



South Carolina Department of Health and Environmental Control

Safe Yield Workgroup

Meeting #2

Agenda

9:00- Welcome

9:10- Work Group Topic and Goal- Operating Assumptions

9:20- Overview of Permit vs Registration (Rob Devlin)

9:35- DNR Comments (Alex Pellett/ Scott Harder)

9:50- Alt SY Evaluations (Median-MIF, Mean-MIF) Edisto Example

10:10- Percentile Alt SY

10:25-Break

10:35- Open Discussion/ Alternatives from Group

11:45- Agenda for SY Meeting #3

12:00- Adjourn

Workgroup Timeline

January 21	Workgroup Kick Off
February 18	Evaluation of Alternative Calculations
March 17	Evaluation of Alternative Calculations
April 14	Discussion-Wrap Up
May 15	Summary Report

Goal

To evaluate how safe yield is currently calculated and to examine possible alternative calculations that the Department should consider.

* Any changes to the Safe Yield Calculation would require a regulation change (Separate Process)

Workgroup Topic



Permit Duration

Exemptions

Hierarchy of Use

Inter-basin
Transfers

Safe Yield Calculation in R61-119

Grandfathered
Permits

Minimum Instream Flow Values

Public Participation
Requirements

Workgroup Assumptions

- Changes to the SY calculation may cause stream segments to become over allocated
- No SY calculation can guarantee MIF will be present 100% of the time
- Changes to the SY formula will not impact existing permitted users or registrations

How will alternatives be evaluated?

Is it allowable under current law?

Is it scalable to Statewide Permitting Process?

Is calculation protective of the resource (while still allowing for use of the resource) across varied stream types?

Can the evaluation be done given the Departmental resources?



South Carolina Department of Health and Environmental Control

New Permits, Grandfathered Permits and Registrations

Rob Devlin

Water Quantity Programs

- **Capacity Use Program**
 - Since the 1970s
 - Issue permits in designated areas of the coastal plain over 3 million gallons in any month (100,000 gallons per day)
- **Surface Water Withdrawal Permitting**
 - Since June 2012
 - Issue permits statewide if over 3 million gallons in any month
- **Water Use Reporting**
 - All registered and permitted groundwater and surface water withdrawers report their annual water use to the department
 - We compile this information and produce water use reports, which are available on our website for public use

Types of Surface Water Withdrawers

Existing Surface
Water
Withdrawer

New Surface
Water
Withdrawer

Agricultural
Withdrawer

Surface Water Regulation: R.61-119

- Came into effect June 22, 2012
- Grandfathered in existing users: agricultural and permitted
- Both required to be registered or permitted if use 3 million or more gallons of water in any given month and must report use every month

Surface Water Withdrawals

- Legislation was approved in 2010, effective January 1, 2011
- Regulation implementing the Act effective June 2012
- Initial (Grandfather) permits – 197
- New permits – 7 (3 PWS and 4 Golf Course)
- Initial Agricultural Registrations – 90
- New Agricultural Registrations - 13

Agricultural Registration

- Registration rather than a permit, but report their water use
- Safe yield or “legally available water” is the amount that can be permitted for withdrawal

Agricultural Registration

- New or Expanding Agricultural Withdrawals
 1. A proposed withdrawer must request its anticipated withdrawal quantity or increase on a form to the Department
 2. Safe Yield will be determined at the point of withdrawal, if the withdrawal is within the safe yield, it will be considered registered
 3. If the withdrawal is not within the safe yield, the registrant may modify it's request to a reduced withdrawal quantity that is within the Safe Yield

New or Expanding Surface Water Withdrawer

- Permit criteria for New or Expanding Surface Water Withdrawal Permit
 1. Withdrawals will be evaluated for reasonableness
 2. Withdrawals will be subject to minimum instream flow (20, 30, 40 percent of mean annual daily flow)
 3. Safe Yield will be calculated at the point of withdrawal
 4. Safe Yield shall be considered one factor, should withdrawals in excess of the safe yield be permitted, additional contingency planning shall be required
 5. New surface water withdrawals must be Public Noticed for 30 days (mandatory Public Hearing for IBT)



	Existing Surface Water Withdrawer	Agricultural Withdrawer	New or Expanding Surface Water Withdrawer
Permit Duration	Minimum 30 years not to exceed 50	Registrations never expire	Minimum 20 years not to exceed 50
Registered or Permitted Withdrawal Amount	Based on Greater of Historical Use or Intake Capacity	Based on Historical Use or Requester Use	Based on Reasonable Use Criteria
Public Notice	No	No	Yes 30 day Public Notice
Minimum Instream Flow Requirements	Subject only to Operation and Contingency Plan	Not subject to Minimum Instream Flow	Must meet Minimum Instream Flow (20, 30, 40)
Reasonableness Criteria for withdrawal	No	No	Yes



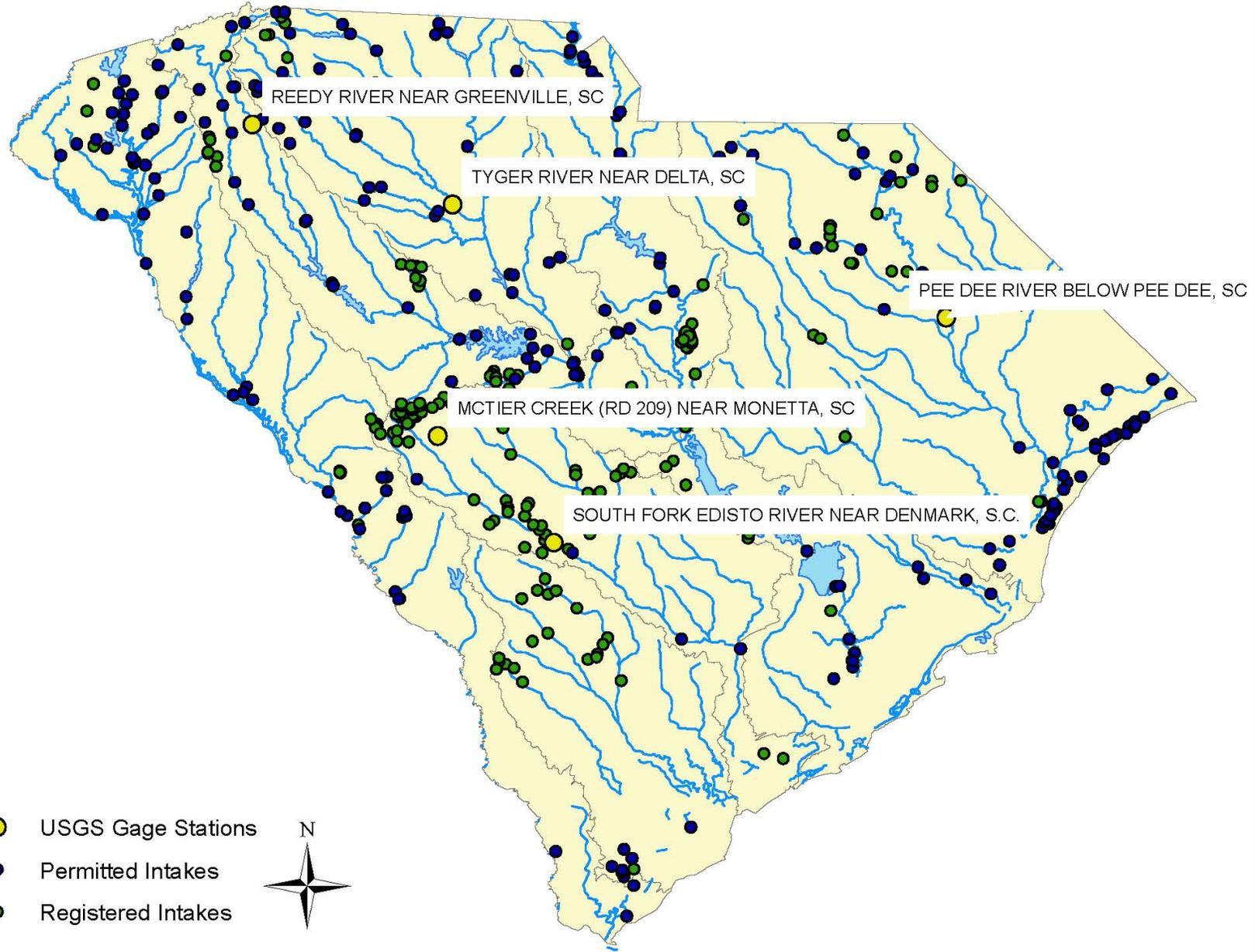
New or Expanding Surface Water Withdrawals		
Agricultural Registration	Withdrawal on River	Withdrawal on Reservoir (FERC)
Conduct Safe Yield Analysis	Conduct Safe Yield Analysis	Request FERC or ACOE approval
If within Safe Yield and Adjusted Safe Yield , approve registration	If within Safe Yield and Adjusted Safe Yield, conduct Minimum Instream Flow	Public Notice Permit
	Use Flow model to analyze historical 20,30,40 flow	Issue Permit
	Review type and size of supplemental water source or contingency plan (Water Supply uses Drought Plan)	
	Determine if withdrawal will adversely impact current withdrawers	
	Public Notice Permit	
	Issue Permit	



	Existing Surface Water Withdrawer	New or Expanding Surface Water Withdrawer	Agricultural Withdrawer
Minimum Instream Flow Requirements (20, 30, 40)	Subject only to Operation and Contingency Plan	Must meet Minimum Instream Flow (20, 30, 40)	Not subject to Minimum Instream Flow
Operation and Contingency Plan	Only address appropriate industry standards for water Conservation	Contingency plan must discontinue water withdrawals from surface water that results in a decrease in flow	Not subject to operation and contingency plans
Operation and Contingency Plan for Public Water System	Public Water Systems must follow their Drought Plan	Public Water Systems must follow their Drought Plan	



SCDNR Comments



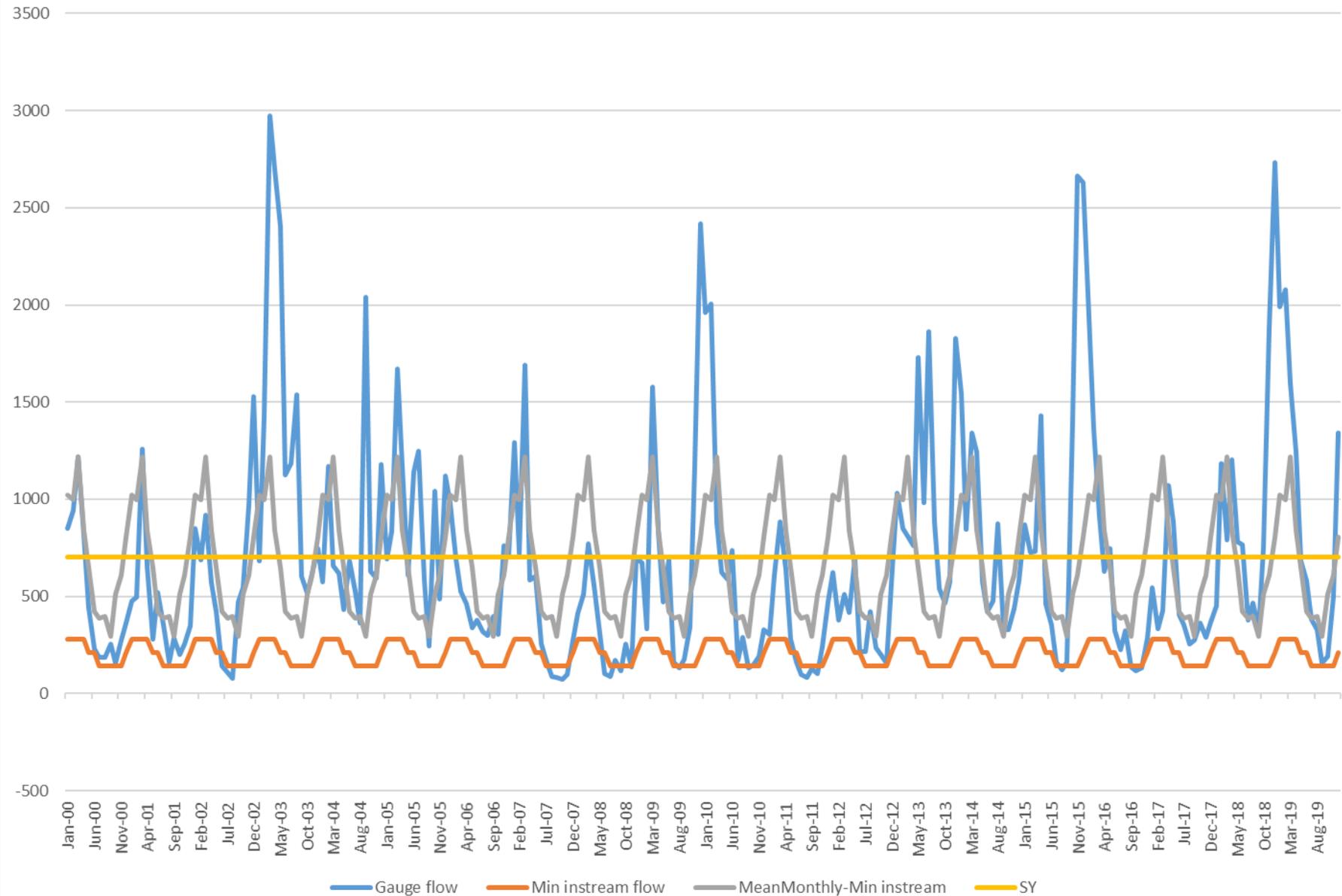


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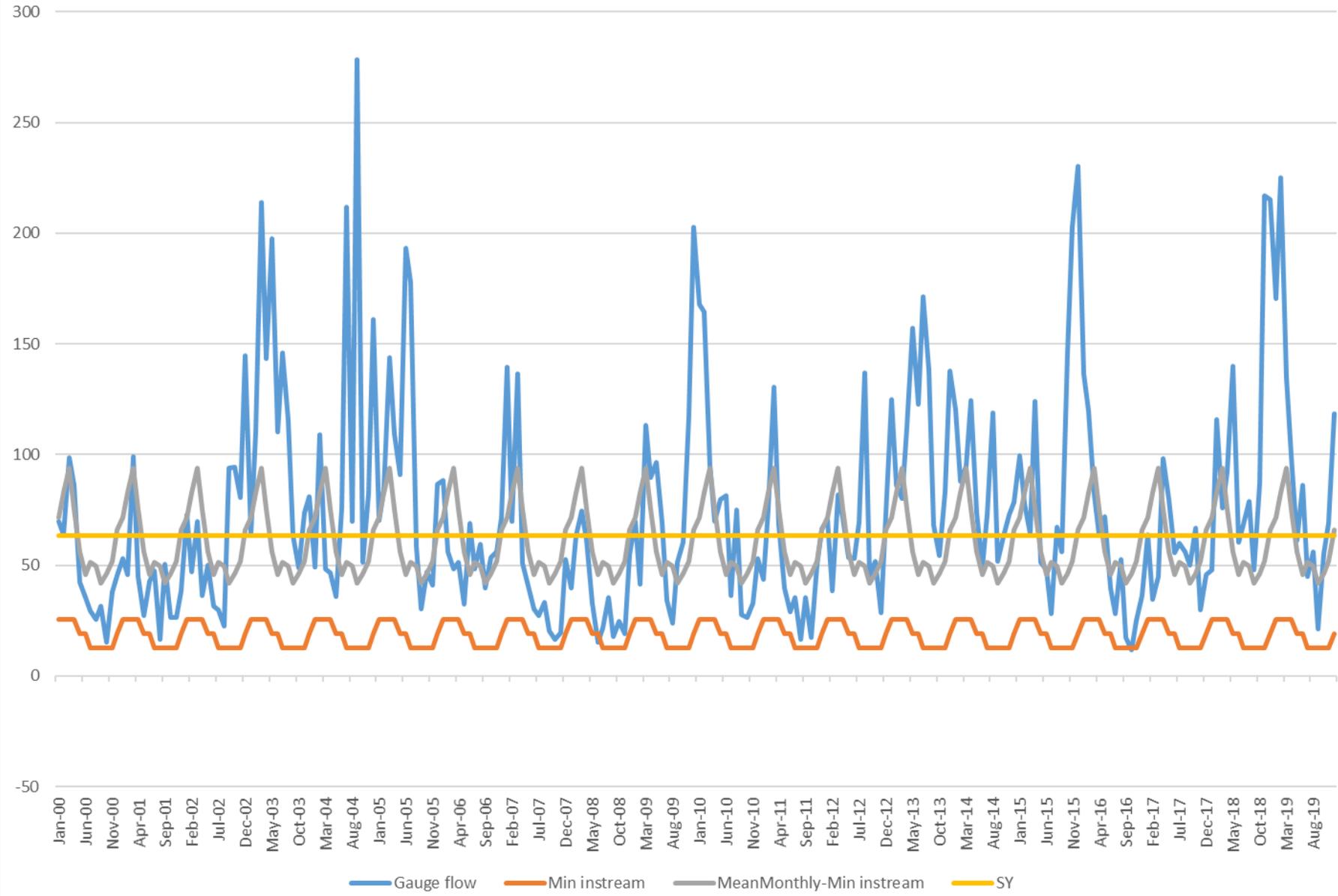
SY Alternative

Monthly Mean – MIF

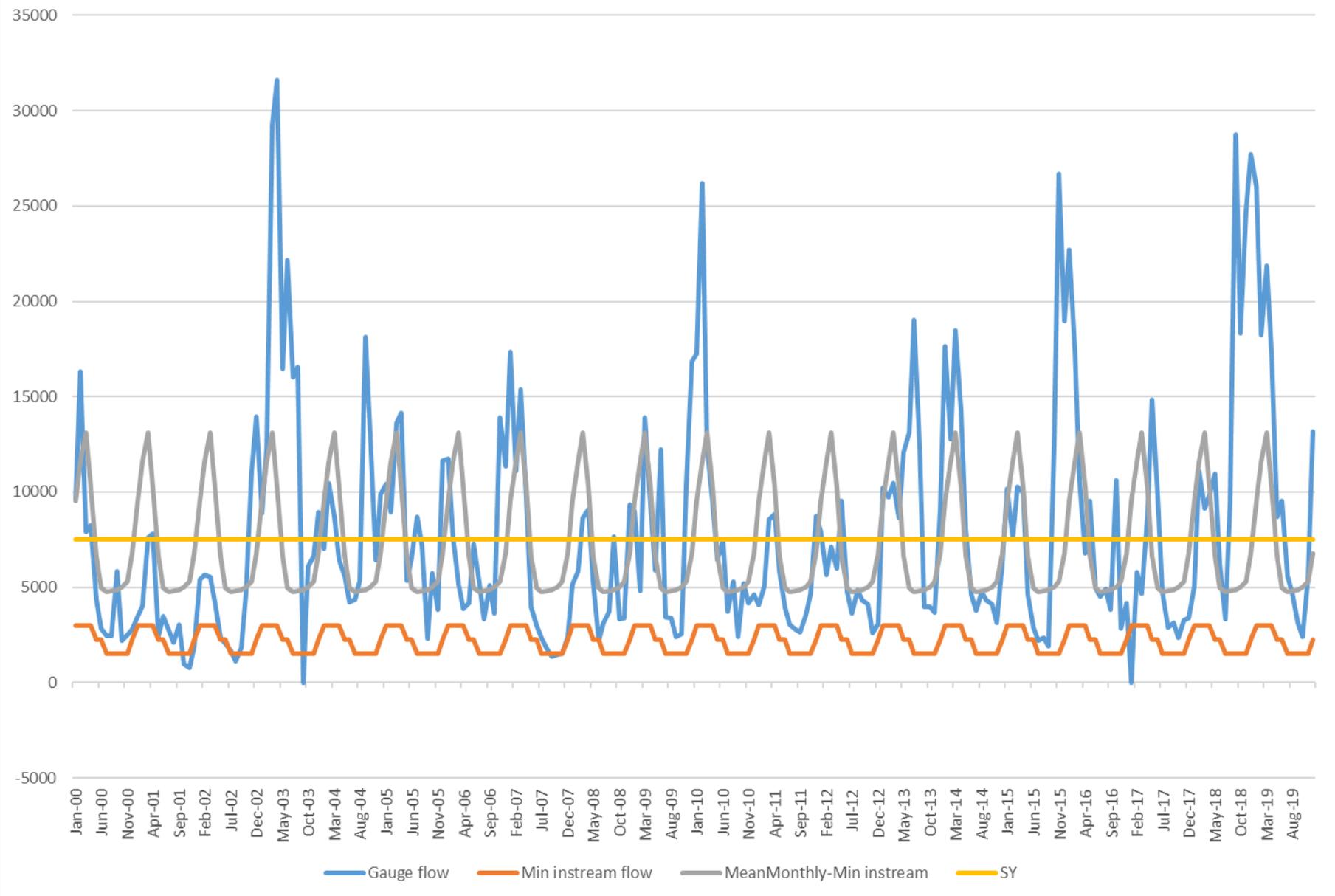
Alternate SY (TYGER RIVER NEAR DELTA, 02160105)



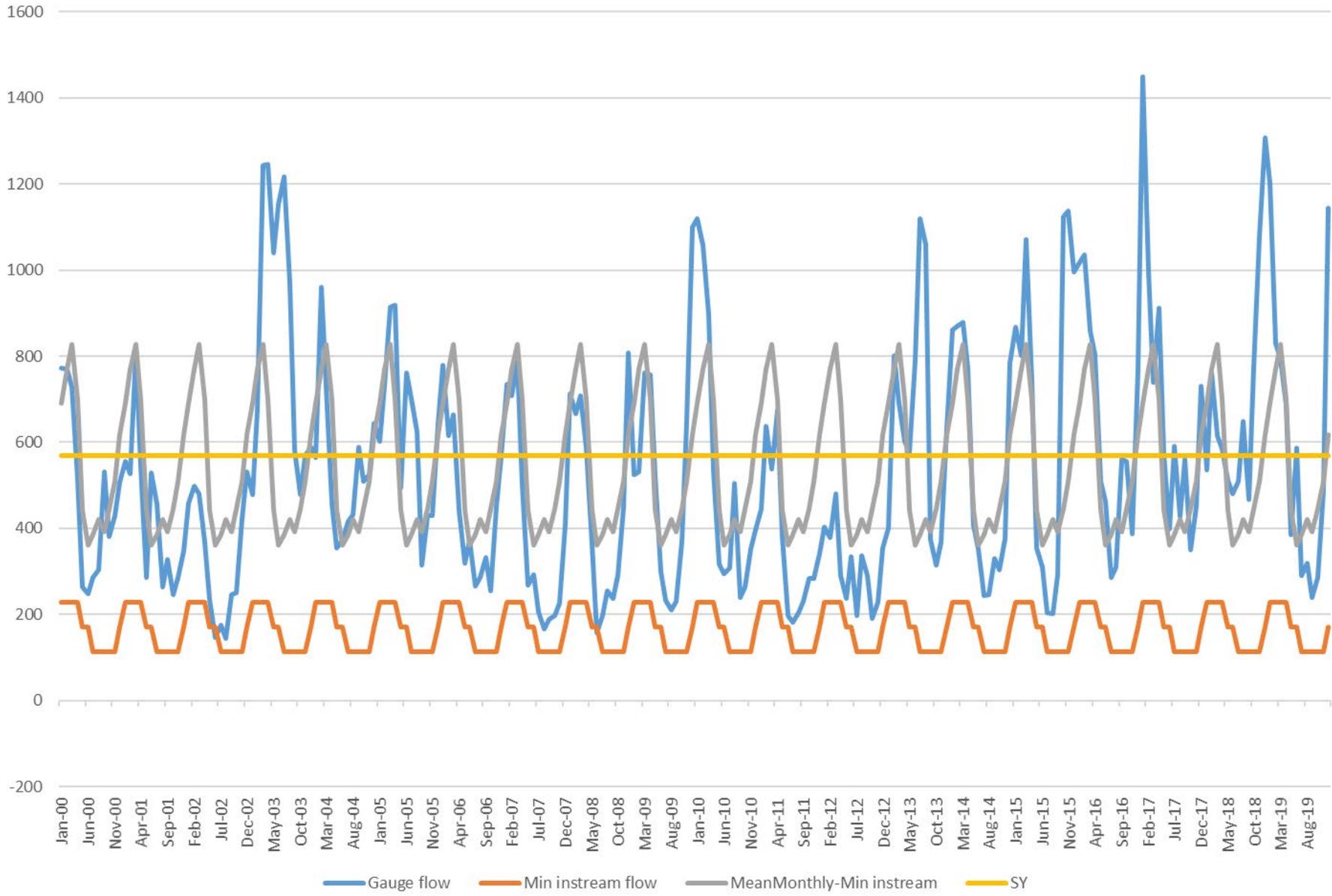
Alternate SY (GREENVILLE 02164000)



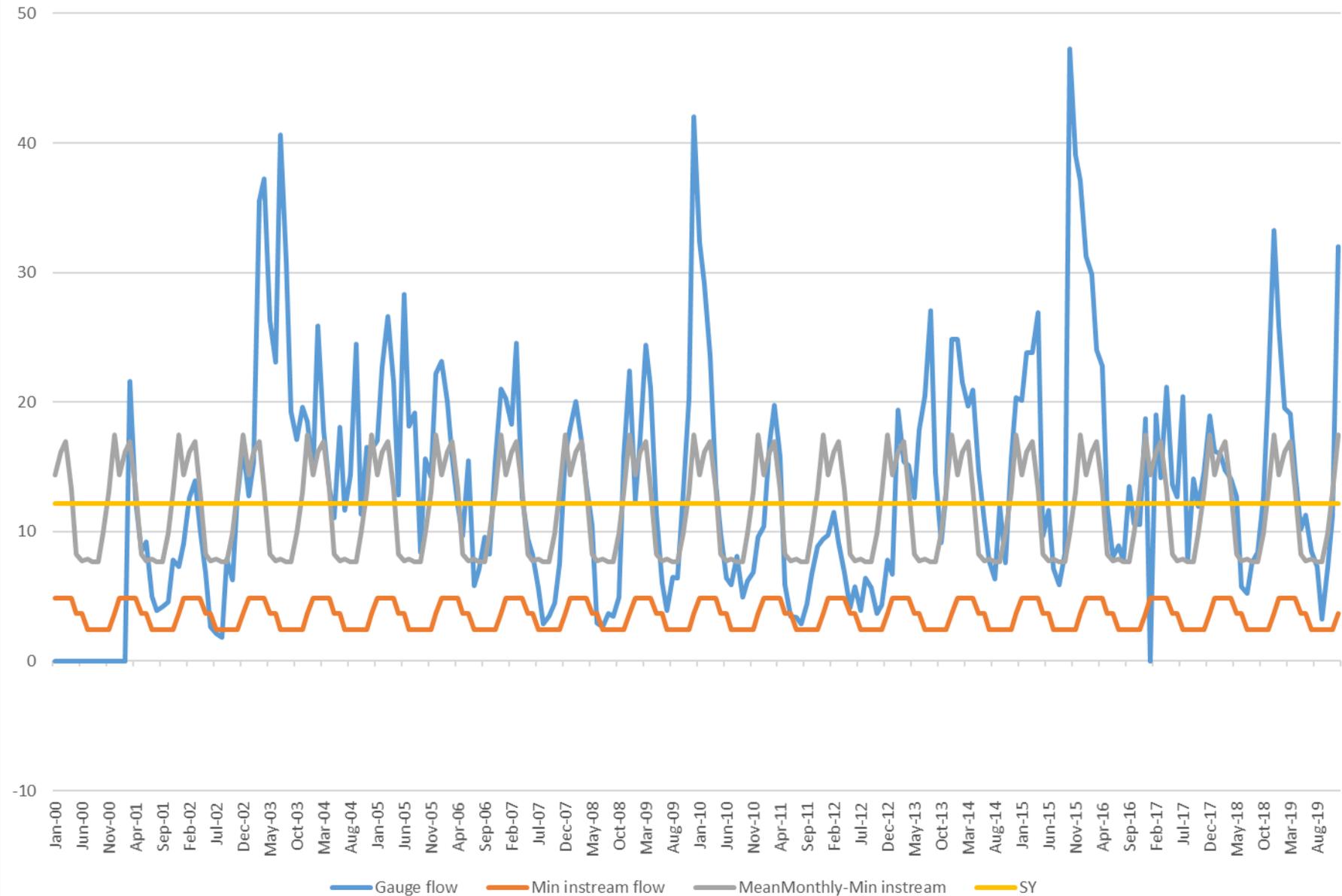
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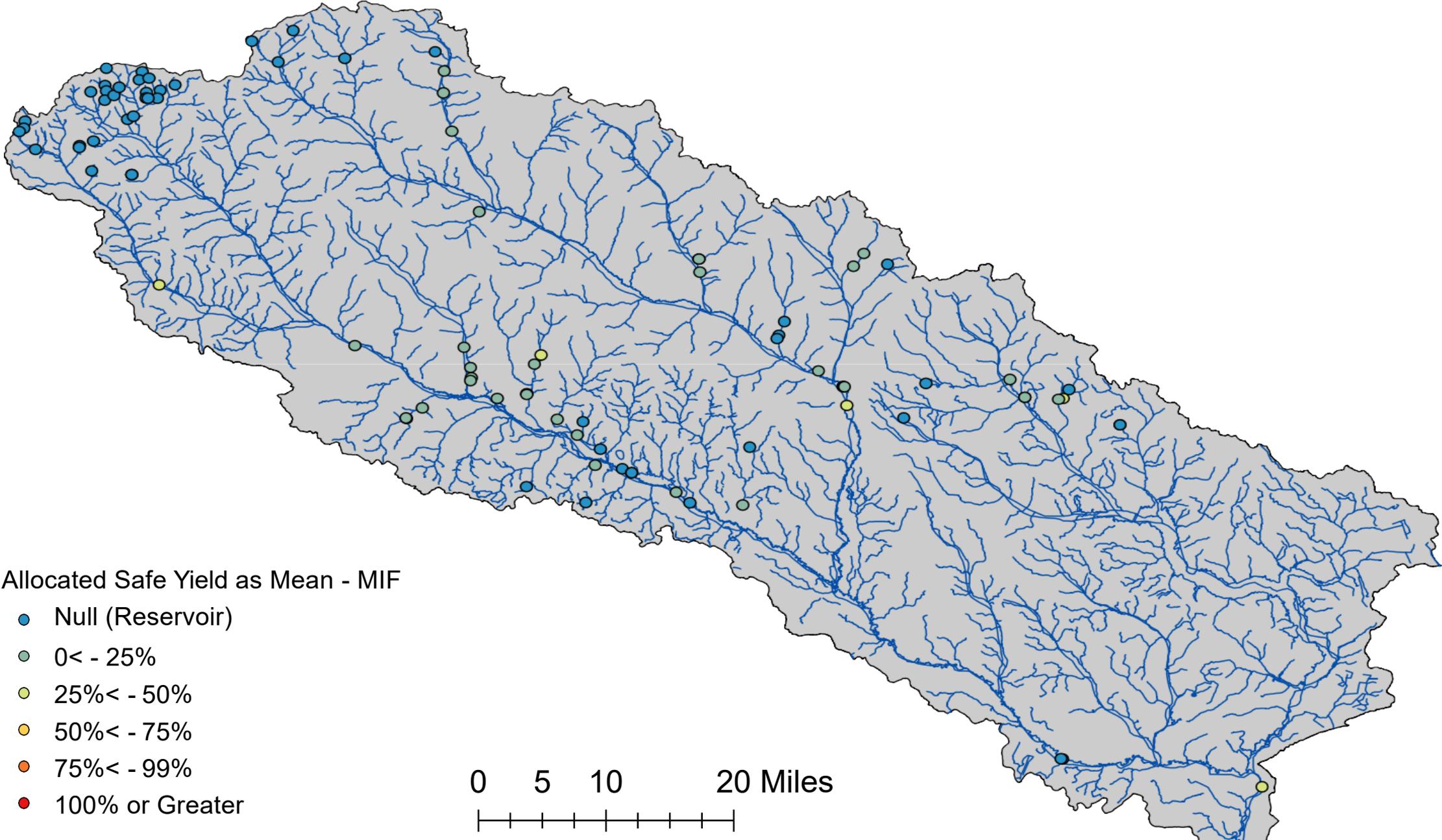
Alternate SY (Denmark, 02173000)



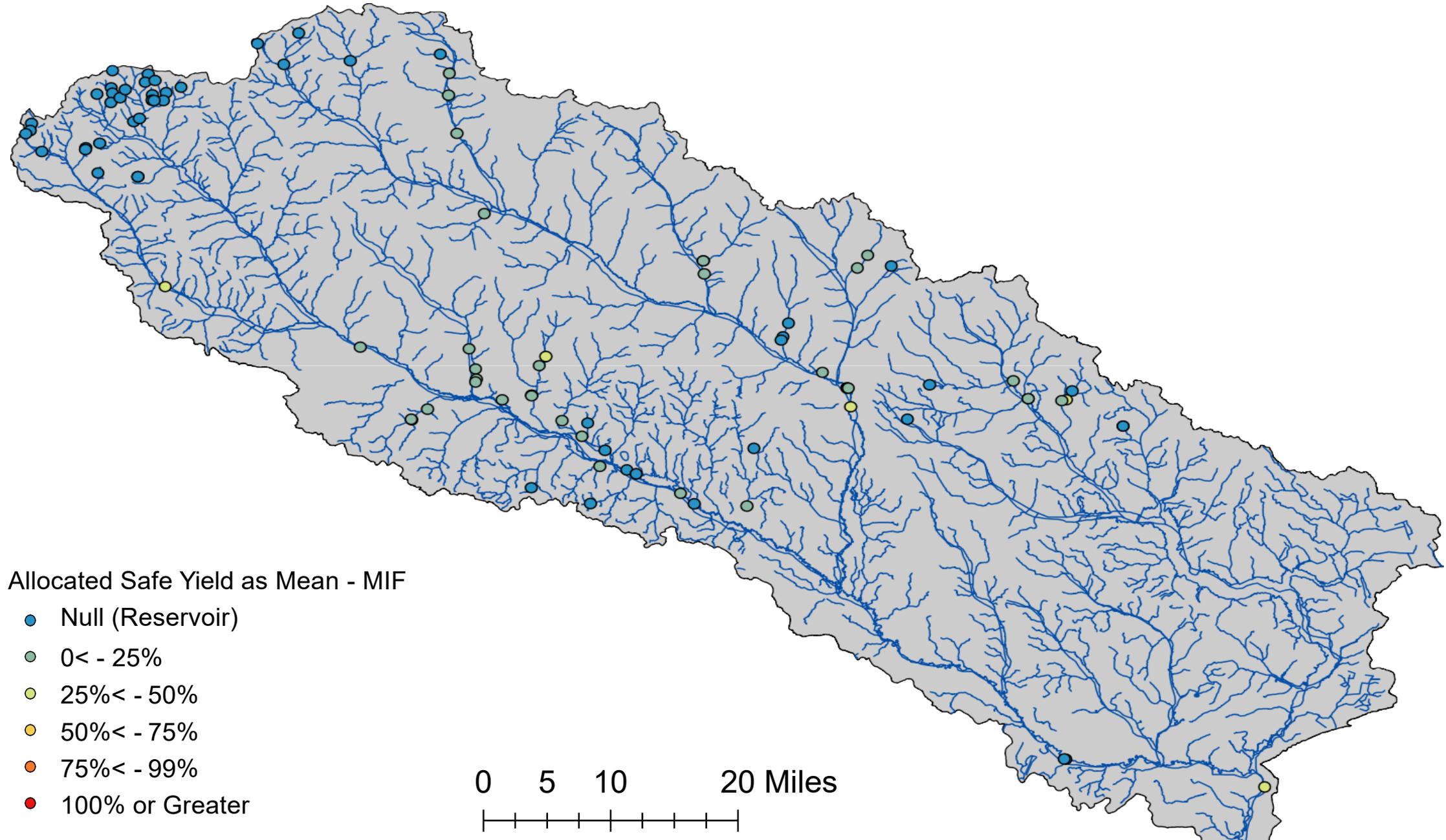
Alternate SY (MCTIER CREEK NEAR MONETTA 02172300)



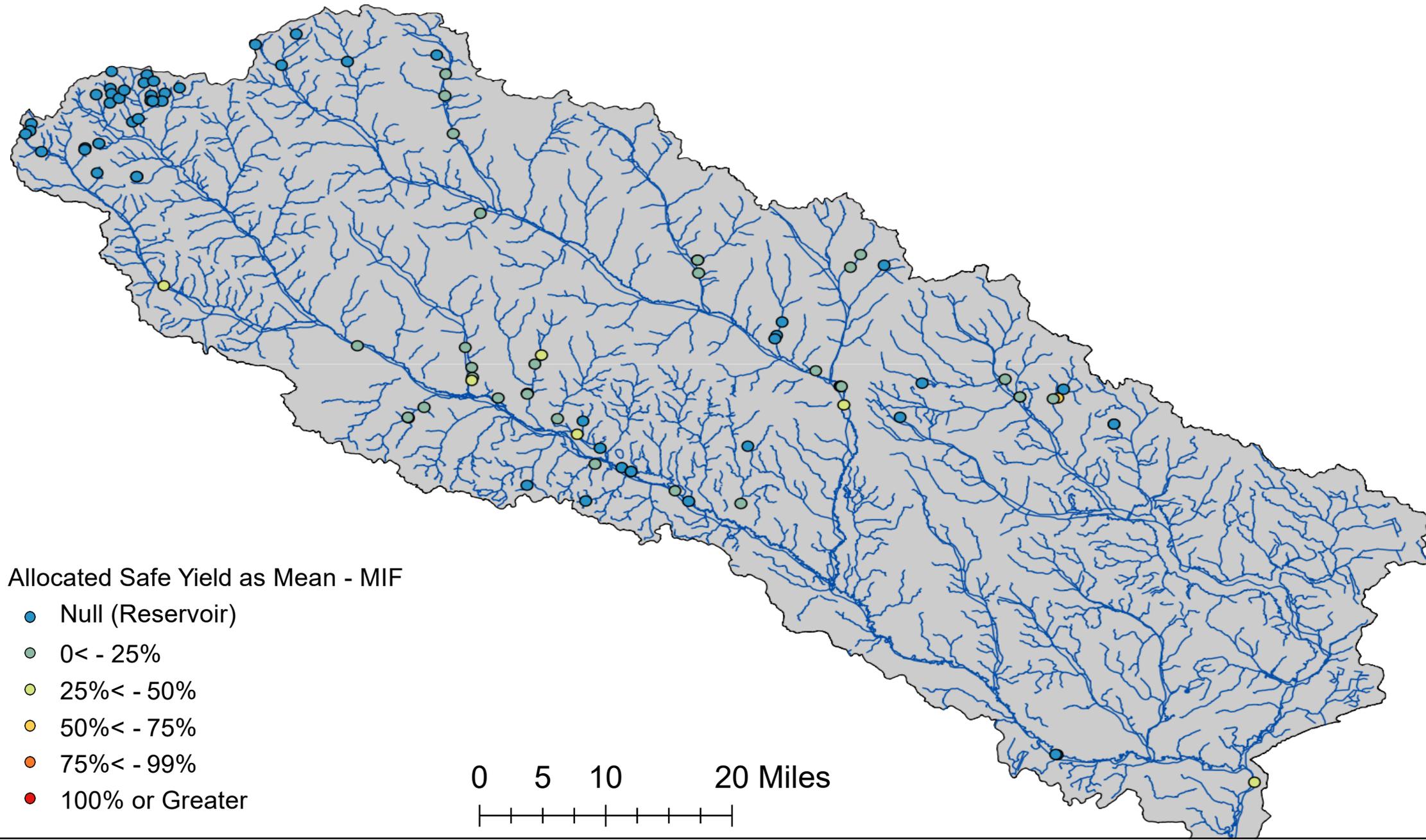
Percent Allocated in the Edisto Basin with Safe Yield as Mean - MIF for January



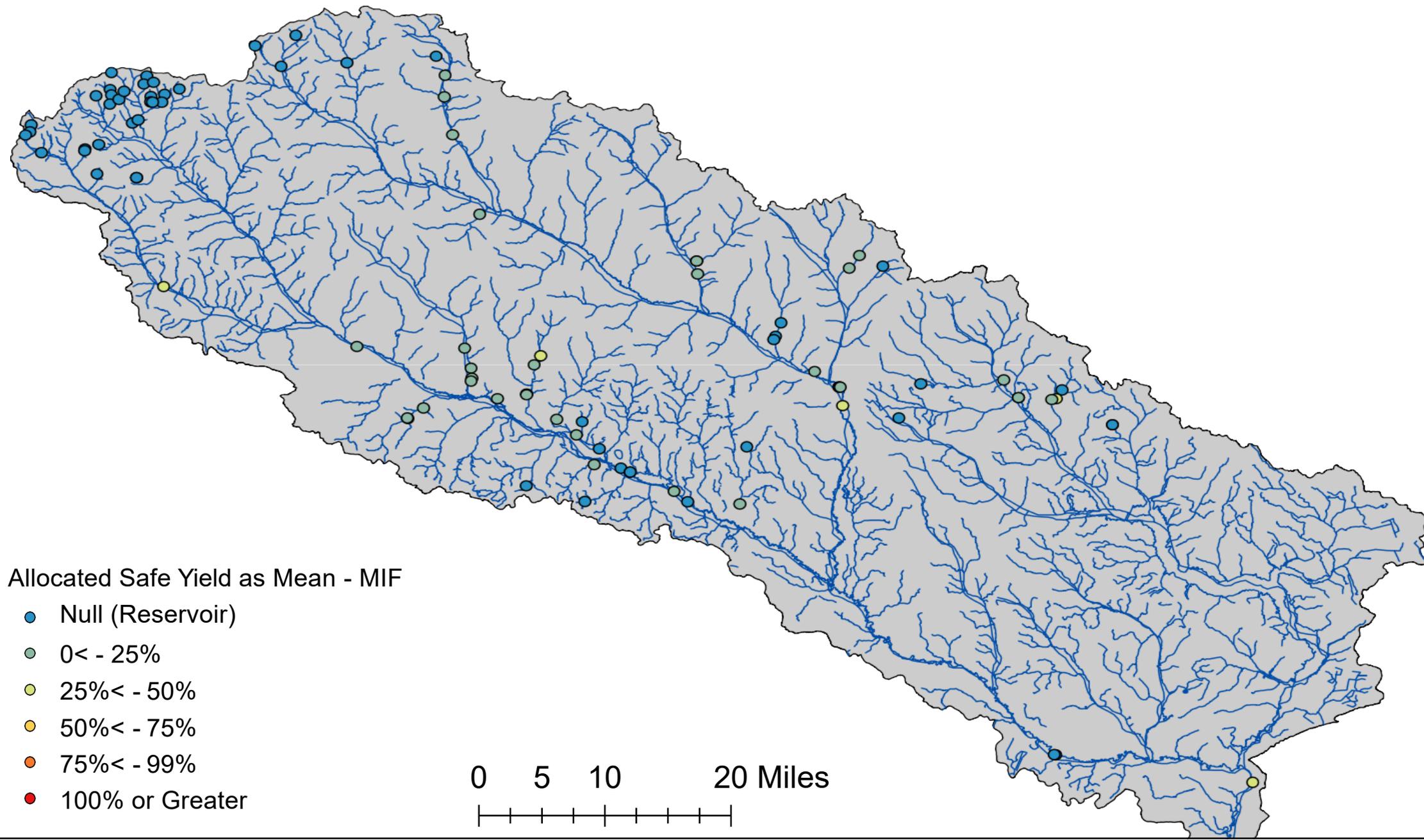
Percent Allocated in the Edisto Basin with Safe Yield as Mean - MIF for February



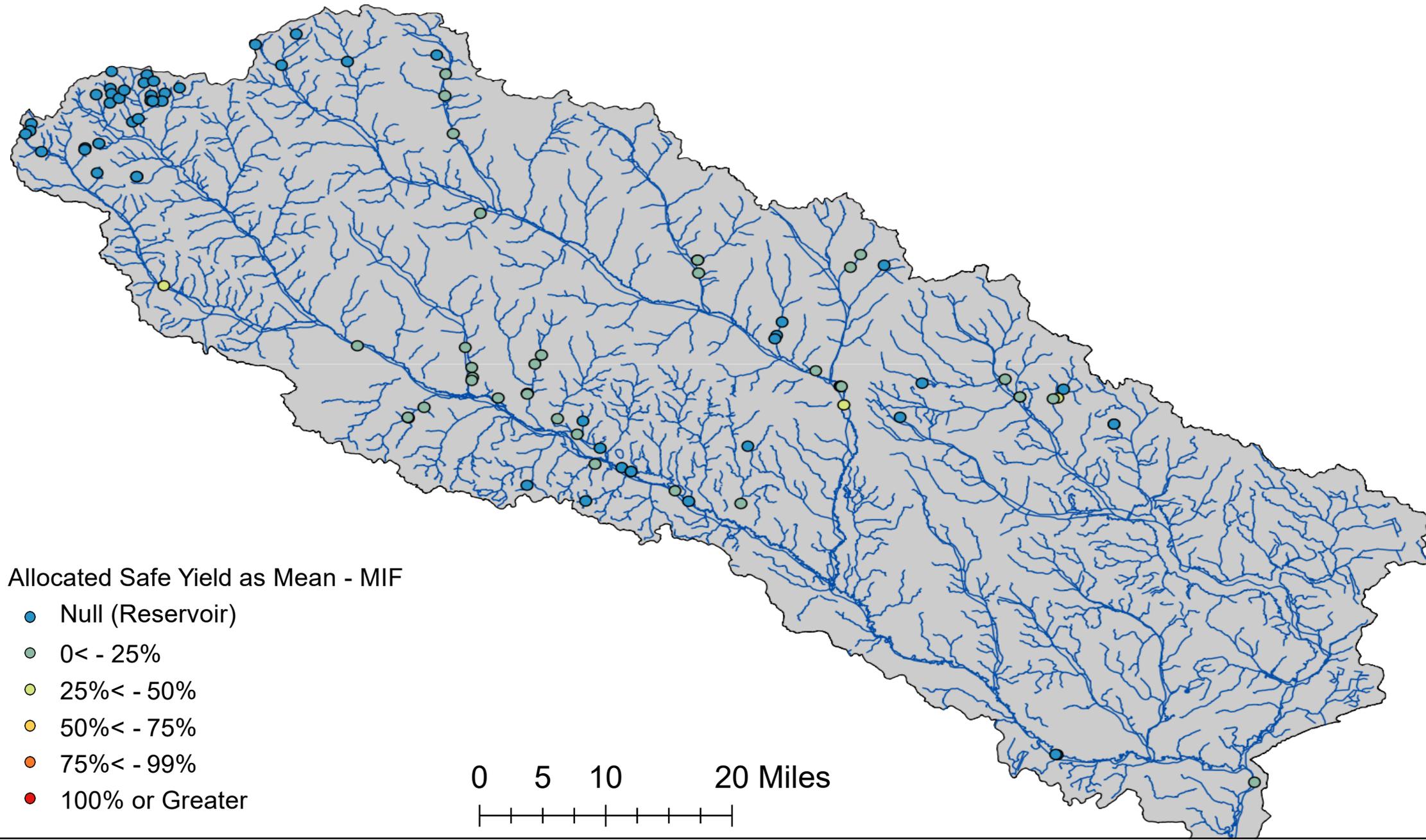
Percent Allocated in the Edisto Basin with Safe Yield as Mean - MIF for March



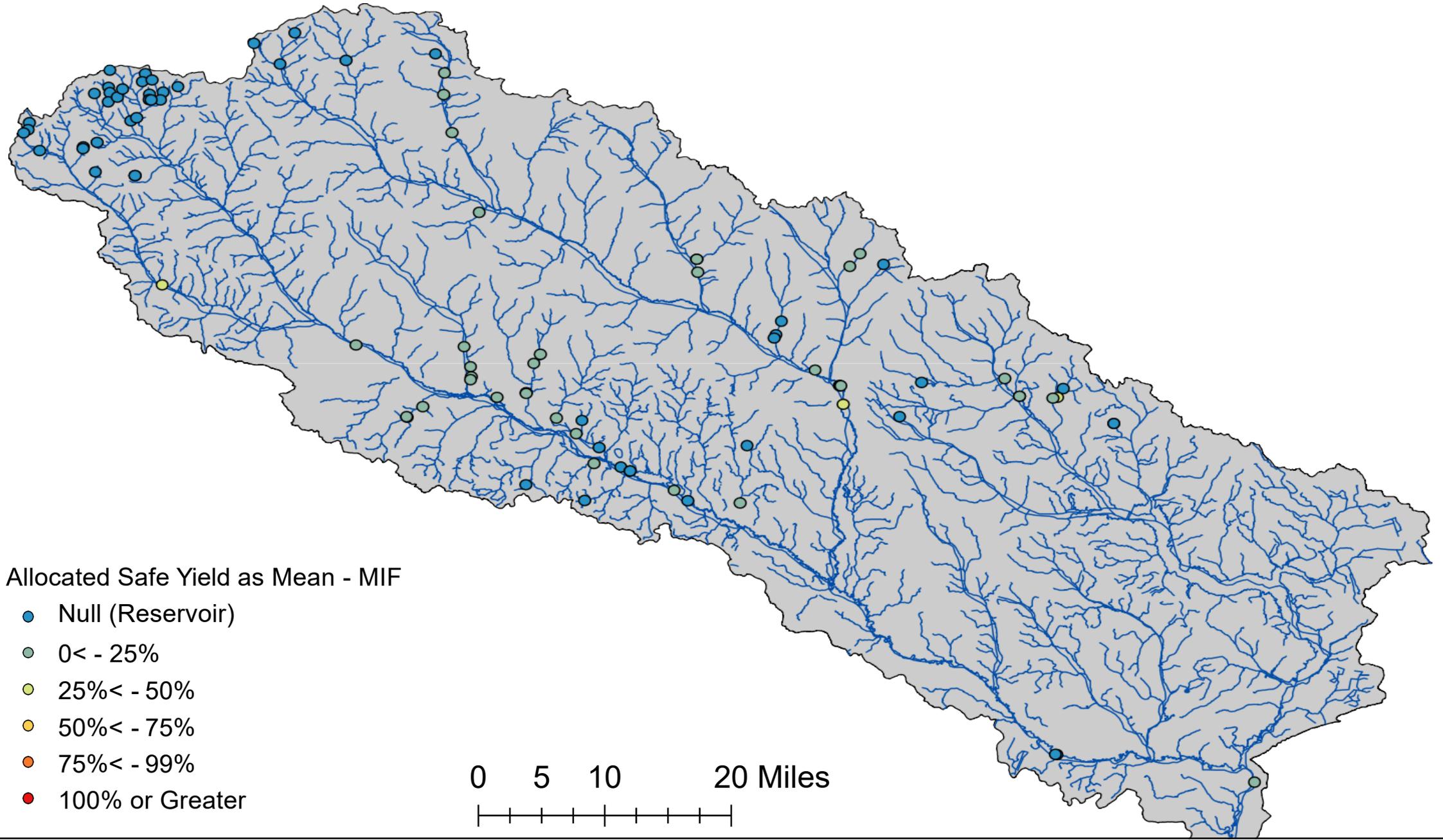
Percent Allocated in the Edisto Basin with Safe Yield as Mean - MIF for April



