

Proposed

Protected Instream Flows for the
Souhegan River Designated
Reach

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The Completed Efforts to Date

- The “players” – IPUOCR identification
- Flow-Dependent IPUOCR
- Groundwater Effects
- Methods to Assess the Flow Needs of Each Flow-Dependent IPUOCR
- PISF Assessments and Report

PISF Assessments and Report

- The IPUOCR, location, water needs
- IPUOCR evaluation methods and results
- How the river meets the proposed PISF
- Identify river reaches that do not meet the proposed PISF
- *TRC to be presented these results and then review and comment*

Flow-Dependent IPUOCR Classes

- Human
- Fish
- Rare, Threatened, and Endangered Species

Groundwater Effects

Three of the studied wells induce recharge

Methods

- Human – Surveys, regulations, interviews
- Fish – Field surveys, reference communities, target communities, modeling
- RTE - Field Surveys, reference communities/habitat needs

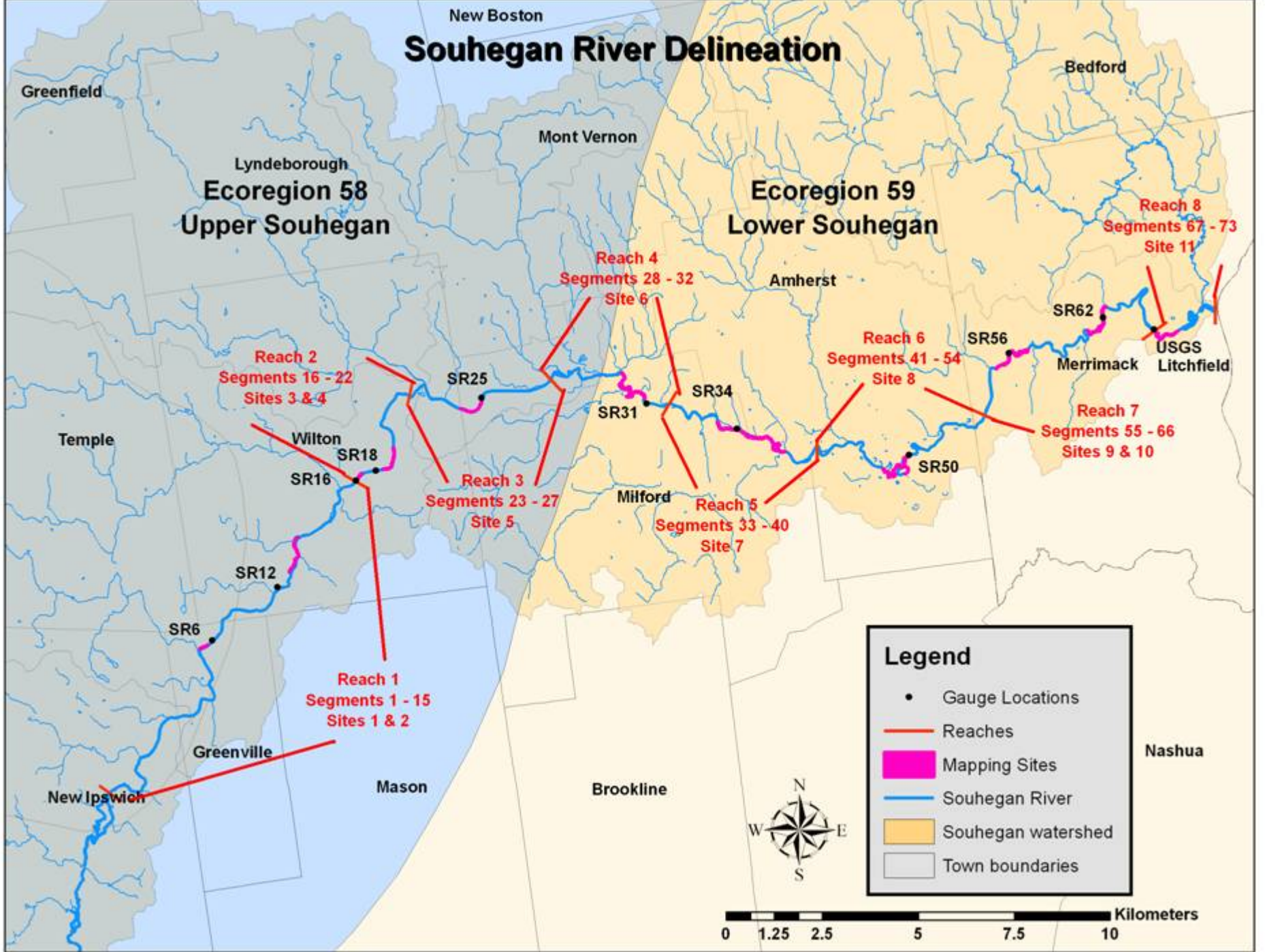
Proposed PISF for Each IPUOCR

Each IPUOCR possess water (river flow) needs that may vary throughout the year and vary along the river.

