

INDIAN PRAIRIE SUBWATERSHED TECHNICAL SHEET			
Subwatershed:	Indian Prairie		
Basins:	C-40, C-41, C-41A, L-48, L-49, L-59E, L-59W, L-60E, L-60W, L-61E, S-131	Flow Issues ¹ : MAYBE	Water Quality Issues ² : YES

Monitored Structure(s):	G-34 (L59E), G74 (L59W), G75 (L60E), G76 (L60W), L61COEHP5 (L-61E), S127, S129, S131, S-68, S-71, S-72, and S-84 Sites
Inflow loads:	Lake Istokpoga
Acreage:	276,577
Percentage of Subwatershed Acreage:	N/A
Percentage of Lake Okeechobee Watershed:	8.0%

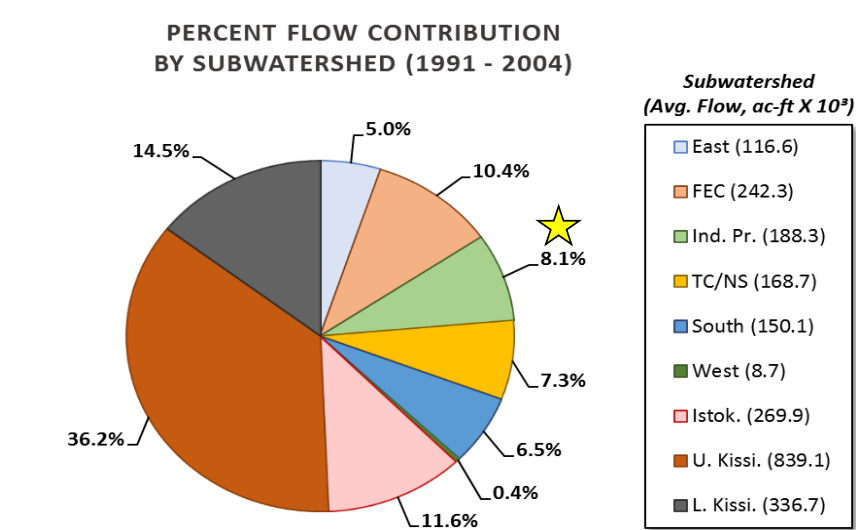
¹Flow Issues:

- L-59E flows prior to WY1995 were estimated. No measurements from WY1995-WY2001. WY2002 flow measurements began.
 - L-59W flows prior to WY1995 were estimated. No measurements from WY1995-WY2003. WY2004 flow measurements began.
 - L-60E flows prior to WY1995 were estimated. No measurements from WY1995-WY2002. WY2003 flow measurements began.
 - L-60W flows prior to WY1995 were estimated. No measurements from WY1995-WY2001. WY2002 flow measurements began.
 - The flow measurement data for L-61E are not considered reliable according to Cheol Mo and Tom James. Prior to WY1995 flows were estimated. No measurements from WY1995-WY2007. WY2008 flow measurements began.
 - Estimated or missing flow measurement data in several basins makes it difficult to evaluate data between the pre and post-protection plan period.
 - The flow showed a statistically significant increase between the pre and post-protection plan period. Flow has a statistically significant increasing trend in the post-protection plan period.
 - The way flow is calculated throughout this subwatershed raises many questions and more information is needed to determine if the flow measurements are reliable.
 - While flow is indicated to be increasing, rainfall data for the subwatershed may help clarify if the increase was due to climatic conditions as well as the previously mentioned flow measurement issues in this subwatershed.
 - The proportion of load and flows generated among C-40, C-41, C-41A is not known. It is currently estimated by an algebraic equation.
 - May want to look into rainfall relationship over time.
- Lake inflow for irrigation shouldn't have impact to loads as it ends up back in the watershed.
- Need to determine if there were changes in water management operations in the post-protection plan period resulting in flow increases.
 - The increase in flow is not attributed to Lake Istokpoga management.
 - Flow and load estimates were based on samples and measurements taken at major structures within the regional system.