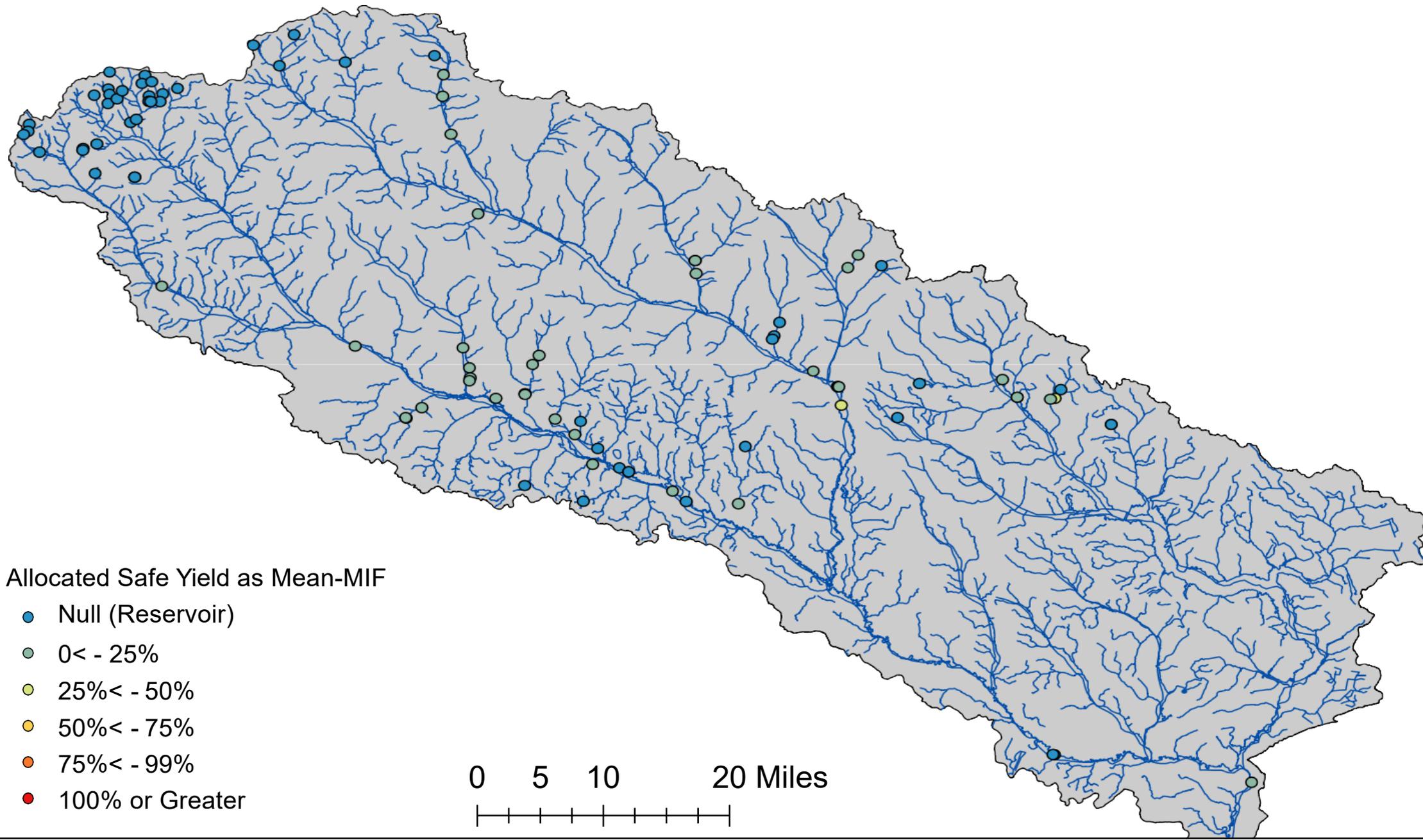
Percent Allocated in the Edisto Basin with Safe Yield as Mean - MIF for May



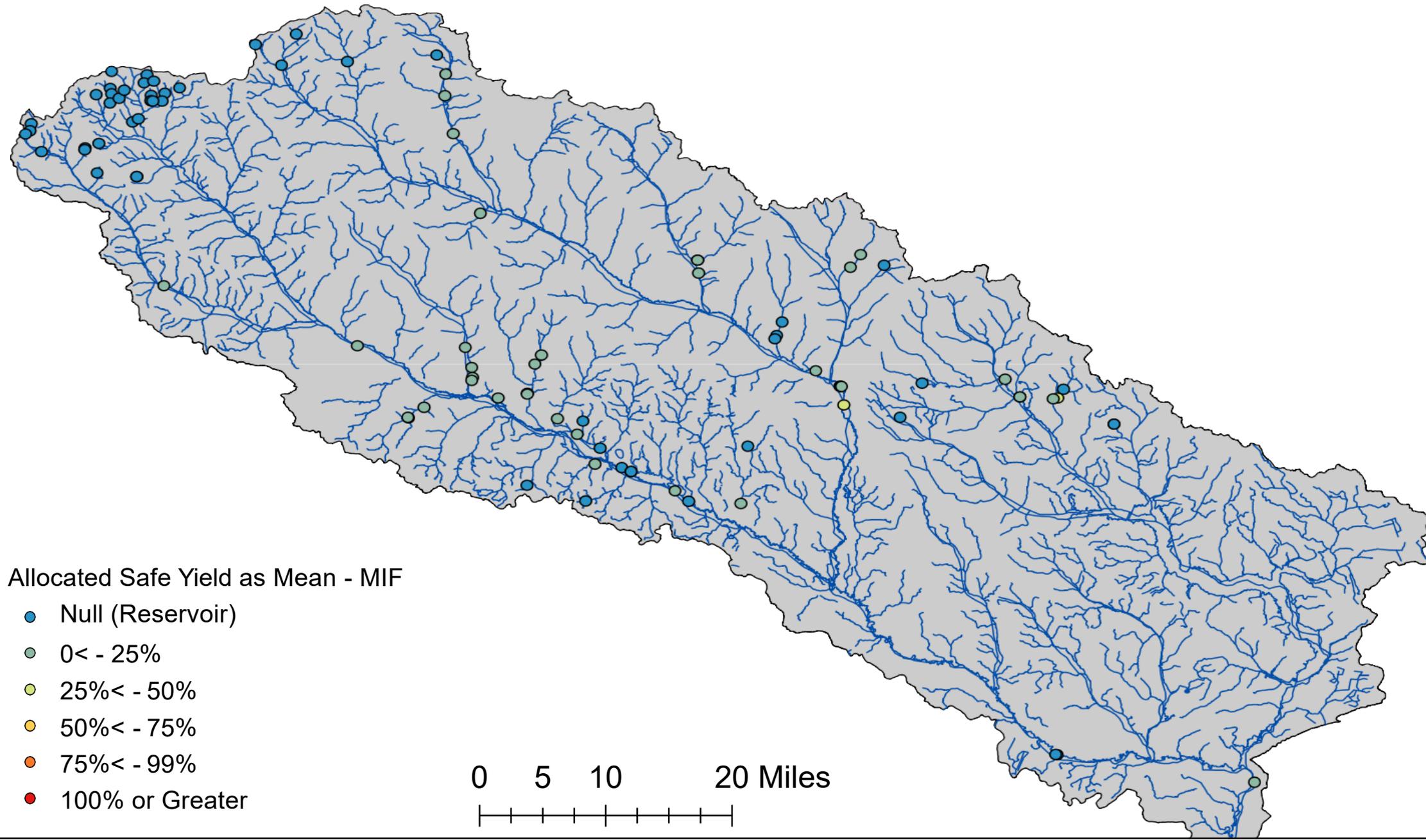
Percent Allocated in the Edisto Basin with Safe Yield as Mean - MIF for June



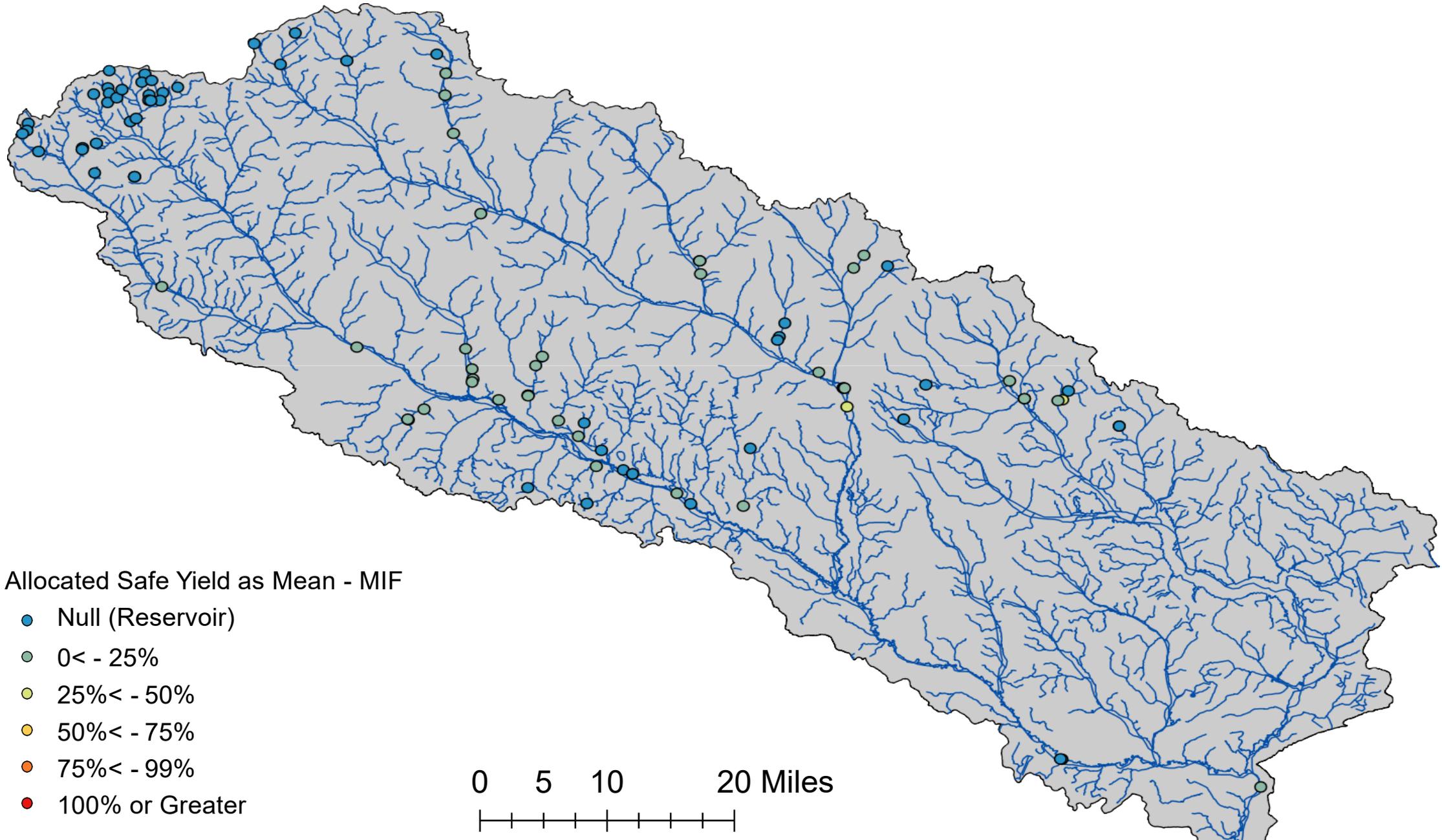
Percent Allocated in the Edisto Basin with Safe Yield as Mean - MIF for July



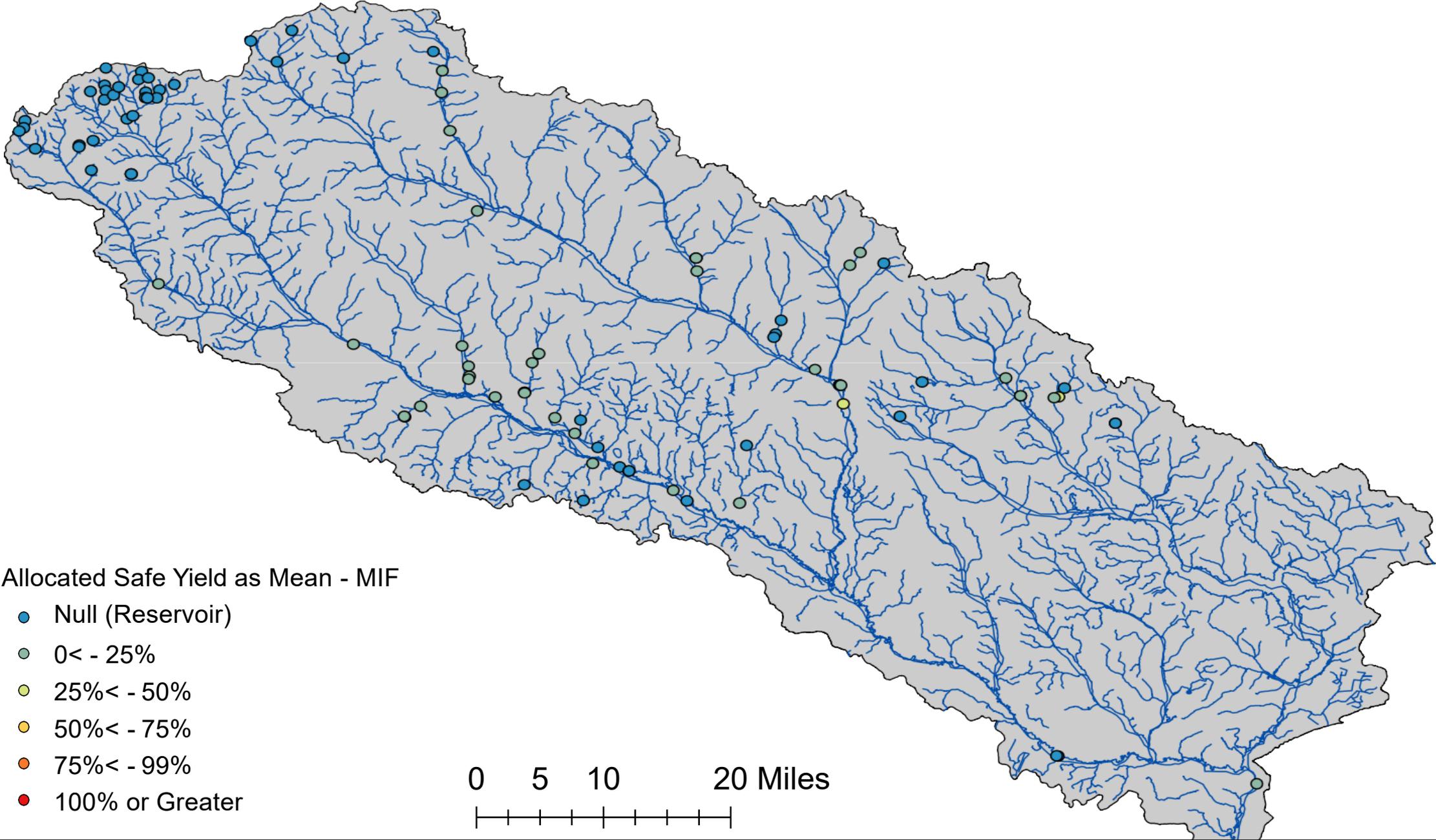
Percent Allocated in the Edisto Basin with Safe Yield as Mean - MIF for August



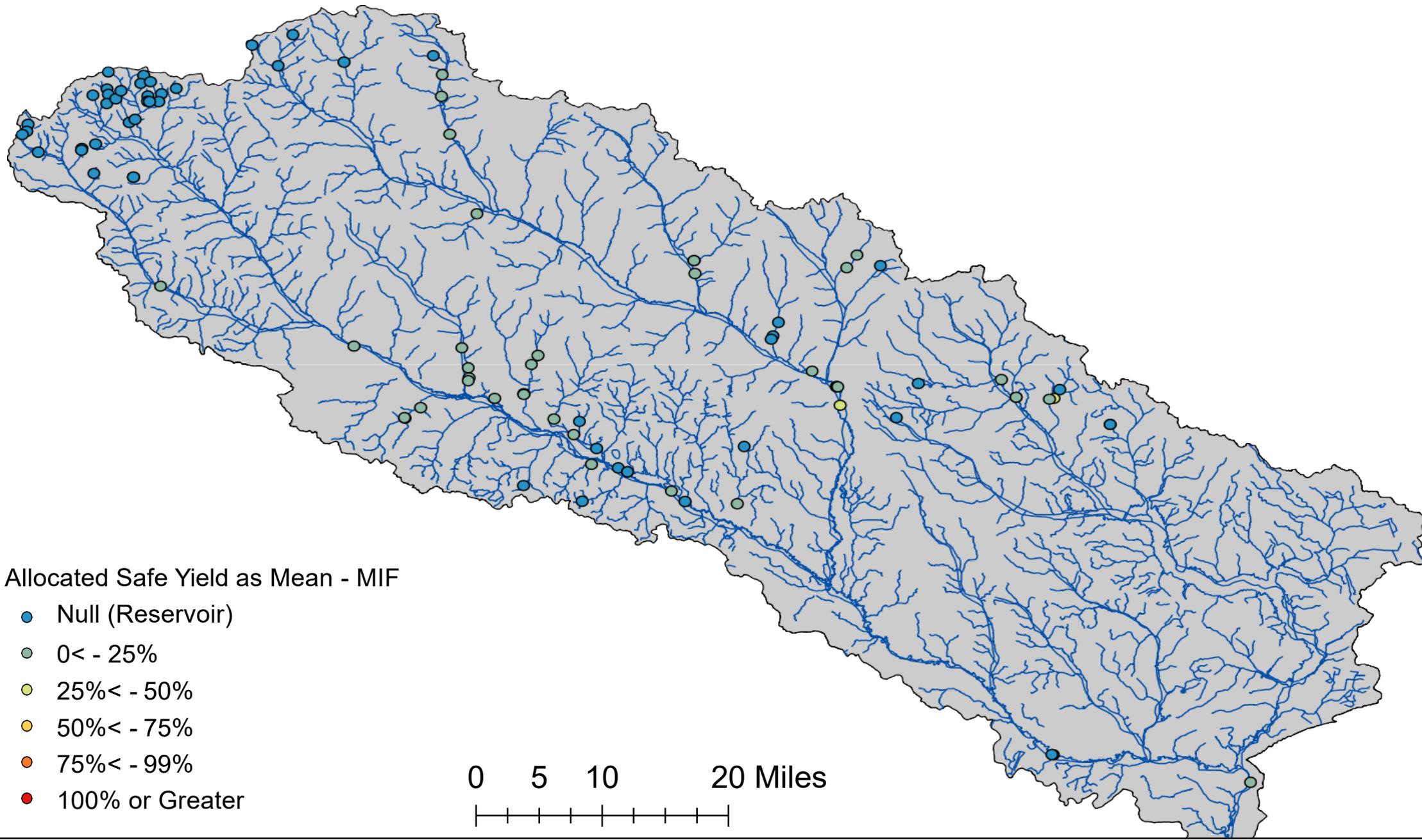
Percent Allocated in the Edisto Basin with Safe Yield as Mean - MIF for September



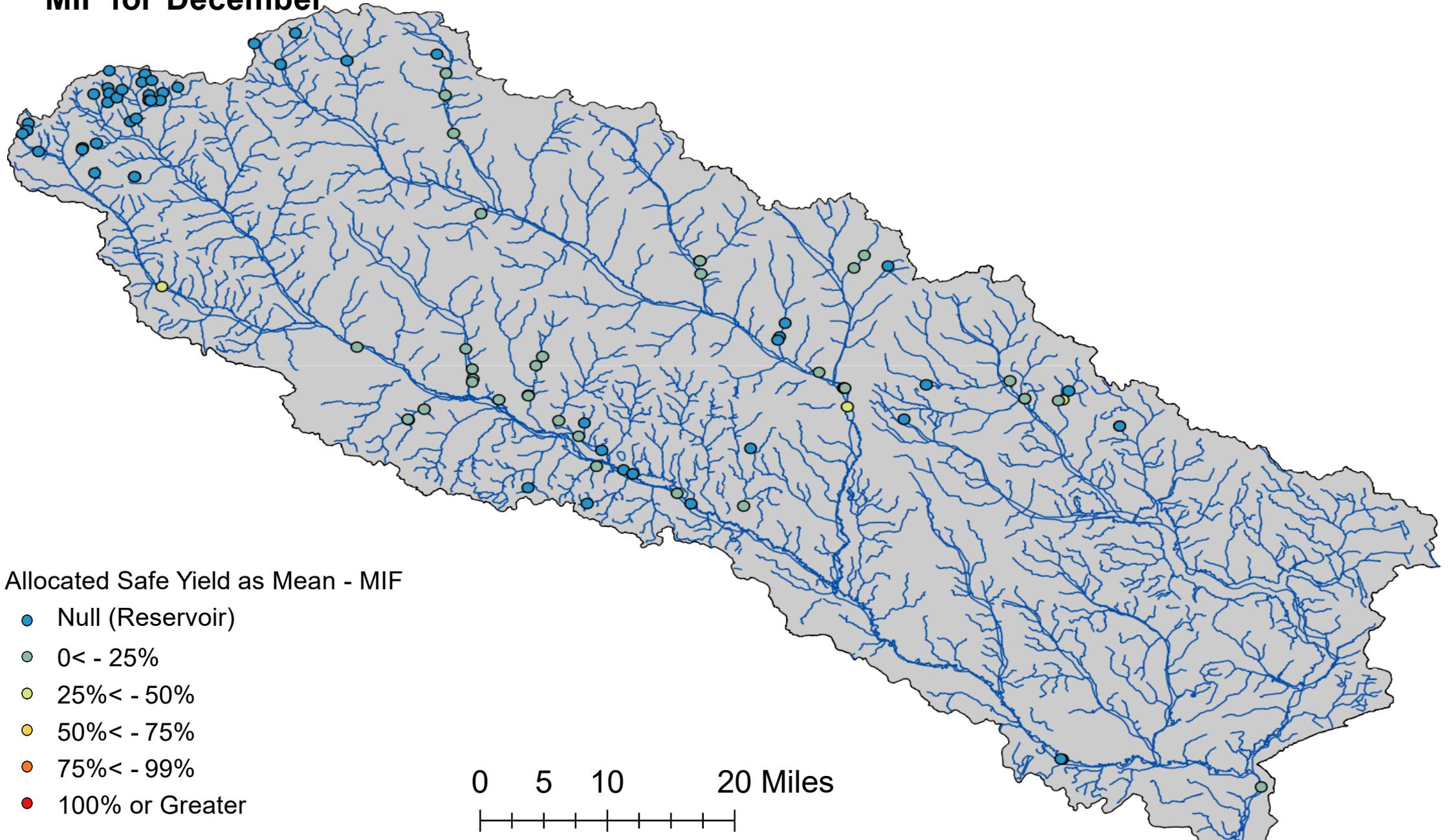
Percent Allocated in the Edisto Basin with Safe Yield as Mean - MIF for October



Percent Allocated in the Edisto Basin with Safe Yield as Mean - MIF for November



Percent Allocated in the Edisto Basin with Safe Yield as Mean - MIF for December



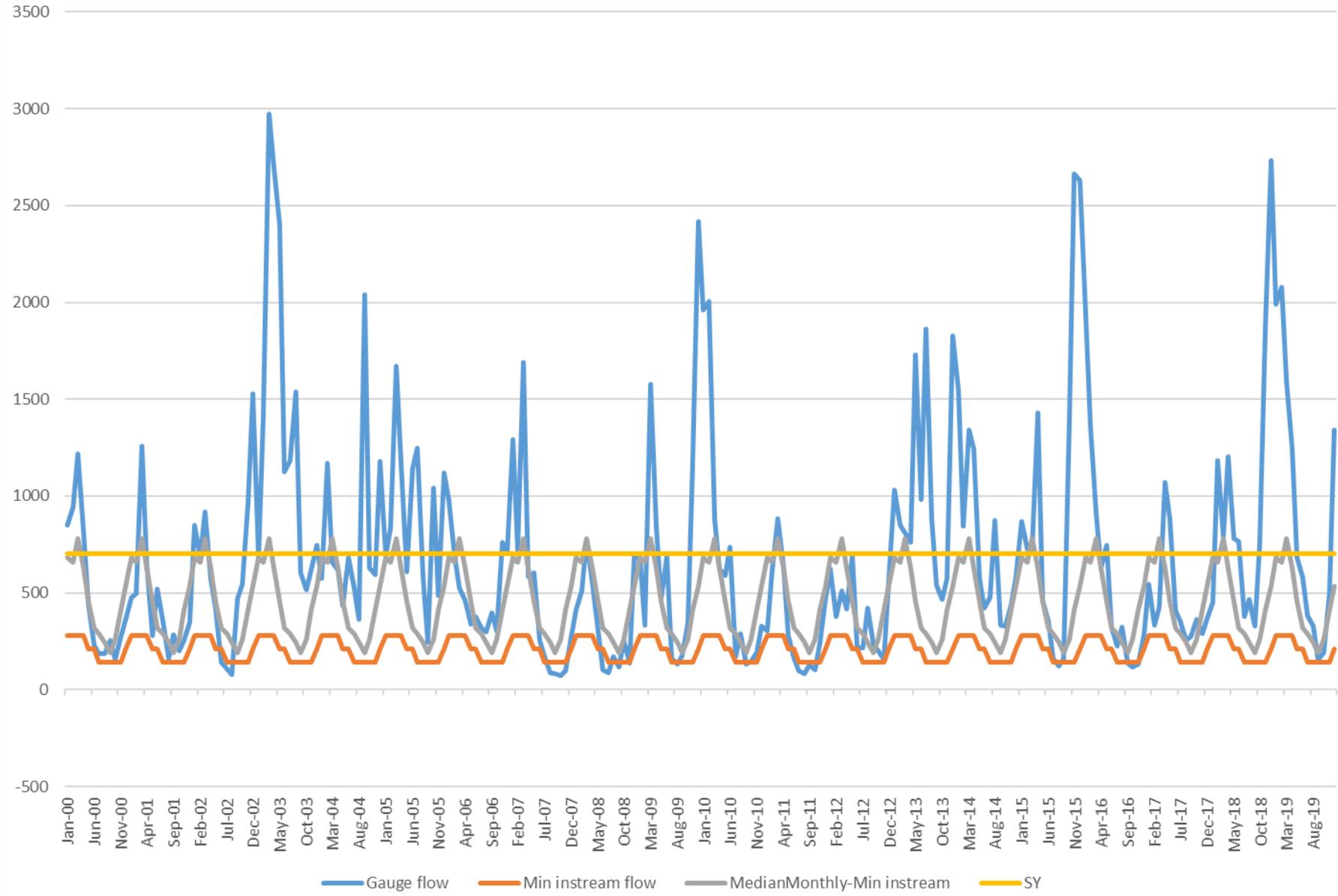


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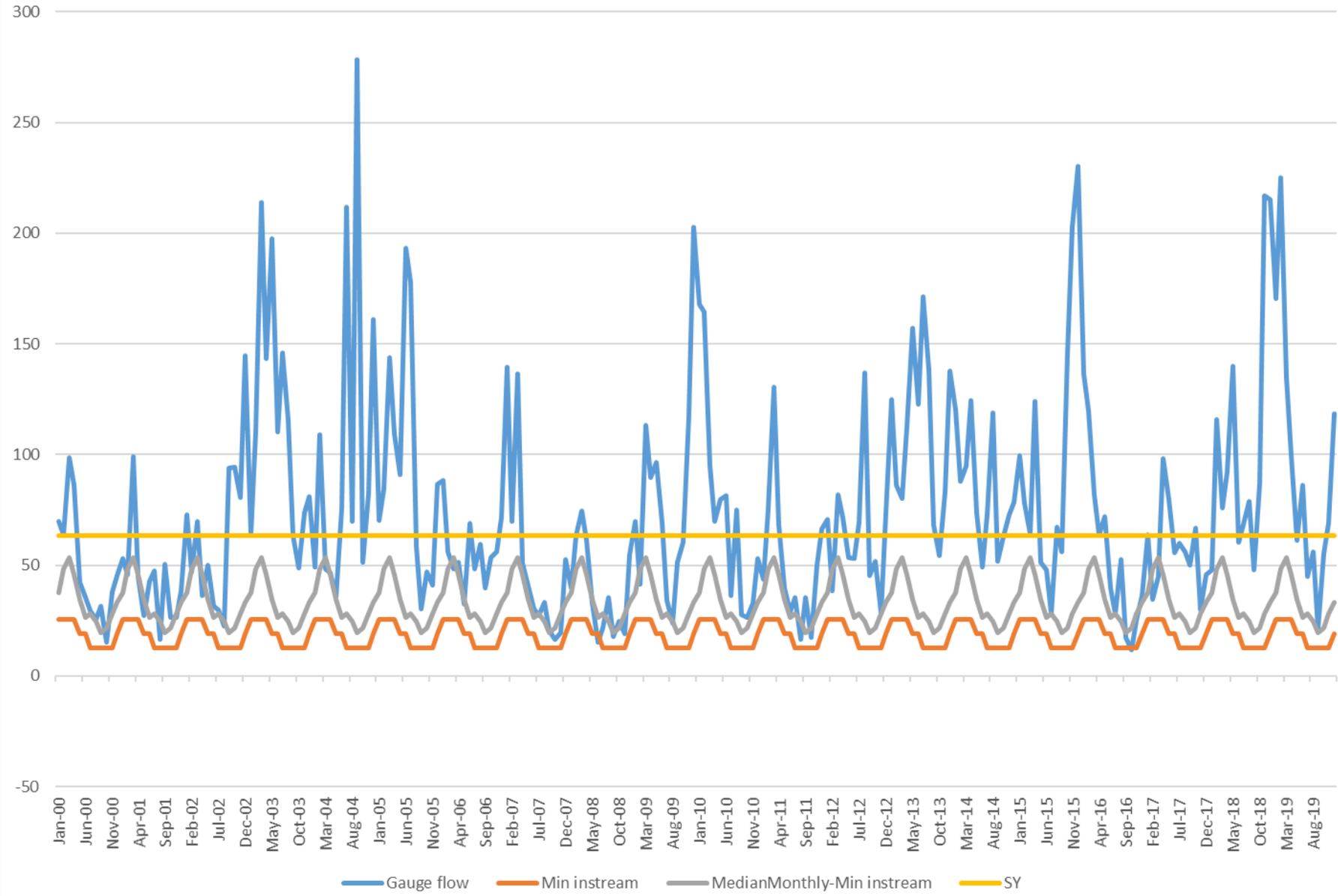
SY Alternative

Monthly Median – MIF

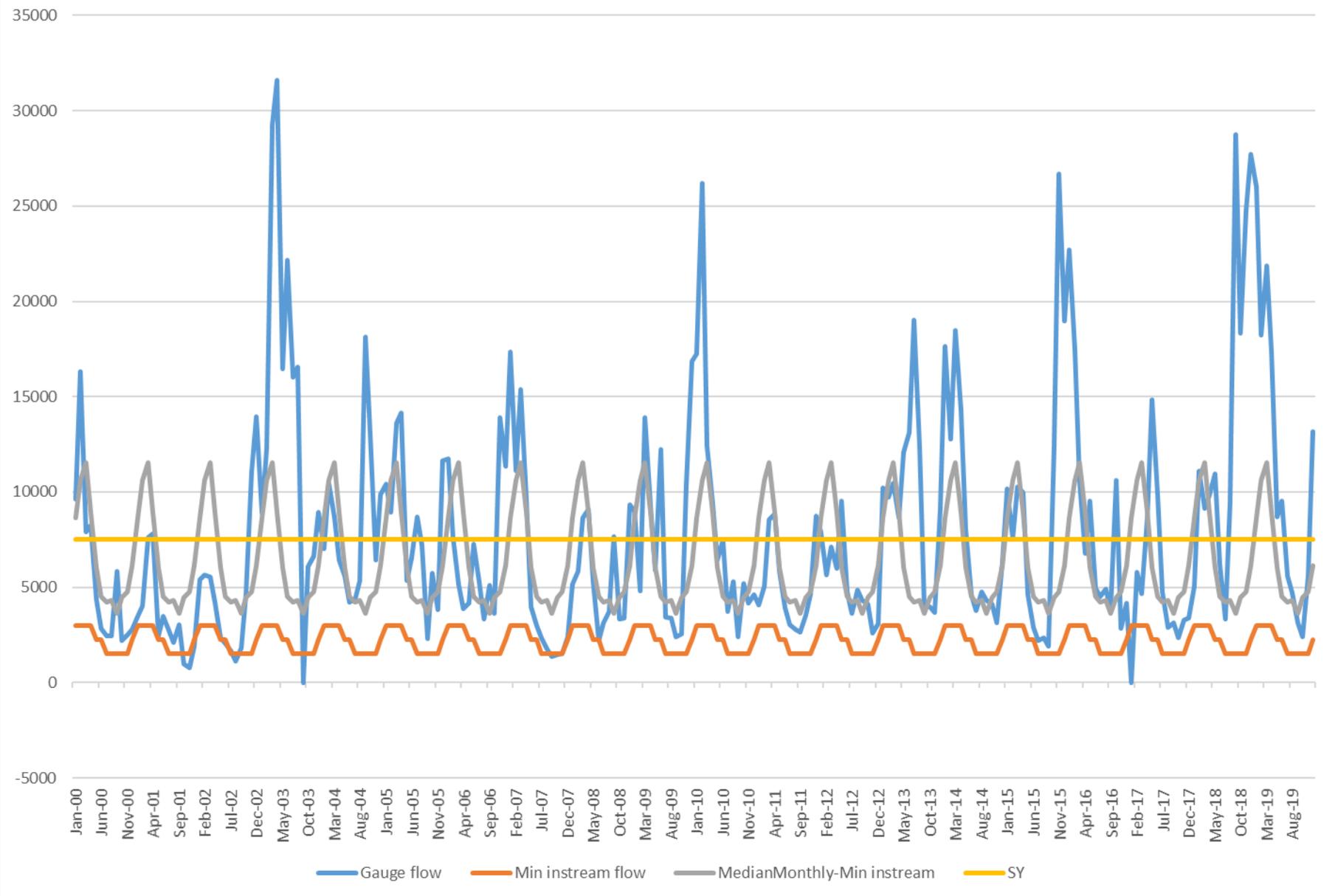
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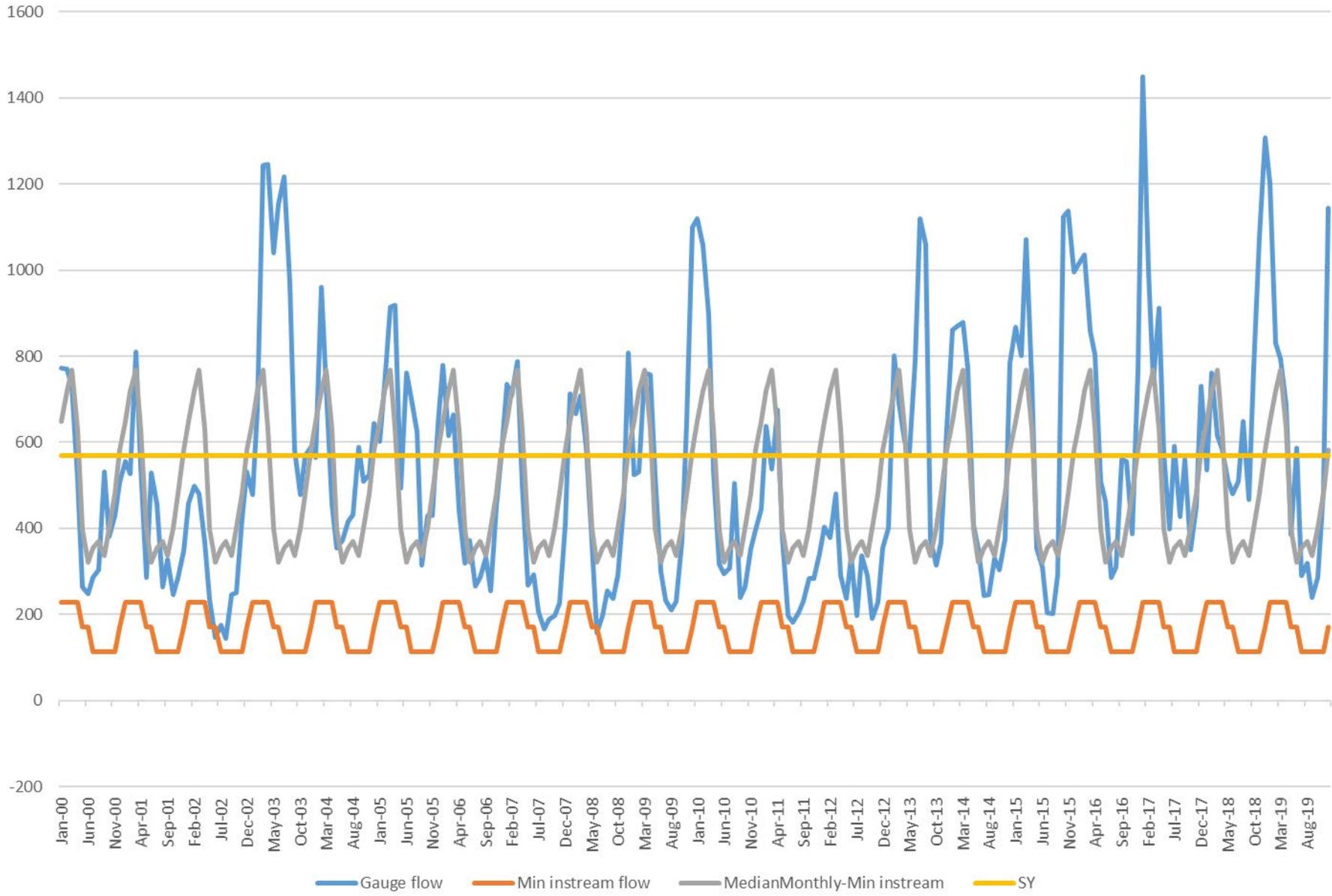
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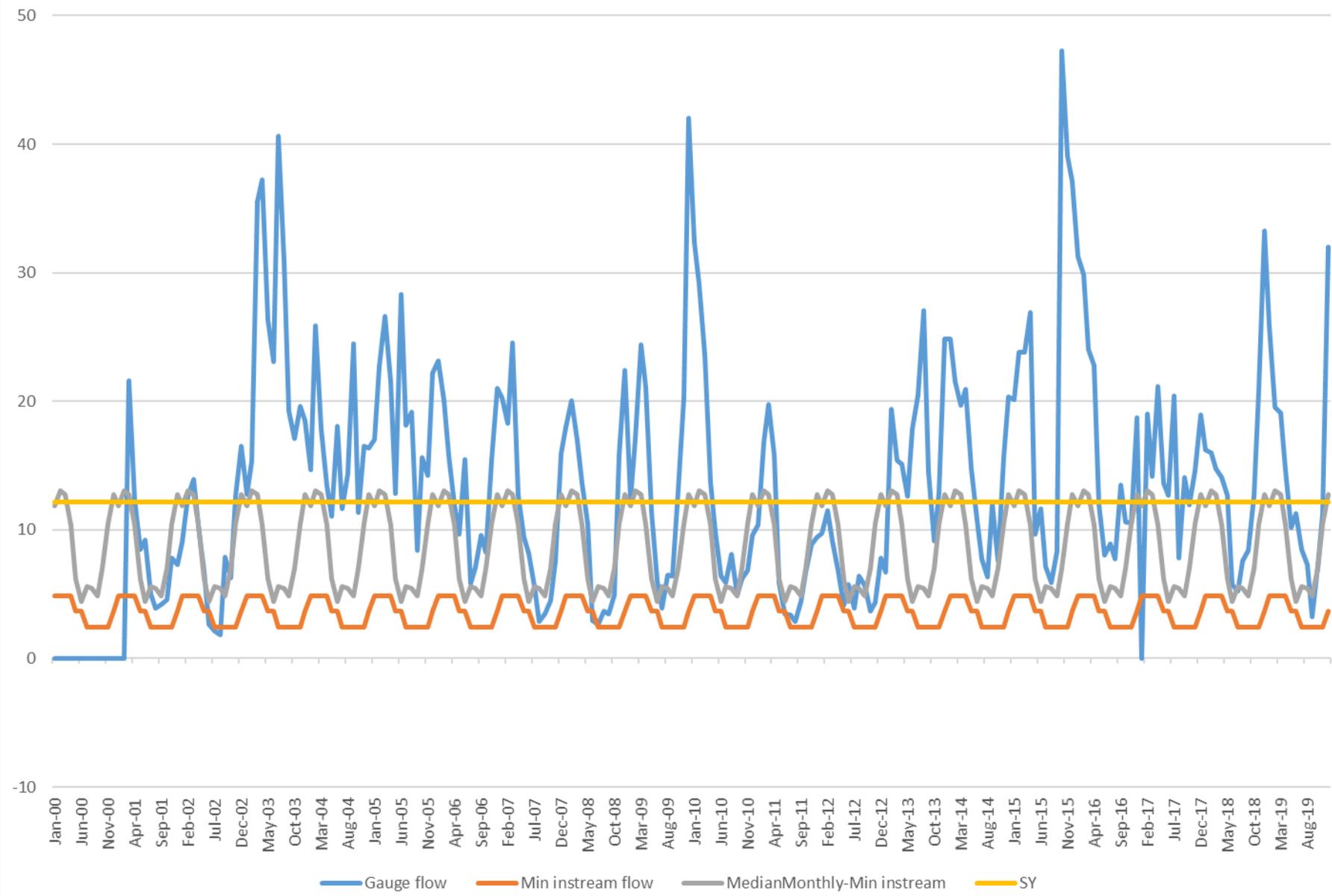
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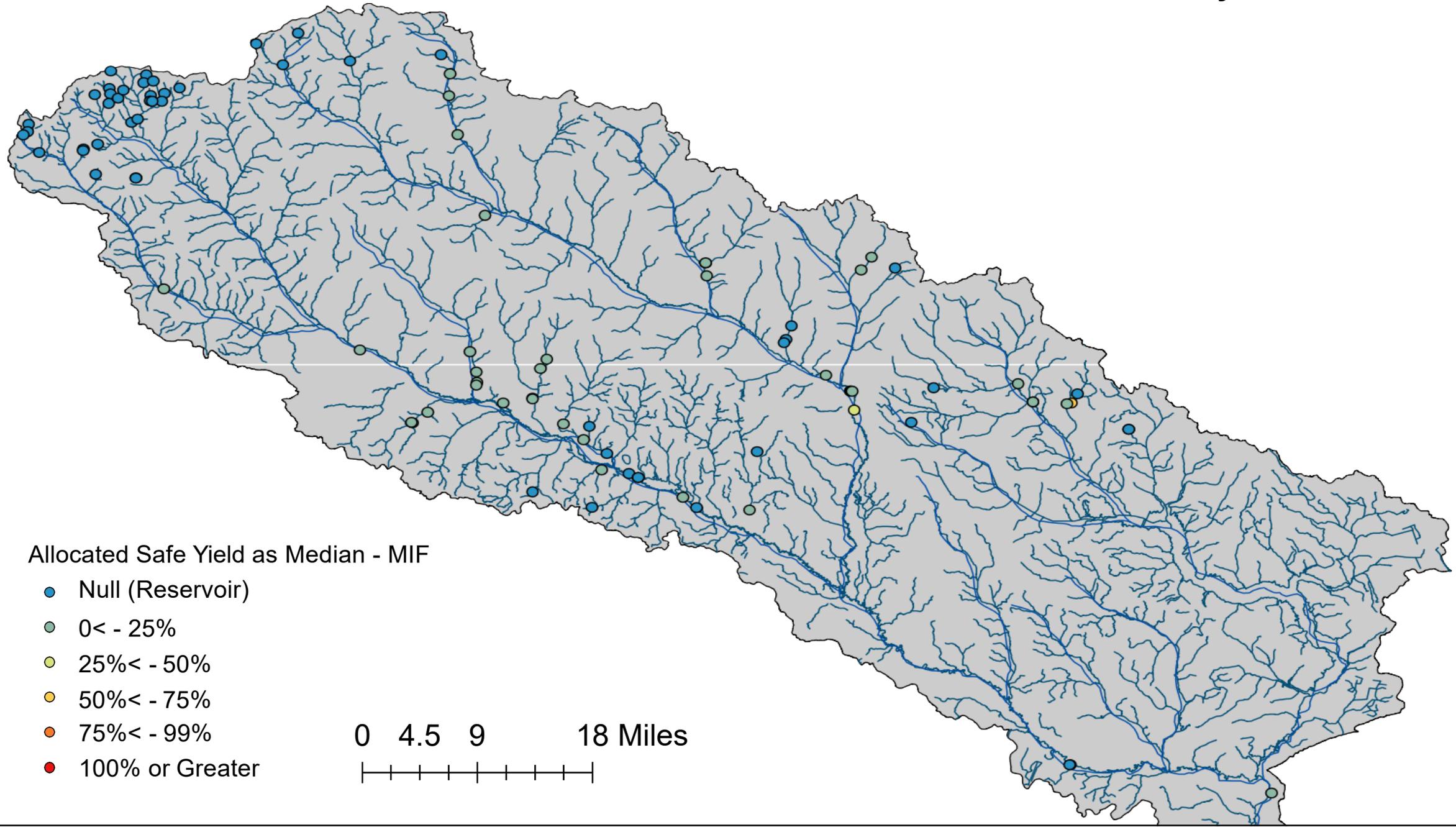
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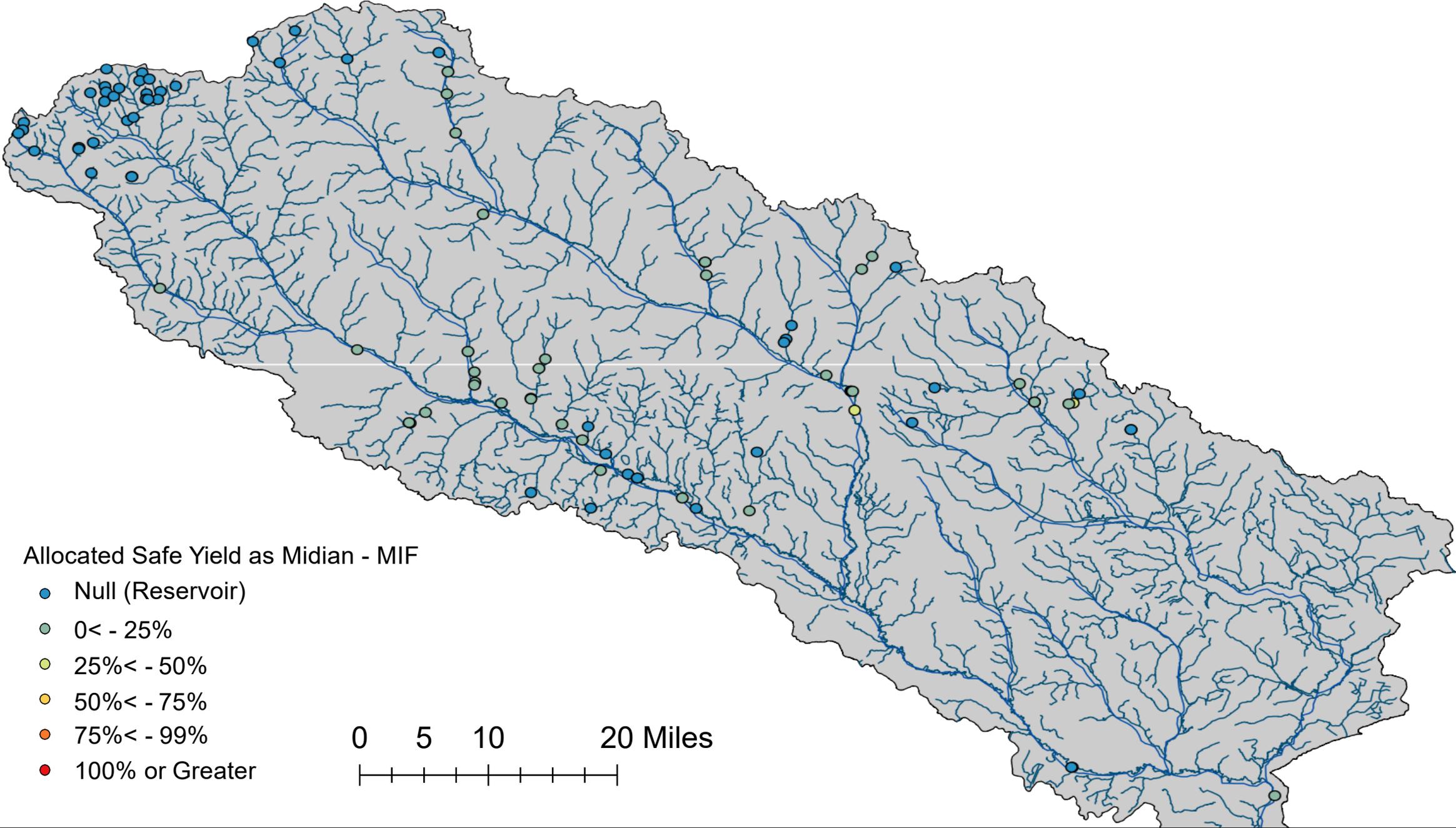
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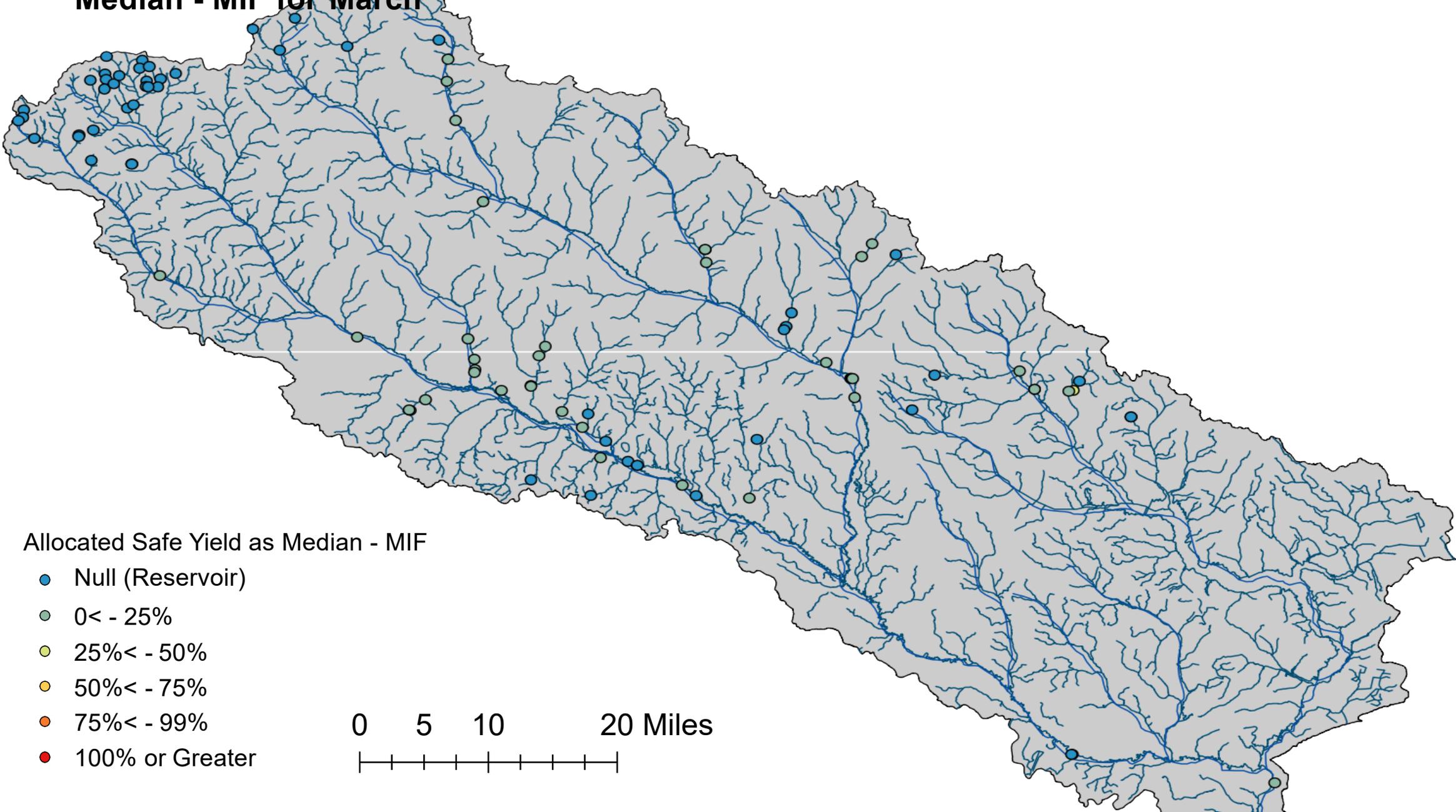
Percent Allocated in the Edisto Basin with Safe Yield as Median - MIF for January