Souhegan River Delineation

Lyndeborough
Ecoregion 58
Upper Souhegan

Amherst
Ecoregion 59
Lower Souhegan



Reach 2
Segments 16 - 22
Sites 3 & 4

Reach 4
Segments 28 - 32
Site 6

Reach 6
Segments 41 - 54
Site 8

Reach 8
Segments 67 - 73
Site 11

Reach 3
Segments 23 - 27
Site 5

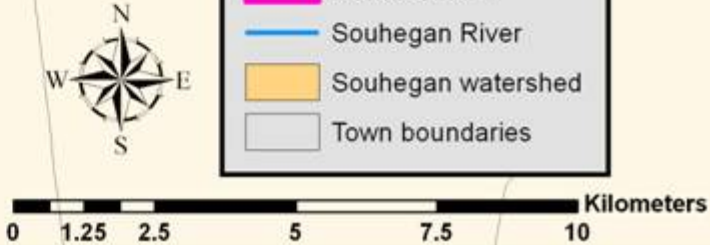
Reach 5
Segments 33 - 40
Site 7

Reach 7
Segments 55 - 66
Sites 9 & 10

Reach 1
Segments 1 - 15
Sites 1 & 2

Legend

- Gauge Locations
- Reaches
- Mapping Sites
- Souhegan River
- Souhegan watershed
- Town boundaries



Example of an IPUOCR PISF

Recreation

4 cfsm in Reaches 1 and 2

Synthesized PISF

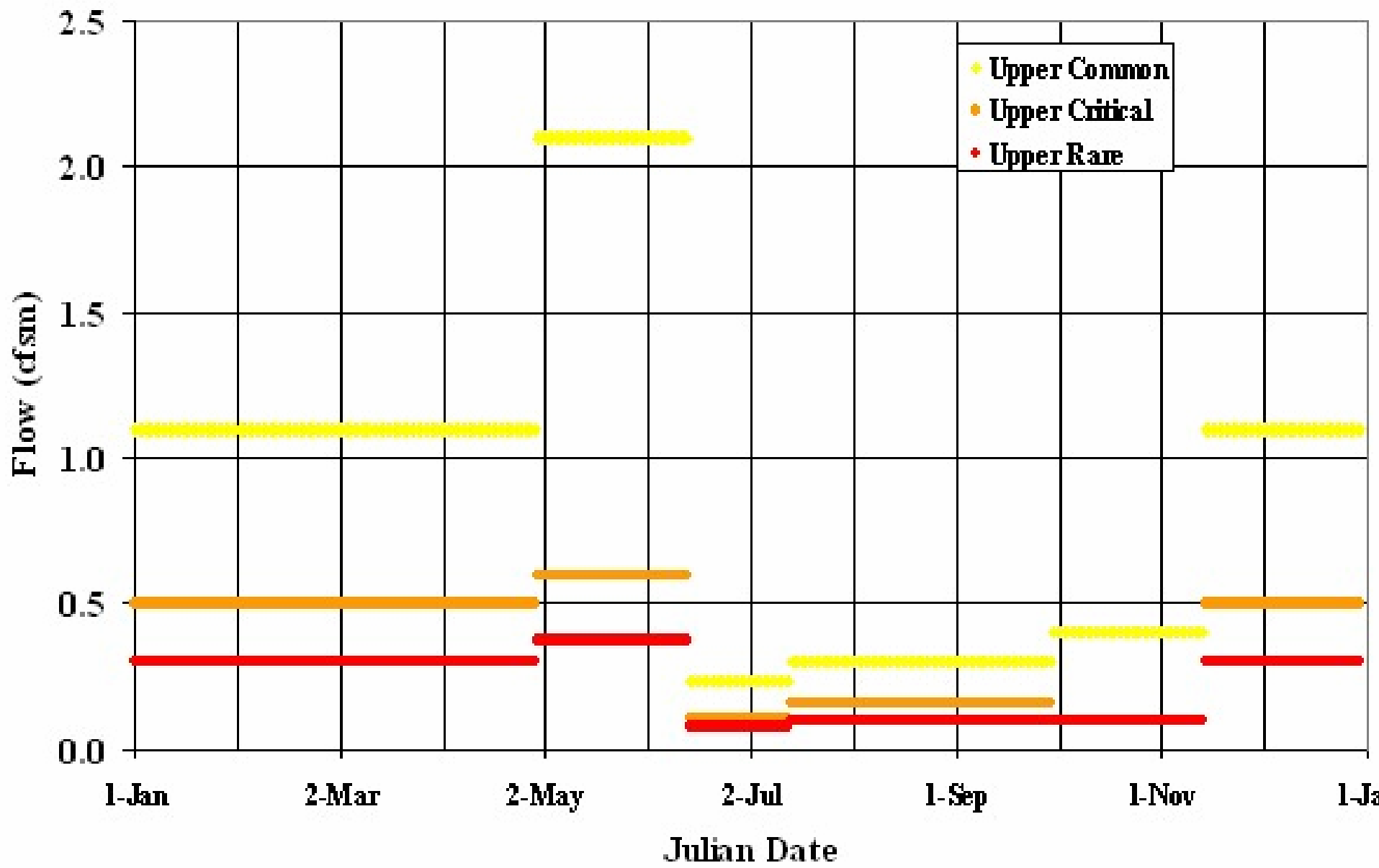
When comparing the PISF need for each IPUOCR for every day of the year, on the low flow end, the largest of the individual IPUOCR PISF controls: meeting that PISF means that all other PISF are met.

