

# TCNS - S-191 BASIN TECHNICAL SHEET

|   |                                       |  |  |
|---|---------------------------------------|--|--|
| <b>Subwatershed:</b> Taylor Creek/Nubbin Slough |                                       |  |  |
| <b>Basin:</b> S-191 (NEEPP Priority Basin)      | <b>Flow Issues<sup>1</sup>:</b> MAYBE | <b>Water Quality Issues<sup>2</sup>:</b> YES |  |

**Monitored Structure(s):** S191

**Inflow loads:** None

**Acreage:** 120,464

**Percentage of Subwatershed Acreage:** 61%

**Percentage of Lake Okeechobee Watershed:** 3.5%

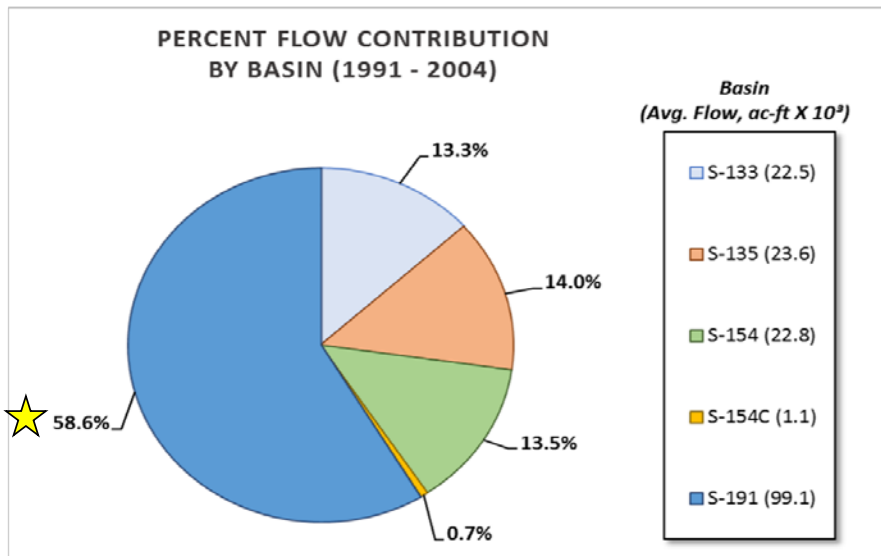
**<sup>1</sup>Flow Issues:**

- This basin has the highest flows compared to the other basins in the Taylor Creek/Nubbin Slough subwatershed; runoff volumes are flashy.
- There was a statistically significant decreasing trend in flow for the period of record (WY1991 to WY2018).

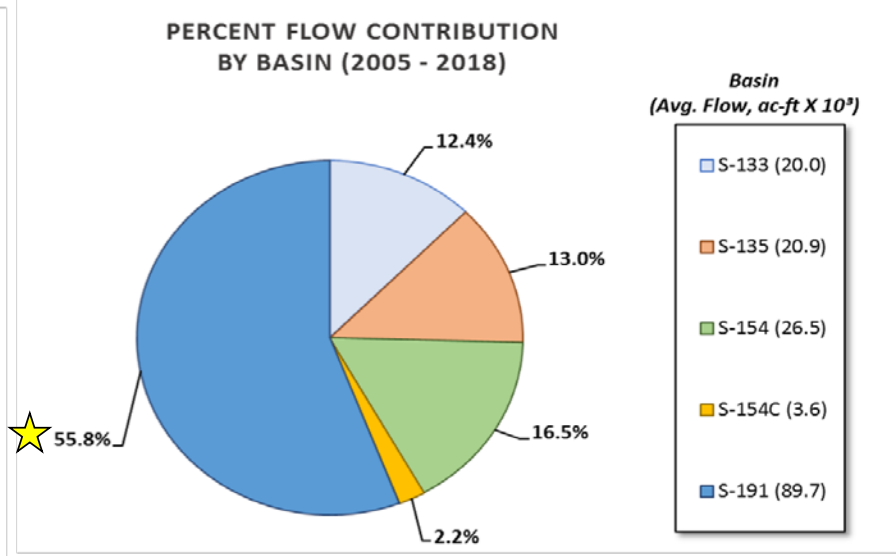
**<sup>2</sup>Water Quality Issues:**

- This is one of the Northern Everglades and Estuaries Protection Plan (NEEPP) four Priority basins.
- While there is a statistically significant decreasing trend for the period of record for total phosphorus (TP) loads, this basin had high TP flow-weighted mean concentrations (FWMC) (612 µg/L during the post-protection plan period).
- The basin represents the majority of the TP loads for the Taylor Creek/Nubbin Slough subwatershed.