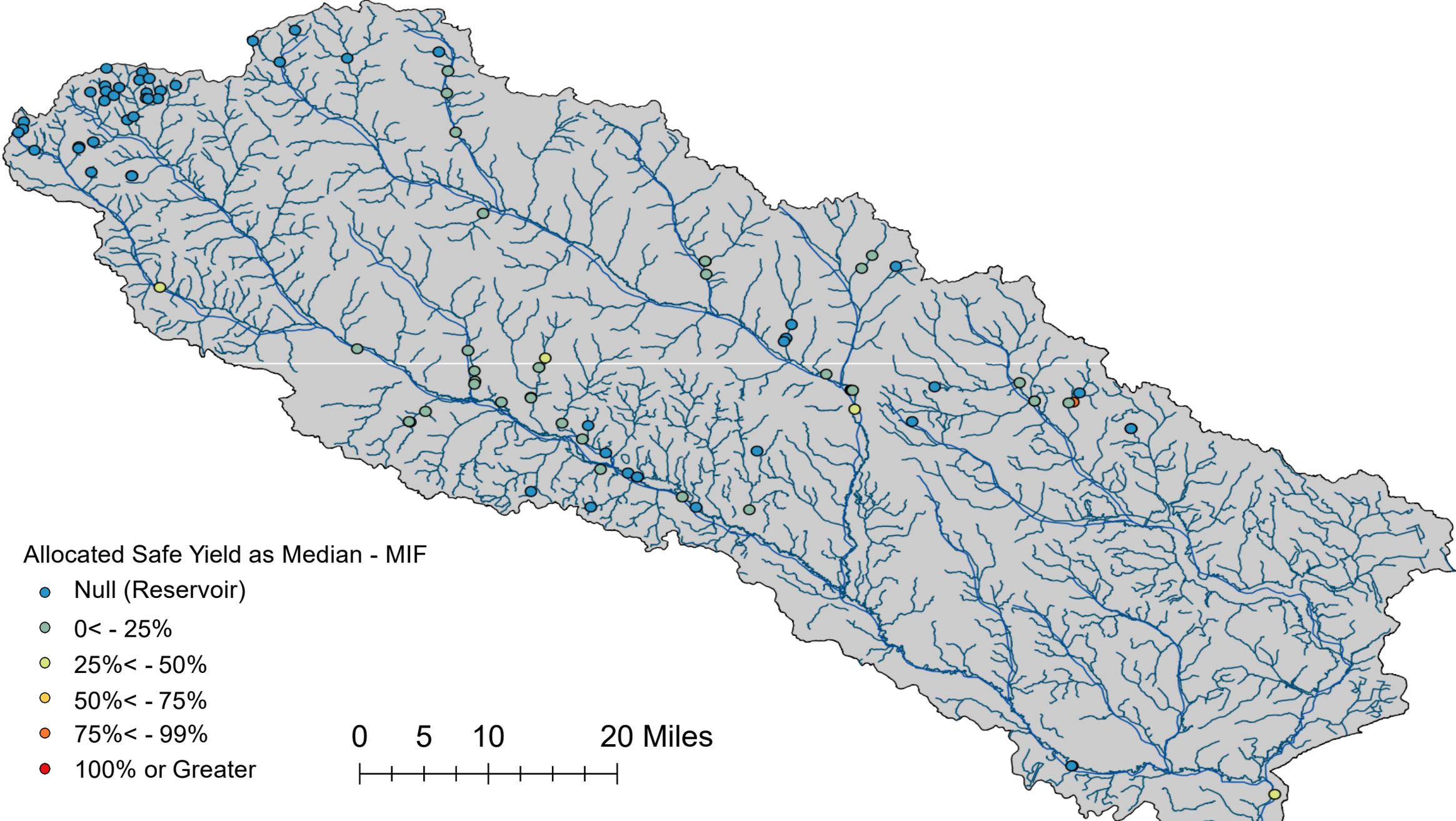
Percent Allocated in the Edisto Basin with Safe Yield as Median - MIF for February



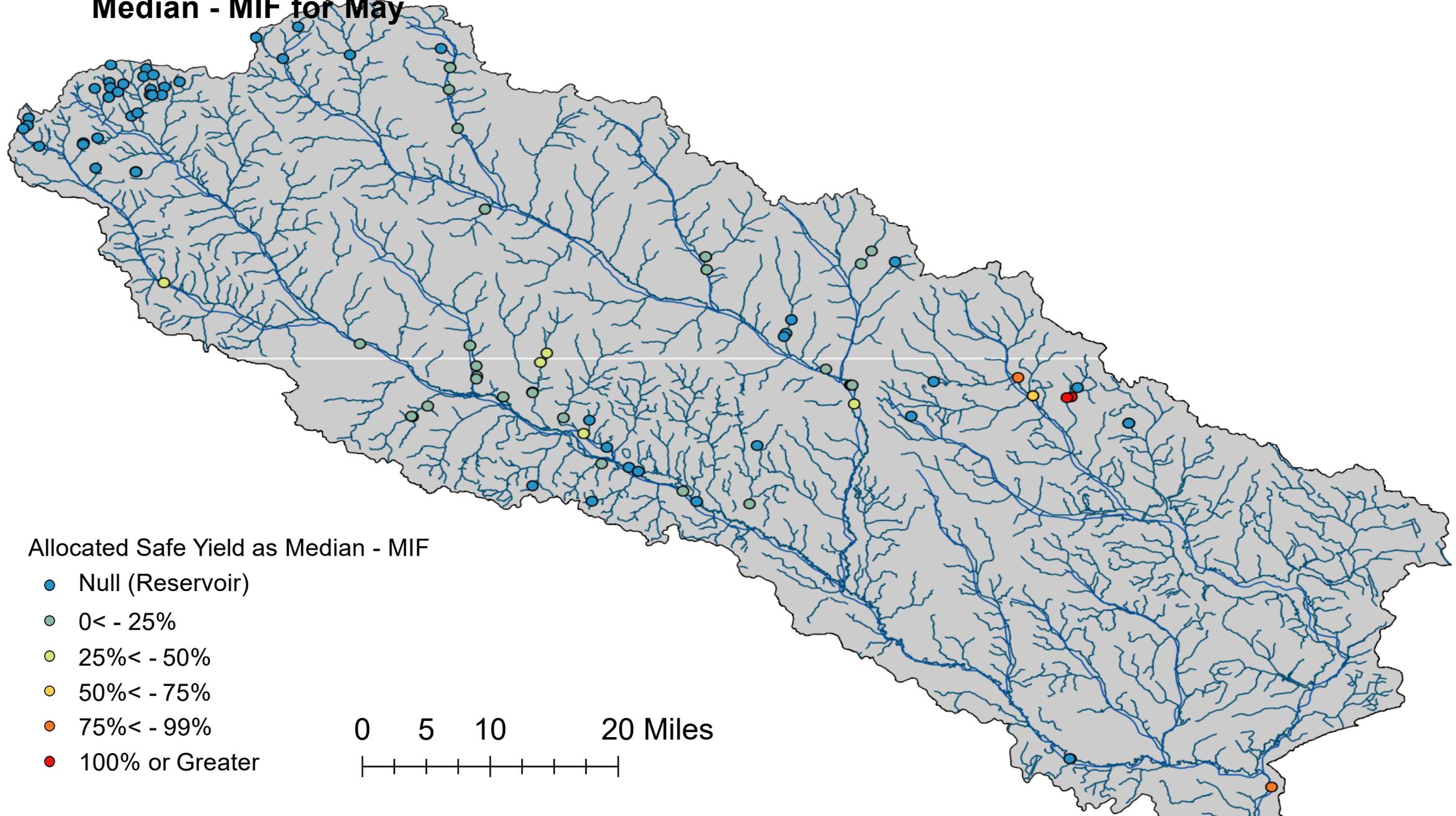
Percent Allocated in the Edisto Basin with Safe Yield as Median - MIF for March



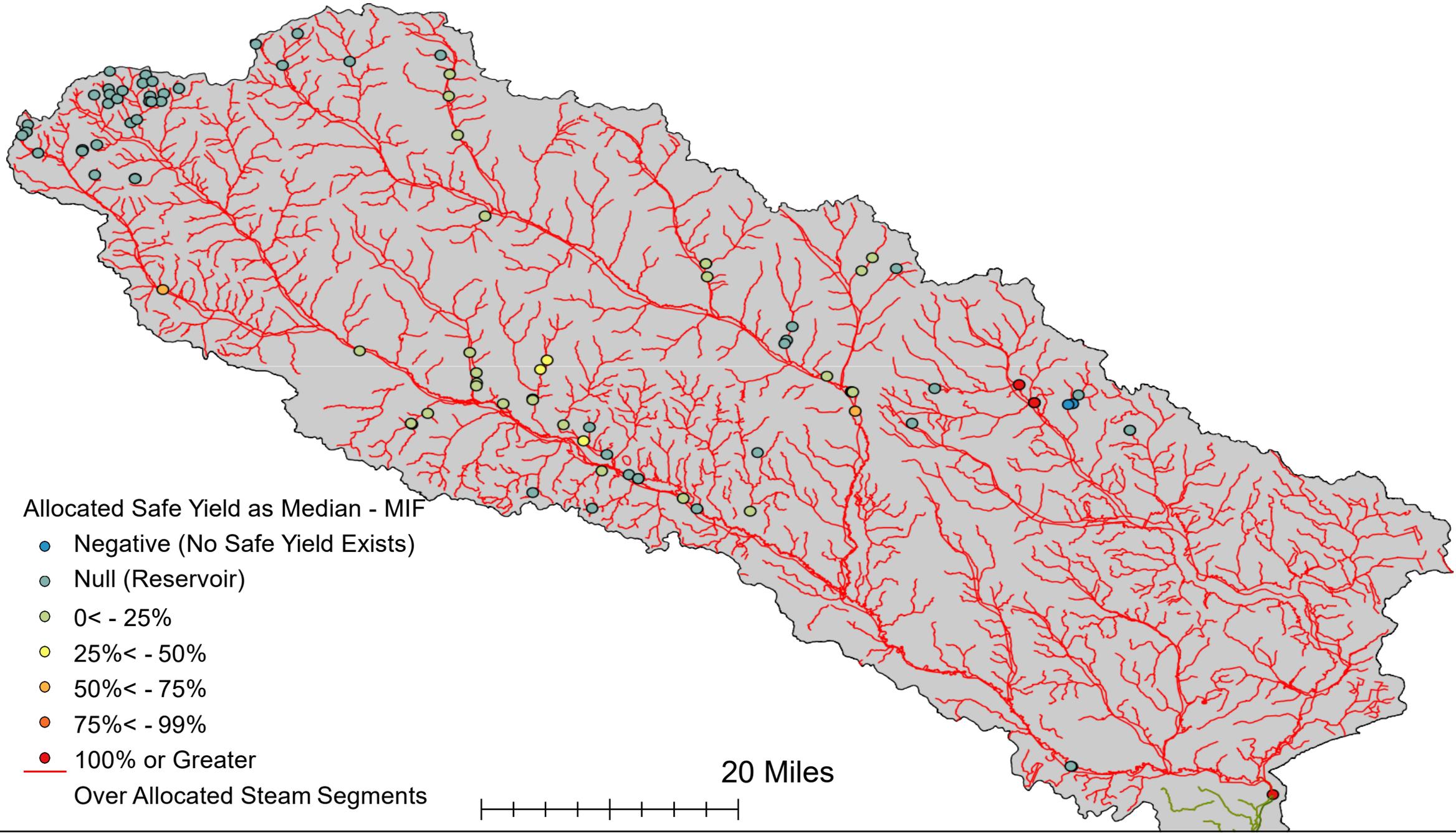
Percent Allocated in the Edisto Basin with Safe Yield as Median - MIF for April



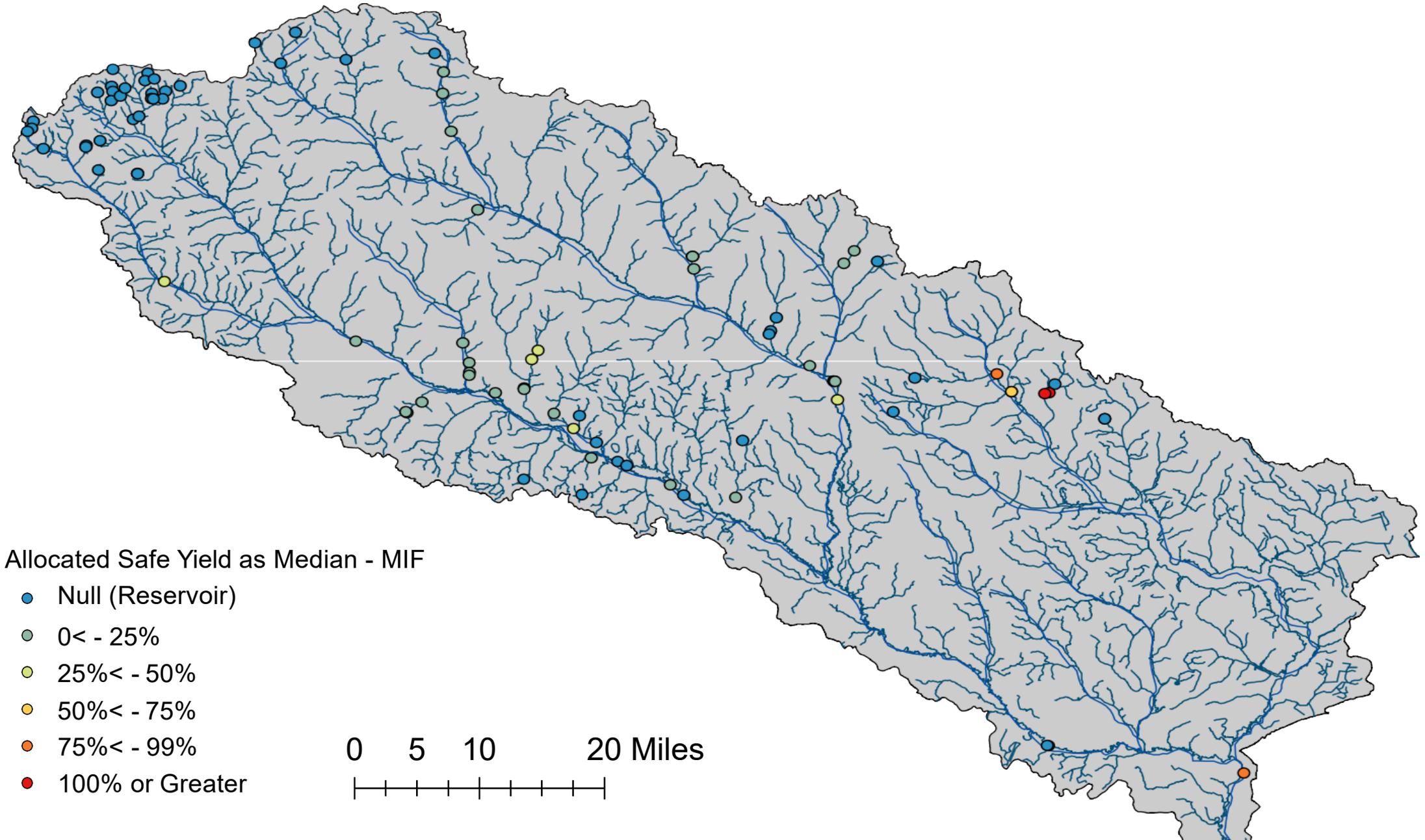
Percent Allocated in the Edisto Basin with Safe Yield as Median - MIF for May



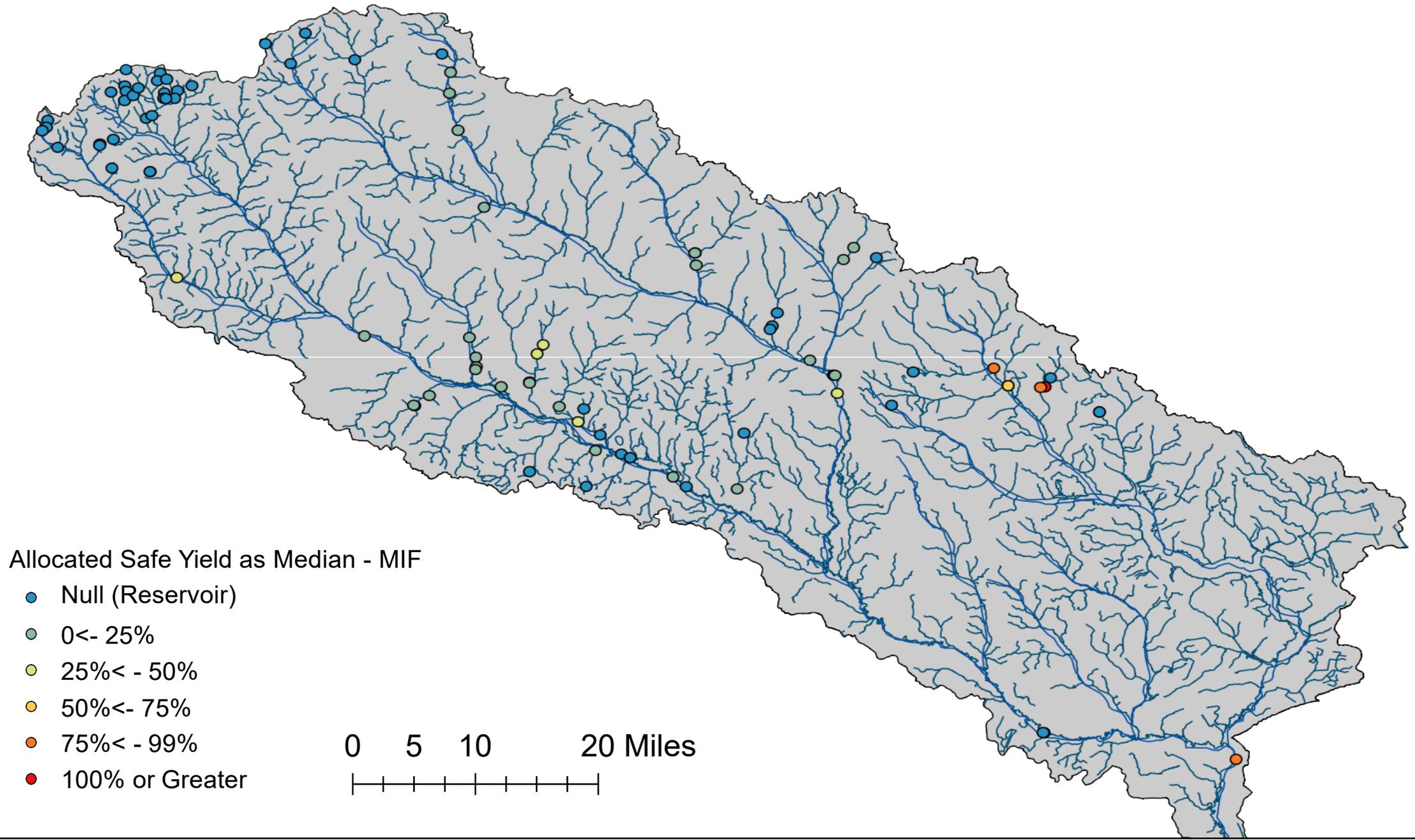
Percent Allocated in the Edisto Basin with Safe Yield as Median - MIF for June



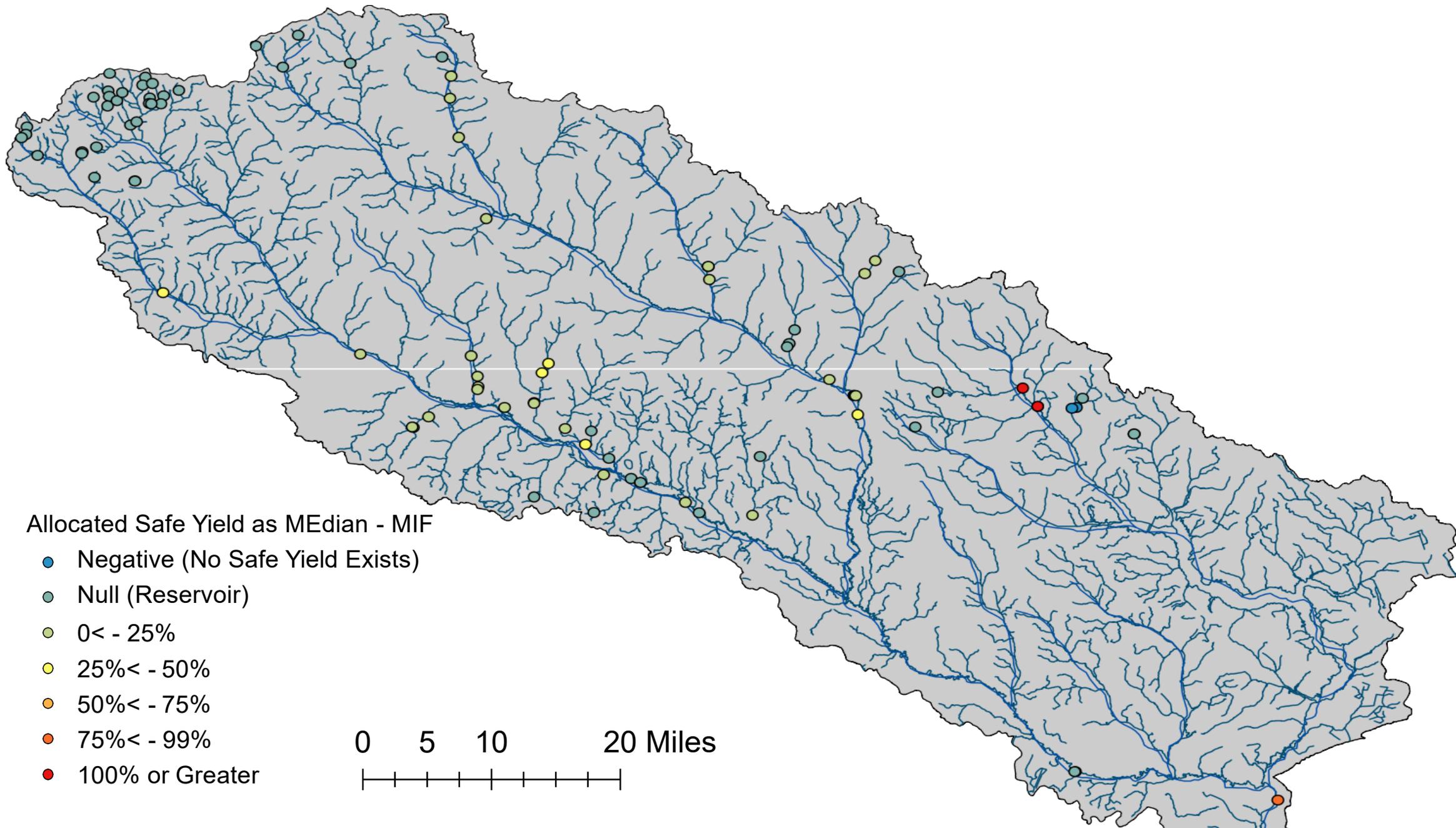
Percent Allocated in the Edisto Basin with Safe Yield as Median - MIF for July



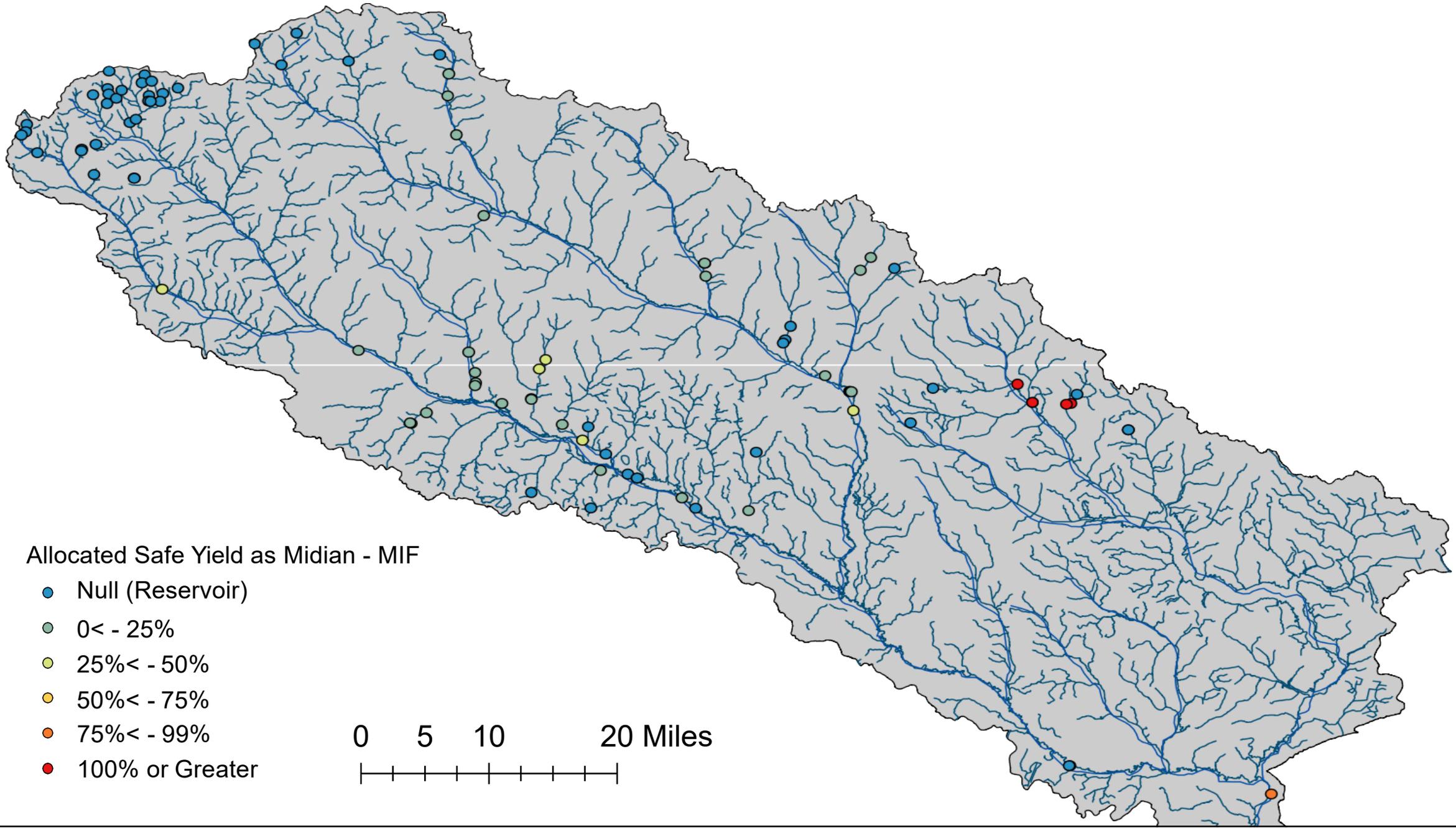
Percent Allocated in the Edisto Basin with Safe Yield as Median - MIF for August



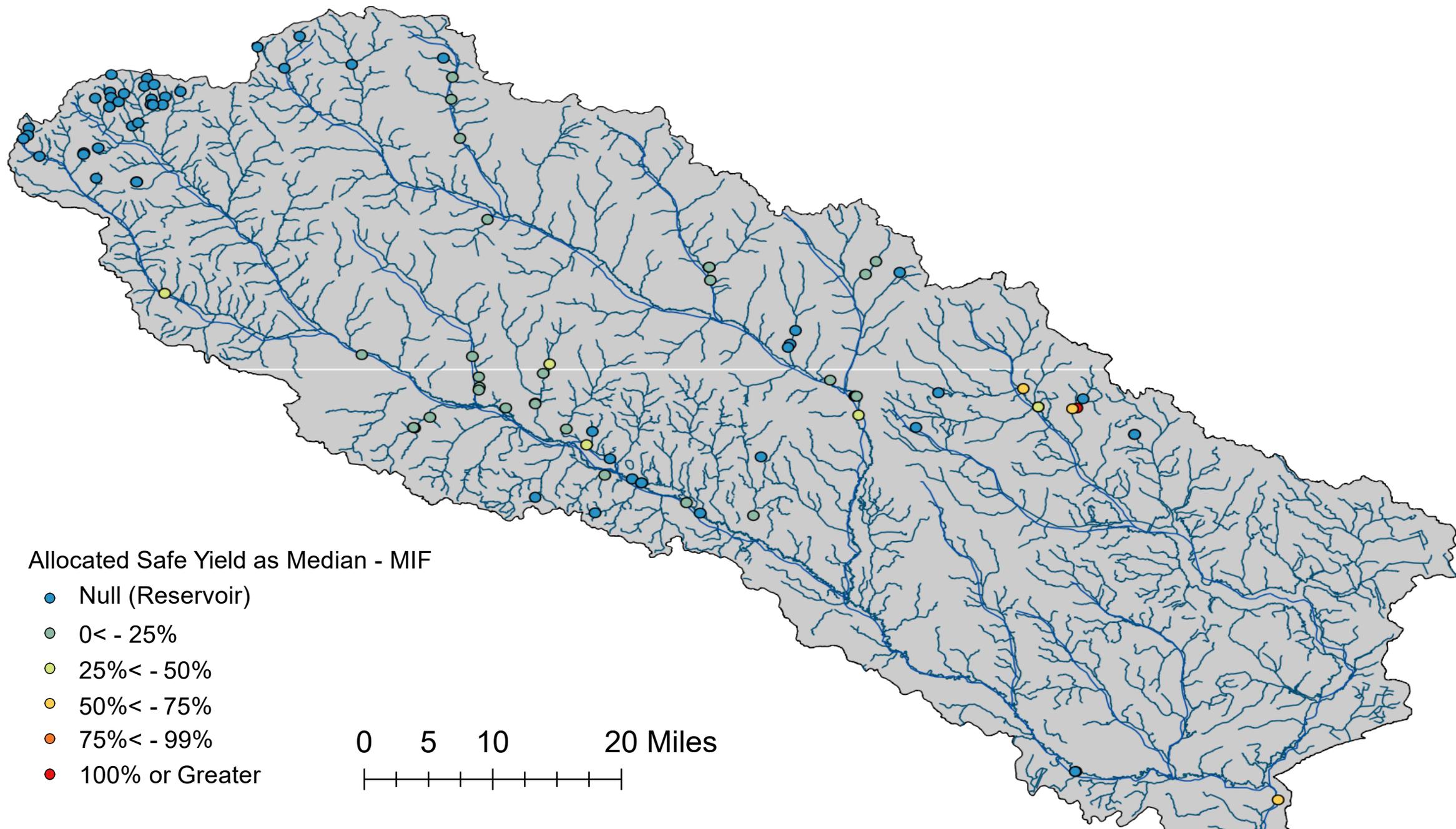
Percent Allocated in the Edisto Basin with Safe Yield as Median - MIF for September



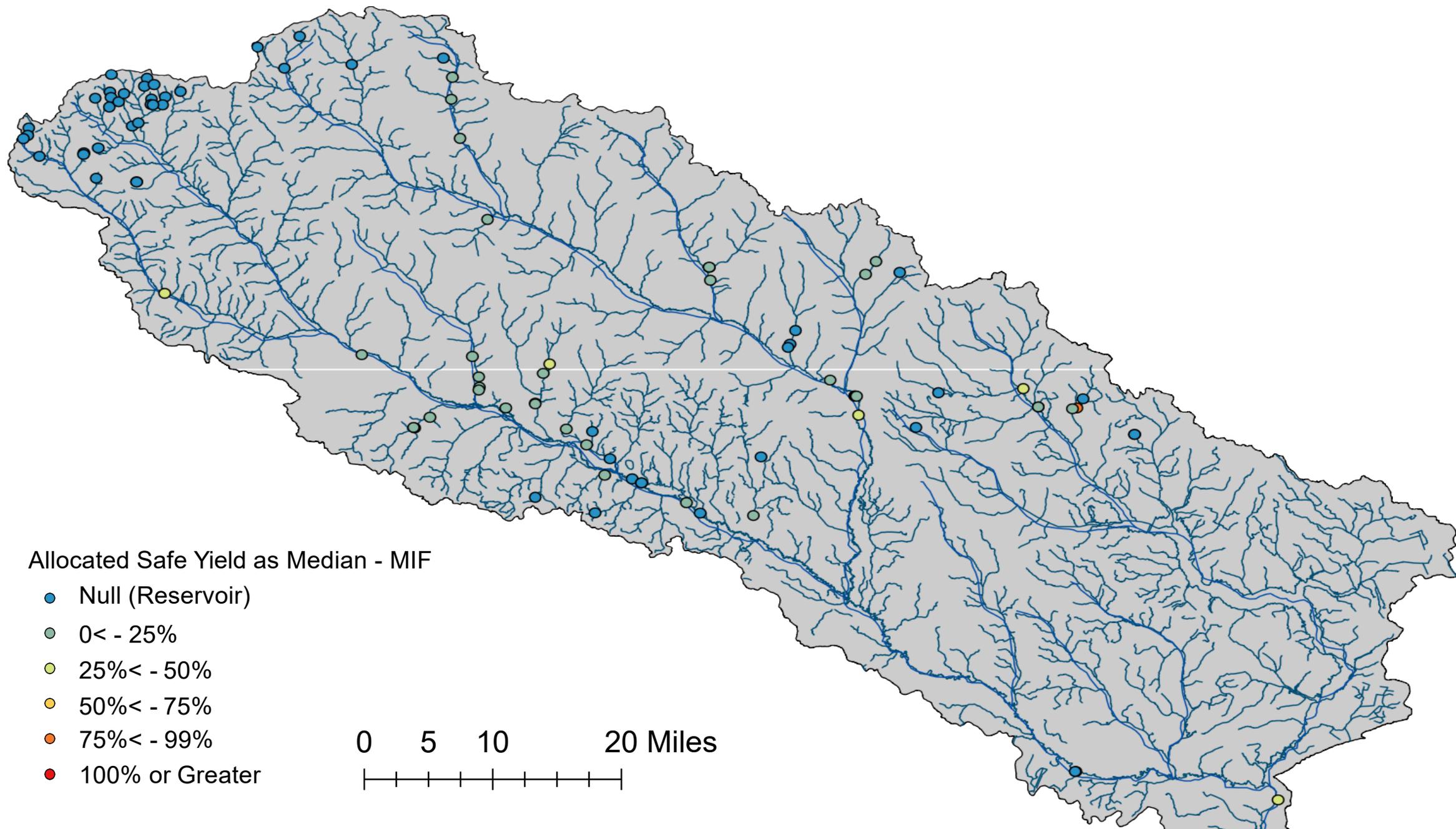
Percent Allocated in the Edisto Basin with Safe Yield as Median - MIF for October



Percent Allocated in the Edisto Basin with Safe Yield as Median - MIF for November



Percent Allocated in the Edisto Basin with Safe Yield as Median - MIF for December



Possible Alternative SY Calculations

- 60th Percentile- Minimum Instream Flow
- 80th Percentile- Minimum Instream Flow

Discussion

What other criteria should be considered for alternative safe yield calculations?

Are there specific scenarios that should be considered?



Meeting #3 (March 17th)

Evaluate alternative calculations submitted by the work-group.
(Please submit by March 2)

Other agenda items?



CONTACT US

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Stay Connected



"Safe yield"

means the amount of water available for withdrawal from a particular surface water source in excess of the minimum instream flow or minimum water level for that surface water source. Safe yield is determined by comparing the natural and artificial replenishment of the surface water to the existing or planned consumptive and nonconsumptive uses.

Safe Yield

- The calculation of safe yield (legally available water for withdrawal) is the same for a permit or agricultural registration
- Applies only to the **point of withdrawal**, is **not** a basin value and does **not** apply upstream or downstream of the withdrawal point
- Is a **volume** of water that can be legally permitted for withdrawal, permits are issued in Millions of Gallons per Month
- Not to be confused with minimum instream flows
- Is a limit on what can be permitted for withdrawal and is adjusted to account for other users
- Drought Act (DNR) will rule in extreme water shortages

"Minimum instream flow"

means the flow that provides an adequate supply of water at the surface water withdrawal point to maintain the biological, chemical, and physical integrity of the stream taking into account the needs of downstream users, recreation, and navigation and that flow is set at forty percent of the mean annual daily flow for the months of January, February, March, and April; thirty percent of the mean annual daily flow for the months of May, June, and December; and twenty percent of the mean annual daily flow for the months of July through November for surface water withdrawers as described in Section 49-4-150(A)(1).



For surface water withdrawal points located on a surface water segment downstream of and influenced by a licensed or otherwise flow controlled impoundment, "minimum instream flow" means the flow that provides an adequate supply of water at the surface water withdrawal point to maintain the biological, chemical, and physical integrity of the stream taking into account the needs of downstream users, recreation, and navigation and that flow is set in Section 49-4-150(A)(3).

How is Safe Yield Calculated in R61-119?

- For withdrawals in a stream segment not influenced by a licensed or otherwise flow controlled impoundment
- For withdrawals located on a stream segment materially influenced by a licensed or otherwise flow controlled impoundment
- For withdrawals from a licensed or otherwise flow controlled impoundment
- For withdrawals from an impoundment that is not considered a licensed or otherwise flow controlled impoundment under this regulation

For withdrawals in a stream segment not influenced by a licensed or otherwise flow controlled impoundment

the safe yield is calculated as the difference between the mean annual daily flow and twenty (20) percent of mean annual daily flow at the withdrawal point, taking into consideration natural and artificial replenishment of the surface water and affected downstream withdrawals.

For withdrawals located on a stream segment materially influenced by a licensed or otherwise flow controlled impoundment

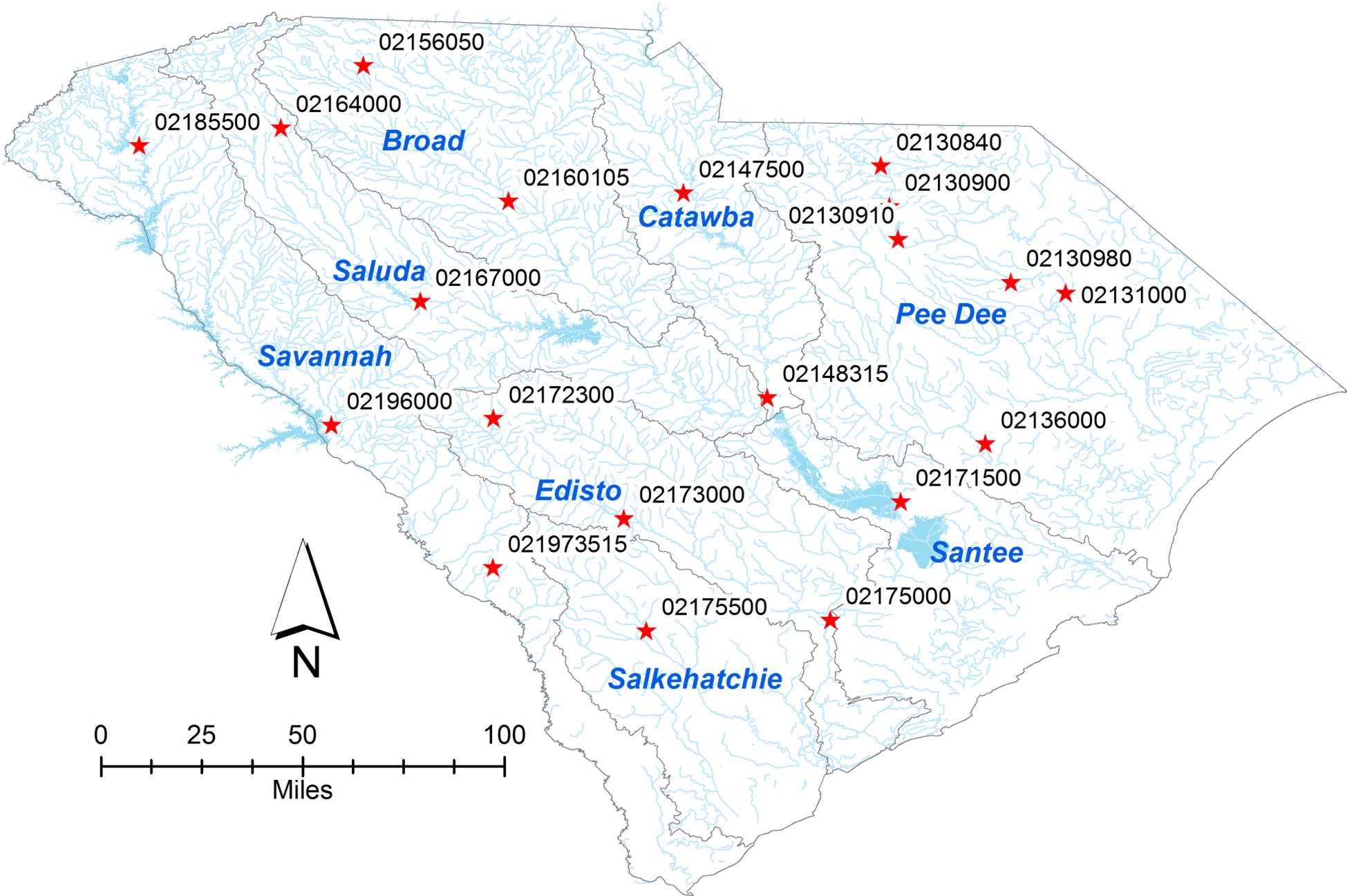
the safe yield is calculated as the difference between mean annual daily flow and the lowest designated flow in the license specified for normal conditions (non- drought), taking into consideration natural and artificial replenishment of the surface water and affected downstream withdrawals and natural attenuation of the stream flow between the licensed or otherwise flow controlled impoundment and the surface water withdrawal point.

For withdrawals from a licensed or otherwise flow controlled impoundment

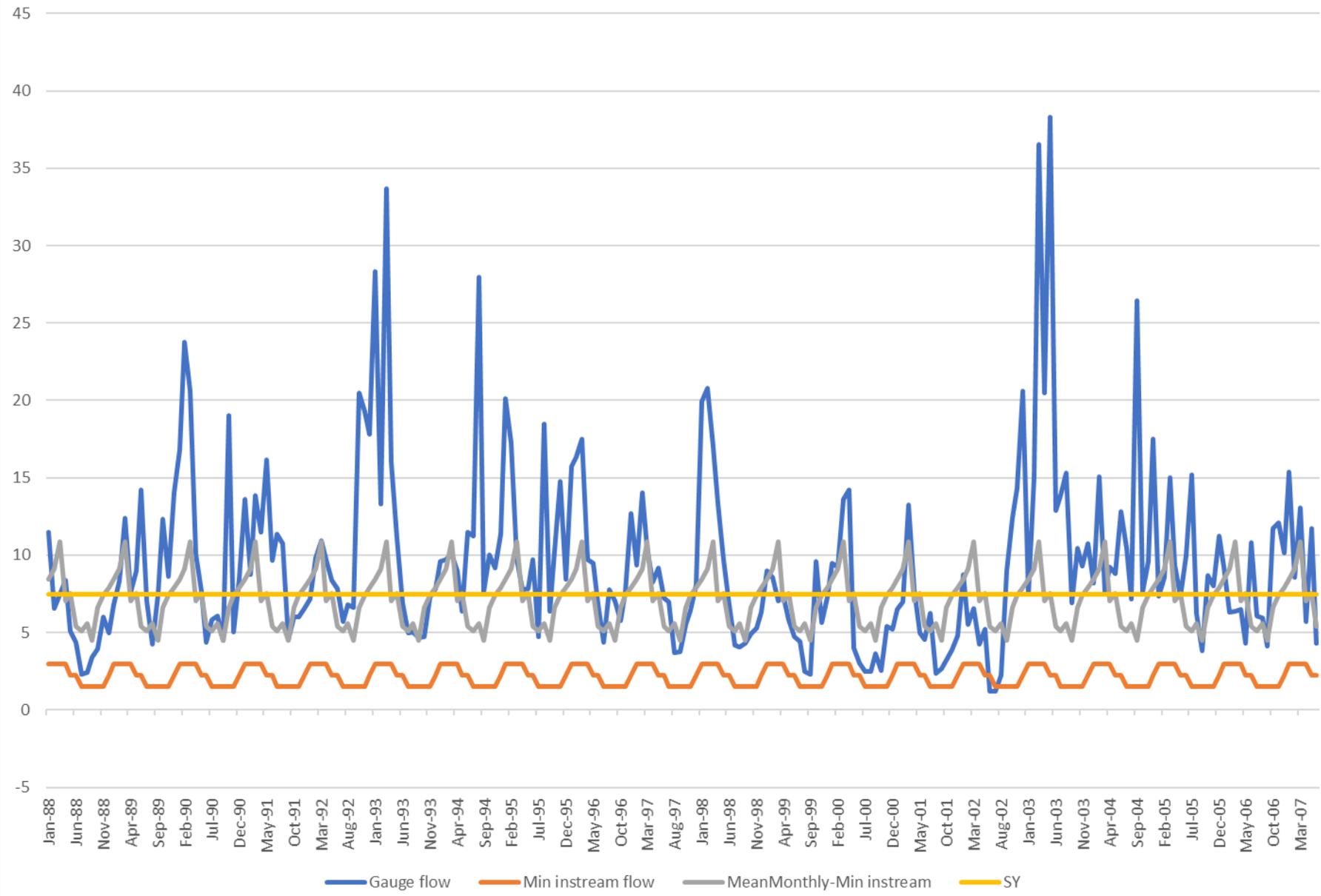
safe yield is calculated as the maximum amount that would not cause a reservoir water level to drop below its minimum water level or to be able to release the lowest minimum flow specified in the license for that impoundment as issued by the appropriate governmental agency.