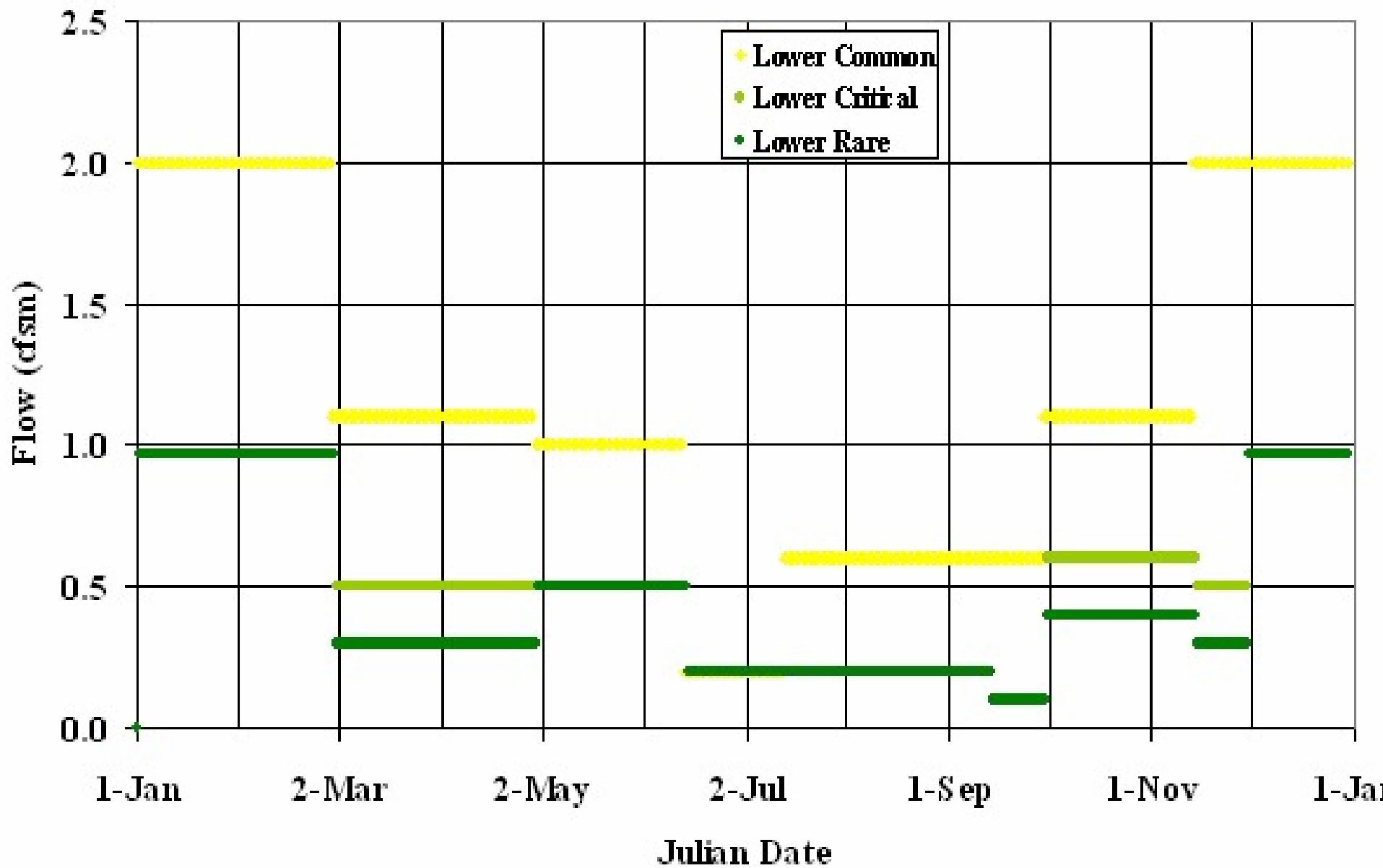
Human needs (recreation and hydropower) are the largest of the low flow PISF.

