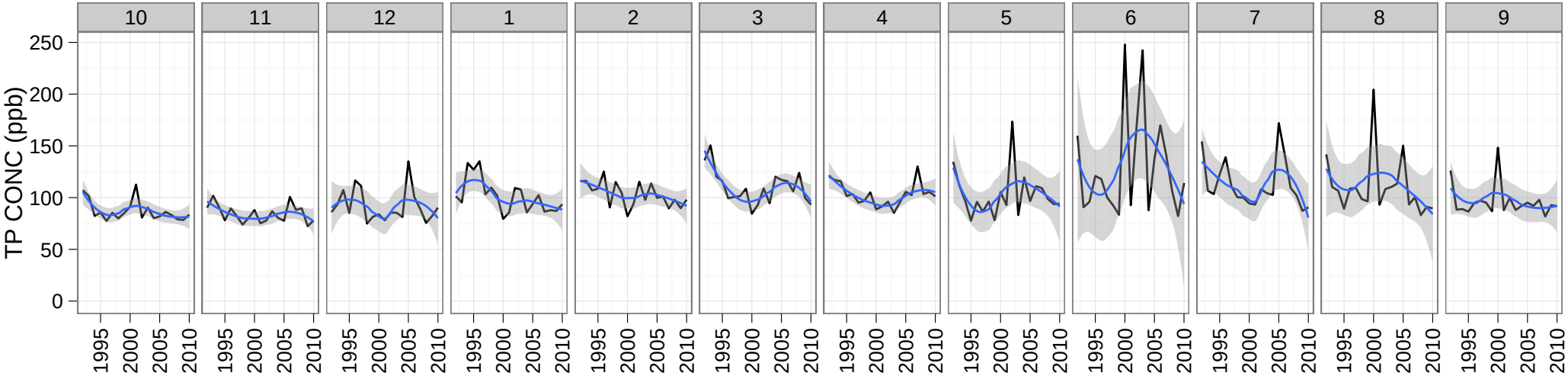


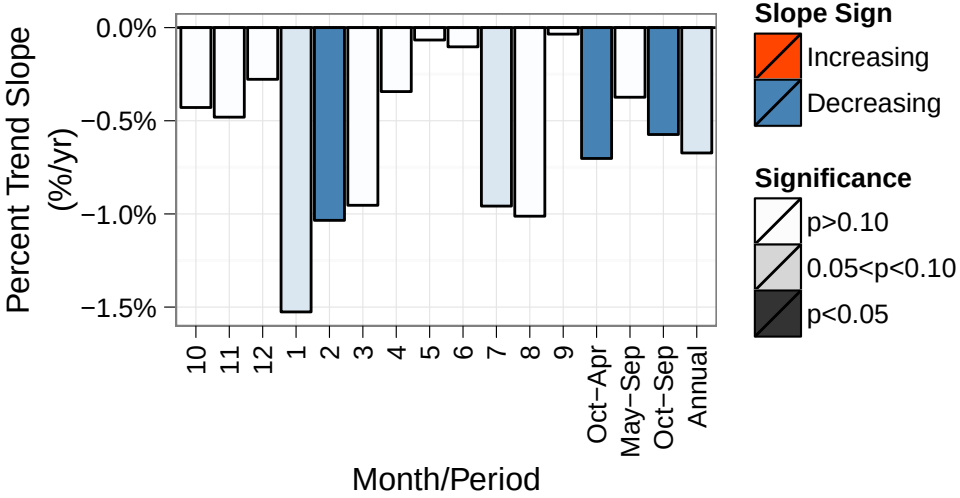


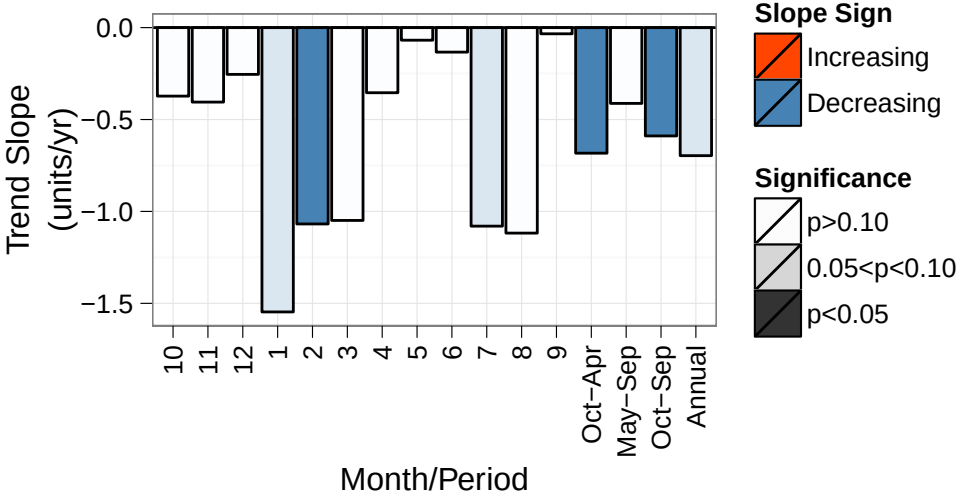
Trend Tests: Total External Inflows, TP, CONC



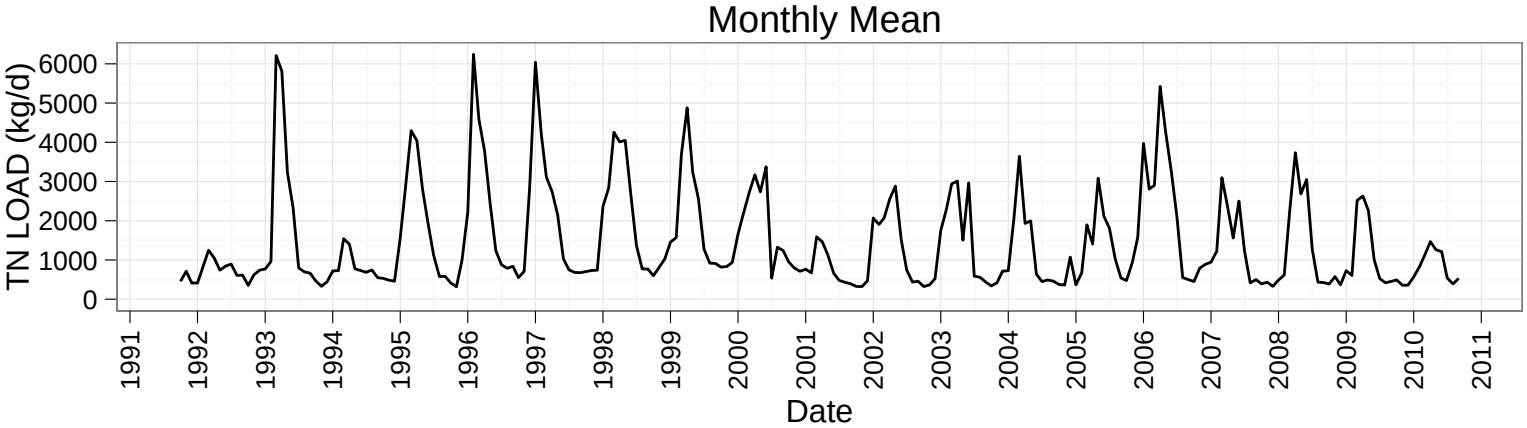


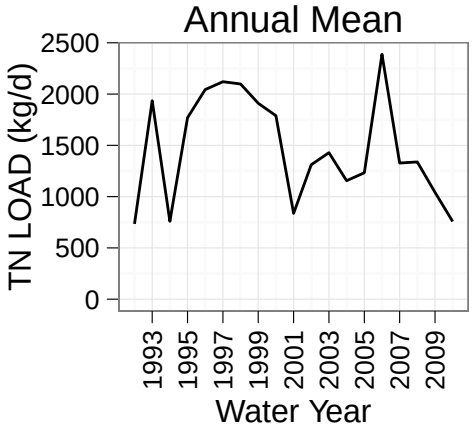


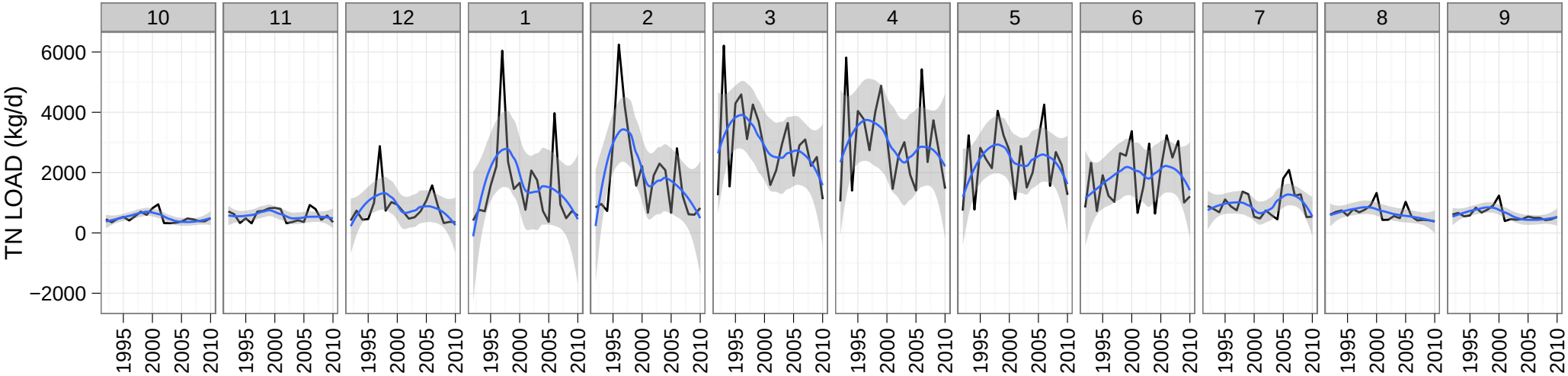


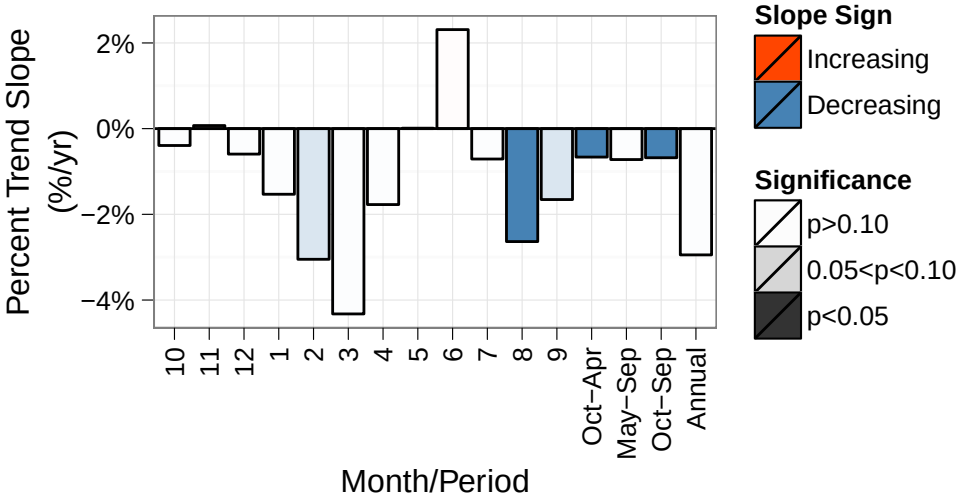


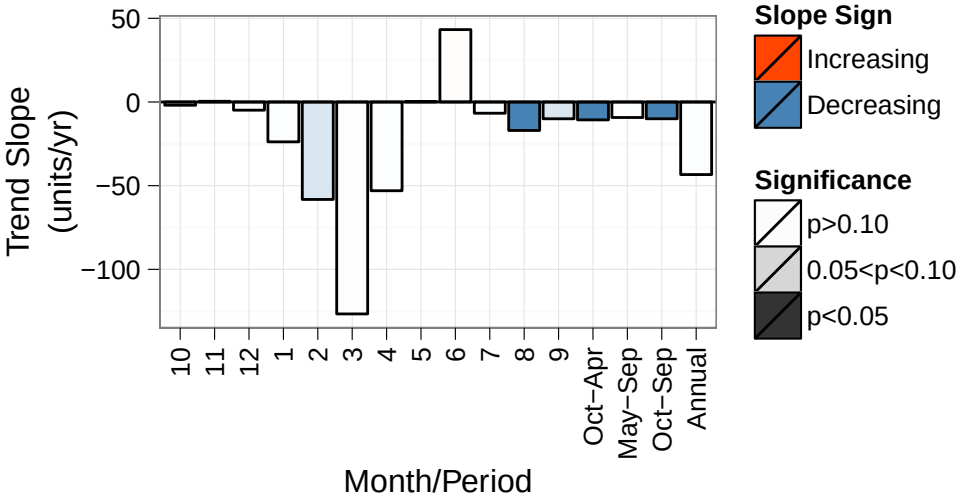
Trend Tests: Total External Inflows, TN, LOAD



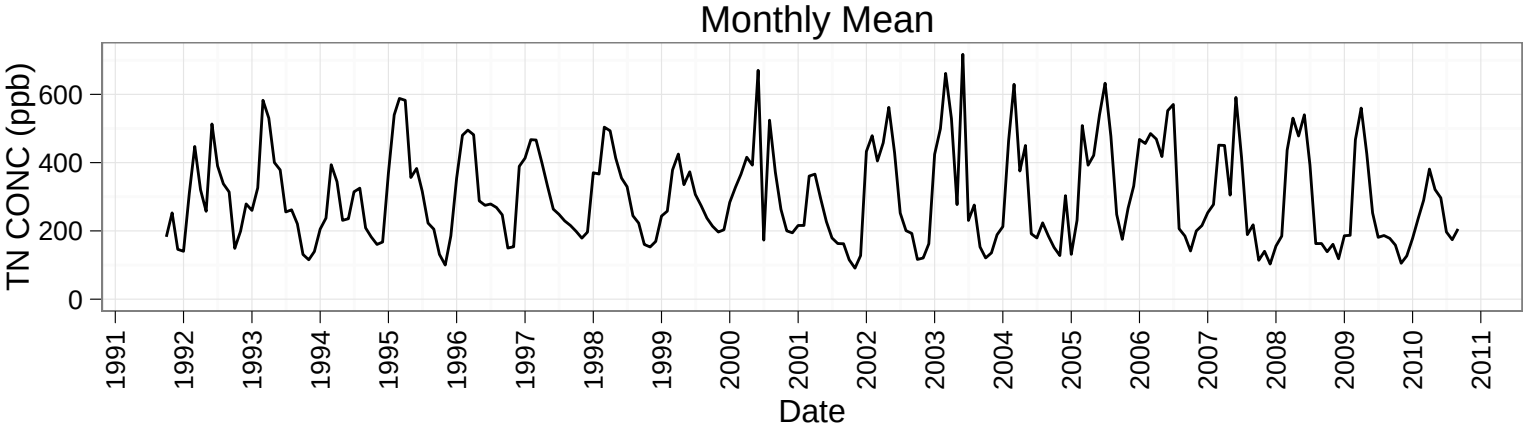


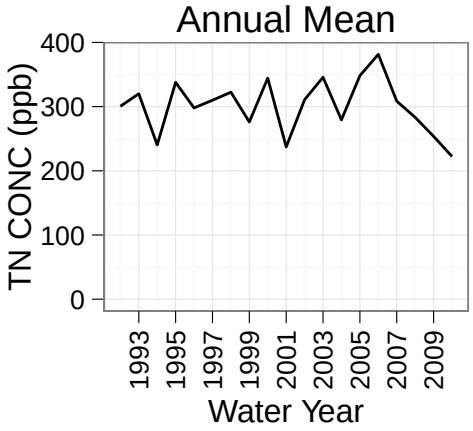


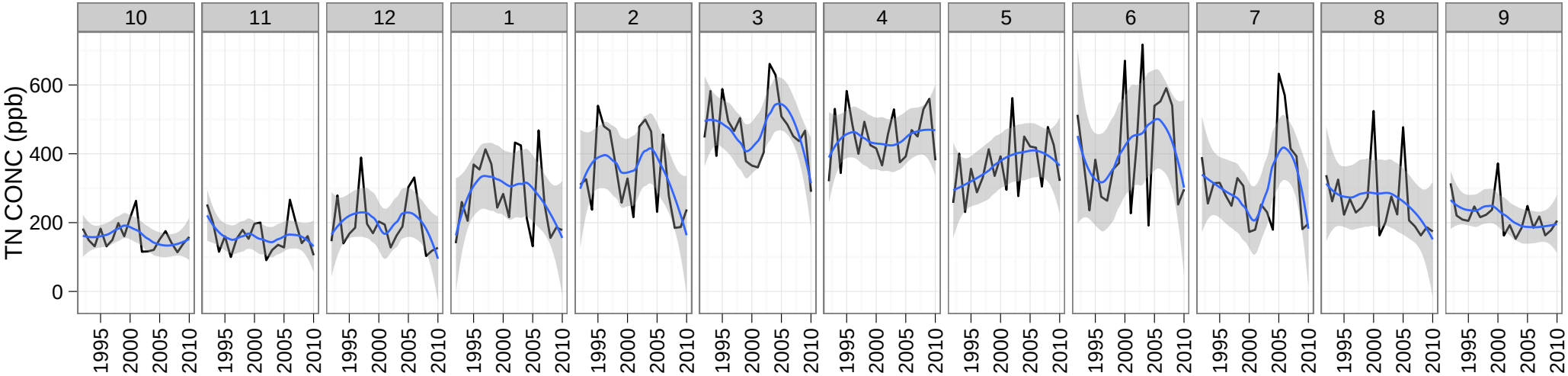


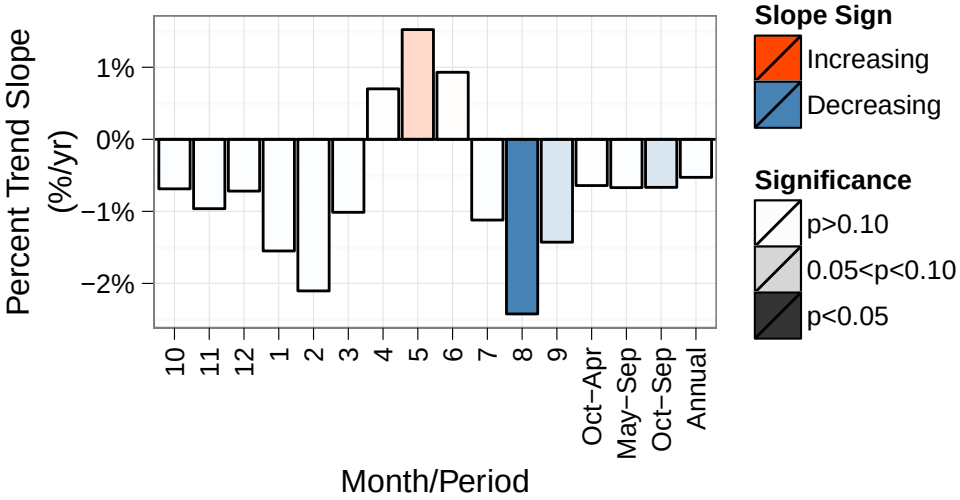


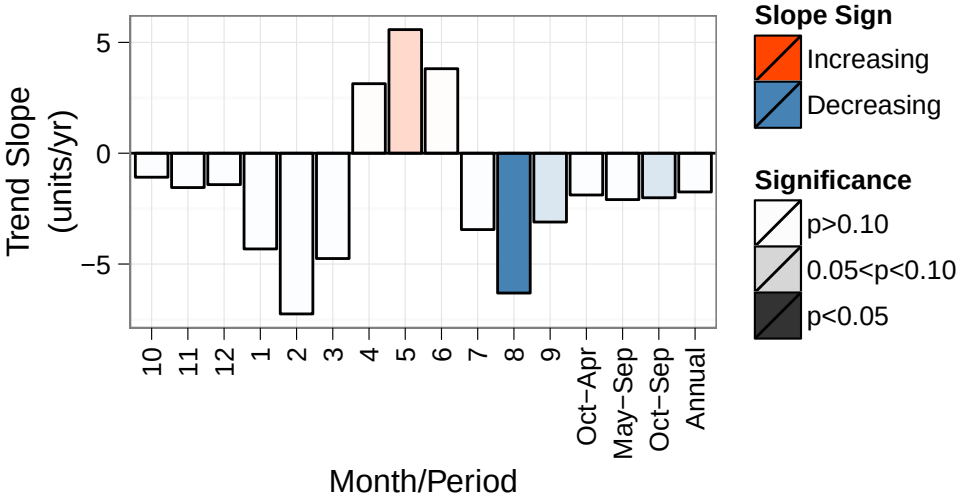
Trend Tests: Total External Inflows, TN, CONC