For withdrawals from an impoundment that is not considered a licensed or otherwise flow controlled impoundment under this regulation

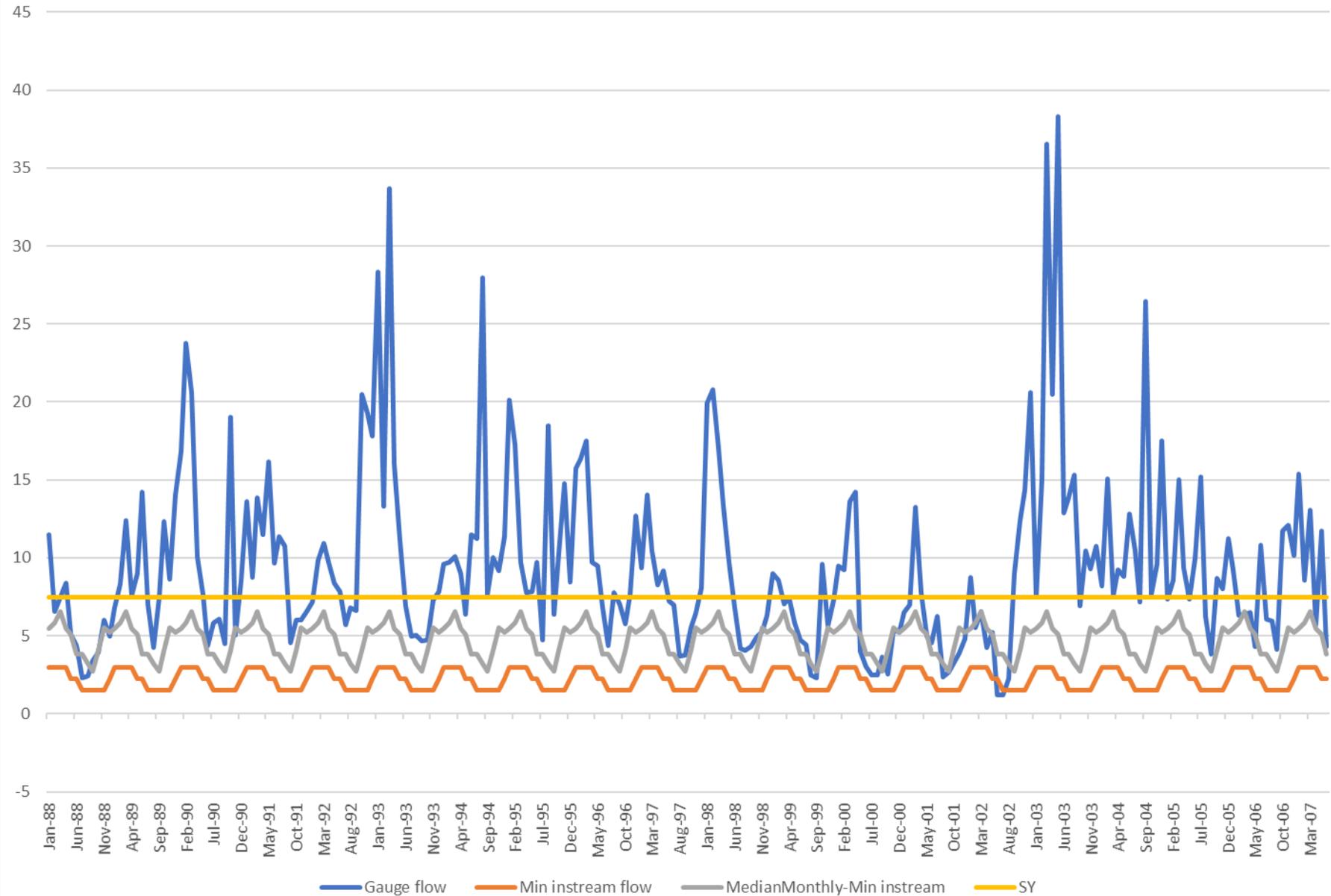
the safe yield is calculated as the maximum amount that would not cause the impoundment water level to drop below its minimum water level as established by the Department with input from the applicant and the owner(s) and operator(s) of the impoundment consistent with E.3.i(C)(2) above.



