

Methodologies for Evaluating Water Availability

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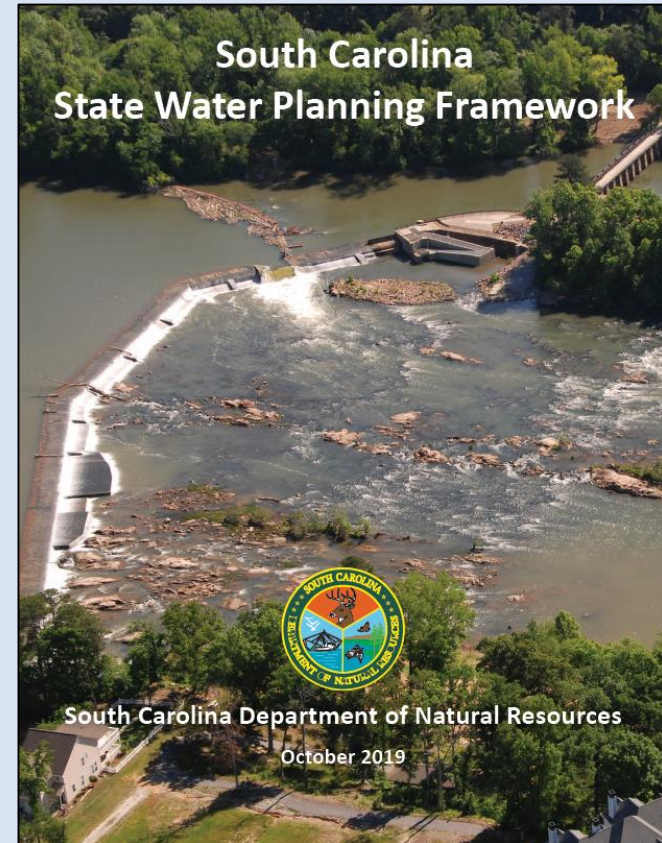


Edisto River Basin Council
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Methods for Evaluating Water Availability



- Formal approach described in Planning Framework (Section 4).
- Based, in part, on methodologies used in Texas for evaluating water availability.
- Provides consistency – designates a common set of definitions and processes to use across the State.



Big Picture – this is a gap analysis, the RBC will be determining where and when demand exceeds supply under varying demand scenarios and deciding how to manage water to close the gaps.