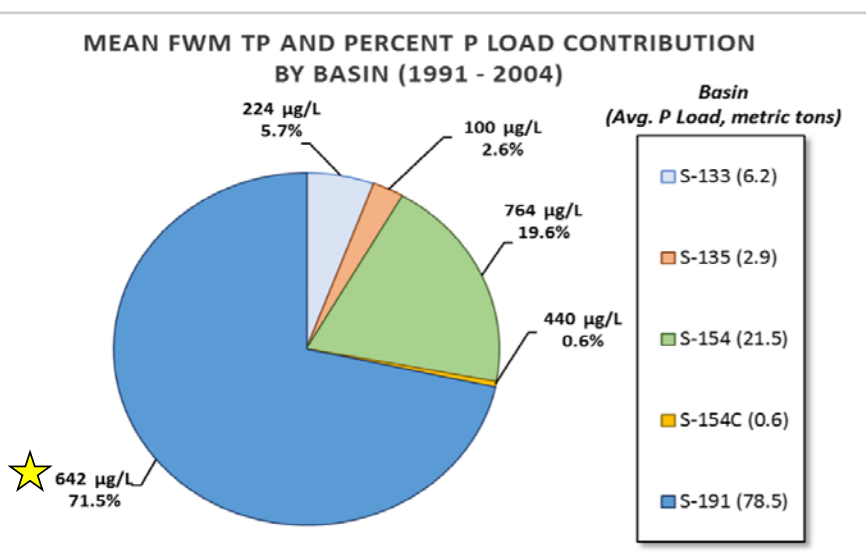
**Pre-Protection Plan Flows**



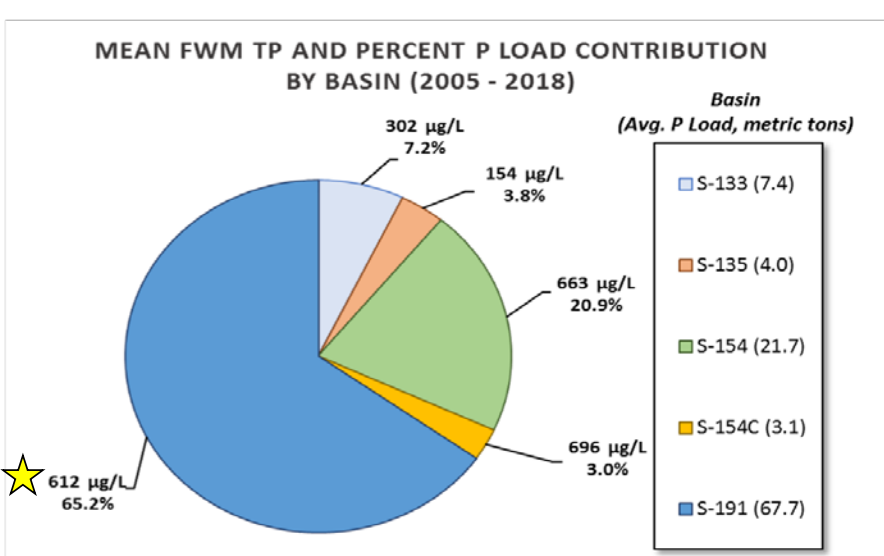
**Post-Protection Plan Flows**



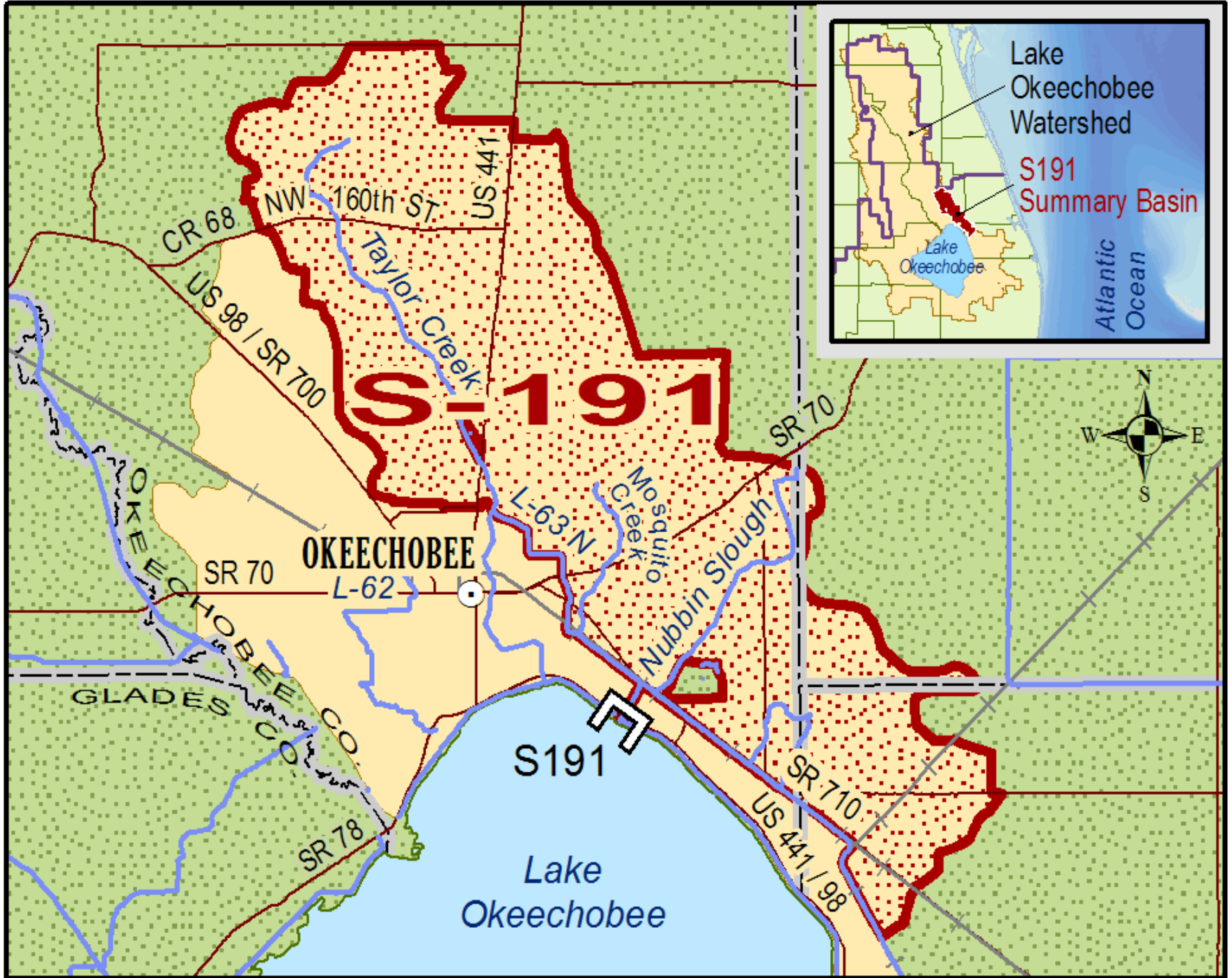
**Pre-Protection Plan Loads**



**Post-Protection Plan Loads**



S-191 BASIN - MAP



REG/EREG 24-SEP-2012 CMISSAU \\ad.sfwm.gov\dfsroot\data\err\_gis\projects\EVG\lok\kEdgemon\_LOK\_PerformanceMeasures\mxd\S191\_PerformanceMeasures\_TinyMap\_cm1.mxd