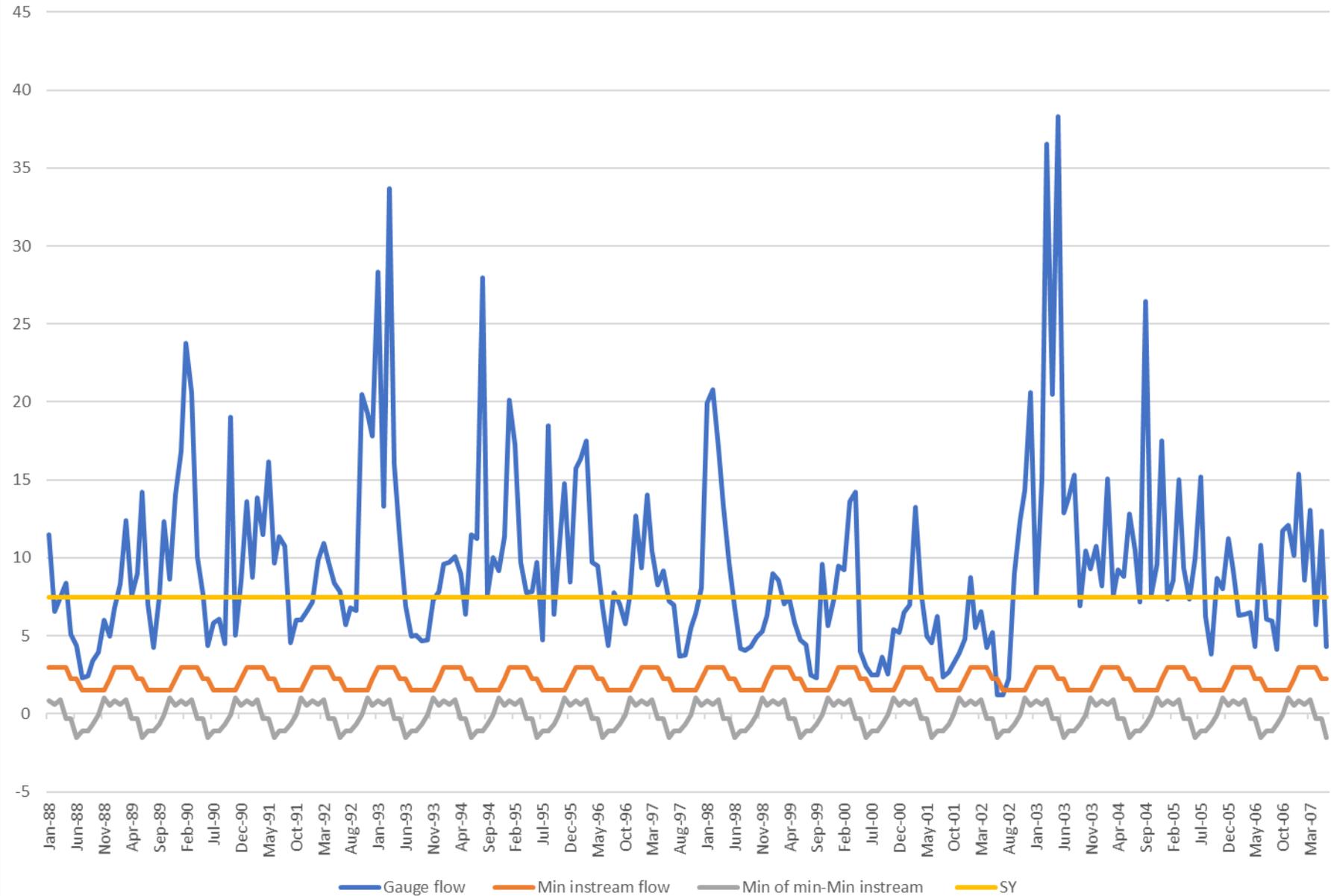
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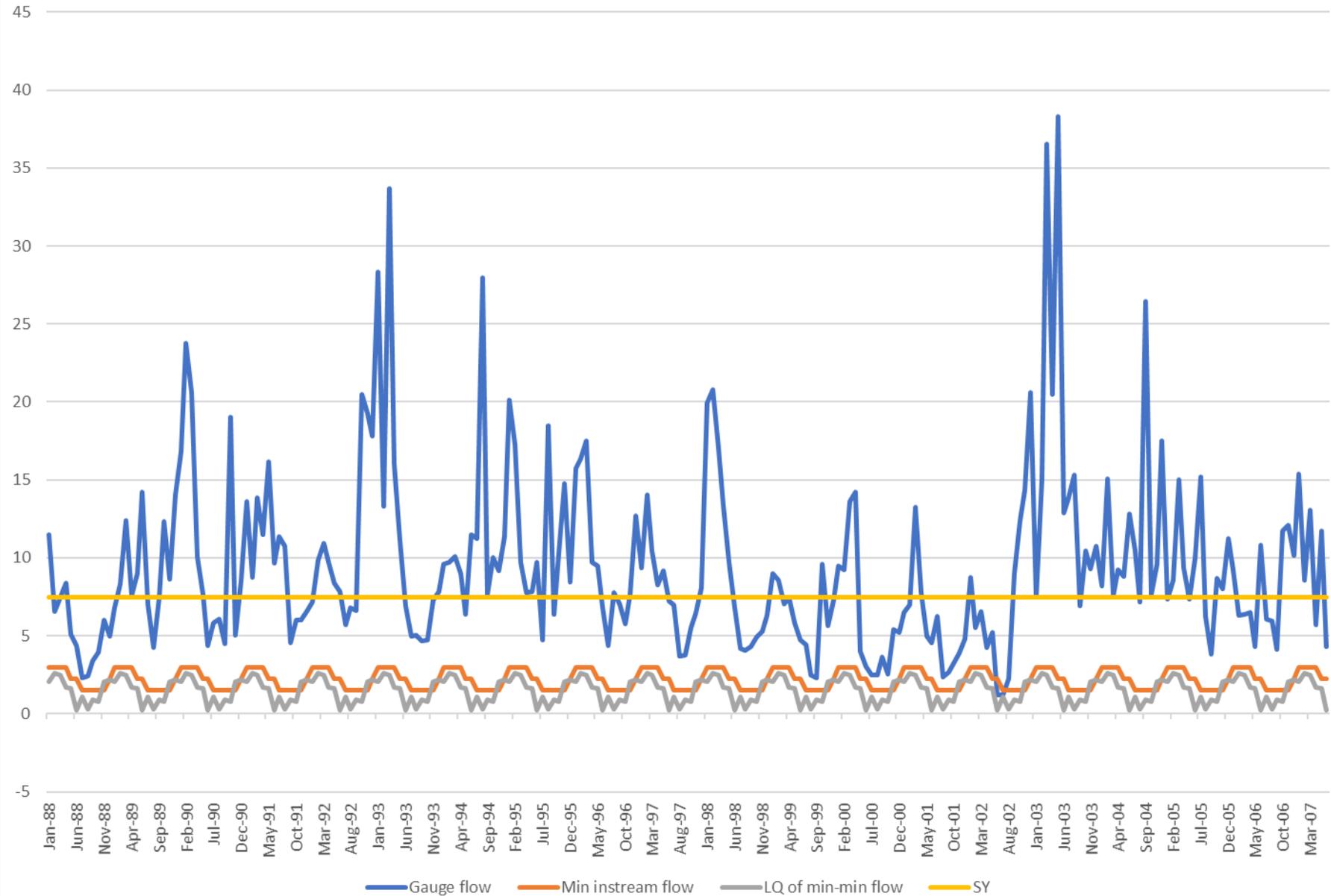
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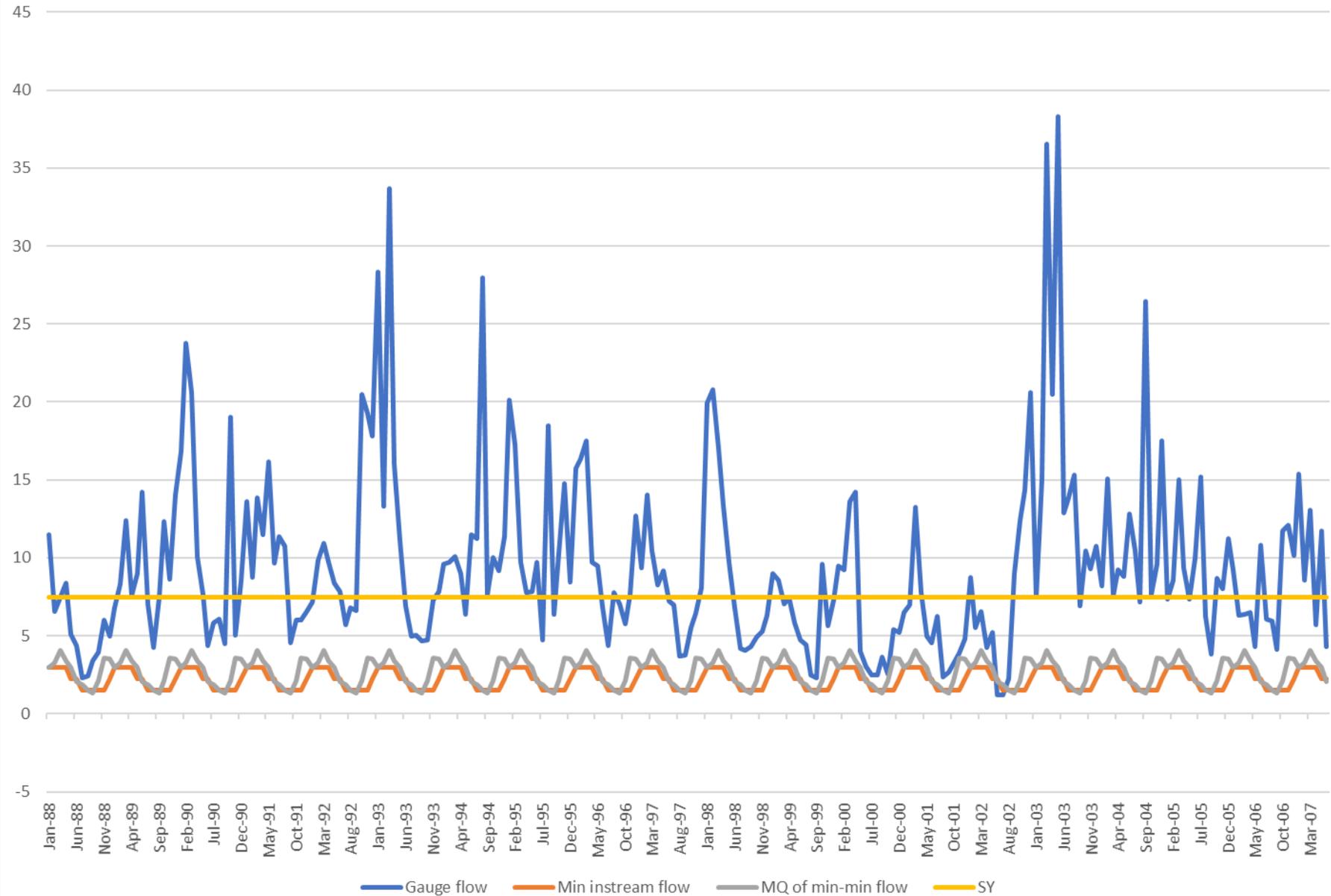
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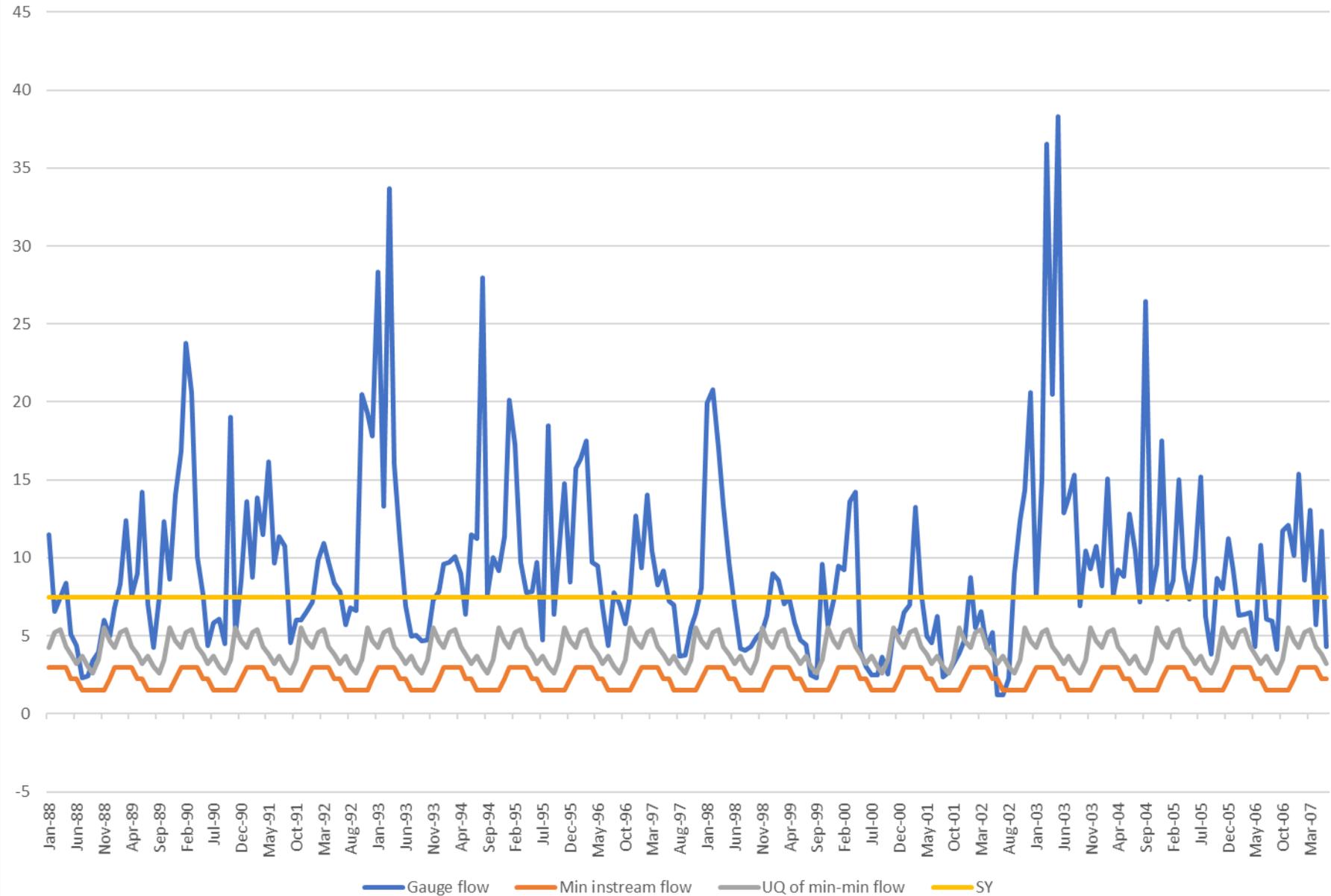
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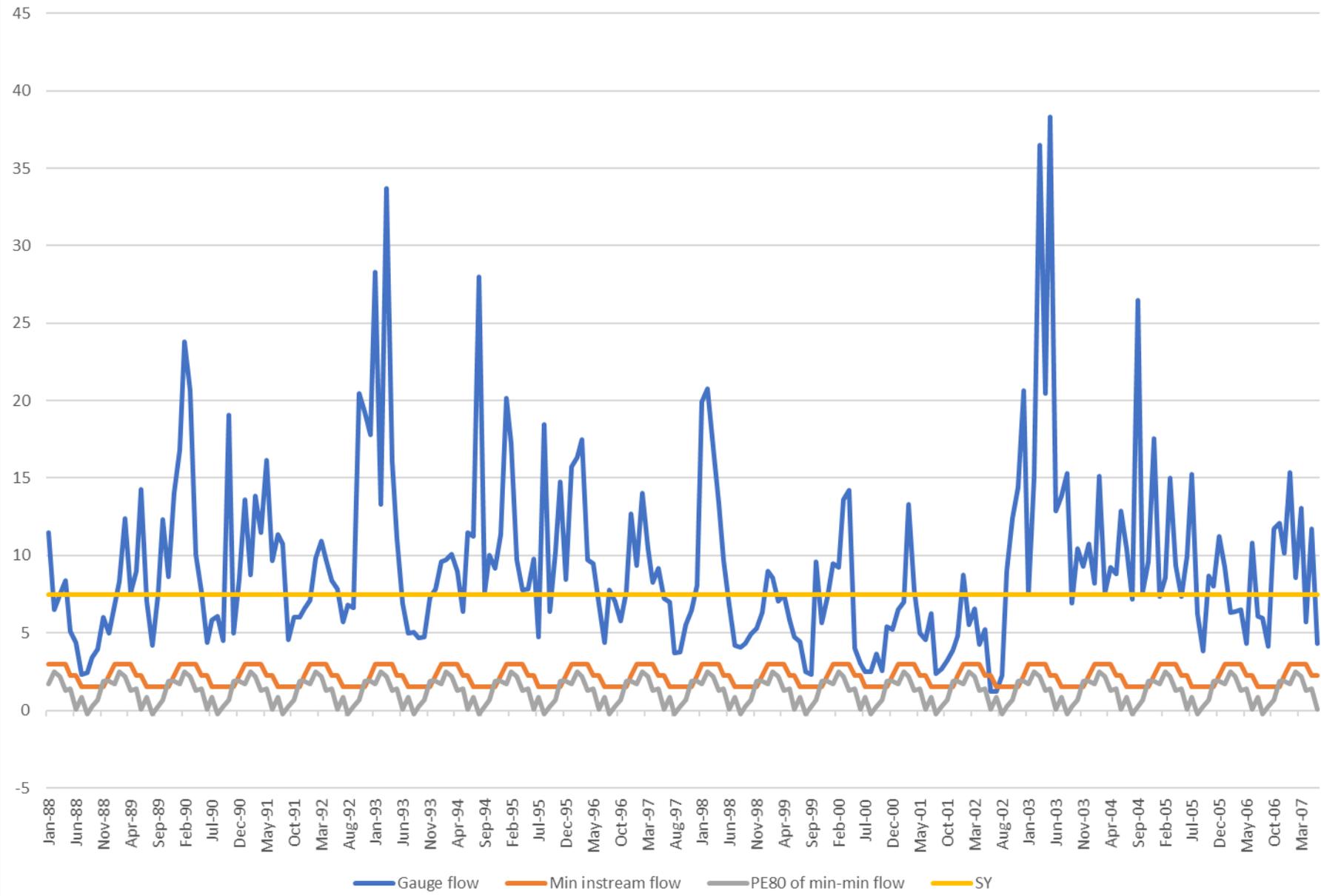
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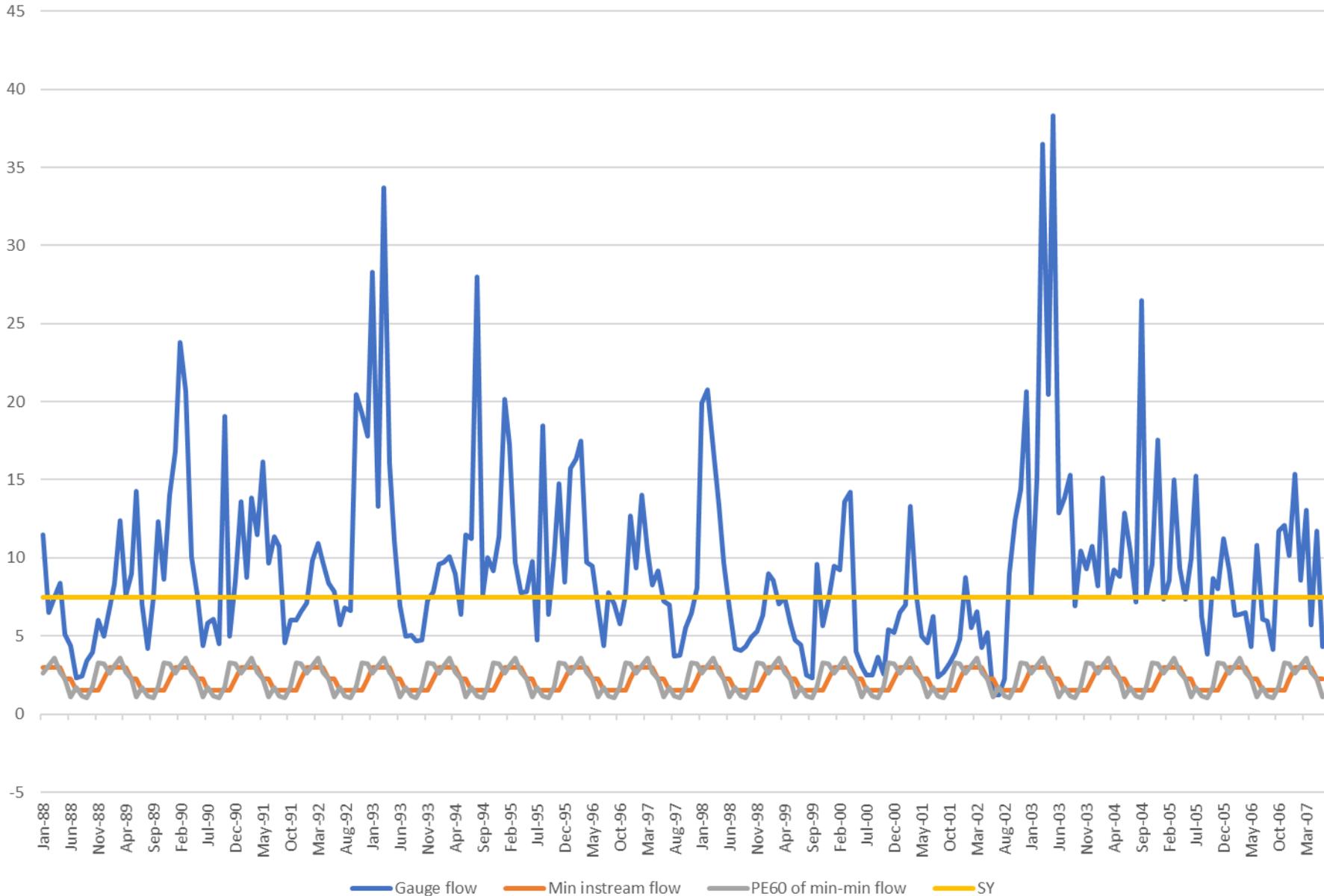
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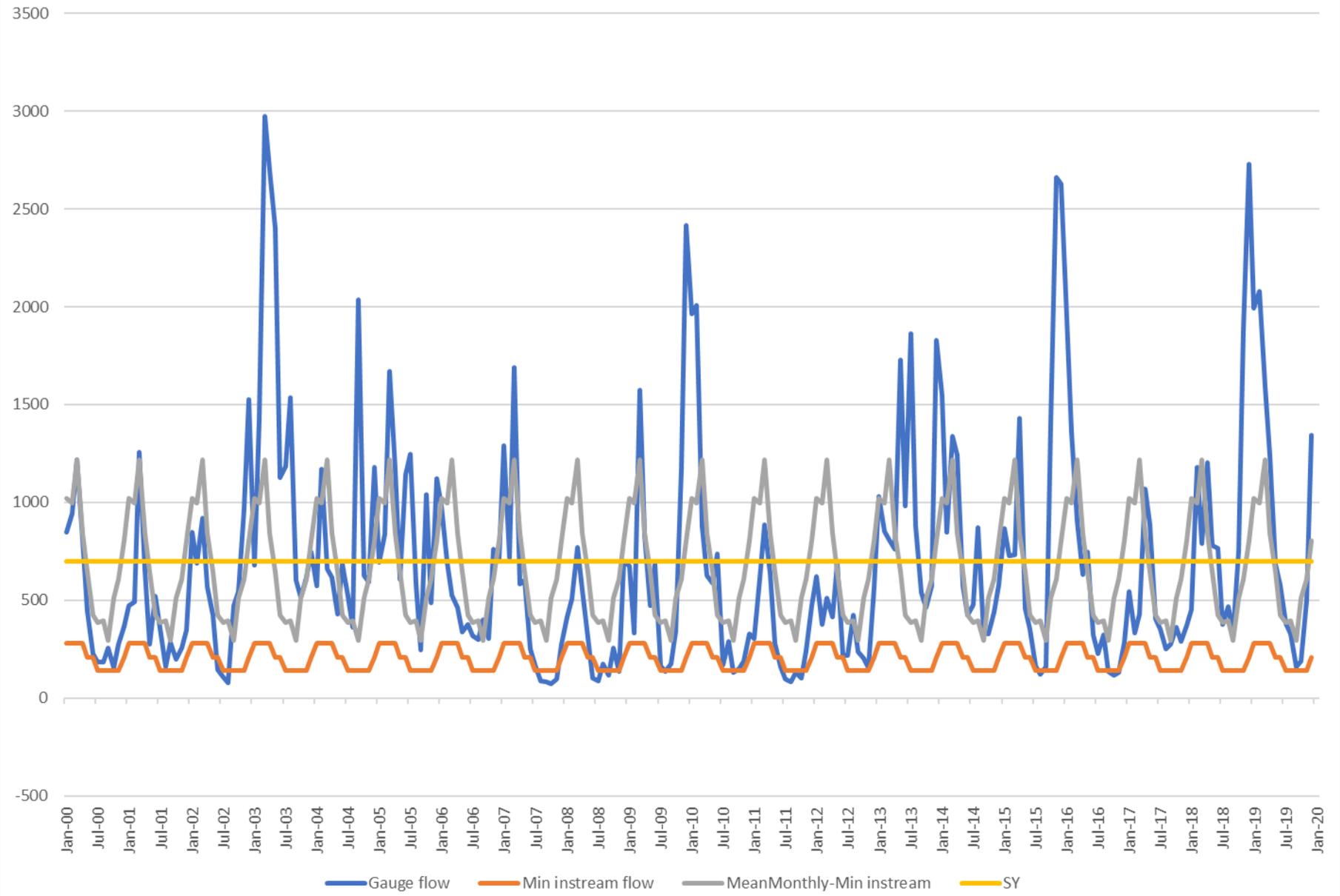
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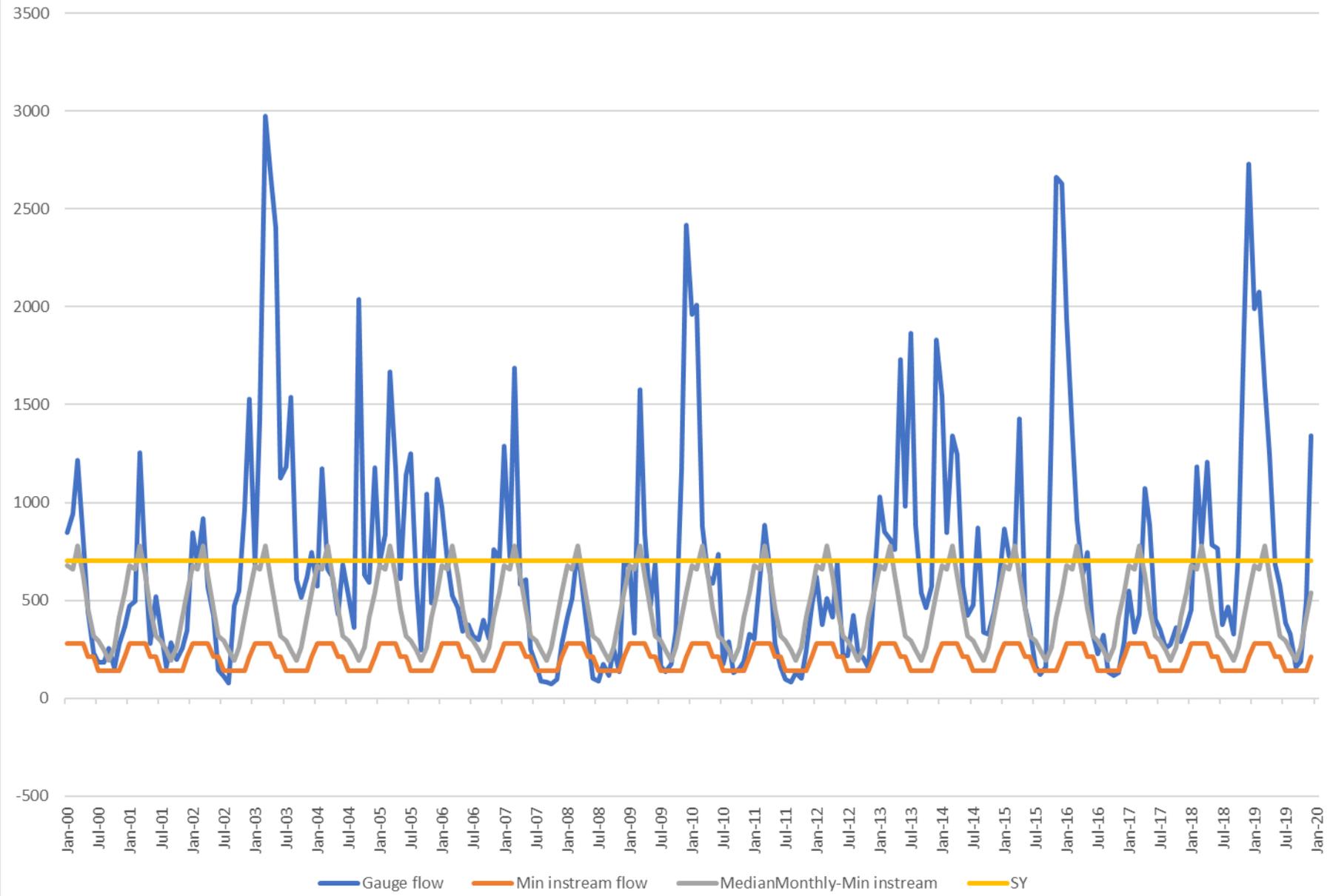
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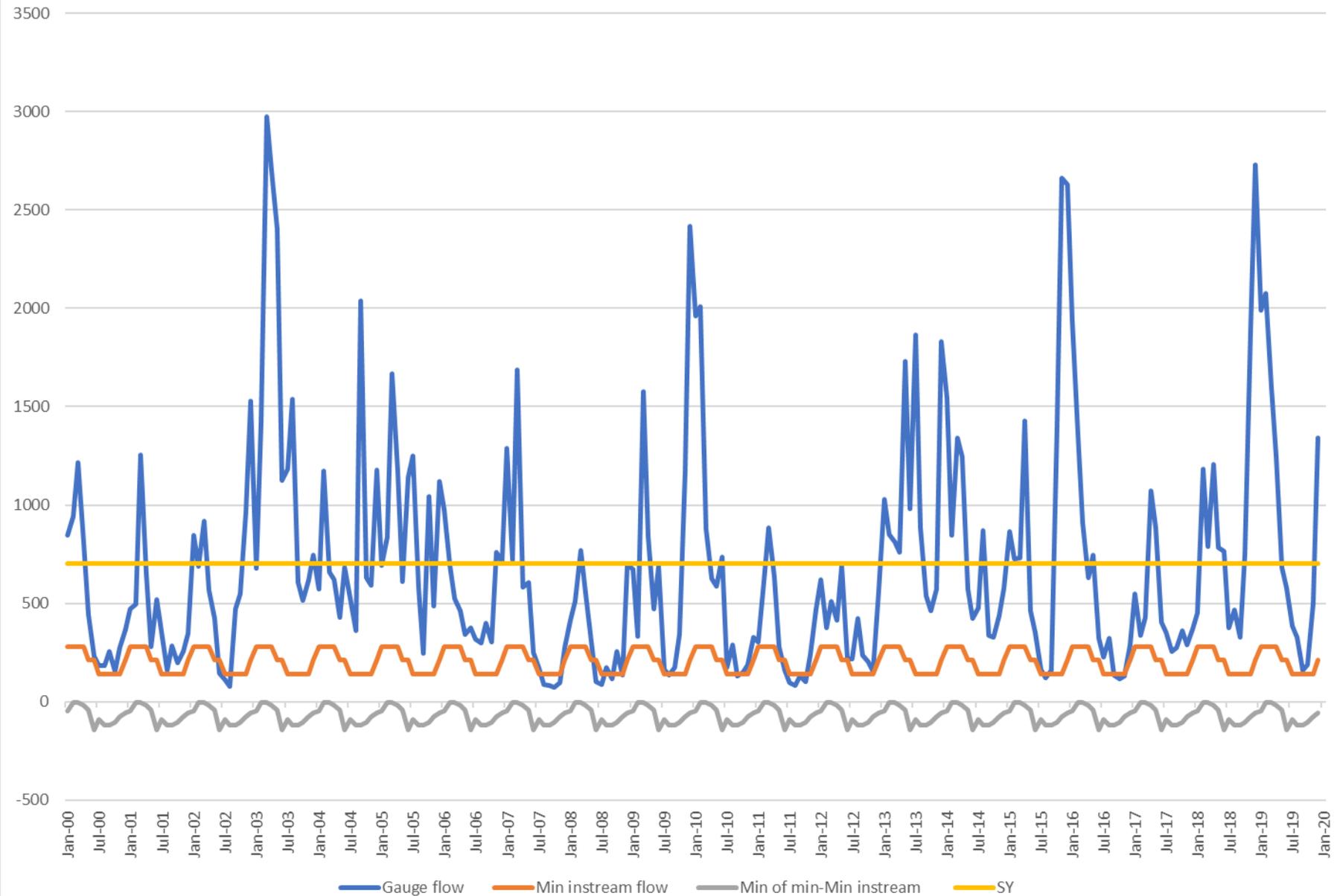
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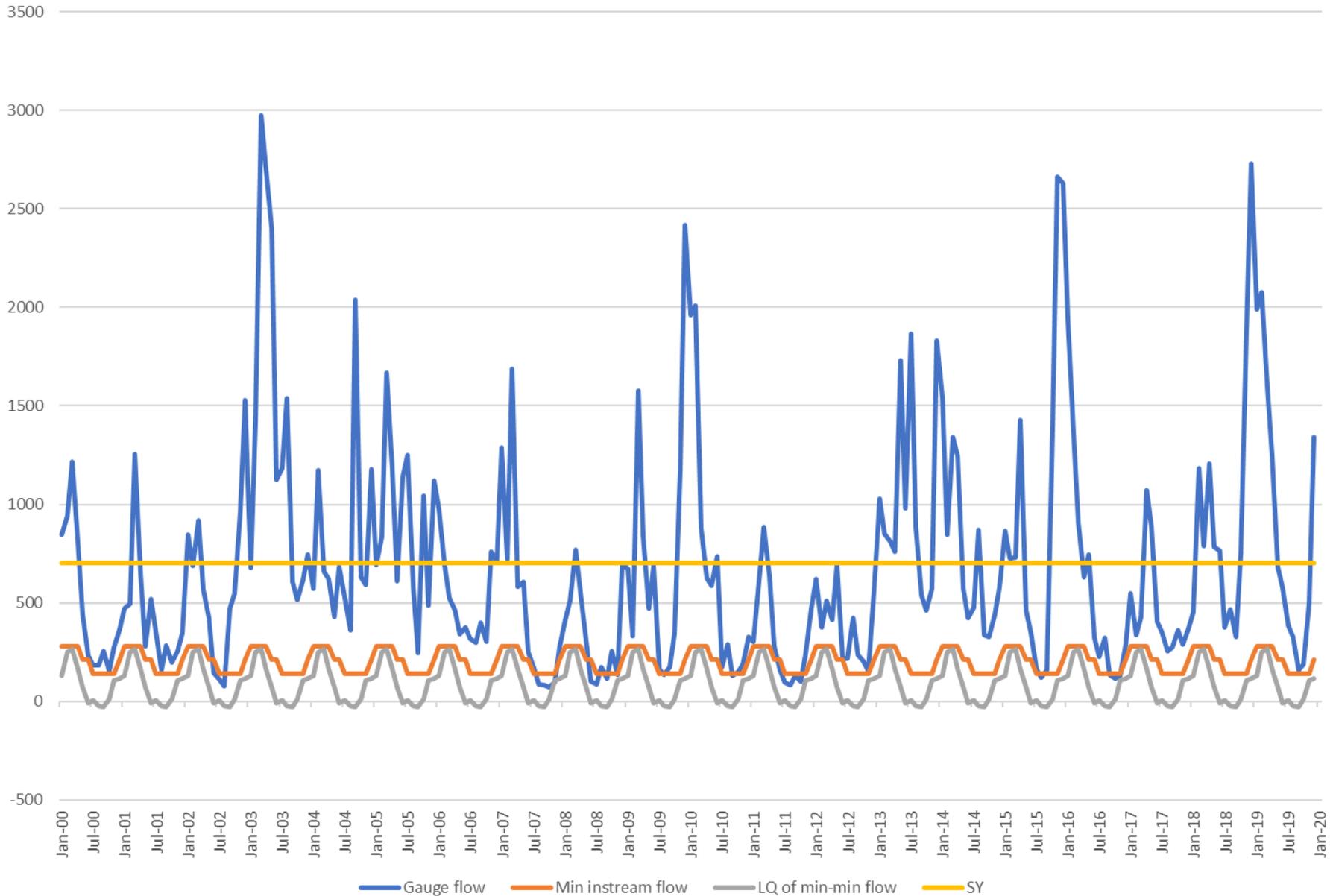
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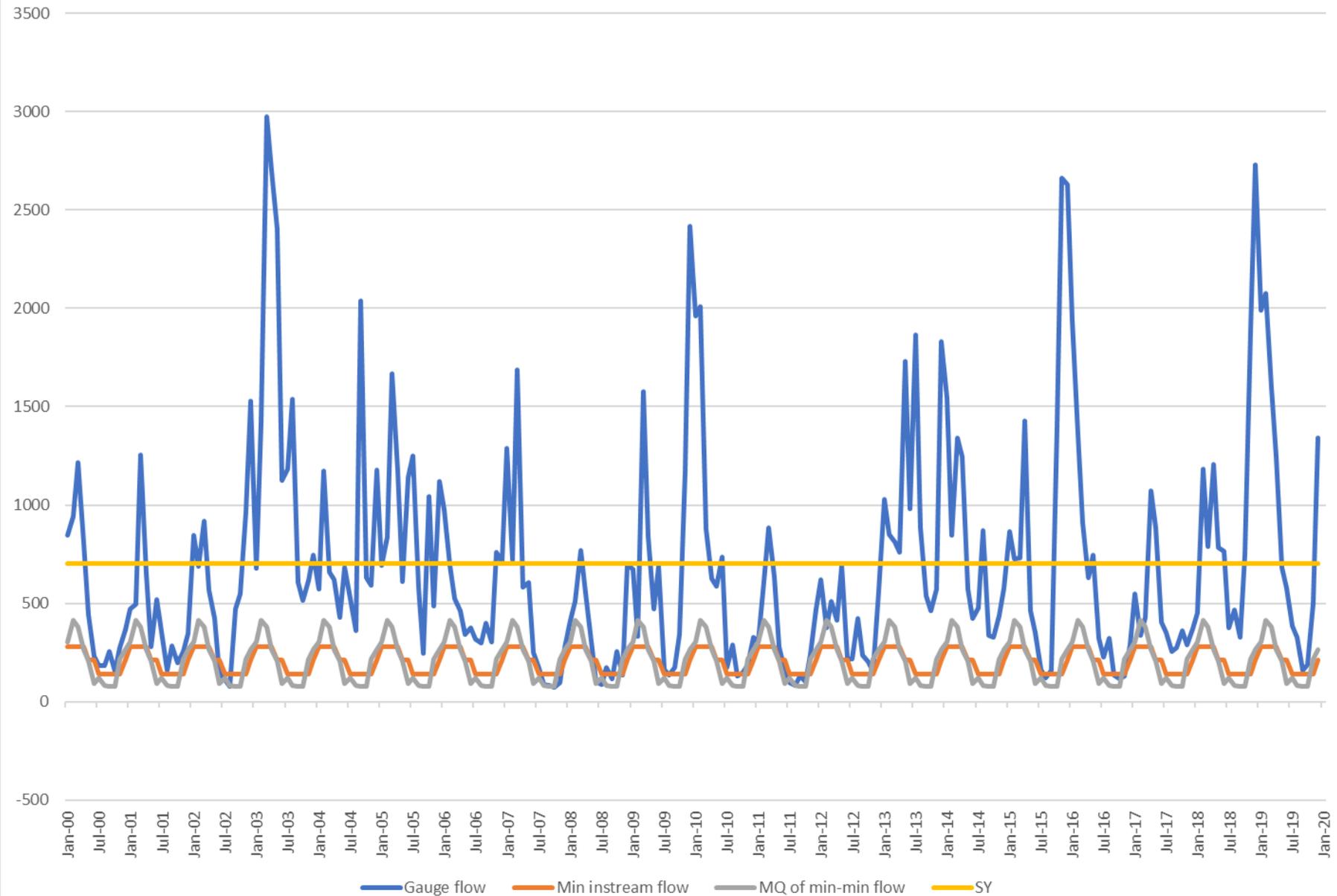
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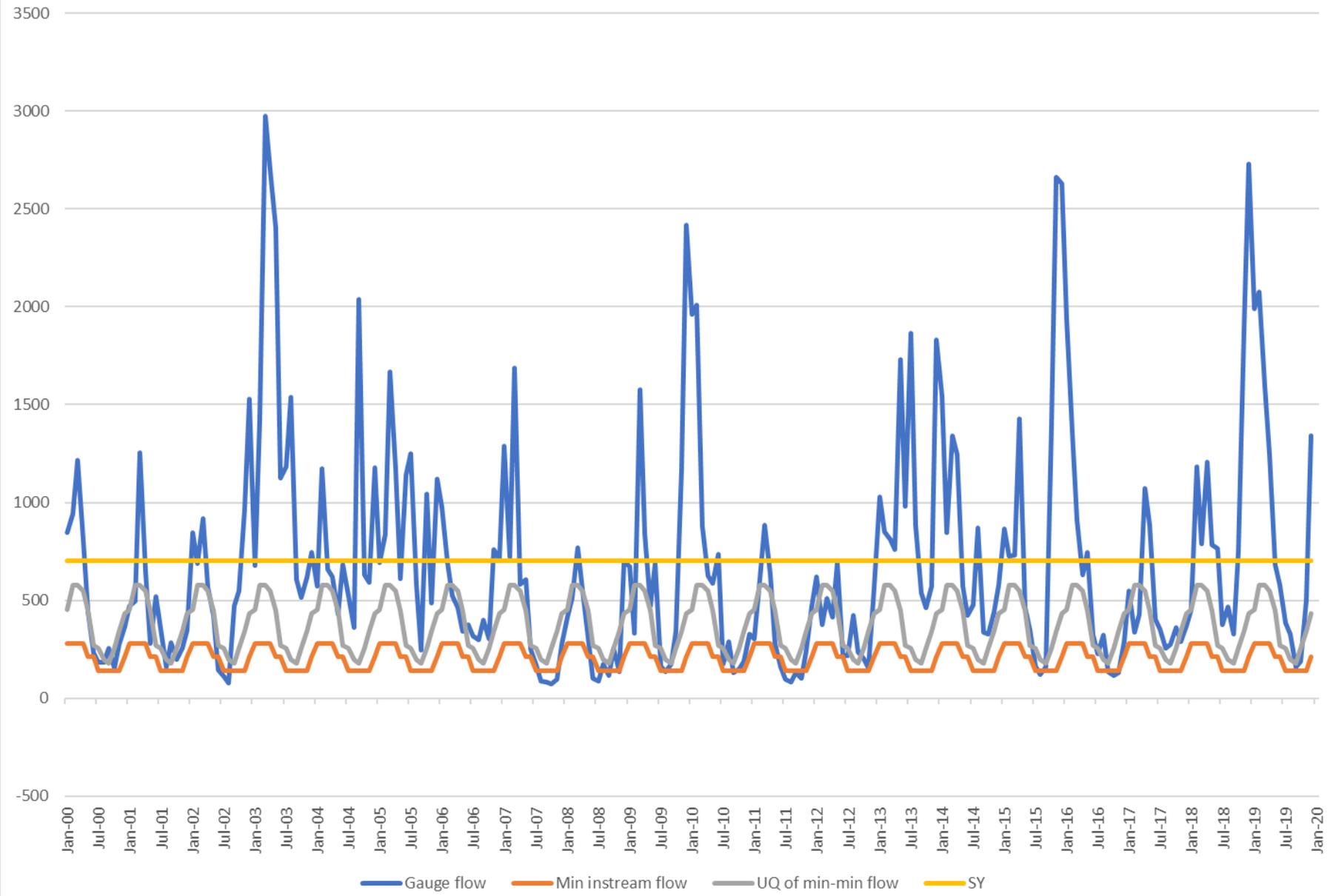
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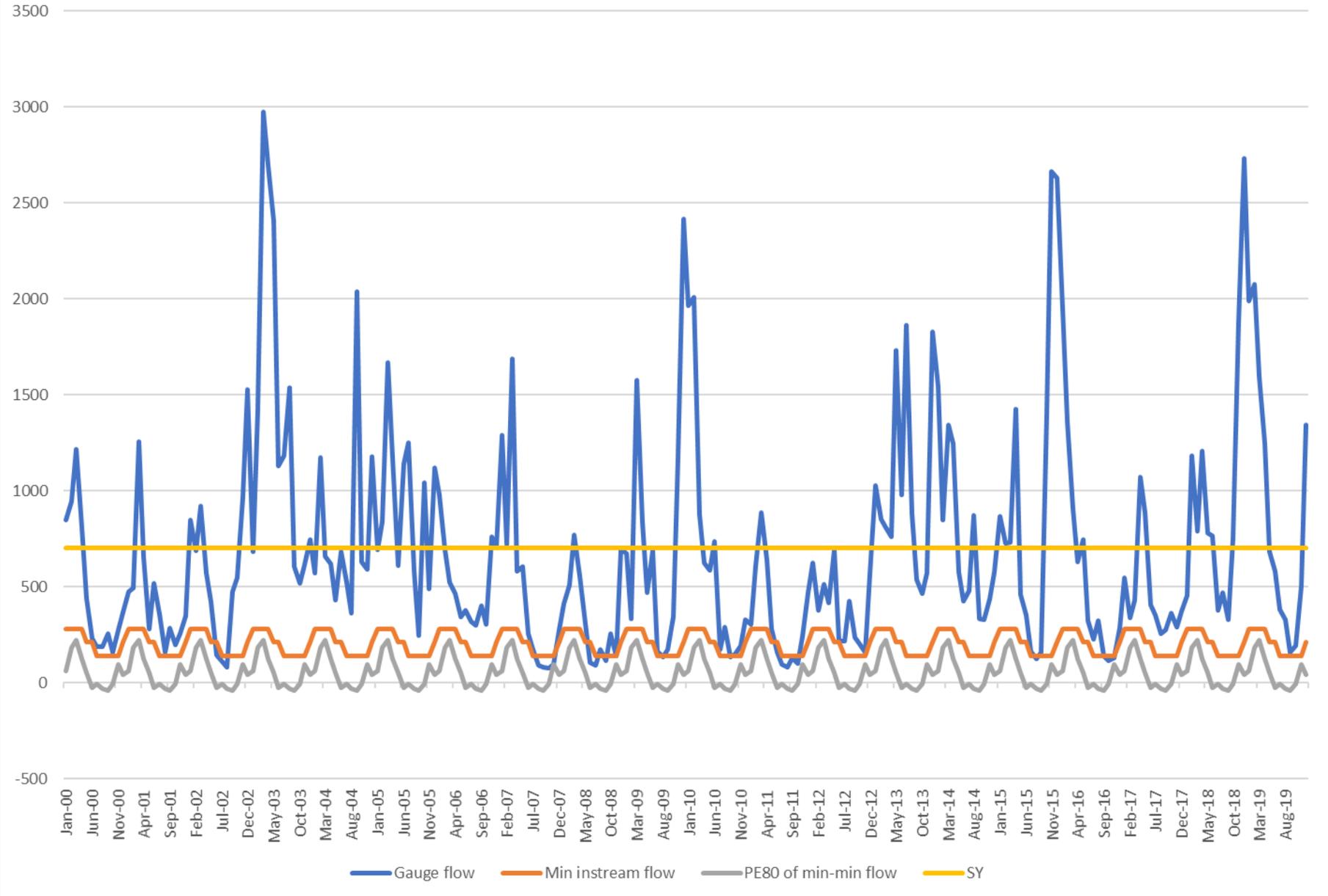
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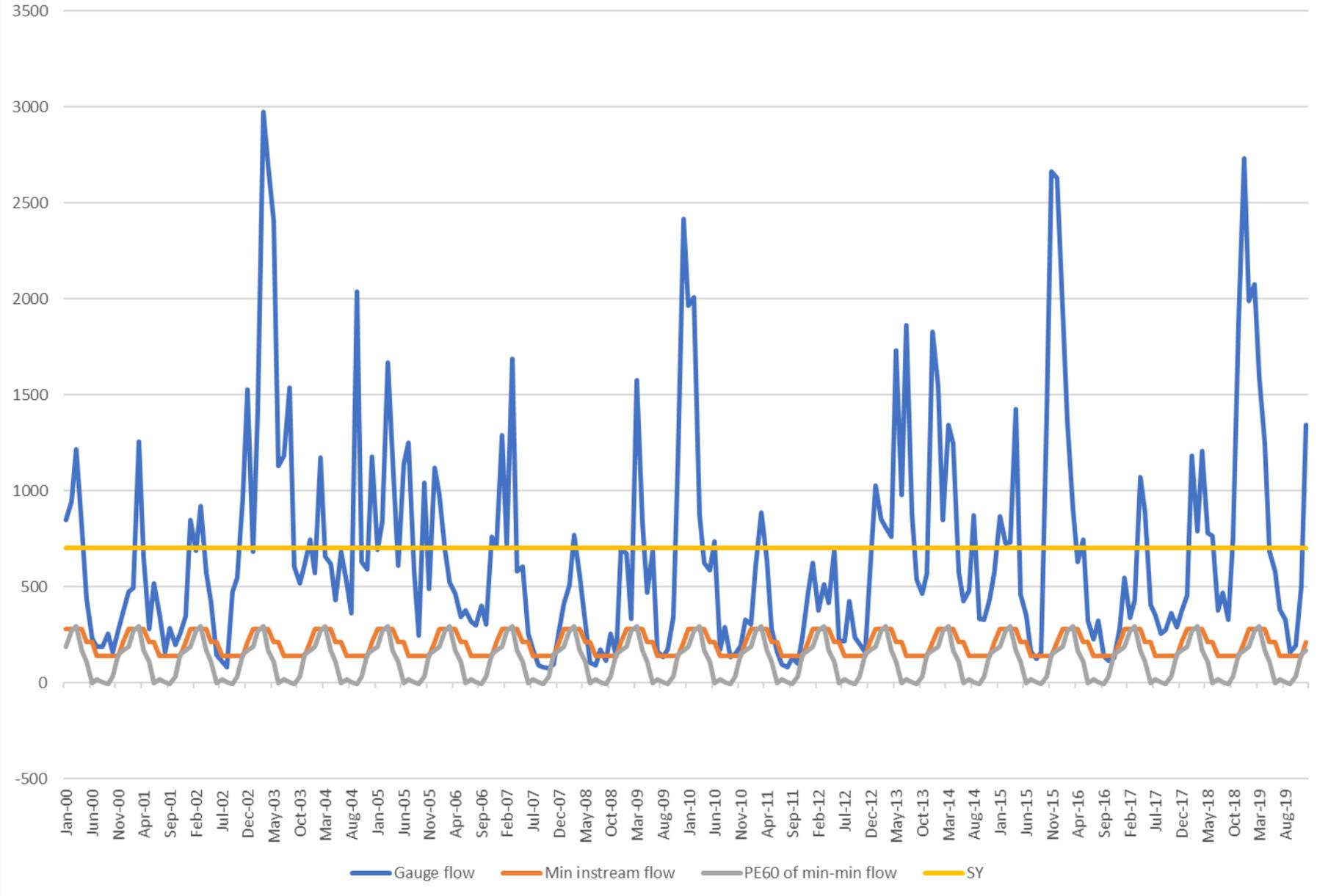
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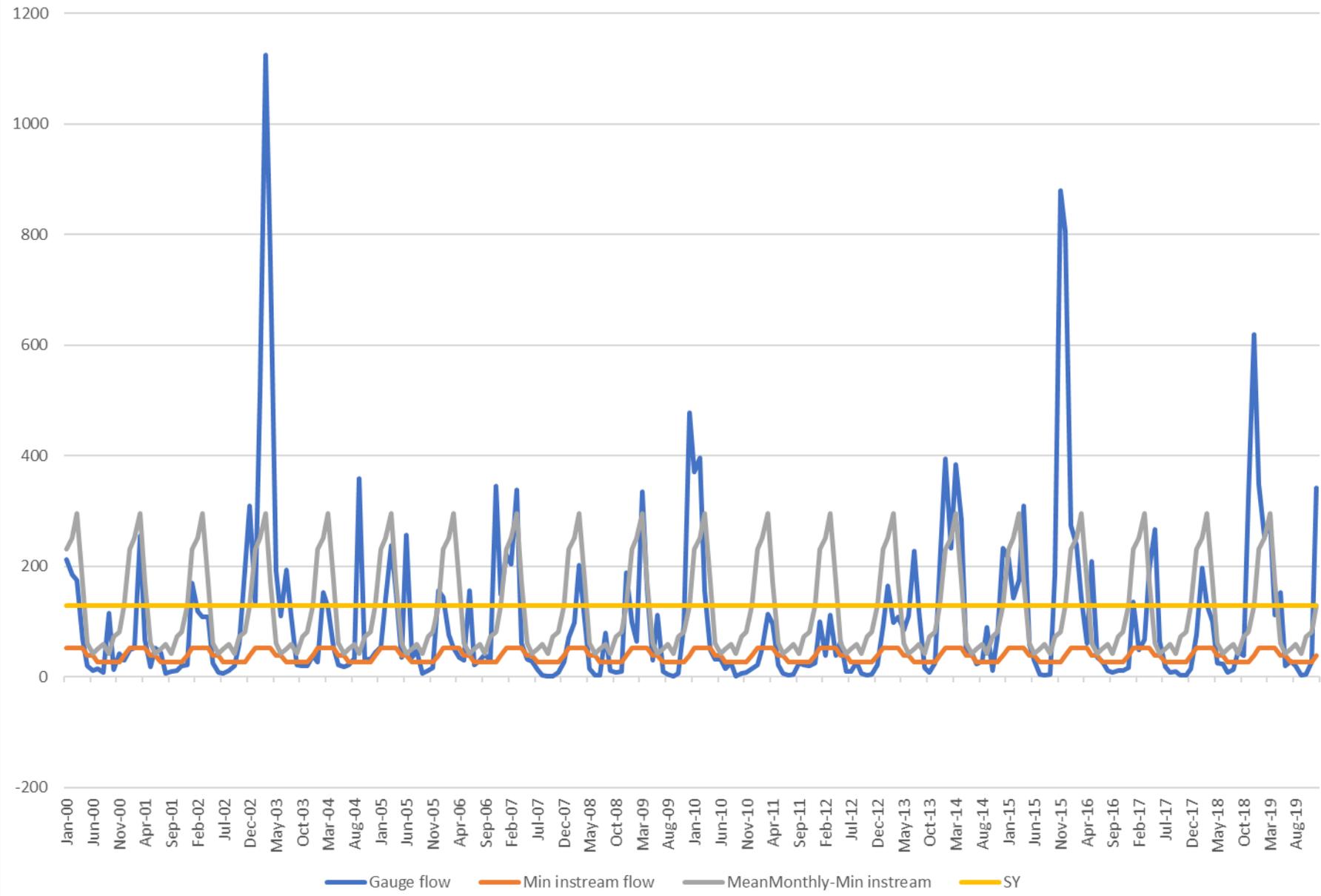
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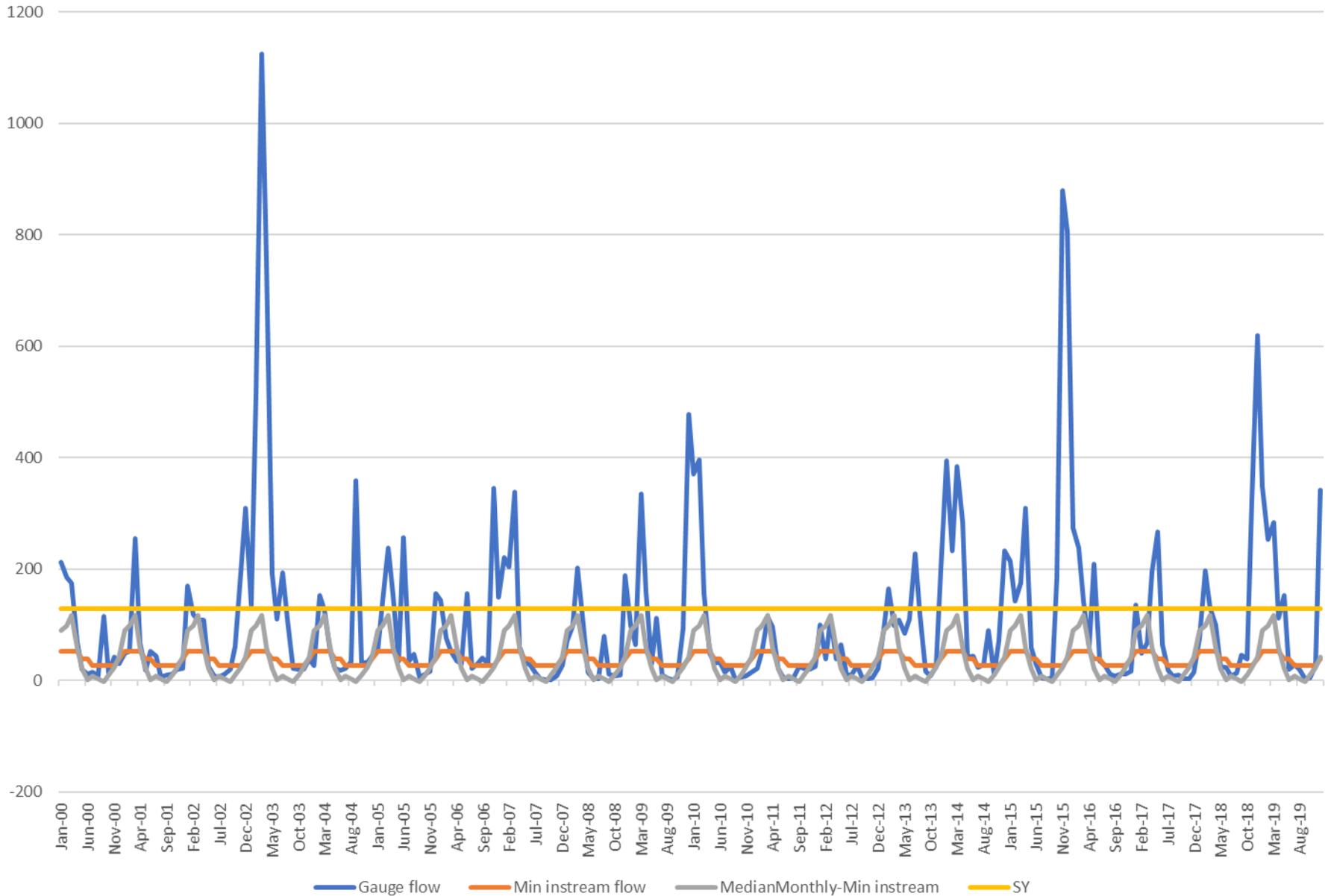
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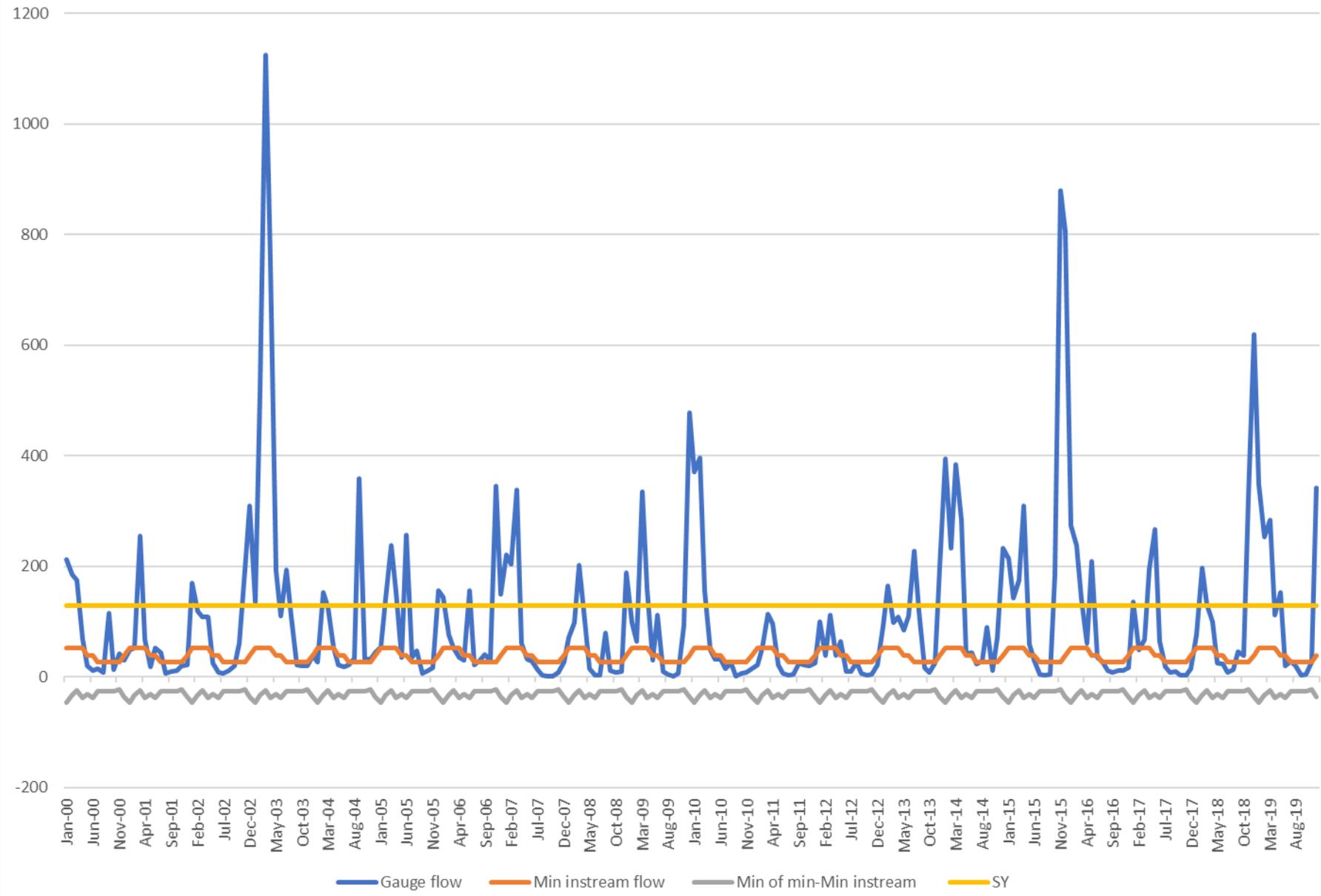
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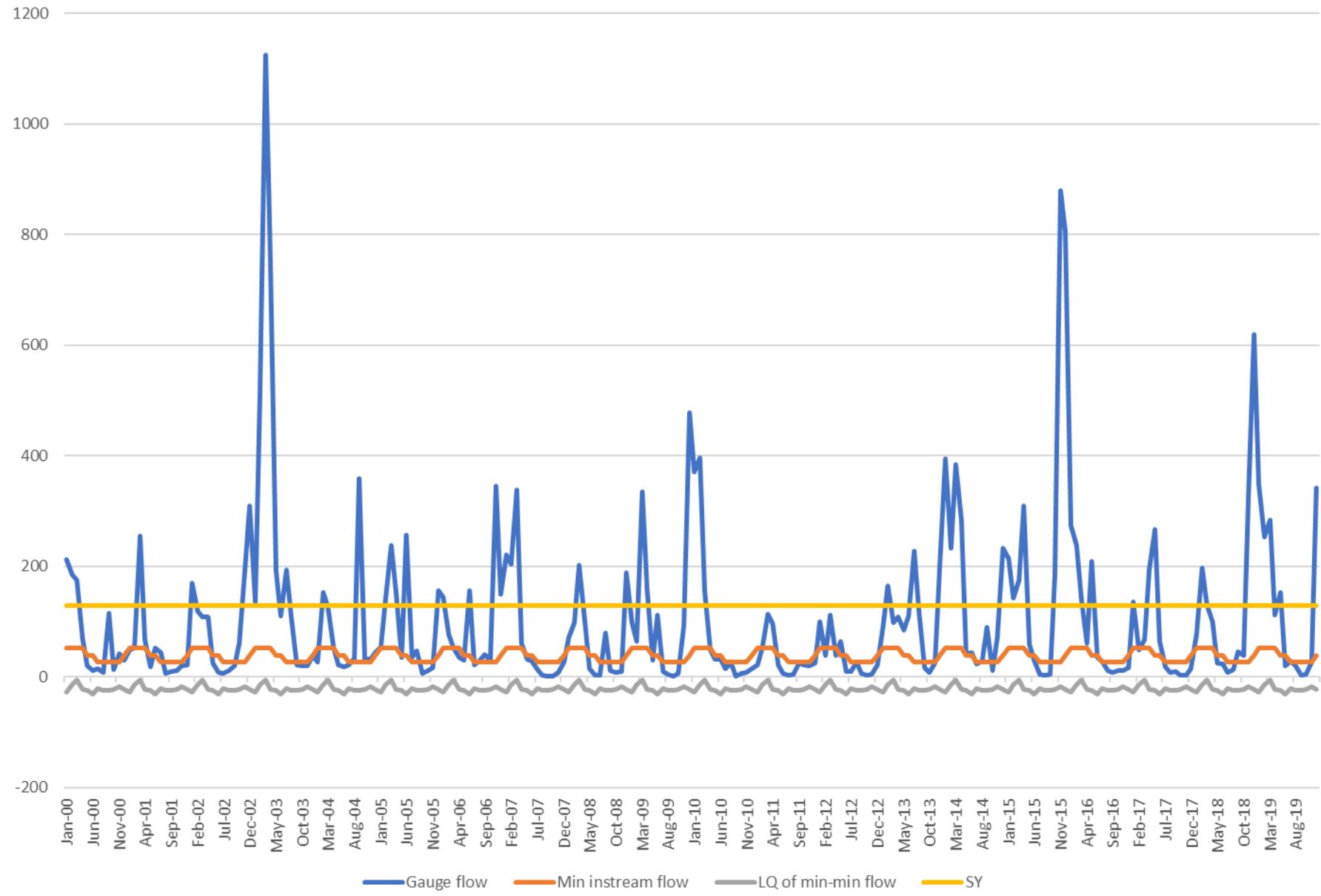
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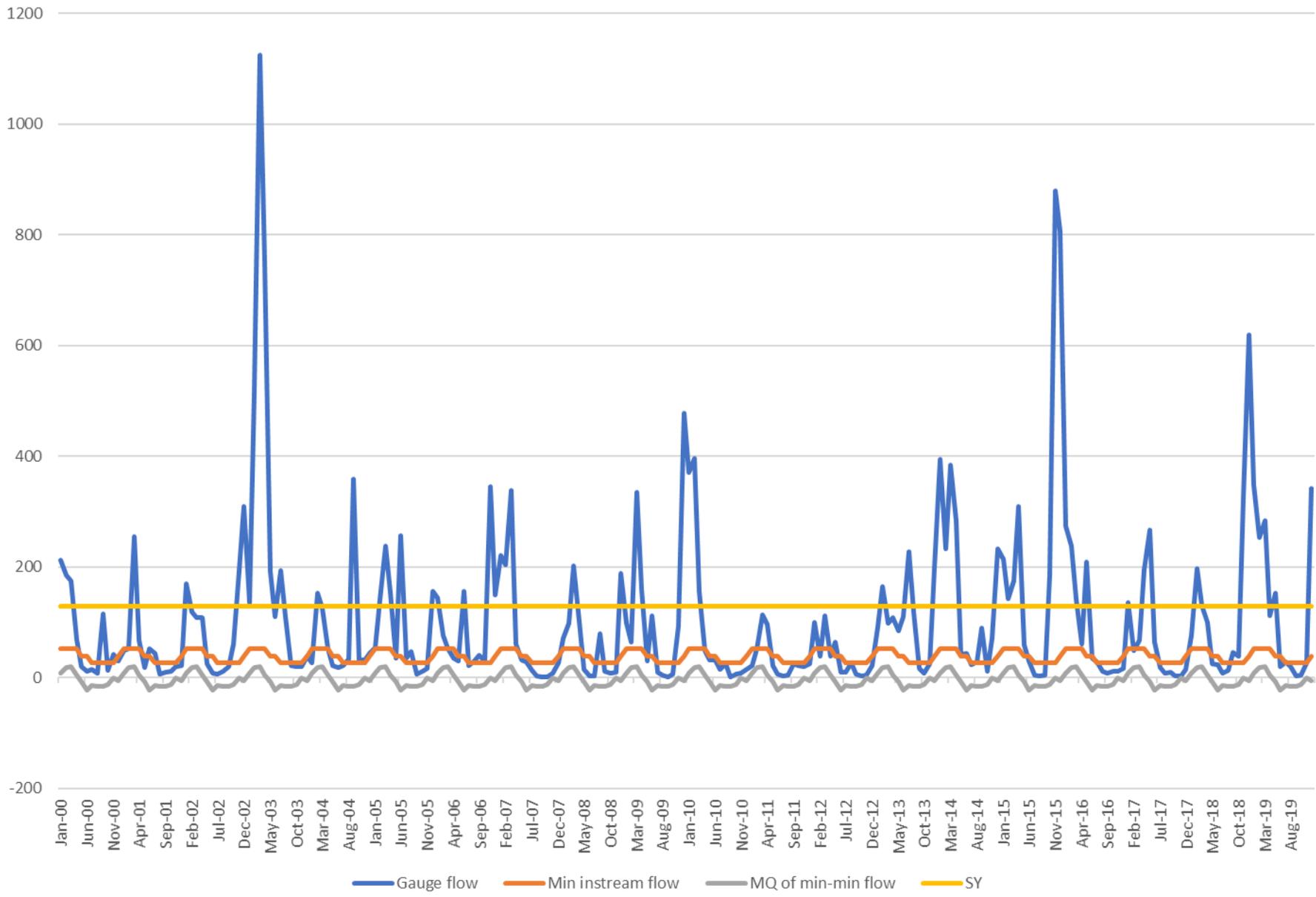
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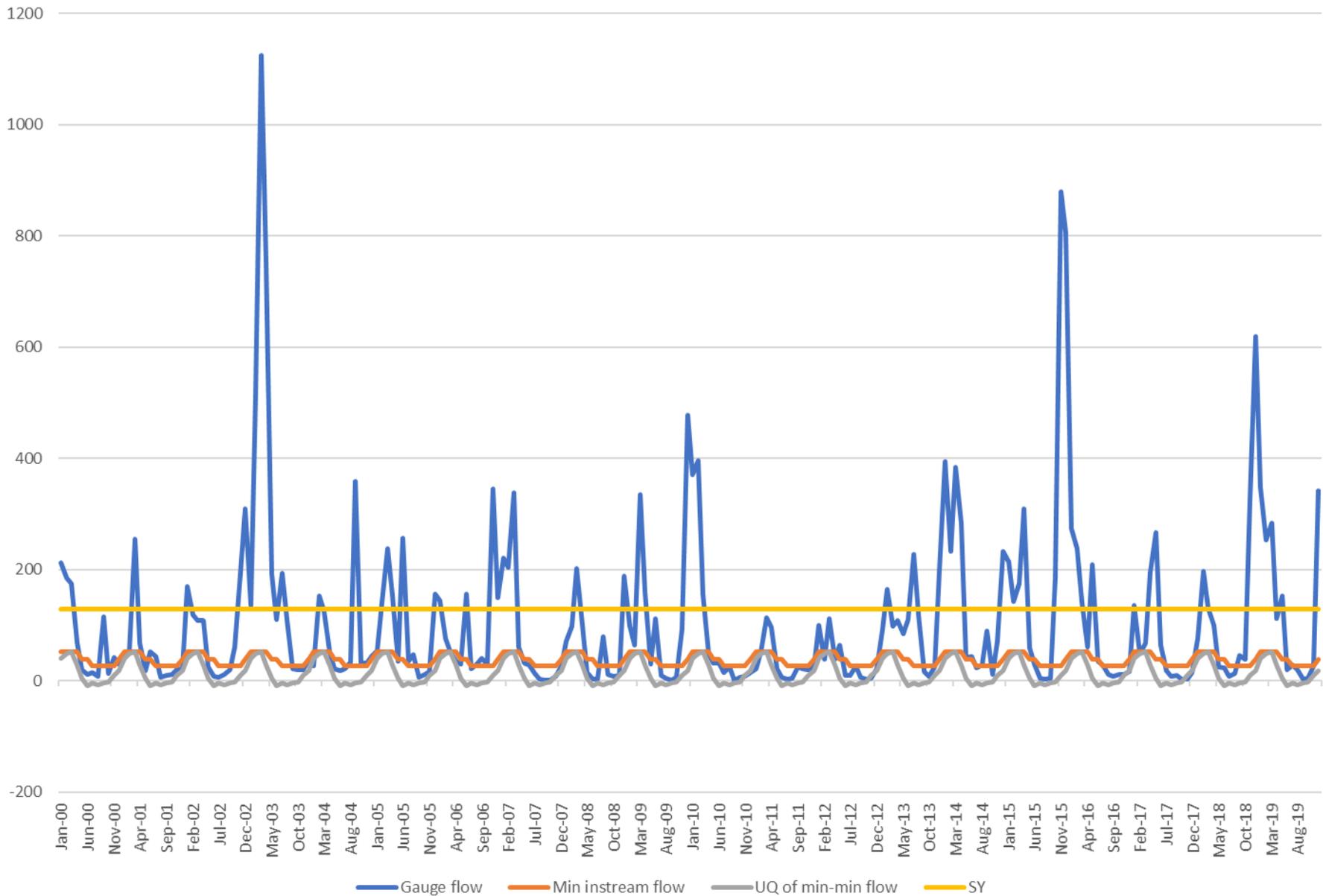
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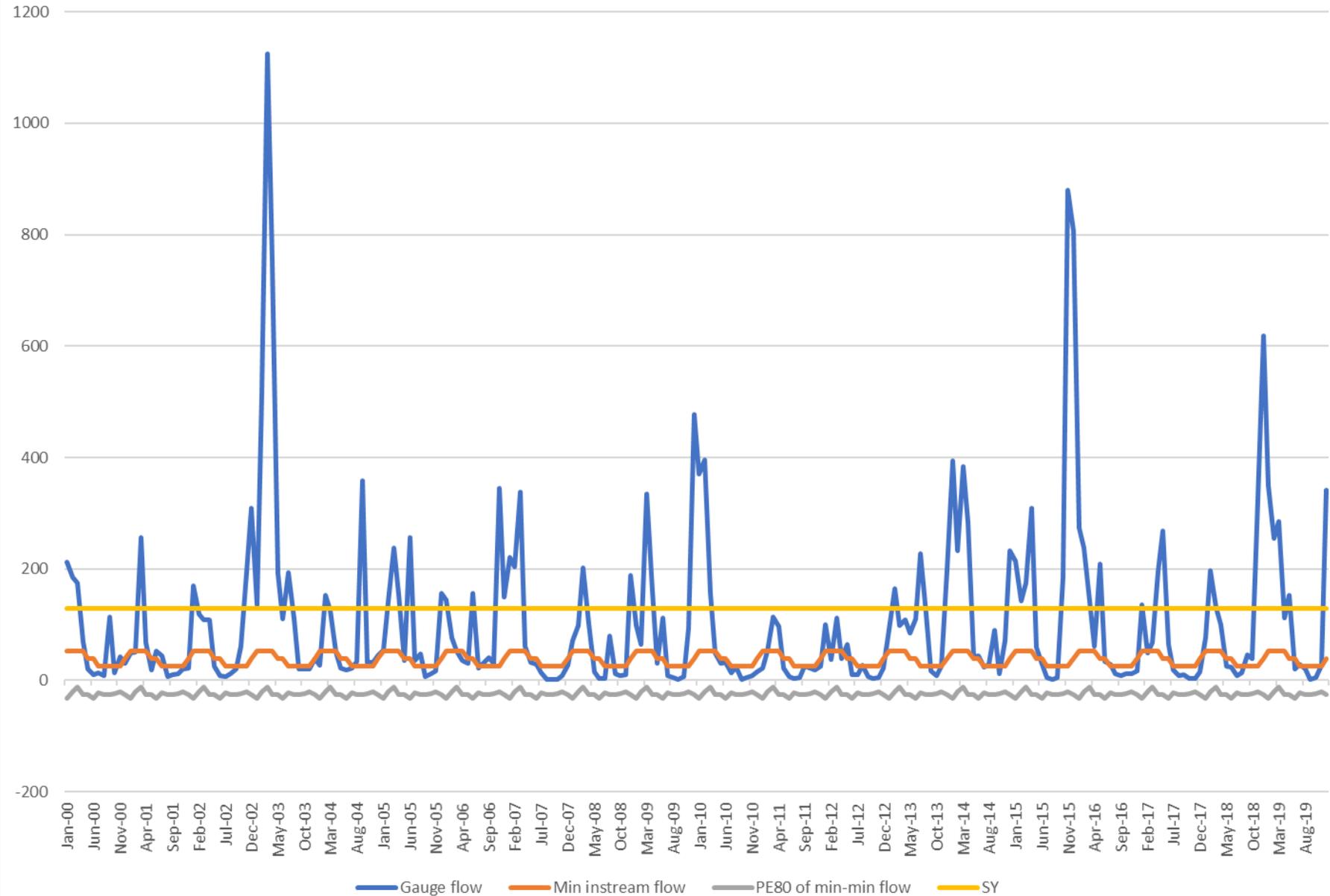
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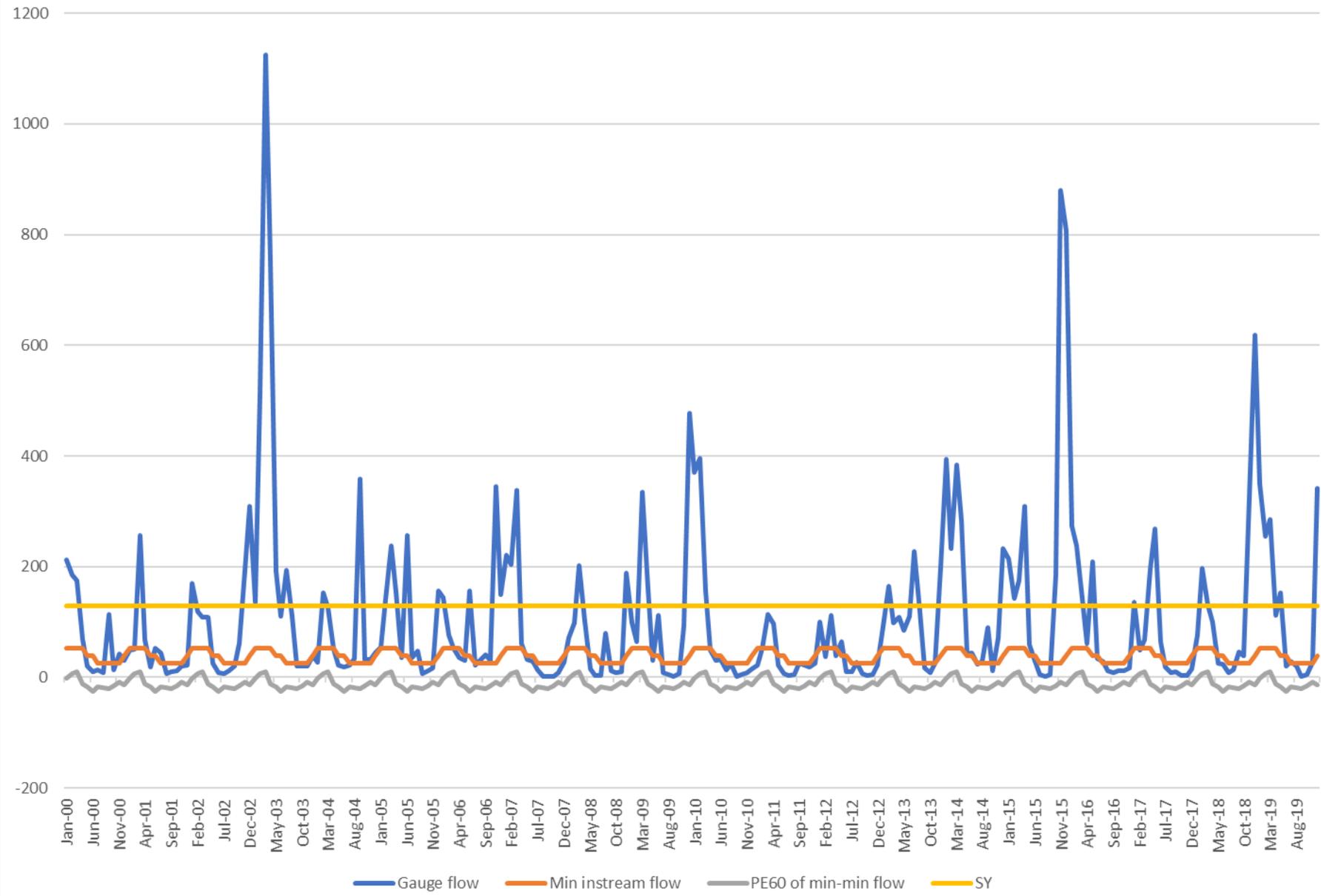
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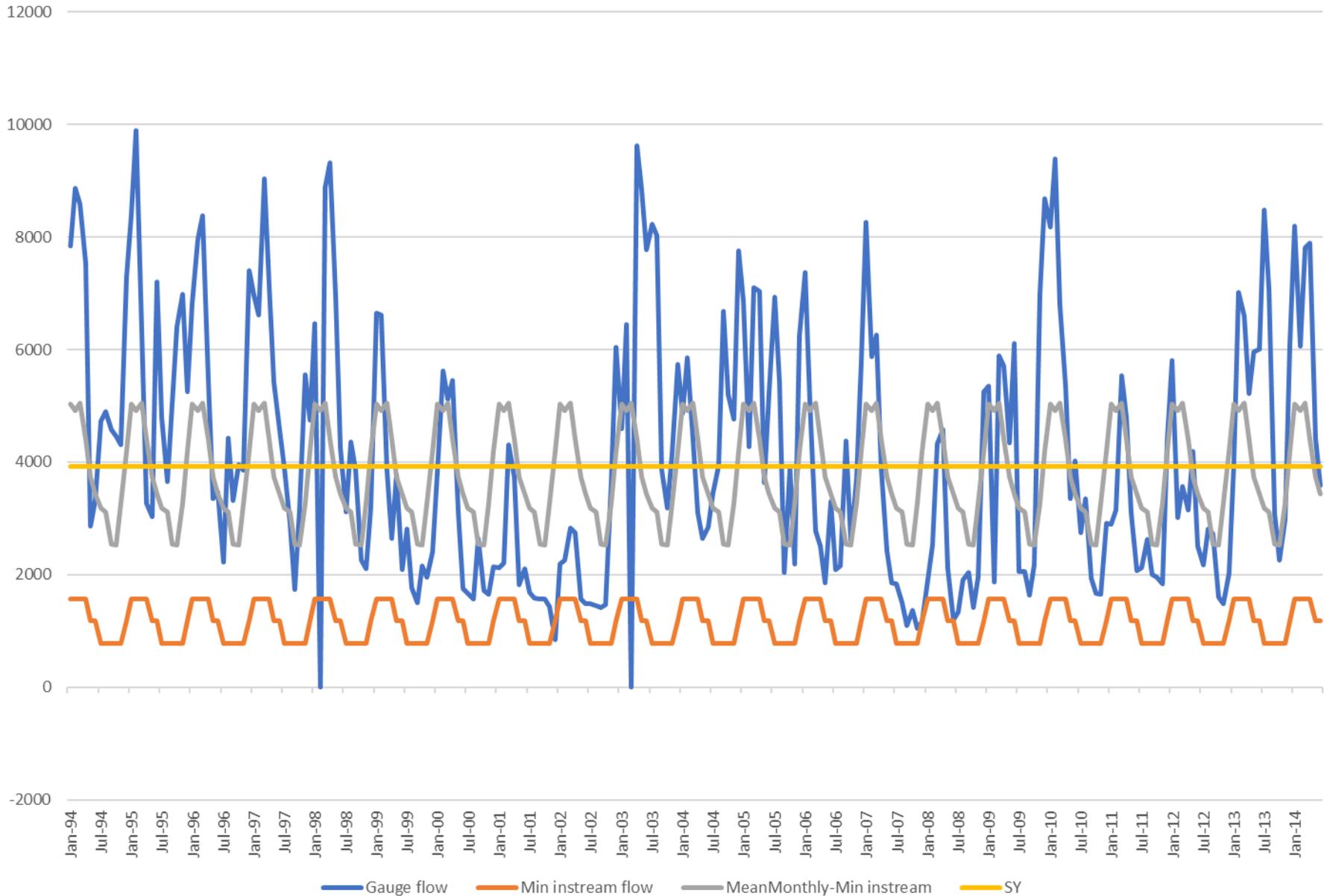
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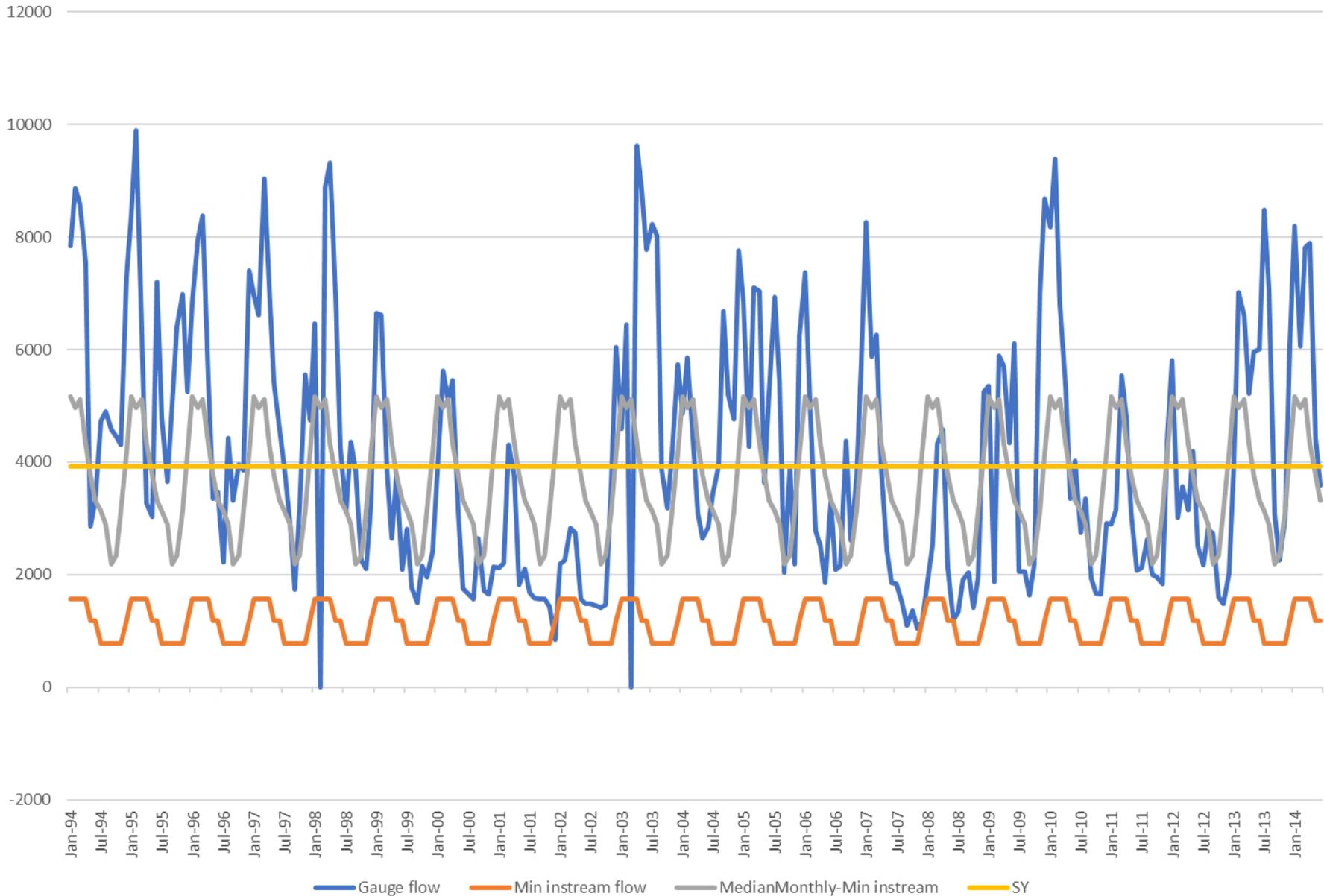
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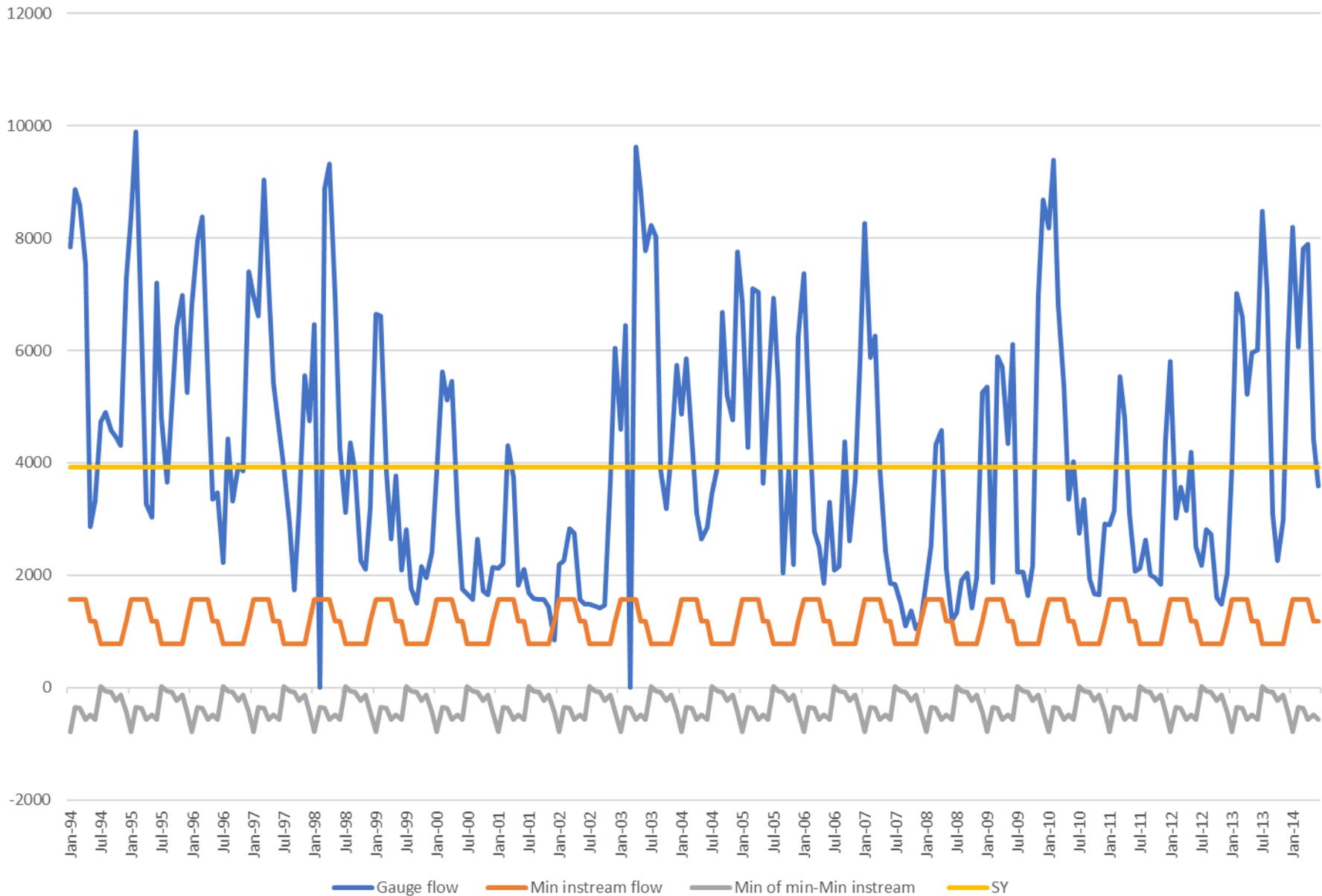
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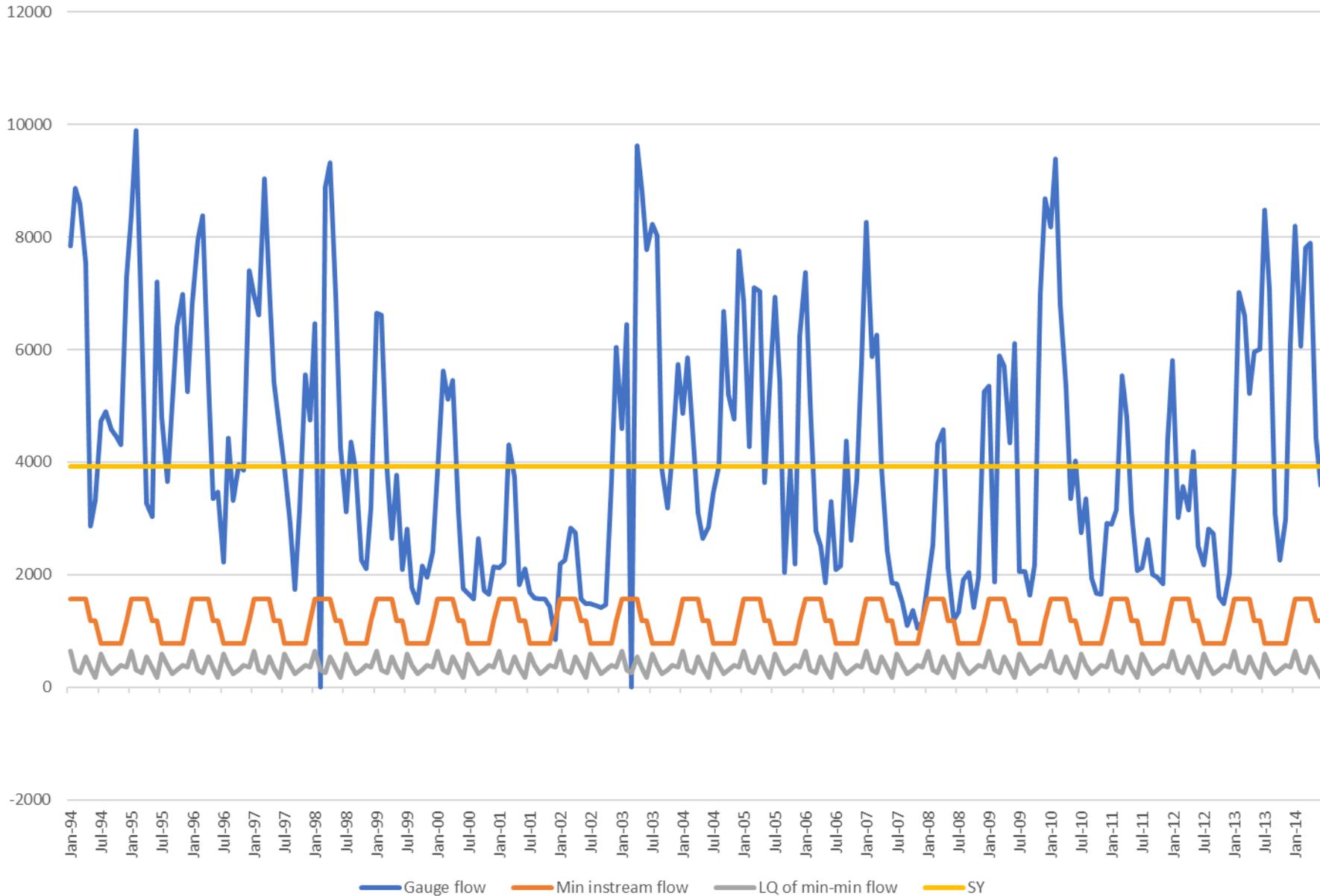
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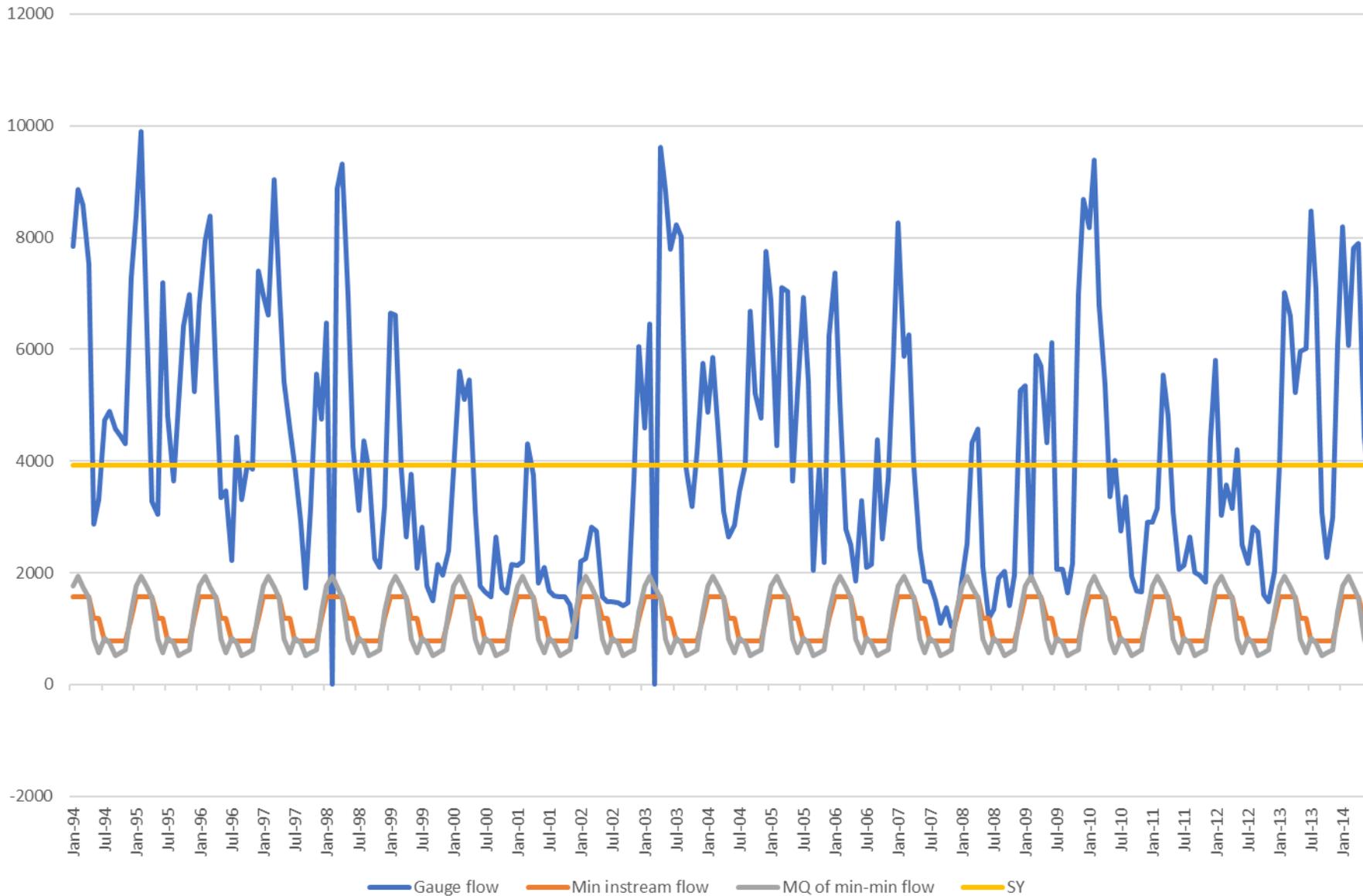
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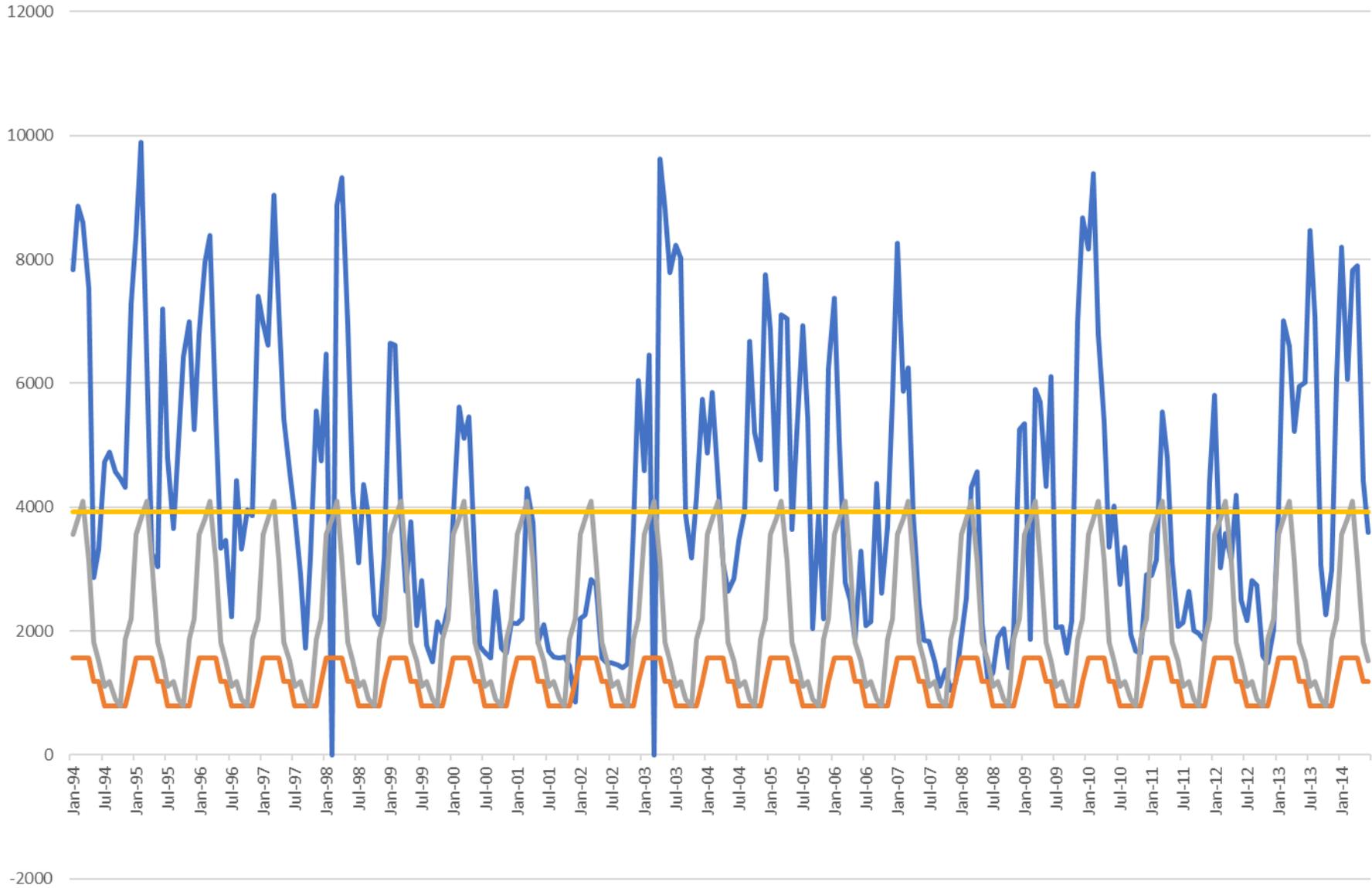
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Alternate SY (USGS 02148315 WATEREE R. BL EASTOVER, SC)