Methods for Evaluating Surface Water Availability



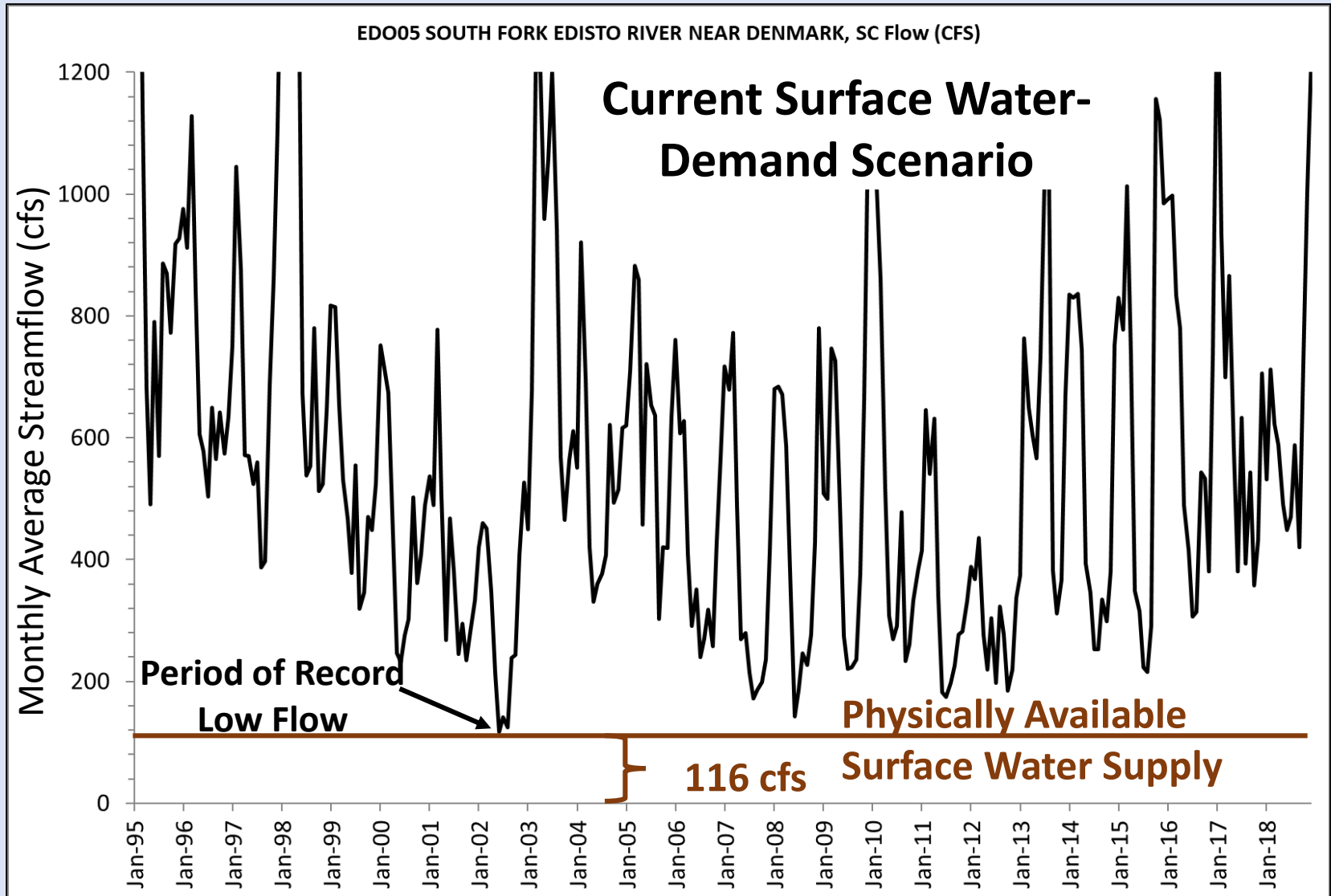
- **Definitions:**
 - **Physically Available Surface Water Supply** – maximum amount of water occurring 100% of the time at a location on a surface water body, with no defined conditions applied on the surface water body.
 - **Surface Water Supply** – maximum amount of water available for withdrawal 100% of the time at a location on a surface water body without violating any applied *Surface Water Conditions* on the surface water source and considering upstream demands.
 - **Surface Water Conditions** – a physical limitation on the amount of water that can be withdrawn from a surface water source and are independent of water demand.
 - **Surface Water Shortage** – occurs when the water demand exceeds the *Surface Water Supply* for any water user in the basin.
 - **Reaches of Interest** – specific stream reaches that may have no identified Surface Water Shortage but experience undesired impacts, environmental or otherwise, determined from current or future water-demand scenarios or proposed water management strategies.

Surface water volumes highlighted in the following hydrographs are for illustrative purposes only.