Achievable Synthesized PISF

The river system has very little conservation storage (stored water that could be released over long periods) to meet human PISF.

It was decided that the human PISF would be met as they have been historically: “run-of-river”, and therefore subsequent water management strategies will focus on the non-human, synthesized PISF.





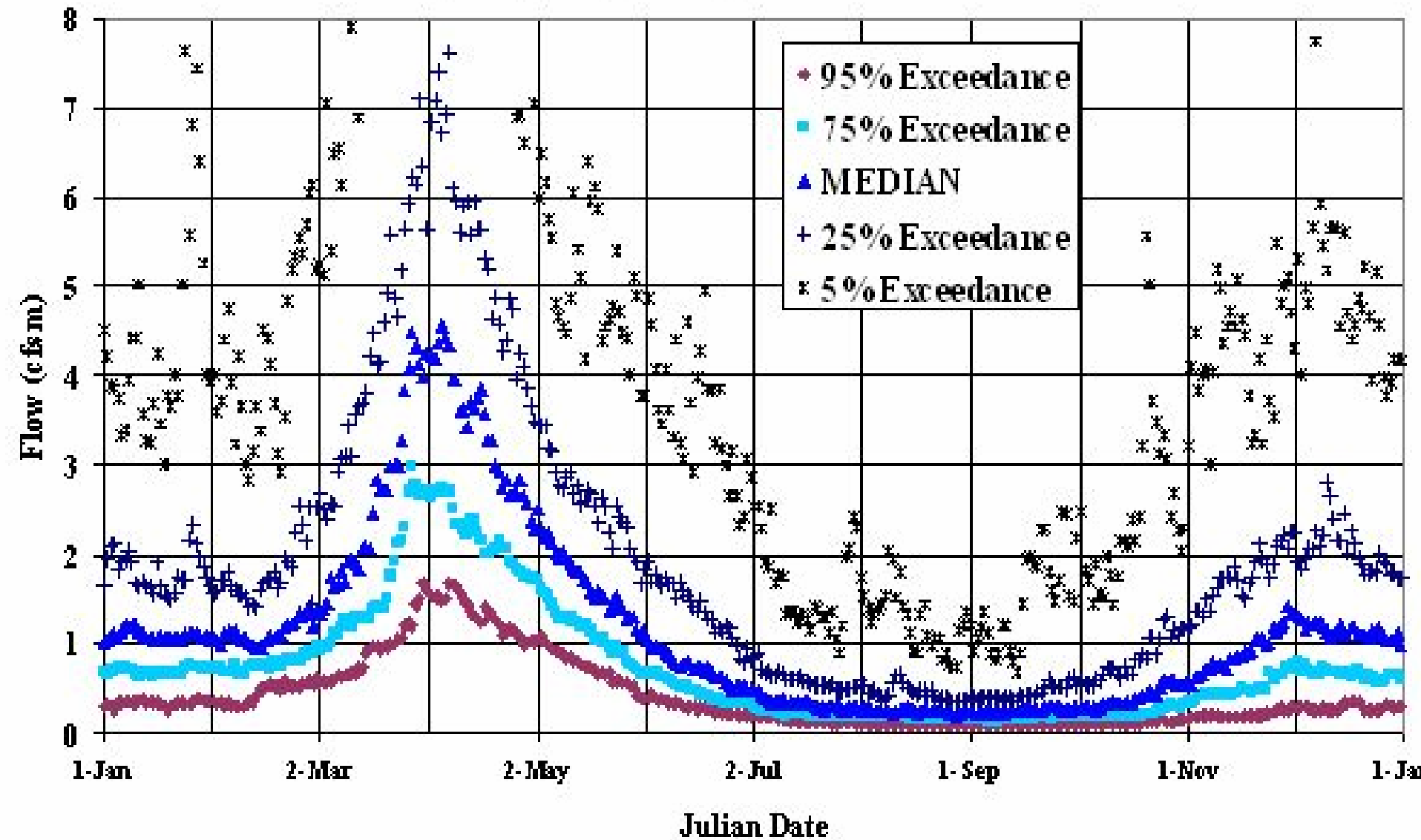
Comparison of the Proposed PISF to River Flow