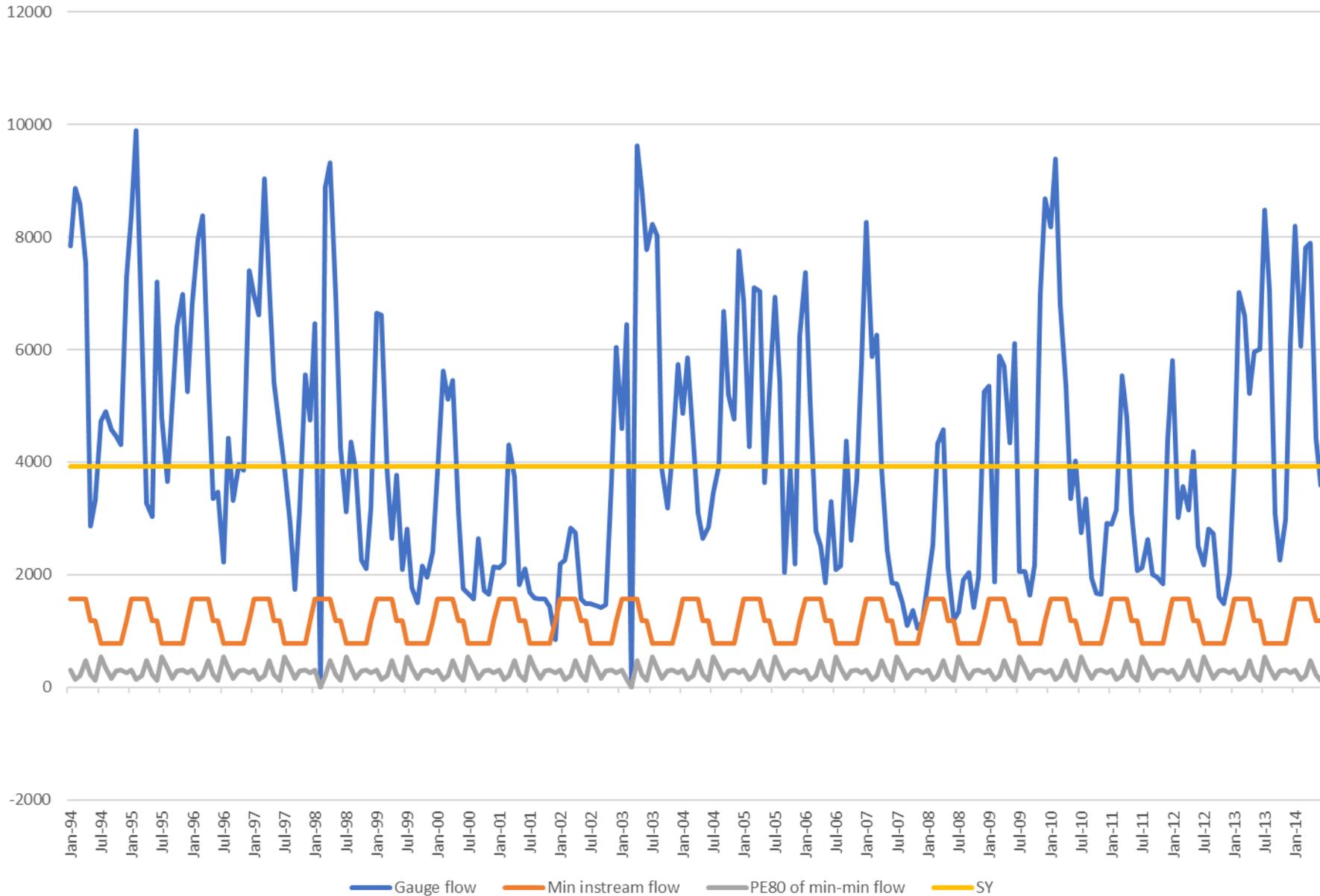


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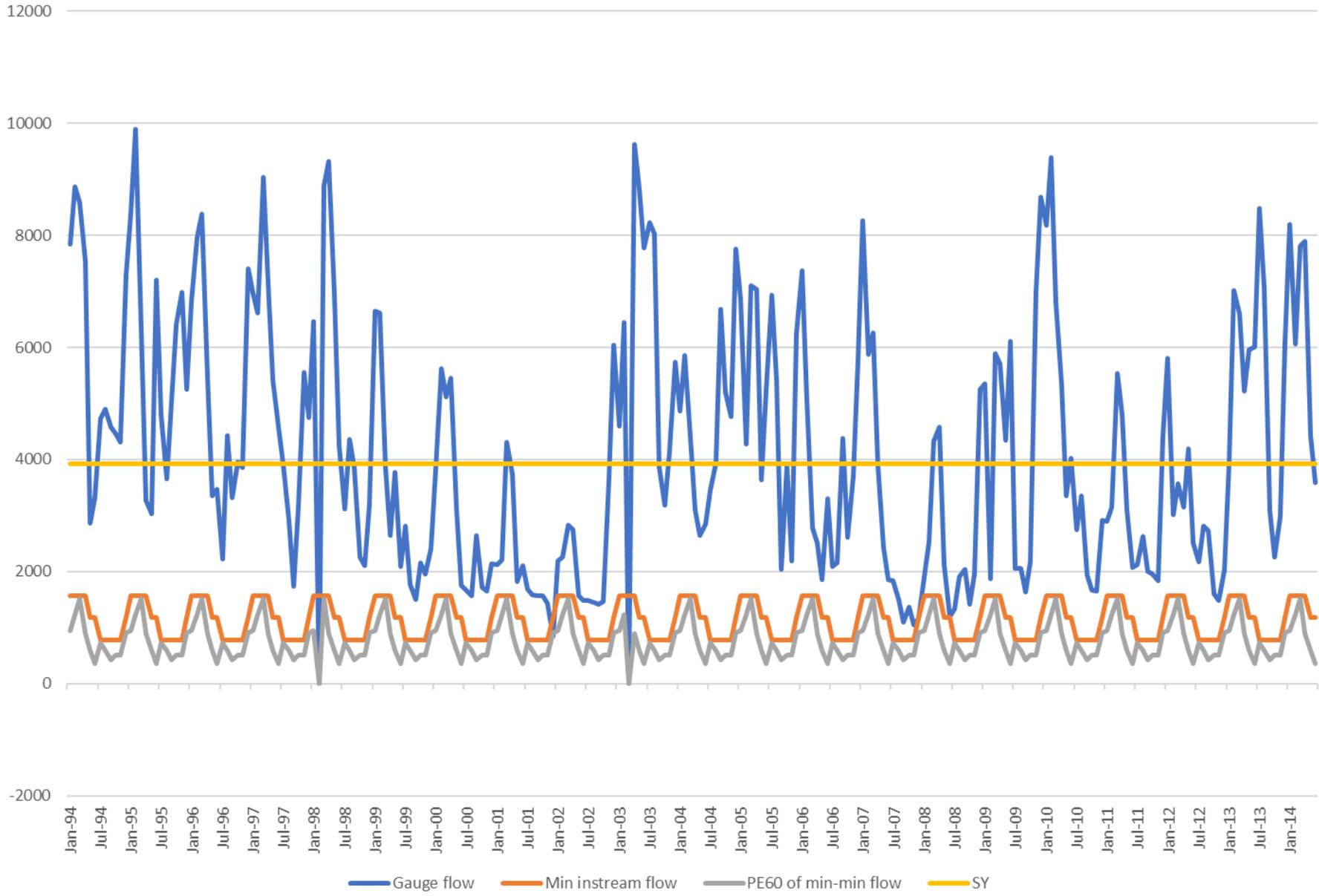