Physically Available Surface Water Supply

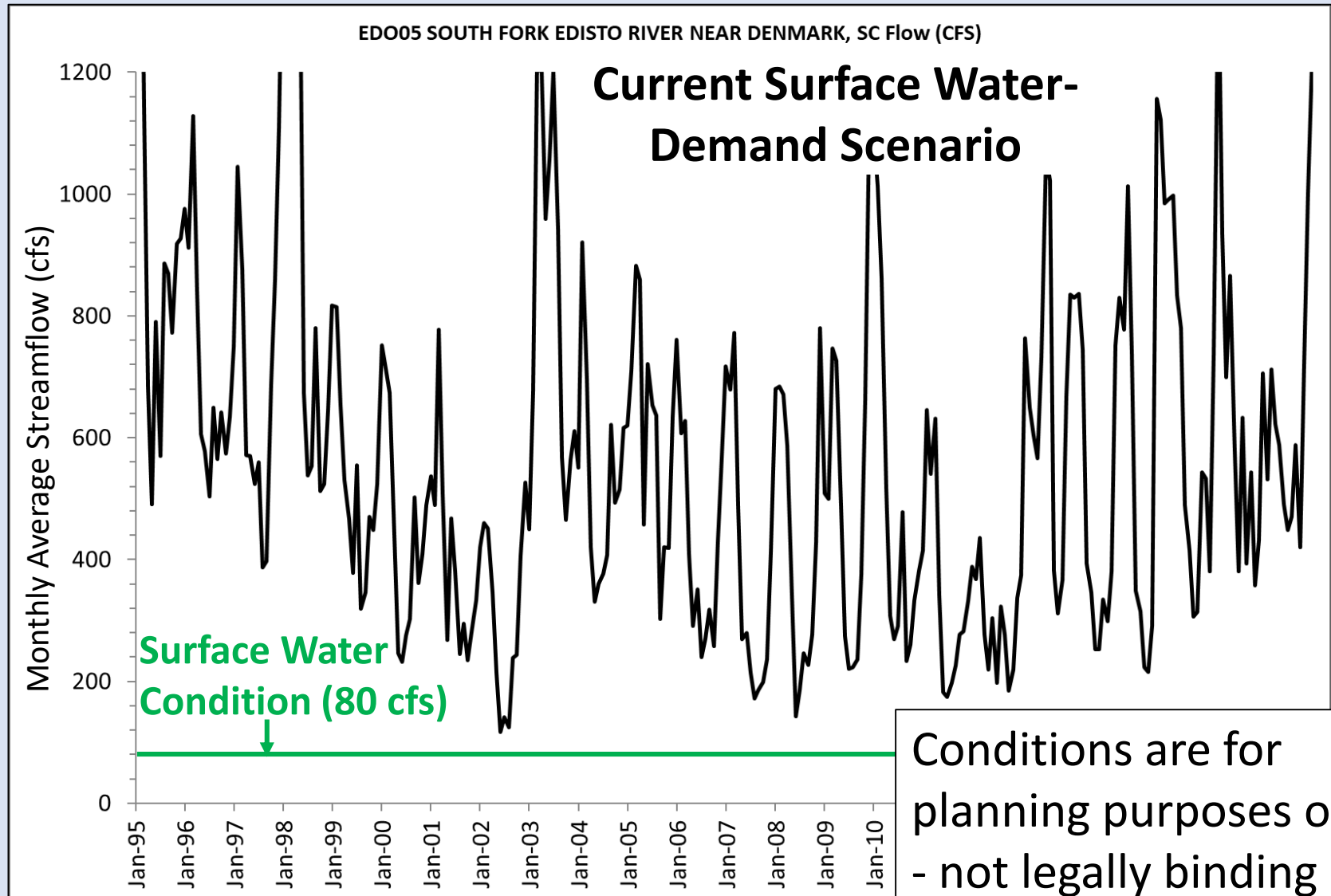
Maximum amount of water occurring 100% of the time at a location on a surface water body, with no defined conditions applied on the surface water body.



