Wayback Machine: Analyzing Specific Conductance

Manatee County Natural Resources Department: Environmental Protection Division

Quality Assurance

7/14/2025

Quality Assurance

I.   **Data Integrity**

All raw data were checked for completeness, consistency, and validity prior to analysis. Outlier values (e.g., pH > 9) were flagged and reviewed based on known environmental thresholds and patterns in surrounding years. Missing values were explicitly handled using LOESS interpolation only when surrounding data supported stable local trends.

II.   **Model Validation**

The LOESS model was selected for its non-parametric flexibility and suitability for environmental time-series data. Model parameters (e.g., span) were selected using a combination of K-fold cross-validation and visual inspection to balance model fit and smoothness. Model fits were reviewed for smoothness and consistency with observed data on both sides of the interpolated gap (1986–1994).

III.   **Reproducibility**

All analyses were conducted using R and fully documented in Quarto notebooks. All code was written using the Tidyverse framework, following consistent data manipulation and visualization practices for readability and reproducibility. The scripts are version-controlled and can be re-run using the same data and settings to reproduce all tables, figures, and interpolations.

IV.   **Cross-Validation with External Studies**

Results were compared against similar studies from the Peace River Cumulative Impact Study (2007), particularly those from Horse Creek and Joshua Creek, to verify consistency of long-term trends across watersheds.

V.   **Standard Error**

Standard errors for bar graph values were calculated as:

    Standard Error = SD / √n,

where n is the number of observations within each time bin.