— Gauge flow — Min instream flow — UQ of min-min flow — SY

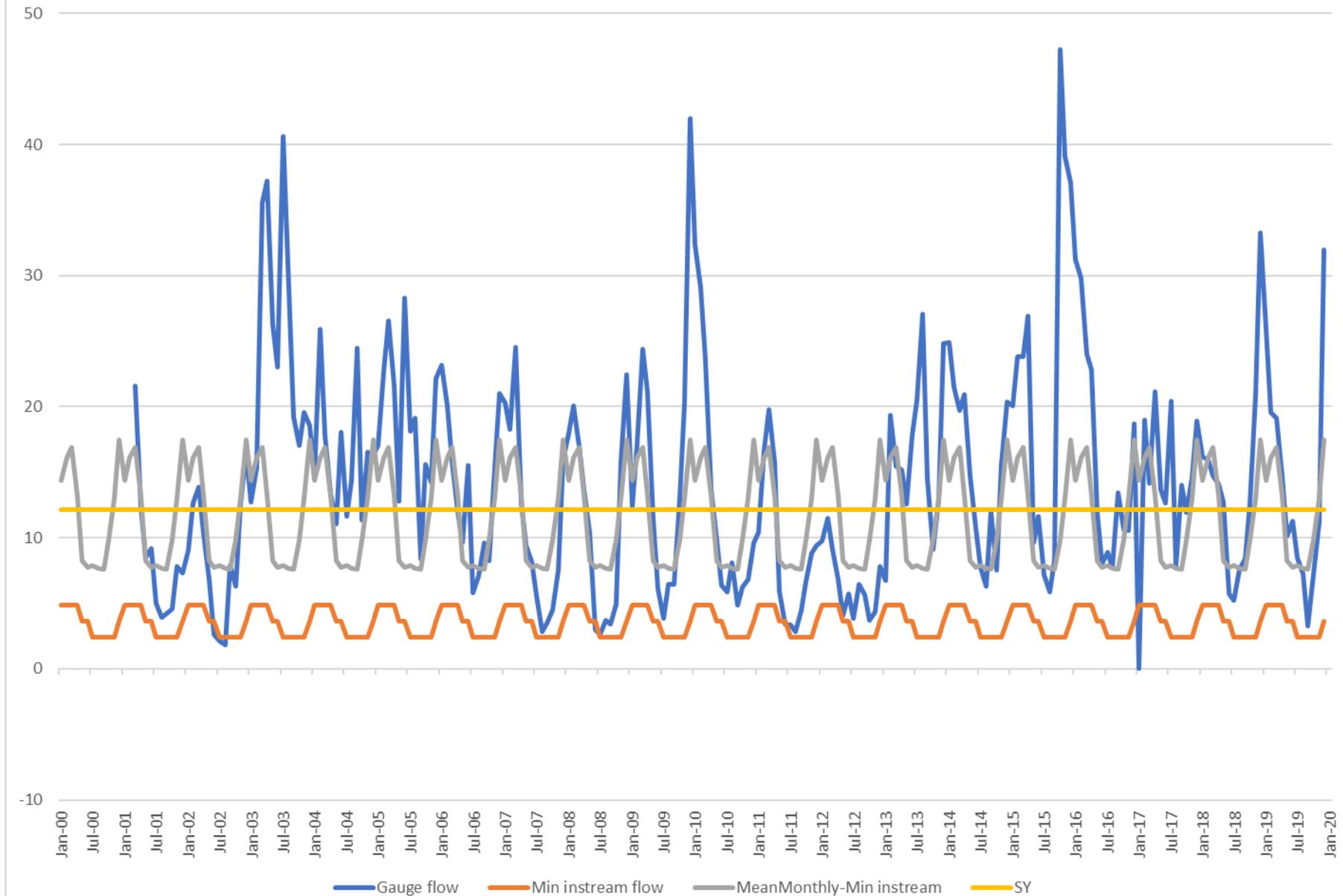
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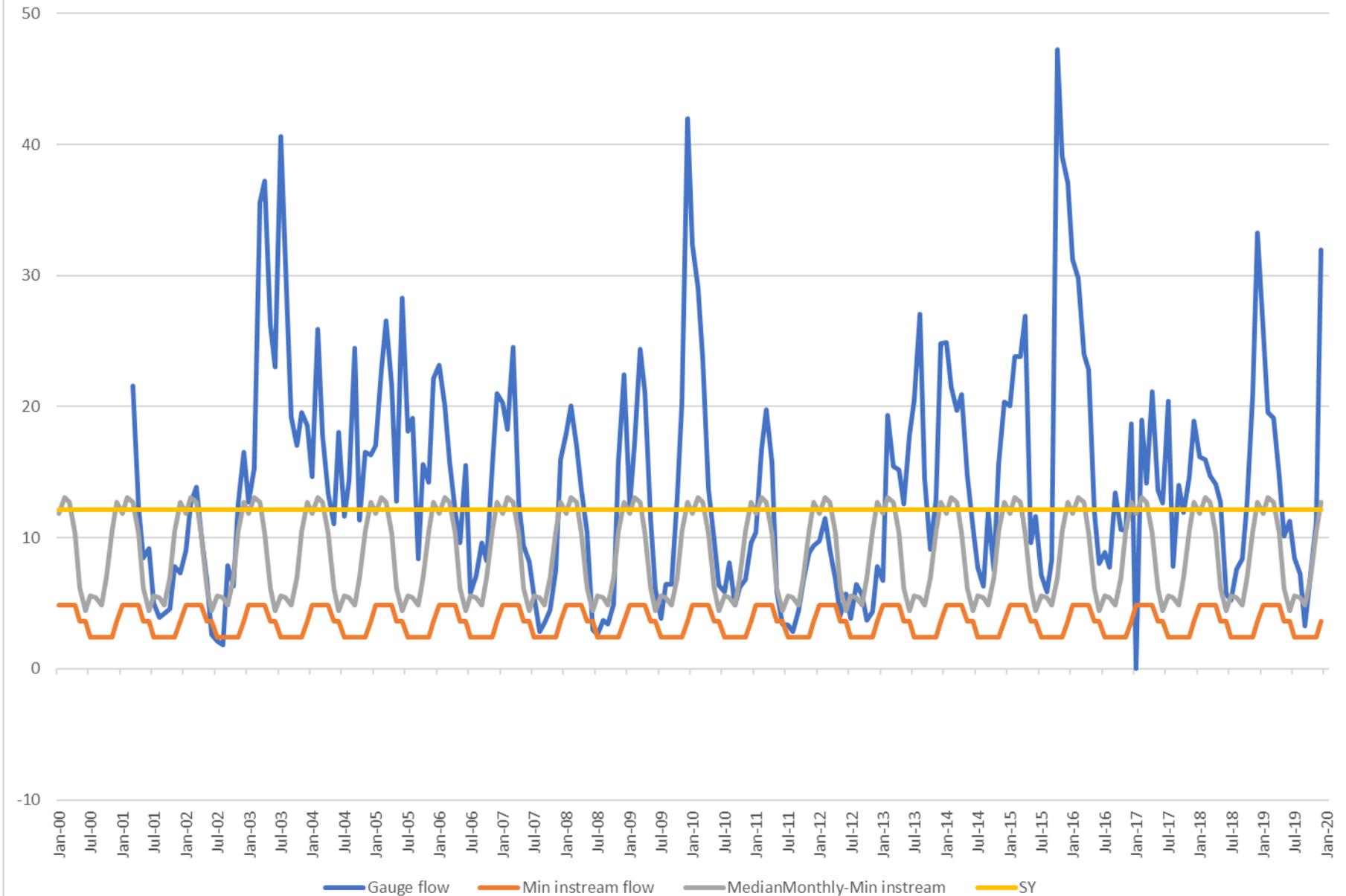
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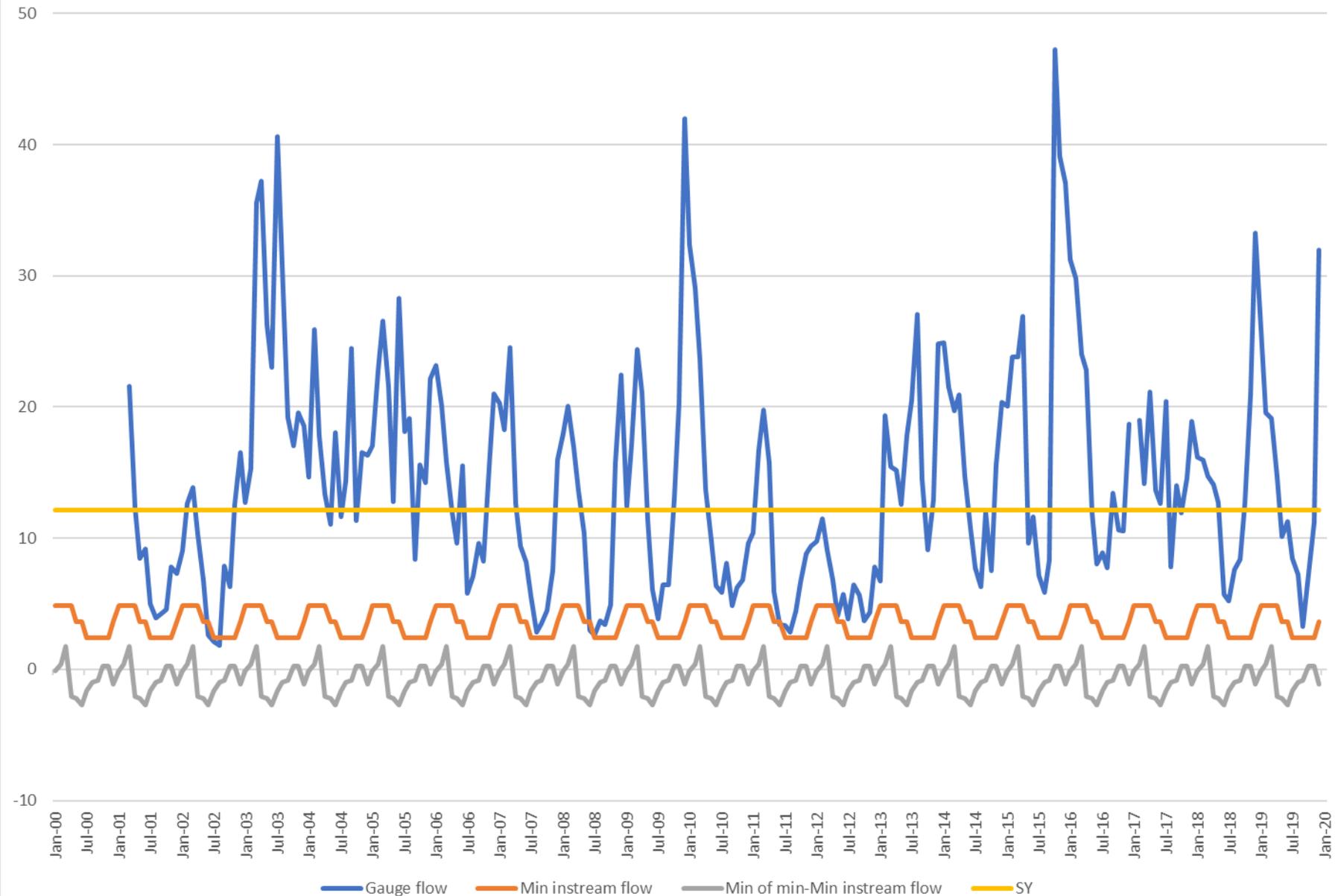
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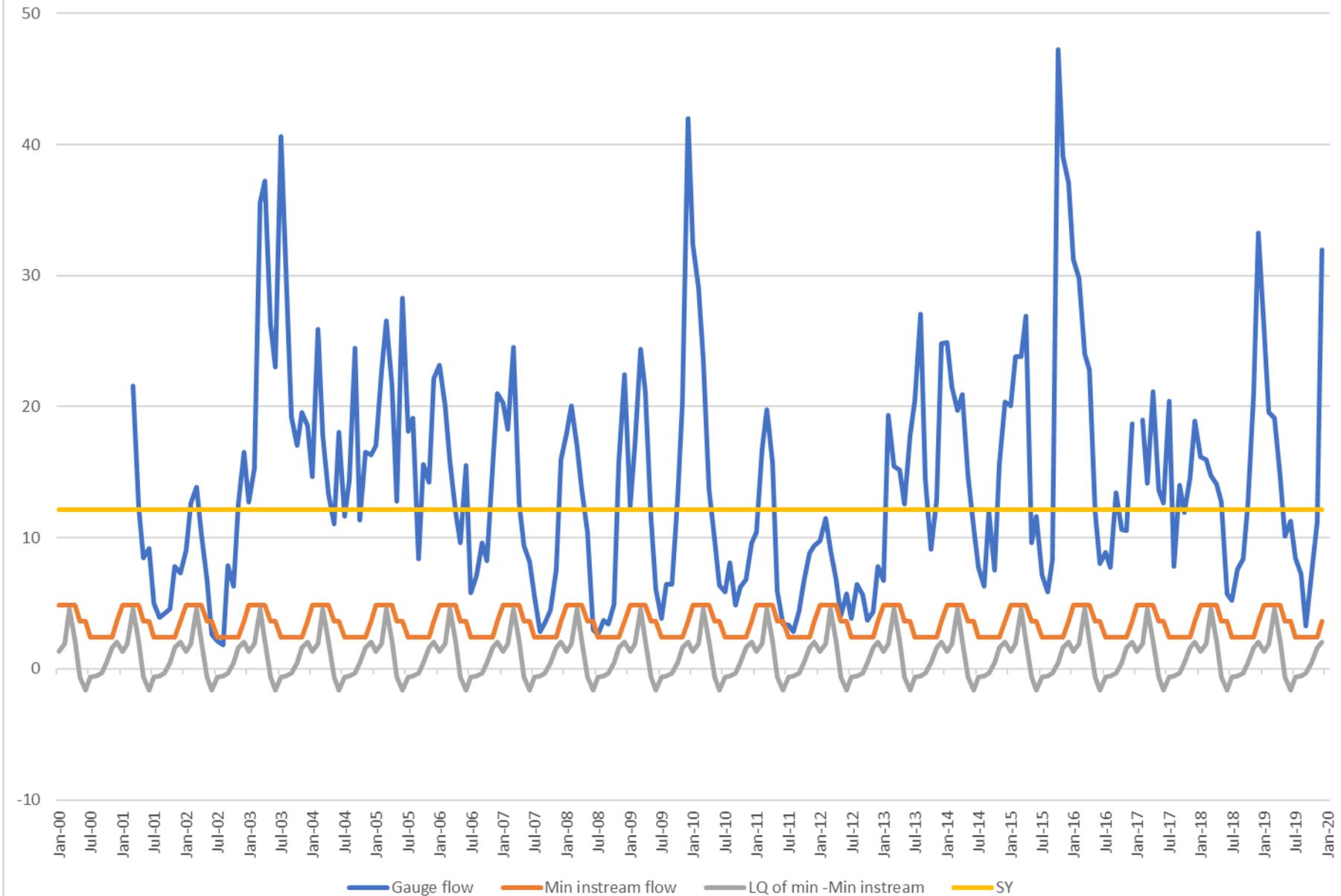
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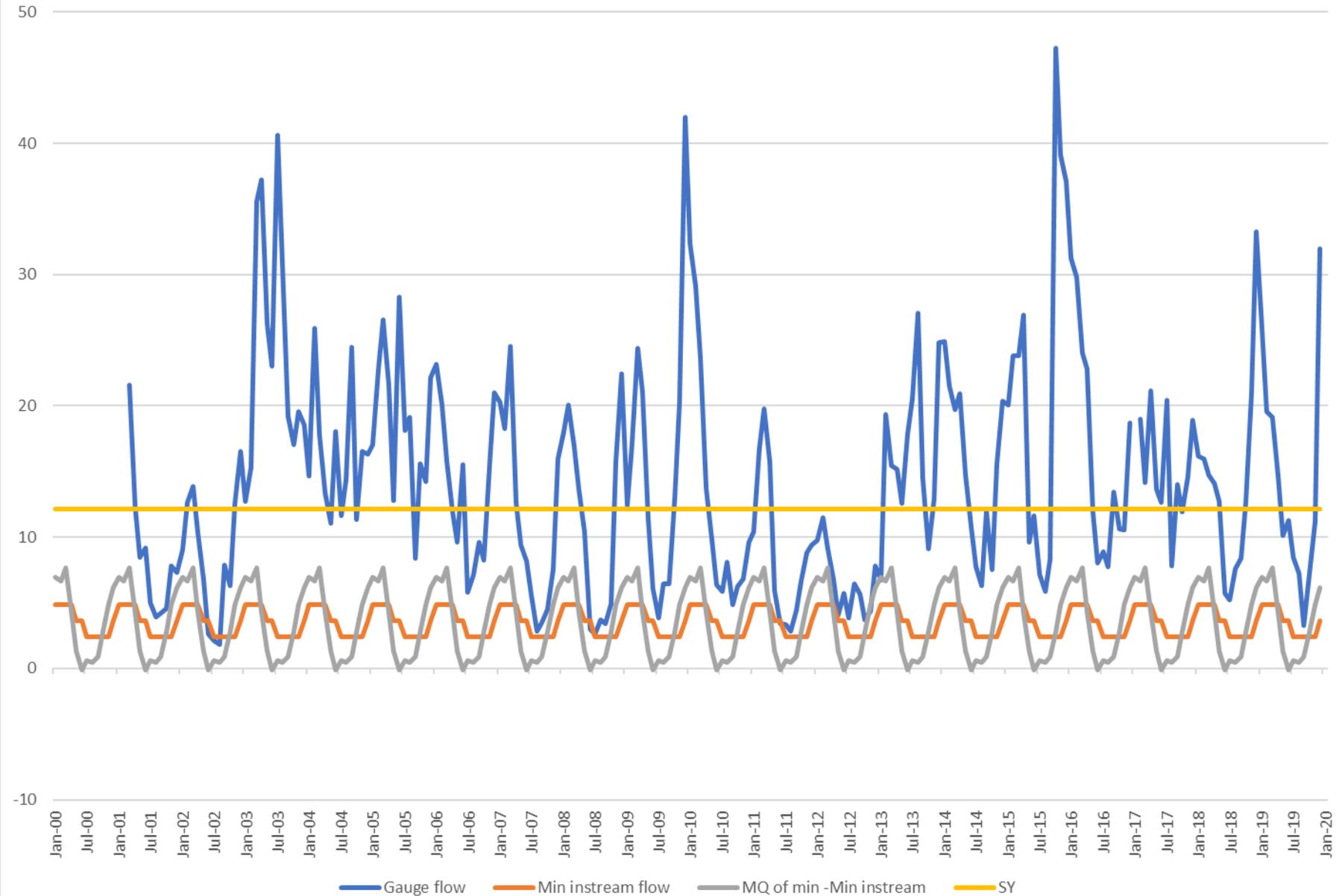
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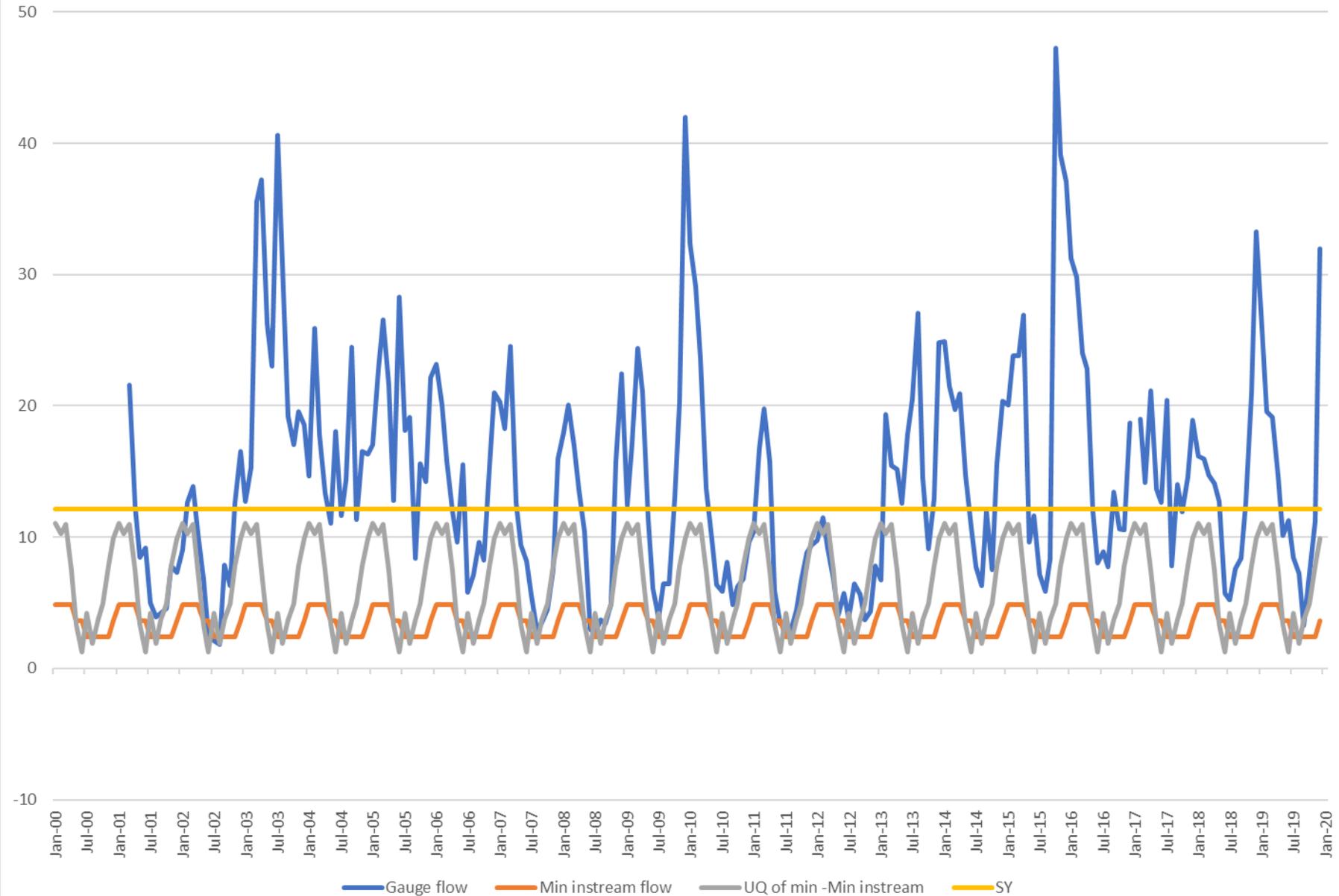
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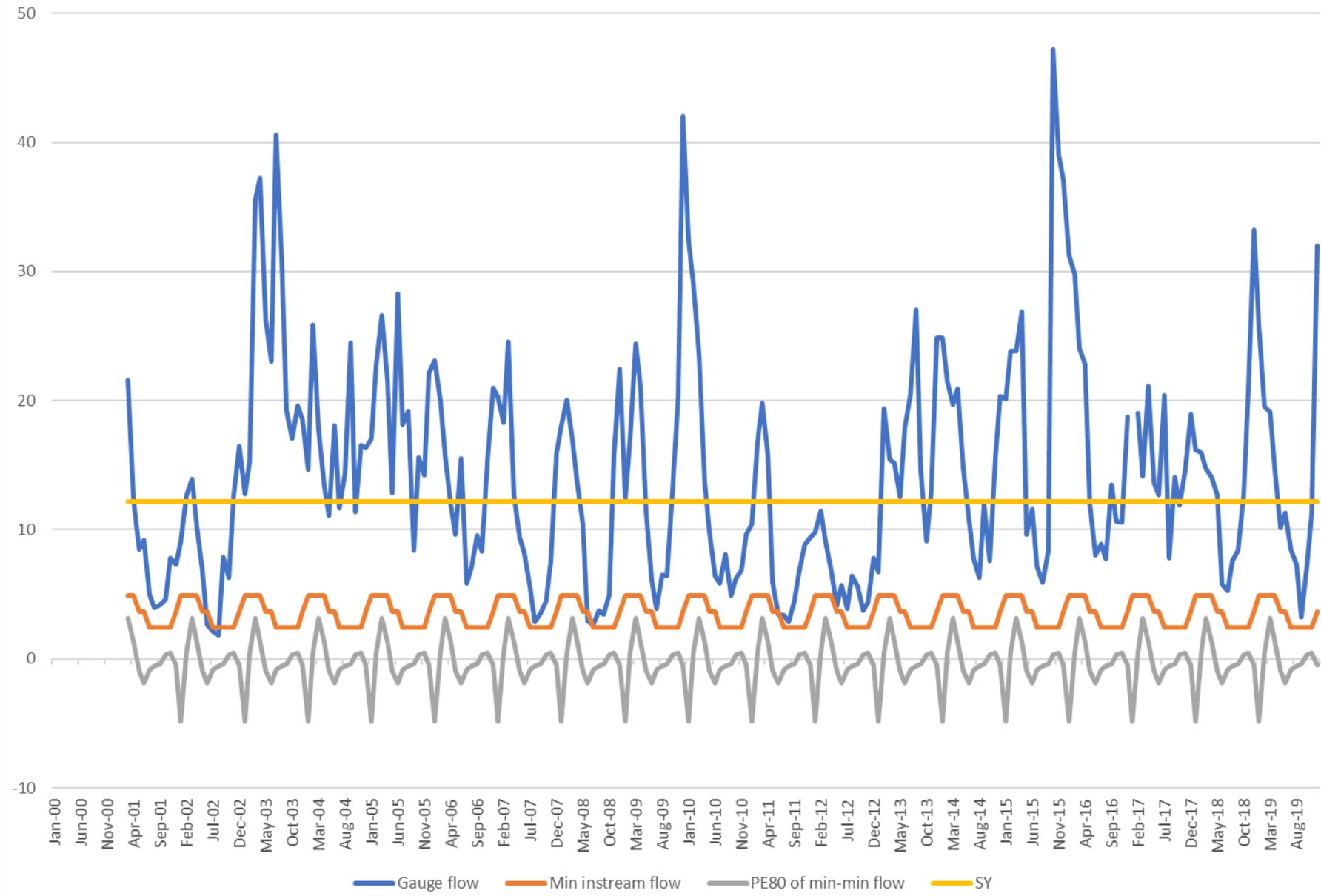
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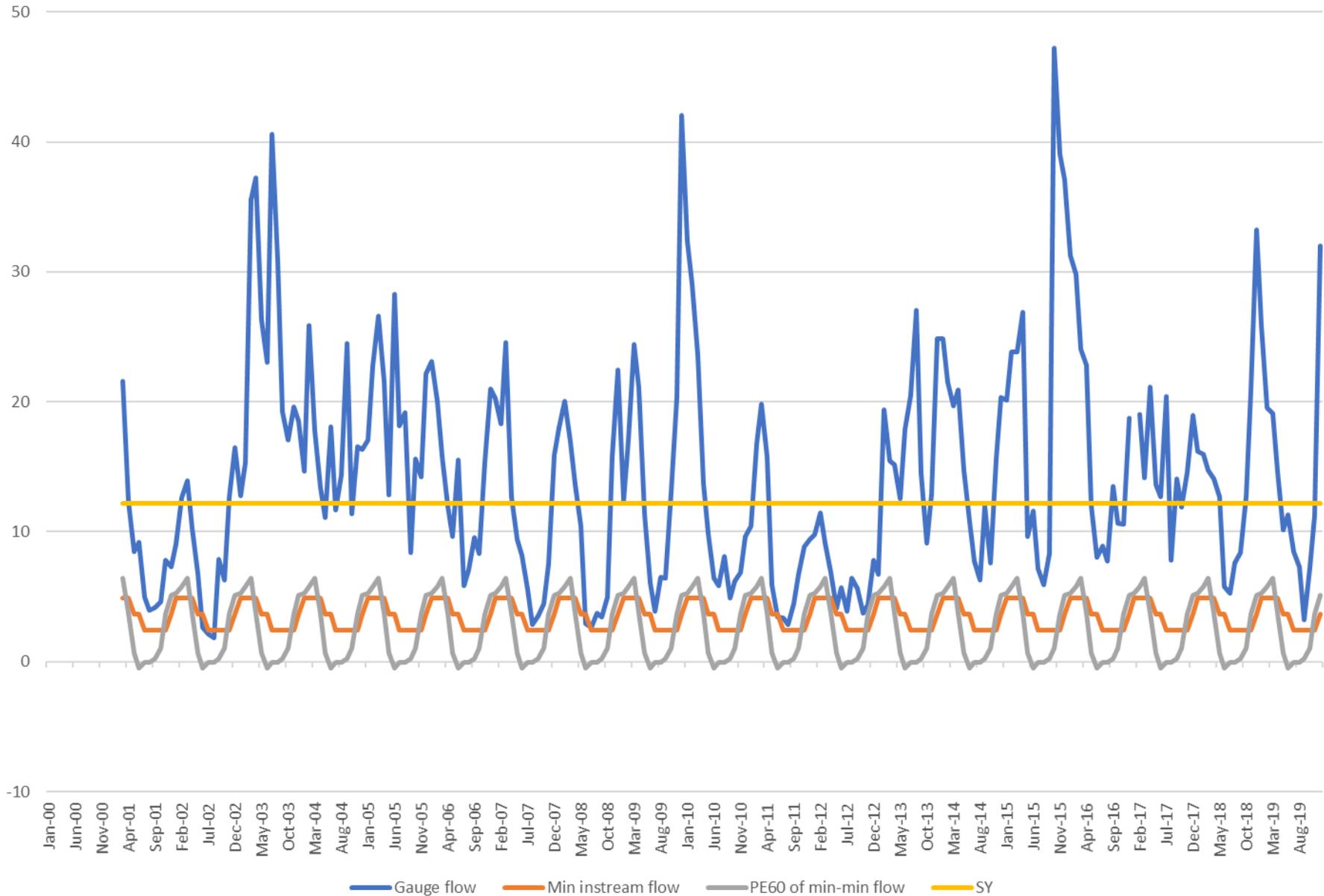
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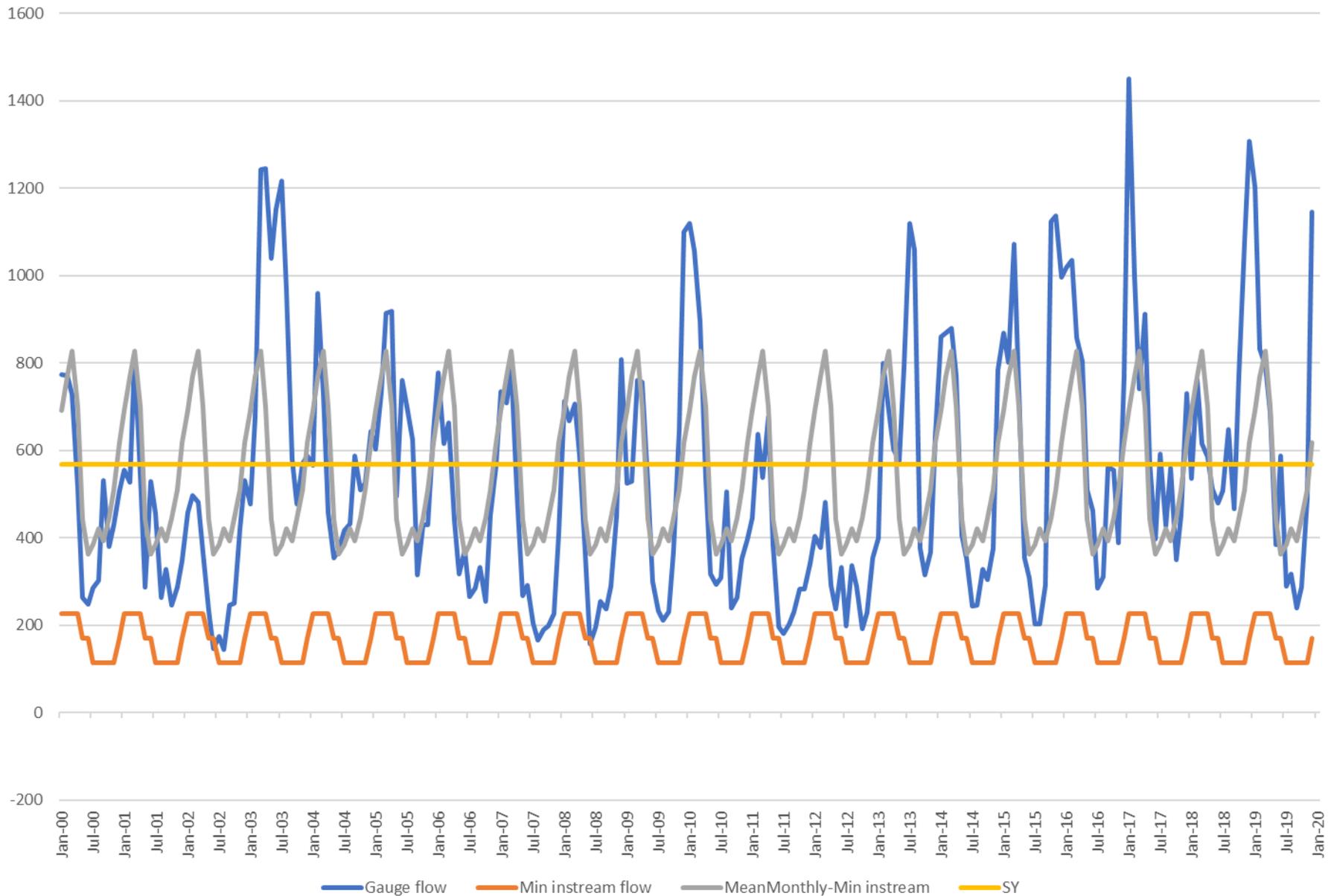
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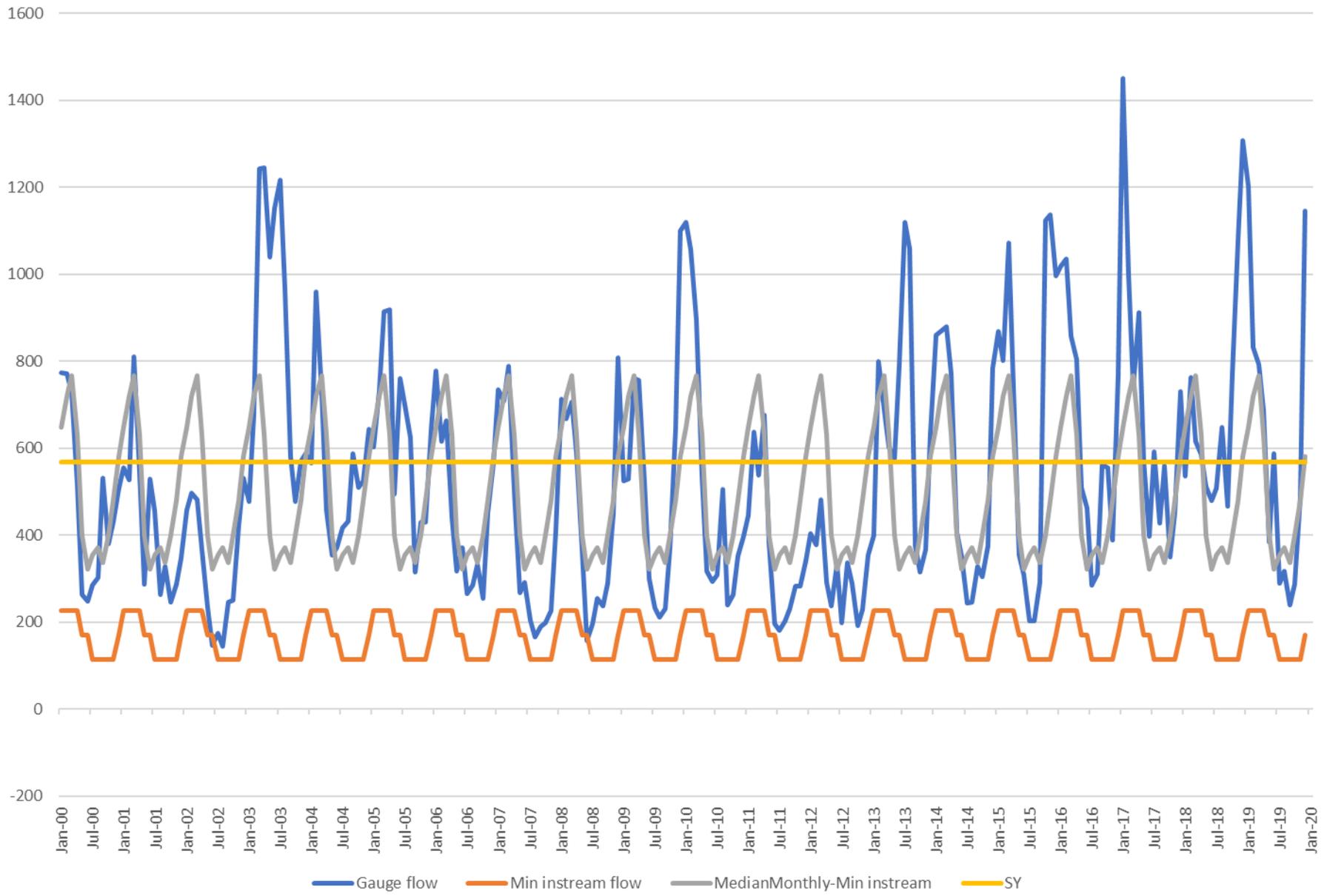
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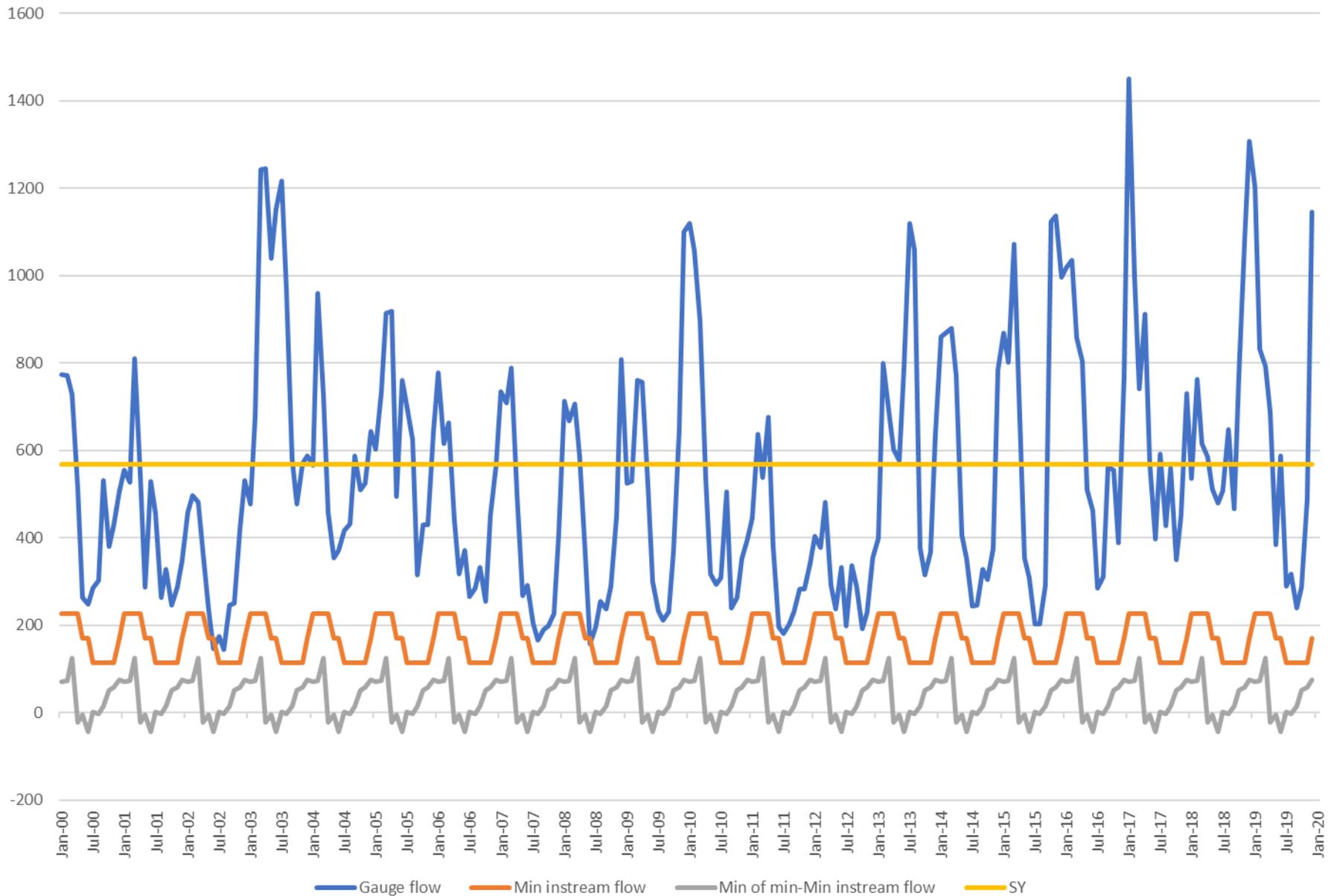
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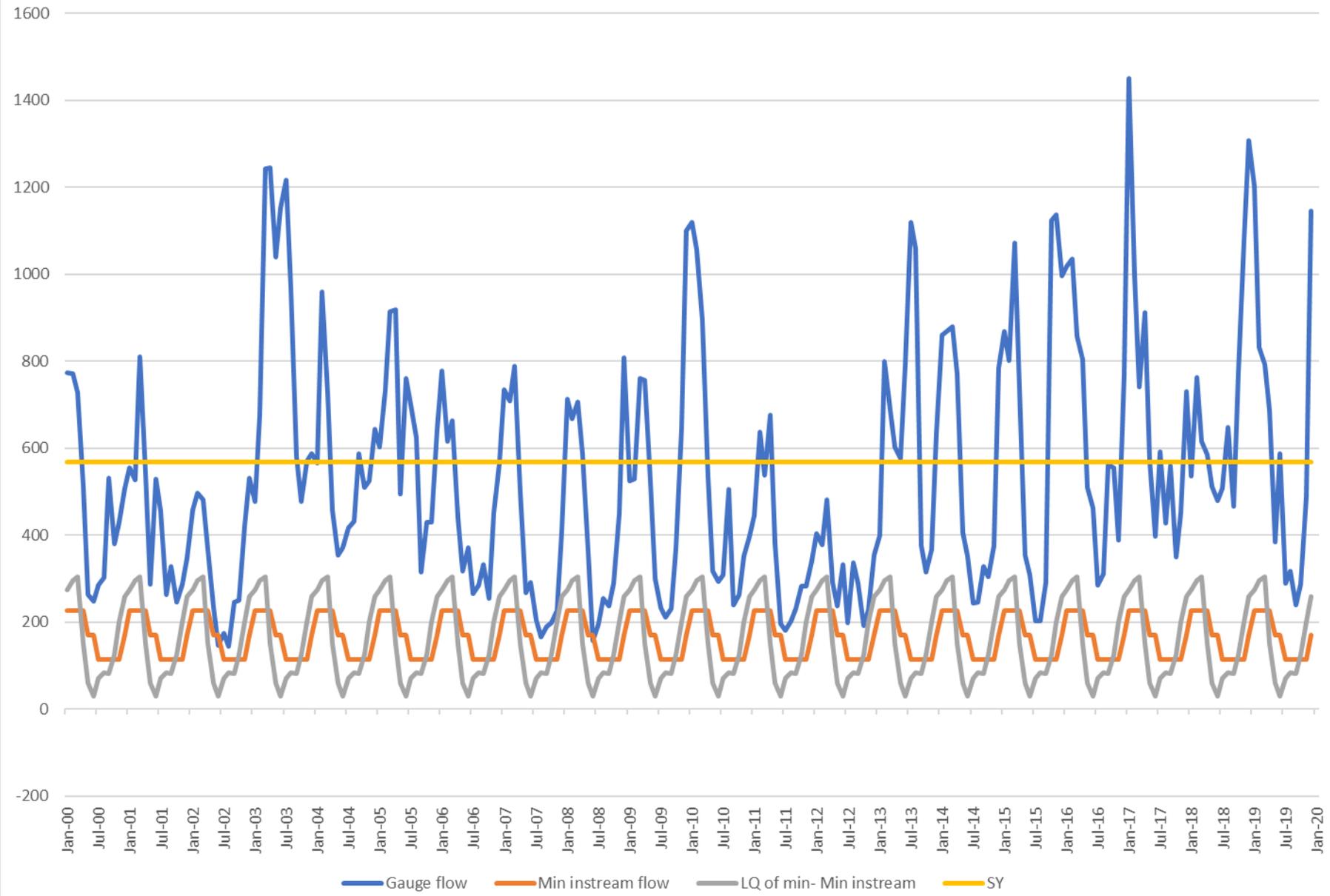
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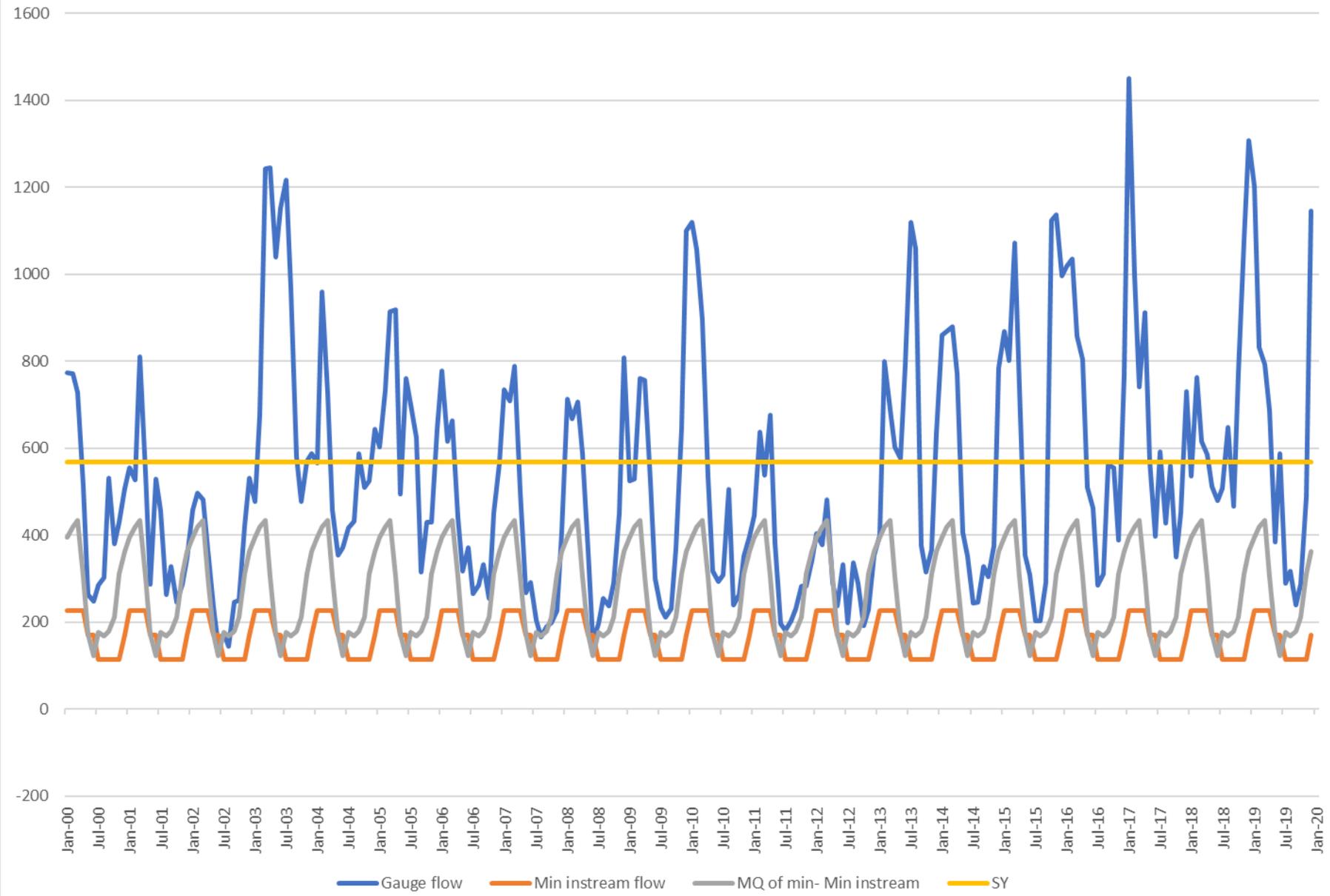
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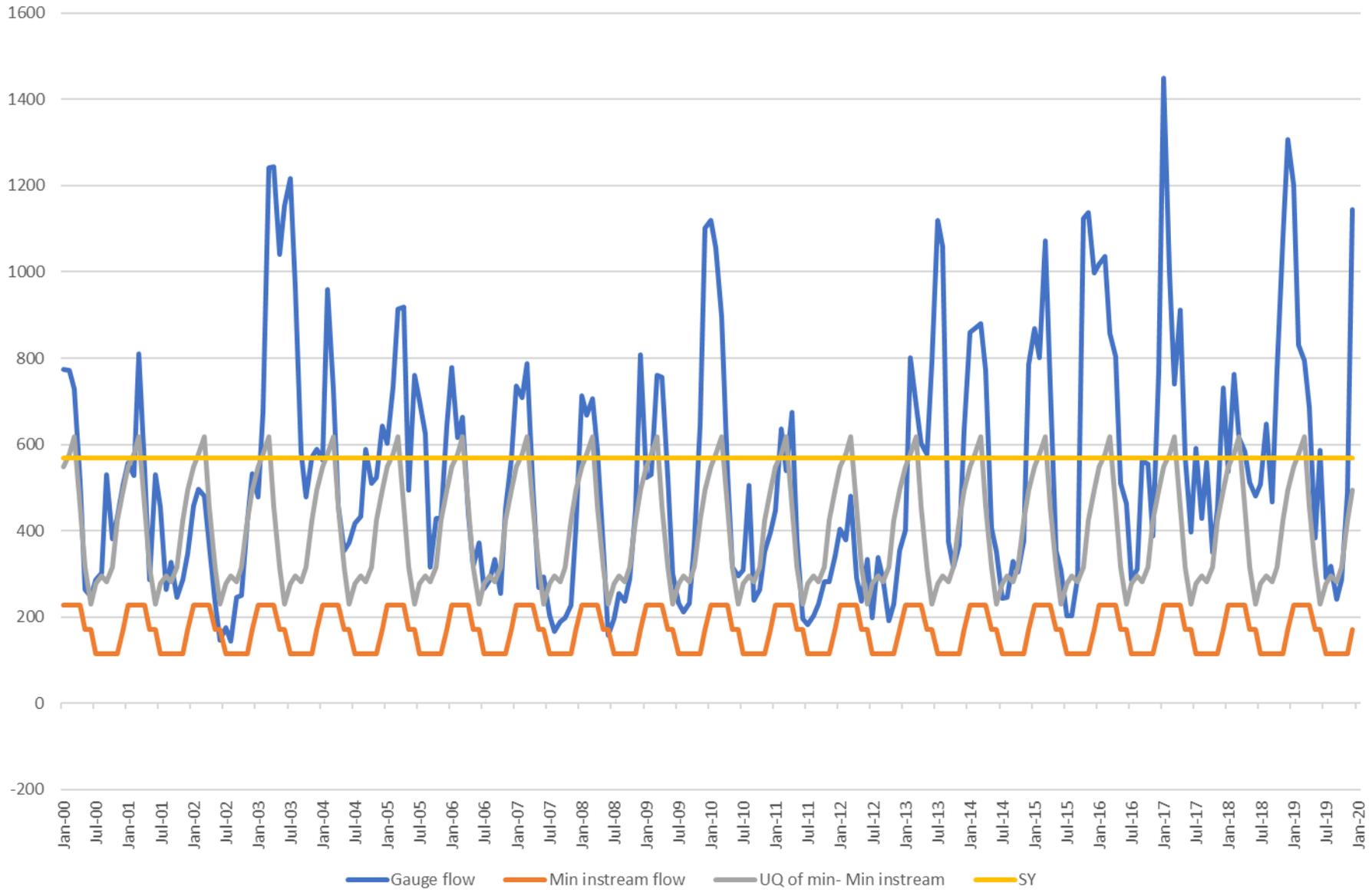
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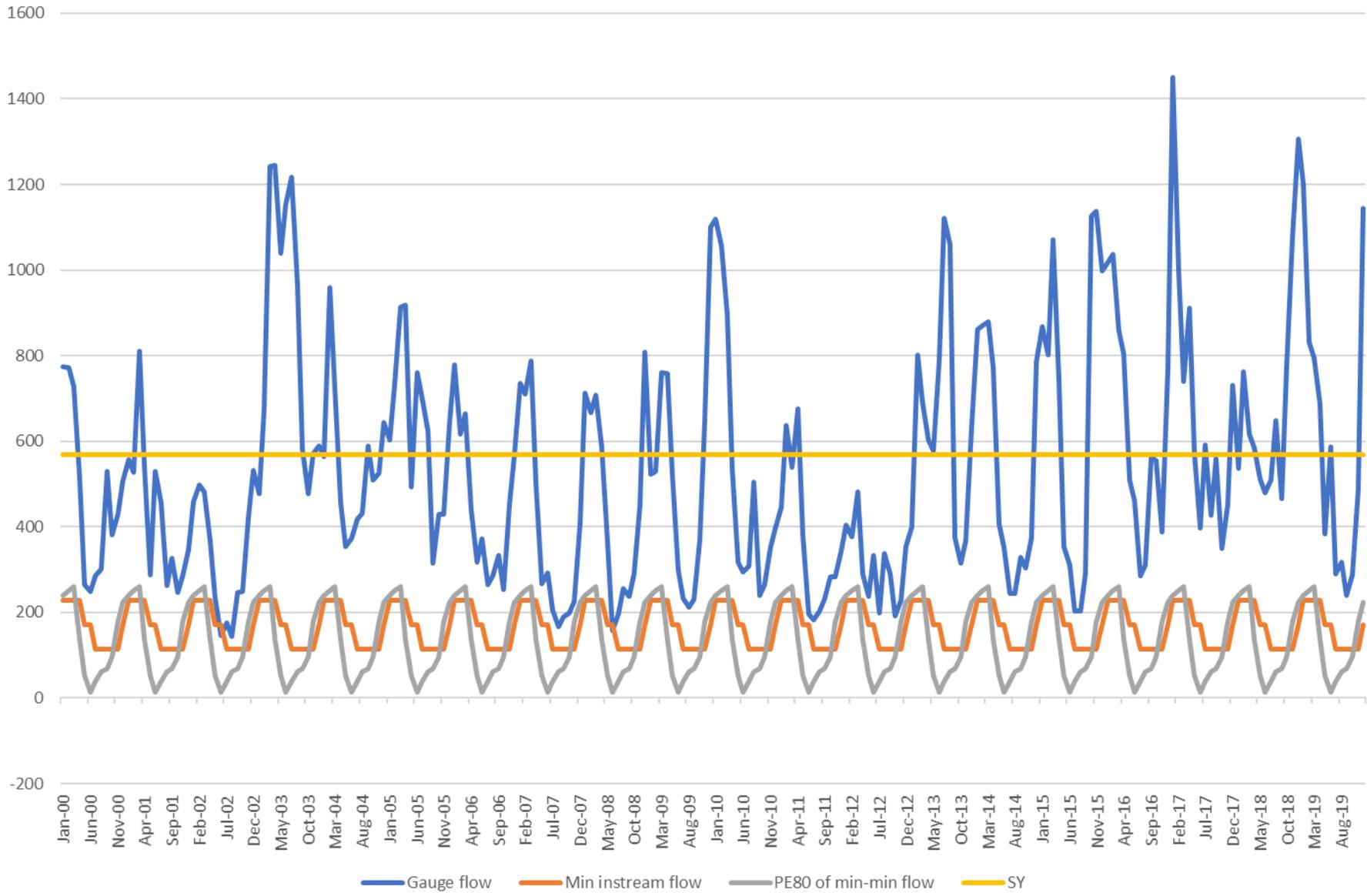
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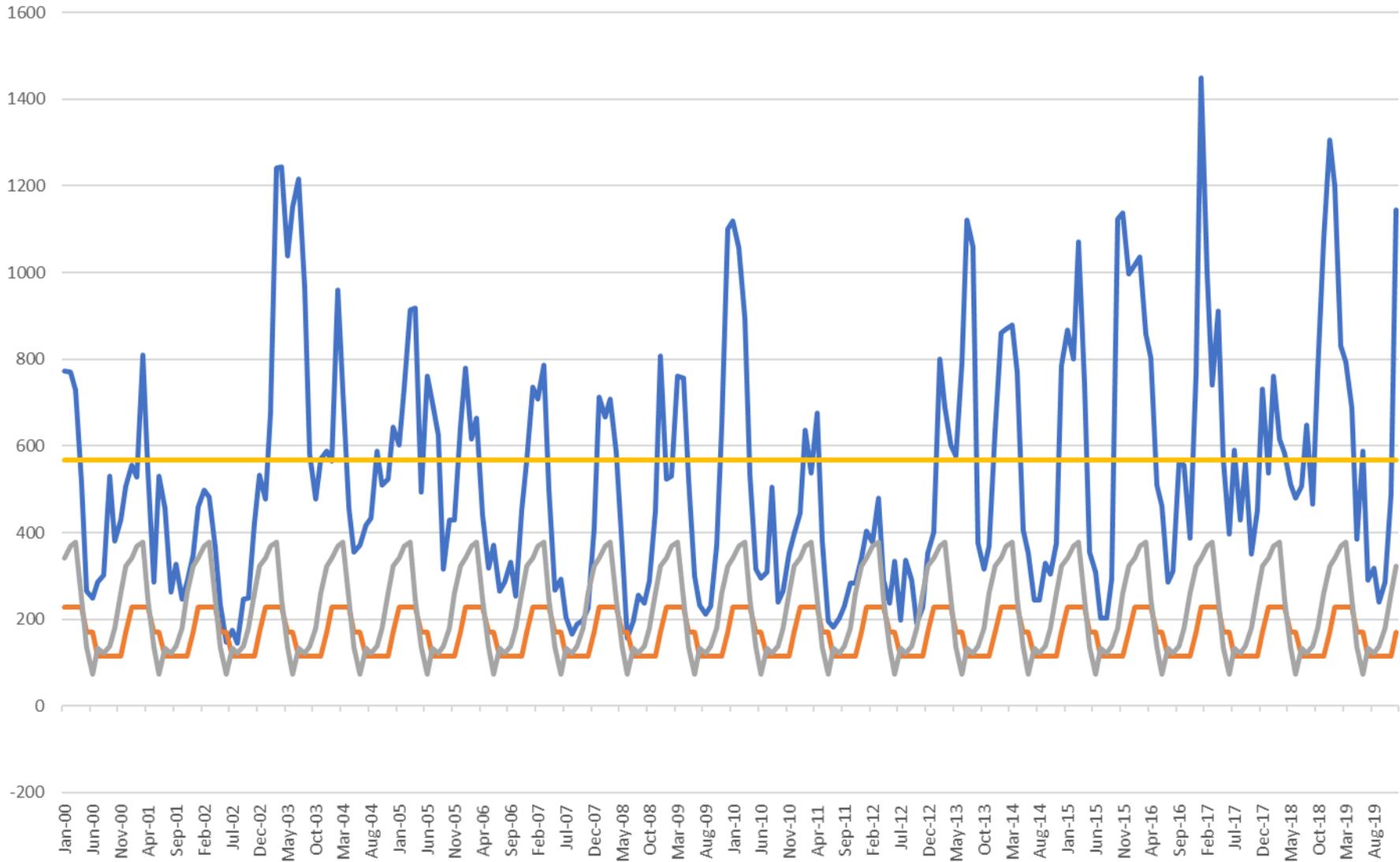
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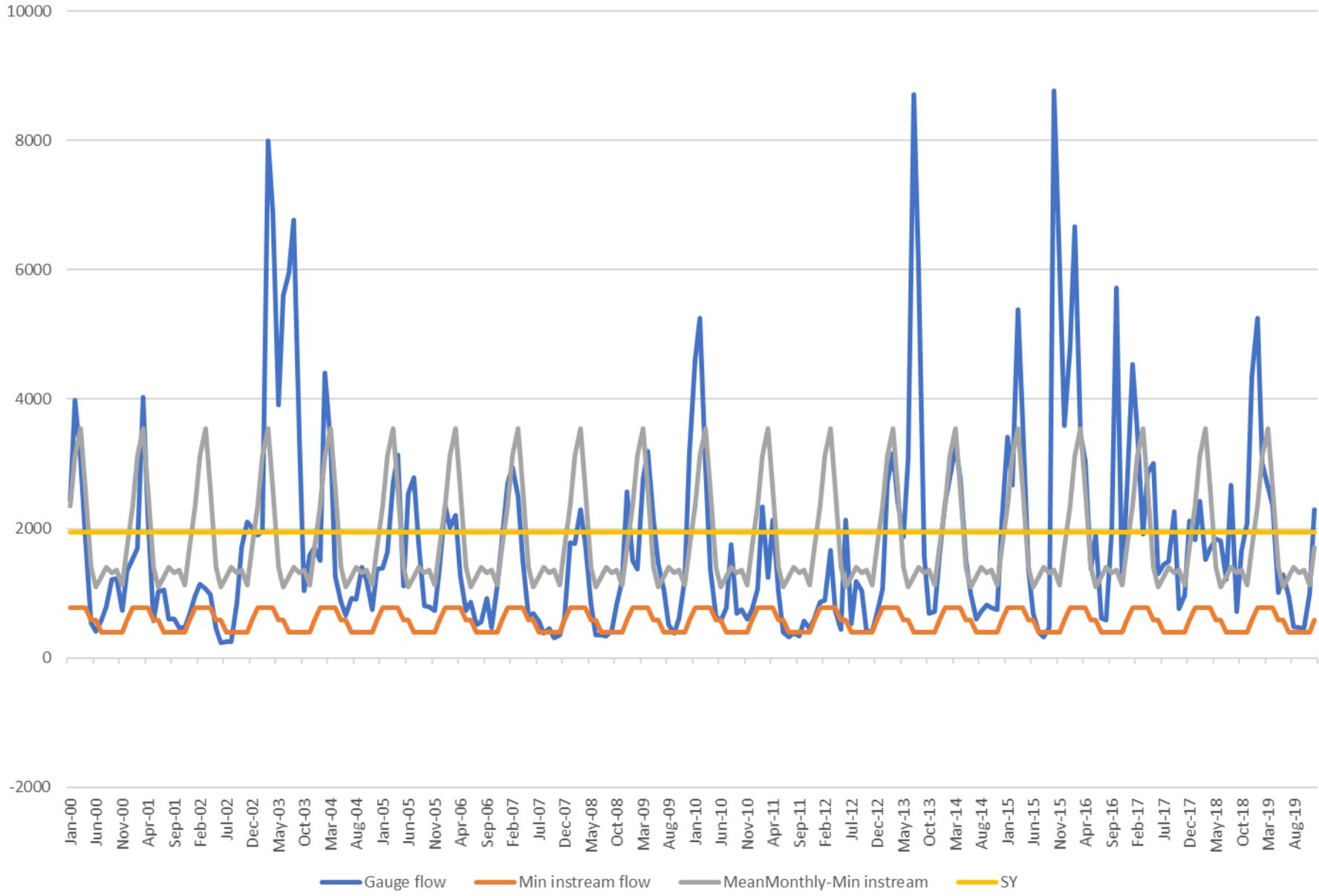
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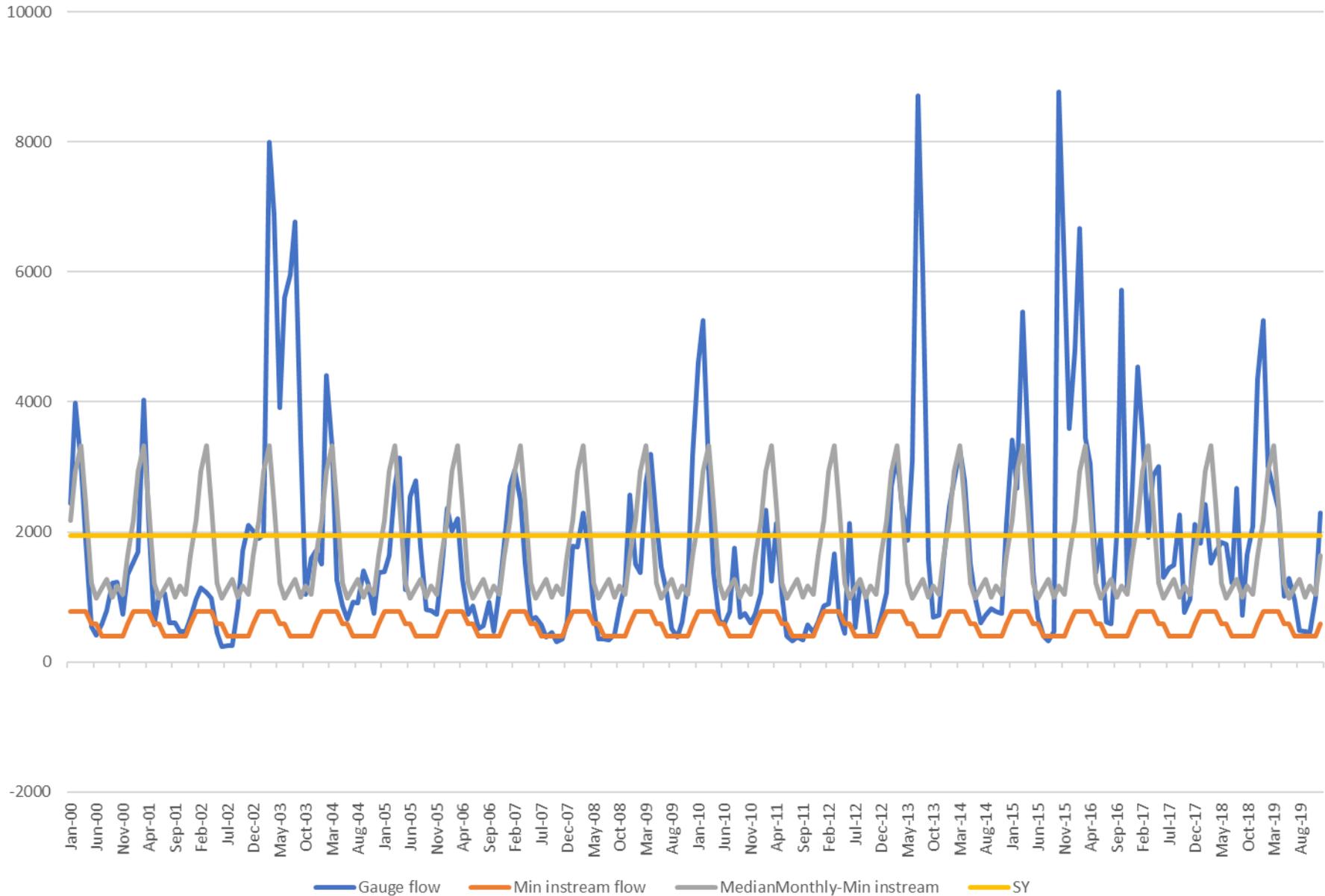
Axis Title