Surface Water Conditions



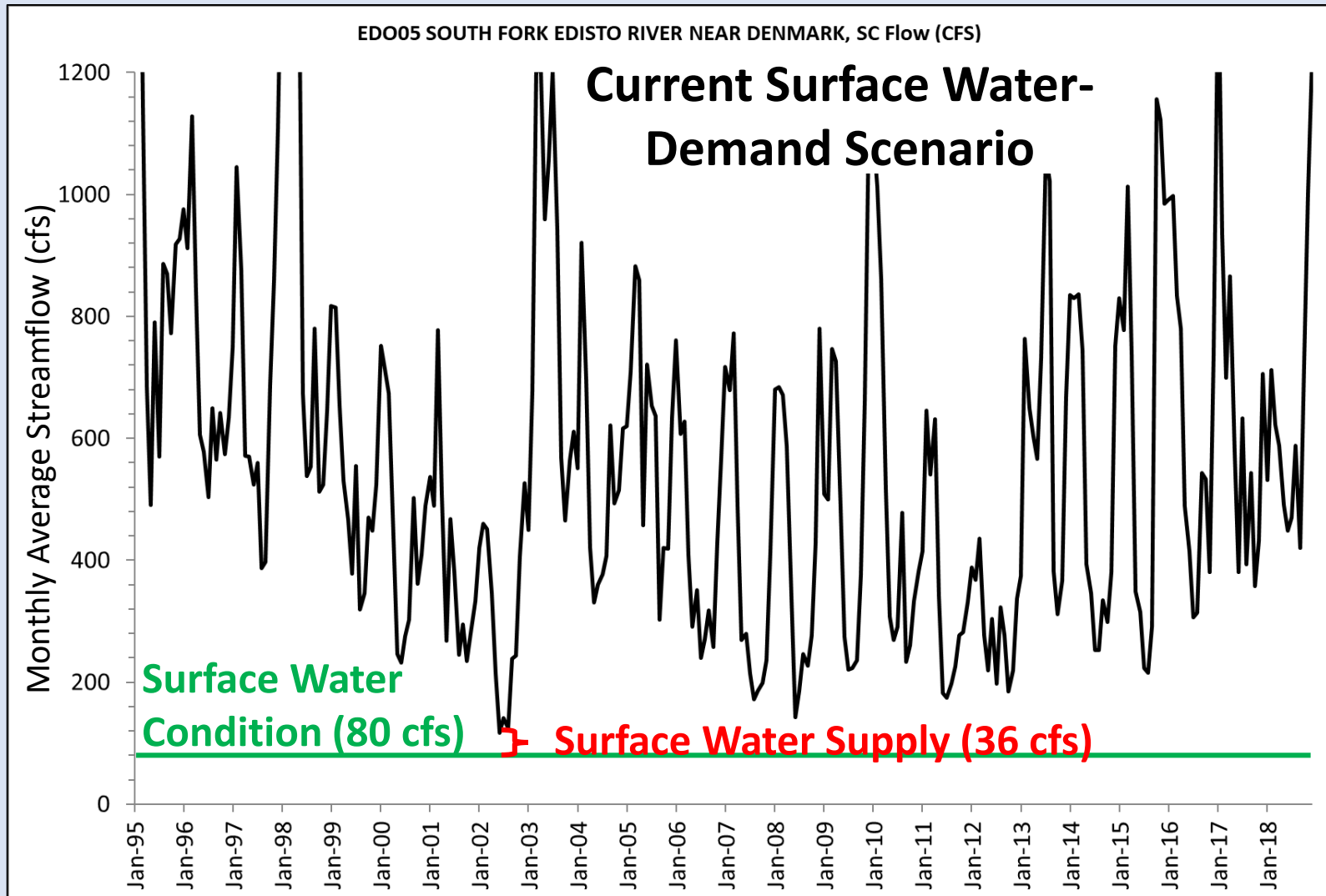
Conditions which physically limit the amount of water that can be withdrawn from a surface water source and are independent of water demand.