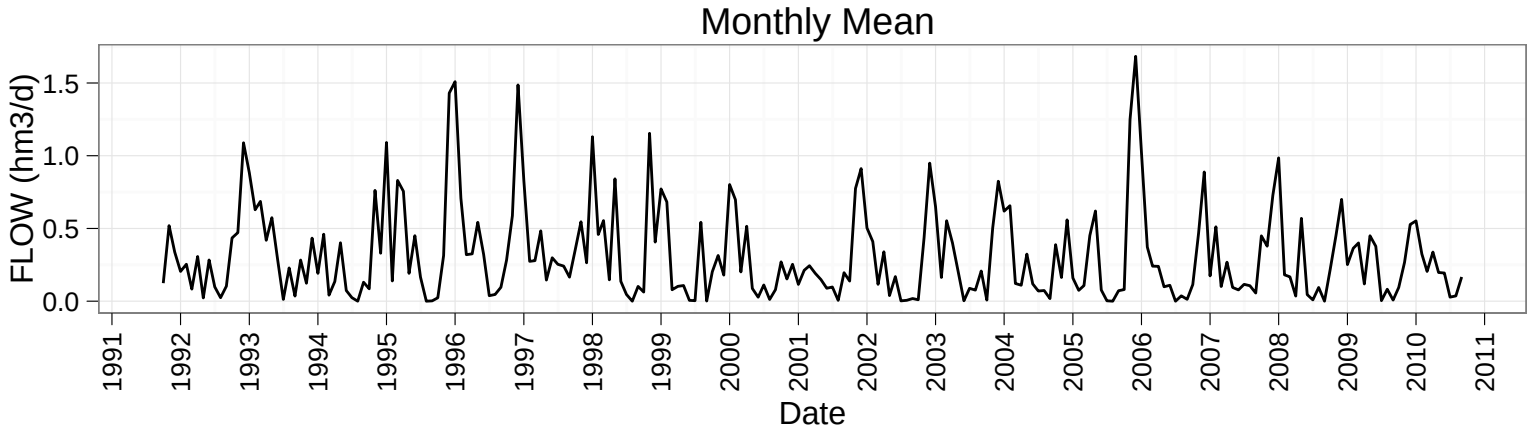


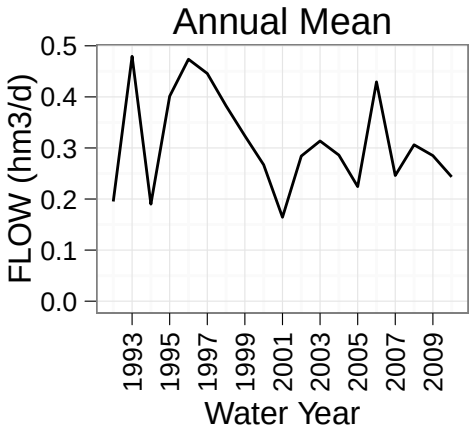


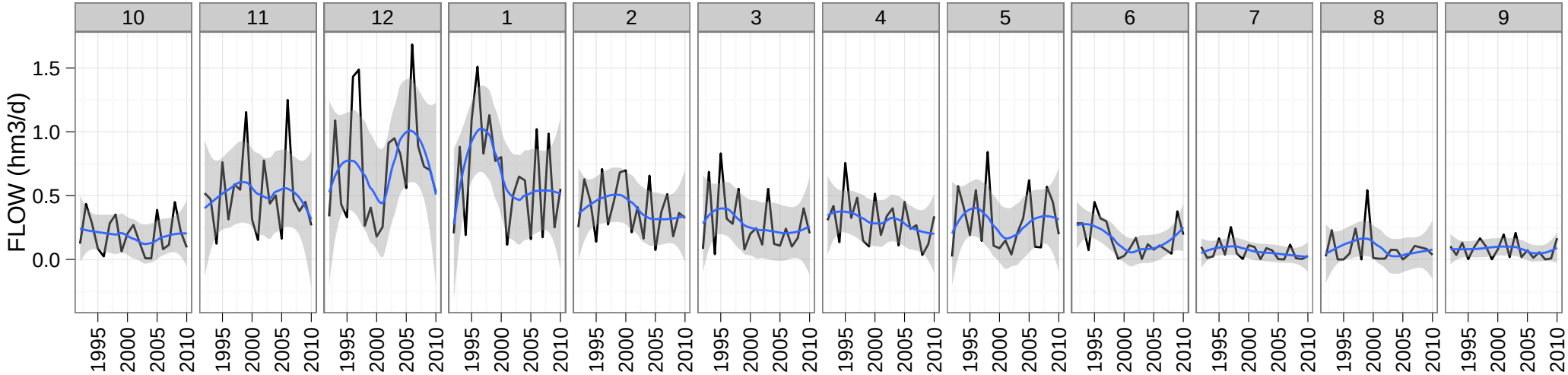


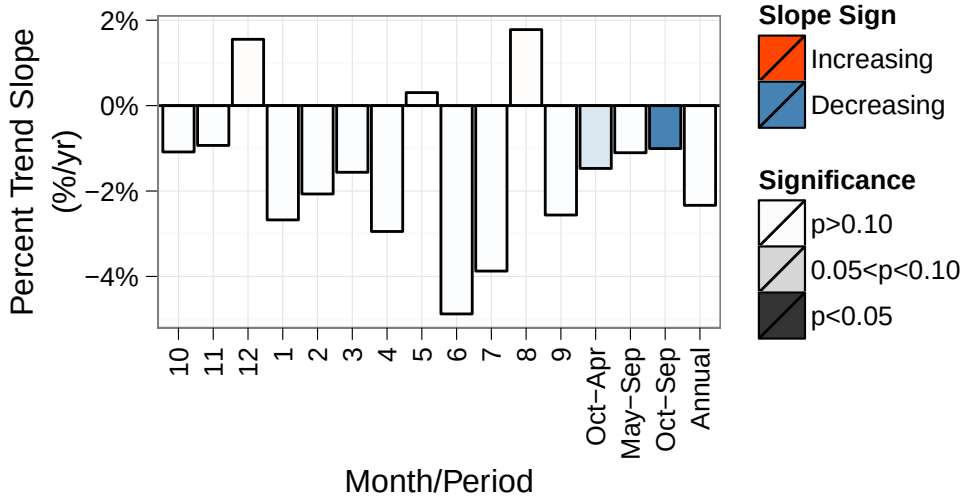


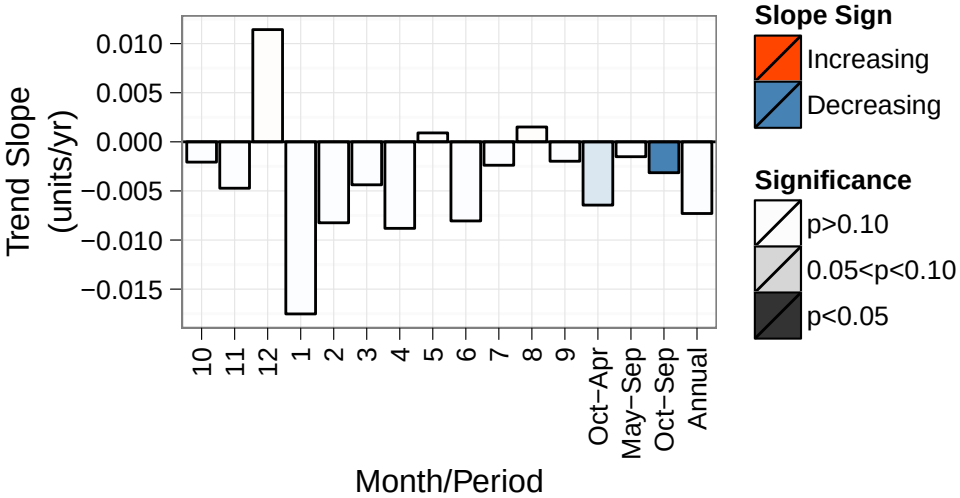
Trend Tests: Precipitation, FLOW



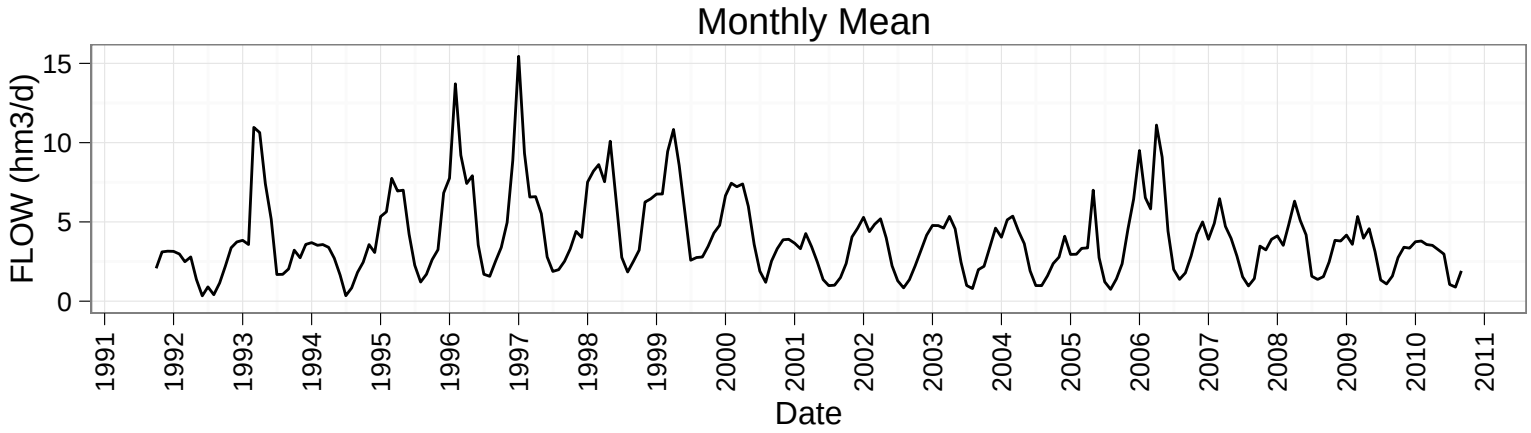


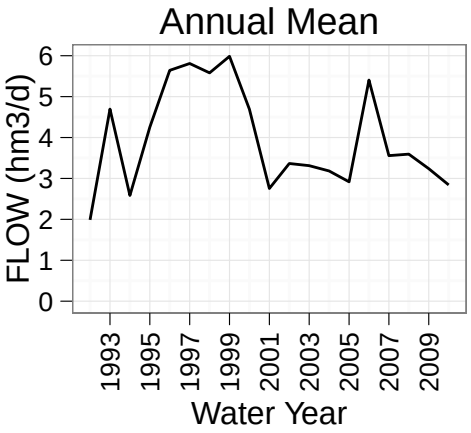


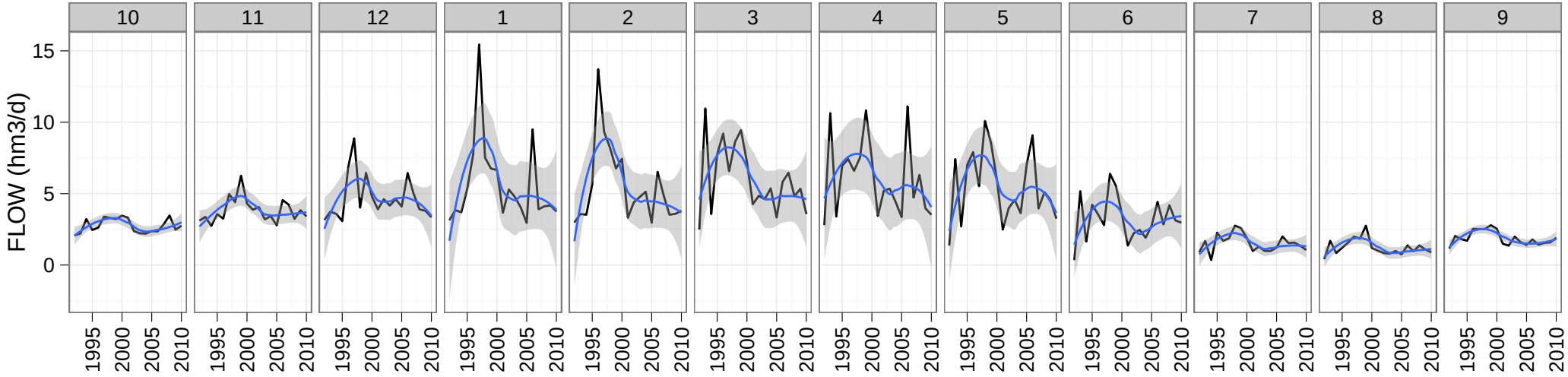


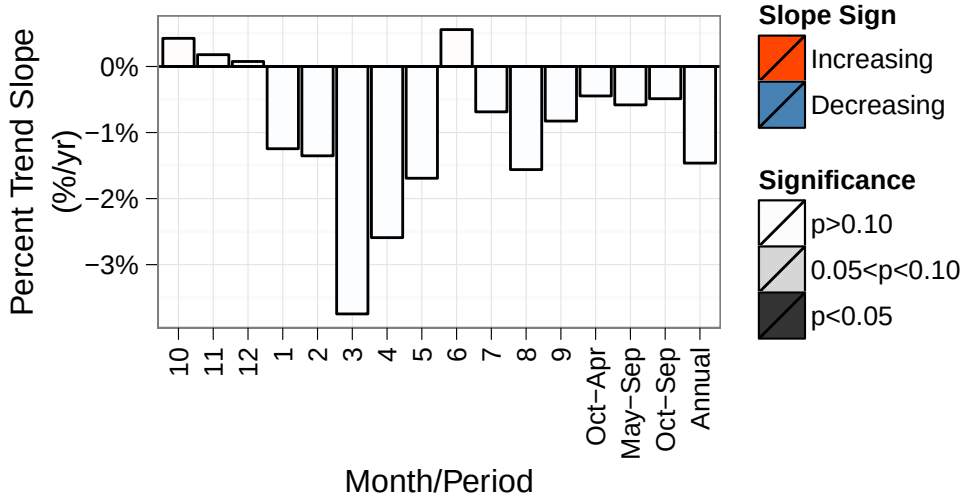


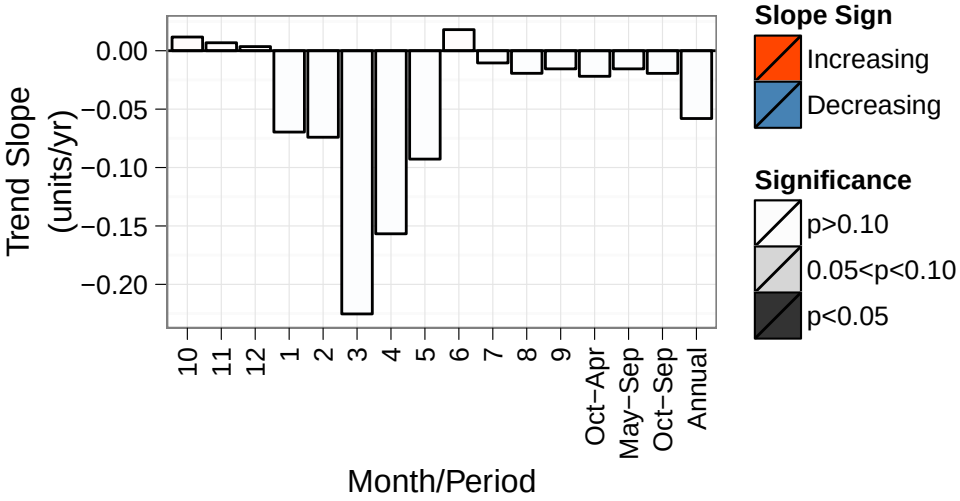
Trend Tests: Net Inflow, FLOW



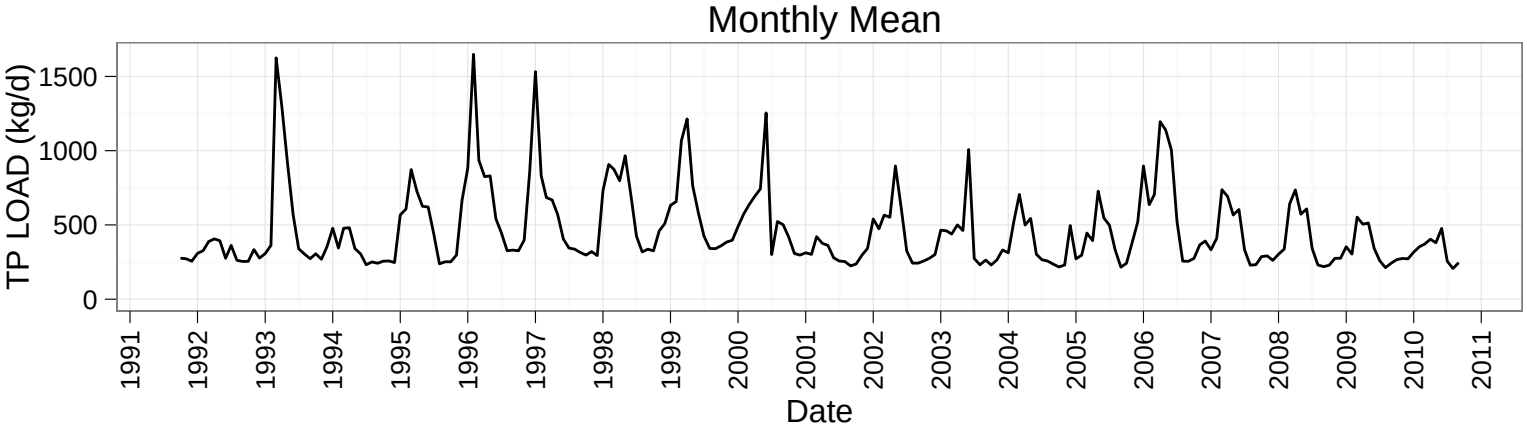


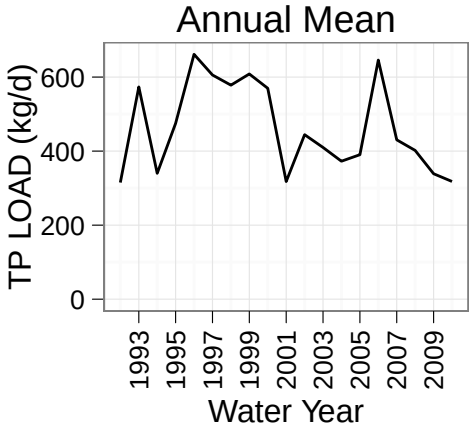


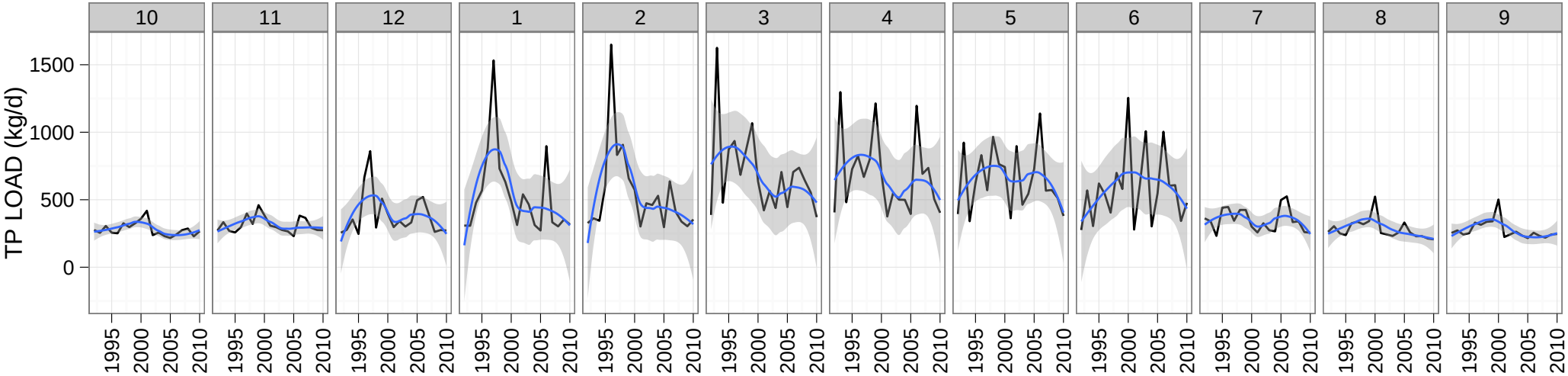


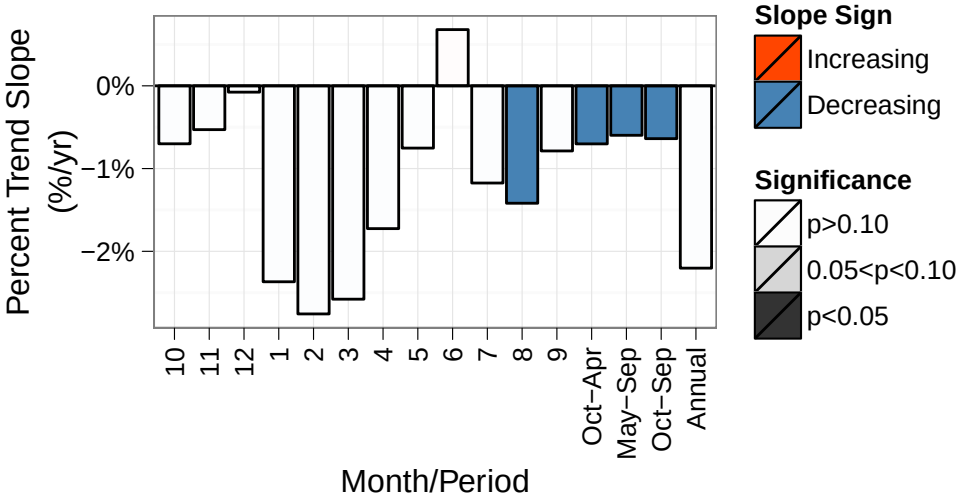


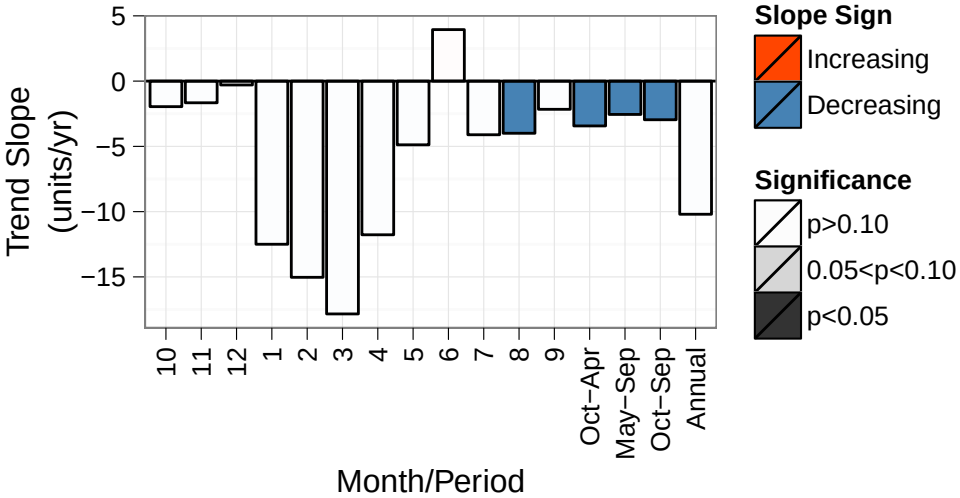
Trend Tests: Net Inflow, TP, LOAD



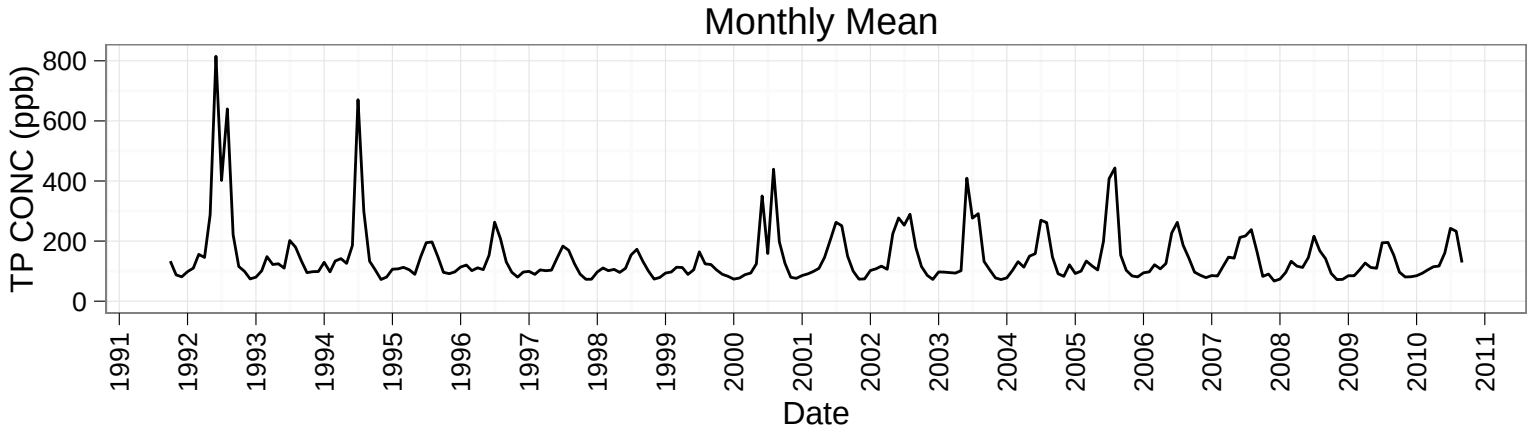


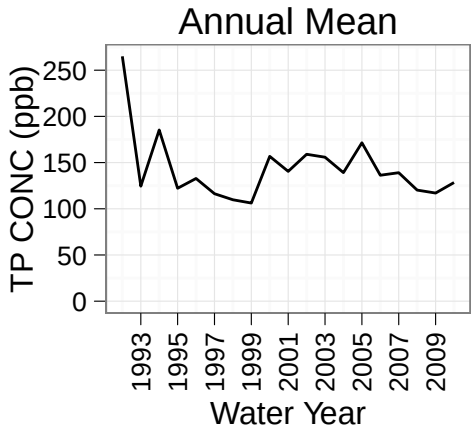


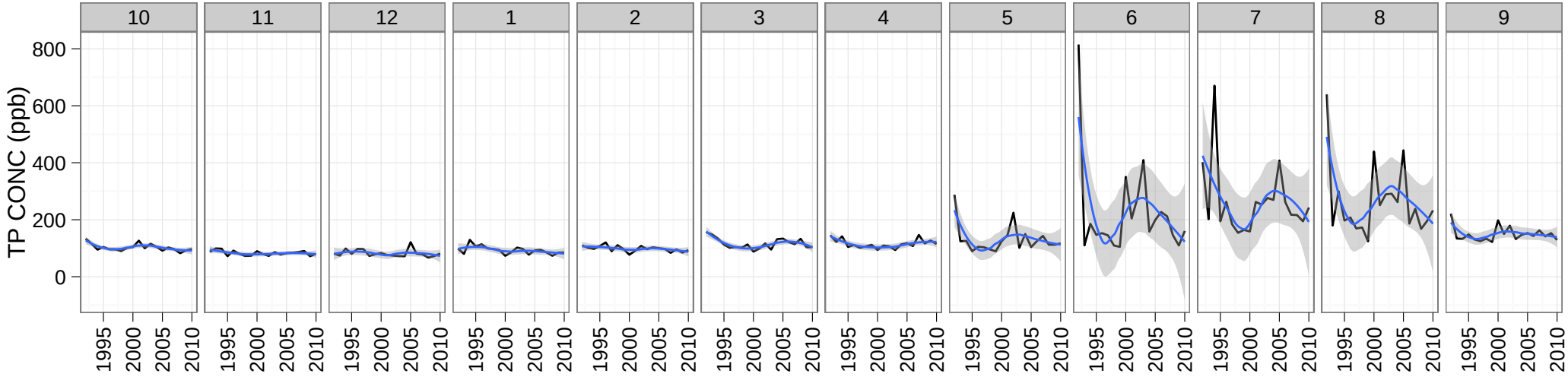


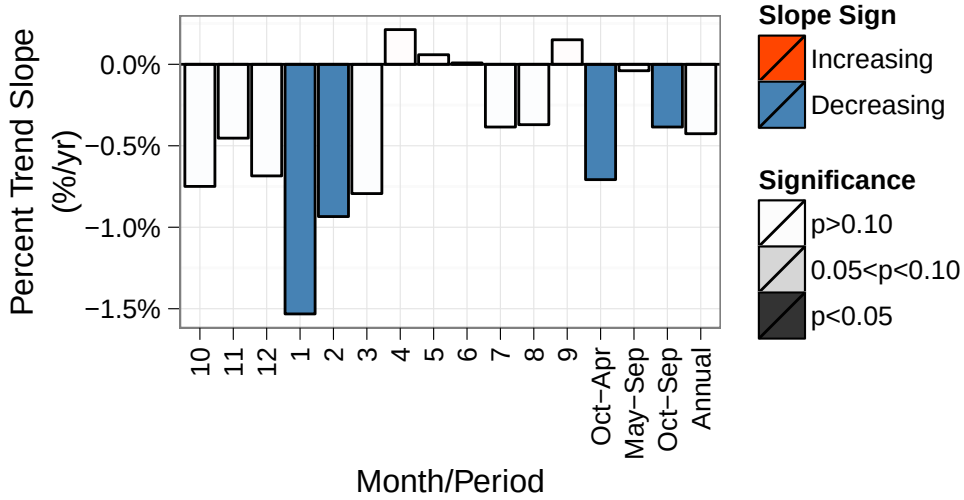


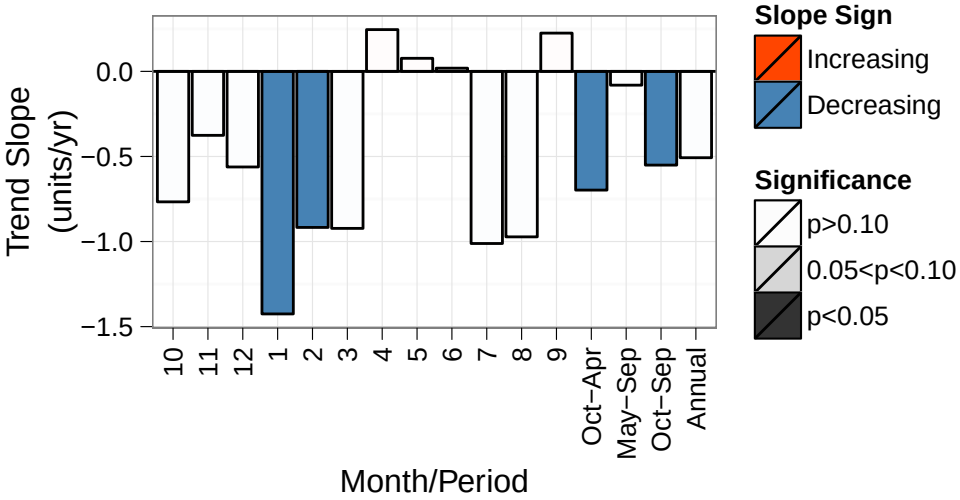
Trend Tests: Net Inflow, TP, CONC

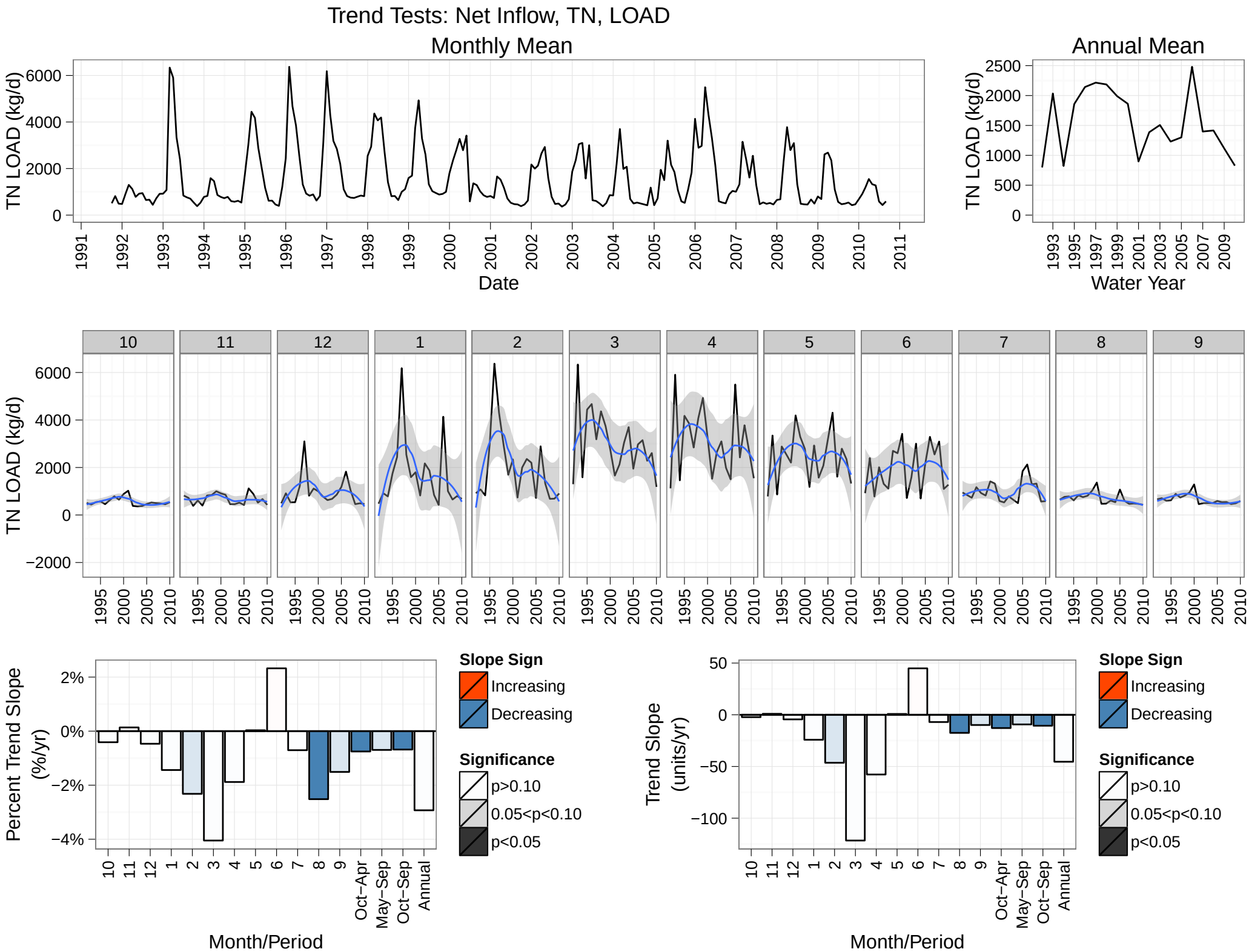




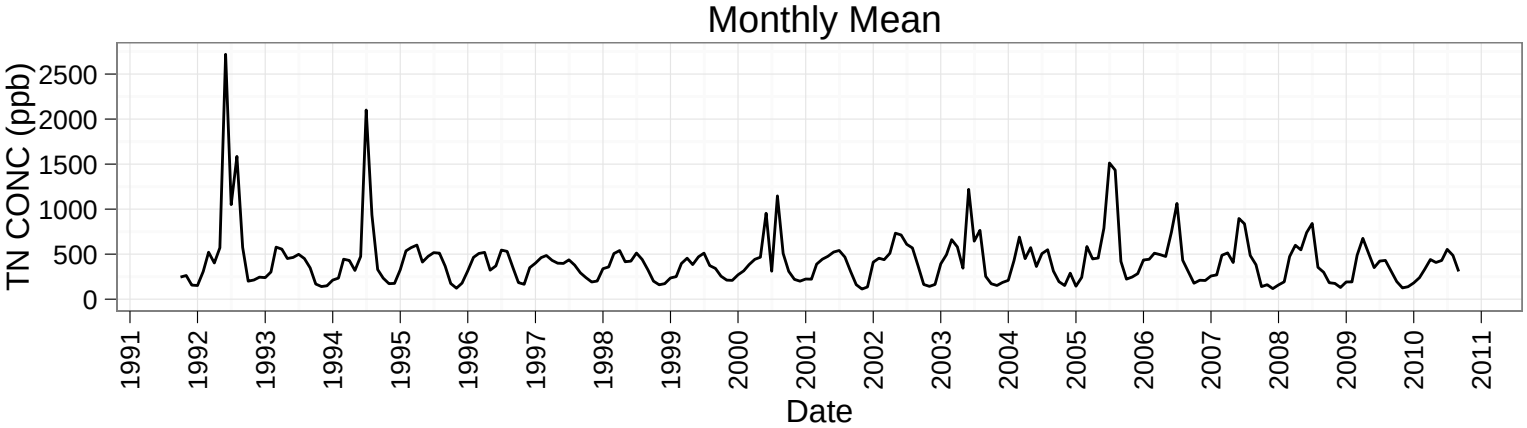


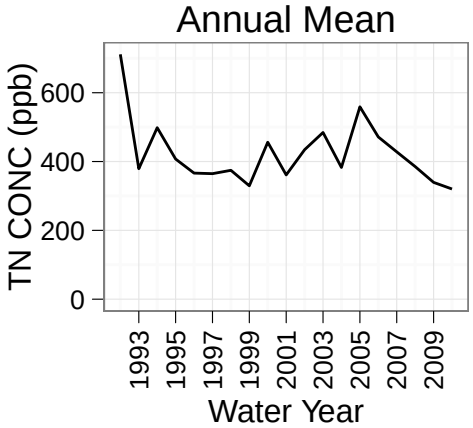


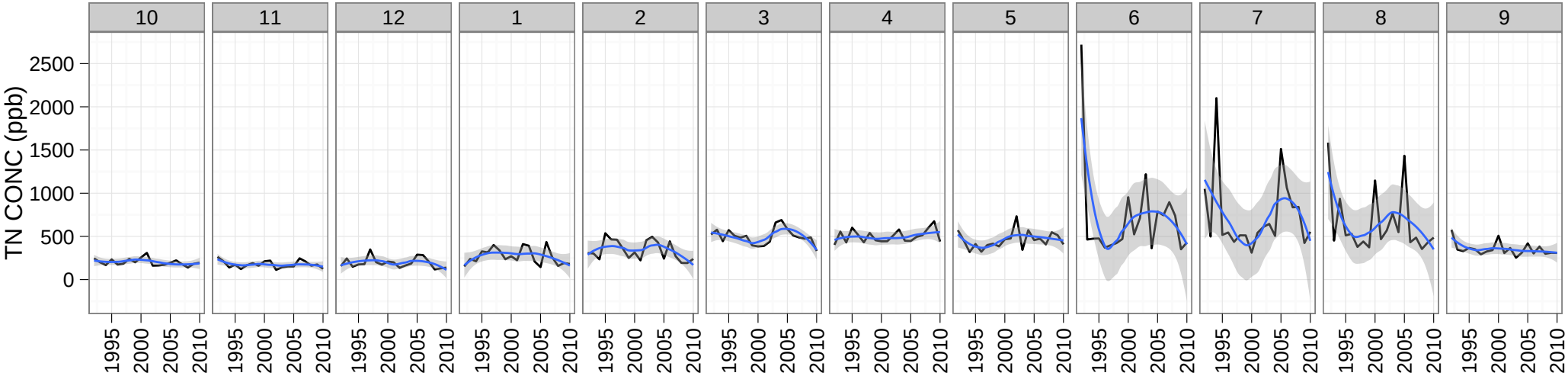


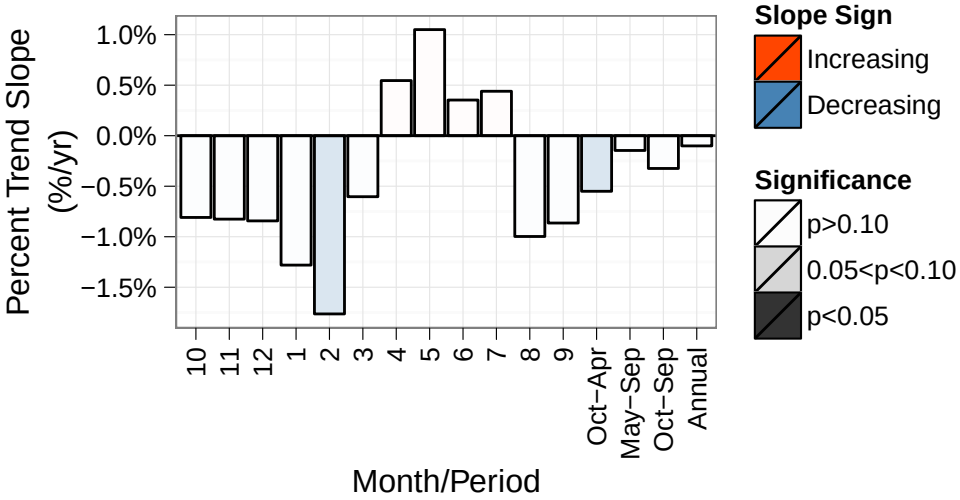

Trend Tests: Net Inflow, TN, LOAD
Monthly Mean
TN LOAD (kg/d)
Date
Annual Mean
TN LOAD (kg/d)
Water Year
Percent Trend Slope (%/yr)
Month/Period
Trend Slope (units/yr)
Month/Period
Slope Sign
Increasing
Decreasing
Significance
p>0.10
0.05<p<0.10
p<0.05
Oct−Apr
May−Sep
Oct−Sep
Annual

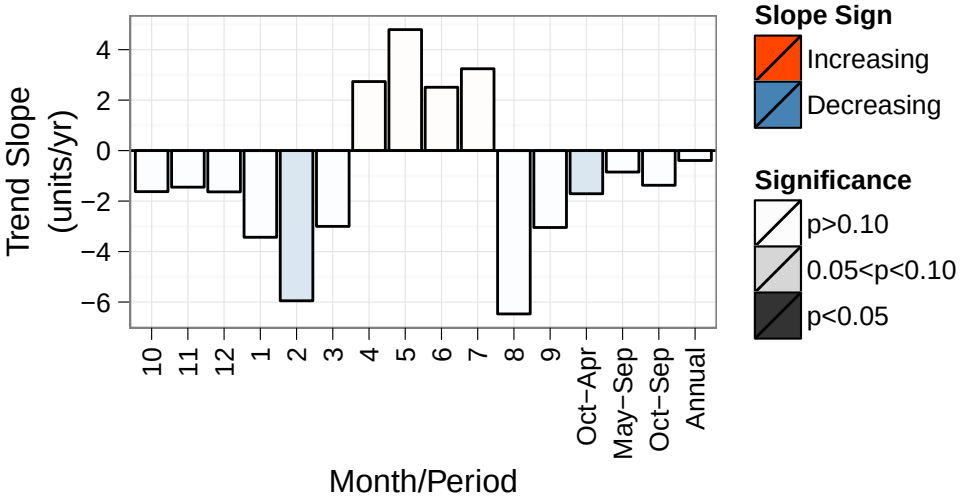
Trend Tests: Net Inflow, TN, CONC



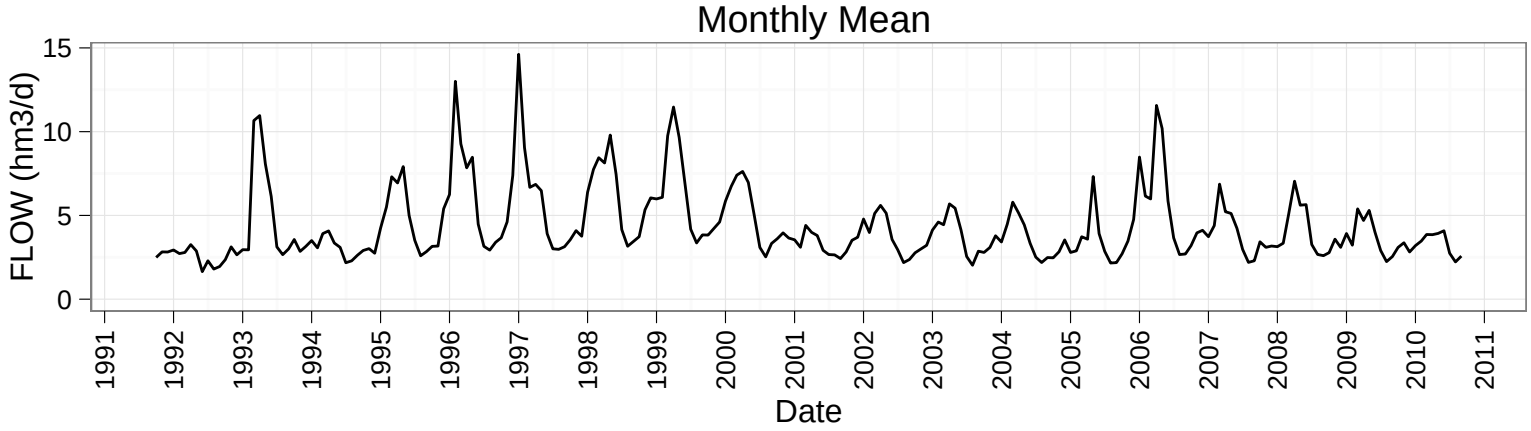


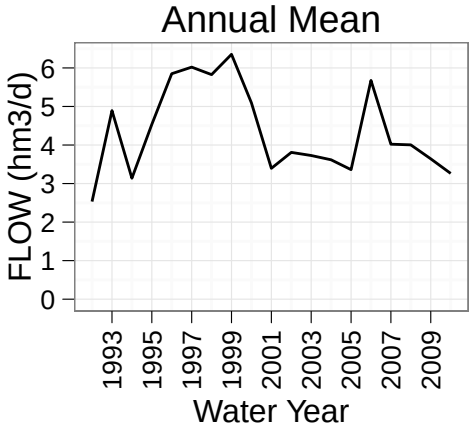


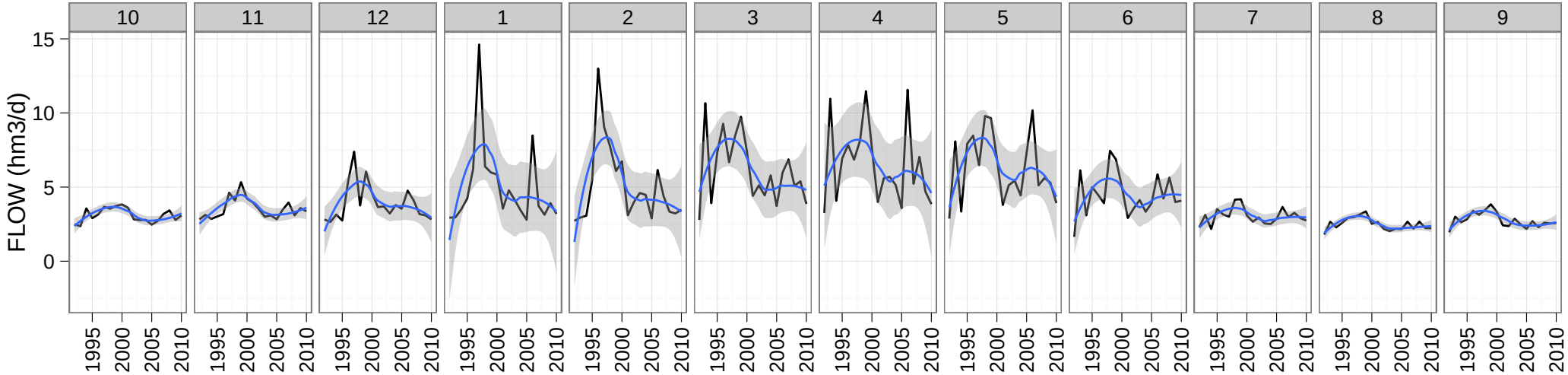


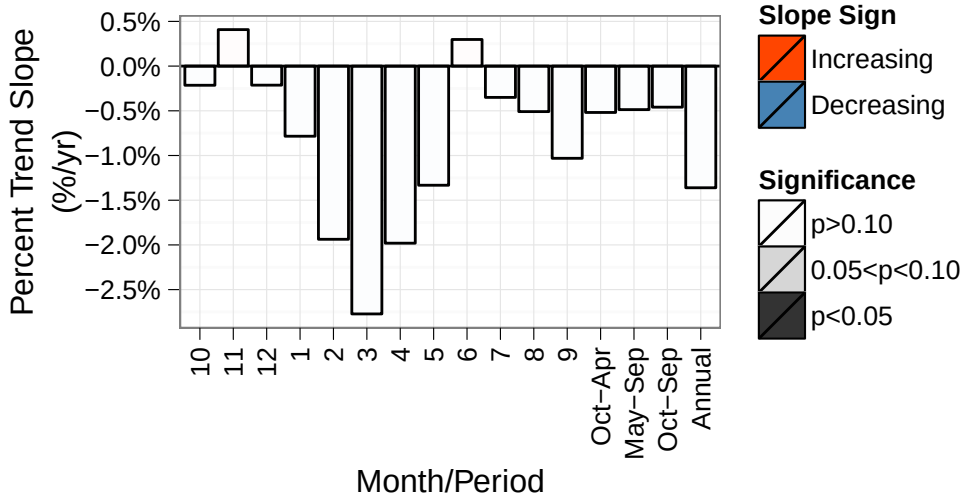


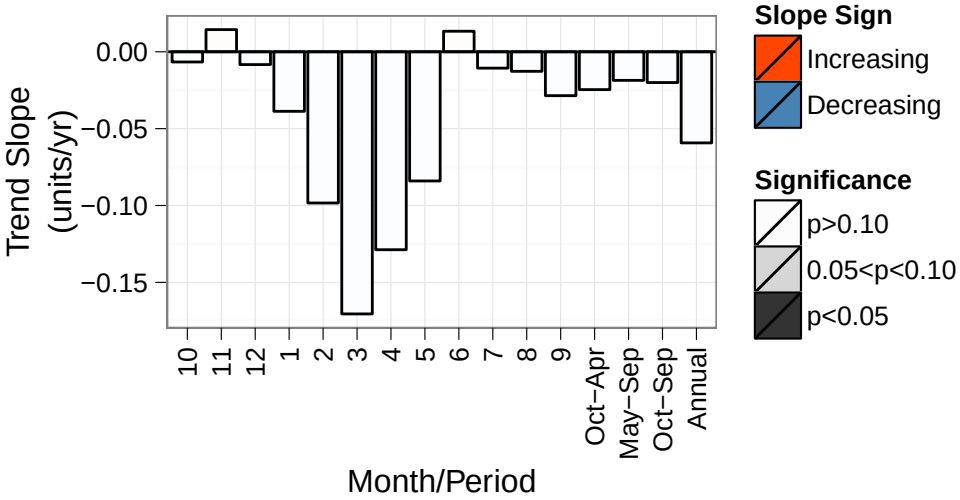
Trend Tests: Anthropogenic Sources, FLOW



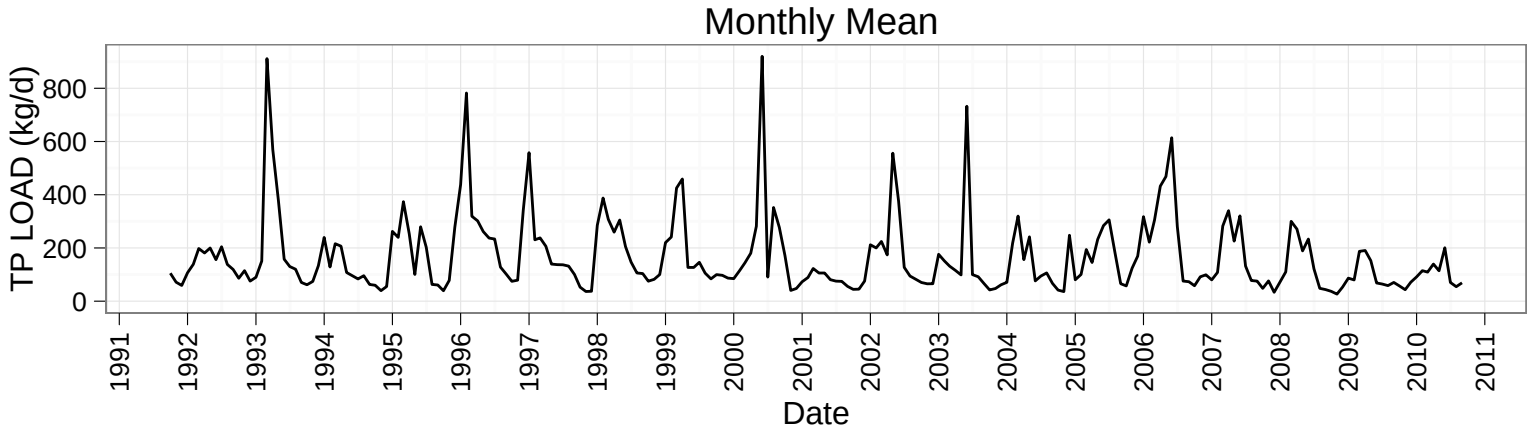


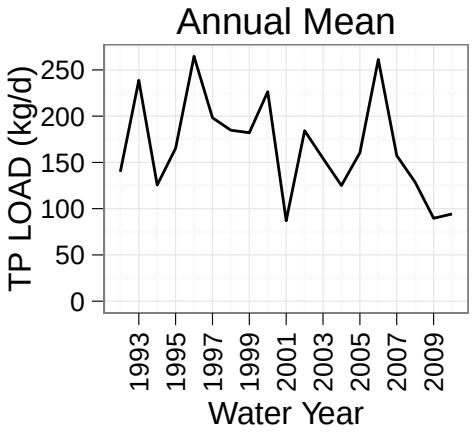


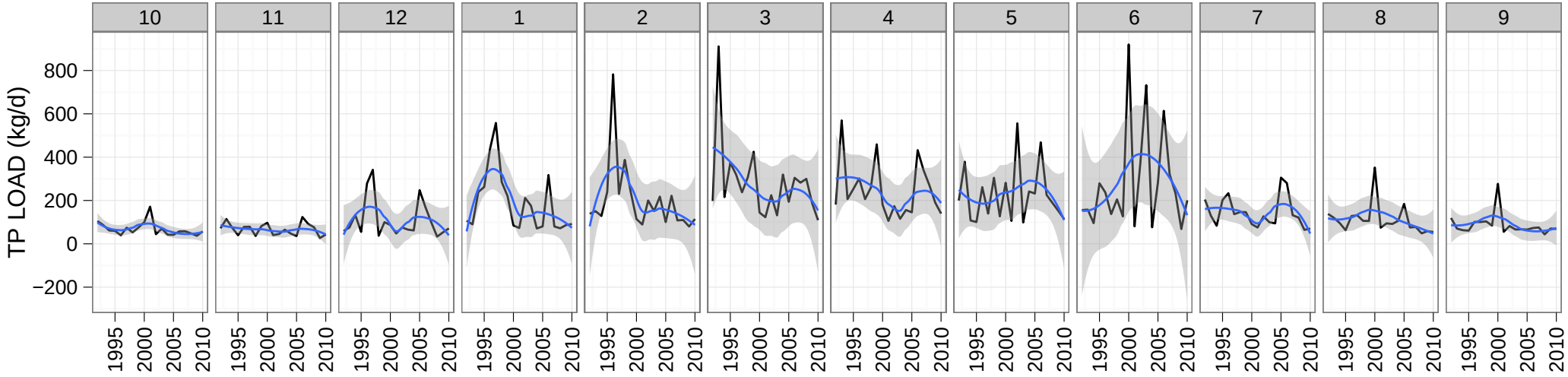


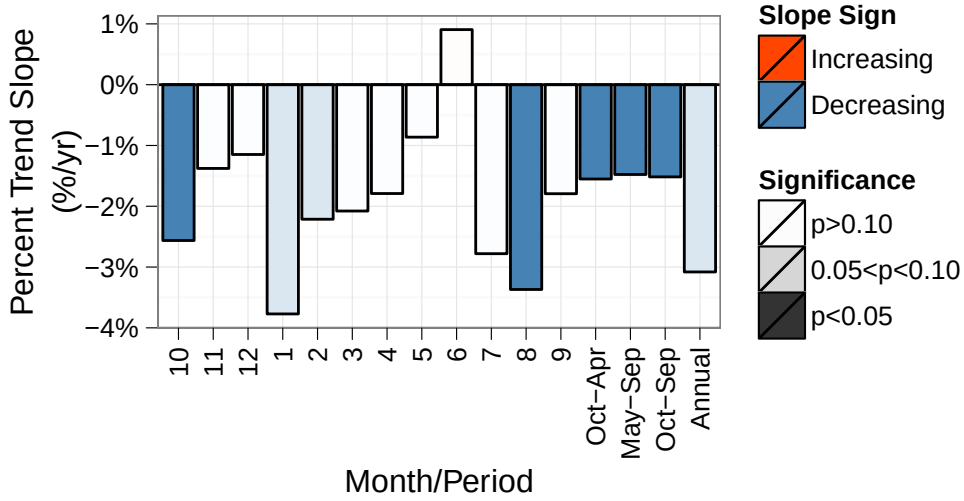


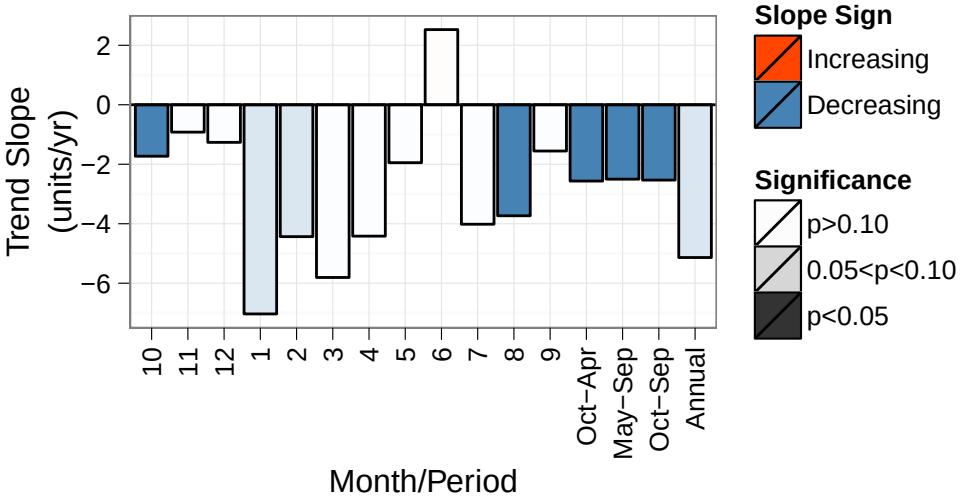
Trend Tests: Anthropogenic Sources, TP, LOAD



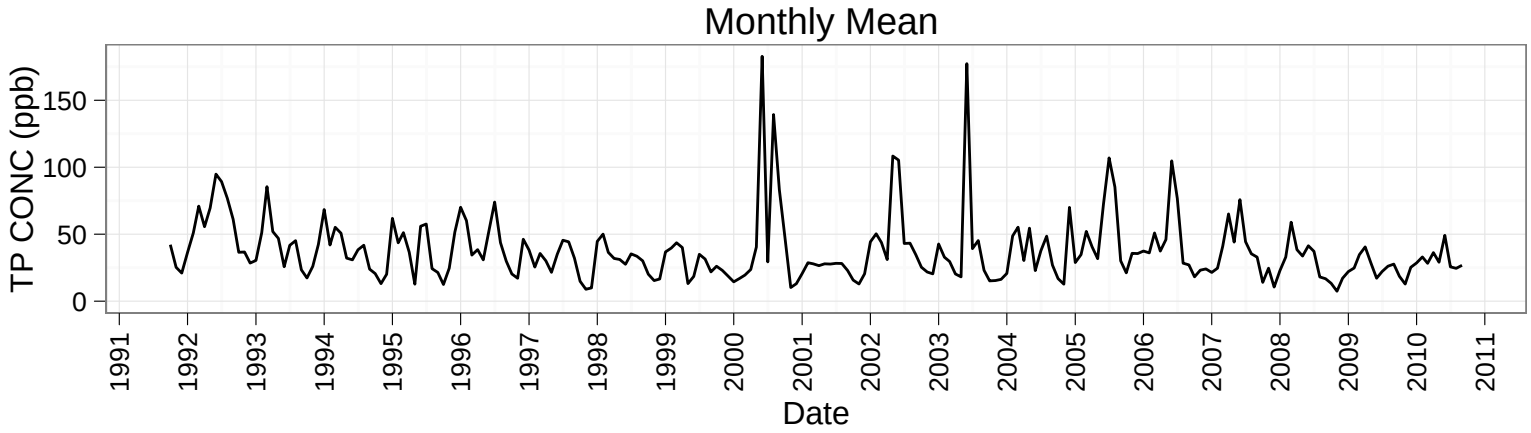


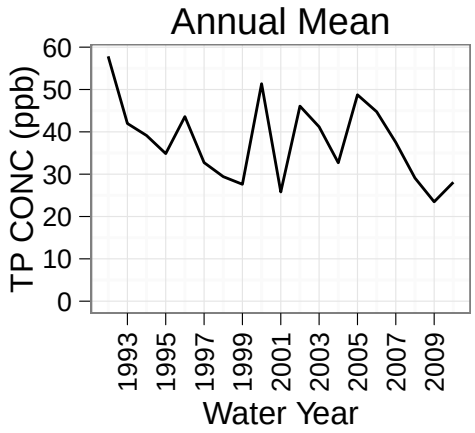


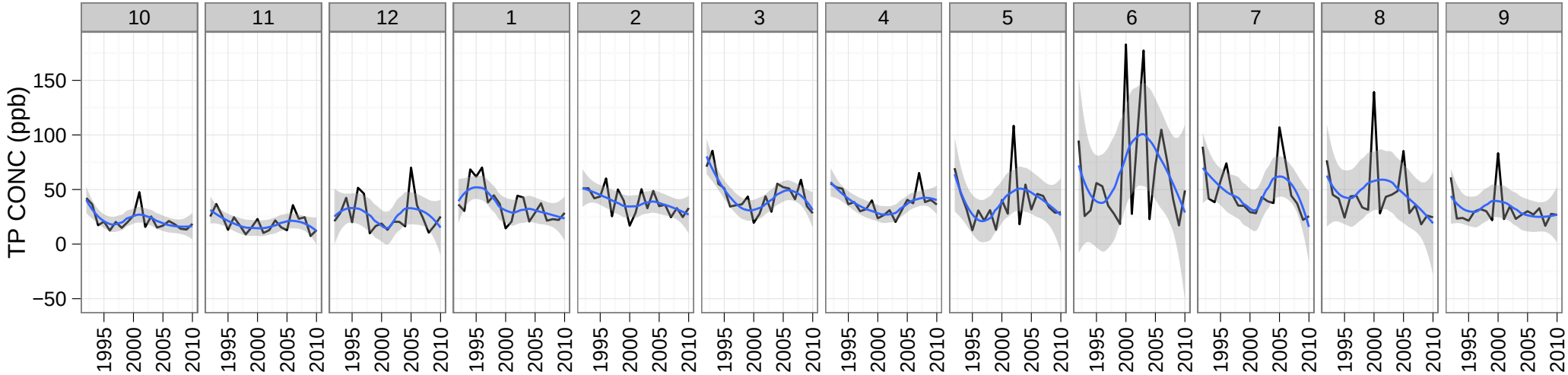


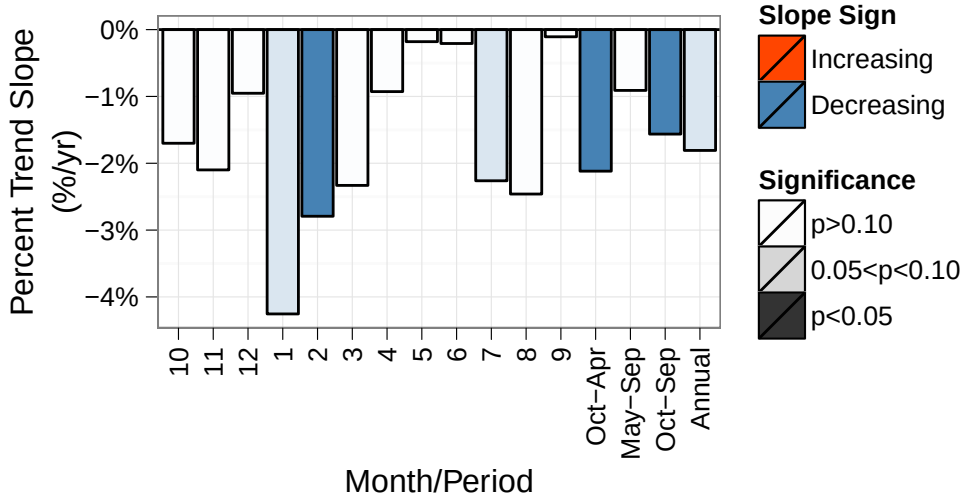


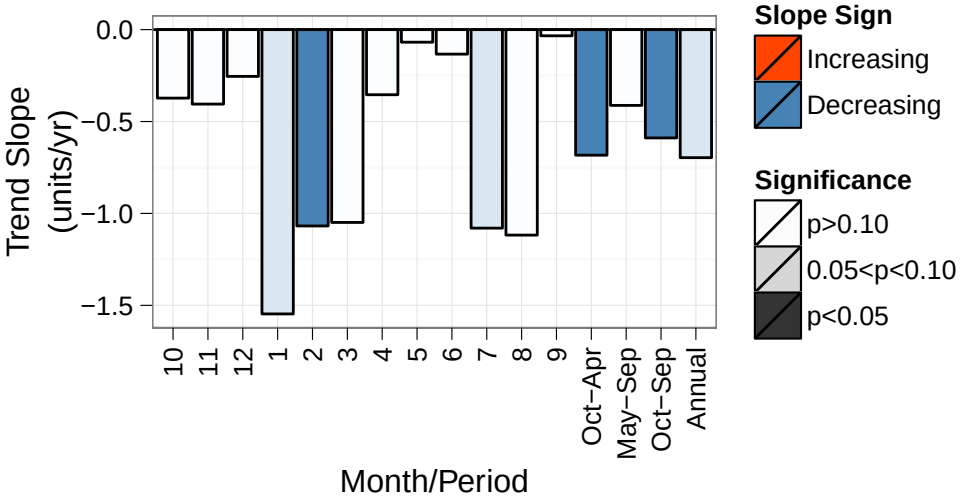
Trend Tests: Anthropogenic Sources, TP, CONC



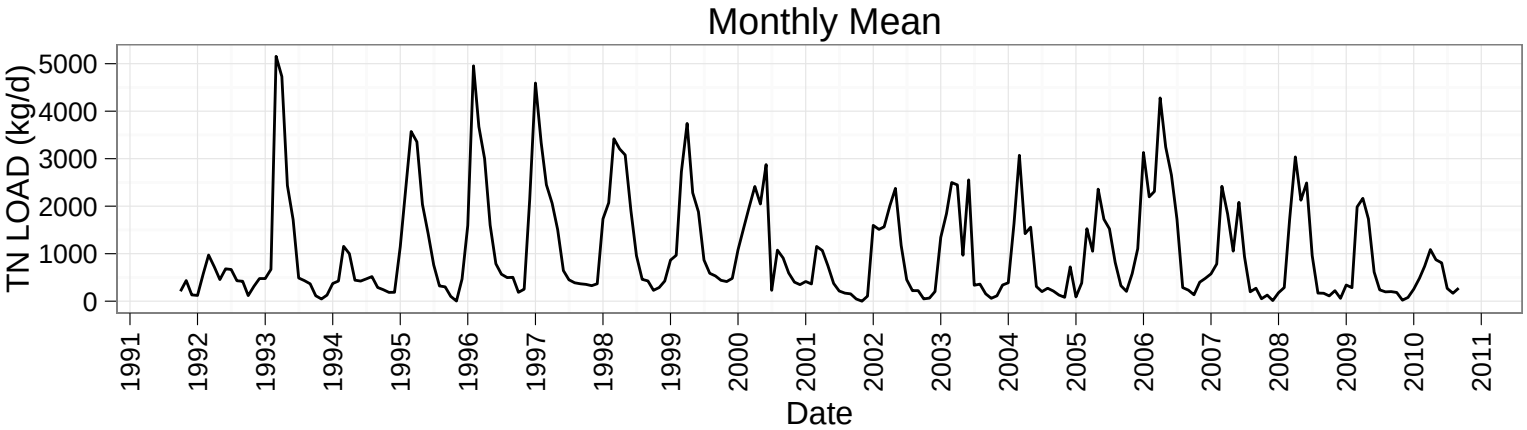


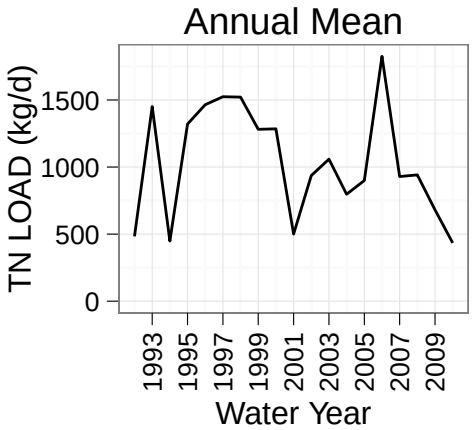


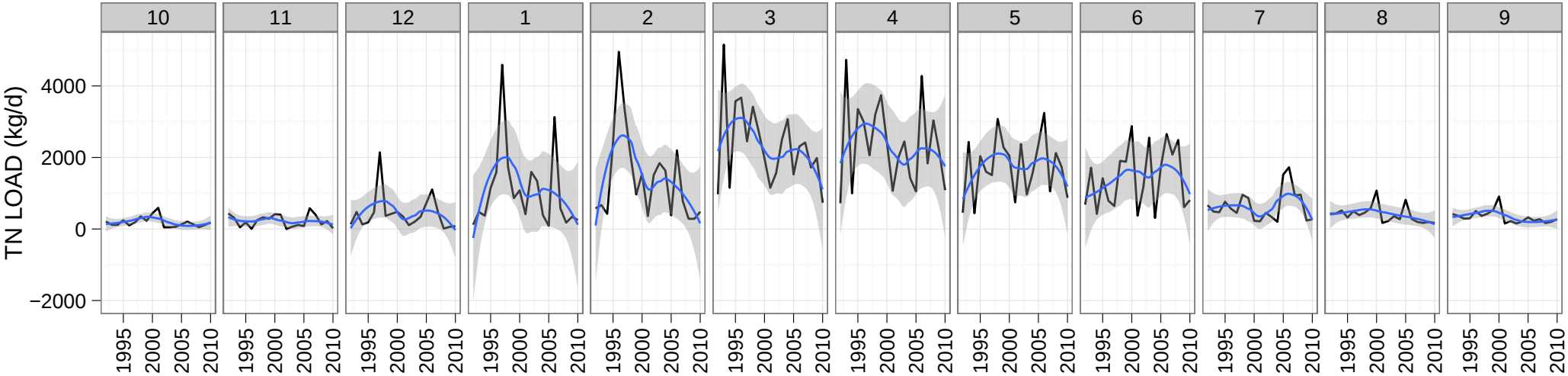


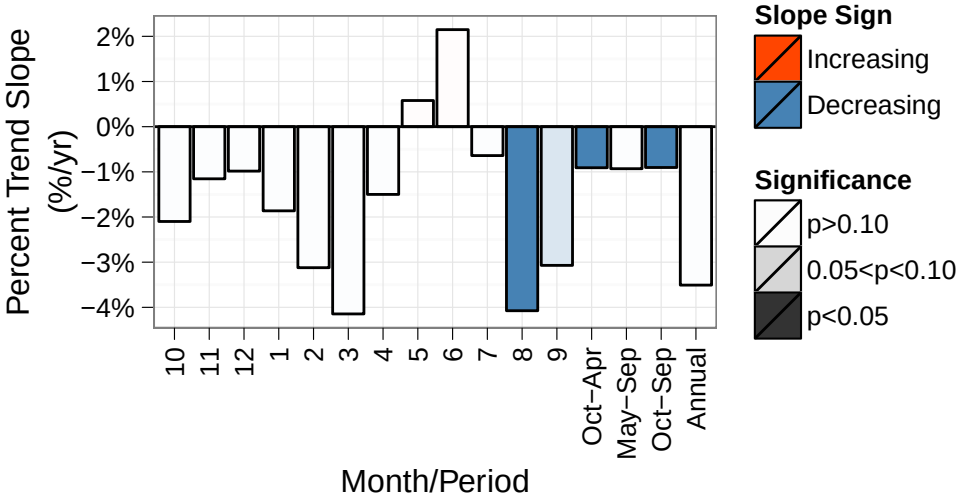


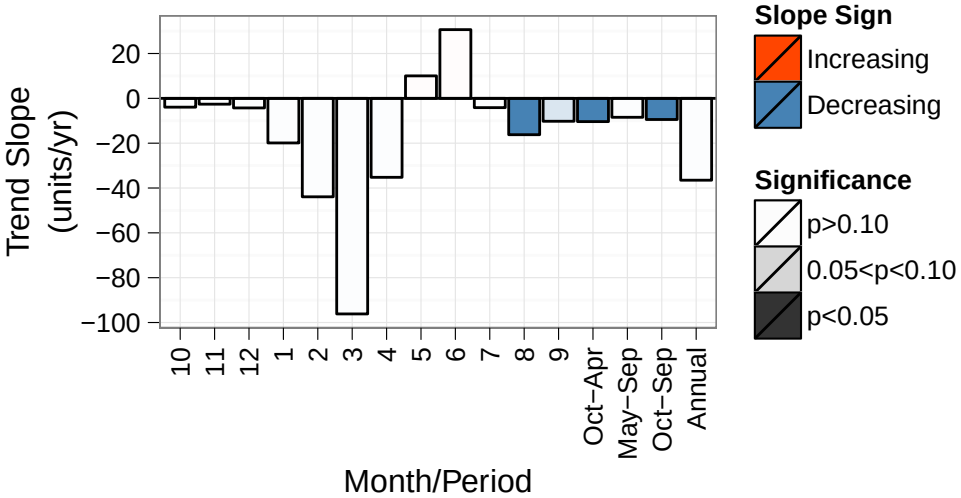
Trend Tests: Anthropogenic Sources, TN, LOAD