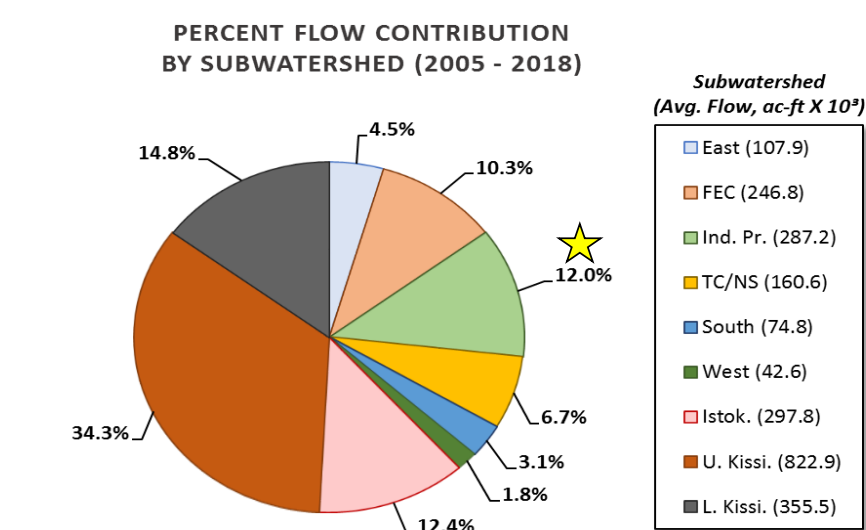
²Water Quality Issues:

- Although the Seasonal Kendall Tau results for total phosphorus (TP) flow-weighted mean concentrations (FWMC) has a statistically significant decreasing trend in the post-protection plan period, the amount of reduction is small (~3% per year) and the post-period TP FWMC remains relatively high at 266 µg/L.
- There is a greater variability in the range of concentrations in pre-period and less variability in post period FWMC data which results in the statistically significant decreasing trend in FWMC for the post period.
- The 18% contribution of TP loads to the watershed indicates a WQ issue.
- The TP load and UAL increased from the pre to the post-protection plan period.WQ for the subwatershed appears to be impacted the most (70%) by 3 of its 11 basins C-40, C-41, C-41A.