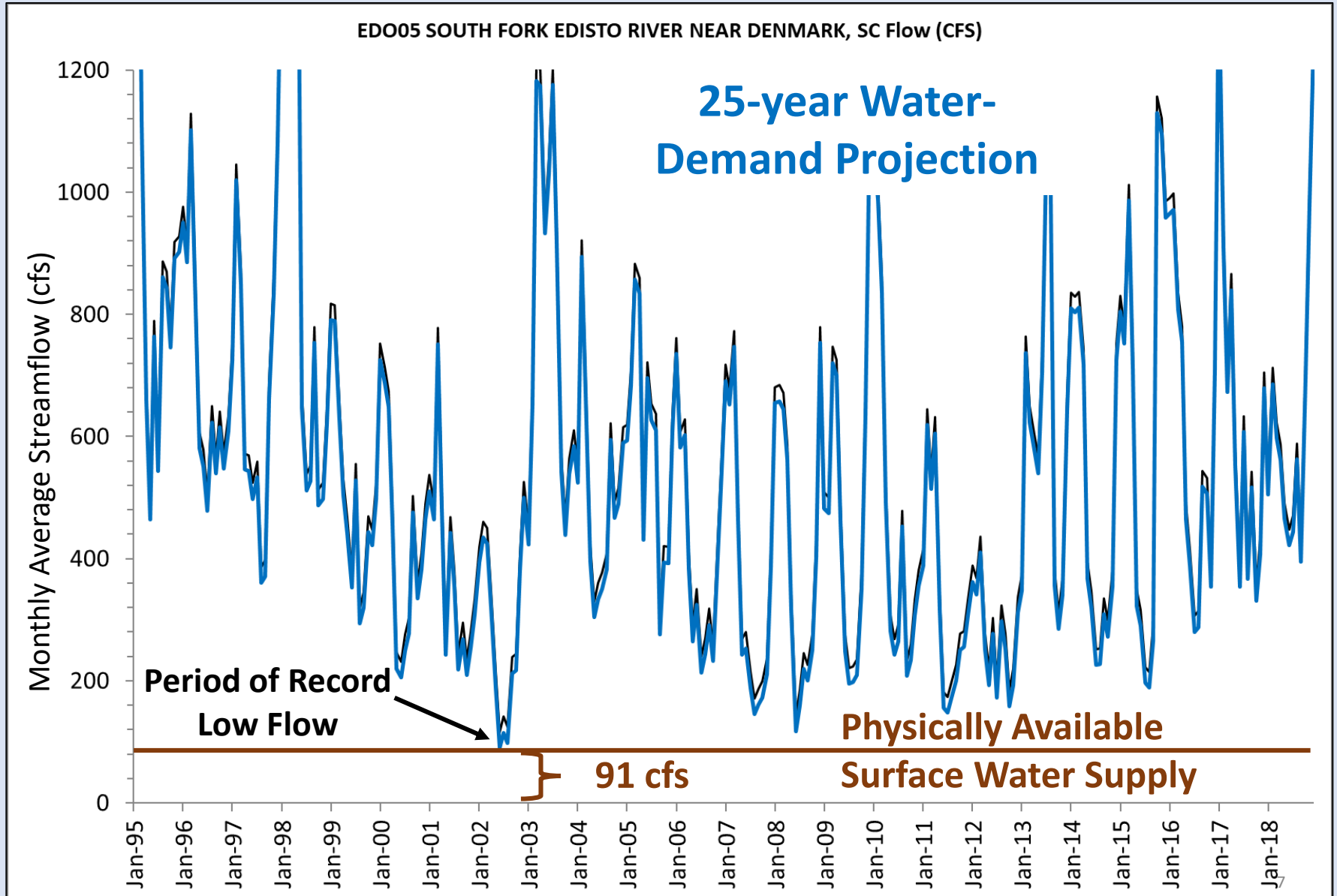
Surface Water Supply



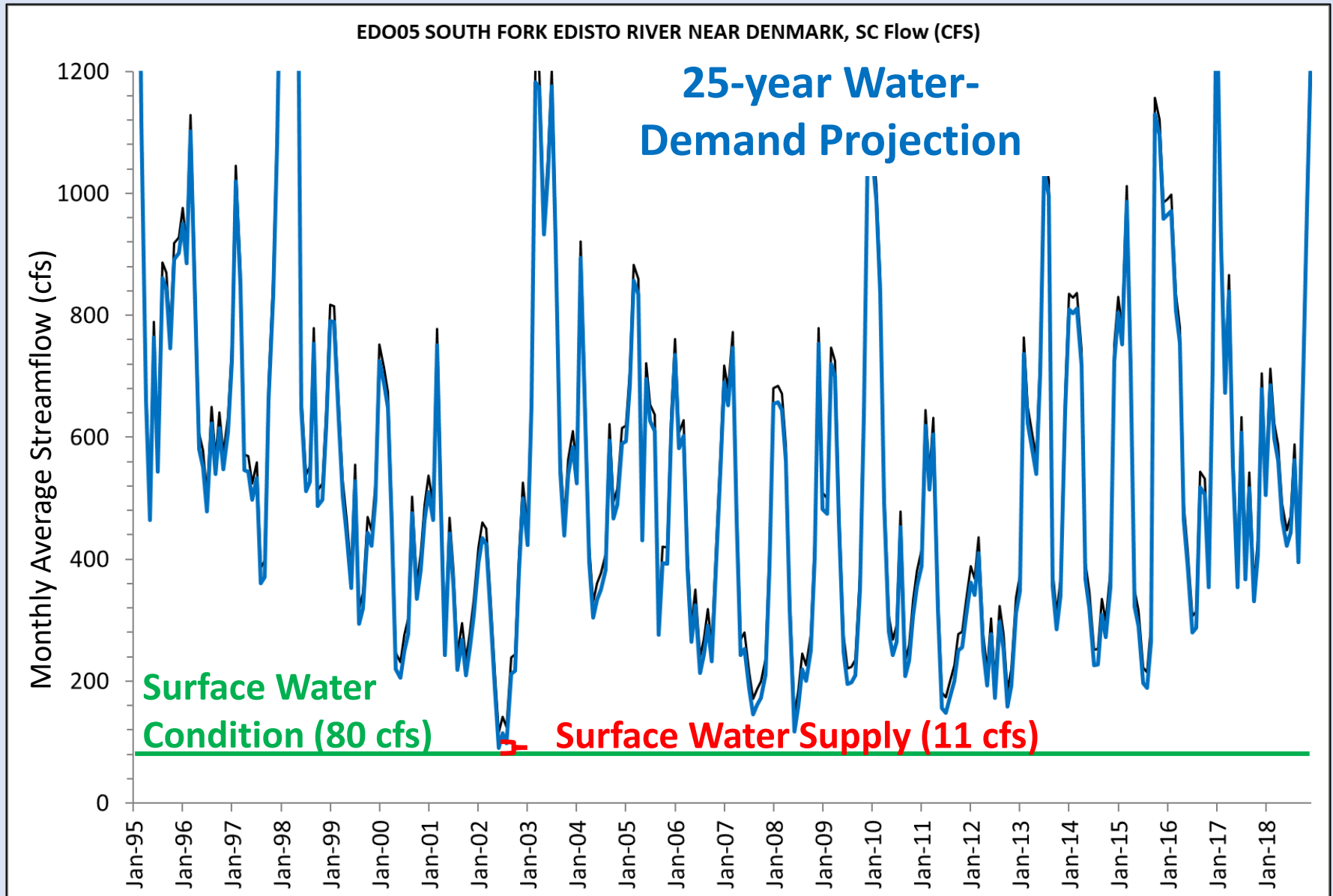
Maximum amount of water available for withdrawal 100% of the time at a location on a surface water body without violating any applied Surface Water Conditions on the surface water source and considering upstream demands.