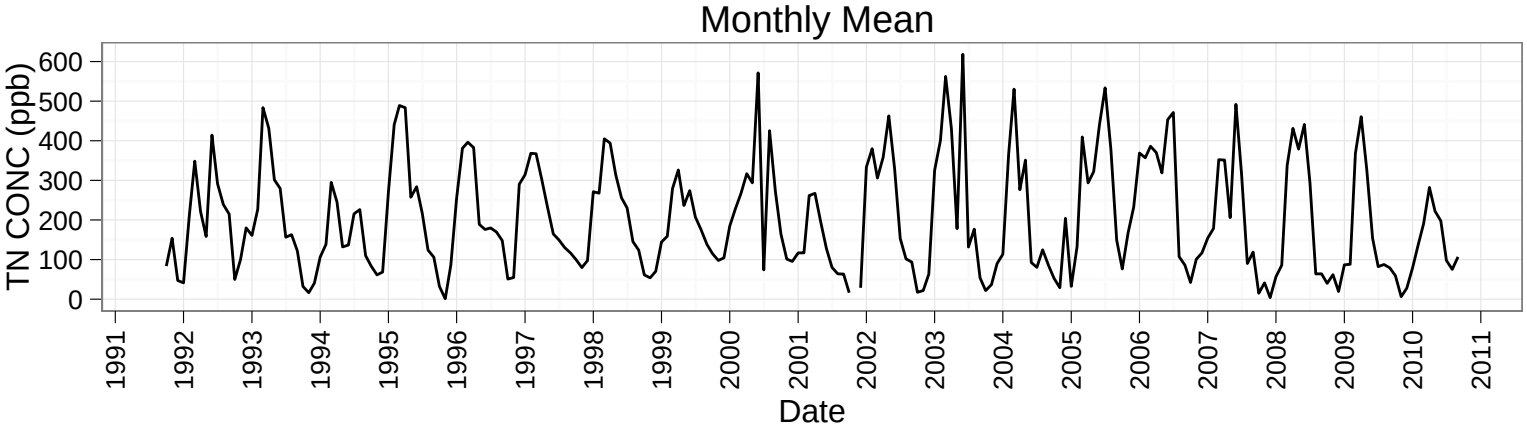


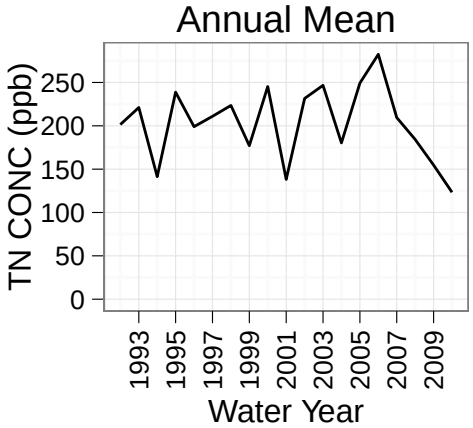


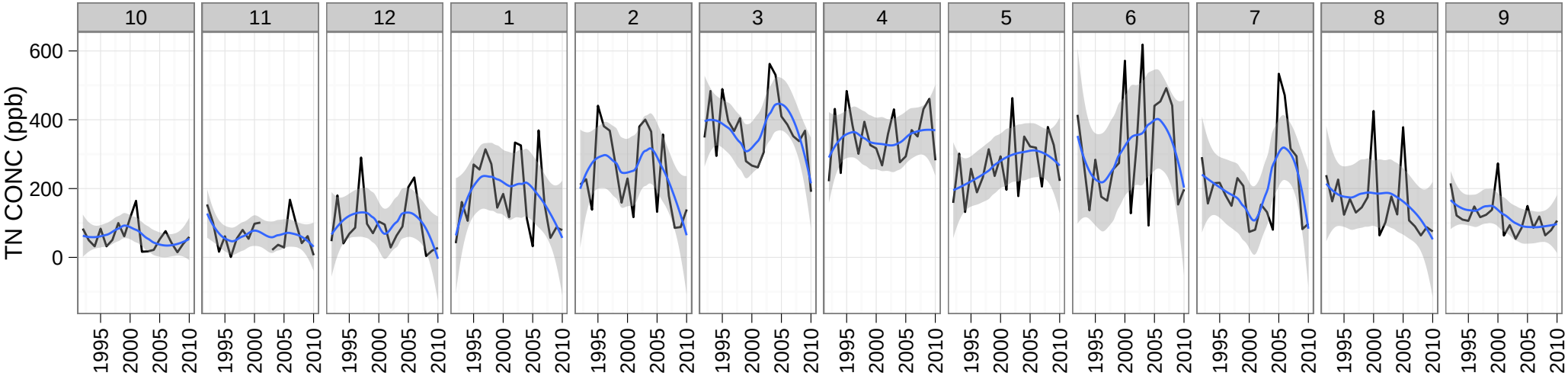


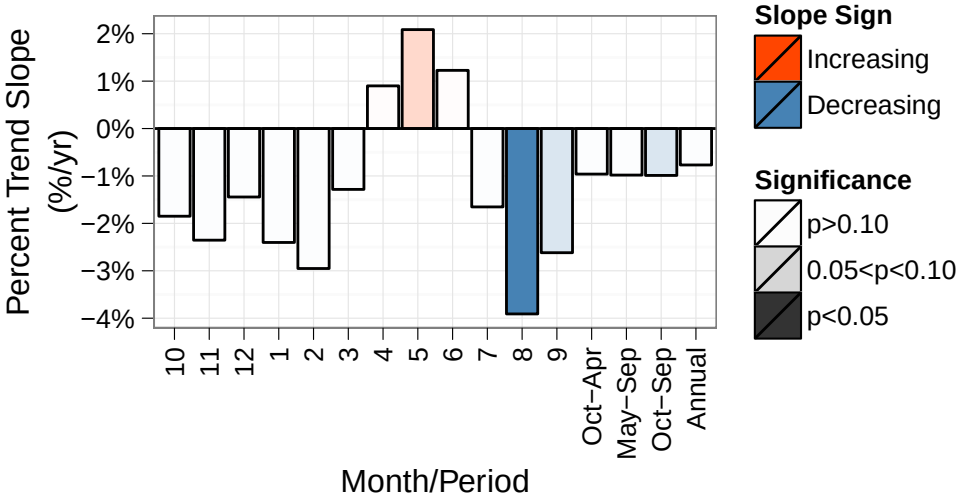


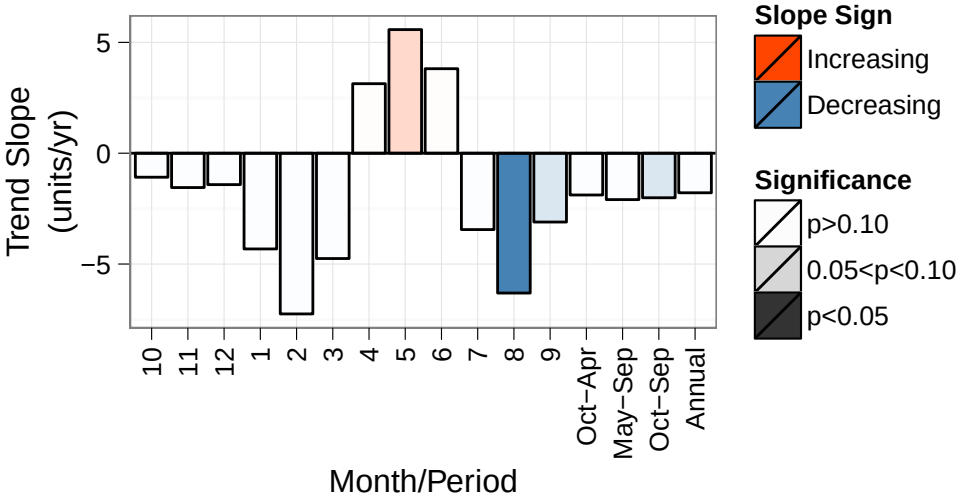
Trend Tests: Anthropogenic Sources, TN, CONC



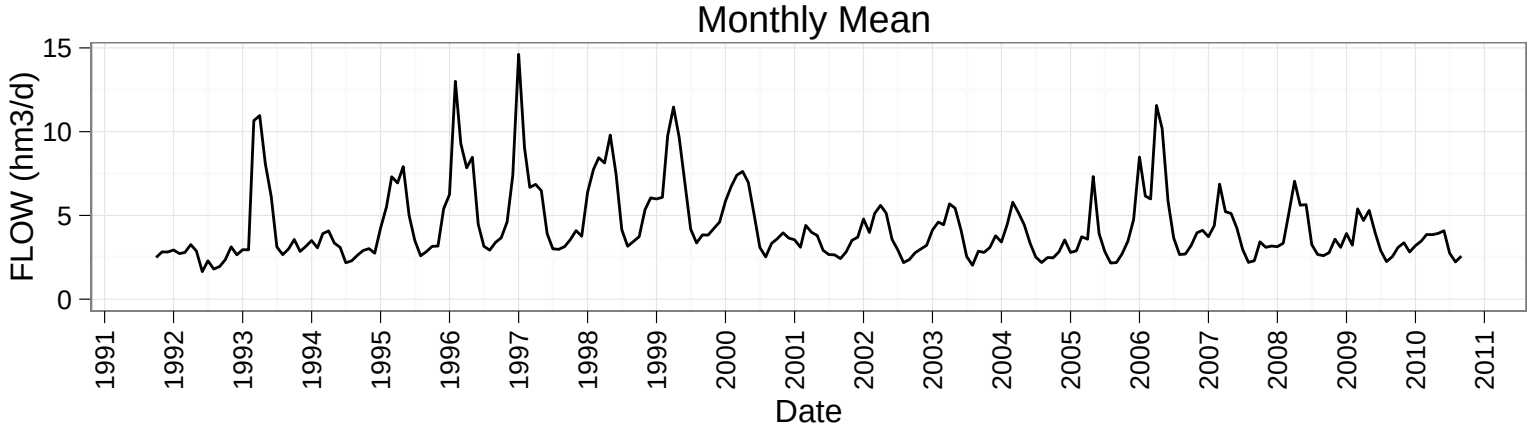


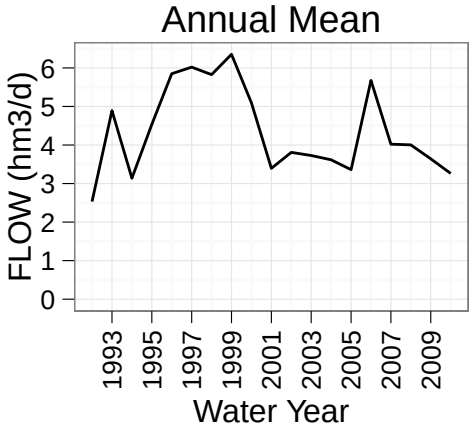


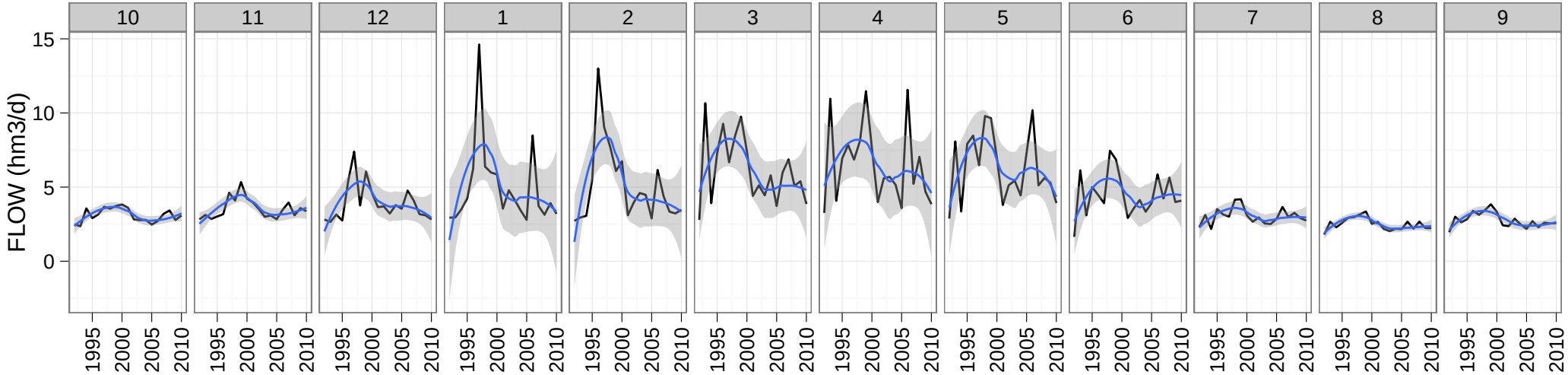


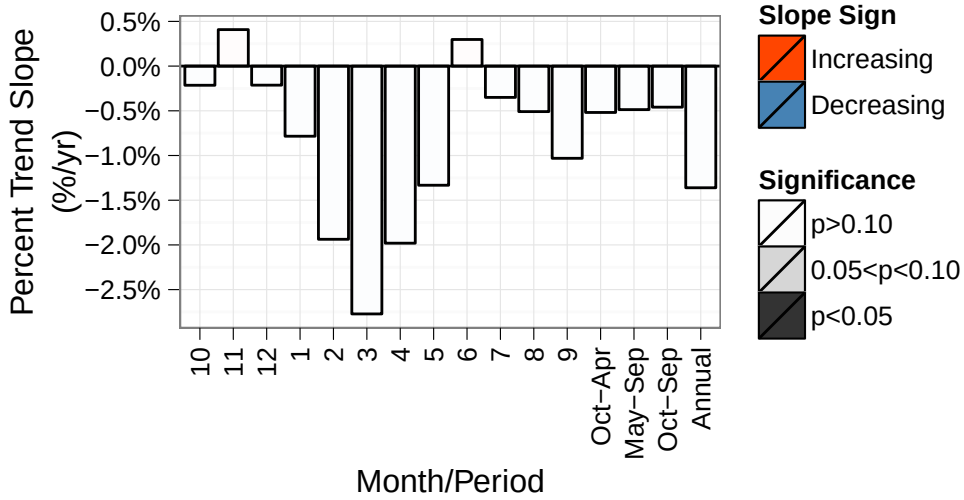


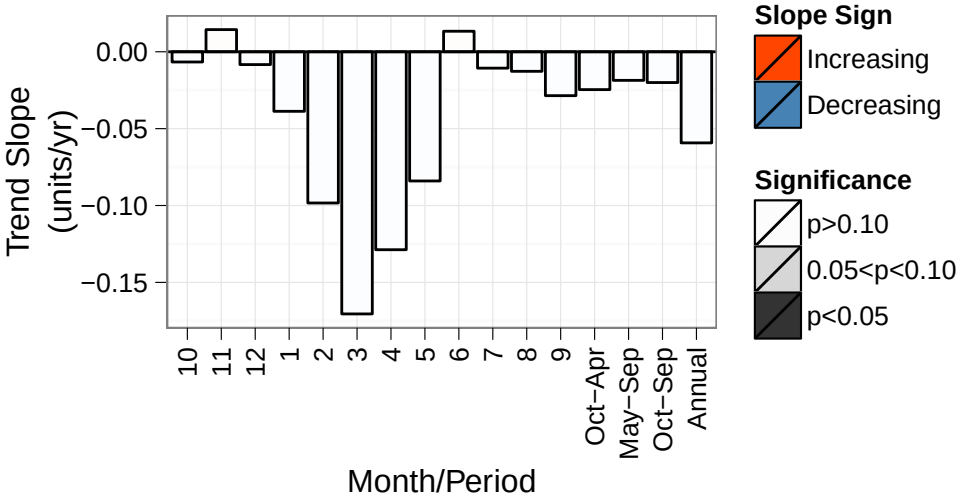
Trend Tests: Background Sources, FLOW



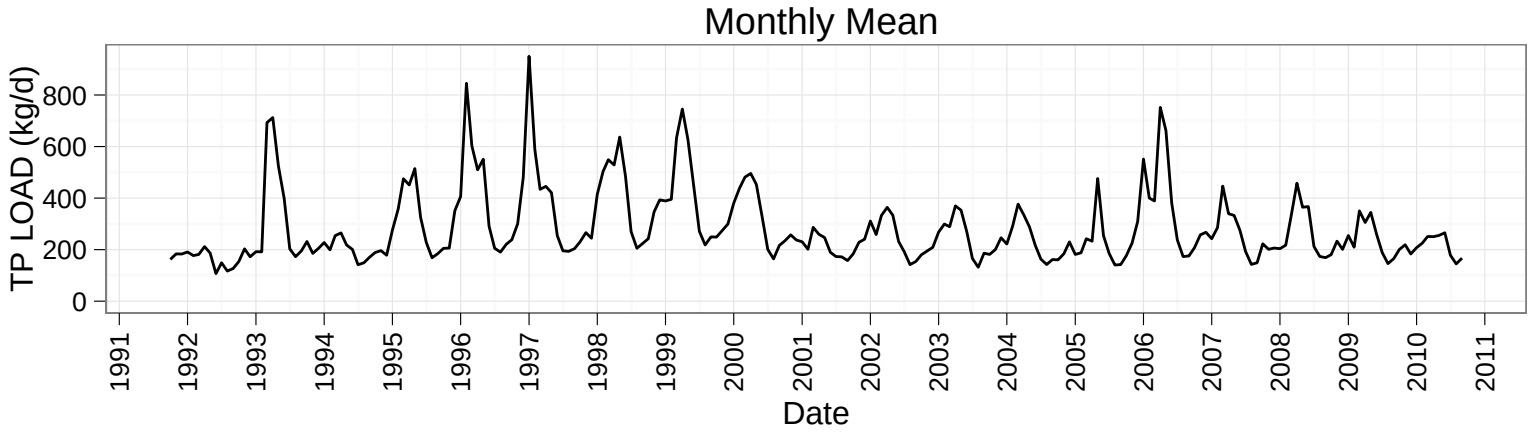


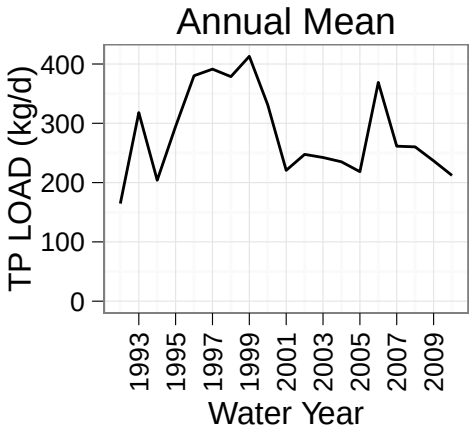


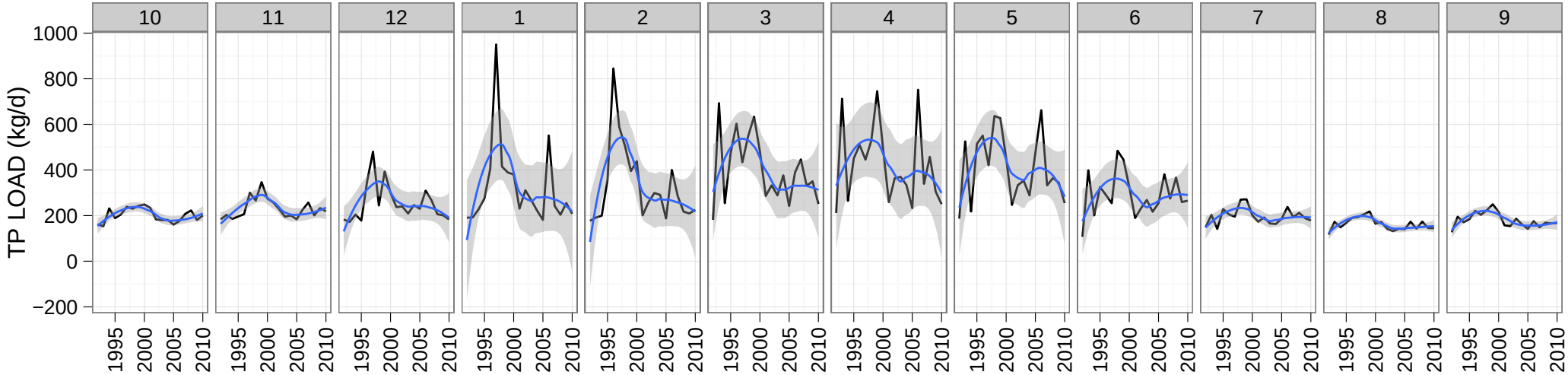


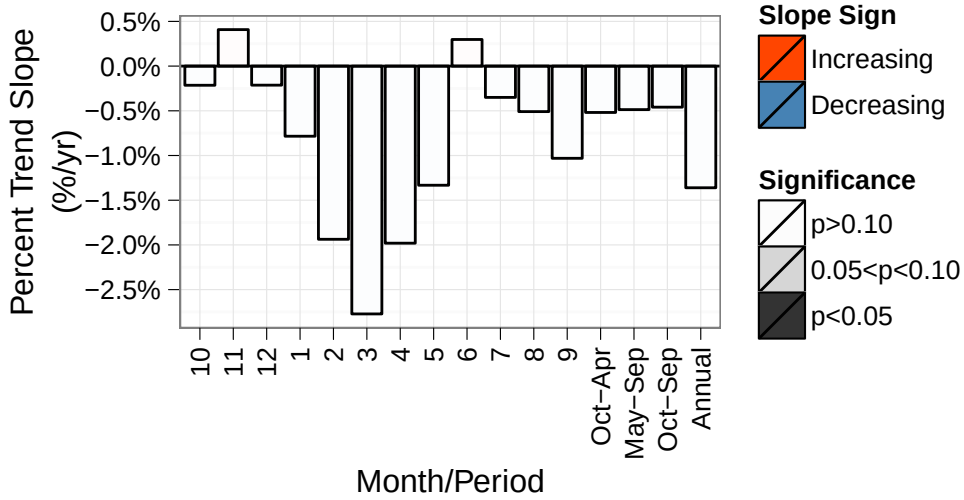


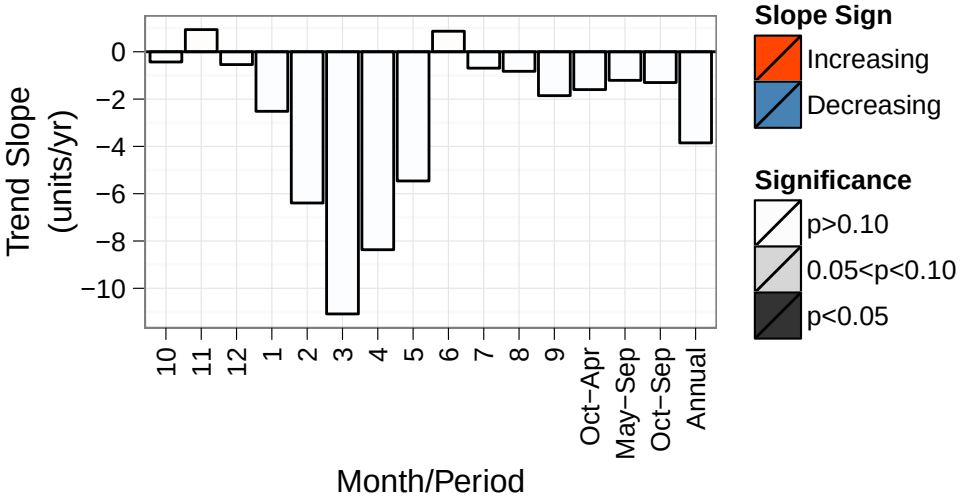
Trend Tests: Background Sources, TP, LOAD



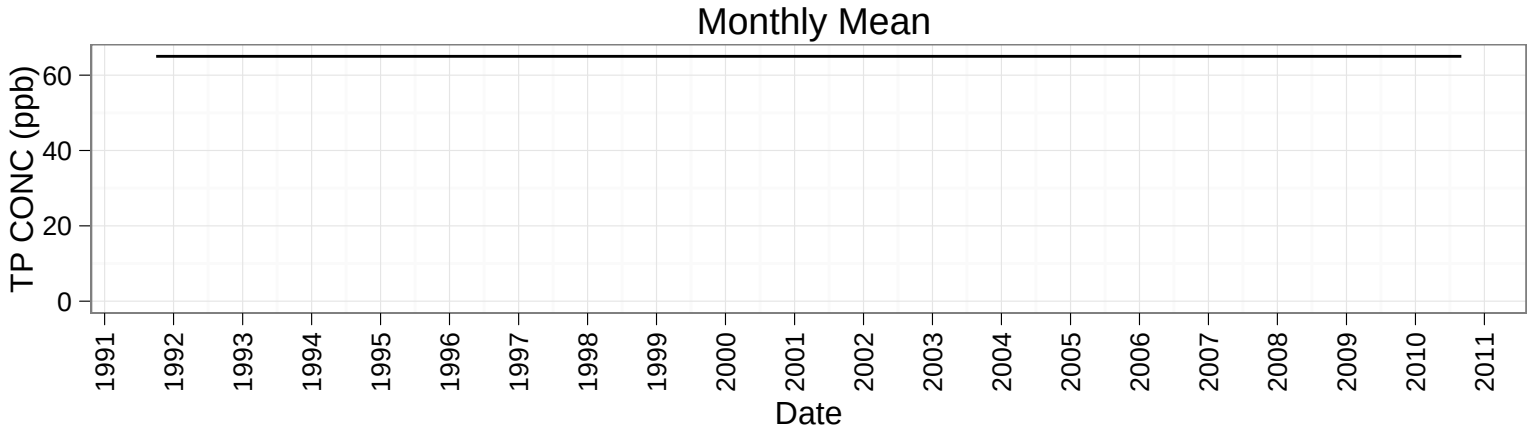


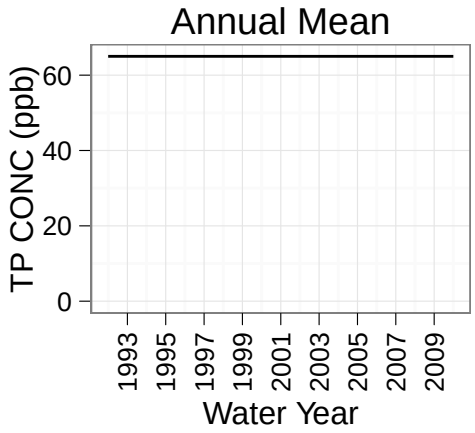


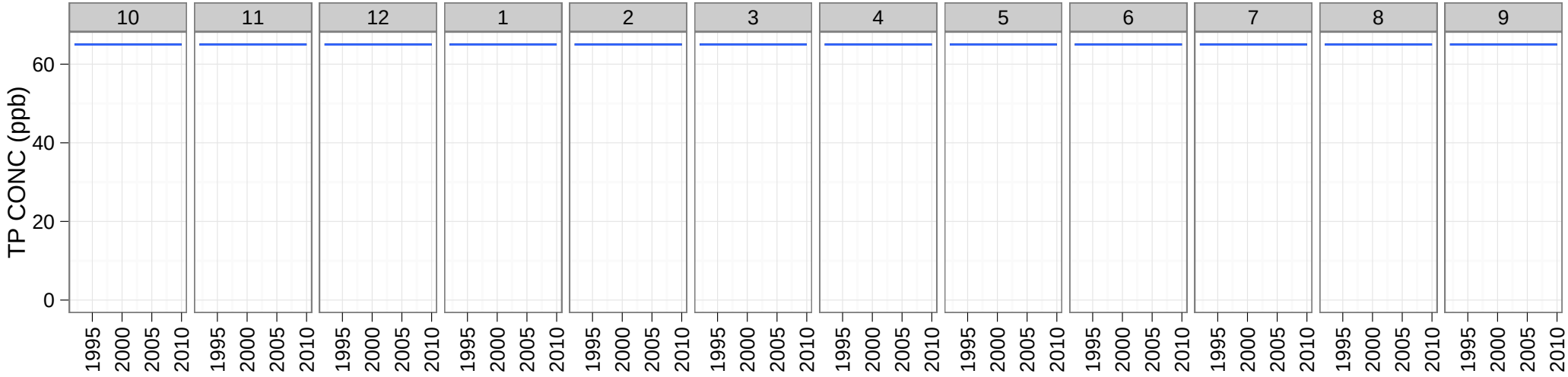


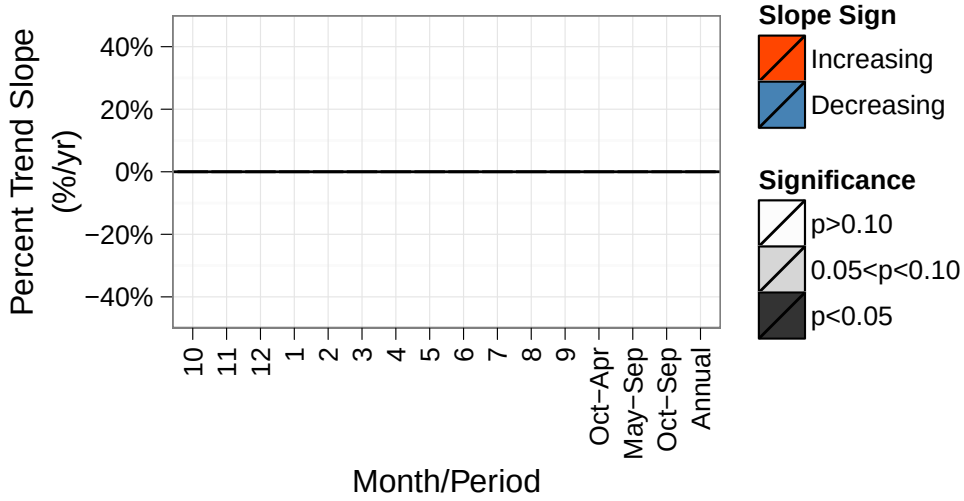


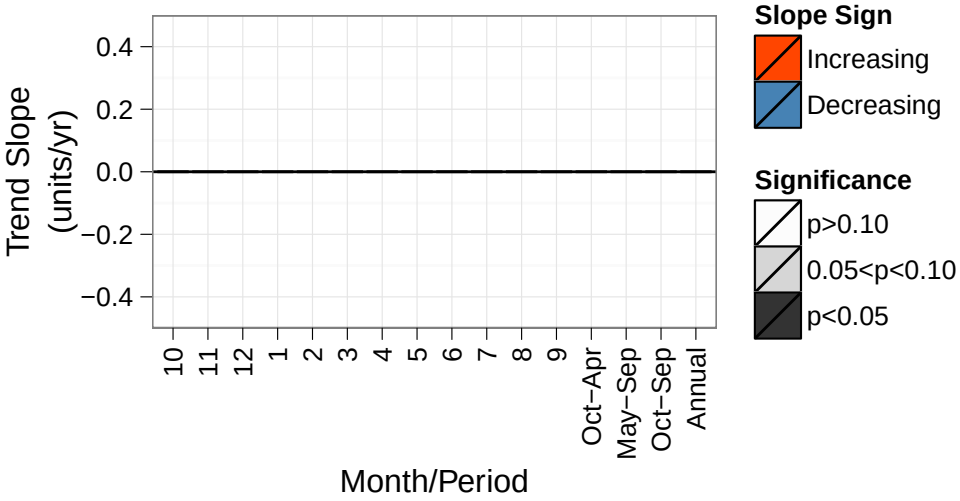
Trend Tests: Background Sources, TP, CONC



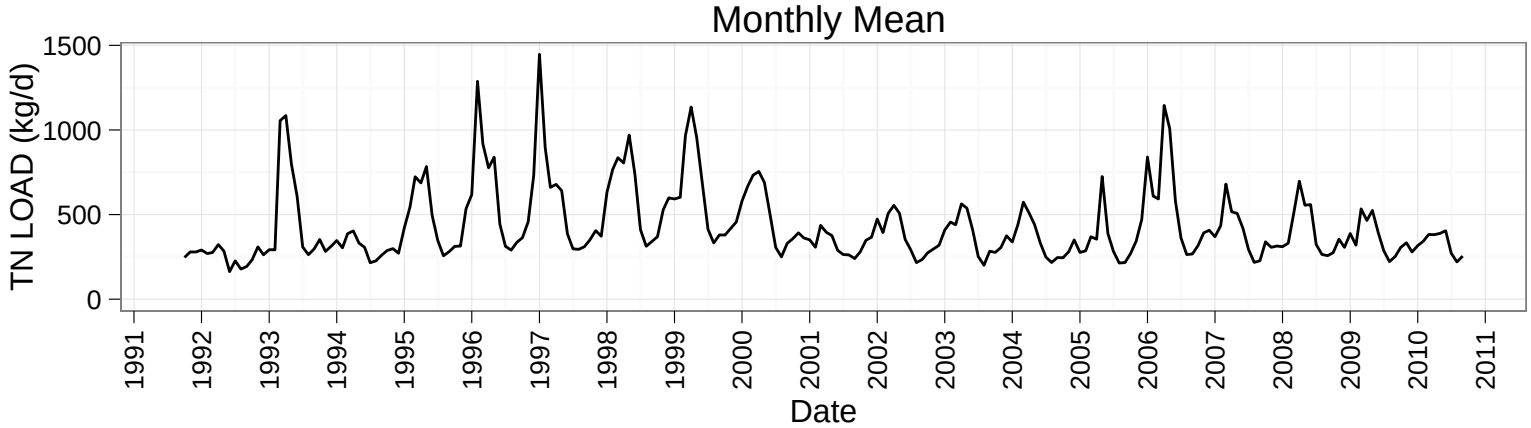


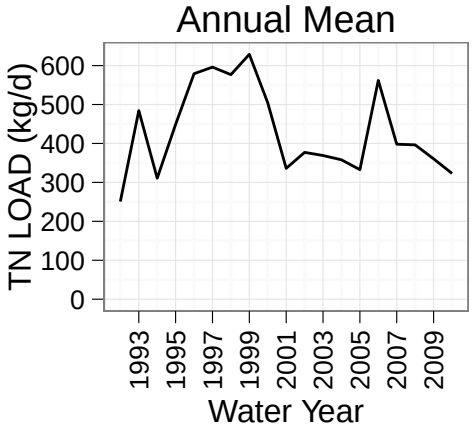


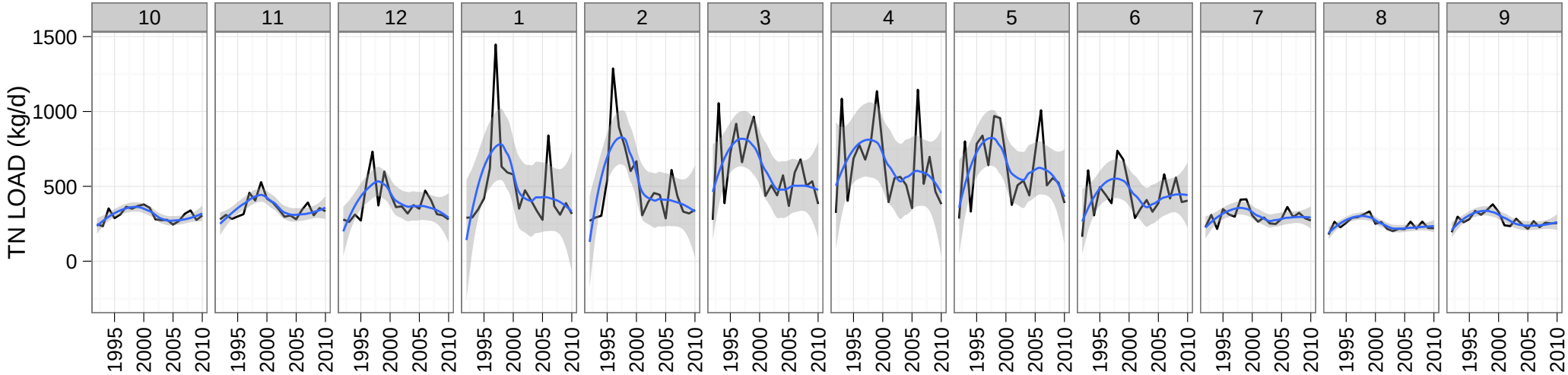


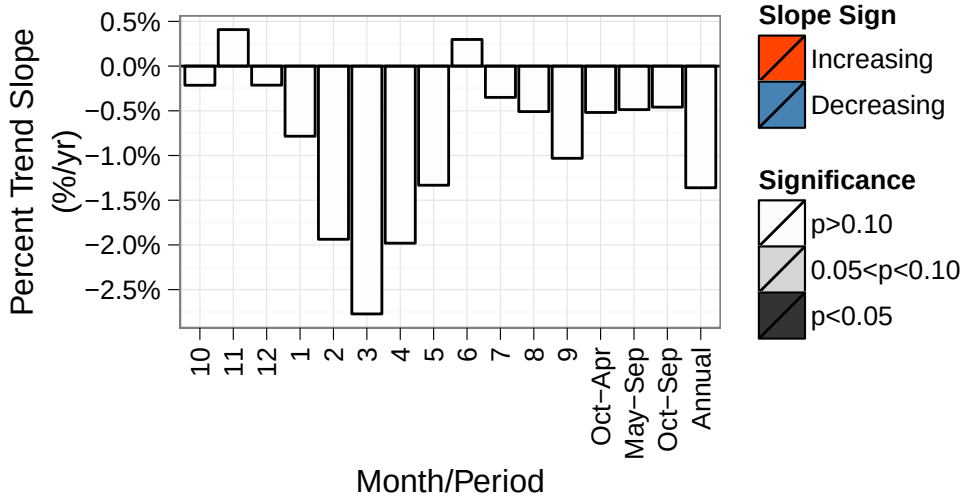


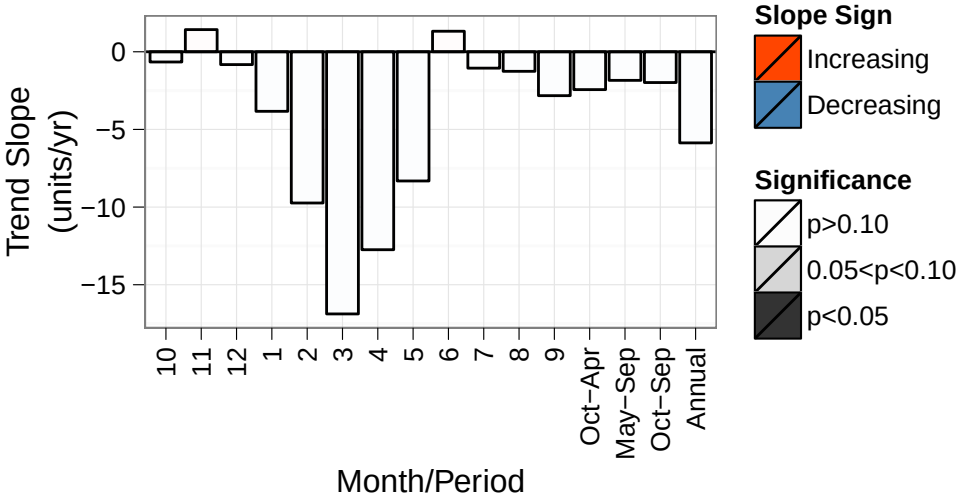
Trend Tests: Background Sources, TN, LOAD



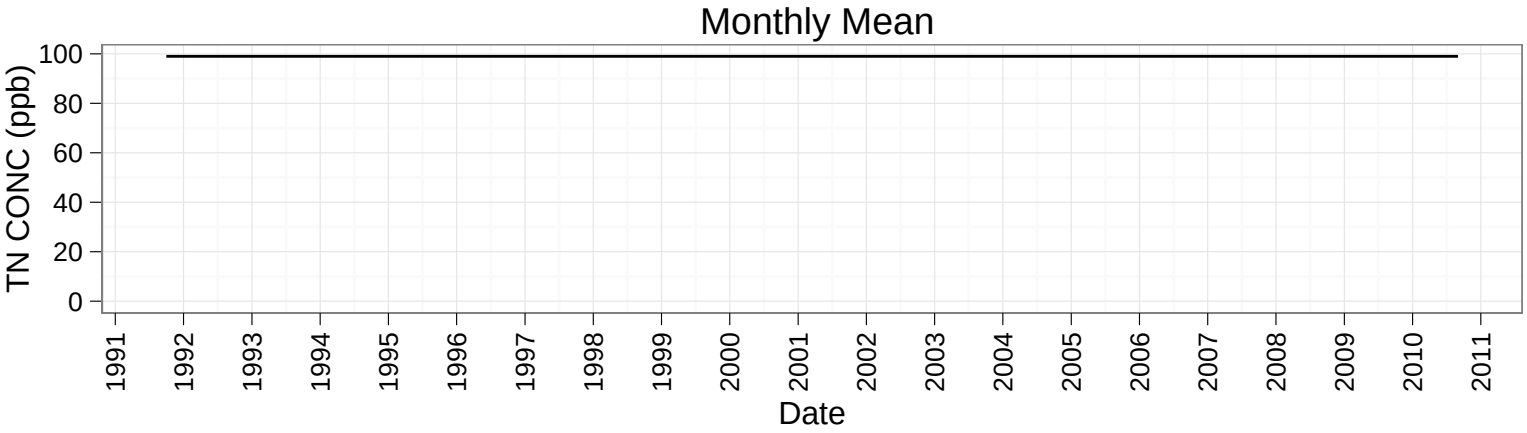


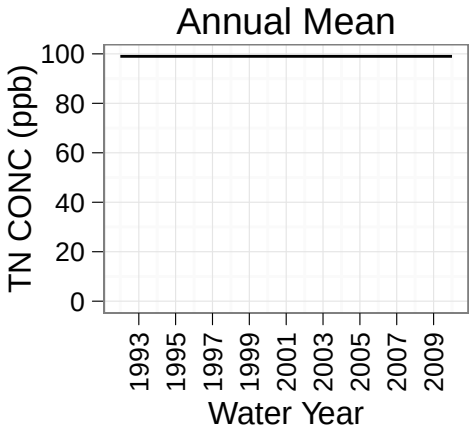


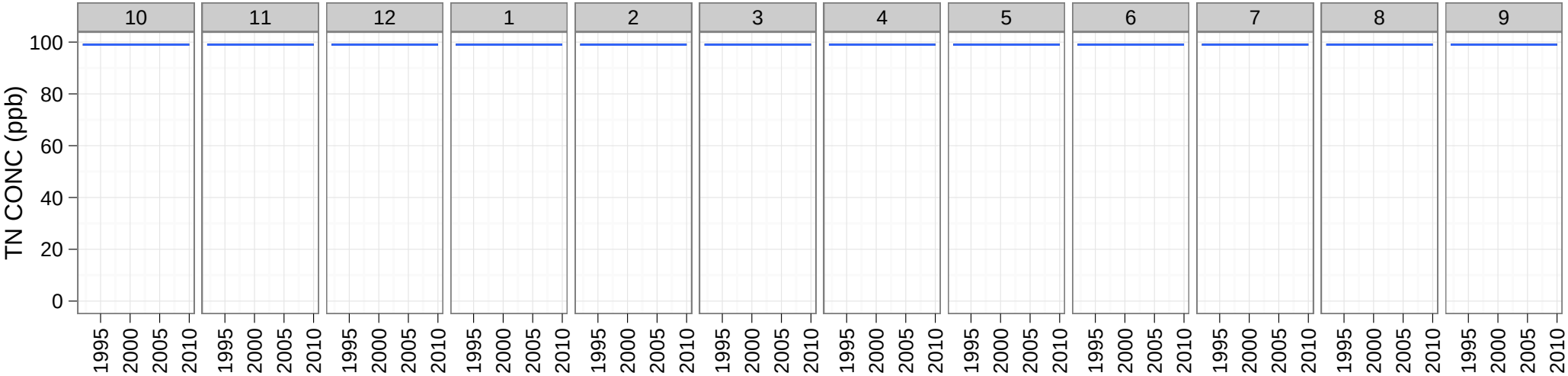


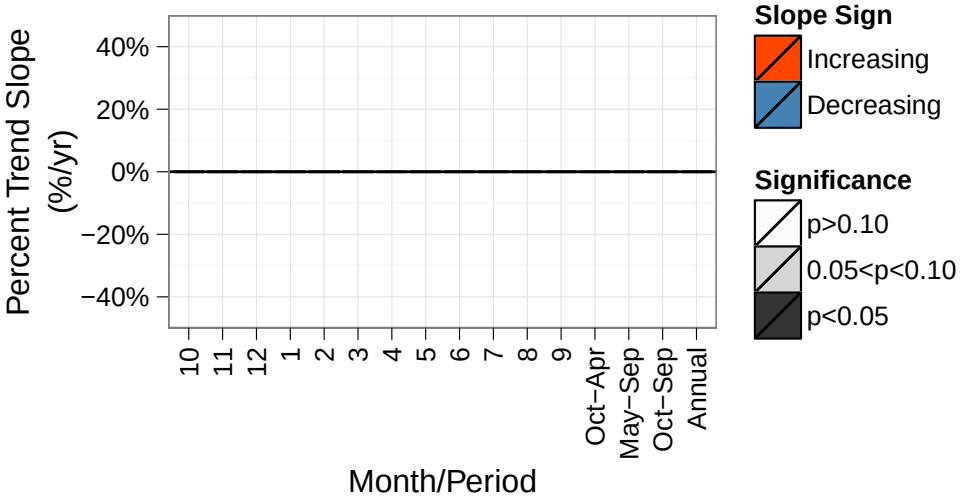


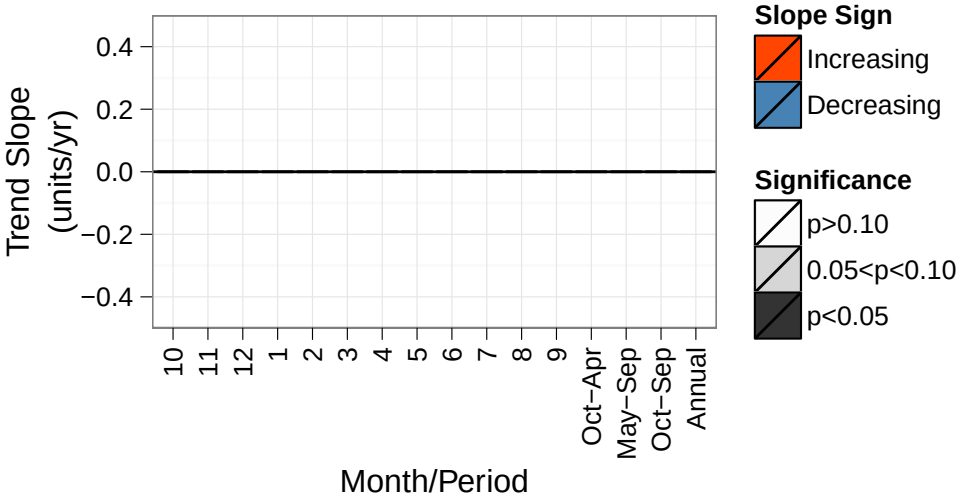
Trend Tests: Background Sources, TN, CONC