- Generate Hydrology
- Compare River flow to synthesized PISF
- Determine characteristics of when the river flow does not meet the PISF

River Hydrology

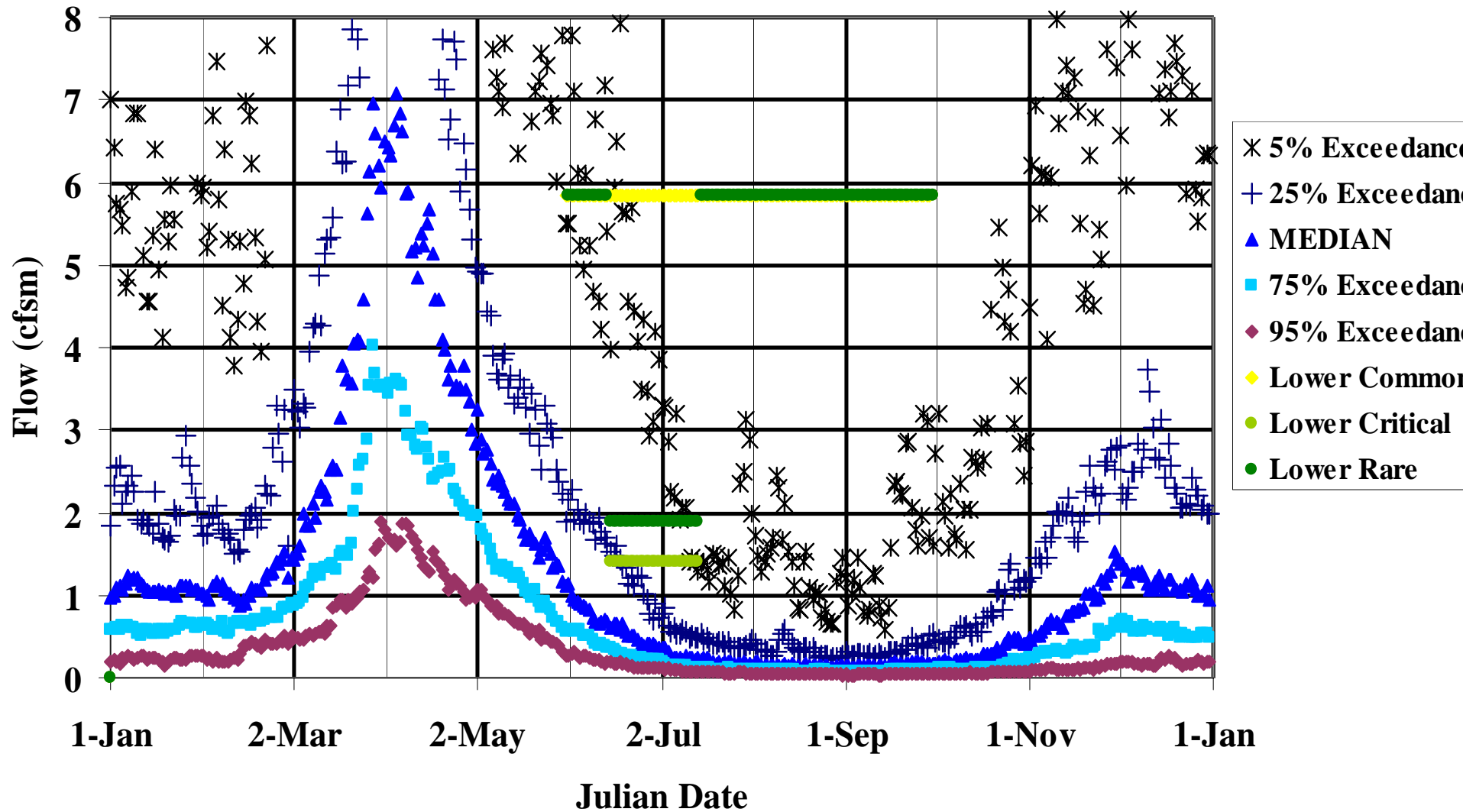
- USGS Gage Data
- Concurrent flow measurements
- Statistical re-creation of flow at various locations along the river