Impacts on Physically Available Surface Water Supply from Increased Demand



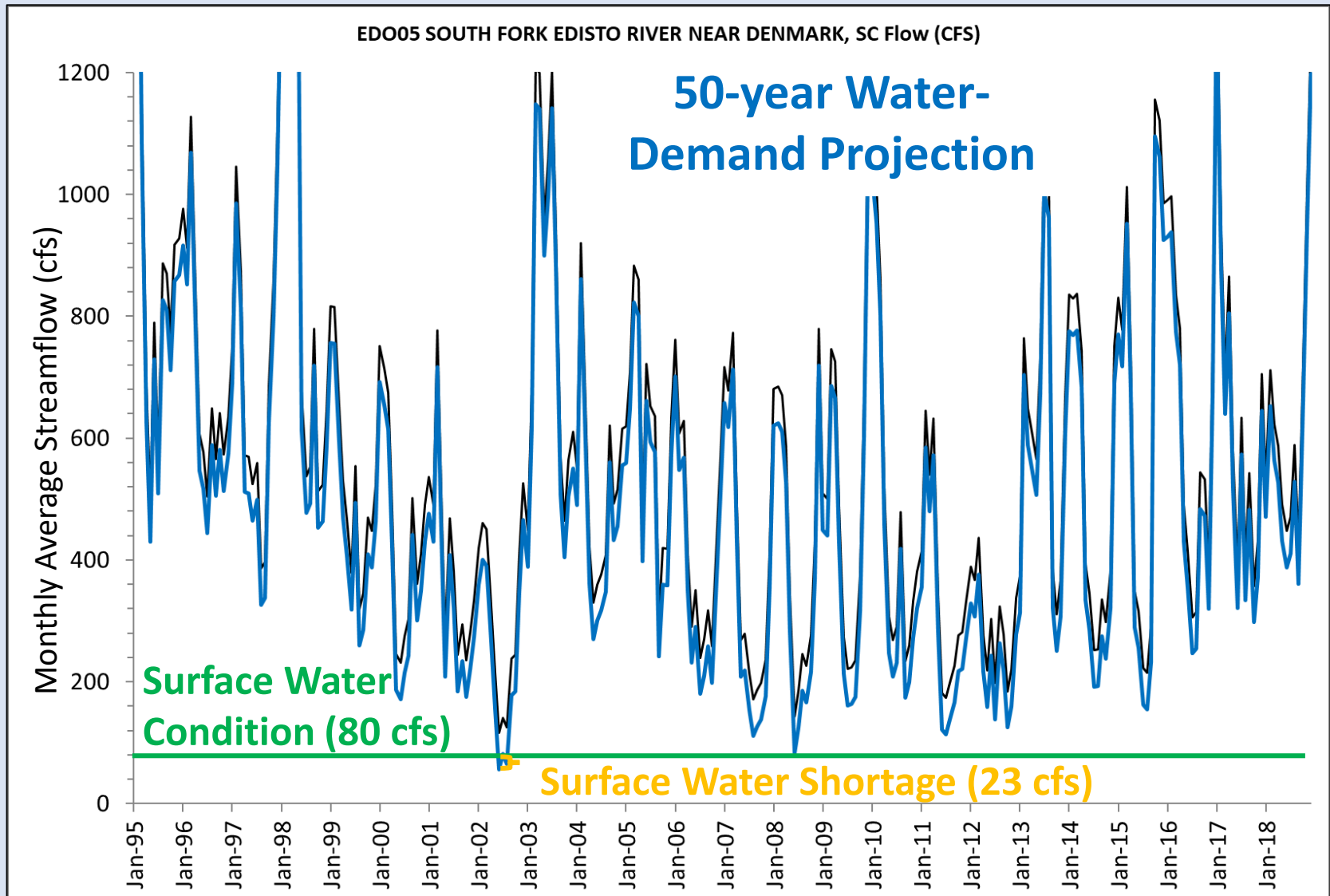
Impacts on Surface Water Supply from Increased Demand