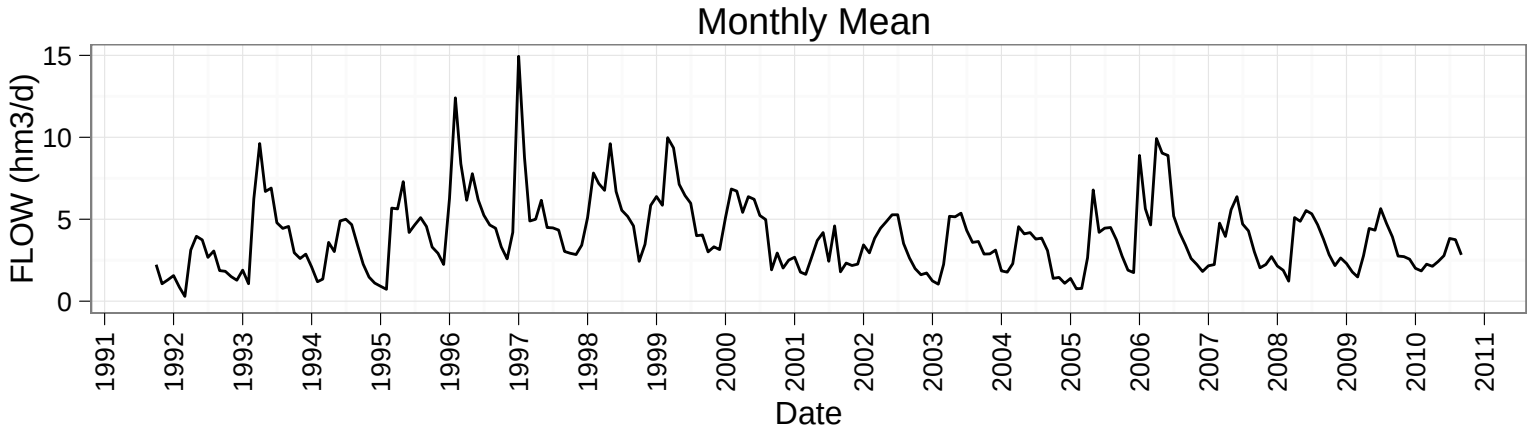


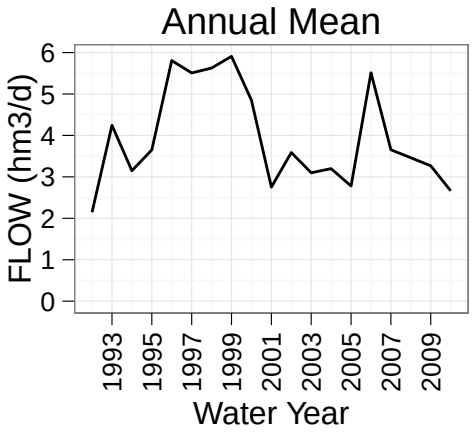


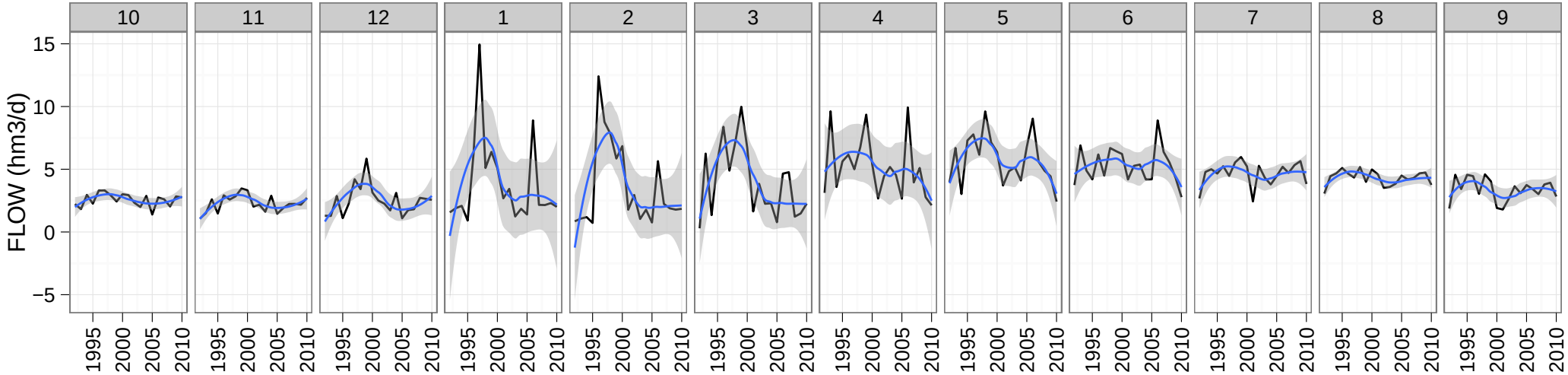


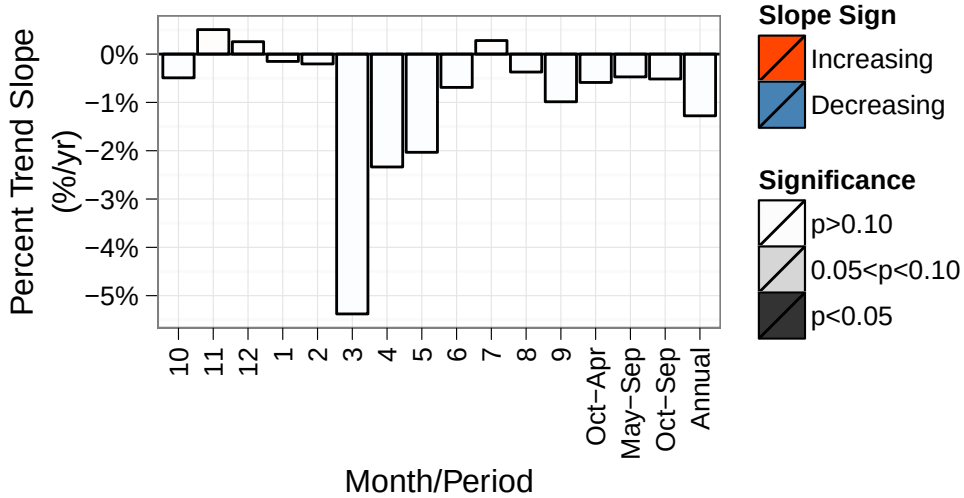


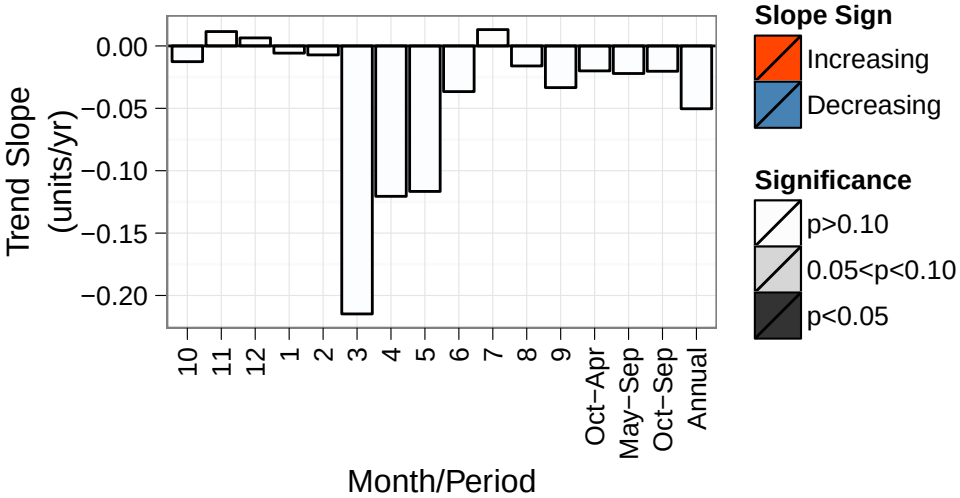
Trend Tests: Lake Outflow, FLOW



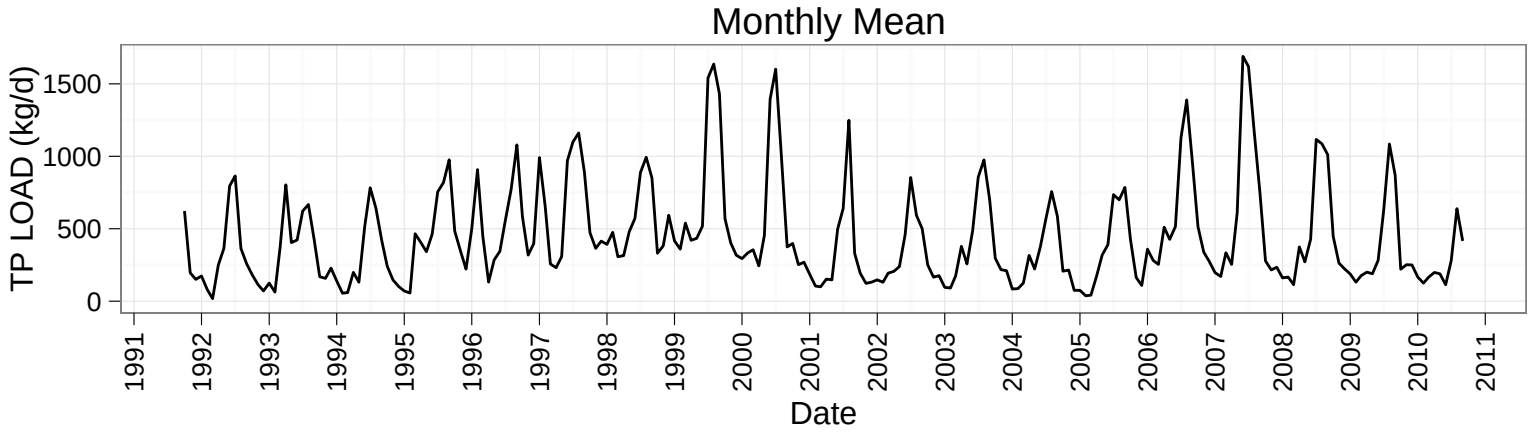


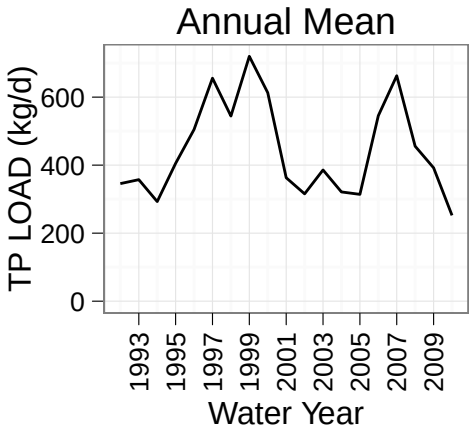


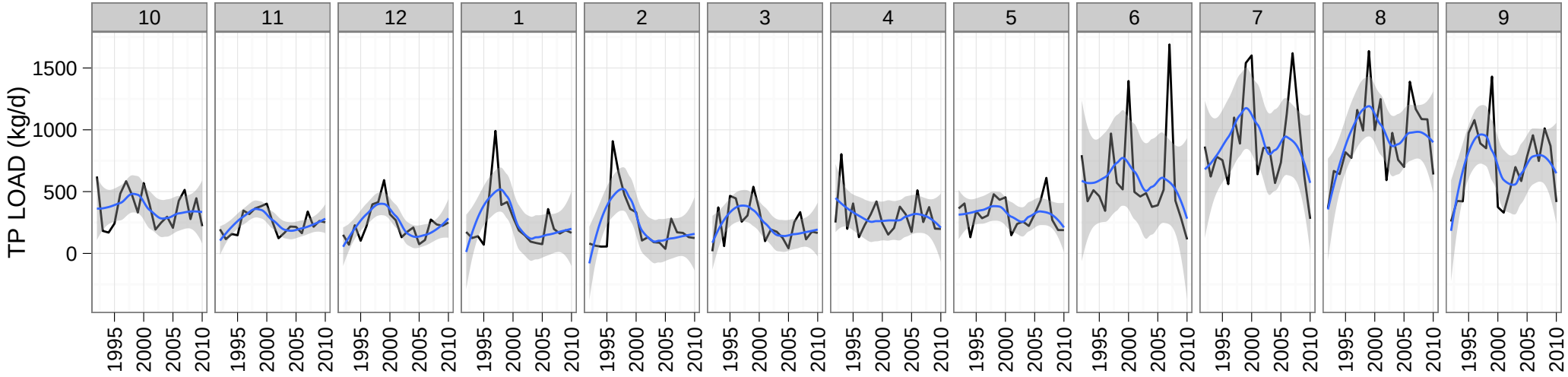


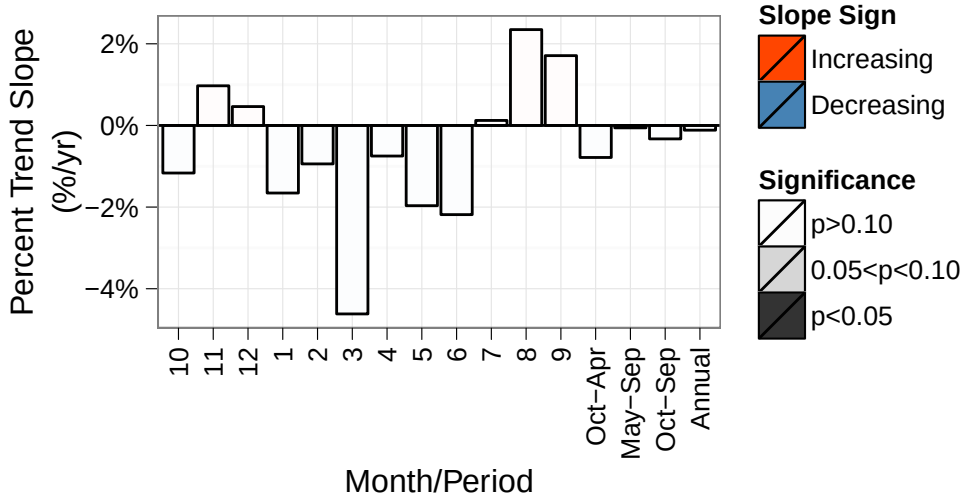


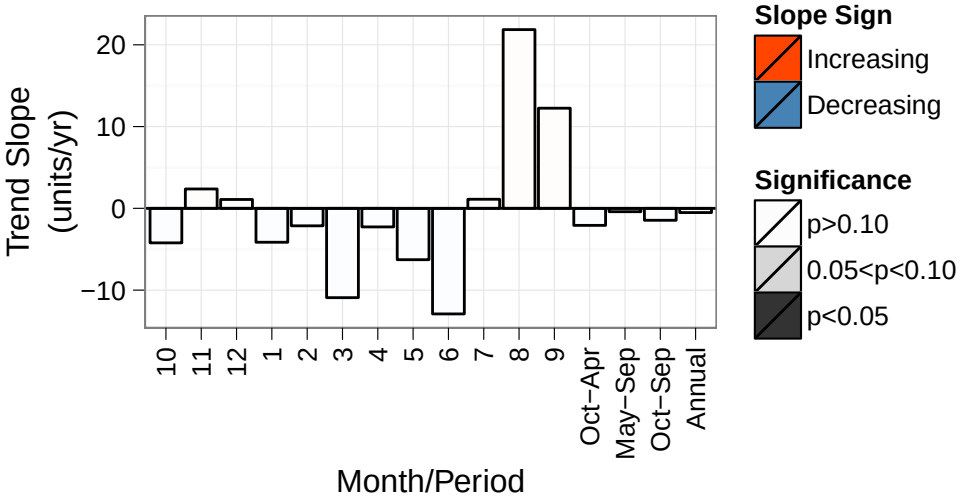
Trend Tests: Lake Outflow, TP, LOAD



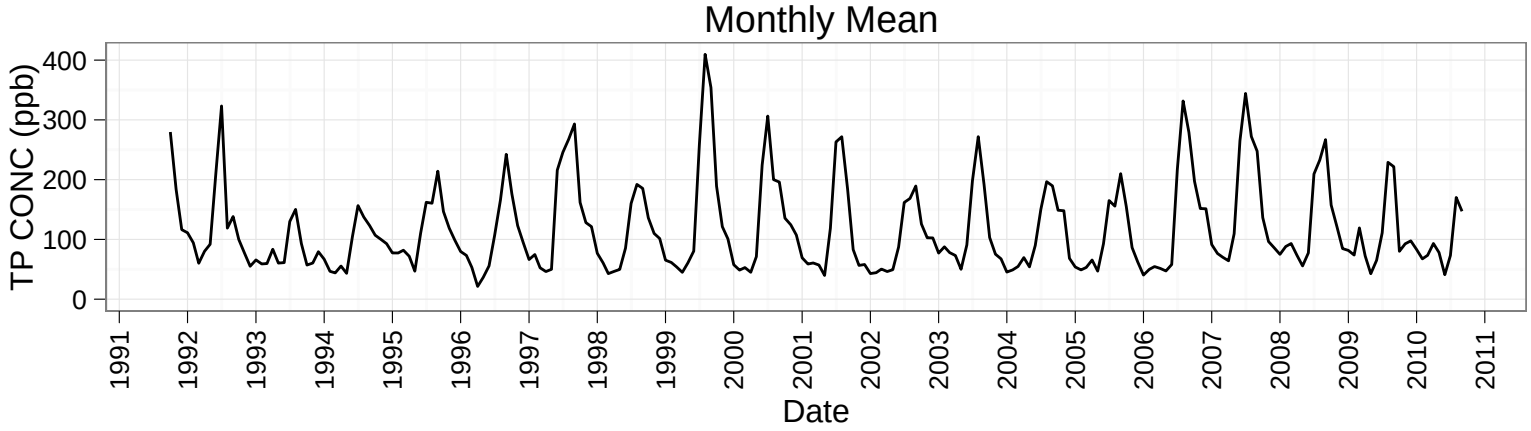


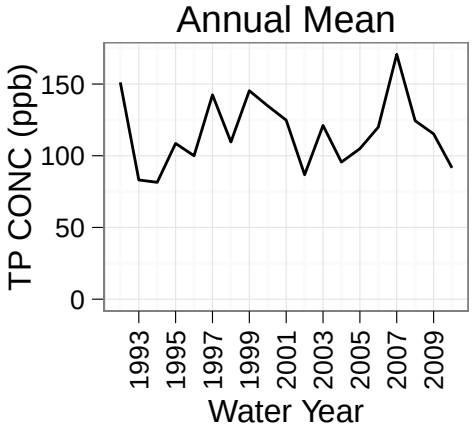


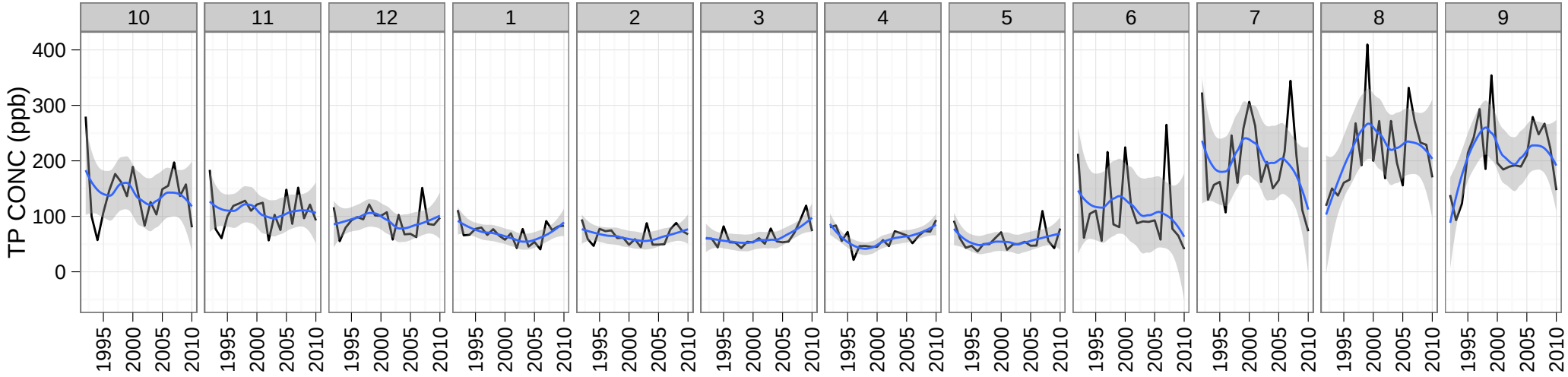


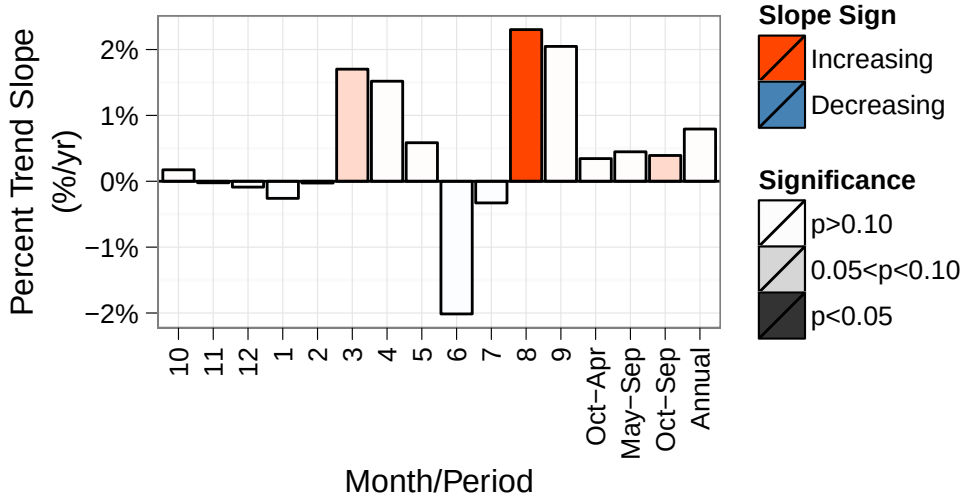


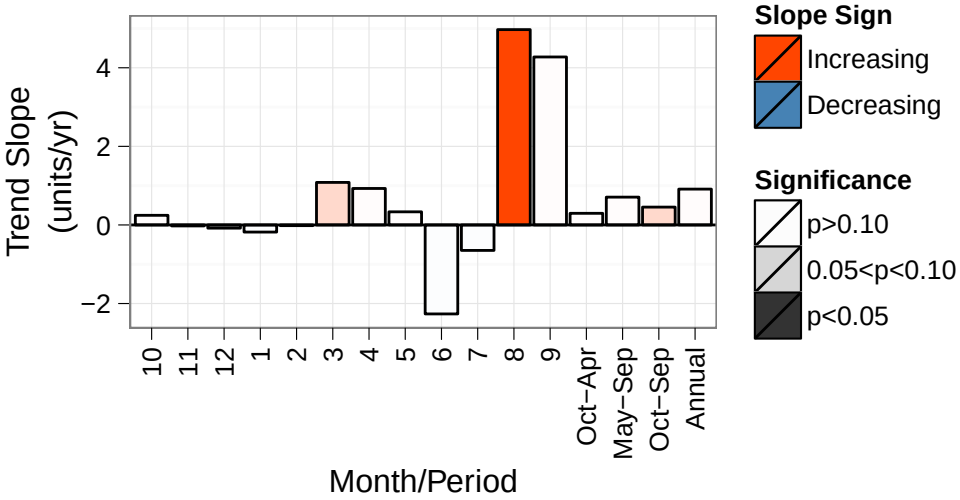
Trend Tests: Lake Outflow, TP, CONC



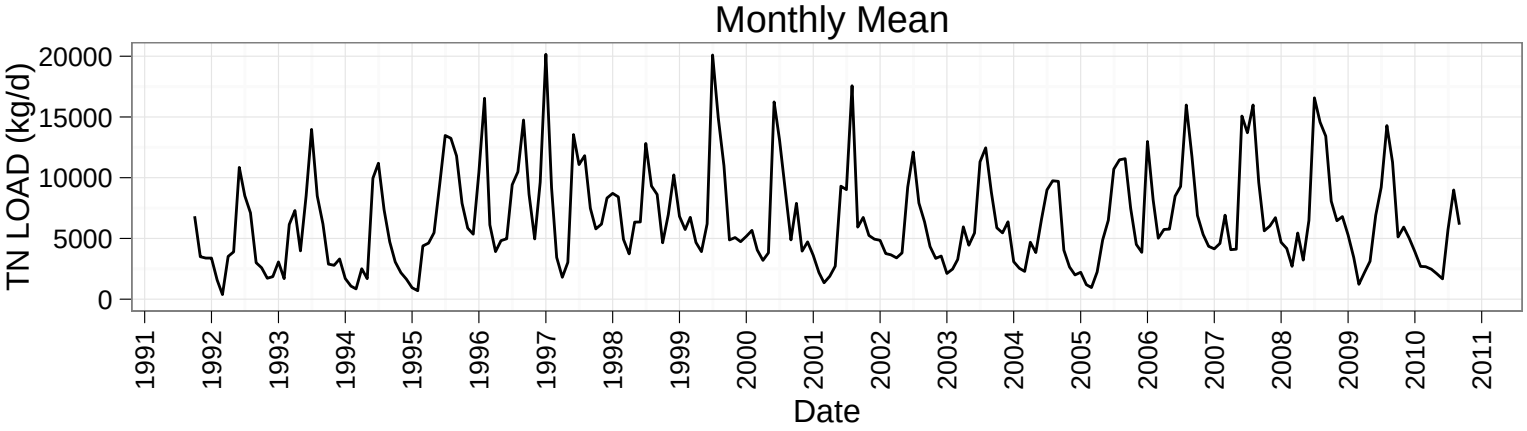


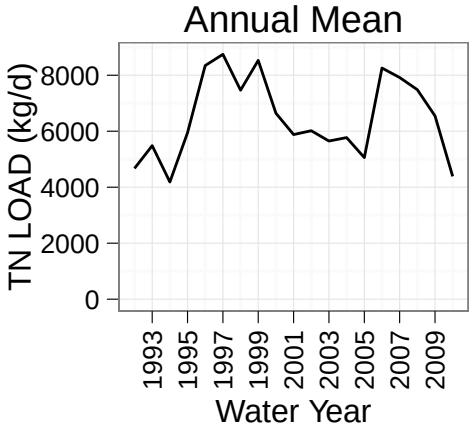


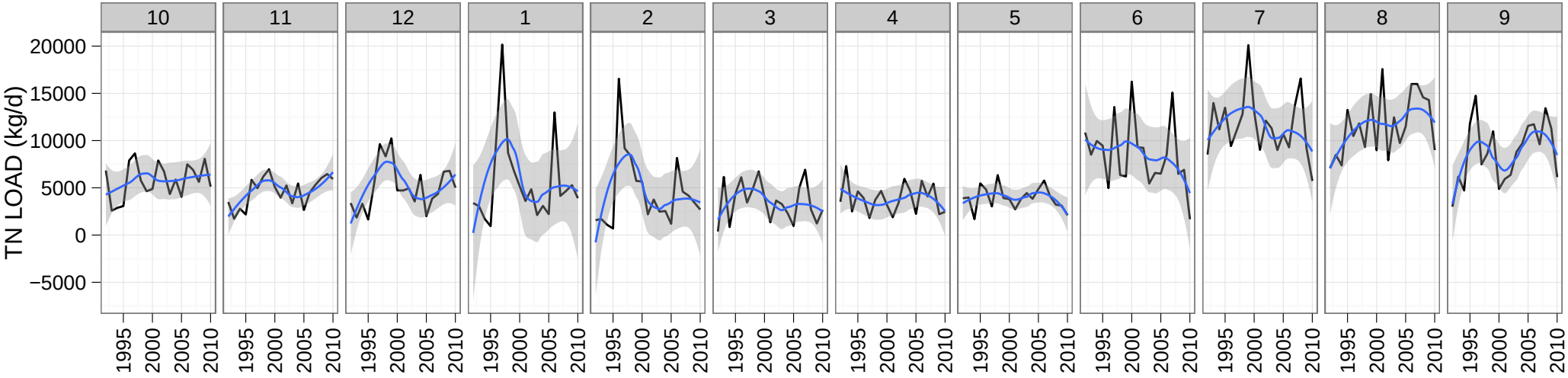


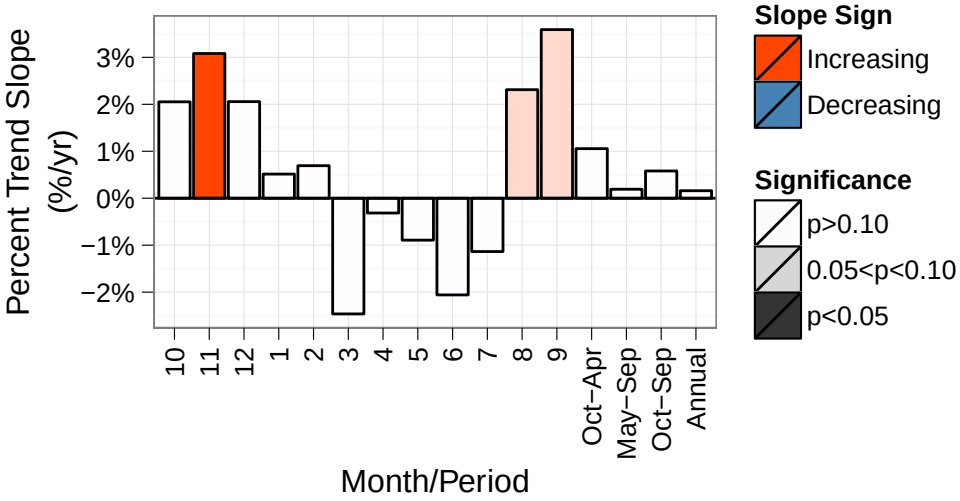


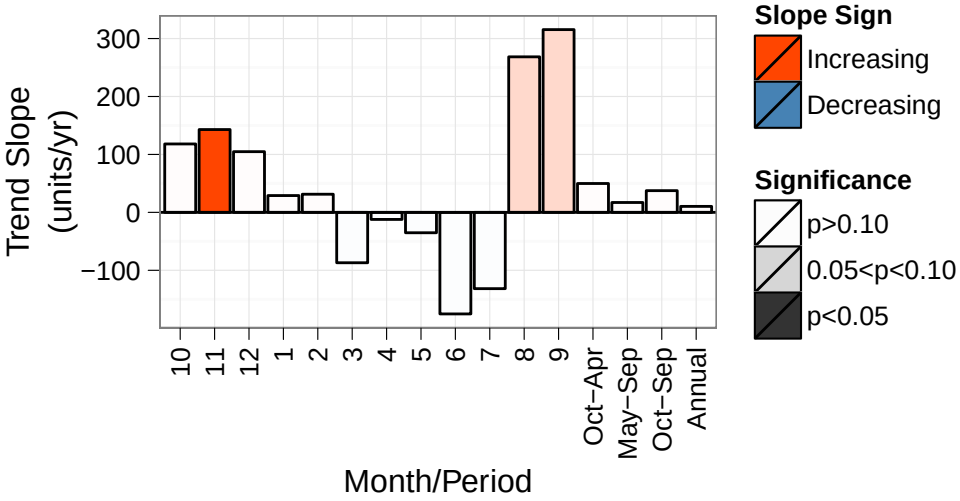
Trend Tests: Lake Outflow, TN, LOAD



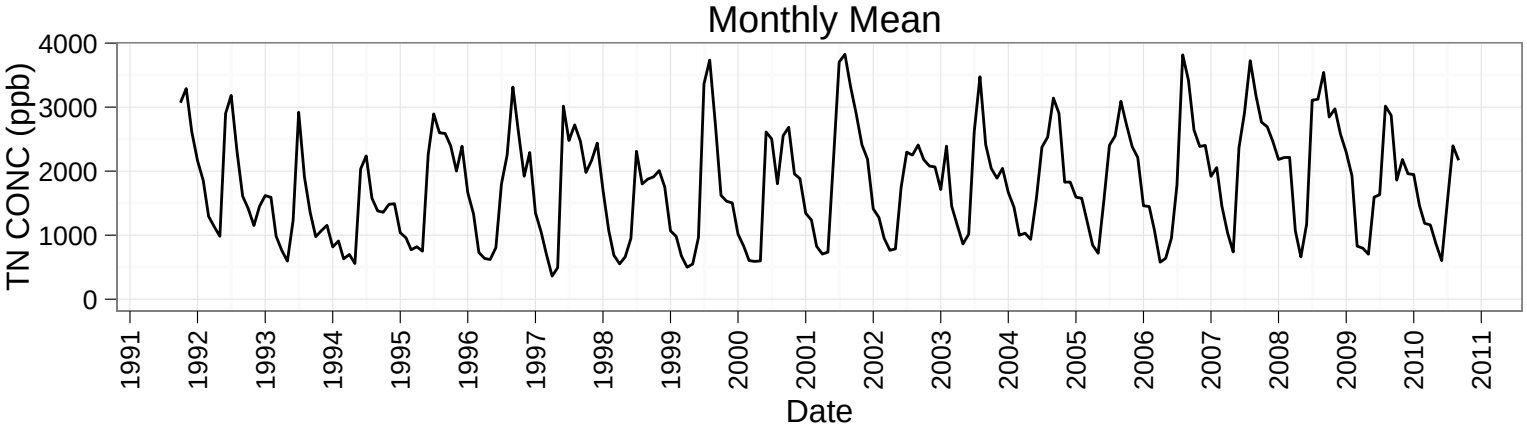


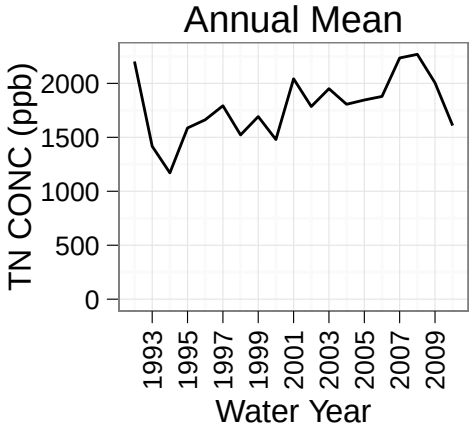


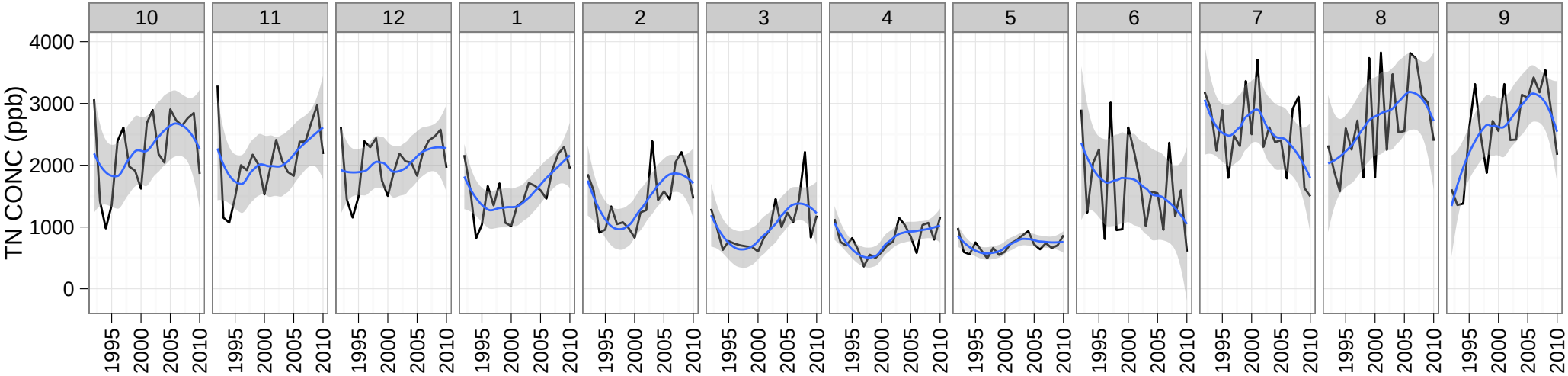


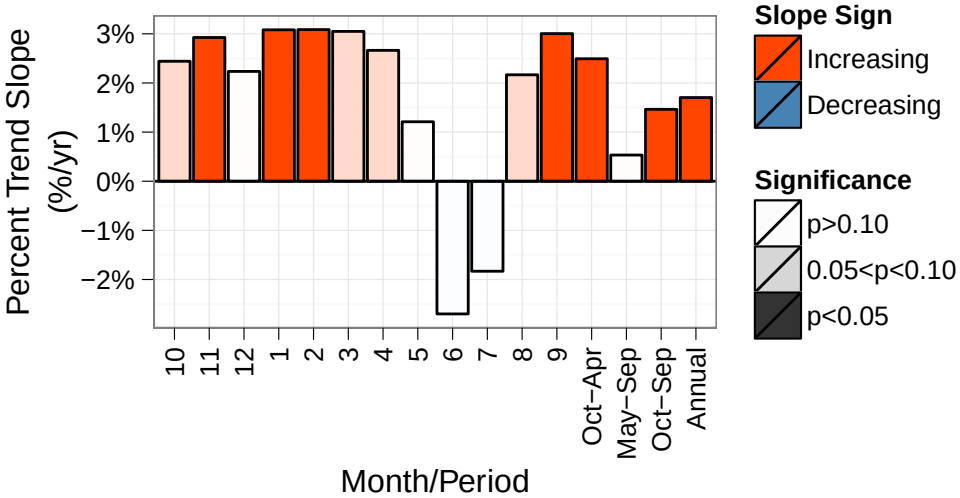


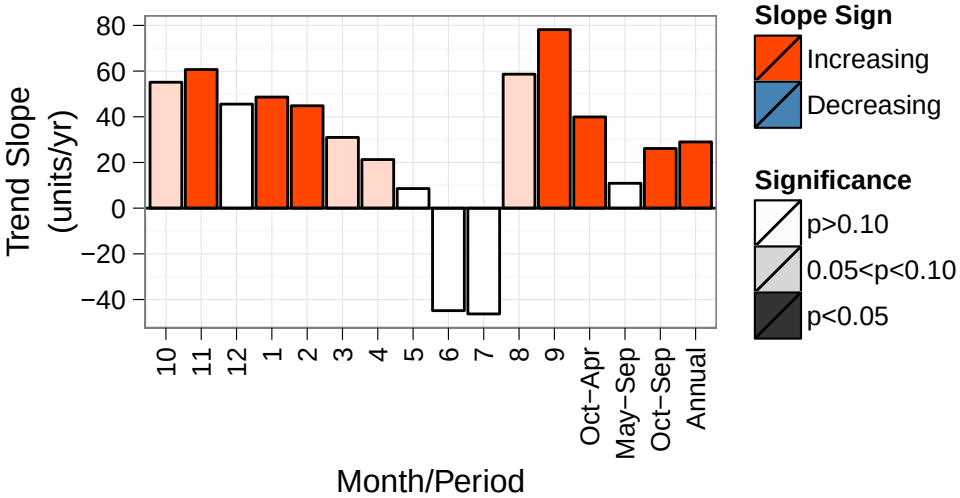
Trend Tests: Lake Outflow, TN, CONC



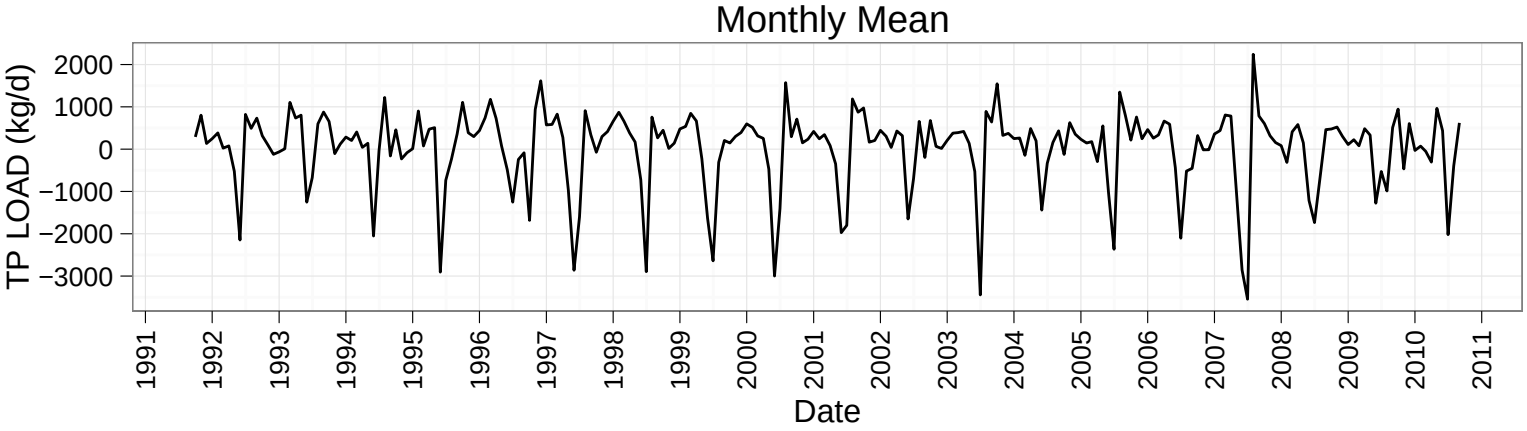


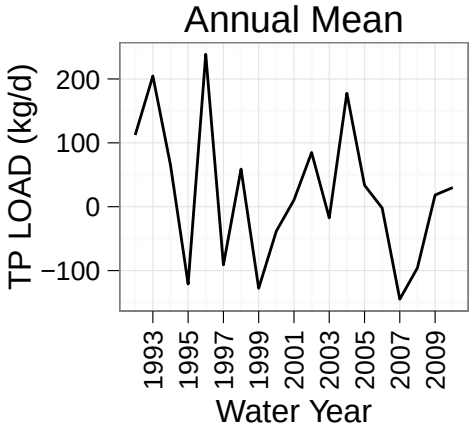


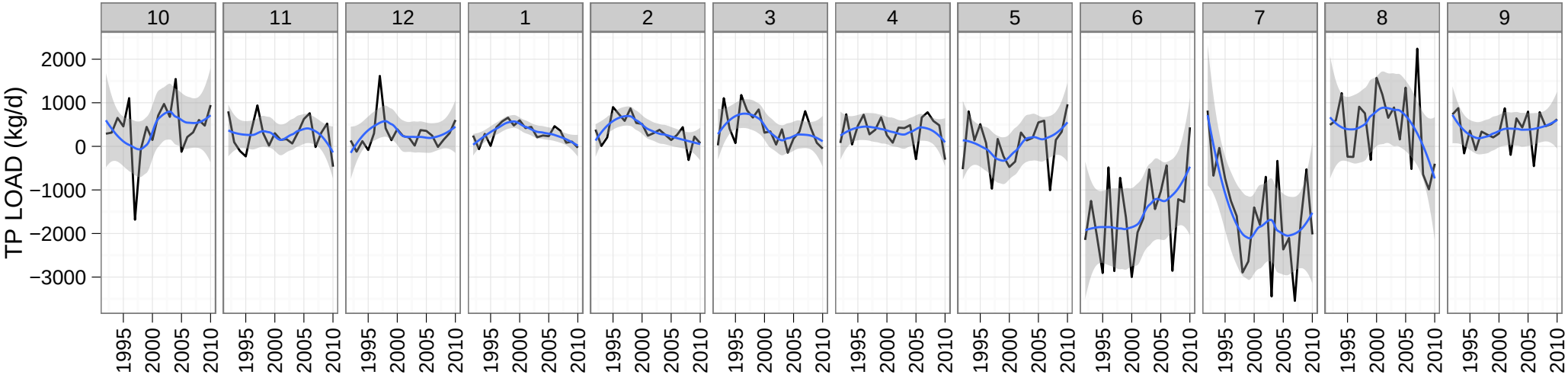


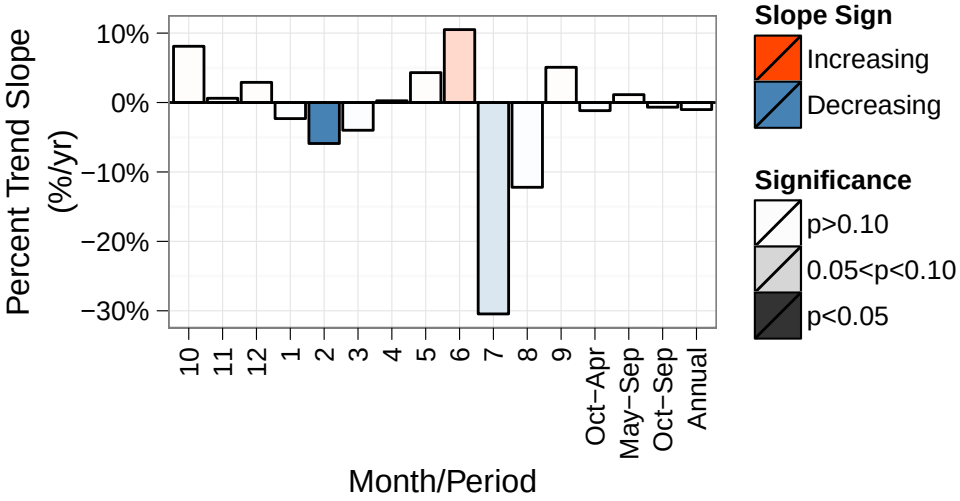


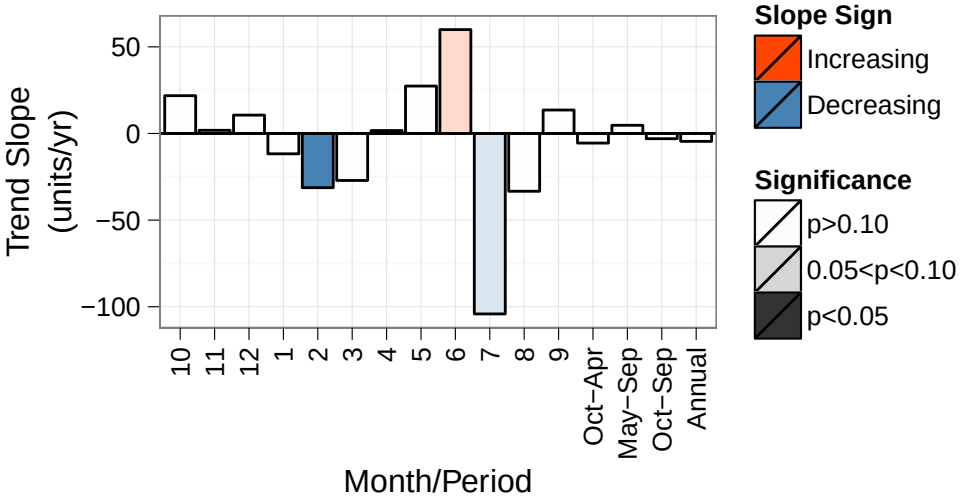
Trend Tests: Retention, TP, LOAD

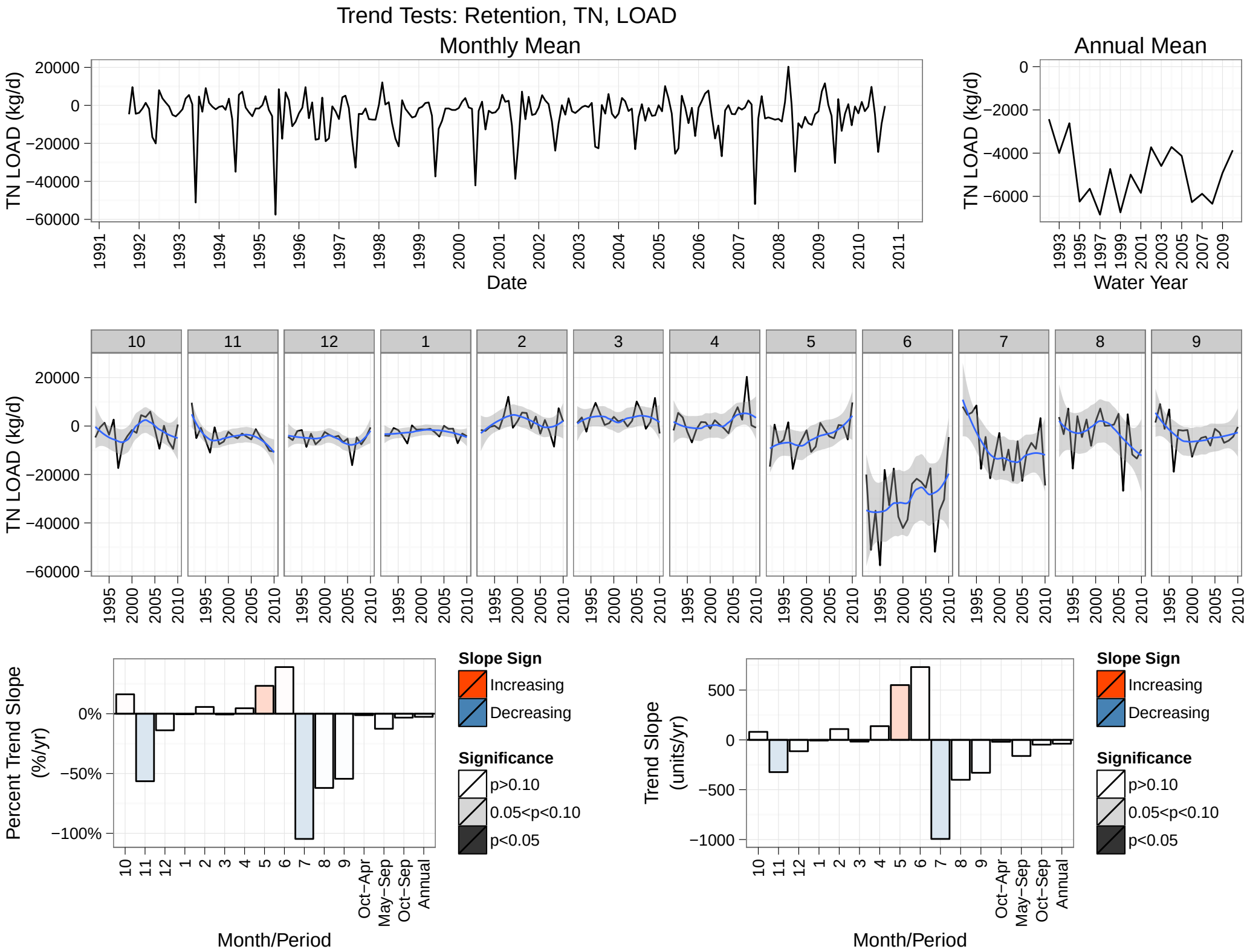


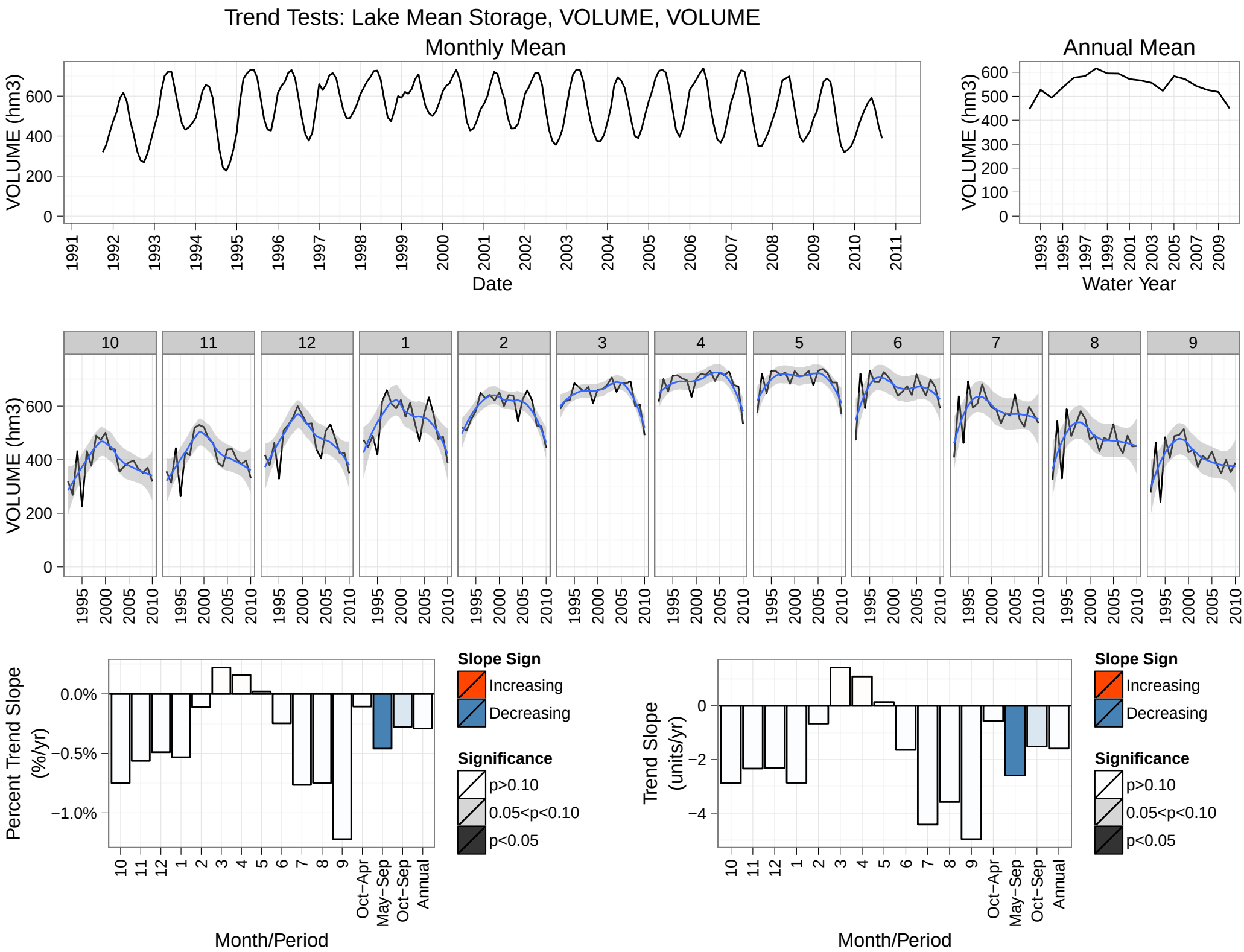




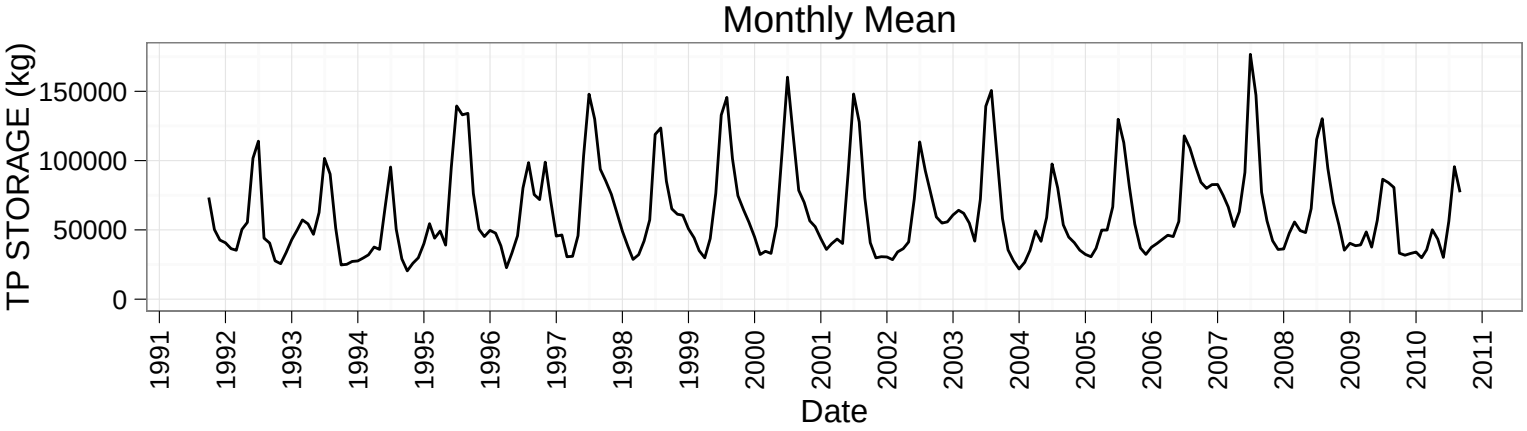


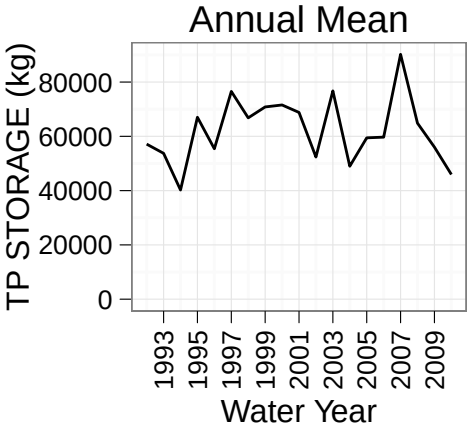


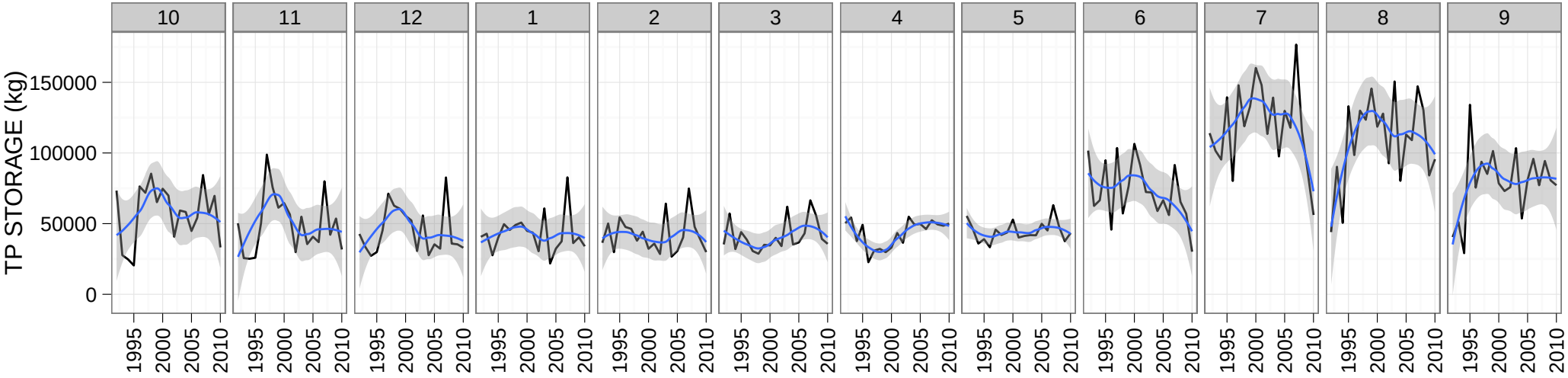

Trend Tests: Retention, TN, LOAD
Monthly Mean