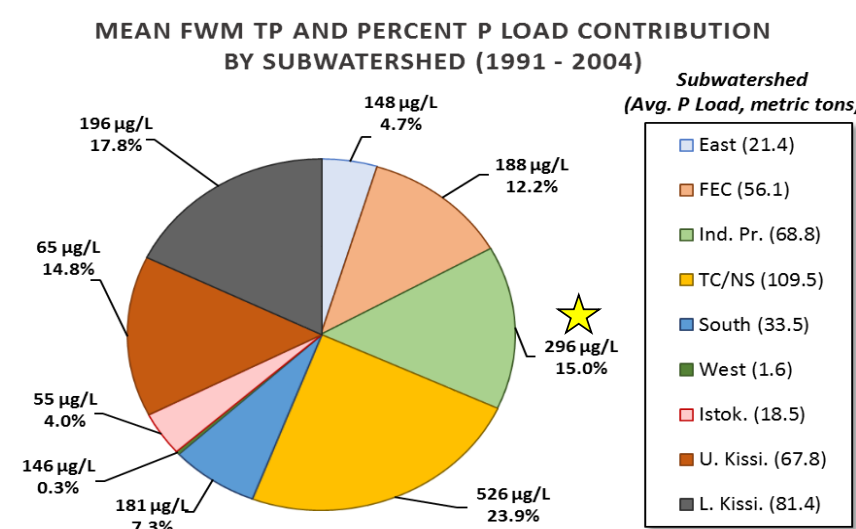
Pre-Protection Plan Flows



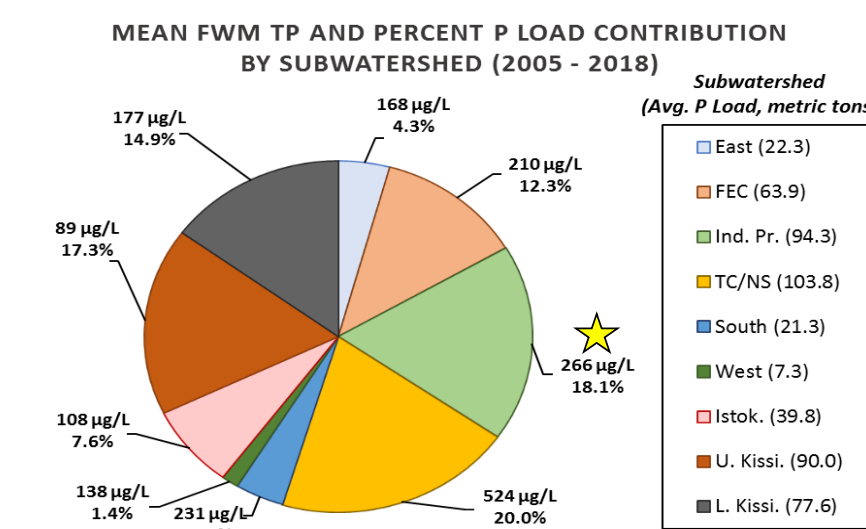
Post-Protection Plan Flows

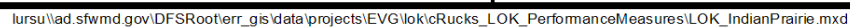


Pre-Protection Plan Loads



Post-Protection Plan Loads





INDIAN PRAIRIE SUBWATERSHED - STATISTICS

Summary Statistics				
	Period of Record	Pre-Protection Plan	Post-Protection Plan	
	WY1991-WY2018	WY1991-WY2004	WY2005-WY2018	
Averages				
Avg. Flow (acft/yr)	237,753	188,273	287,233	
Avg. Load (mt/yr)	81.54	68.81	94.28	
FWMC (ug/L)	278	296	266	
Avg. UAL (lbs/acre/yr)	0.65	0.55	0.75	
Medians				Mann-Whitney Results p-values ³
Median Flow (acft/yr)	258,558	199,883	315,427	0.0274
Median Load (mt/yr)	66.77	63.78	87.68	0.1681
Median FWMC (ug/L)	292	310	281	0.2701
Median UAL (lbs/acre/yr)	0.53	0.51	0.70	0.1678
Highlighted cells indicate statistical significance				

³The Mann-Whitney test is a non-parametric test alternative to the two sample t-test. It is used to test the equality around the central tendency of two data sets (pre-protection plan period and post-protection plan period). A p-value of less than 0.05 indicates that a significant difference between pre-protection plan period and post-protection plan period exists. A comparison of the median values identifies which period is higher. A median is a value at the mid-point of a distribution of observed data.

Sub-watershed Indian Prairie - Seasonal Kendall τ Results for Total Monthly Flow (ac-ft) by Basin over Three Water Year Ranges															
Sub-watershed/ <i>Basin</i>	1991-2018					1991-2004					2005-2018				
	% Missing Months	Kendall's τ	Sen Slope	Intercept	p-value	% Missing Months	Kendall's τ	Sen Slope	Intercept	p-value	% Missing Months	Kendall's τ	Sen Slope	Intercept	p-value
Indian Prairie	0.0%	0.165	316	4050	0.020	0.0%	0.097	274	4563	0.332	0.0%	0.245	833	3192	0.022

Sub-watershed Indian Prairie - Seasonal Kendall τ Results for Total Monthly P Load (kg) by Basin over Three Water Year Ranges															
Sub-watershed/ <i>Basin</i>	1991-2018					1991-2004					2005-2018				
	% Missing Months	Kendall's τ	Sen Slope	Intercept	p-value	% Missing Months	Kendall's τ	Sen Slope	Intercept	p-value	% Missing Months	Kendall's τ	Sen Slope	Intercept	p-value
Indian Prairie	0.0%	0.043	13.44	1736	0.521	0.0%	0.075	71.57	1541	0.522	0.0%	0.132	65.76	1235	0.112

Sub-watershed Indian Prairie - Seasonal Kendall τ Results for Monthly FWM TP ($\mu\text{g/L}$) by Basin over Three Water Year Ranges															
Sub-watershed/ <i>Basin</i>	1991-2018					1991-2004					2005-2018				
	% Missing Months	Kendall's τ	Sen Slope	Intercept	p-value	% Missing Months	Kendall's τ	Sen Slope	Intercept	p-value	% Missing Months	Kendall's τ	Sen Slope	Intercept	p-value
Indian Prairie	23.2%	-0.113	-2	254	0.141	25.6%	0.082	4	221	0.470	20.8%	-0.269	-10	265	0.020

Italic red font cells indicate statistical significance

Note: The Seasonal Kendall Tau analyzes data for monotonic trends (consistent upward or downward trend) and accounts for seasonality. Typically monthly data are used to identify seasons. Probability values (p-values) are derived from the tau-statistic which identifies the direction of the trend. A p-value less than 0.05 detects statistically significant trends for a period of interest. The Sen Slope provides an indication of the magnitude of the observed trend.

INDIAN PRAIRIE SUBWATERSHED - MONTHLY DATA AND SKT TRENDS