Surface Water Shortage



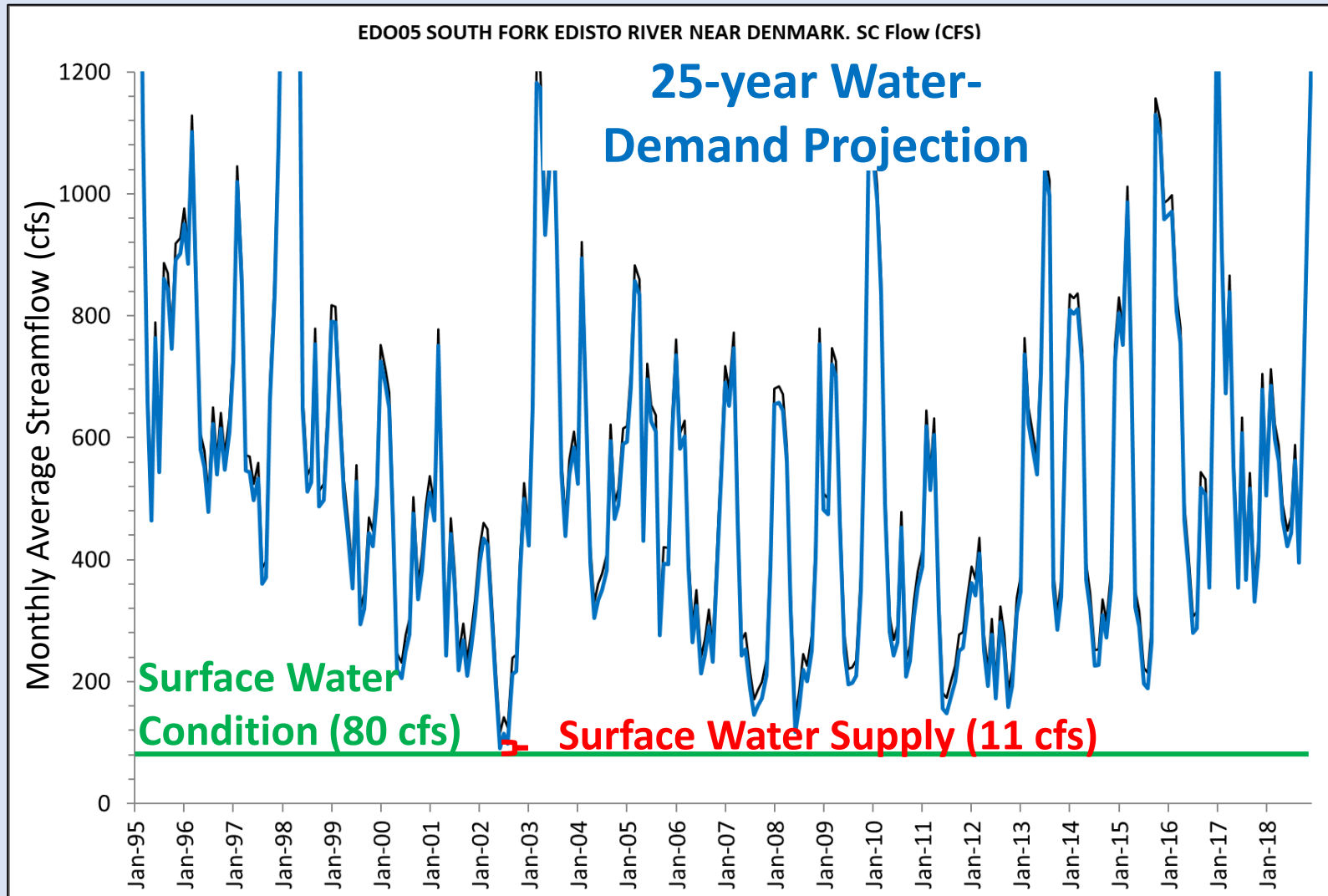
Occurs when the water demand exceeds the Surface Water Supply for any water user in the basin.





Reaches of Interest

Specific stream reaches that may have no identified Surface Water Shortage but experience undesired impacts, environmental or otherwise, determined from current or future water-demand scenarios or proposed water management strategies.