TN LOAD (kg/d)
Date
Annual Mean
TN LOAD (kg/d)
Water Year
10
11
12
1
2
3
4
5
6
7
8
9
TN LOAD (kg/d)
Percent Trend Slope (%/yr)
Month/Period
Slope Sign
Increasing
Decreasing
Significance
p>0.10
0.05<p<0.10
p<0.05
Trend Slope (units/yr)
Month/Period
Slope Sign
Increasing
Decreasing
Significance
p>0.10
0.05<p<0.10
p<0.05

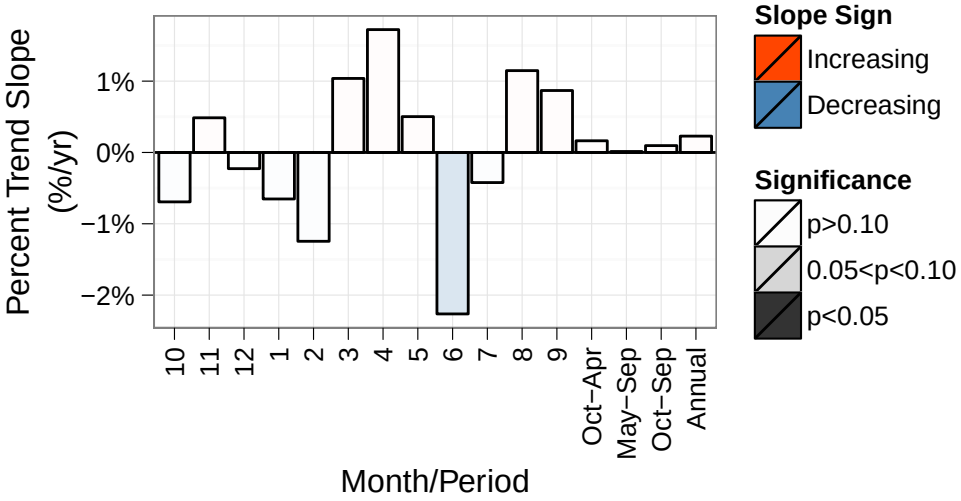

Trend Tests: Lake Mean Storage, VOLUME, VOLUME
Monthly Mean
VOLUME (hm3)
Date
Annual Mean
VOLUME (hm3)
Water Year
Percent Trend Slope (%/yr)
Month/Period
Trend Slope (units/yr)
Month/Period
Slope Sign
Increasing
Decreasing
Significance
p>0.10
0.05<p<0.10
p<0.05

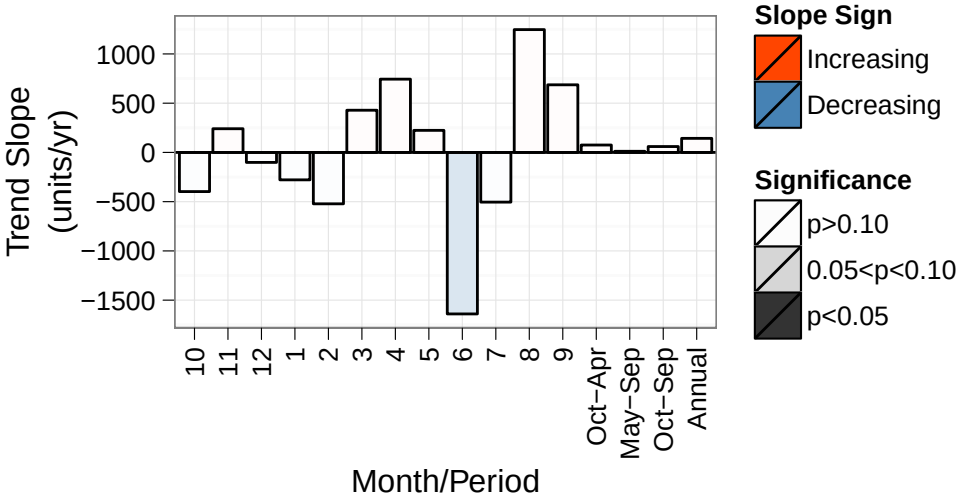
Trend Tests: Lake Mean Storage, TP, STORAGE



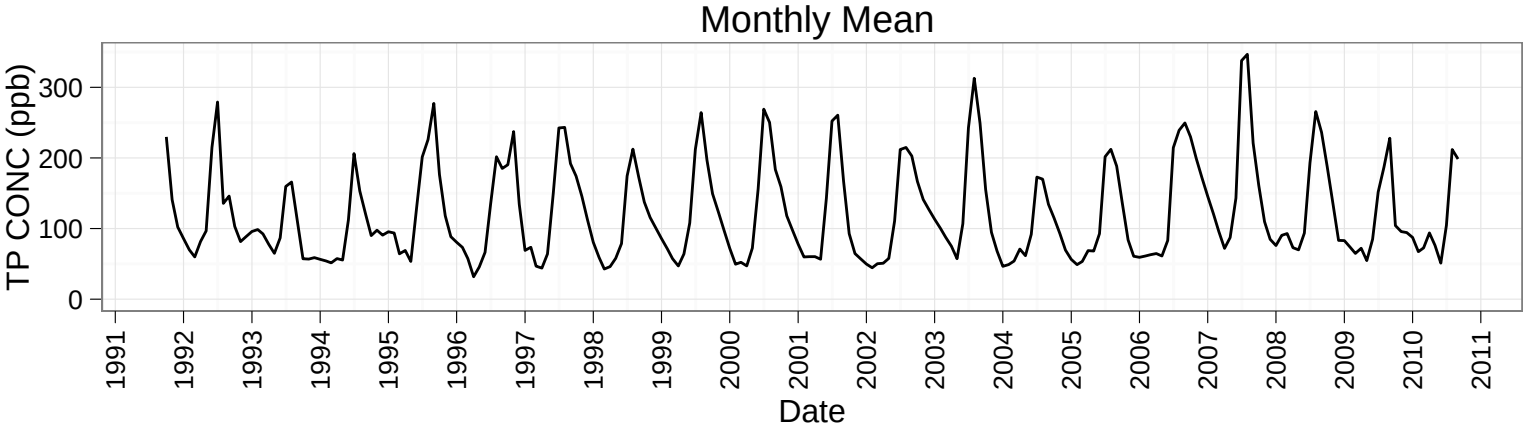


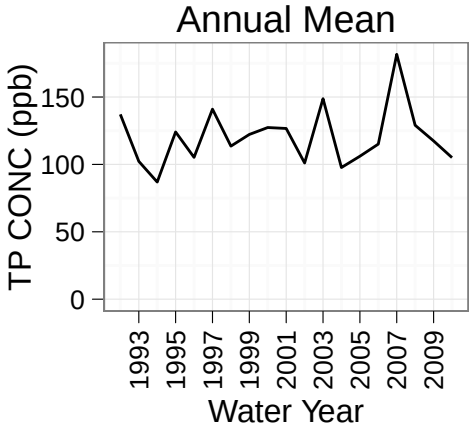


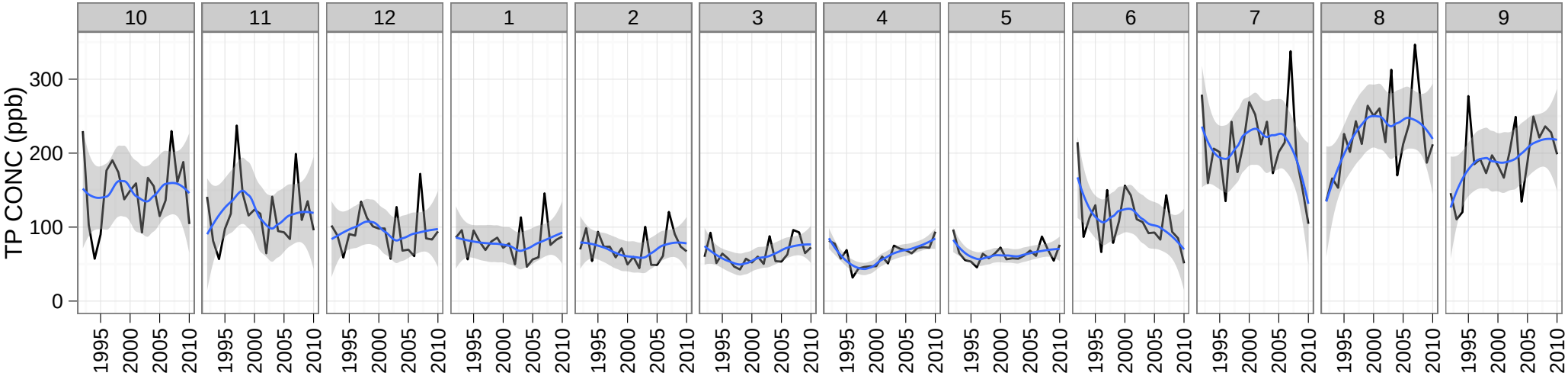


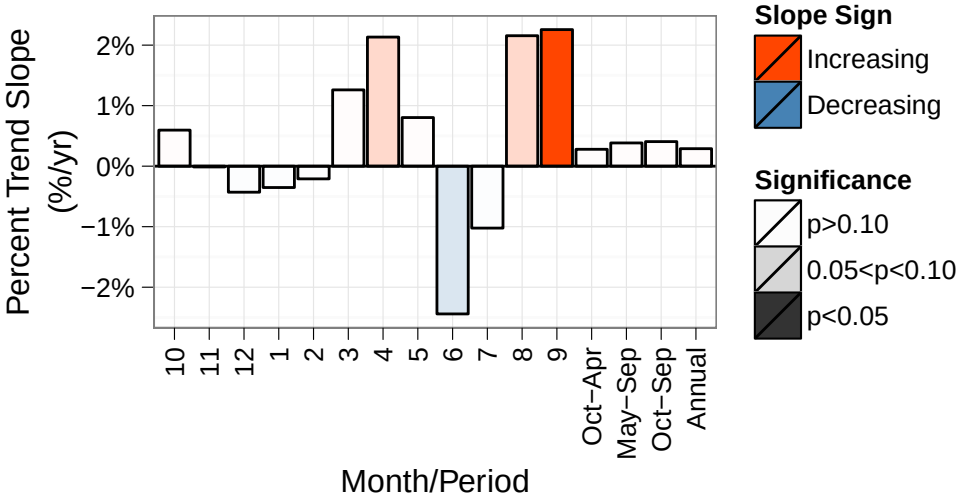


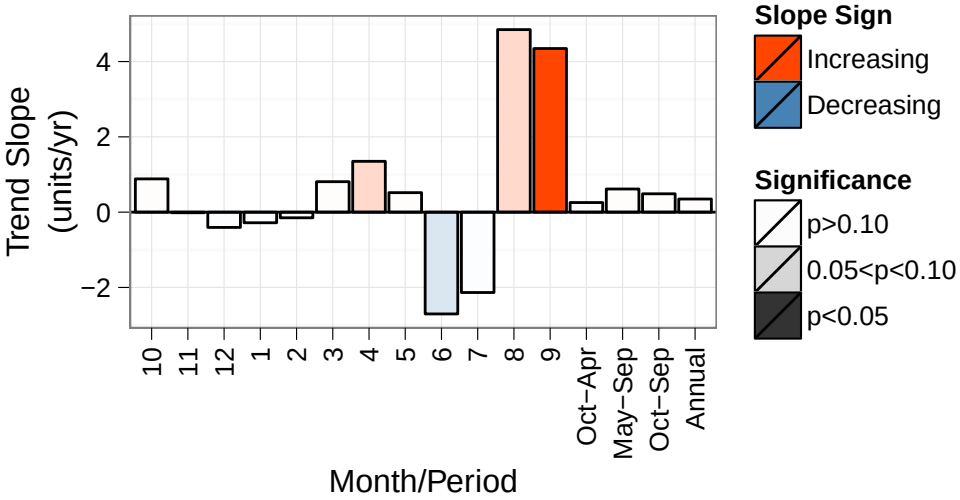
Trend Tests: Lake Mean Storage, TP, CONC



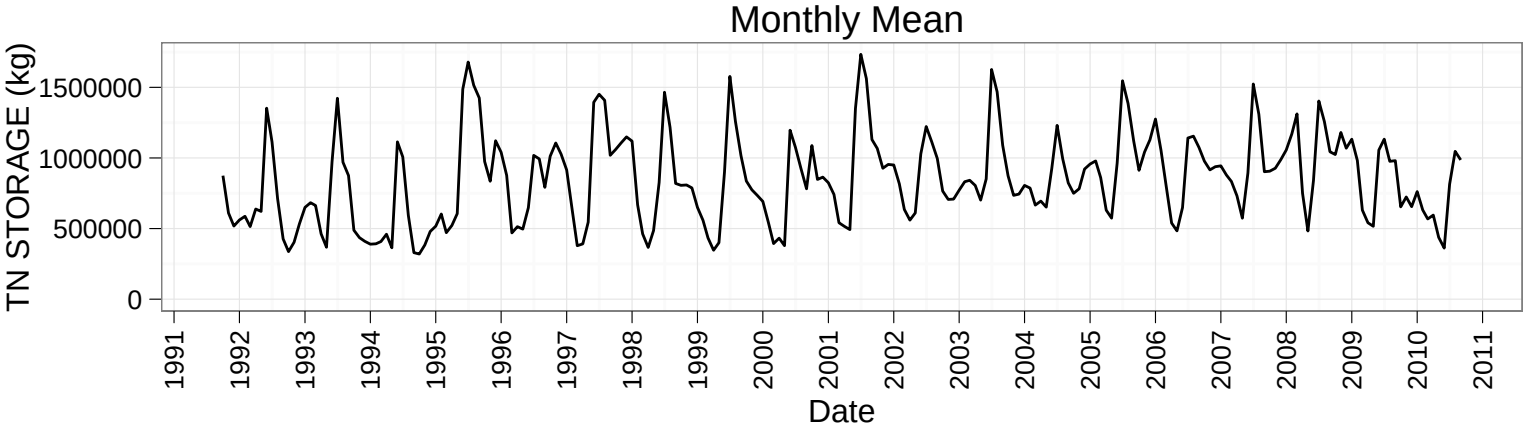


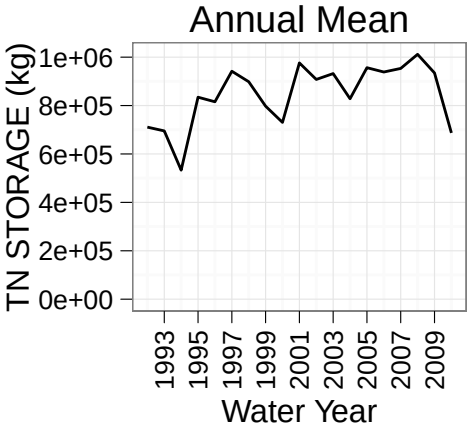


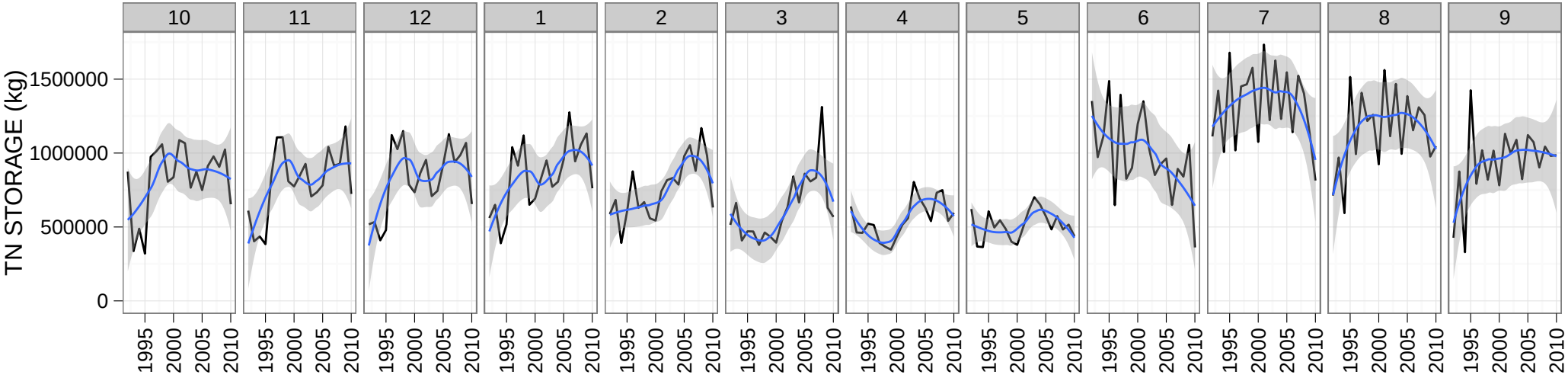


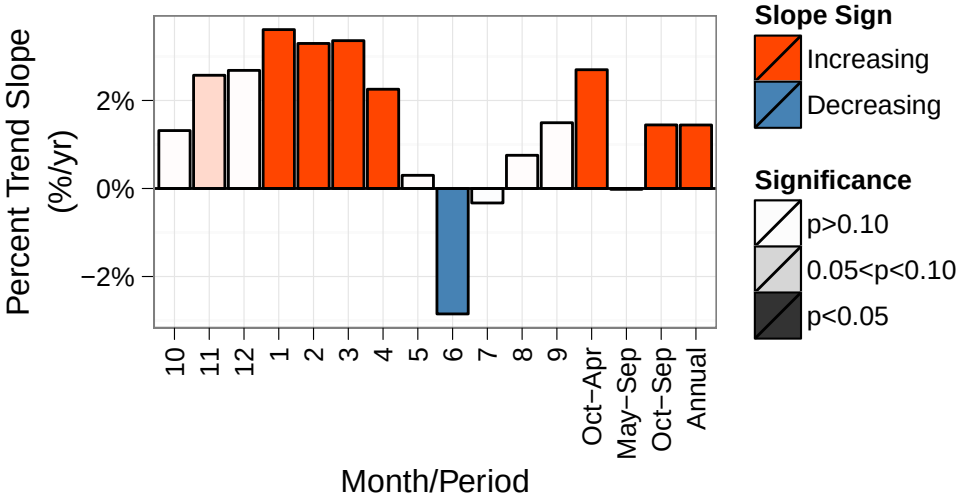


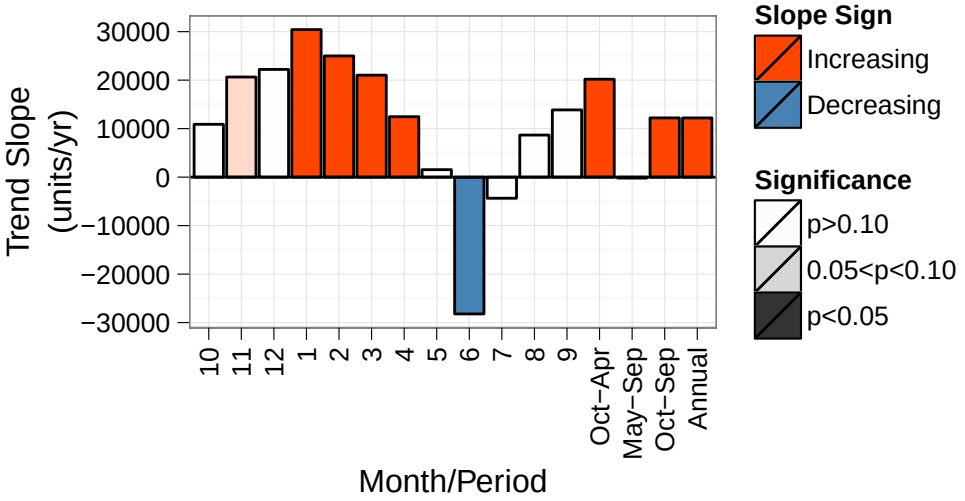
Trend Tests: Lake Mean Storage, TN, STORAGE



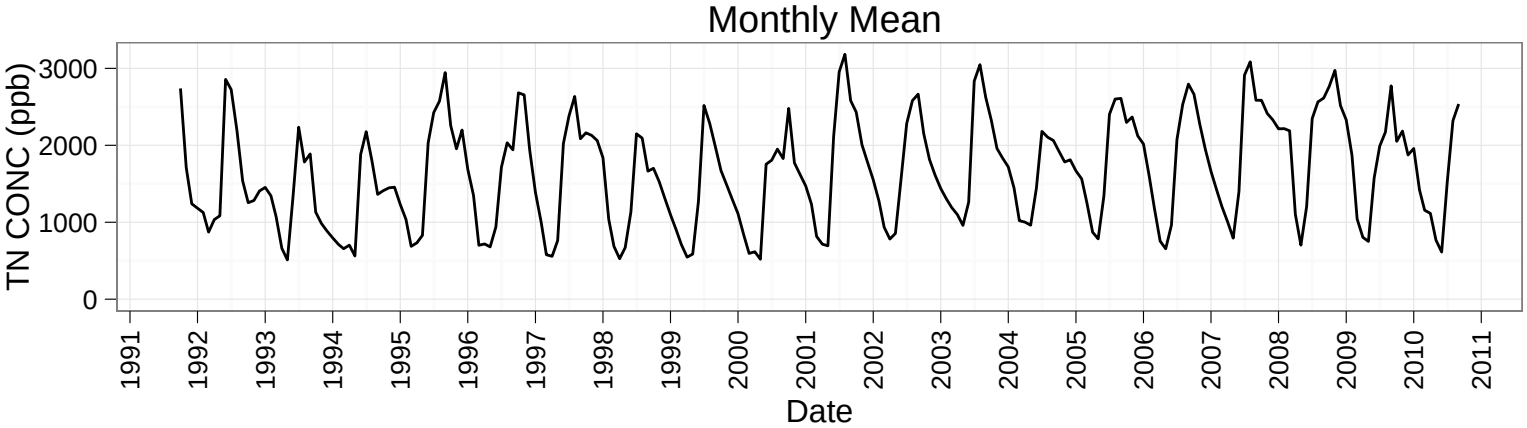


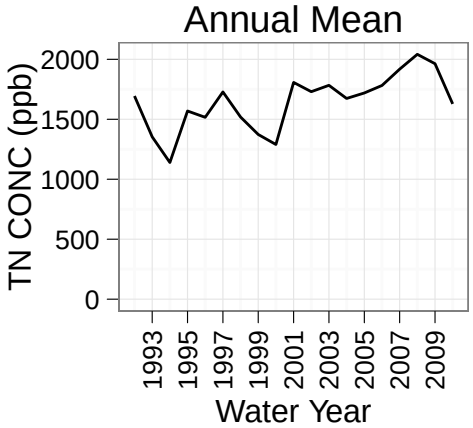


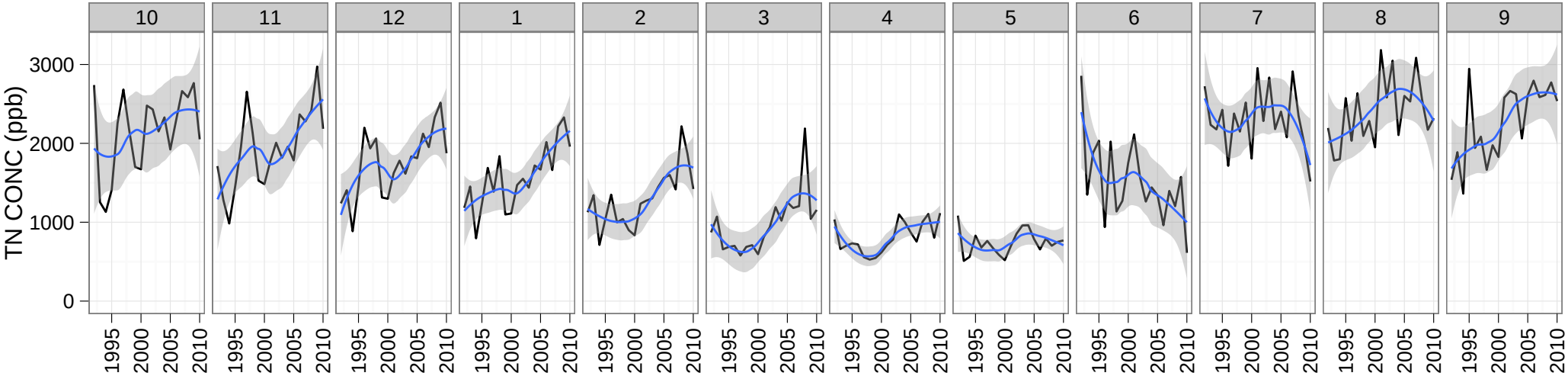


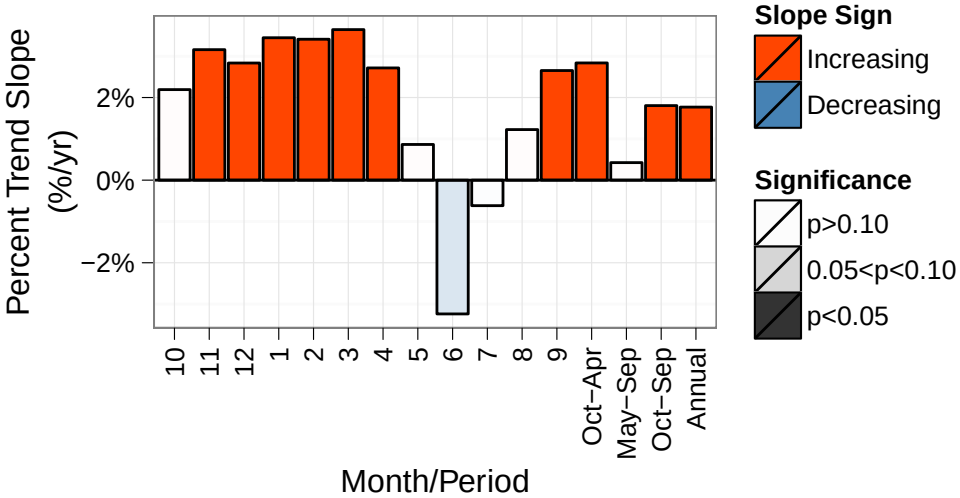


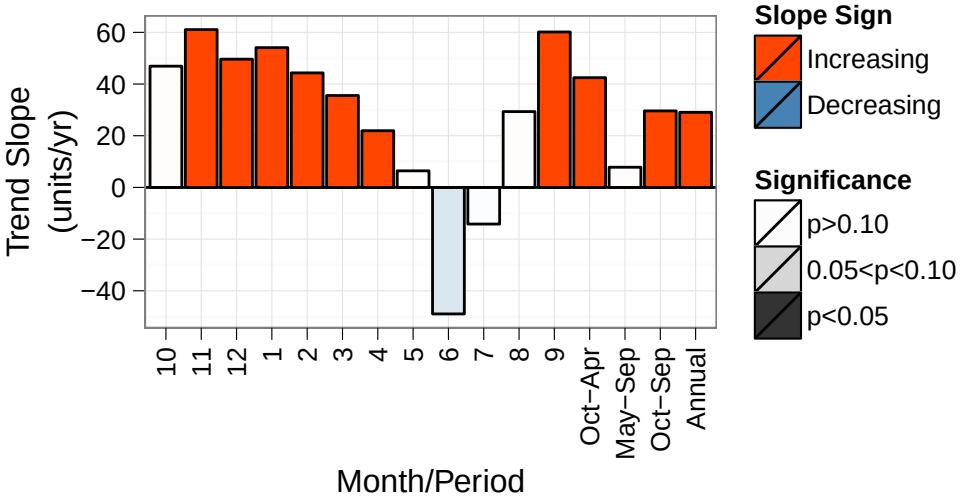
Trend Tests: Lake Mean Storage, TN, CONC











Appendix H
Annual and Seasonal Variations in Nutrient Species Concentrations

Figures

H1 Annual and Seasonal Variations in Nutrient Species Concentrations

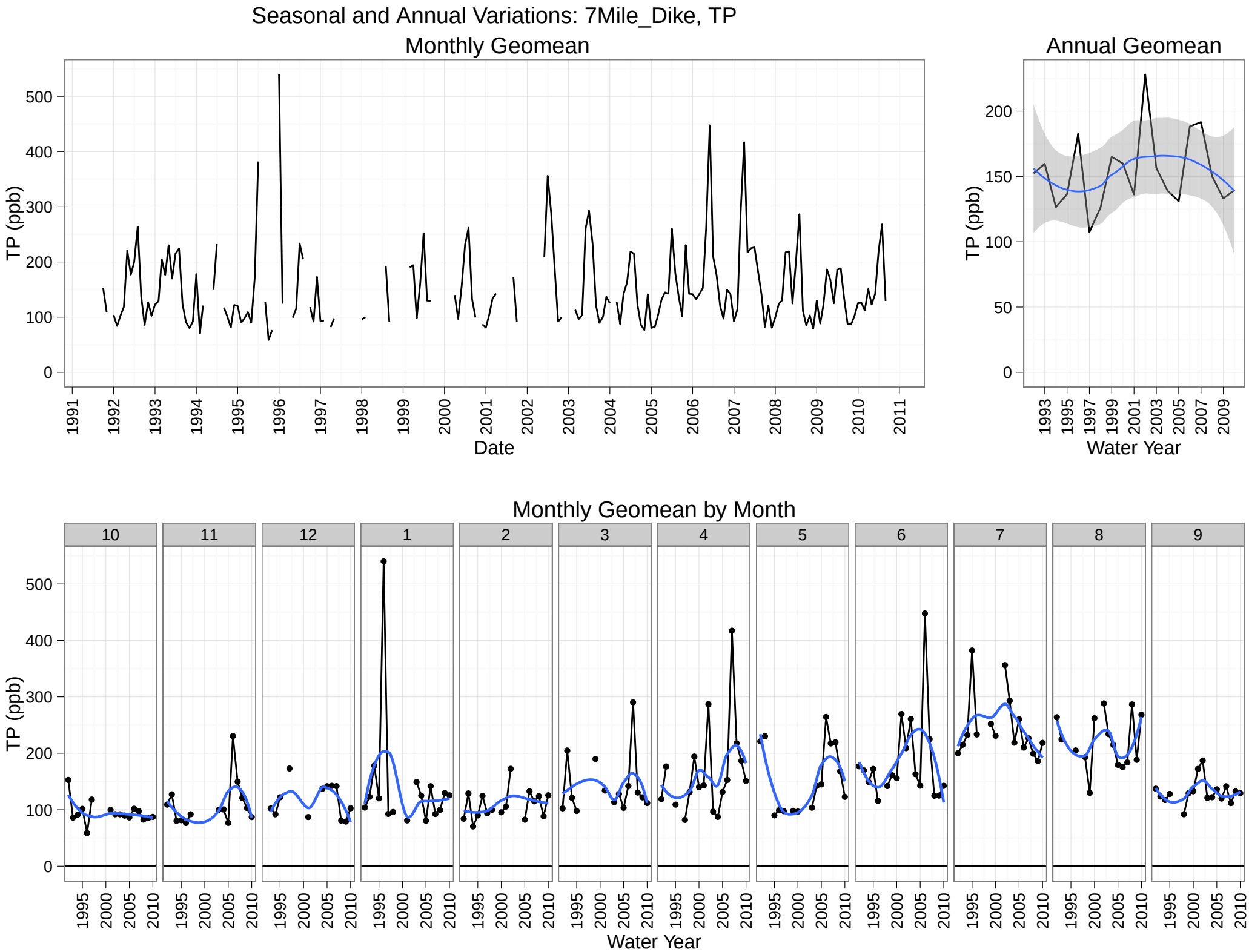
Figure H1: Annual and Seasonal Variations in Nutrient Species Concentrations