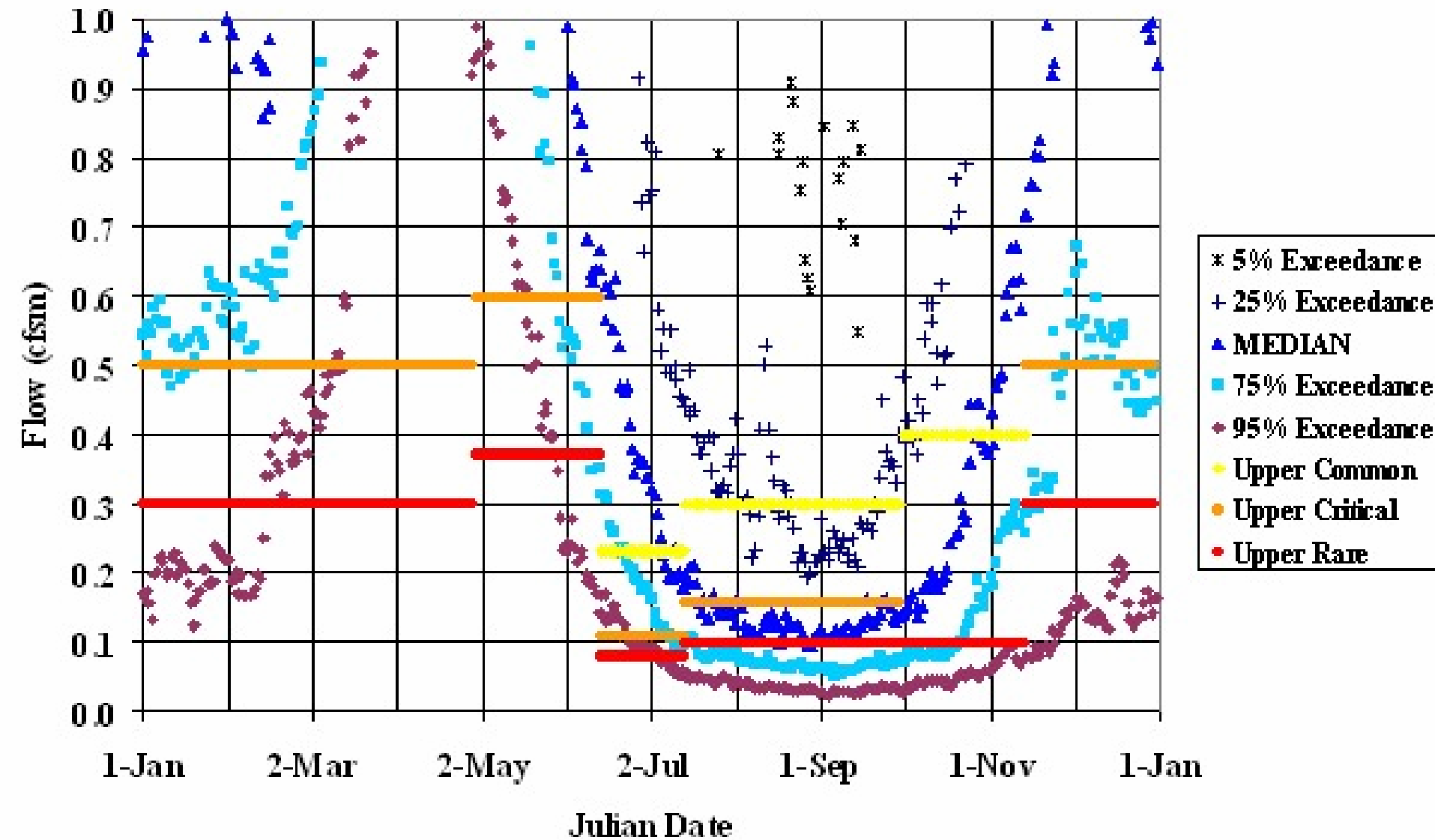
Daily Frequency Souhegan River at Merrinack