Methods for Evaluating Surface Water Availability



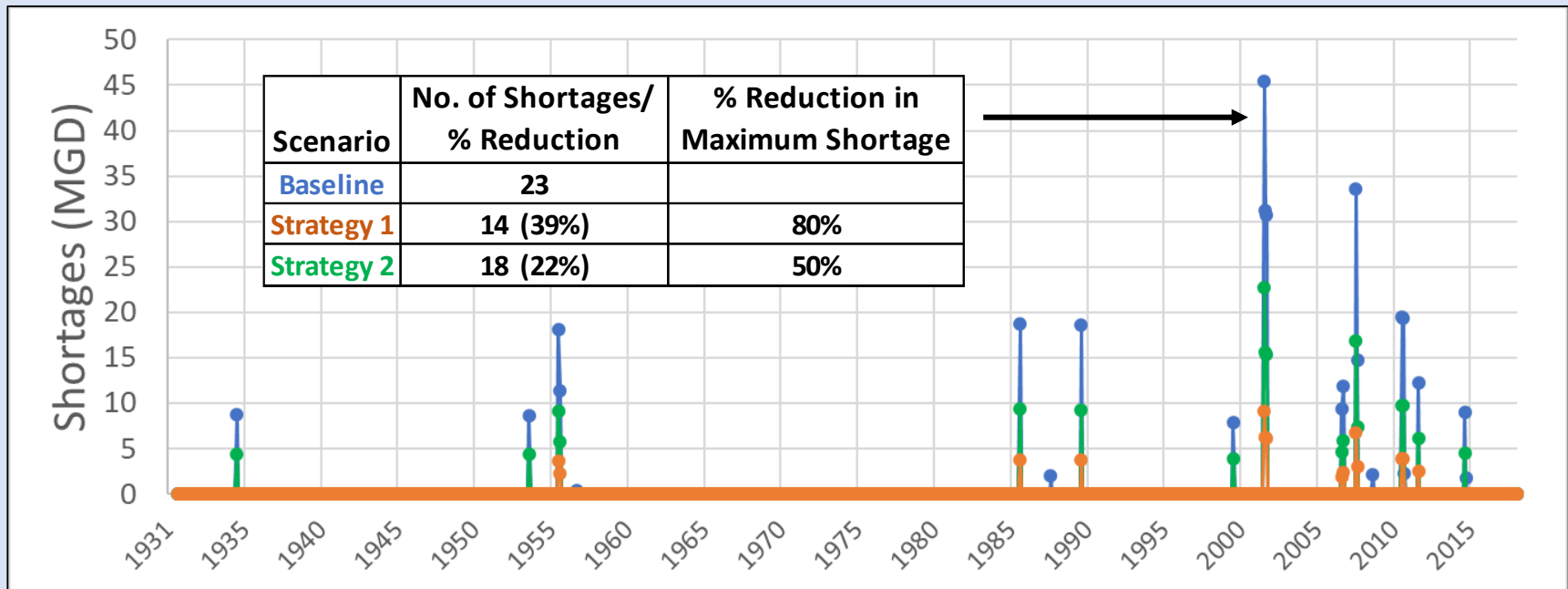
- RBCs will determine (Phase II):
 - Surface Water Conditions, if any
 - Surface Water Supply at nodes of interest
 - All Surface Water Shortages
 - Reaches of Interest
- Surface Water Management Strategies will be developed and evaluated (Phase III):
 - **Surface Water Management Strategy** – *any water management strategy proposed to eliminate a Surface Water Shortage, reduce a Surface Water Shortage, or generally increase Surface Water Supply.*
 - Examples: conservation measures, conjunctive use, new supplies, etc.
 - Effectiveness and feasibility of each strategy will be evaluated.
 - Impacts of strategies on Reaches of Interest will be evaluated.
- *River Basin Plan will document Surface Water Supply, Shortages, Reaches of Interest, and recommended Surface Water Management Strategies.*

Performance Measures



To facilitate analyses, RBCs may also:

- Develop **Performance Measures** – quantitative measures of change in a user-defined condition from an established baseline used to assess the performance of a proposed water management strategy or combination of strategies.
 - % Change in monthly minimum flow or 5th percentile flow
 - % Change in Surface Water Supply
 - % Change in number and/or magnitude of Surface Water Shortages
 - Impacts on Regulatory Minimum Instream Flow (20-30-40% MDF)



Strategic Nodes

- Designated by RBC and designed to facilitate analyses.
- Definition: a location on a surface water body or aquifer designated to evaluate the cumulative impacts of water management strategies for a given model scenario and serves as a primary point of interest from which to evaluate a model scenario's *Performance Measures*.
- Examples:
 - USGS streamflow gage locations
 - Outlets of tributaries of interest