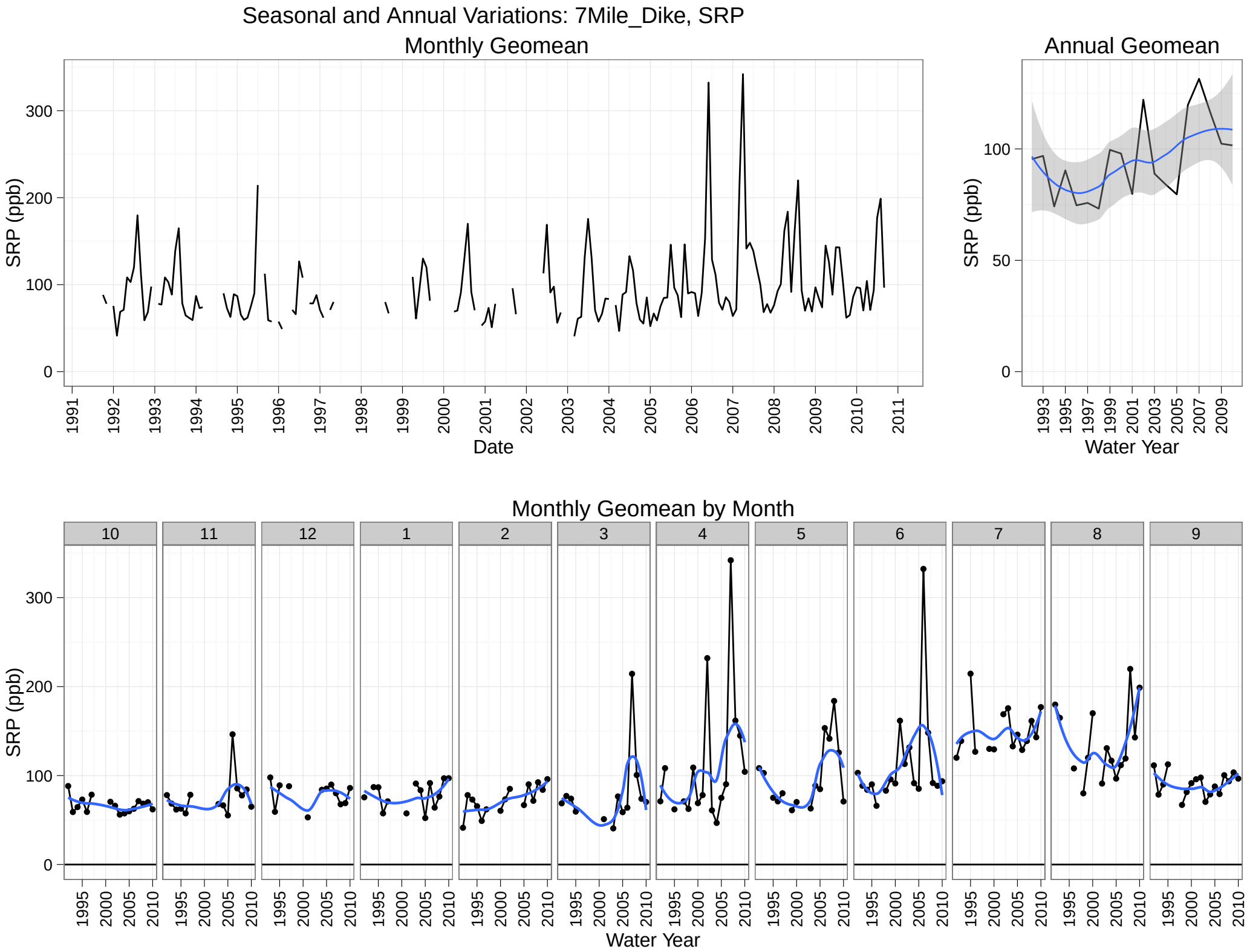
Description: Monthly and annual geometric mean time series of concentrations for each major sampling station
Time series of monthly geometric mean concentraiton grouped by month over the period of record

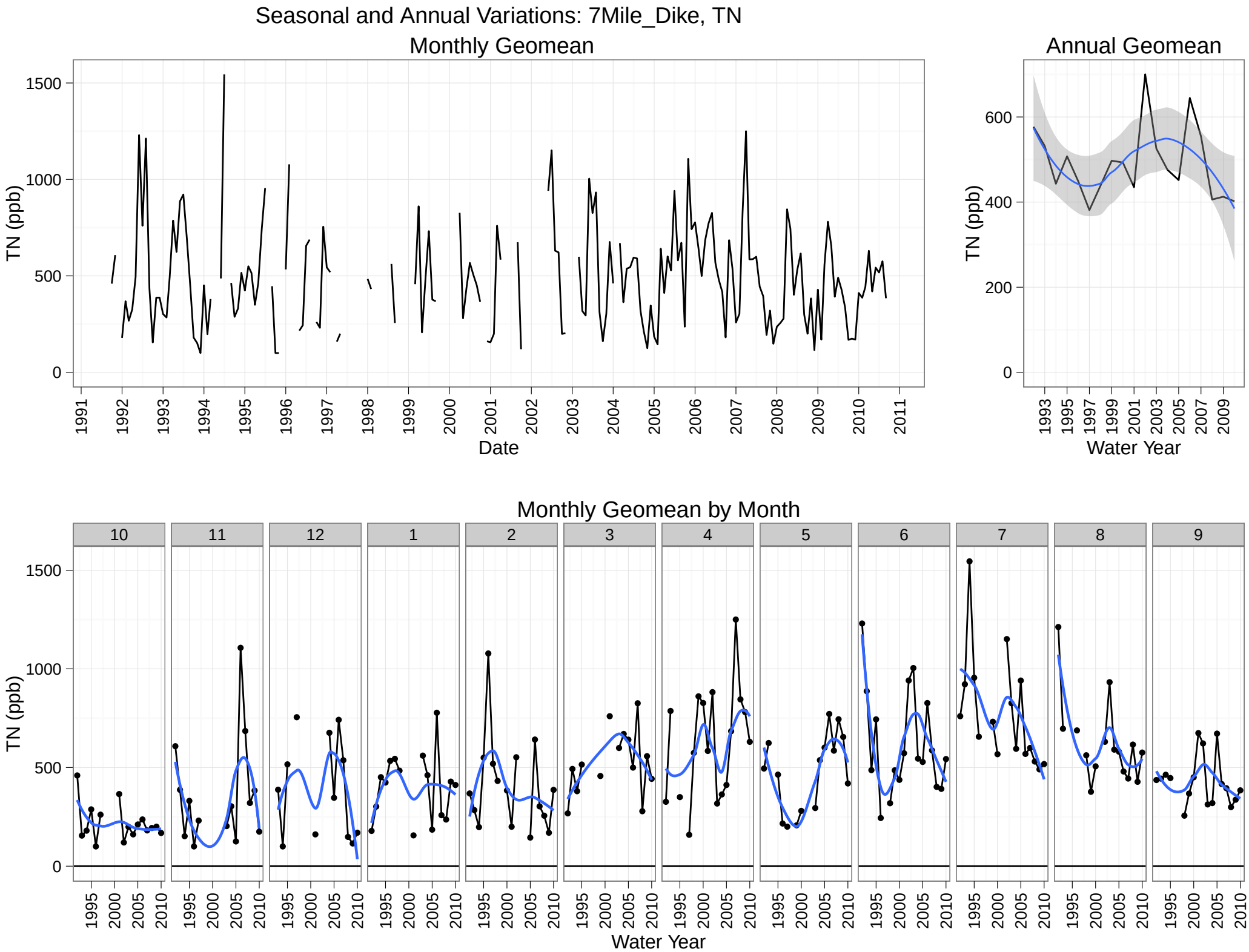
Variables:	TP	Total Phosphorus
	SRP	Soluble Reactive Phosphorus
	TN	Total Nitrogen
	NH4N	Ammonia Nitrogen
	NO23N	Nitrite+Nitrate Nitrogen
Stations:	7Mile_Dike	Sevenmile Canal at Dike Road
	Wood_Weed	Wood River at Weed Road
	Wood_Dike	Wood River at Dike Road
	Sprague	Sprague River
	Williamson	Williamson River
	Outlet	Lake Outlet

Note: Sample data for TN, NH4N and NO23N were constained to the maximum detection limits over the period of record (100 ppb for TN, 10 ppb for NH4N and NO23N)
Excludes three outliers of NO23N at Wood_Dike (7/7/1992) and Wood_Weed (7/7/1992 and 11/5/1991)
Monthly and annual geometric means computed directly from sample concentration data
Results for TP and TN may be different from those shown in Appendix G, which are based on monthly concentration and load estimates computed for the mass balance (see Appendix B)
Annual Geomean panel includes LOESS smooth with +/- 1 standard error bands
Monthly Geomean by Month panel includes LOESS smooth without standard error bands

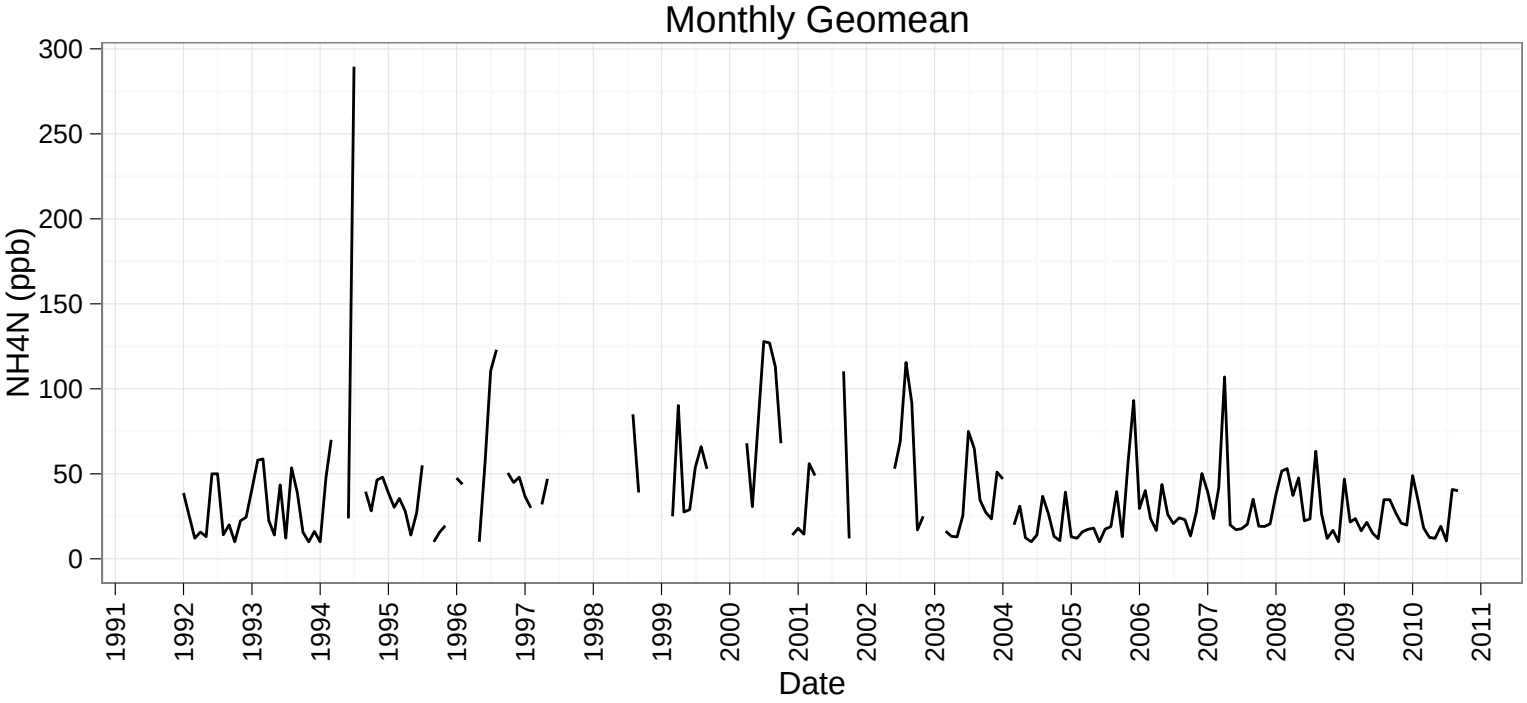
Total Pages: 30

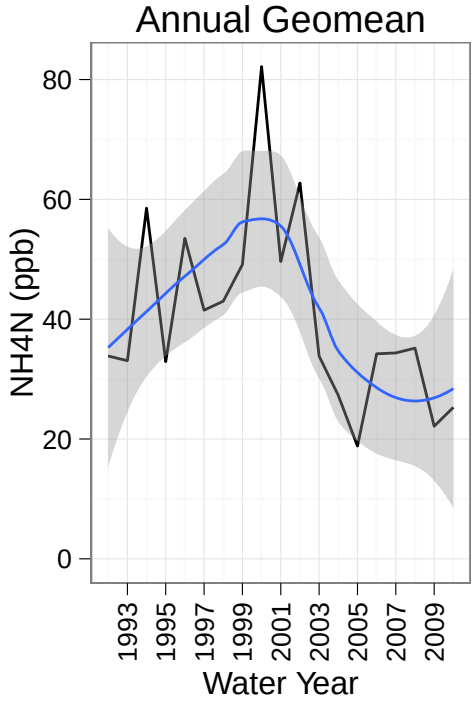

Seasonal and Annual Variations: 7Mile_Dike, TP
Monthly Geomean
TP (ppb)
Date
Annual Geomean
TP (ppb)
Water Year
Monthly Geomean by Month
10
11
12
1
2
3
4
5
6
7
8
9
TP (ppb)
Water Year

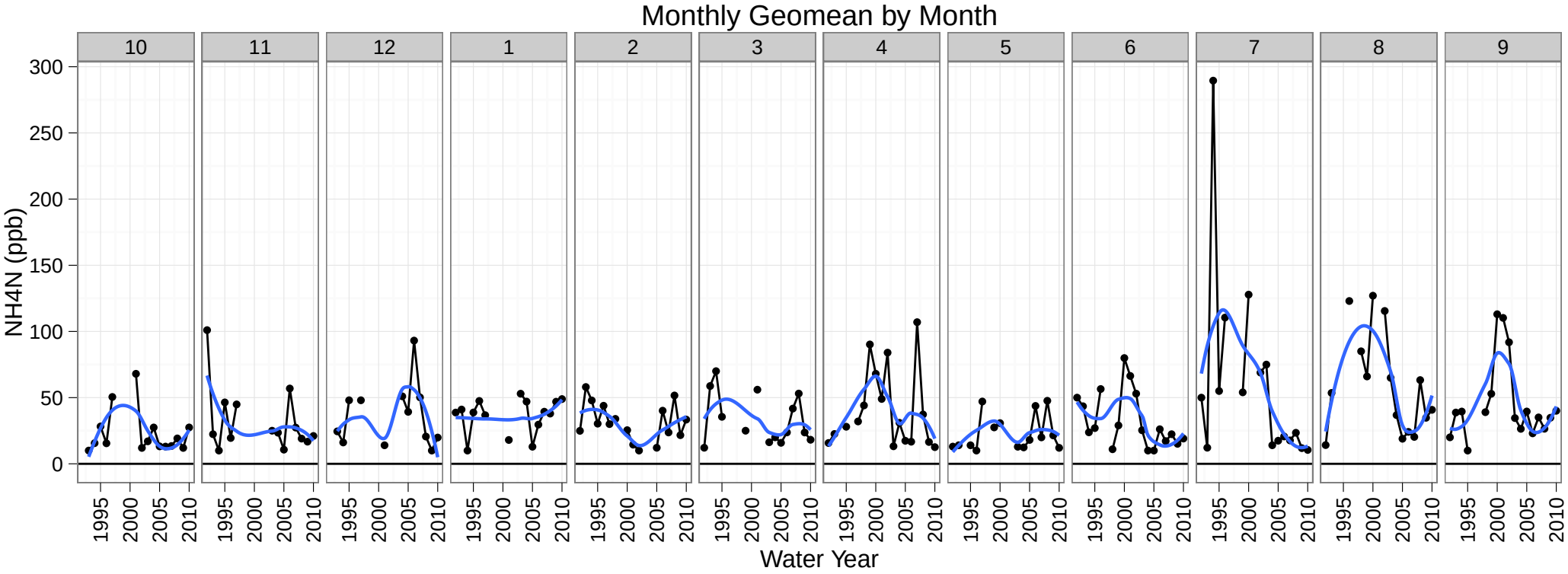

Seasonal and Annual Variations: 7Mile_Dike, SRP
Monthly Geomean
SRP (ppb)
Date
Annual Geomean
SRP (ppb)
Water Year
Monthly Geomean by Month
10
11
12
1
2
3
4
5
6
7
8
9
SRP (ppb)
Water Year

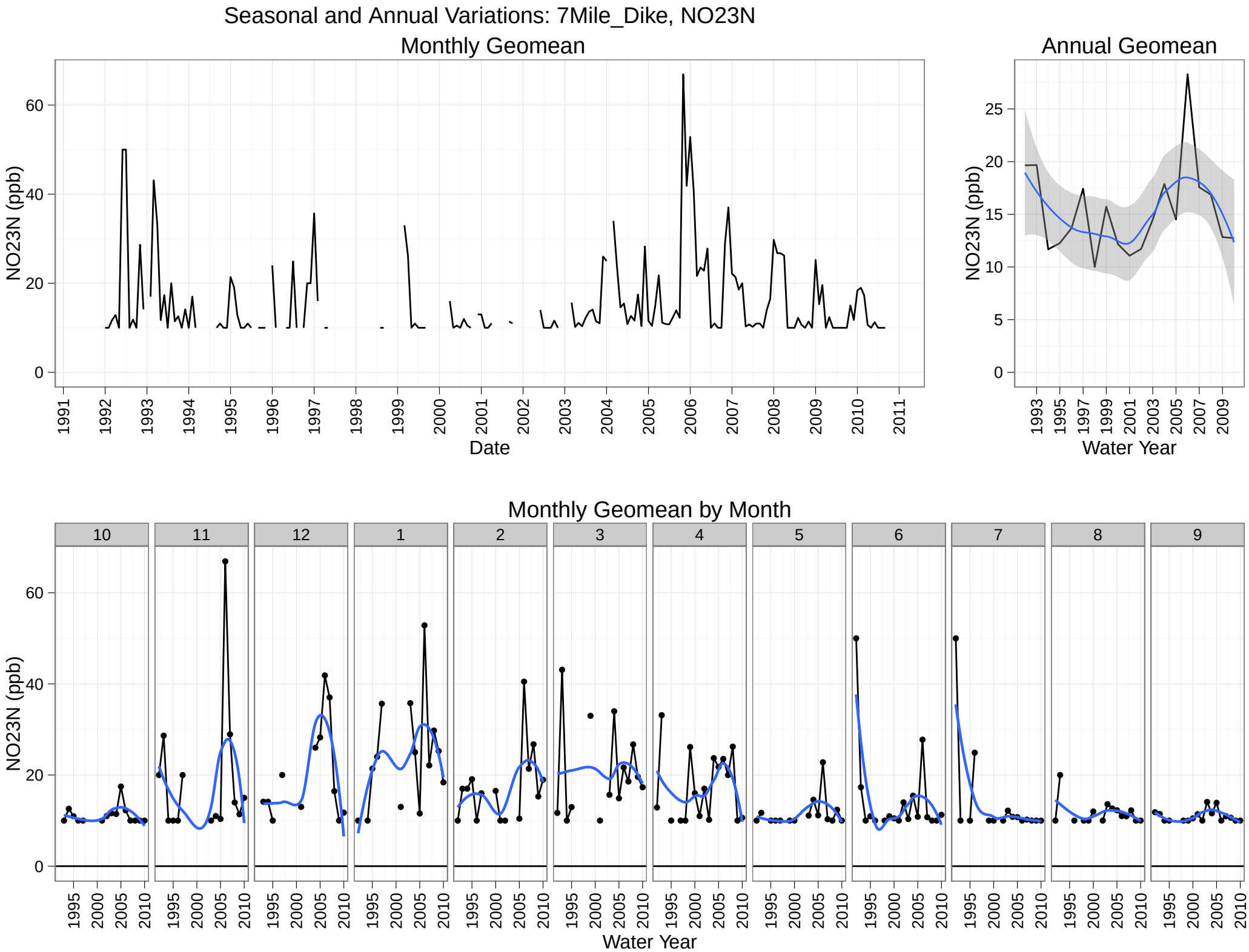

Seasonal and Annual Variations: 7Mile_Dike, TN
Monthly Geomean
TN (ppb)
Date
Annual Geomean
TN (ppb)
Water Year
Monthly Geomean by Month
10
11
12
1
2
3
4
5
6
7
8
9
TN (ppb)
Water Year

Seasonal and Annual Variations: 7Mile_Dike, NH4N








Seasonal and Annual Variations: 7Mile_Dike, NO23N
Monthly Geomean
NO23N (ppb)
Date
Annual Geomean
NO23N (ppb)
Water Year
Monthly Geomean by Month
10
11
12
1
2
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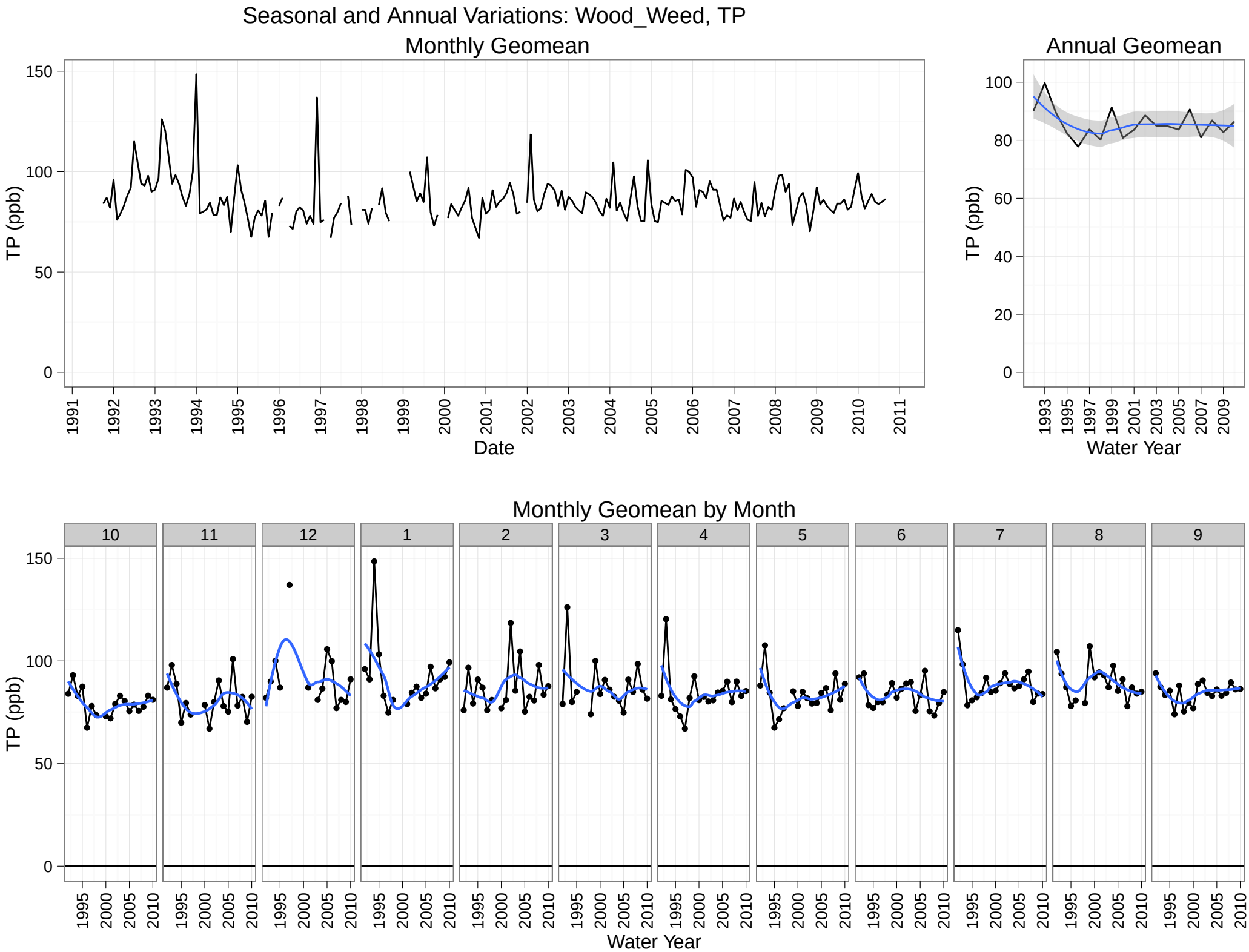
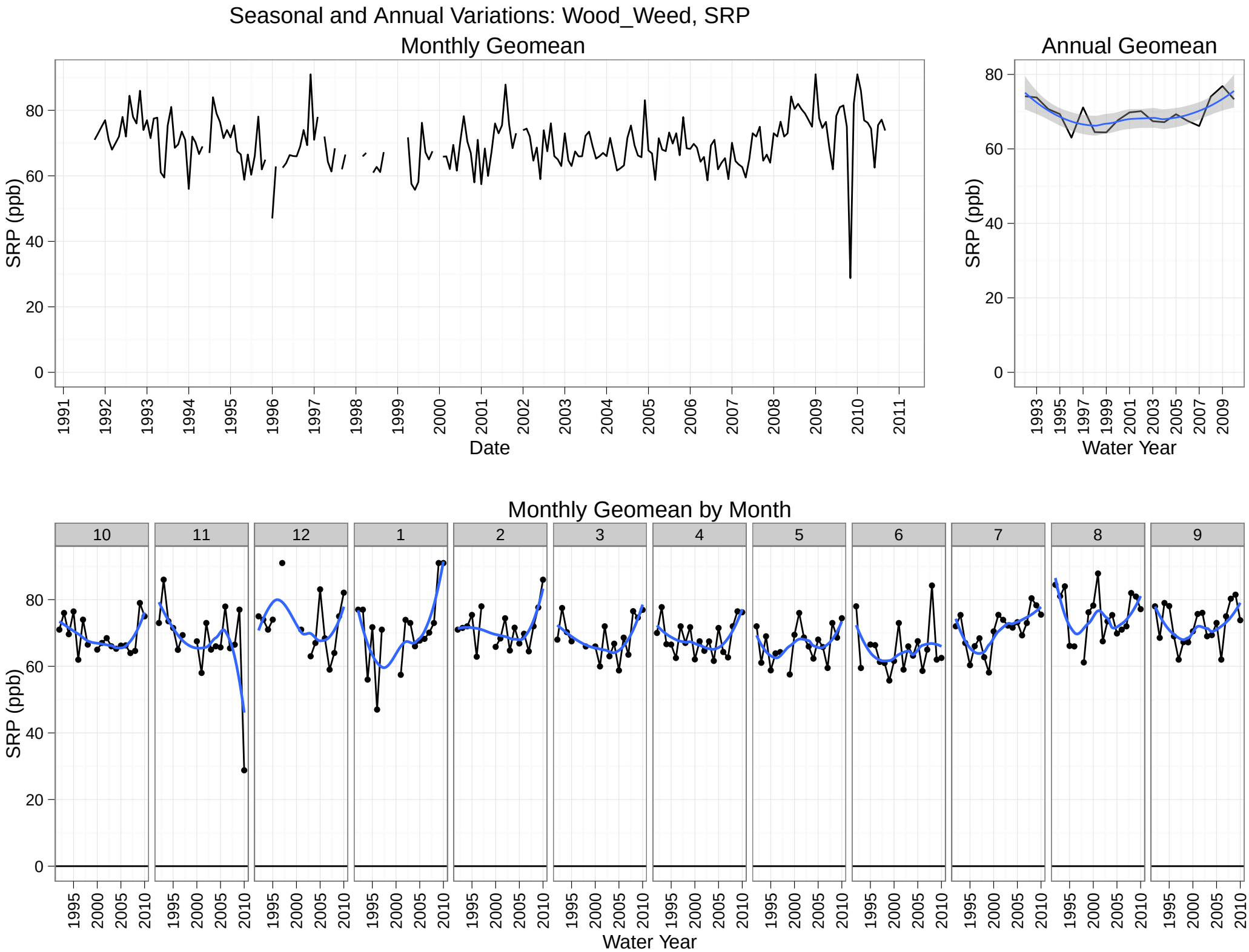
4
5
6
7
8
9
NO23N (ppb)
Water Year


Seasonal and Annual Variations: Wood_Weed, TP
Monthly Geomean
TP (ppb)
Date
Annual Geomean
TP (ppb)
Water Year
Monthly Geomean by Month
10
11
12
1
2
3
4
5
6
7
8
9
TP (ppb)
Water Year


Seasonal and Annual Variations: Wood_Weed, SRP
Monthly Geomean
SRP (ppb)
Date
Annual Geomean
SRP (ppb)
Water Year
Monthly Geomean by Month
10
11
12
1
2
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5
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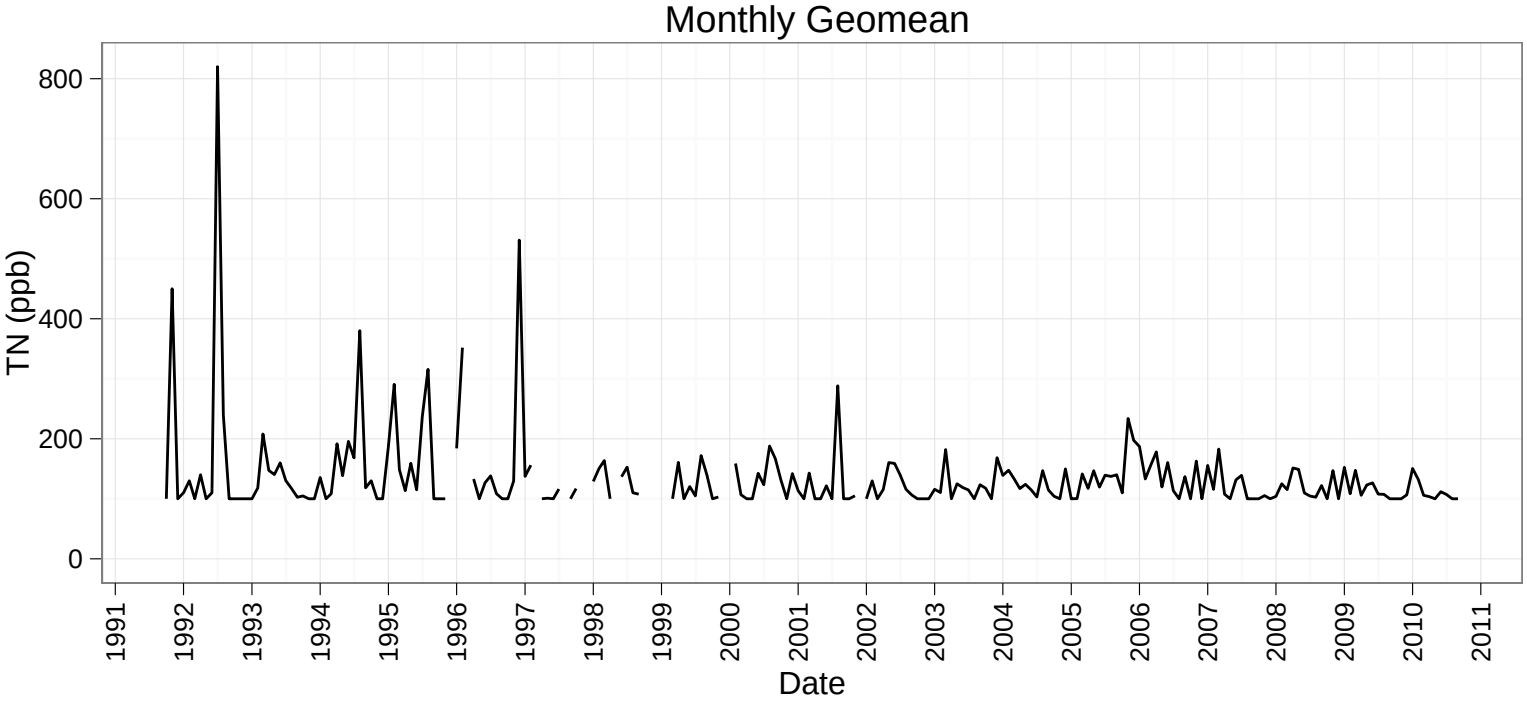
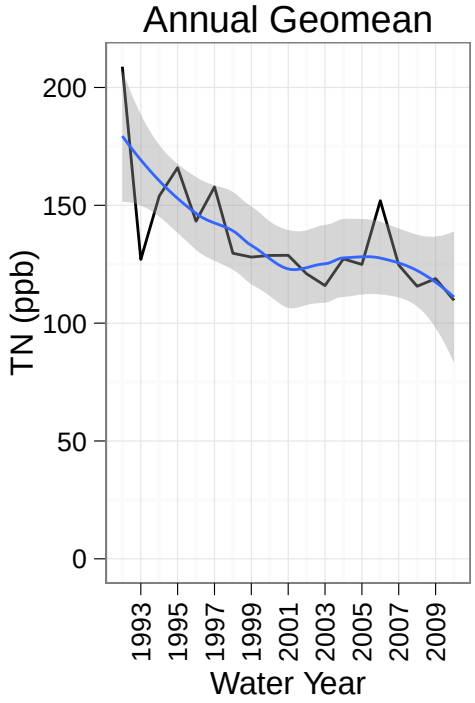
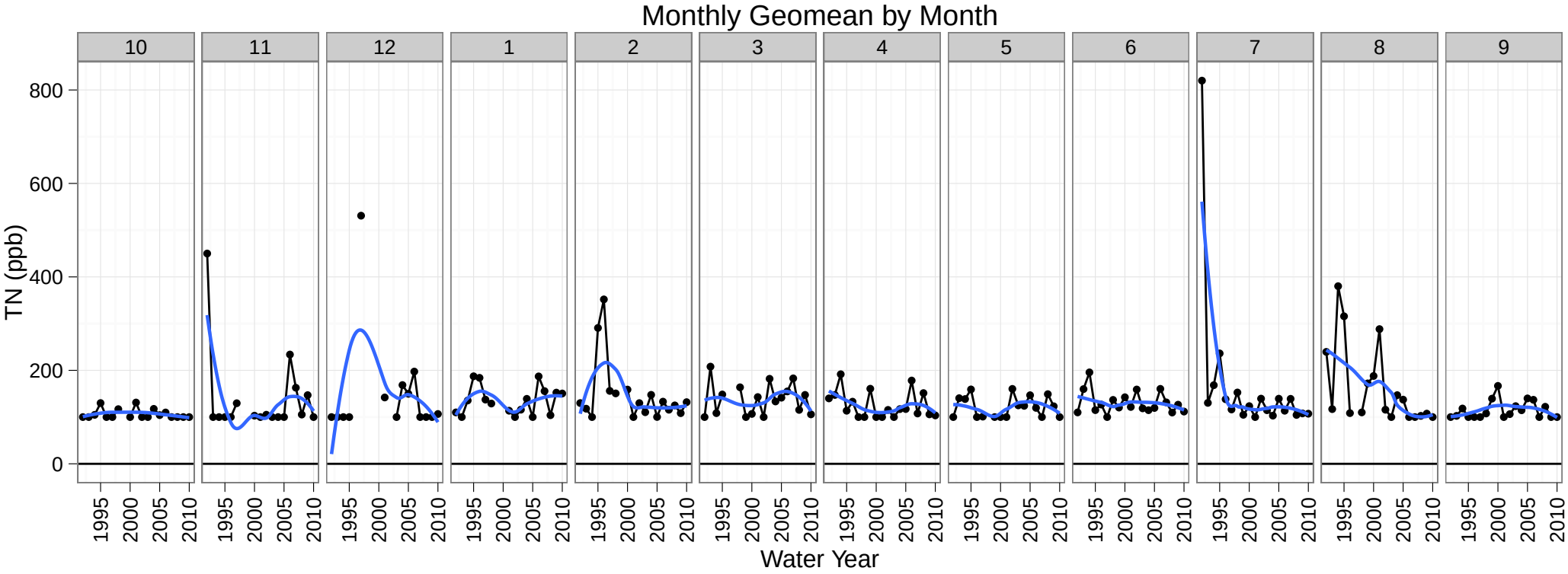
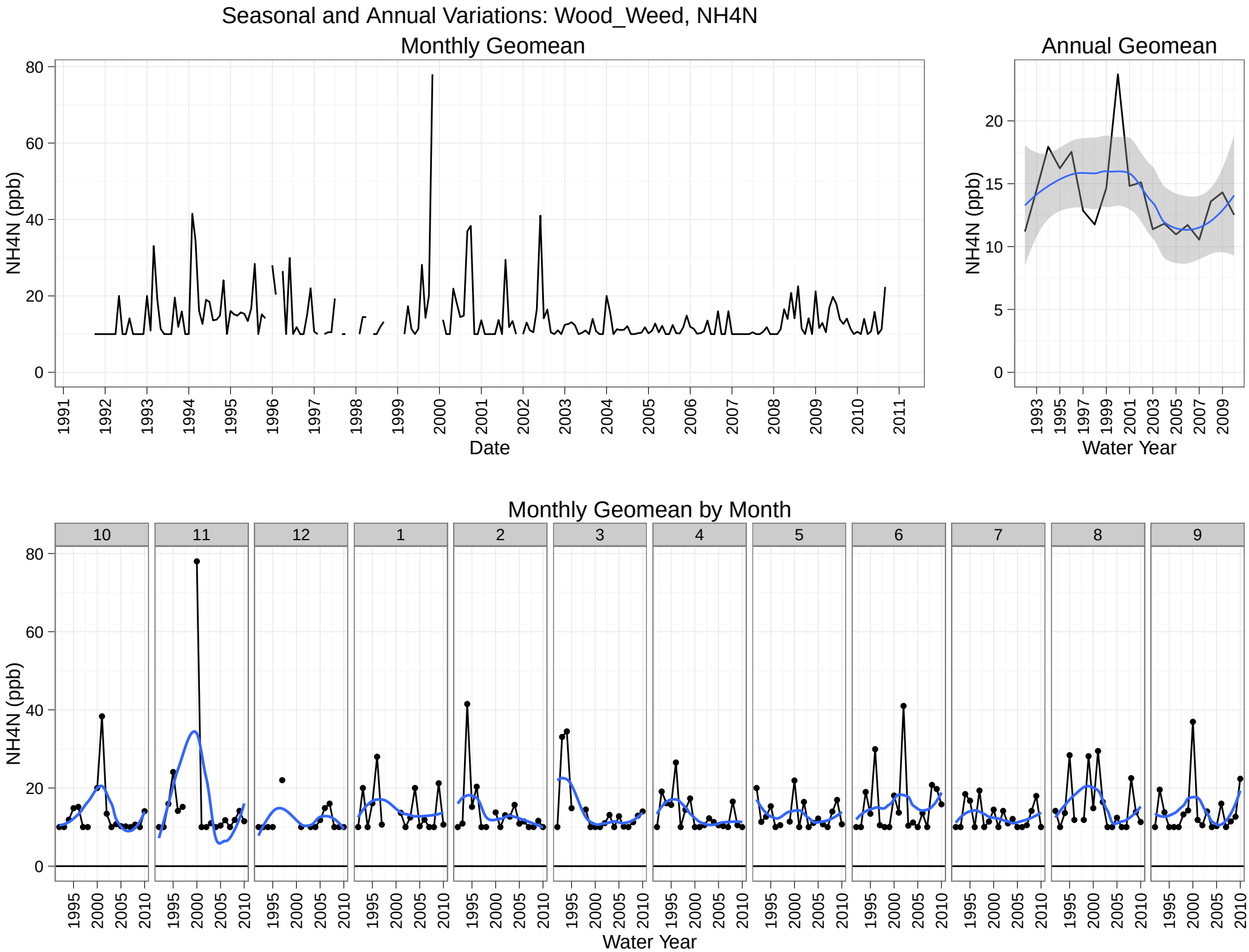
7
8
9
SRP (ppb)
Water Year

Seasonal and Annual Variations: Wood_Weed, TN








Seasonal and Annual Variations: Wood_Weed, NH4N
Monthly Geomean
NH4N (ppb)
Date
Annual Geomean
NH4N (ppb)
Water Year
Monthly Geomean by Month
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11
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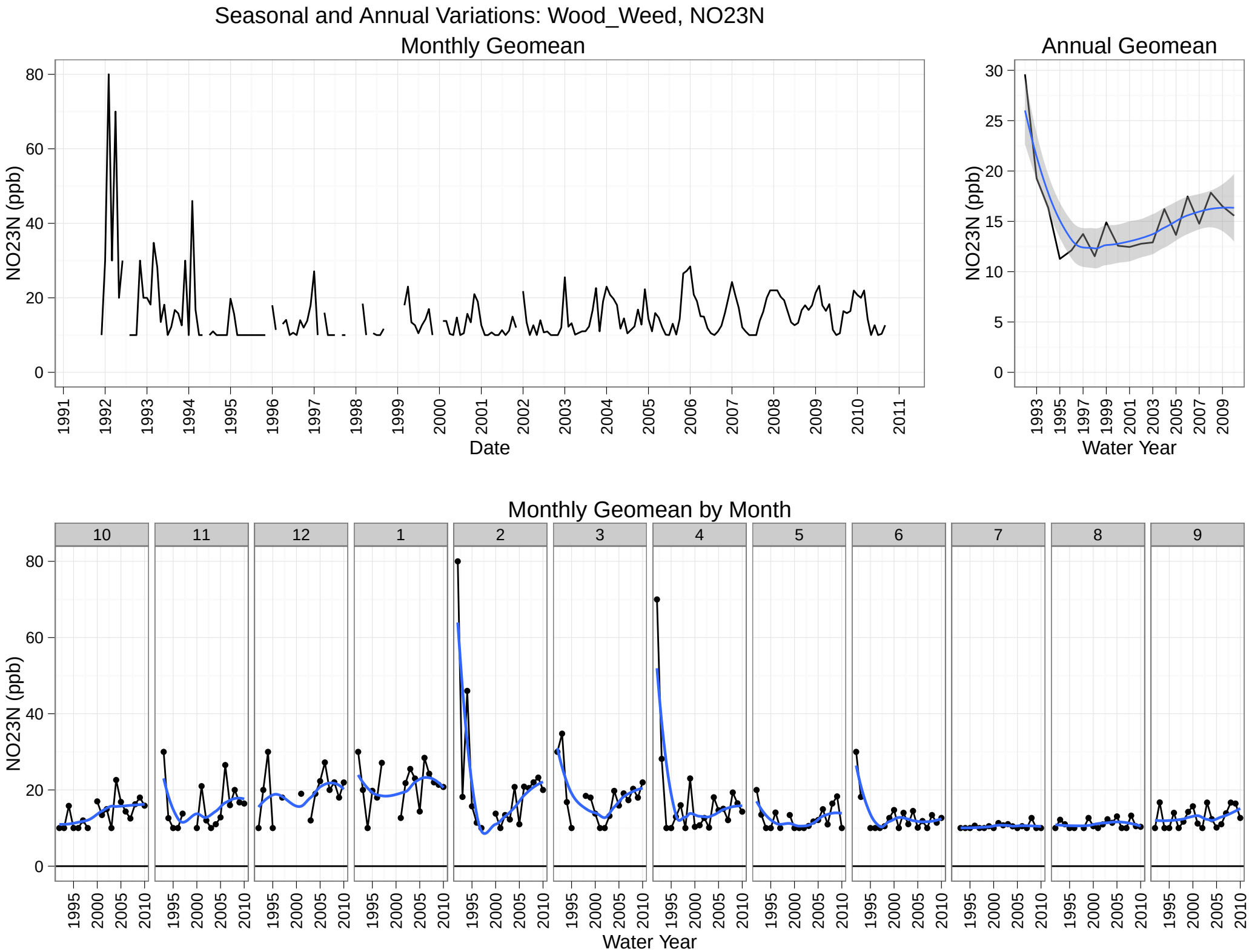
NH4N (ppb)
Water Year


Seasonal and Annual Variations: Wood_Weed, NO23N
Monthly Geomean
NO23N (ppb)
Date
Annual Geomean
NO23N (ppb)
Water Year
Monthly Geomean by Month
10
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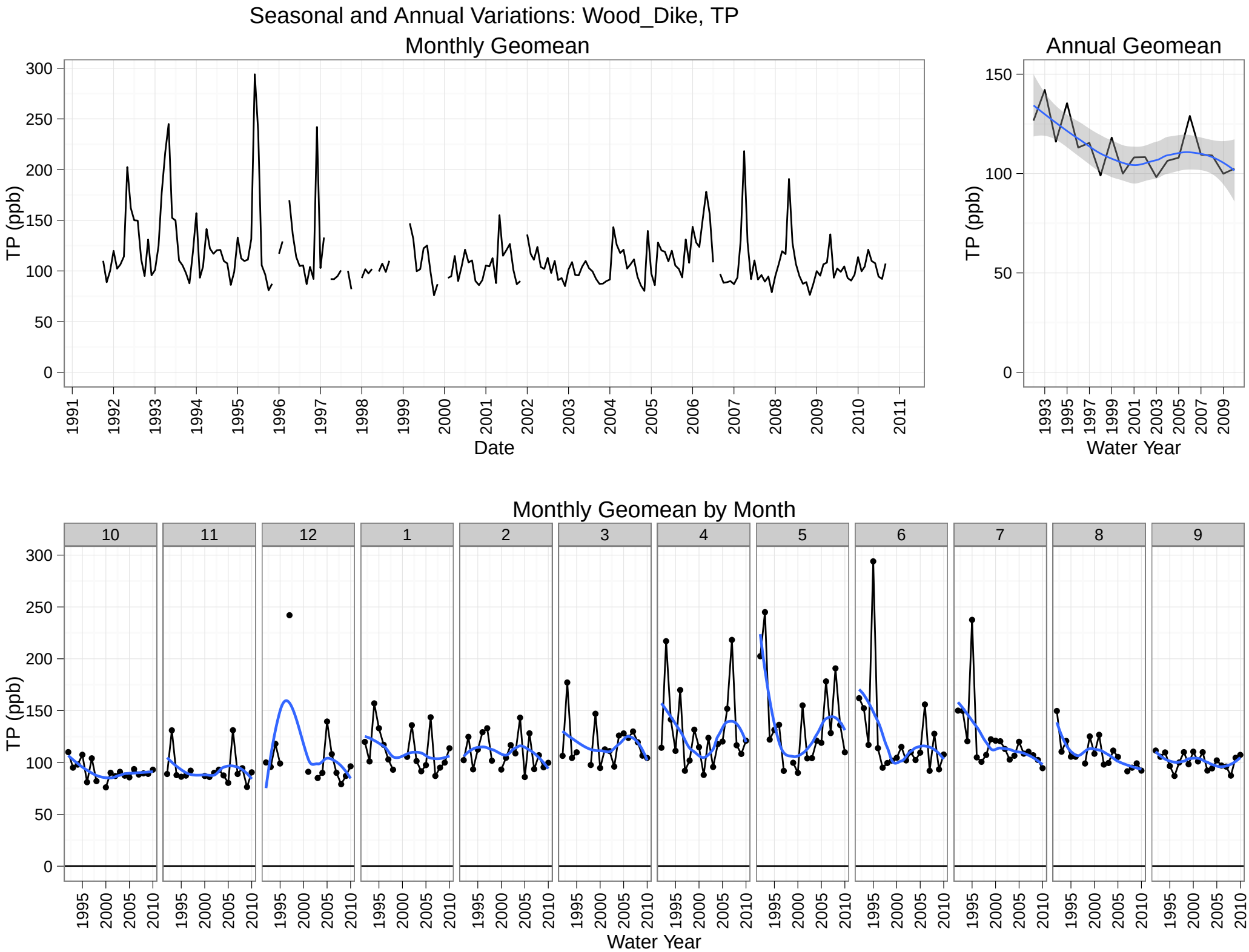
NO23N (ppb)
Water Year