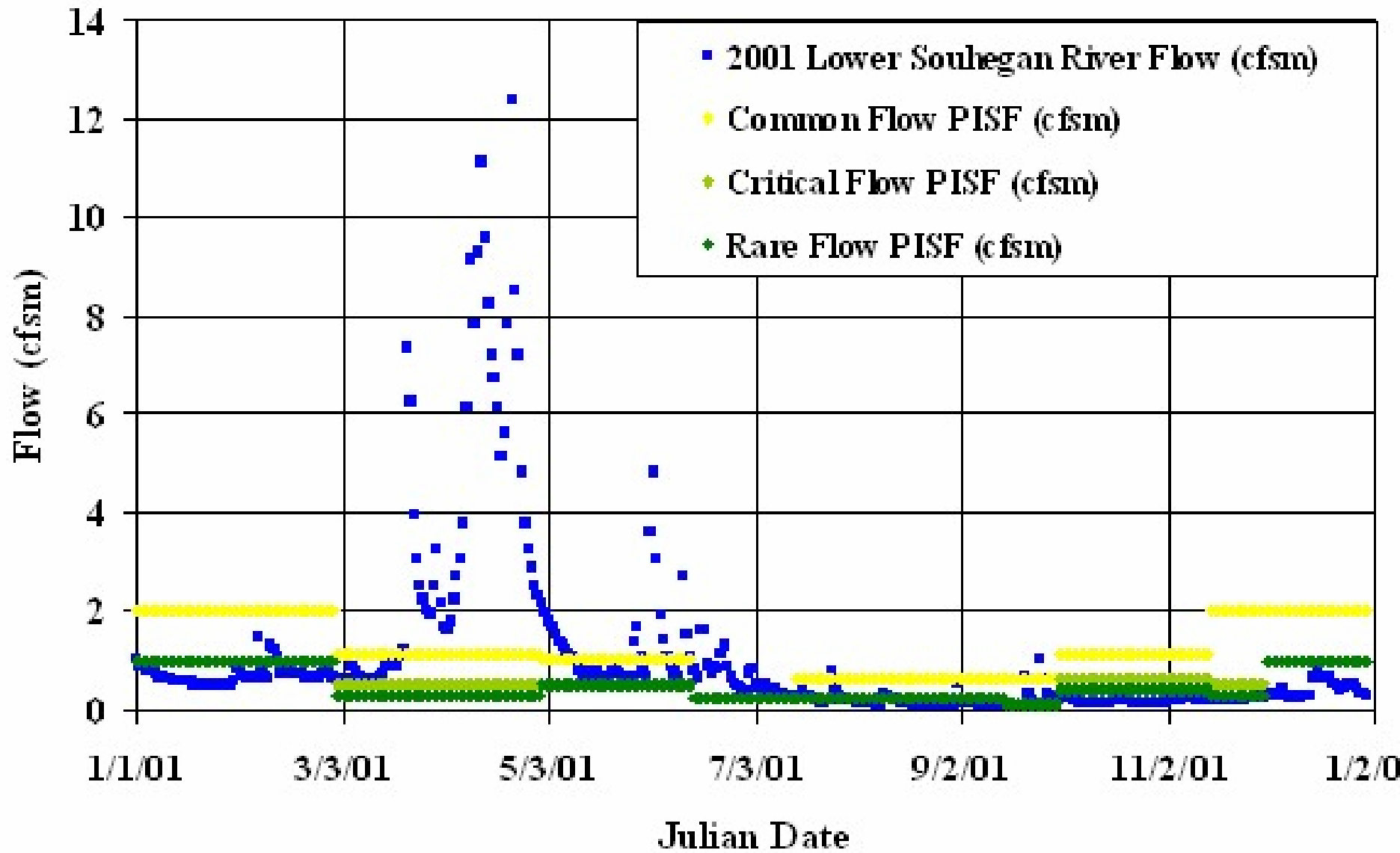


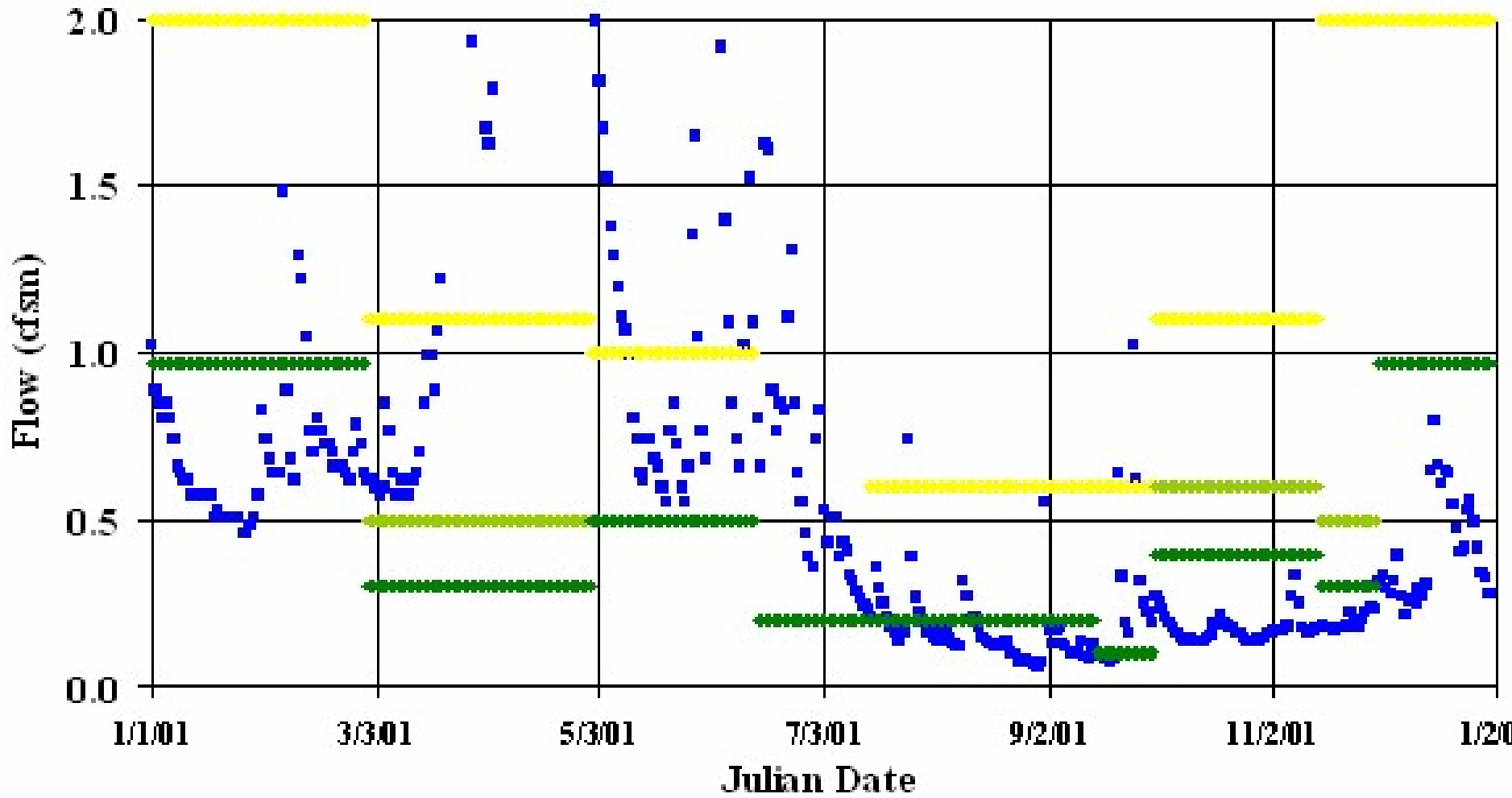
Hydrology and the Ability of the Existing System to Meet the Proposed PISF

Daily Frequency - Lower Souhegan River and High Flow PISF









- 2001 Lower Souhegan River Flow (cfsm)
- ◆ Common Flow PISF (cfsm)
- ◆ Critical Flow PISF (cfsm)
- ◆ Rare Flow PISF (cfsm)

Important Points to Make as We Move into the Water Management Phase

- Significant habitat can be created without increasing flows, but through stream corridor restoration measures
- Increasing flows alone is not as important as also addressing high temperatures