## S-191 BASIN - STATISTICS

| Summary Statistics       |                  |                     |                      |  |
|--------------------------|------------------|---------------------|----------------------|--|
|                          | Period of Record | Pre-Protection Plan | Post-Protection Plan |  |
|                          | WY1991-WY2018    | WY1991-WY2004       | WY2005-WY2018        |  |
| <b>Averages</b>          |                  |                     |                      |  |
| Avg. Flow (acft/yr)      | 94,416           | 99,147              | 89,685               |  |
| Avg. Load (mt/yr)        | 73.10            | 78.54               | 67.66                |  |
| FWMC (ug/L)              | 628              | 642                 | 612                  |  |
| Avg. UAL (lbs/acre/yr)   | 1.34             | 1.44                | 1.24                 |  |
| <b>Medians</b>           |                  |                     |                      | <b>Mann-Whitney Results p-values<sup>3</sup></b> |
| Median Flow (acft/yr)    | 88,090           | 88,654              | 88,090               | 0.6133   |
| Median Load (mt/yr)      | 73.23            | 76.12               | 66.70                | 0.4907   |
| Median FWMC (ug/L)       | 617.21           | 648.5               | 571                  | 0.1752   |
| Median UAL (lbs/acre/yr) | 1.34             | 1.40                | 1.22                 | 0.4906   |

Highlighted cells indicate statistical significance

<sup>3</sup>The 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 Taylor Creek/Nubbin Slough - Seasonal Kendall  $\tau$  Results for Total Monthly Flow (ac-ft) by Basin over Three Water Year Ranges

| Sub-watershed/Basin | 1991-2018        |                  |           |           |         | 1991-2004        |                  |           |           |         | 2005-2018        |                  |           |           |         |
|---------------------|------------------|------------------|-----------|-----------|---------|------------------|------------------|-----------|-----------|---------|------------------|------------------|-----------|-----------|---------|
|                     | % Missing Months | Kendall's $\tau$ | Sen Slope | Intercept | p-value | % Missing Months | Kendall's $\tau$ | Sen Slope | Intercept | p-value | % Missing Months | Kendall's $\tau$ | Sen Slope | Intercept | p-value |
| S-191 Basin         | 0.0%             | -0.172           | -43.67    | 2764      | 0.021   | 0.0%             | -0.110           | -94.27    | 4193      | 0.346   | 0.0%             | 0.018            | 0.00      | 956       | 0.760   |

Sub-watershed Taylor Creek/Nubbin Slough - Seasonal Kendall  $\tau$  Results for Total Monthly P Load (kg) by Basin over Three Water Year Ranges

| Sub-watershed/Basin | 1991-2018        |                  |           |           |         | 1991-2004        |                  |           |           |         | 2005-2018        |                  |           |           |         |
|---------------------|------------------|------------------|-----------|-----------|---------|------------------|------------------|-----------|-----------|---------|------------------|------------------|-----------|-----------|---------|
|                     | % Missing Months | Kendall's $\tau$ | Sen Slope | Intercept | p-value | % Missing Months | Kendall's $\tau$ | Sen Slope | Intercept | p-value | % Missing Months | Kendall's $\tau$ | Sen Slope | Intercept | p-value |
| S-191 Basin         | 0.0%             | -0.188           | -20.04    | 1373      | 0.014   | 0.0%             | -0.097           | -32.45    | 2198      | 0.394   | 0.0%             | 0.018            | 0.00      | 414       | 0.760   |

Sub-watershed Taylor Creek/Nubbin Slough - Seasonal Kendall  $\tau$  Results for Monthly FWM TP ( $\mu\text{g/L}$ ) by Basin over Three Water Year Ranges

| Sub-watershed/Basin | 1991-2018        |                  |           |           |         | 1991-2004        |                  |           |           |         | 2005-2018        |                  |           |           |         |
|---------------------|------------------|------------------|-----------|-----------|---------|------------------|------------------|-----------|-----------|---------|------------------|------------------|-----------|-----------|---------|
|                     | % Missing Months | Kendall's $\tau$ | Sen Slope | Intercept | p-value | % Missing Months | Kendall's $\tau$ | Sen Slope | Intercept | p-value | % Missing Months | Kendall's $\tau$ | Sen Slope | Intercept | p-value |
| S-191 Basin         | 16.1%            | -0.116           | -3        | 520       | 0.115   | 11.9%            | 0.009            | 1         | 493       | 0.936   | 20.2%            | 0.184            | 8         | 401       | 0.099   |

*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.

## S-191 BASIN - MONTHLY DATA AND SKT TRENDS