Seasonal and Annual Variations: Wood_Dike, TP
Monthly Geomean
TP (ppb)
Date
Annual Geomean
TP (ppb)
Water Year
Monthly Geomean by Month
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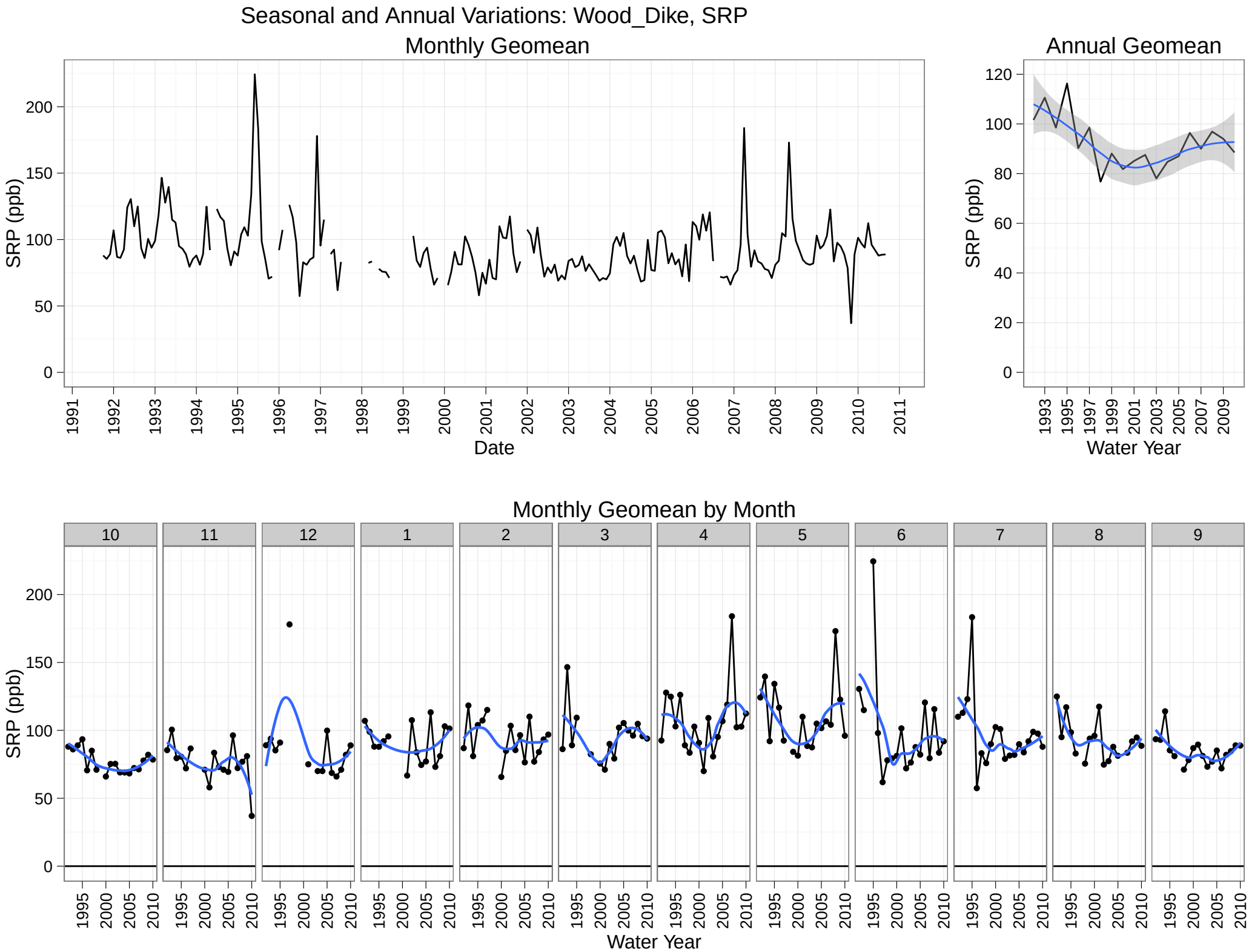
9
TP (ppb)
Water Year


Seasonal and Annual Variations: Wood_Dike, SRP
Monthly Geomean
SRP (ppb)
Date
Annual Geomean
SRP (ppb)
Water Year
Monthly Geomean by Month
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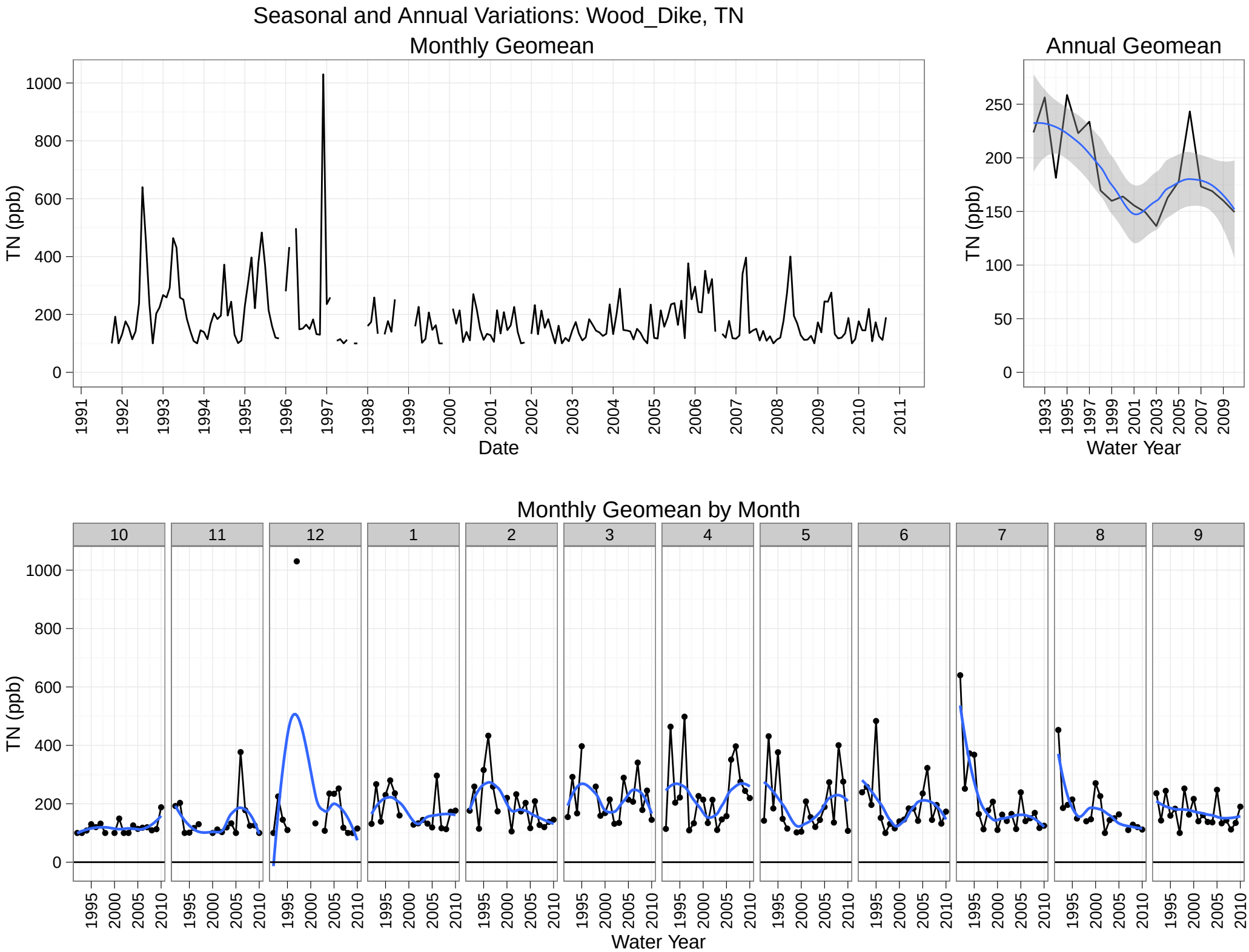
SRP (ppb)
Water Year


Seasonal and Annual Variations: Wood_Dike, TN
Monthly Geomean
TN (ppb)
Date
Annual Geomean
TN (ppb)
Water Year
Monthly Geomean by Month
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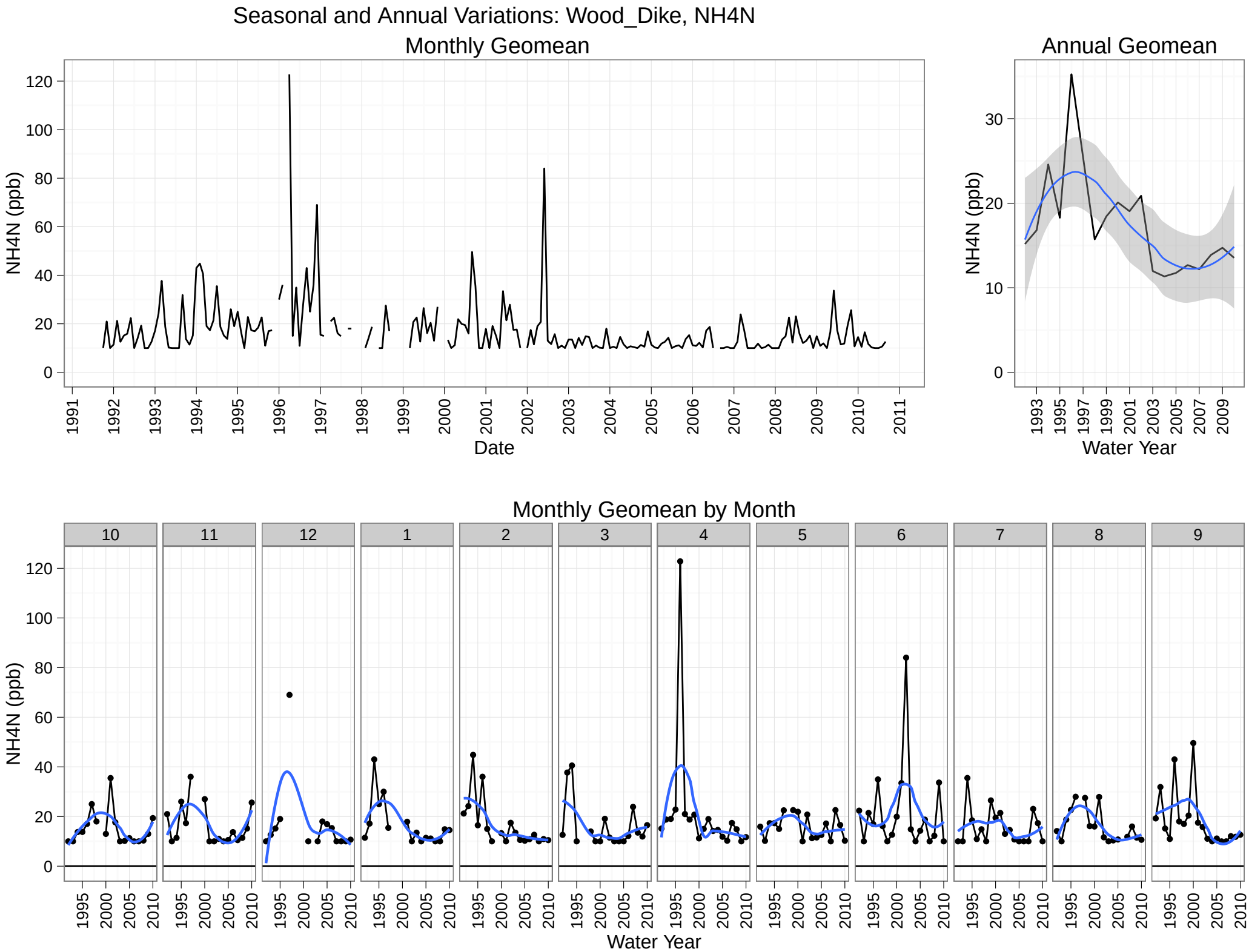
9
TN (ppb)
Water Year


Seasonal and Annual Variations: Wood_Dike, NH4N
Monthly Geomean
NH4N (ppb)
Date
Annual Geomean
NH4N (ppb)
Water Year
Monthly Geomean by Month
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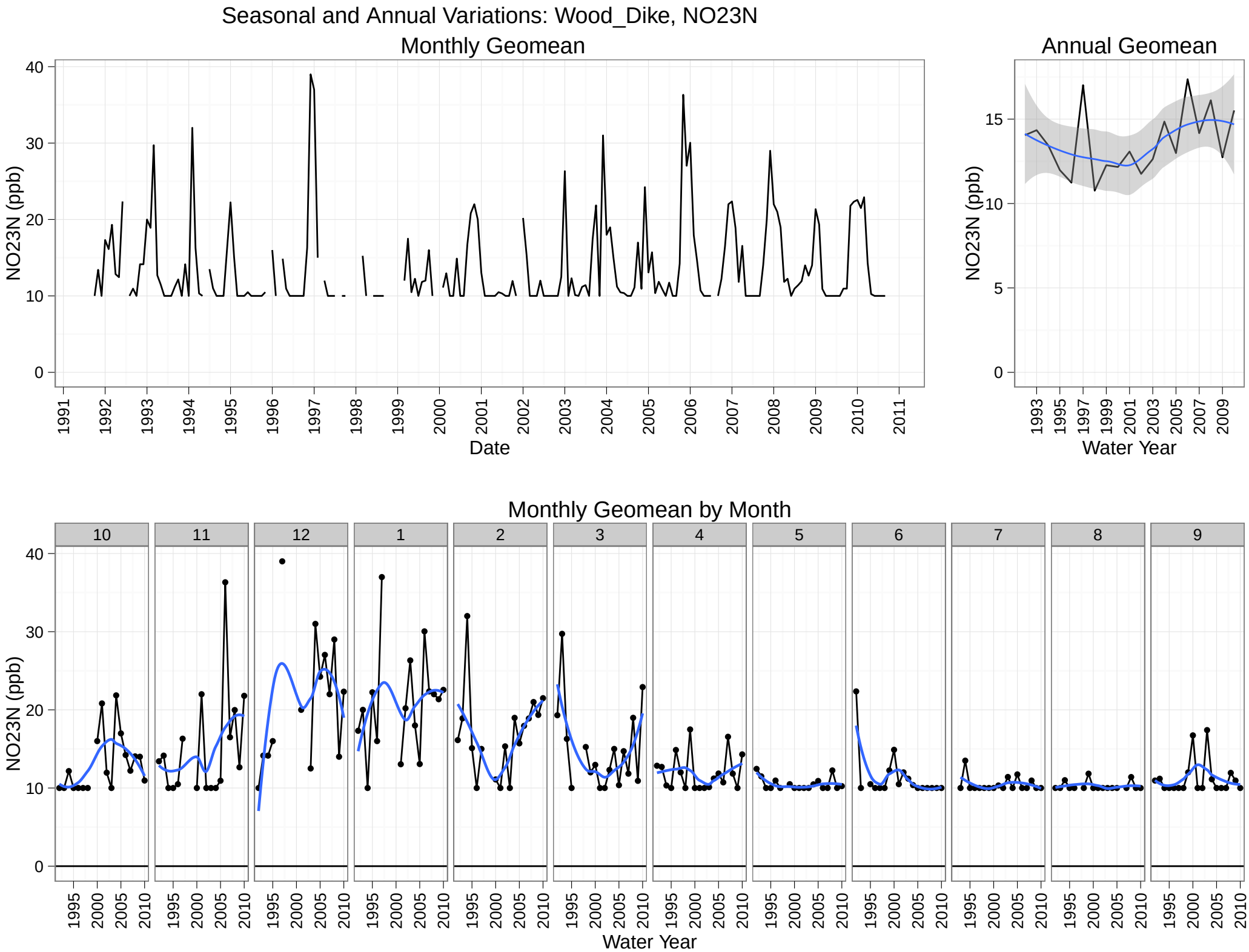
NH4N (ppb)
Water Year


Seasonal and Annual Variations: Wood_Dike, NO23N
Monthly Geomean
NO23N (ppb)
Date
Annual Geomean
NO23N (ppb)
Water Year
Monthly Geomean by Month
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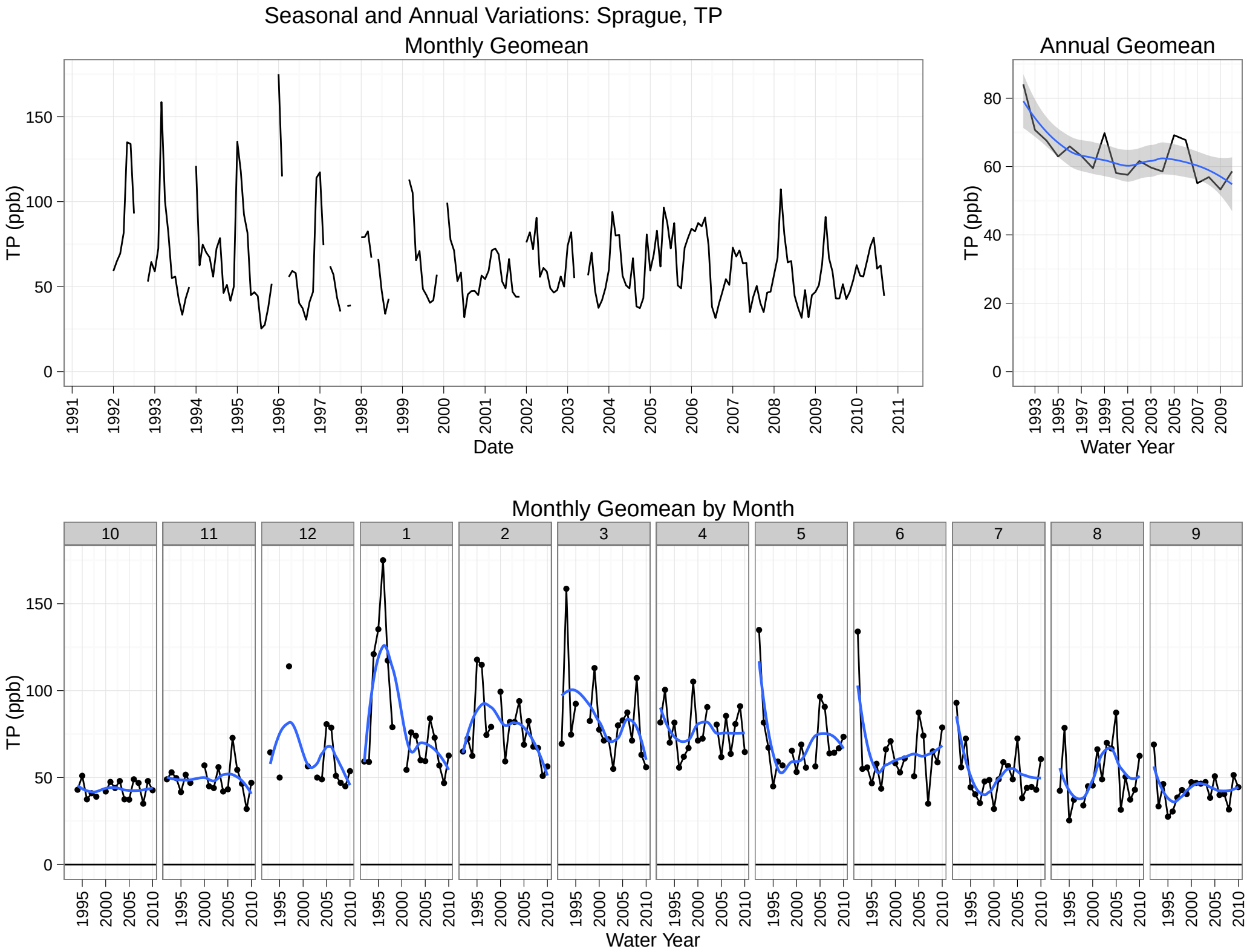
NO23N (ppb)
Water Year


Seasonal and Annual Variations: Sprague, TP
Monthly Geomean
TP (ppb)
Date
Annual Geomean
TP (ppb)
Water Year
Monthly Geomean by Month
10
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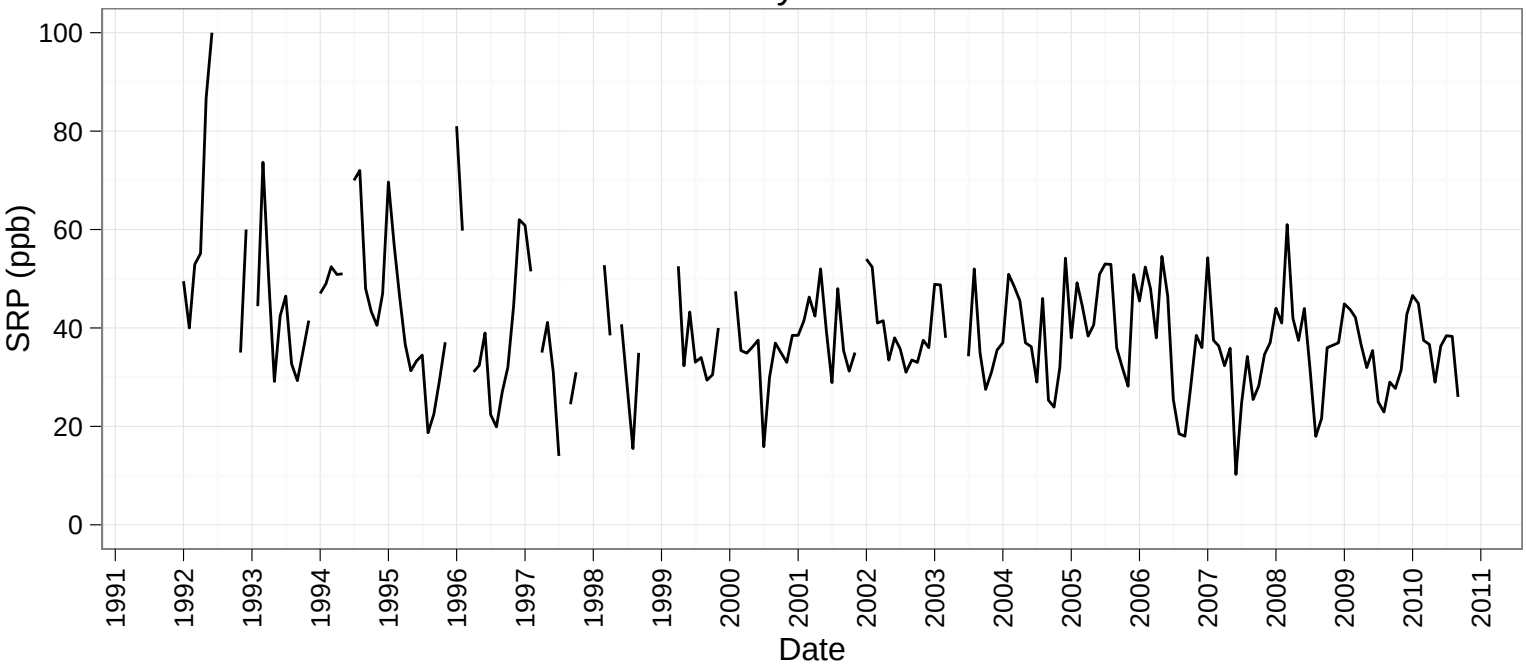
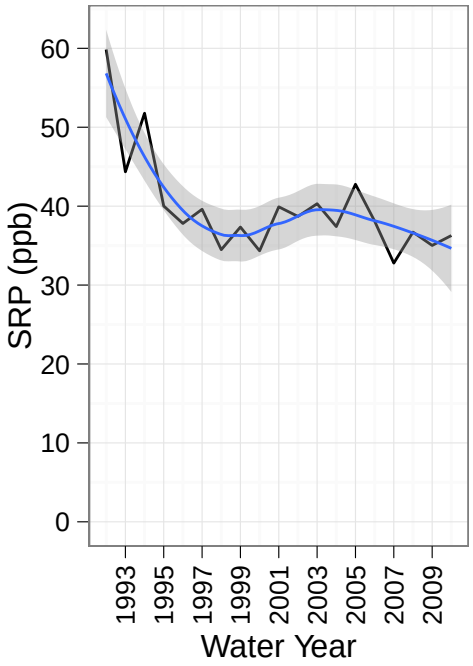
9
TP (ppb)
Water Year

Seasonal and Annual Variations: Sprague, SRP

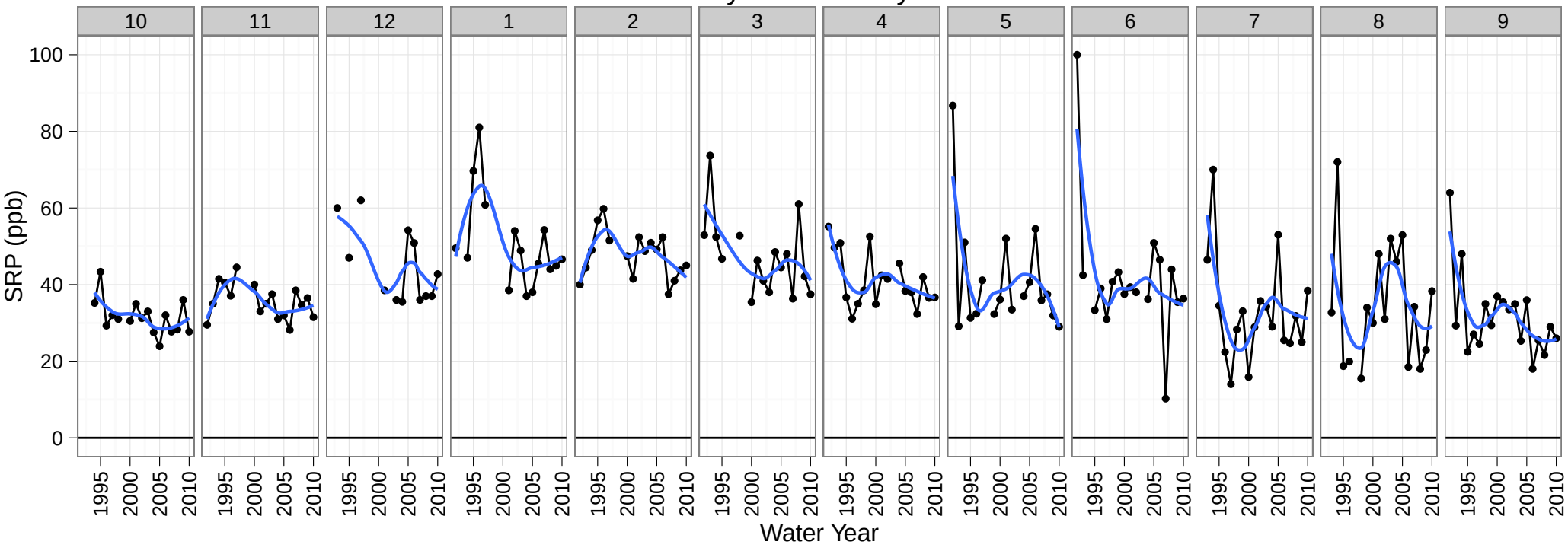
Monthly Geomean

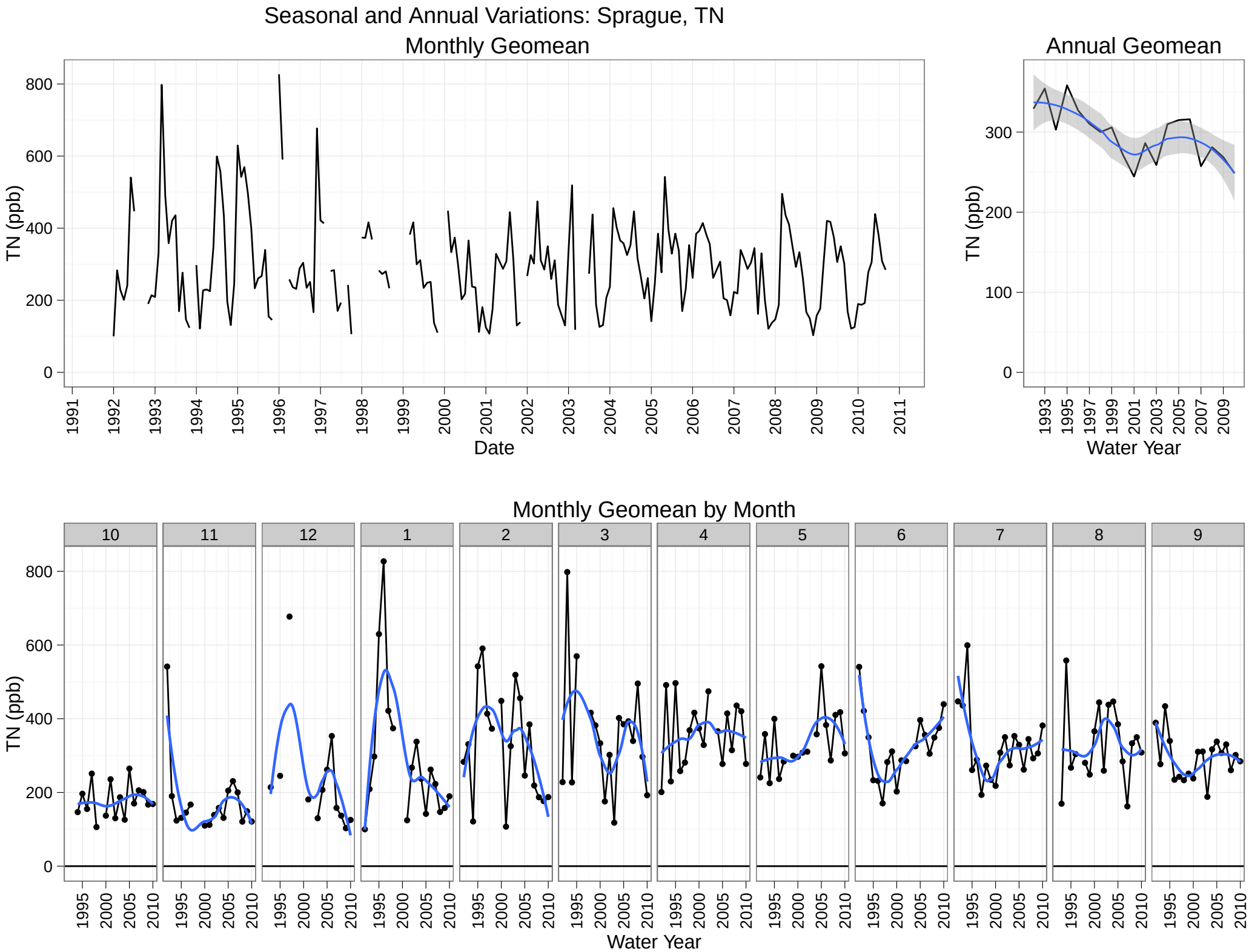


Annual Geomean



Monthly Geomean by Month




Seasonal and Annual Variations: Sprague, TN
Monthly Geomean
TN (ppb)
Date
Annual Geomean
TN (ppb)
Water Year
Monthly Geomean by Month
10
11
12
1
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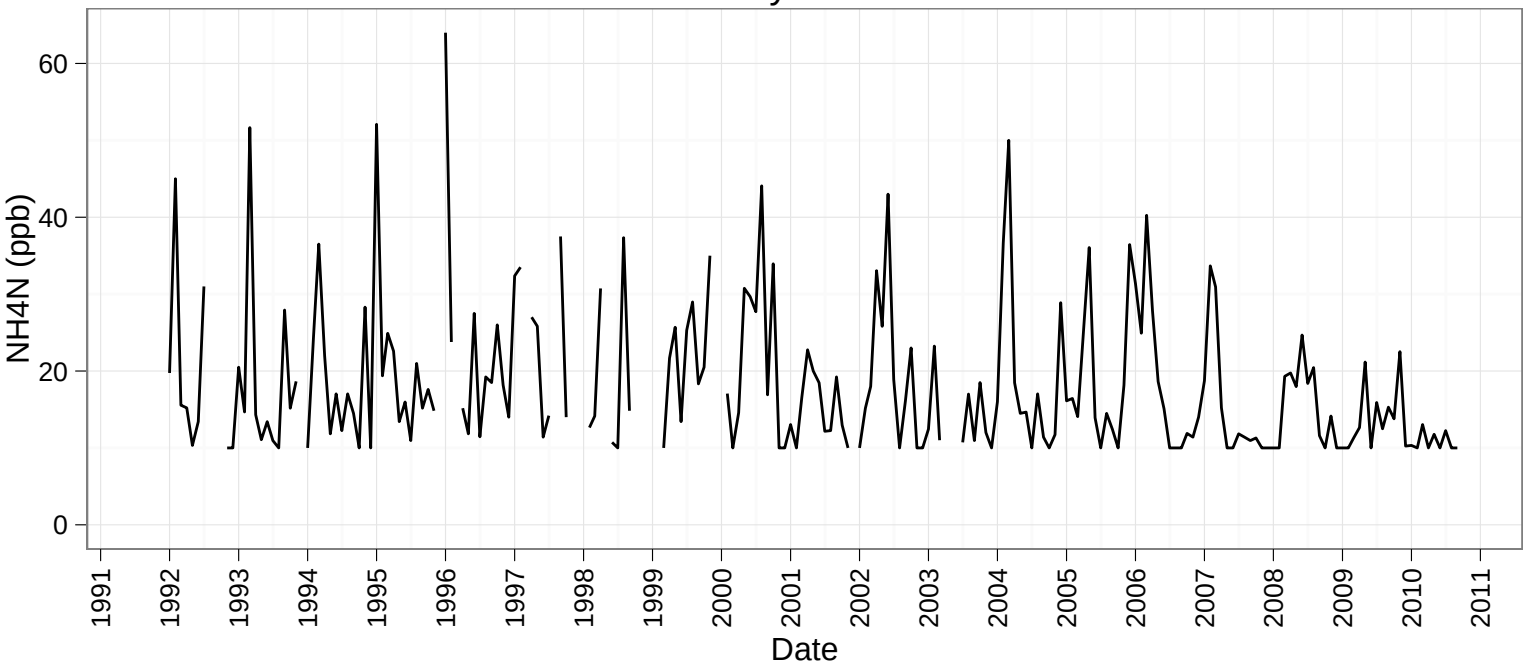
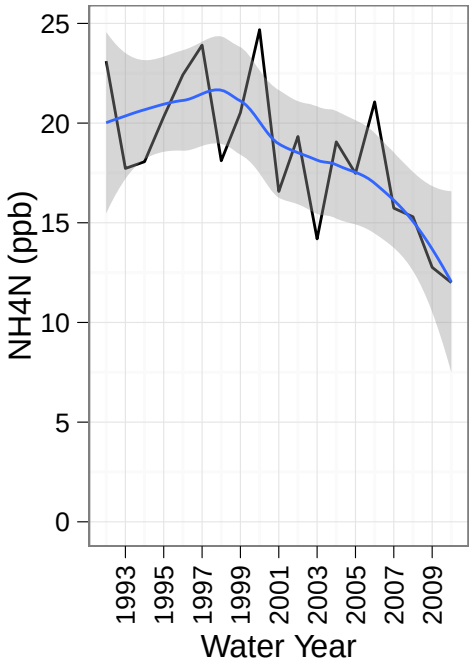
4
5
6
7
8
9
TN (ppb)
Water Year

Seasonal and Annual Variations: Sprague, NH4N

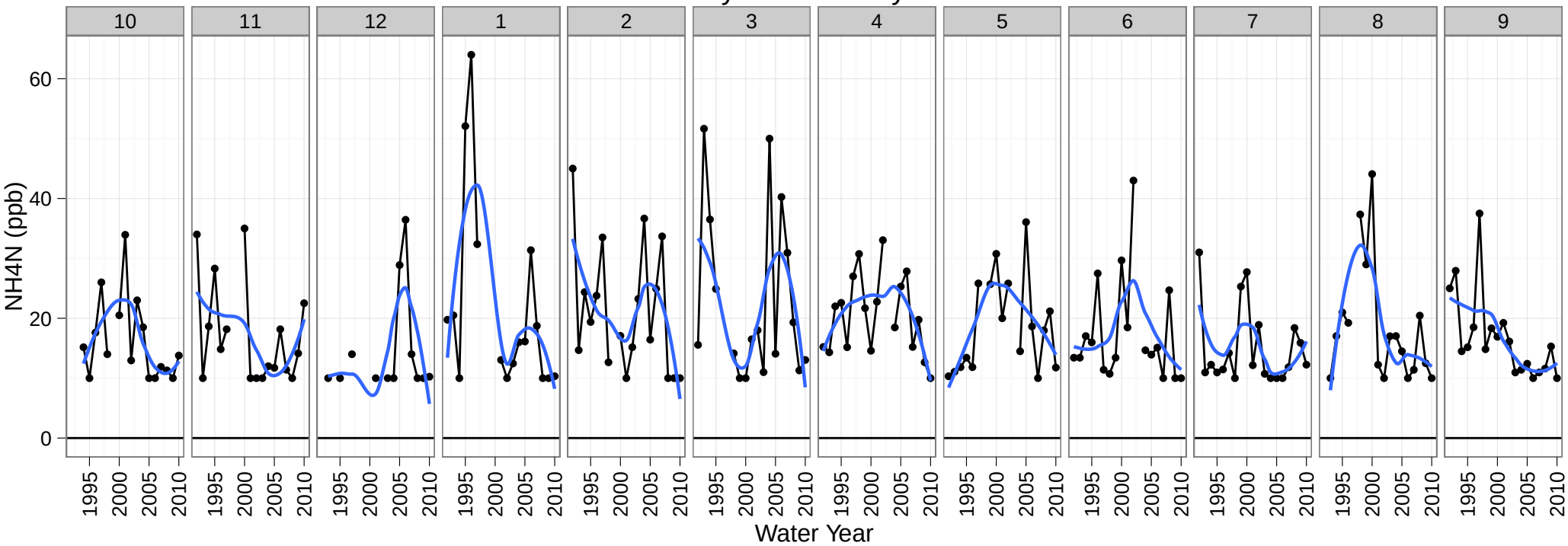
Monthly Geomean

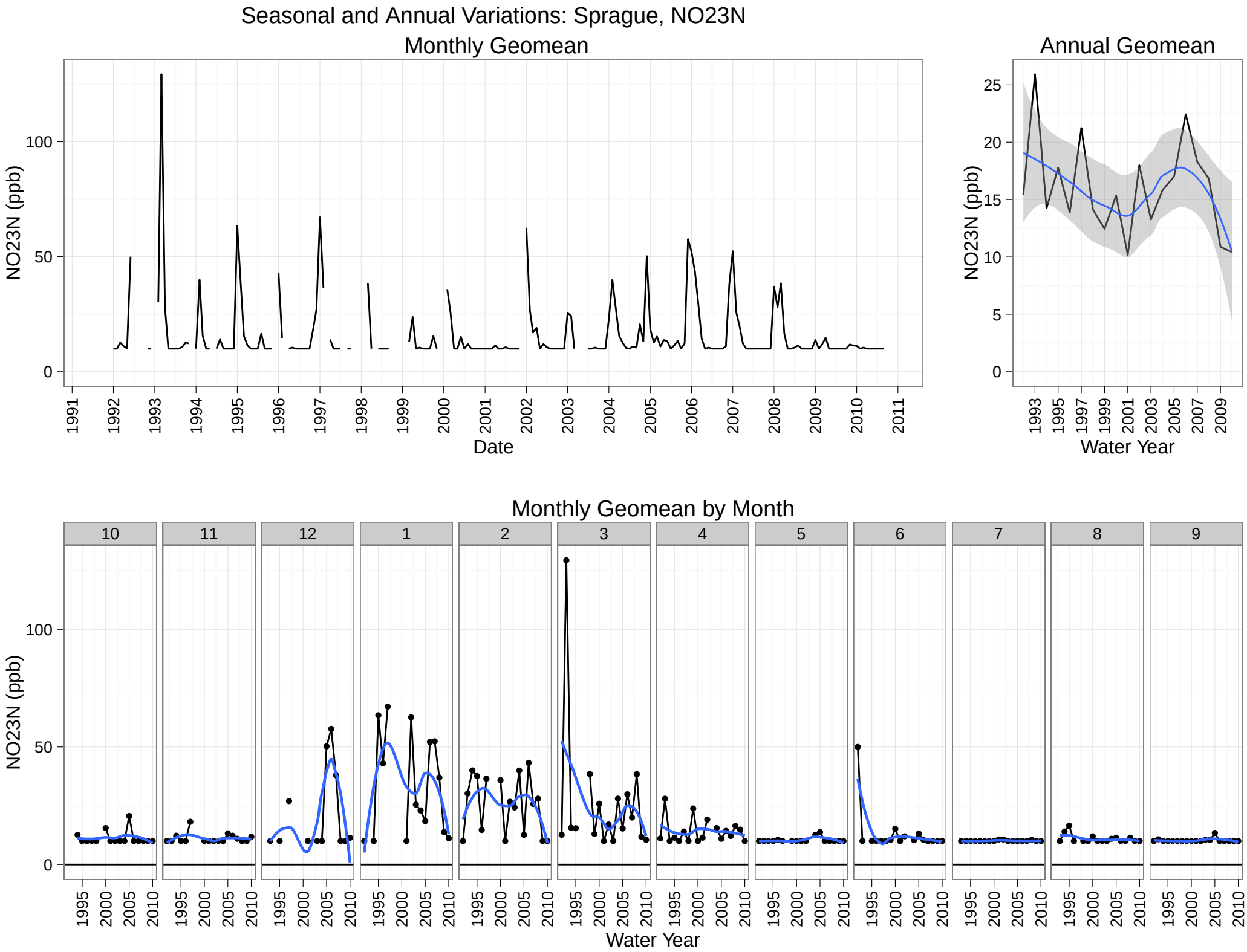


Annual Geomean



Monthly Geomean by Month




Seasonal and Annual Variations: Sprague, NO23N
Monthly Geomean
NO23N (ppb)
Date
Annual Geomean
NO23N (ppb)
Water Year
Monthly Geomean by Month
10
11
12
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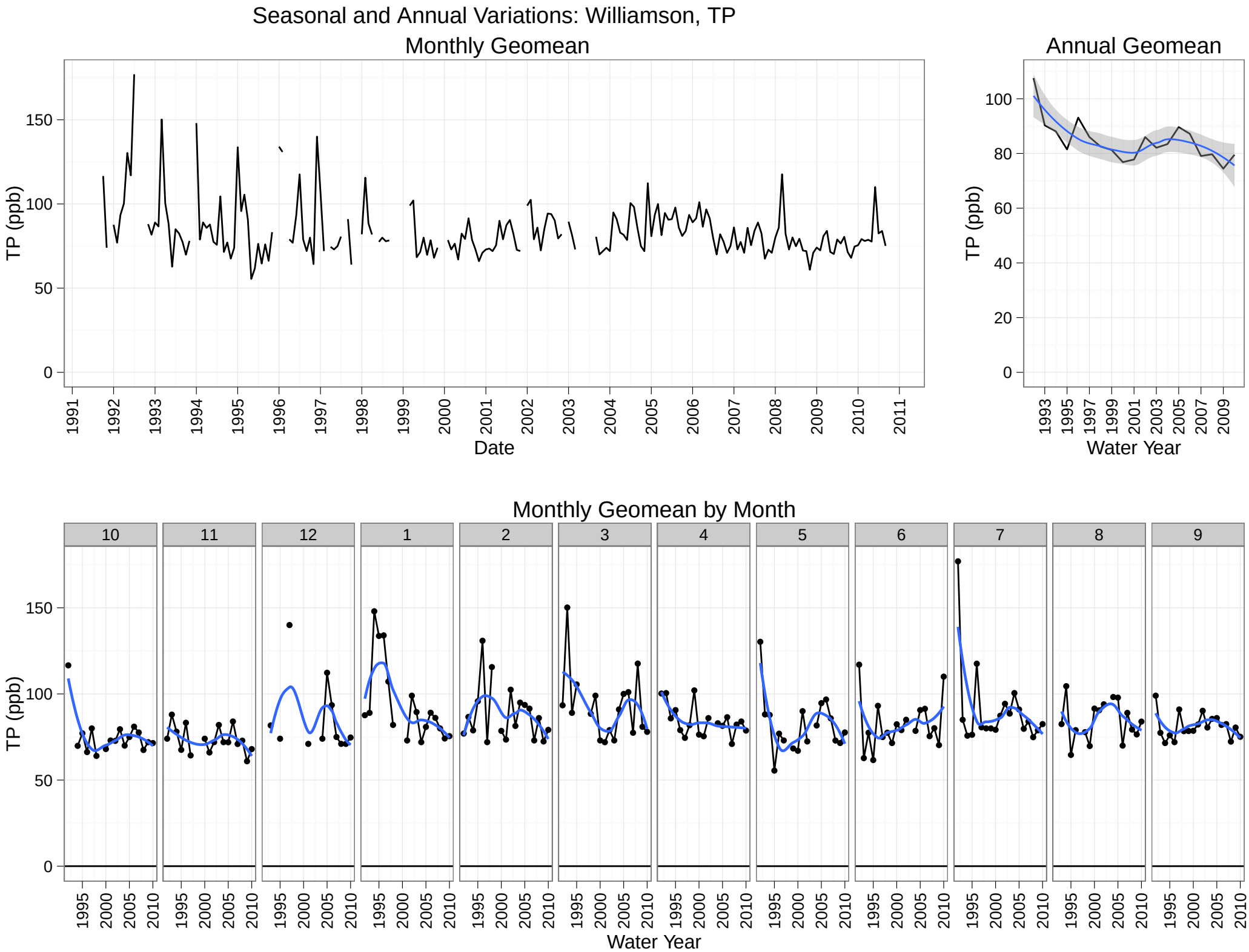
9
NO23N (ppb)
Water Year


Seasonal and Annual Variations: Williamson, TP
Monthly Geomean
TP (ppb)
Date
Annual Geomean
TP (ppb)
Water Year
Monthly Geomean by Month
10
11
12
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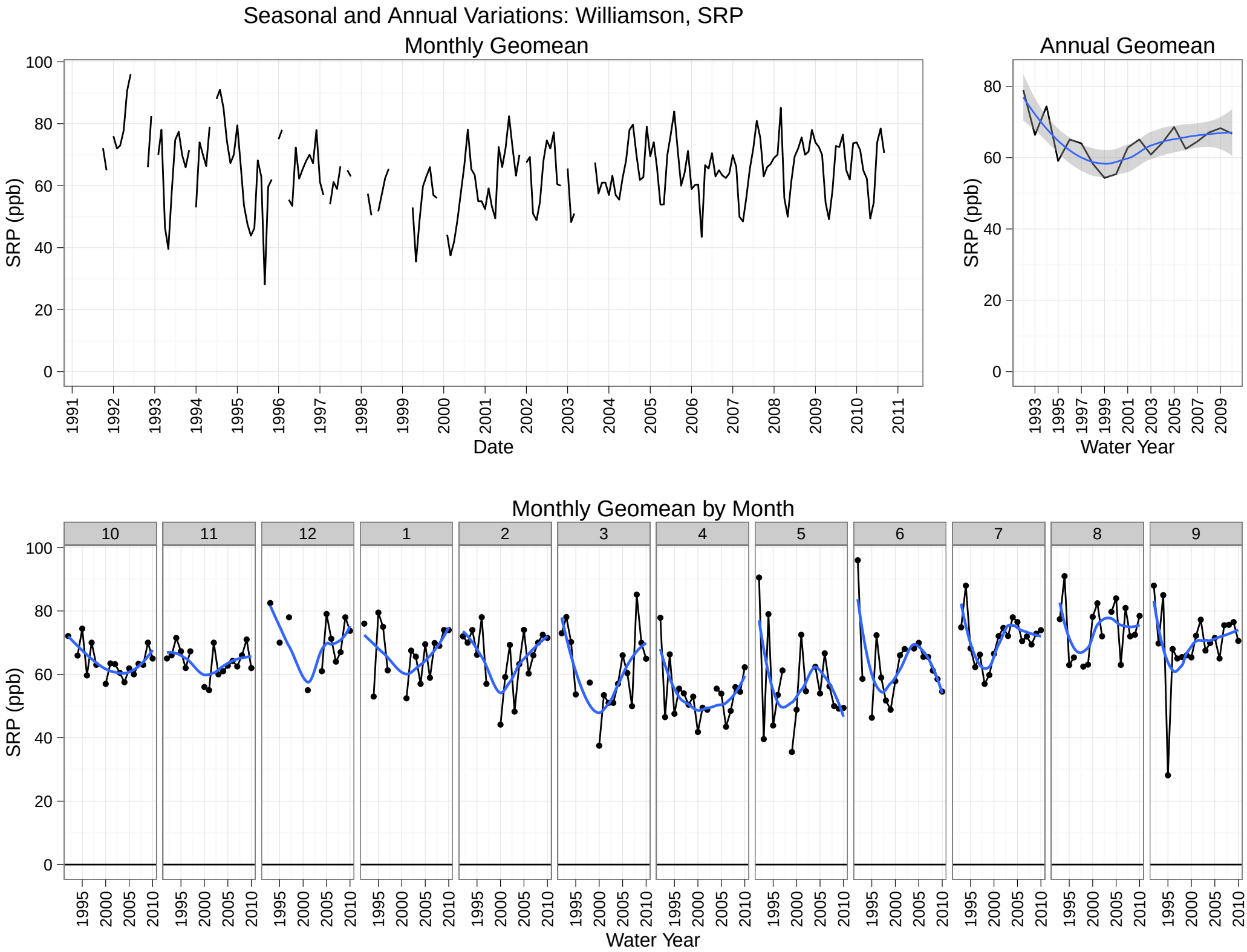
8
9
TP (ppb)
Water Year


Seasonal and Annual Variations: Williamson, SRP
Monthly Geomean
SRP (ppb)
Date
Annual Geomean
SRP (ppb)
Water Year
Monthly Geomean by Month
10
11
12
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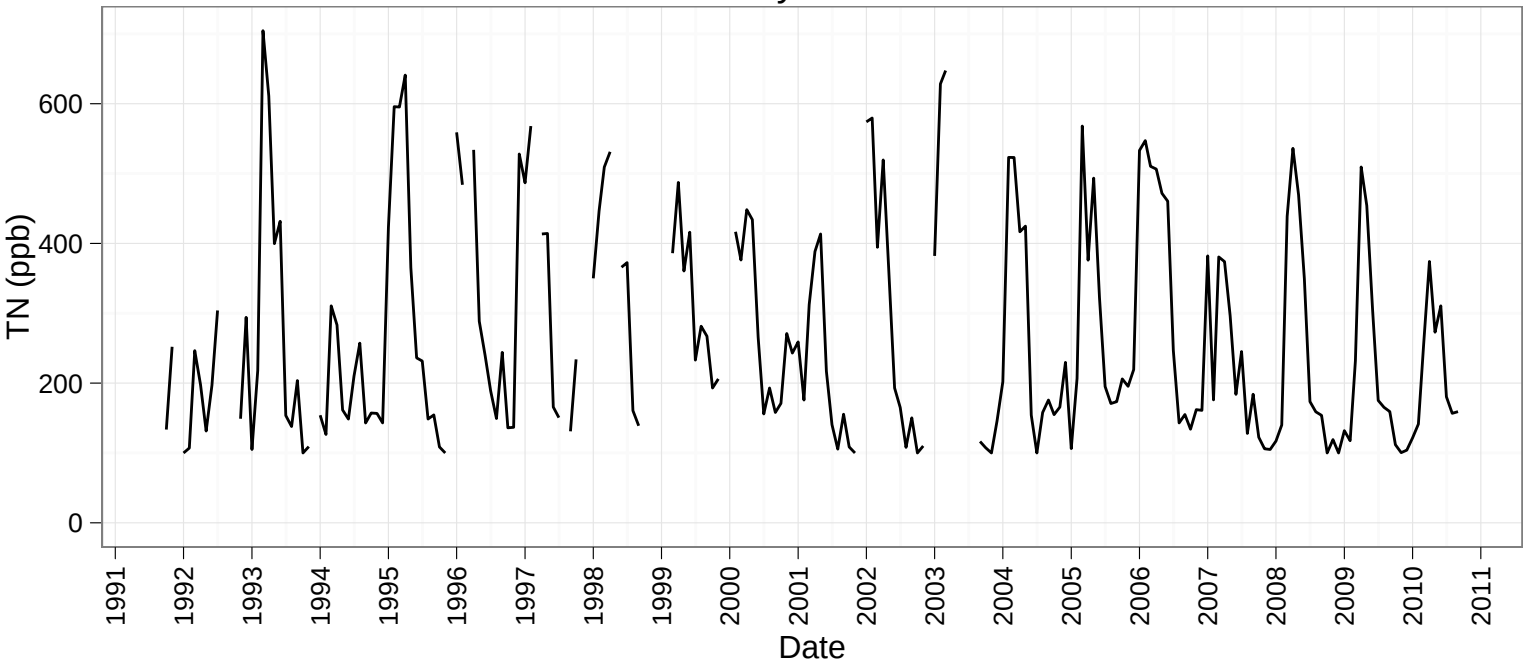
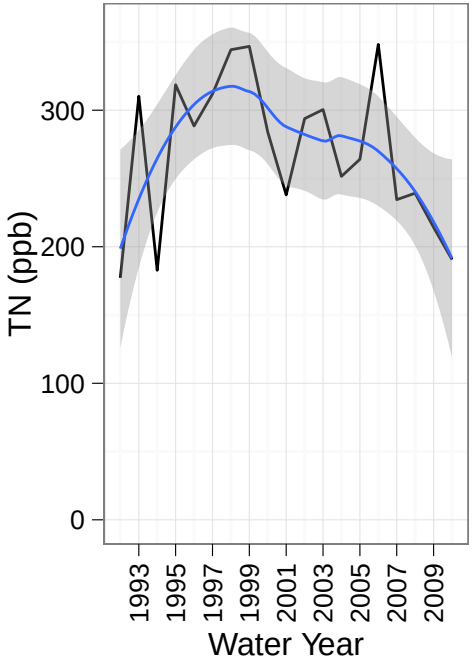
SRP (ppb)
Water Year

Seasonal and Annual Variations: Williamson, TN

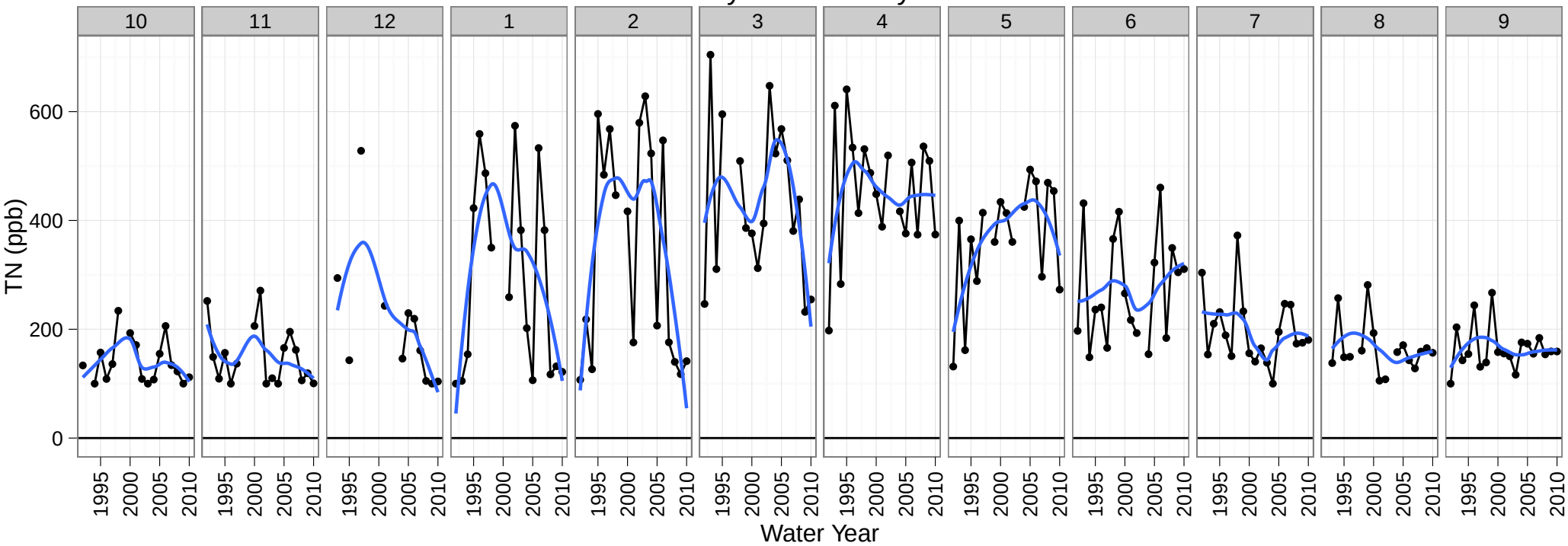
Monthly Geomean

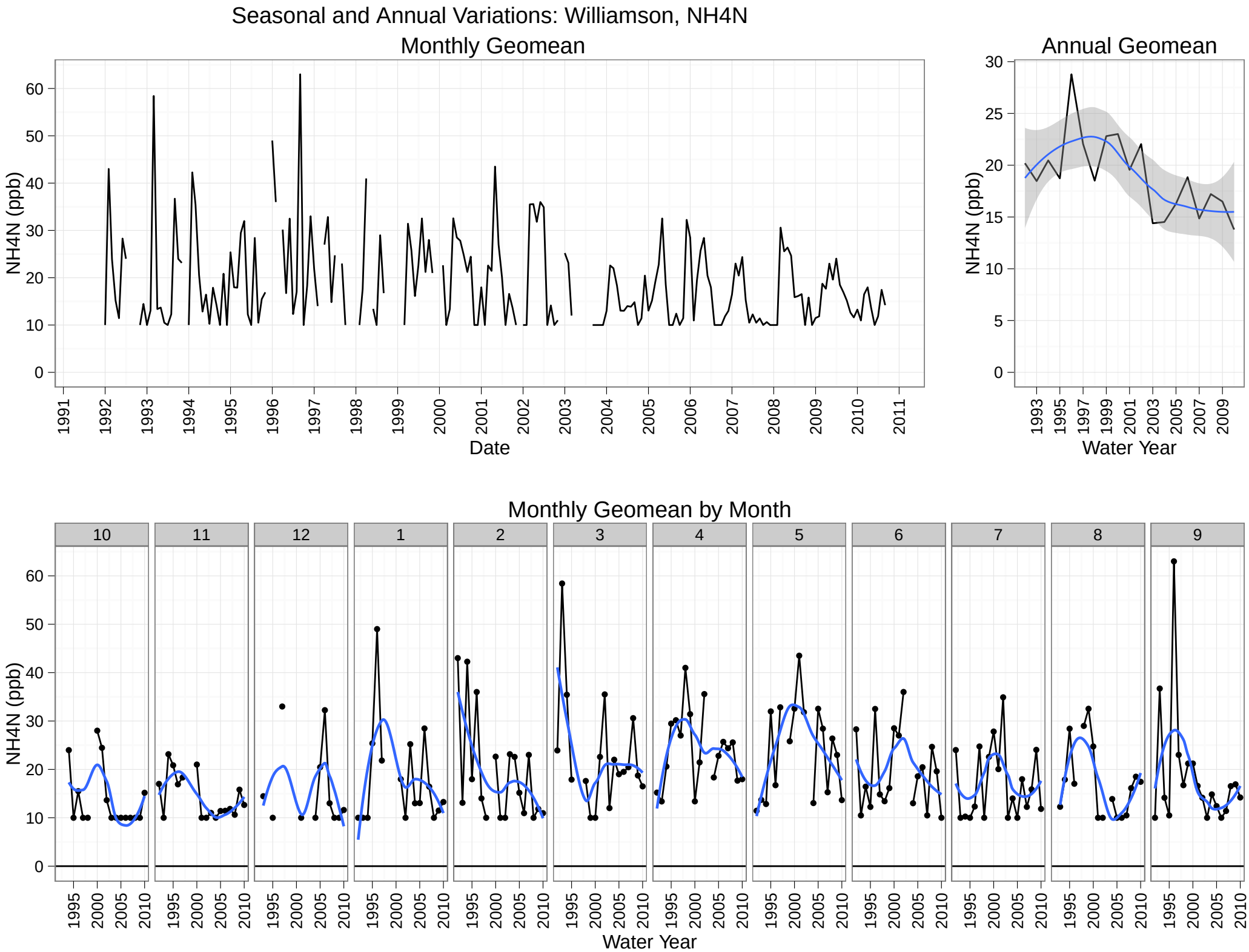


Annual Geomean



Monthly Geomean by Month




Seasonal and Annual Variations: Williamson, NH4N
Monthly Geomean
NH4N (ppb)
Date
Annual Geomean
NH4N (ppb)
Water Year
Monthly Geomean by Month
10
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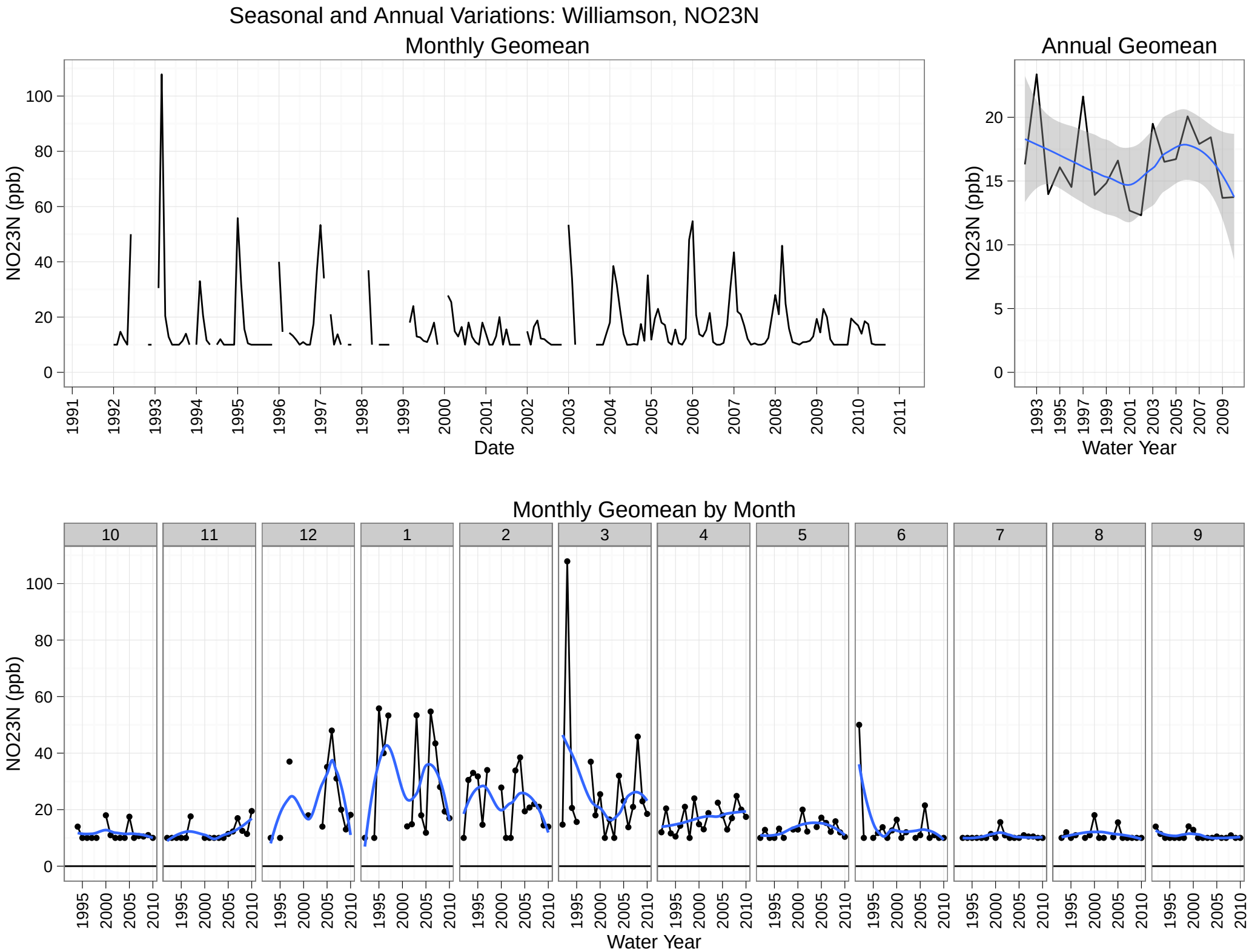
NH4N (ppb)
Water Year


Seasonal and Annual Variations: Williamson, NO23N
Monthly Geomean
NO23N (ppb)
Date
Annual Geomean
NO23N (ppb)
Water Year
Monthly Geomean by Month
10
11
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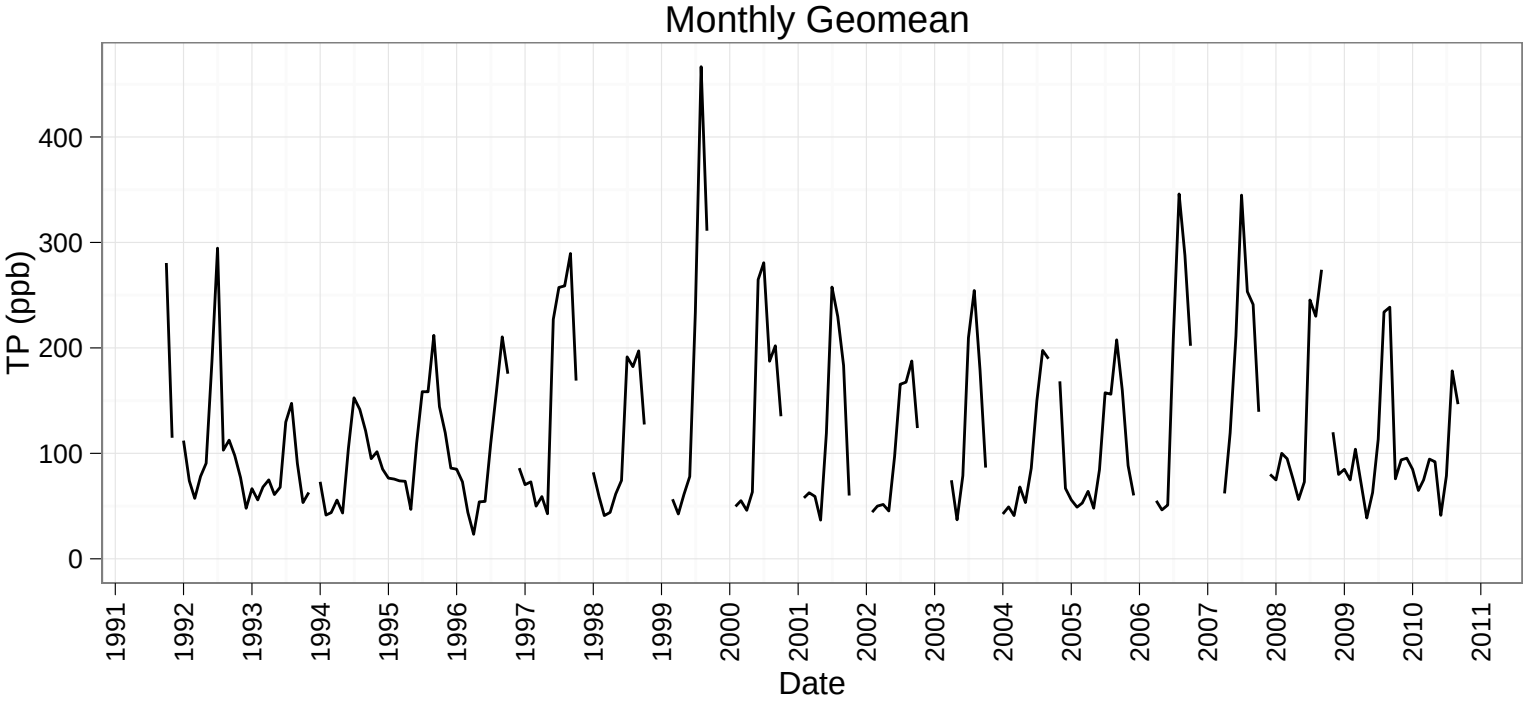
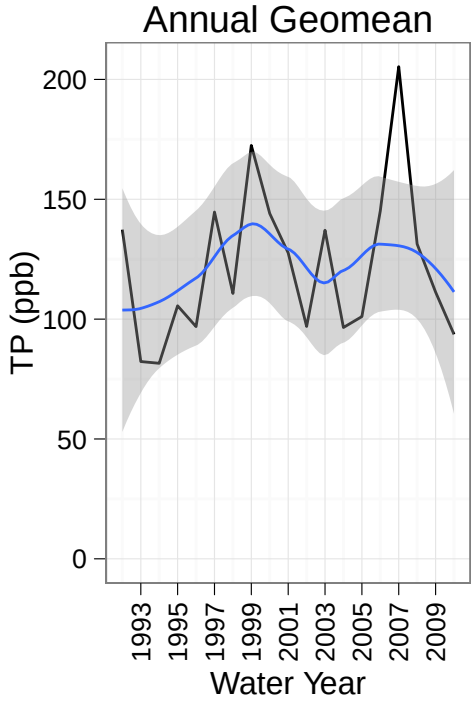
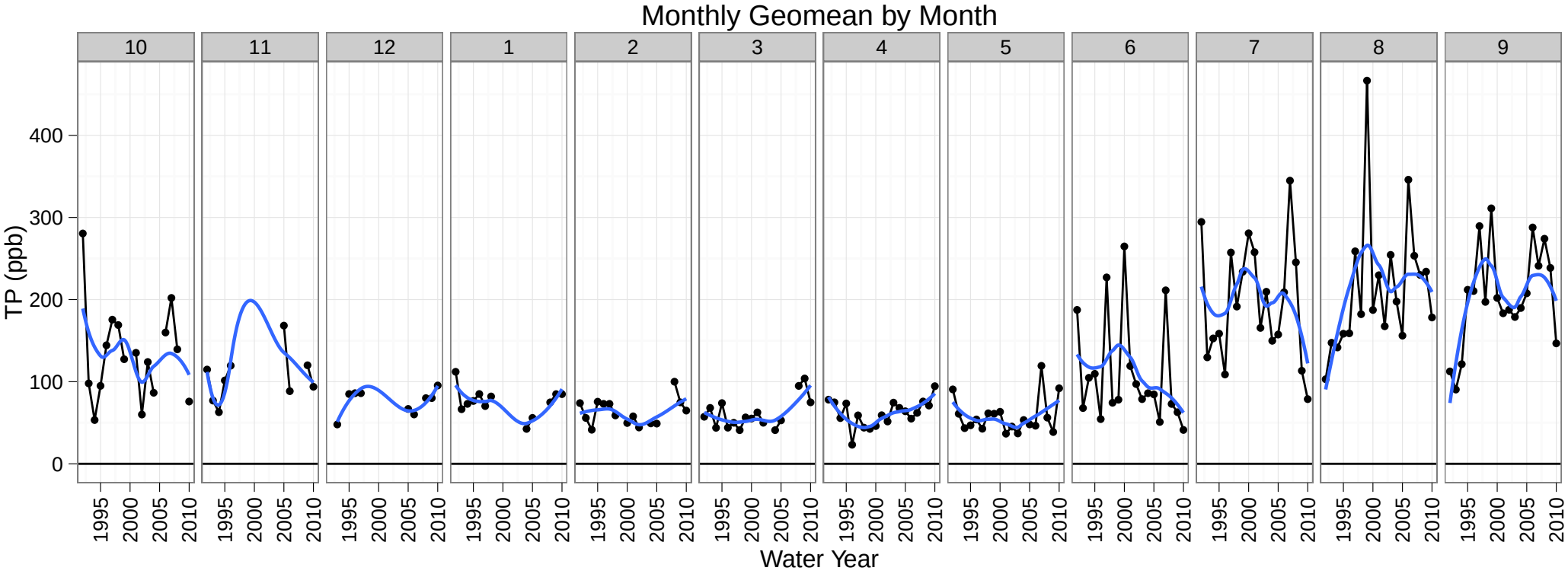
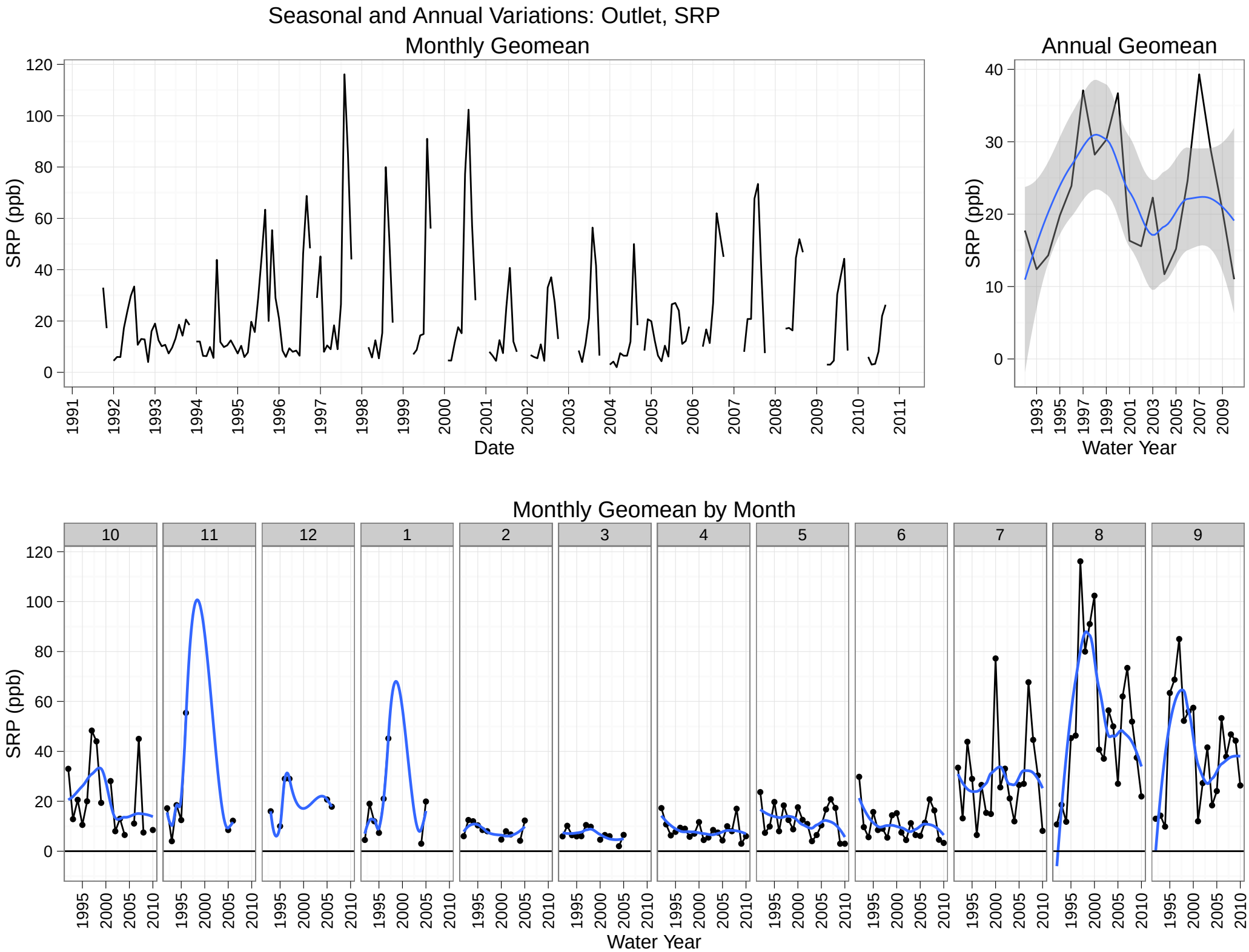
9
NO23N (ppb)
Water Year

Seasonal and Annual Variations: Outlet, TP








Seasonal and Annual Variations: Outlet, SRP
Monthly Geomean
SRP (ppb)
Date
Annual Geomean
SRP (ppb)
Water Year
Monthly Geomean by Month
10
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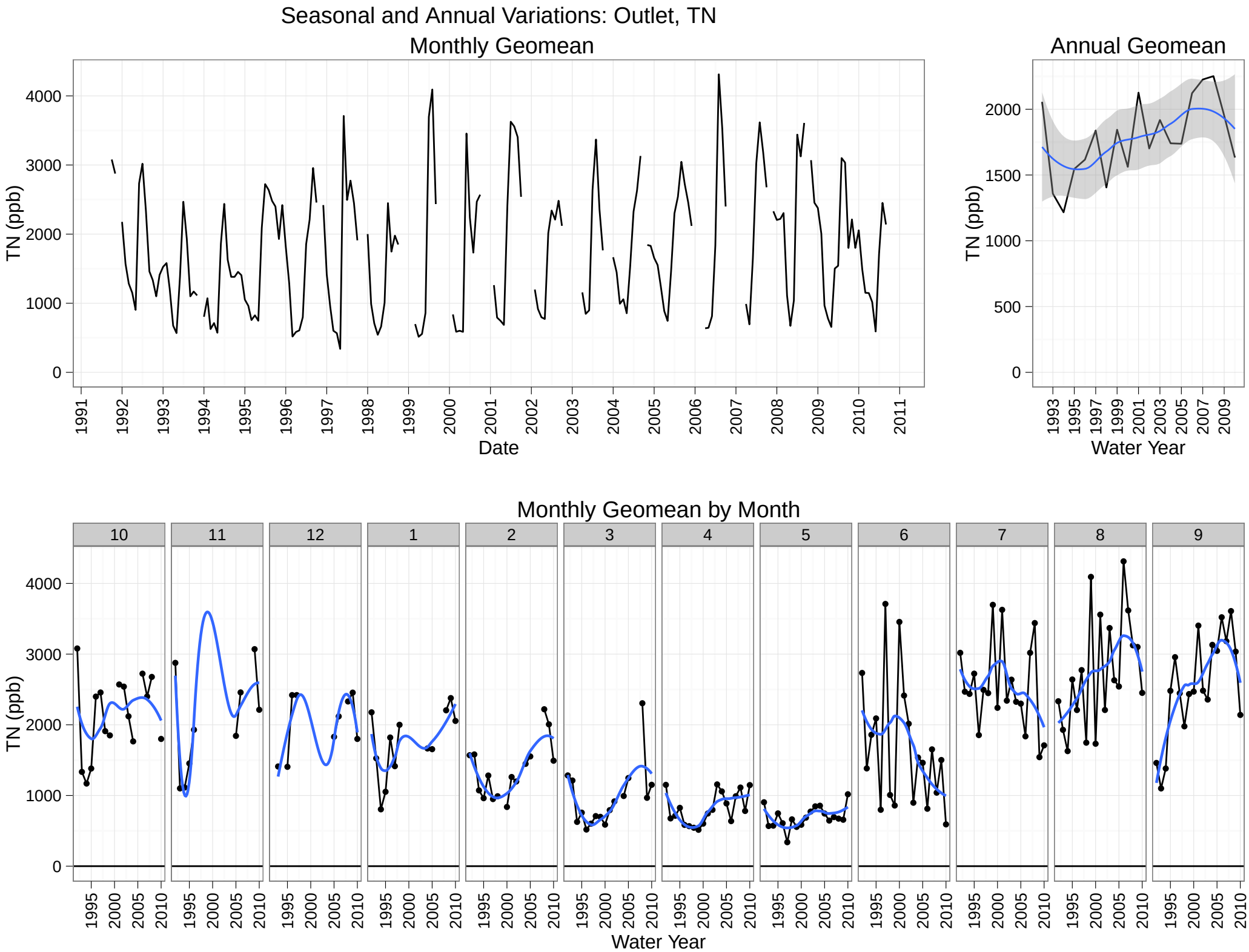
SRP (ppb)
Water Year


Seasonal and Annual Variations: Outlet, TN
Monthly Geomean
TN (ppb)
Date
Annual Geomean
TN (ppb)
Water Year
Monthly Geomean by Month
10
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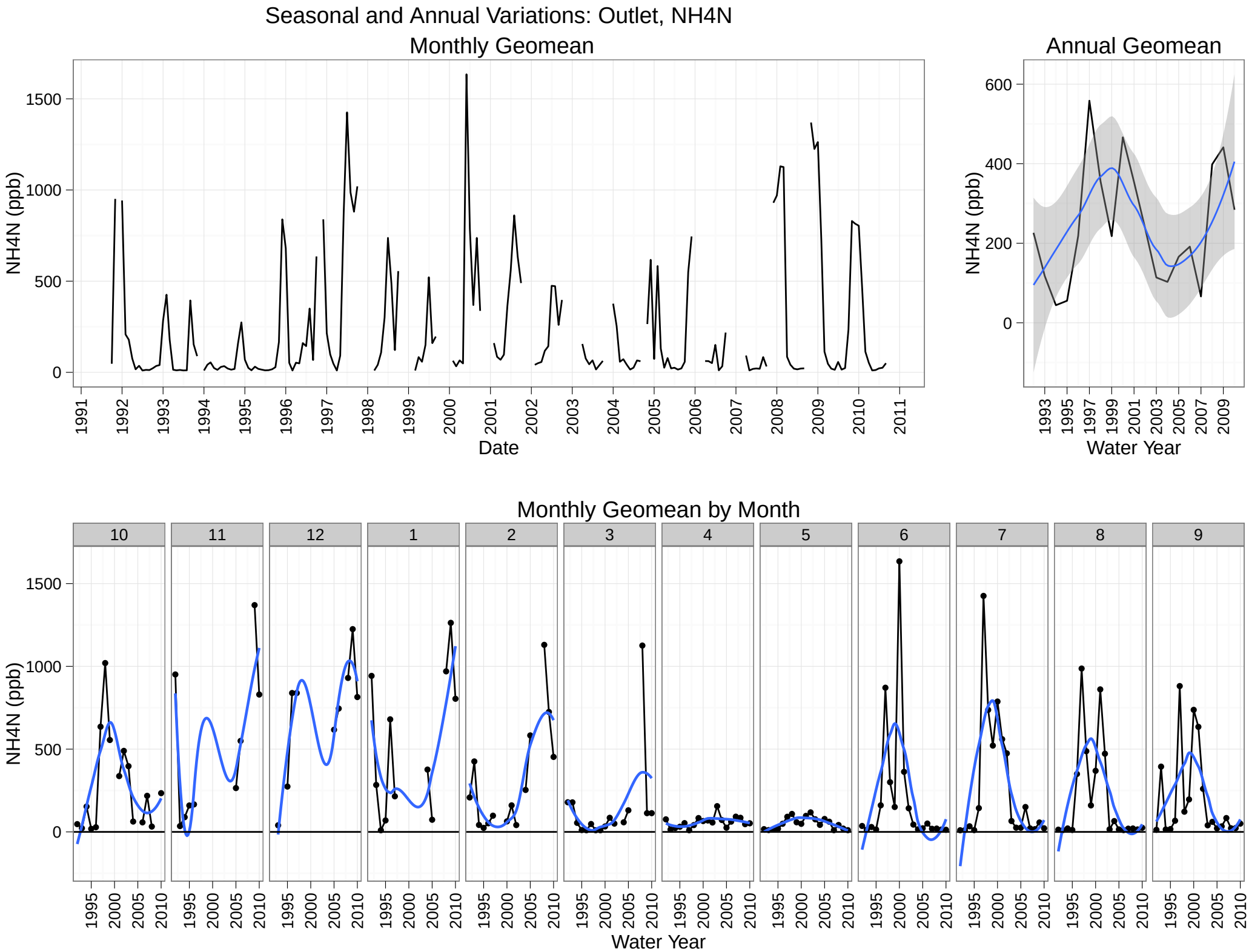
TN (ppb)
Water Year


Seasonal and Annual Variations: Outlet, NH4N
Monthly Geomean
NH4N (ppb)
Date
Annual Geomean
NH4N (ppb)
Water Year
Monthly Geomean by Month
10
11
12
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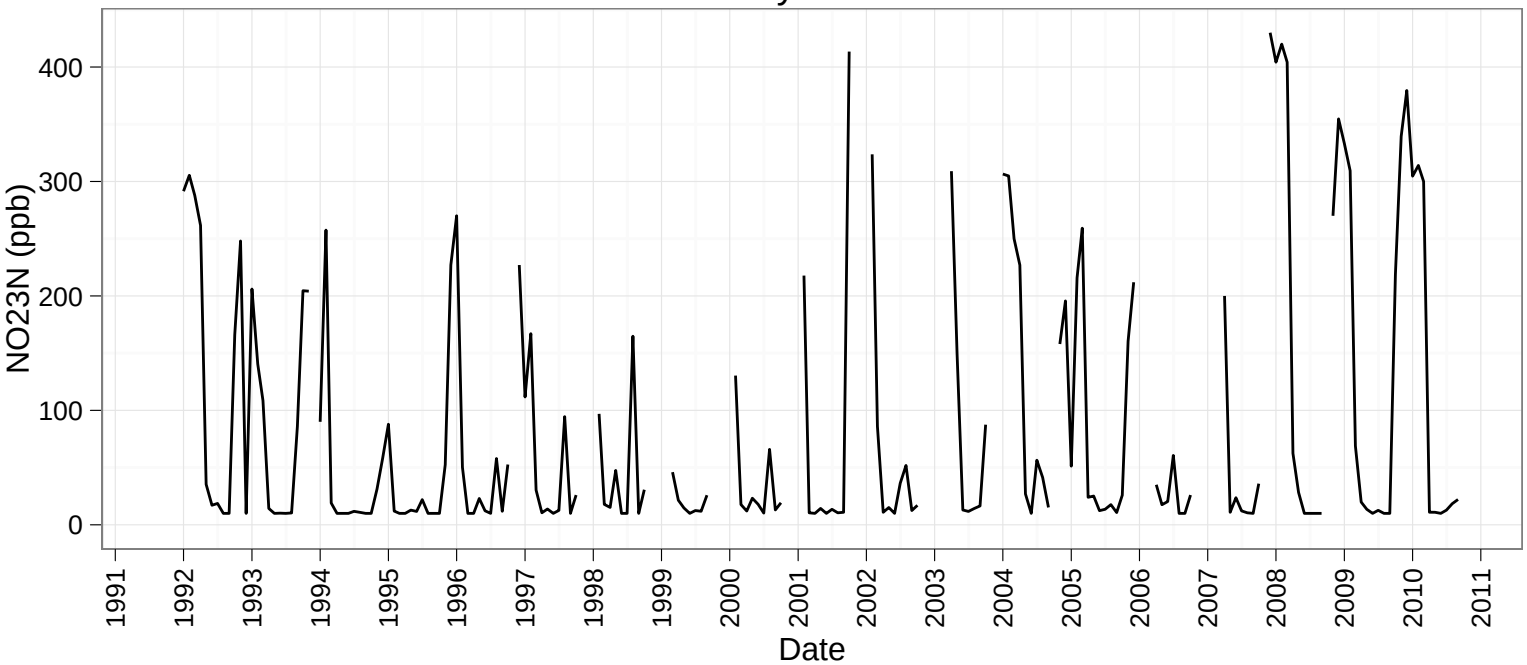
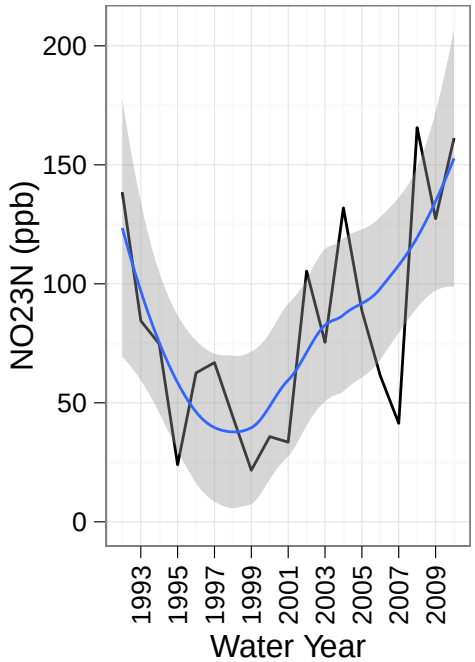
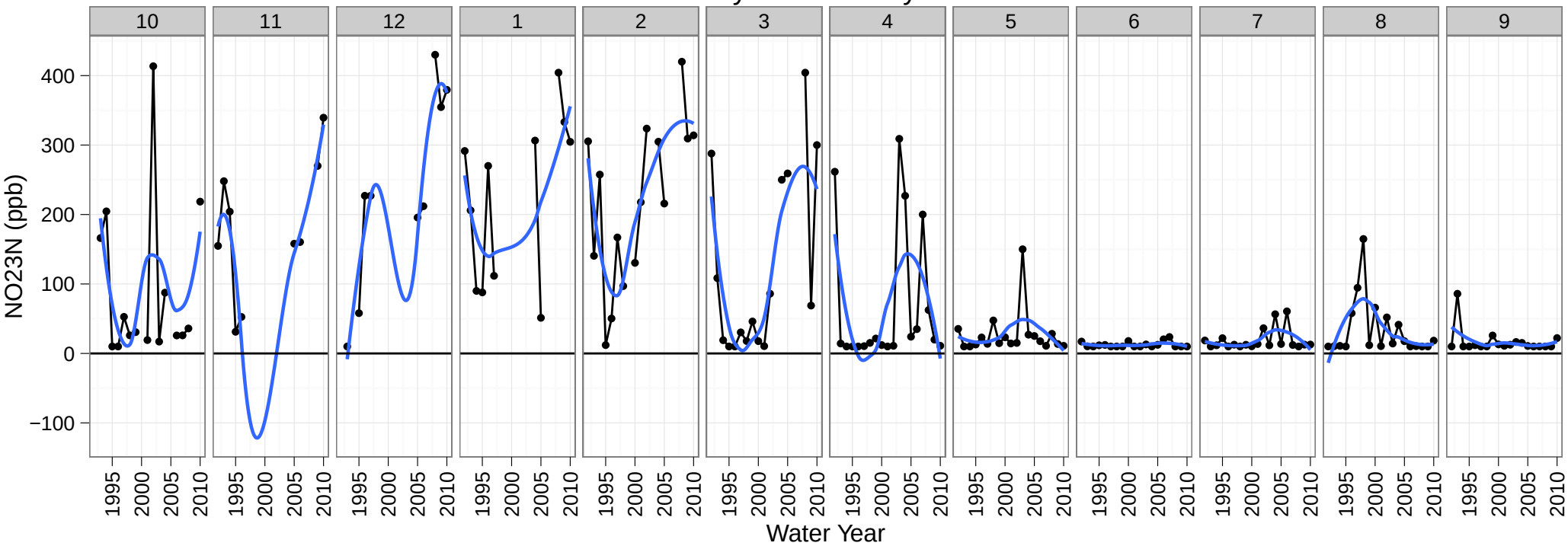
NH4N (ppb)
Water Year

Seasonal and Annual Variations: Outlet, NO23N

Monthly Geomean



Annual Geomean



Monthly Geomean by Month