— Gauge flow — Min instream flow — PE60 of min-min flow — SY

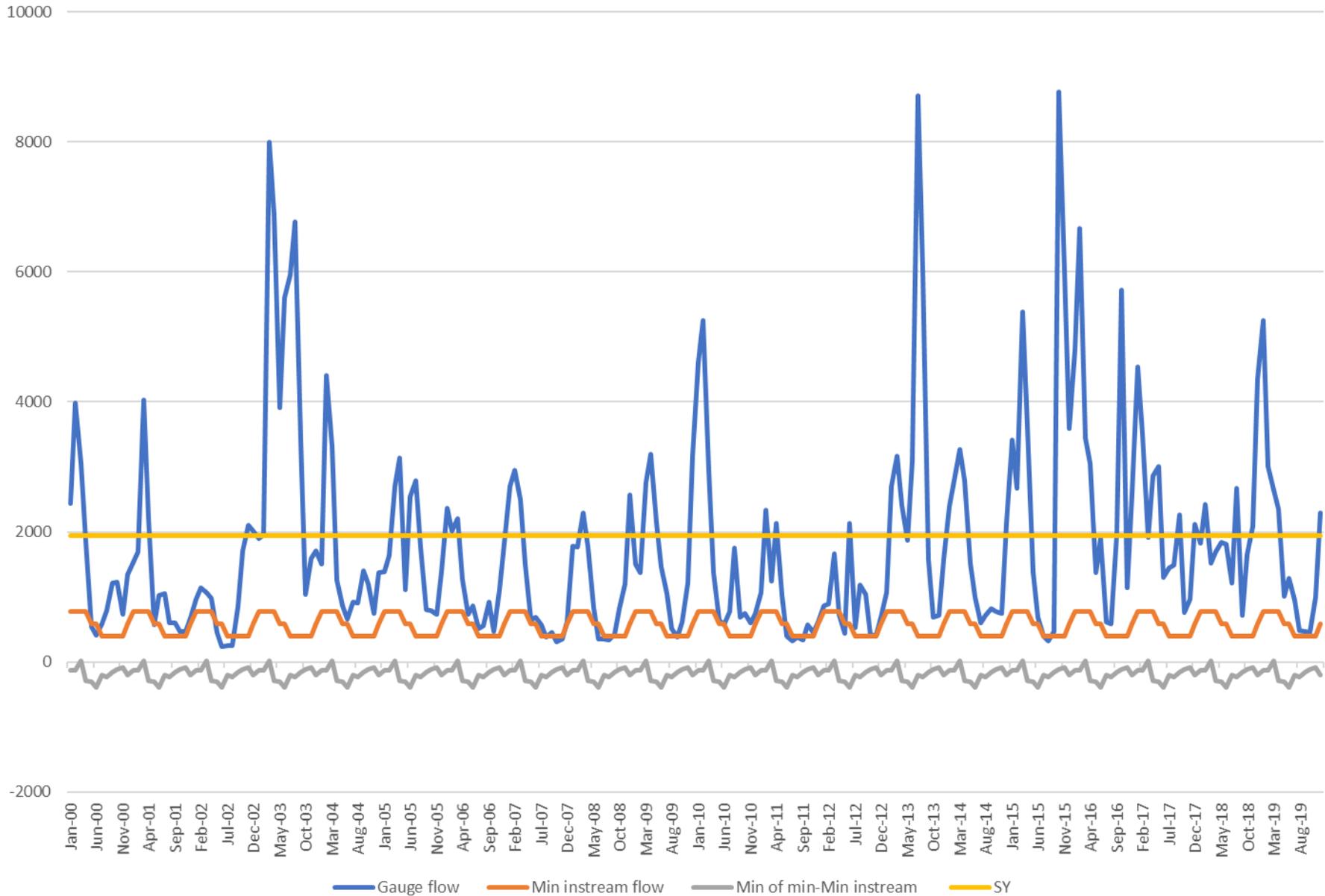
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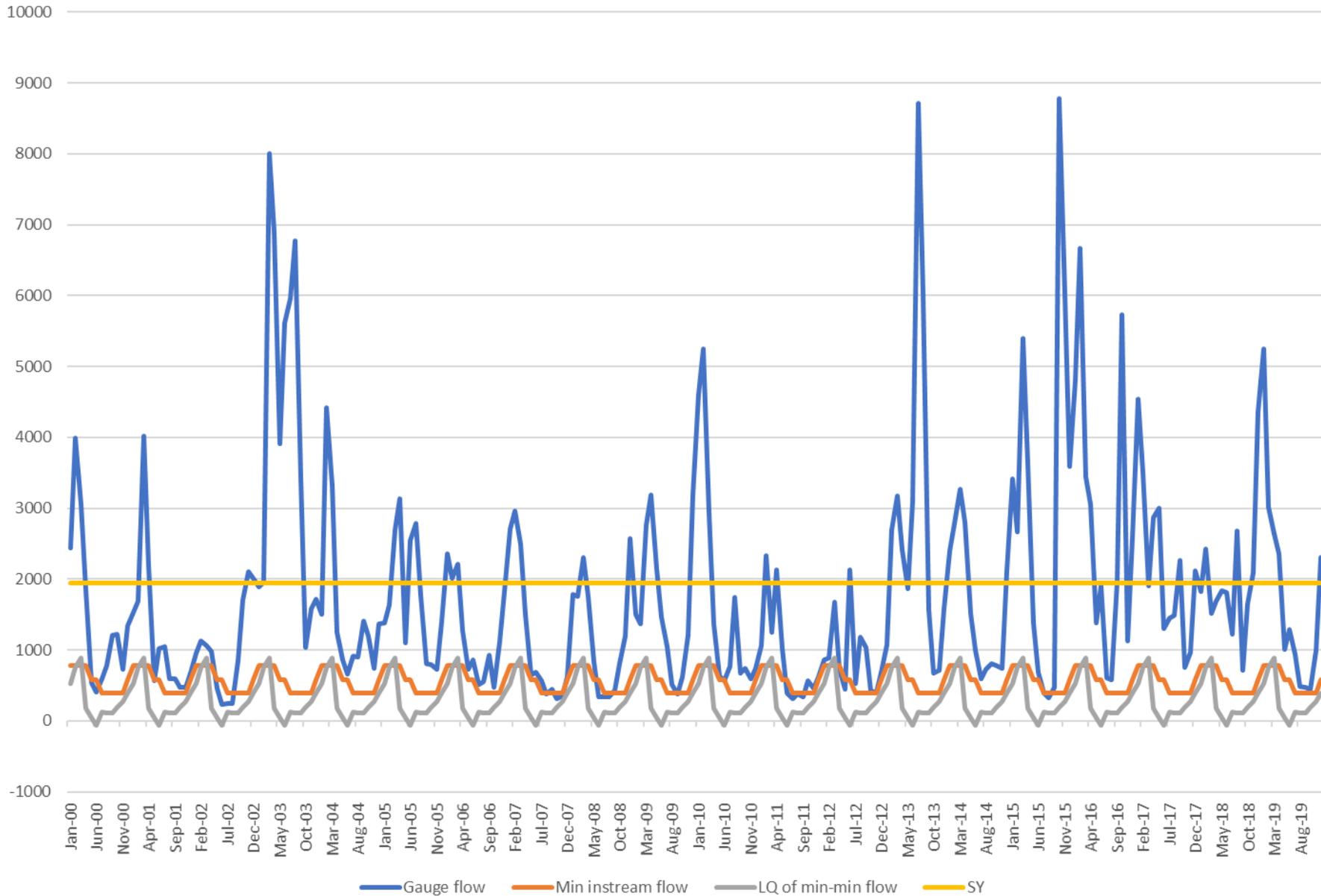
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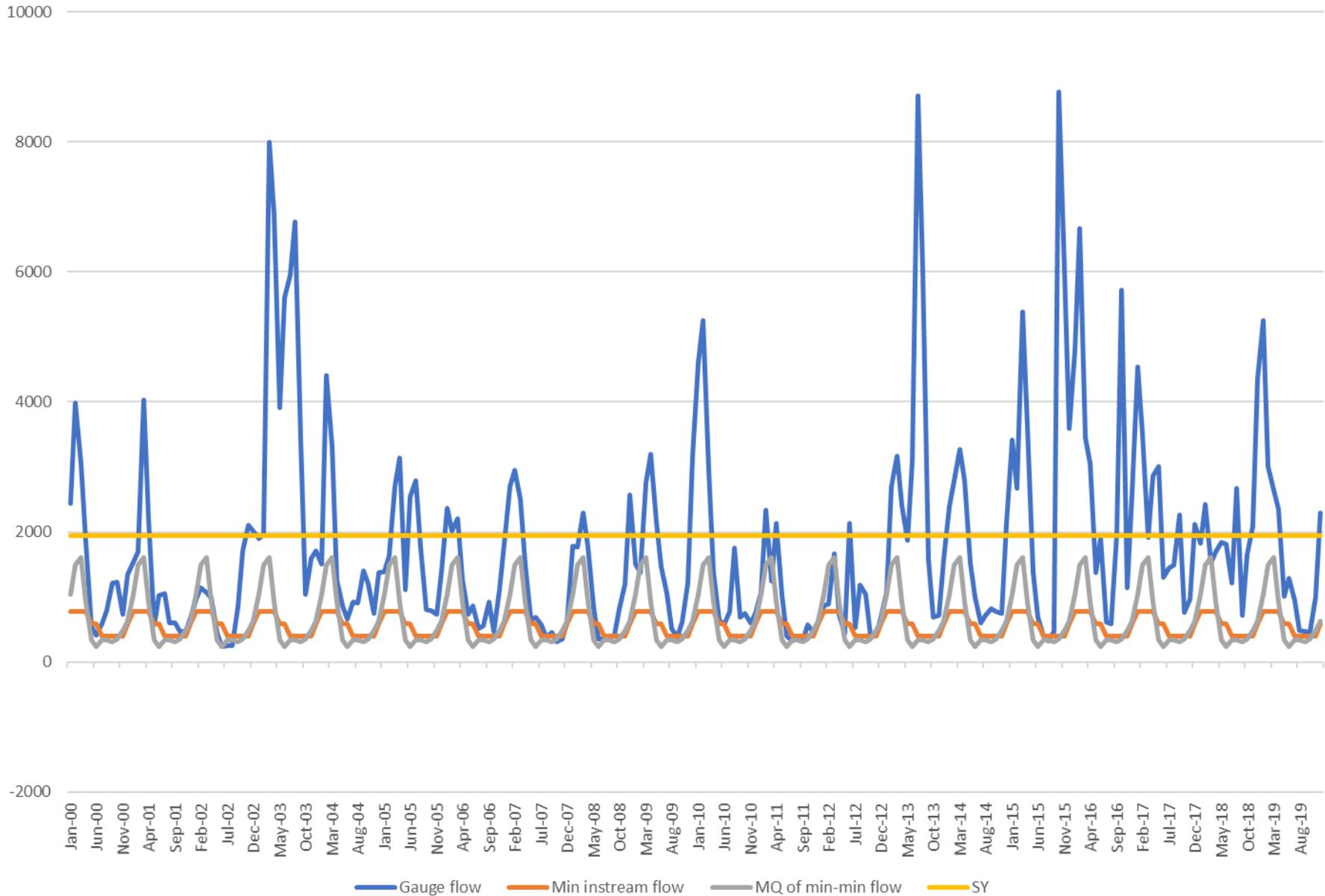
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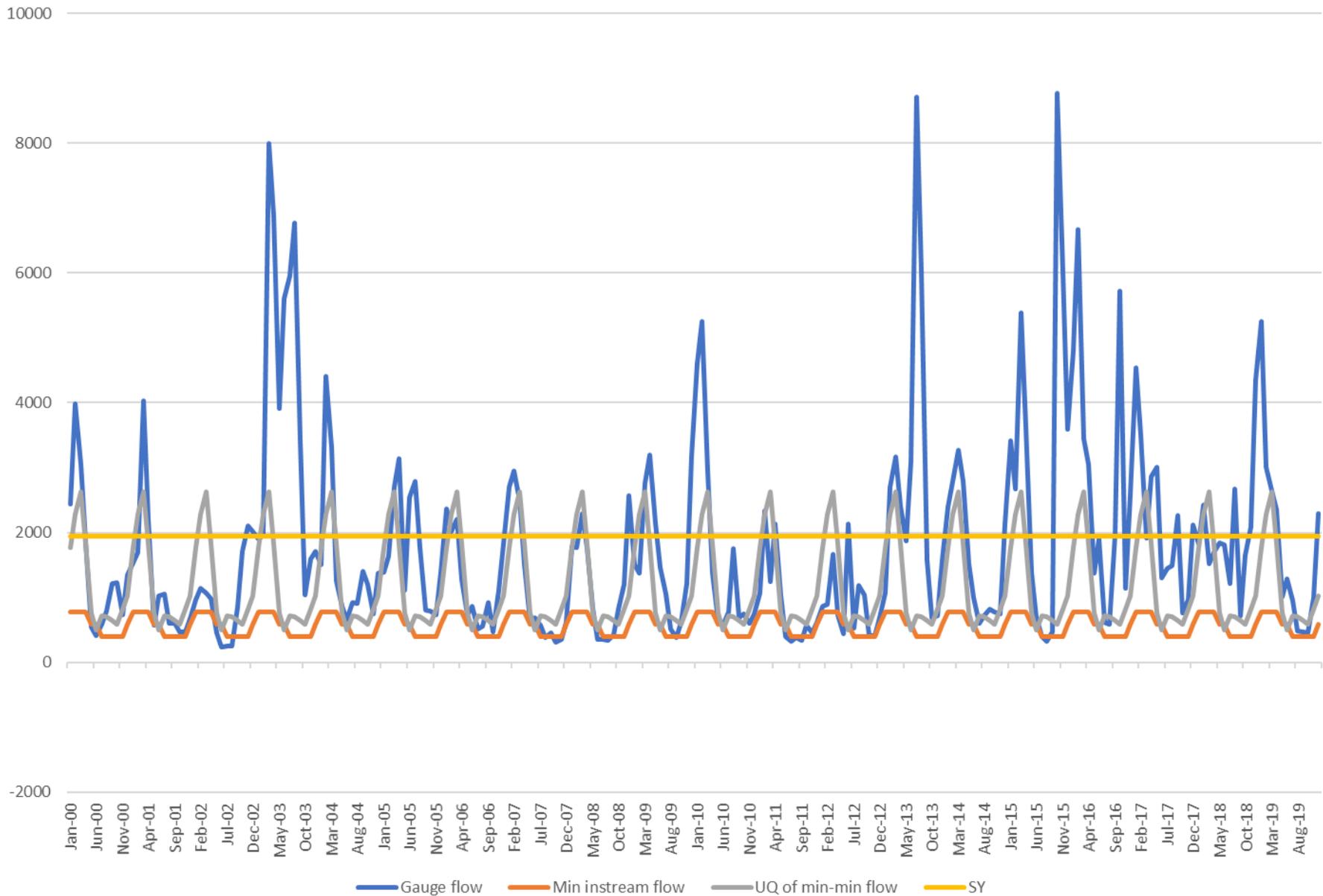
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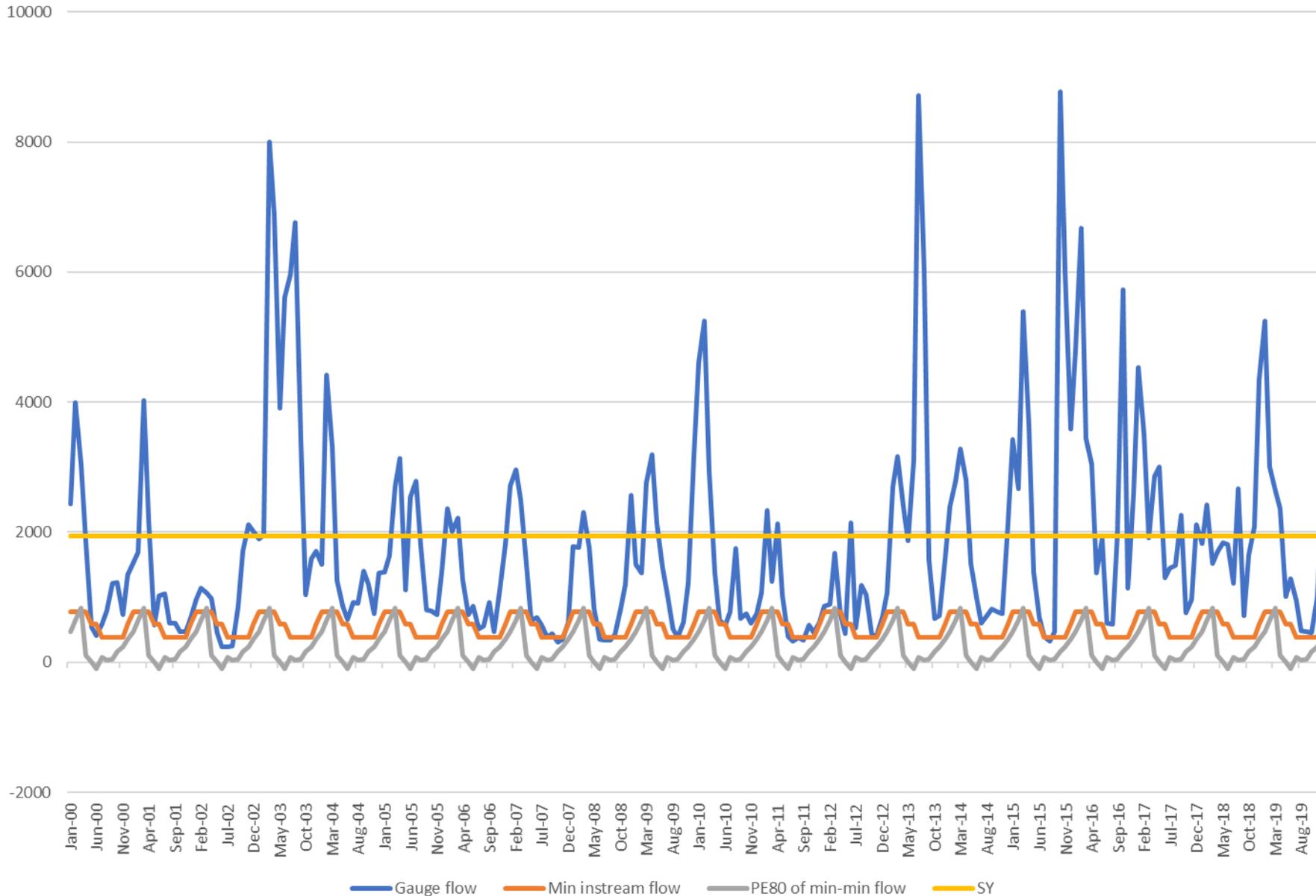
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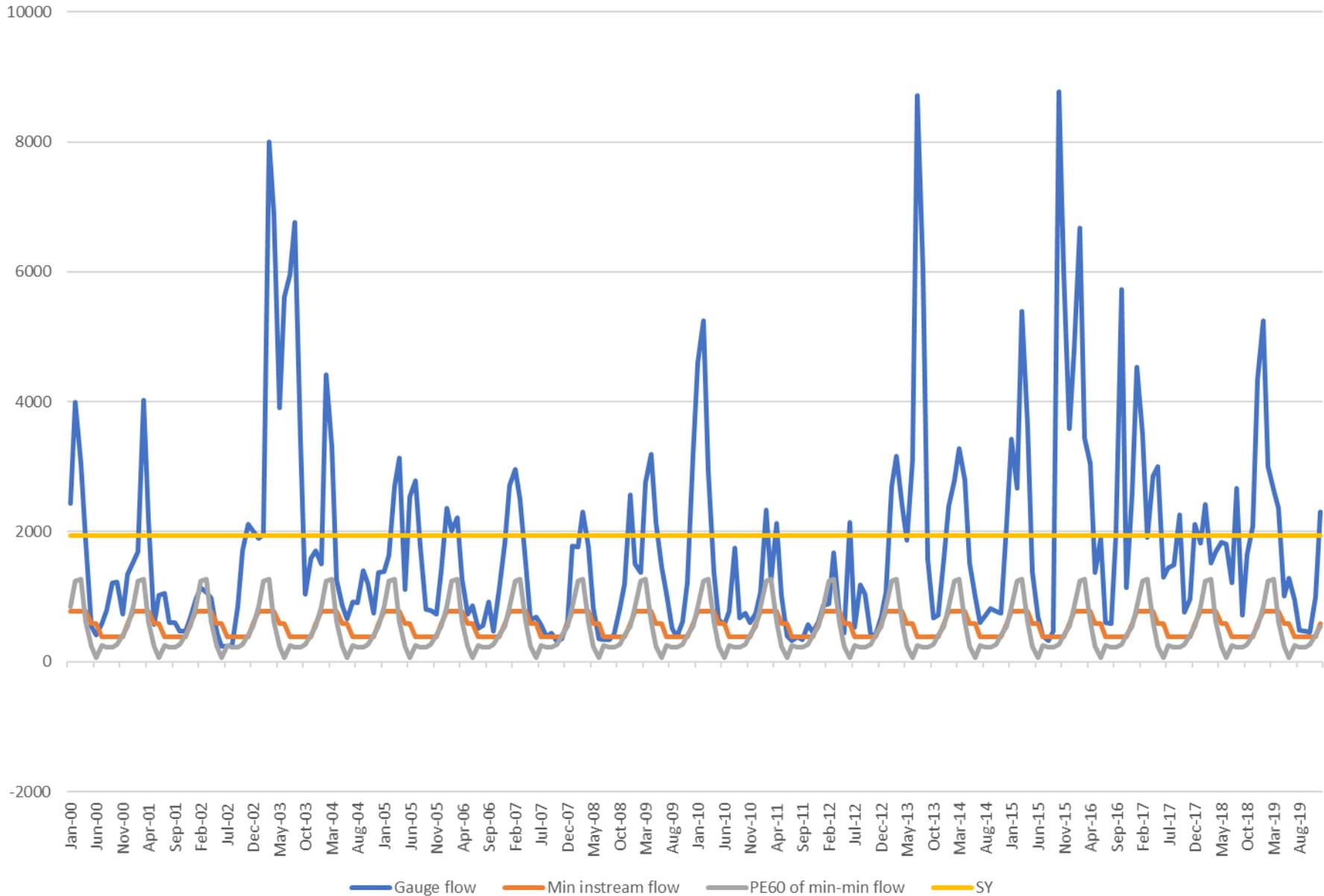
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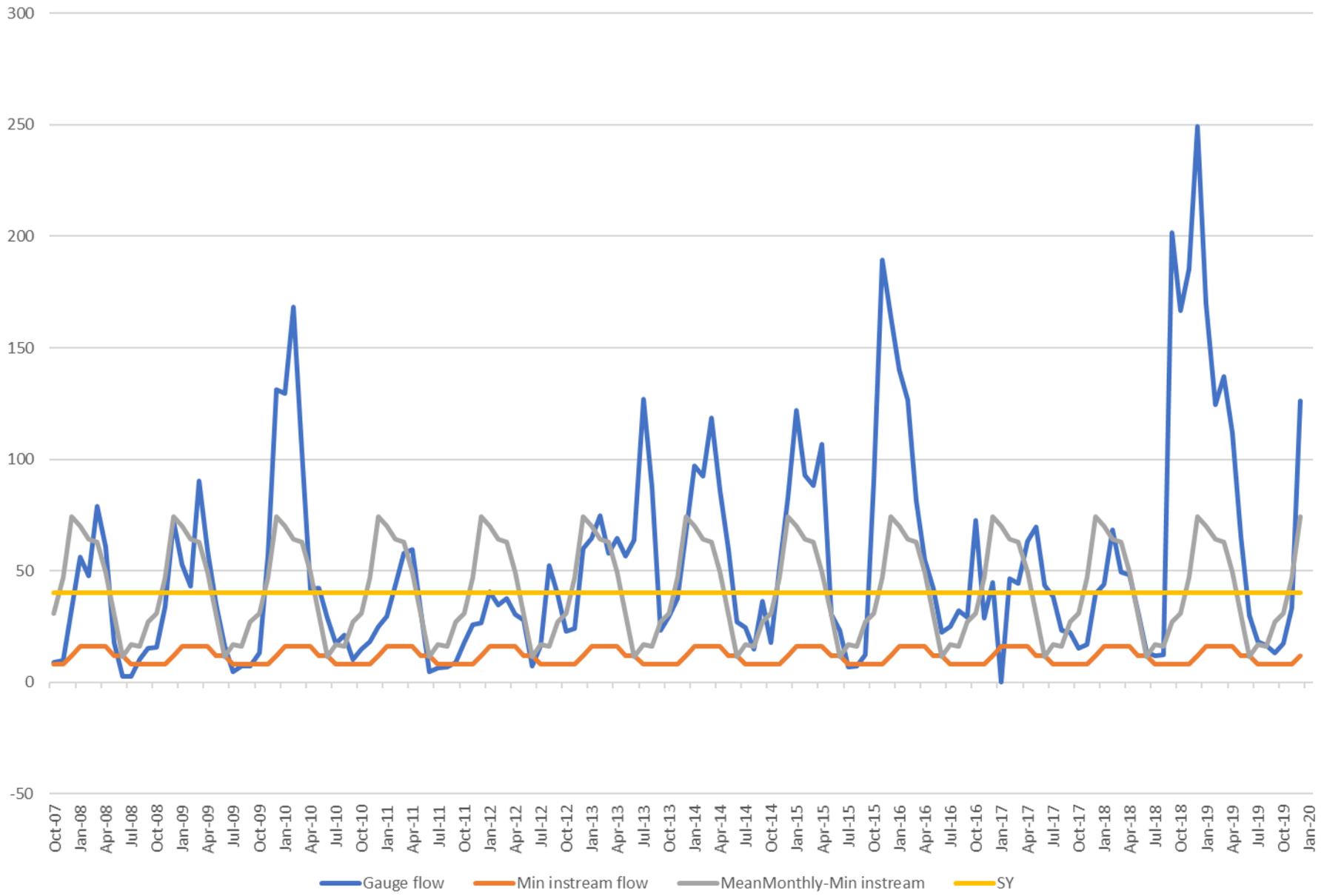
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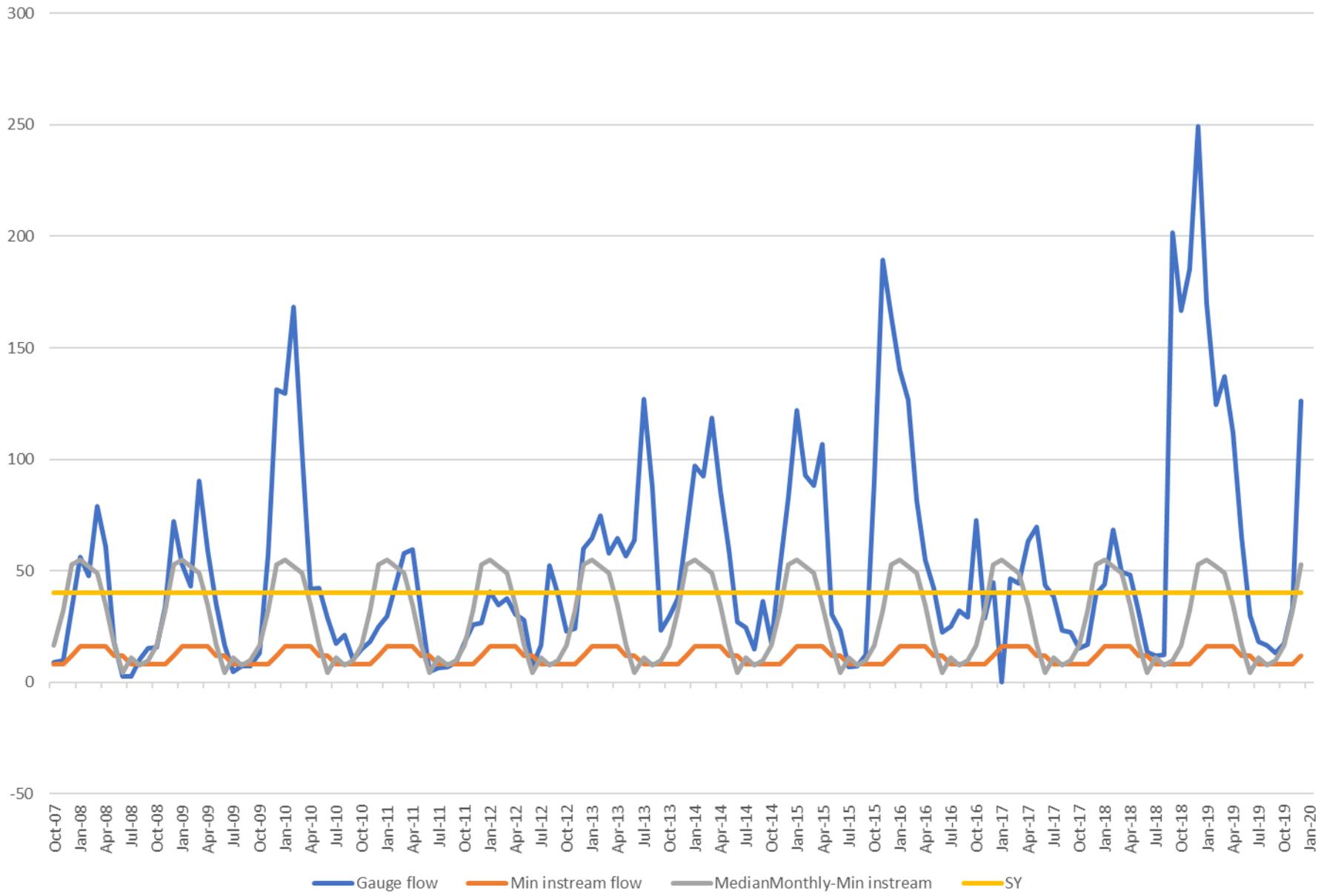
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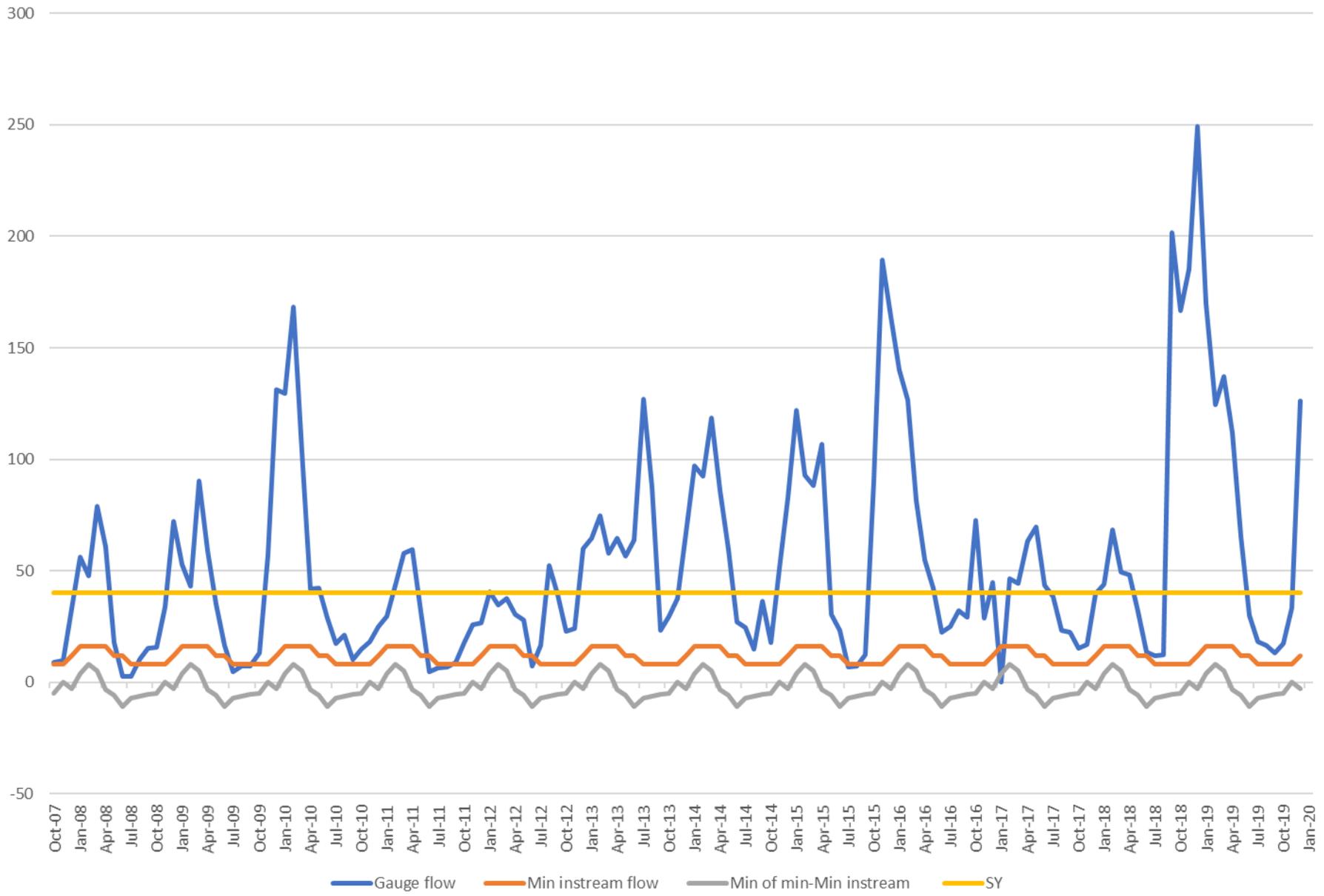
Alternate SY (USGS 02130840 BLACK CREEK BELOW CHESTERFIELD, SC)



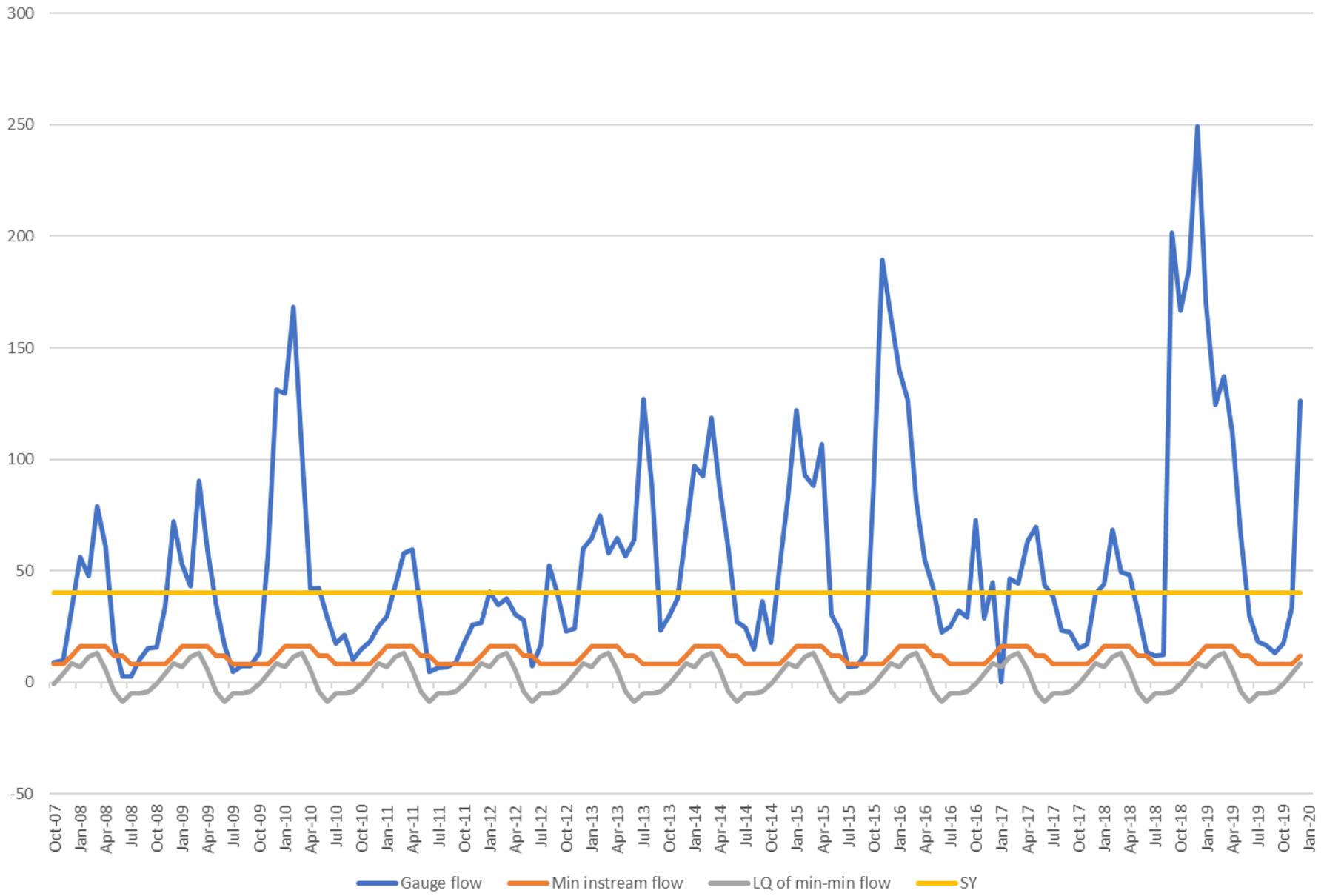
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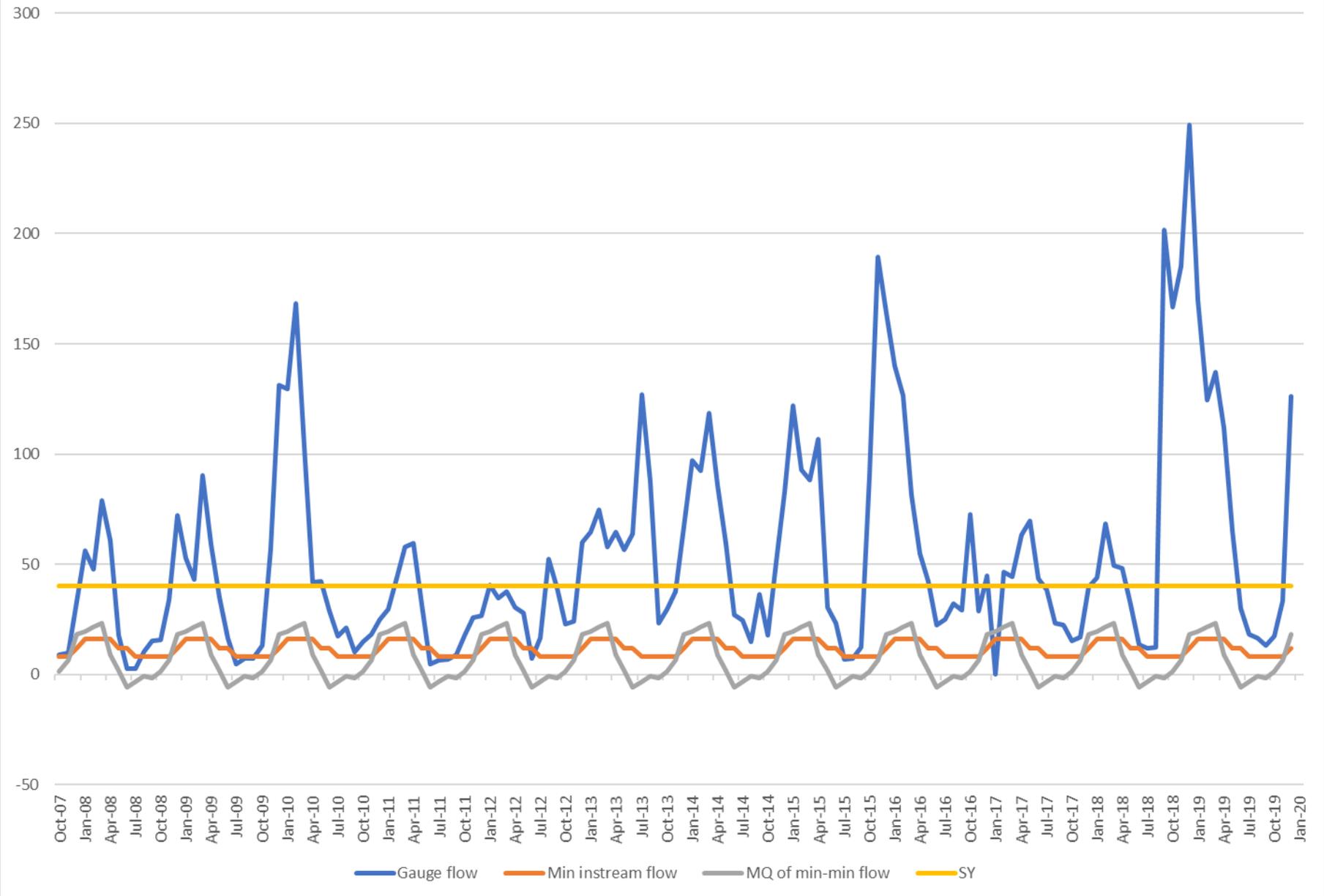
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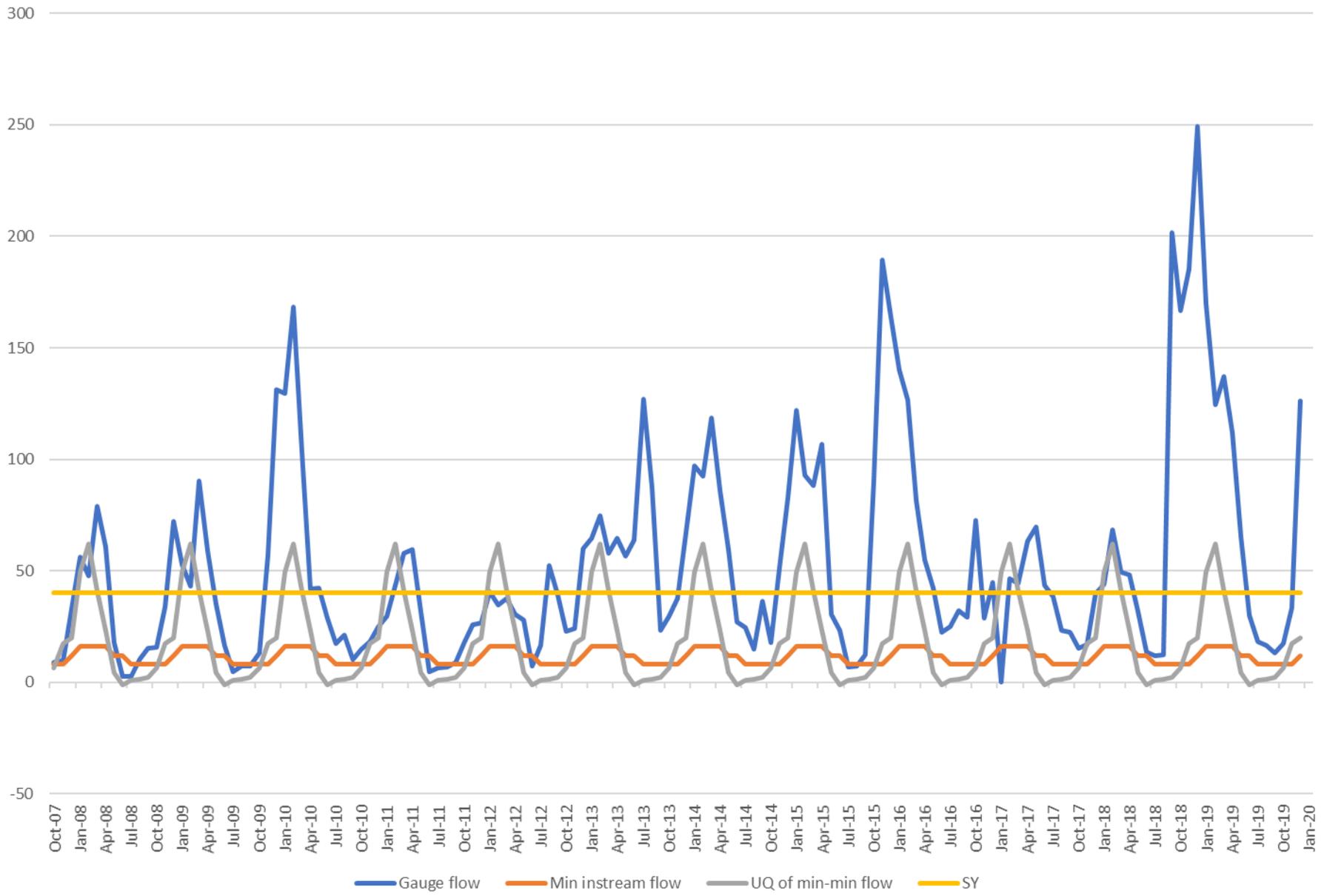
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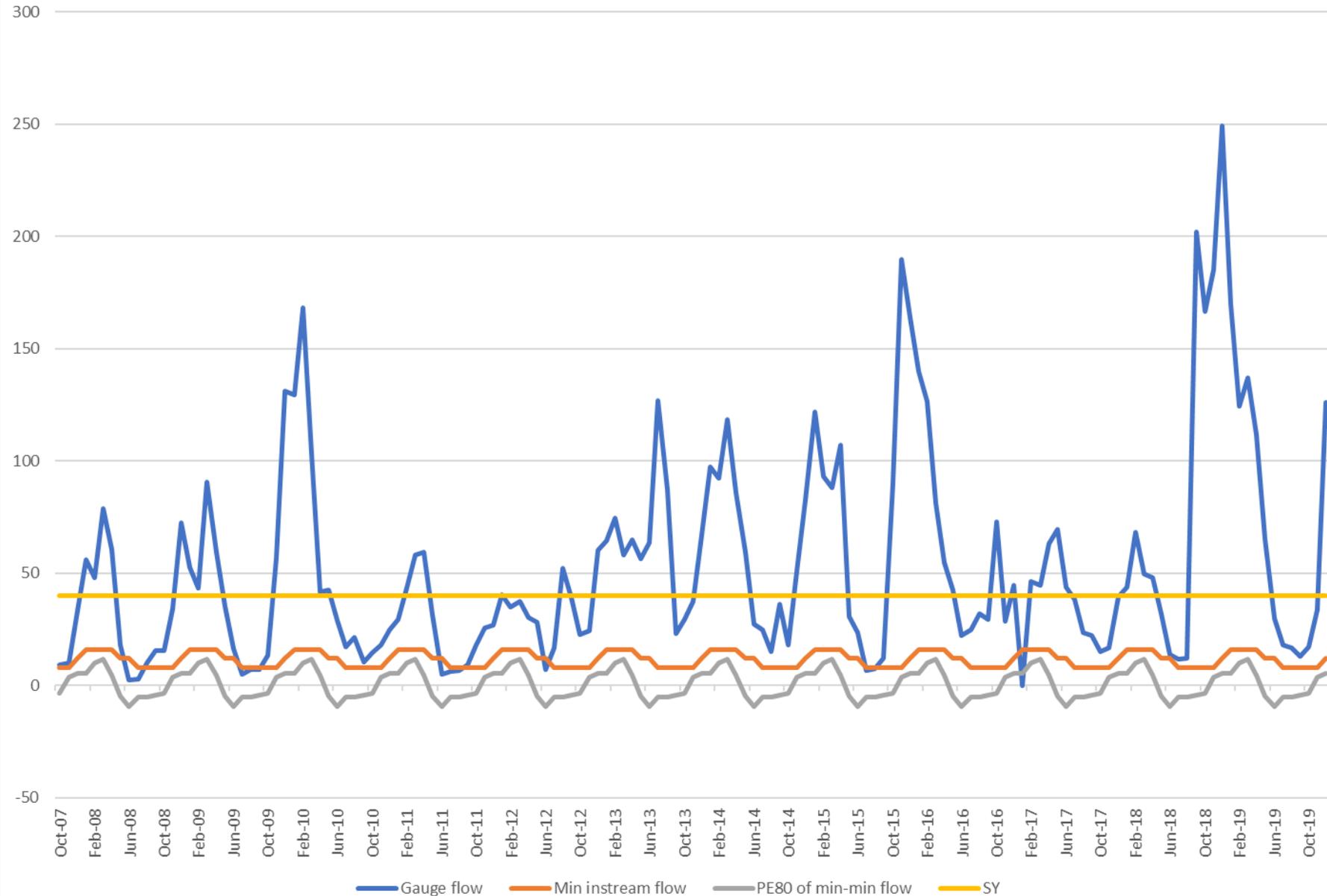
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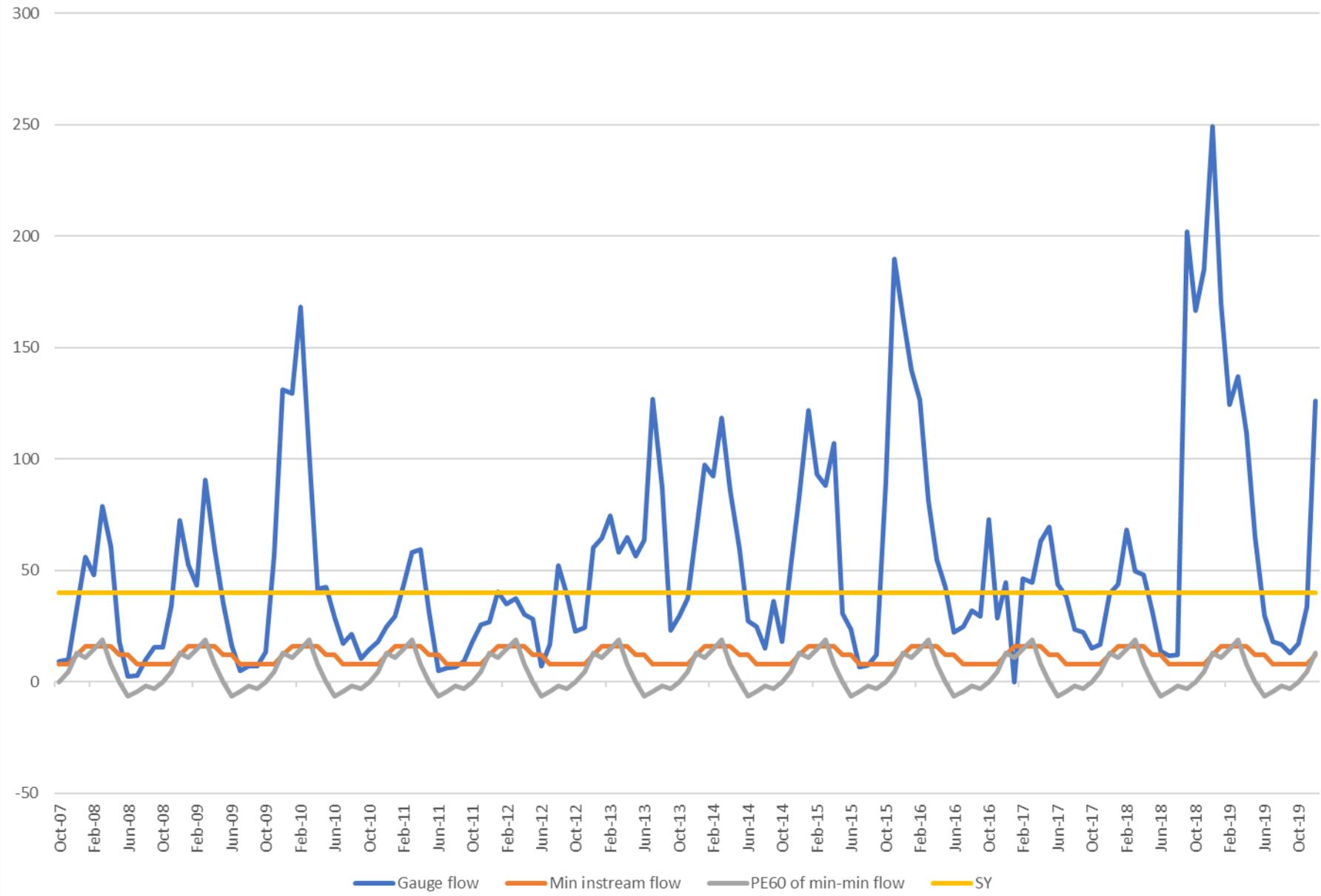
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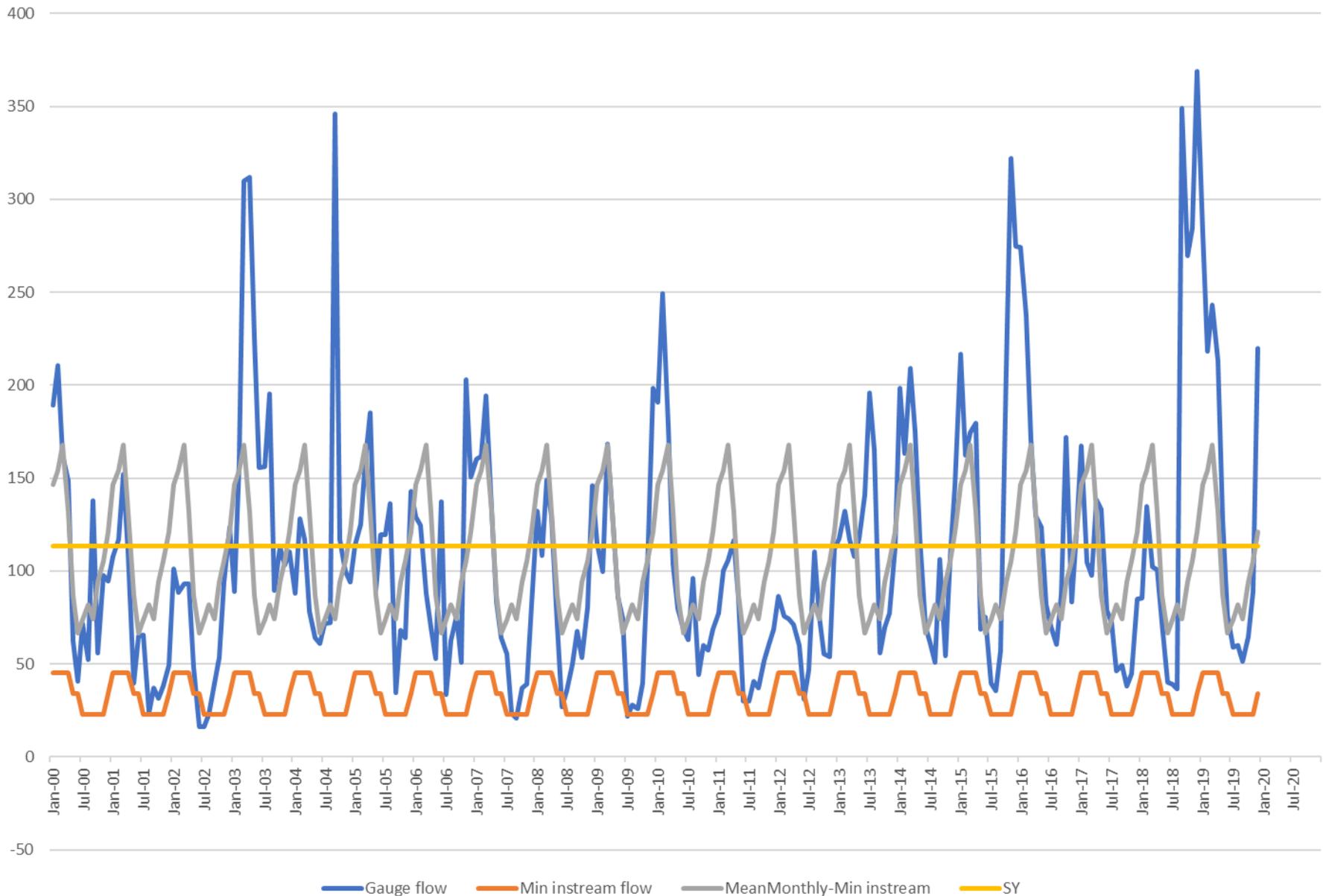
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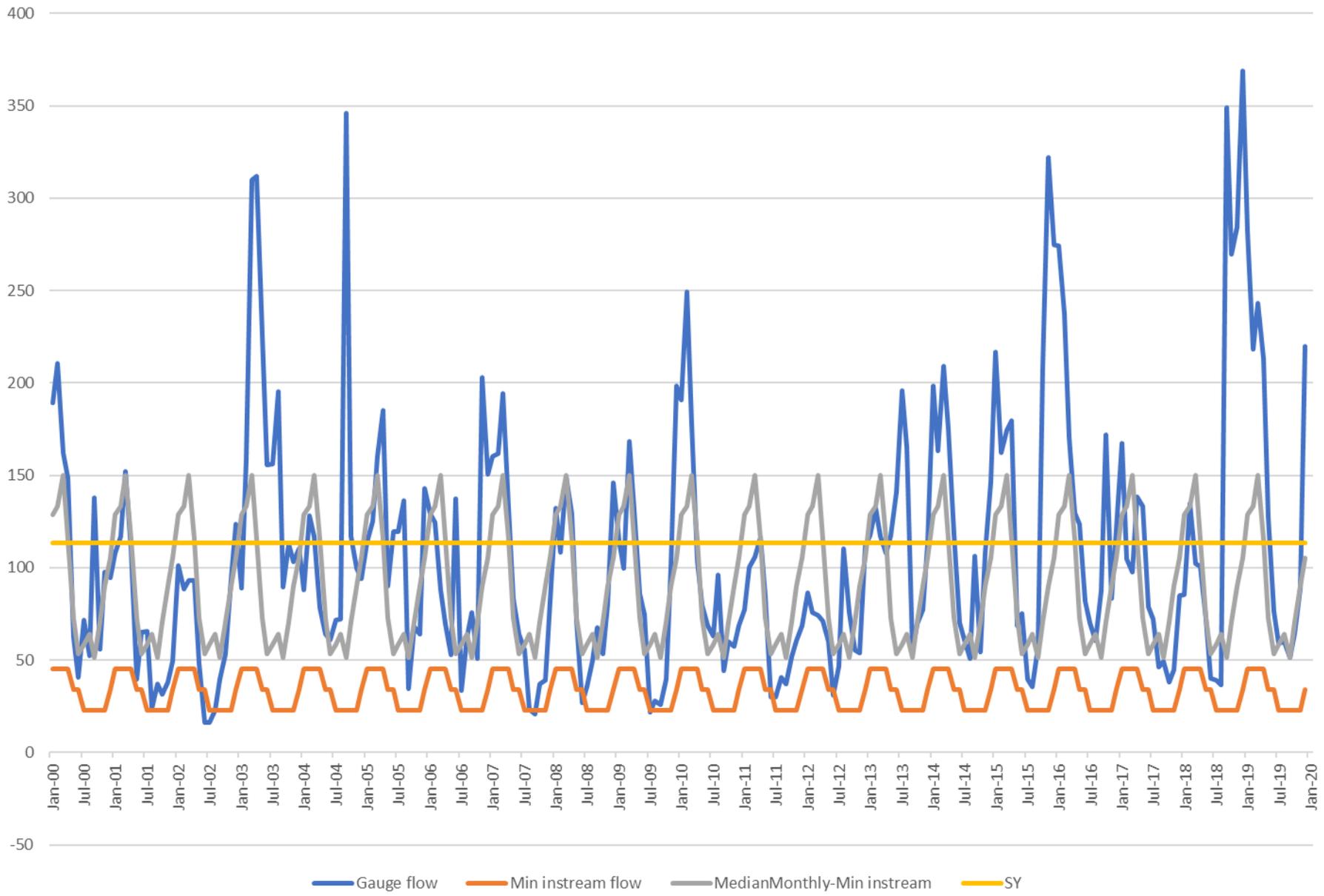
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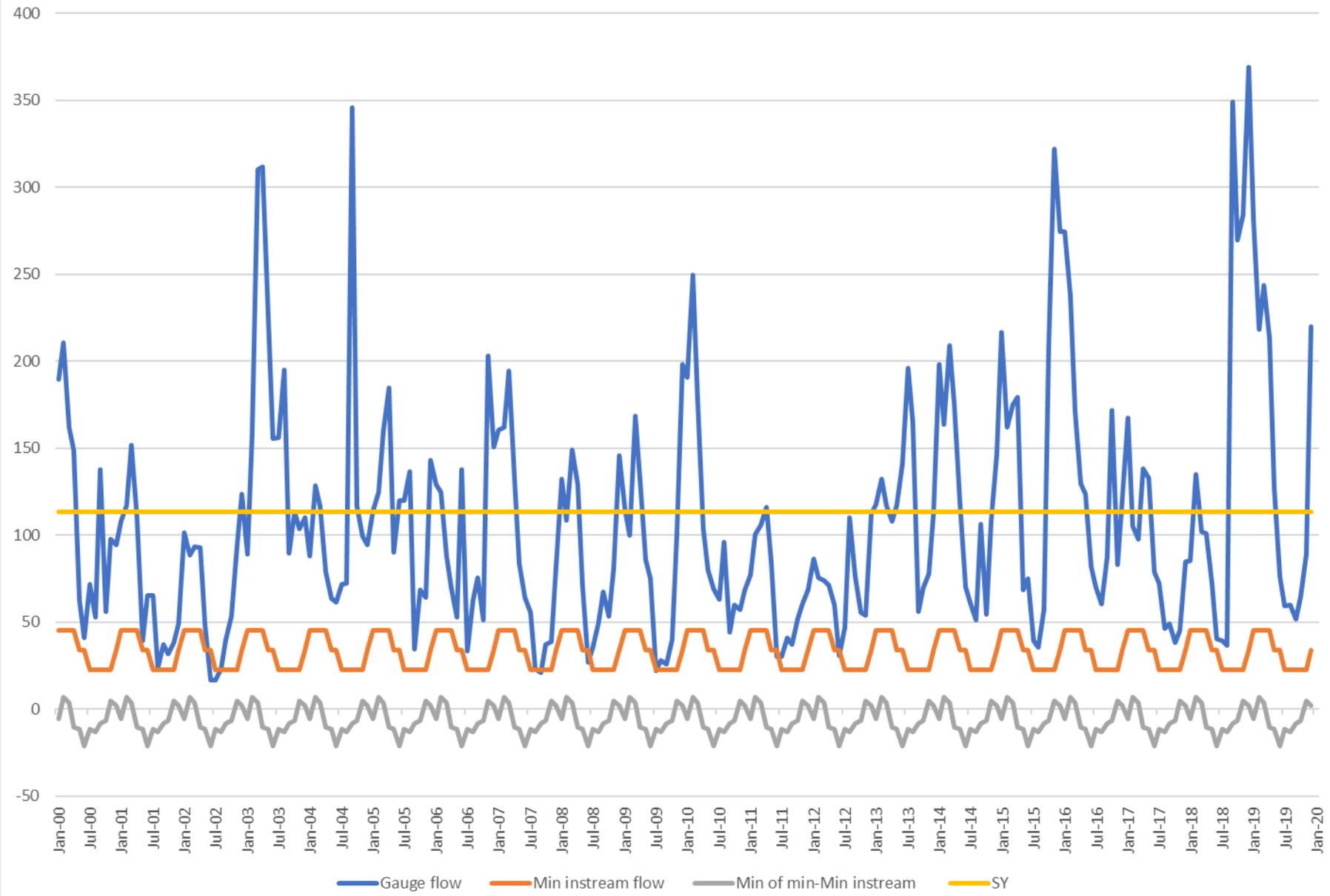
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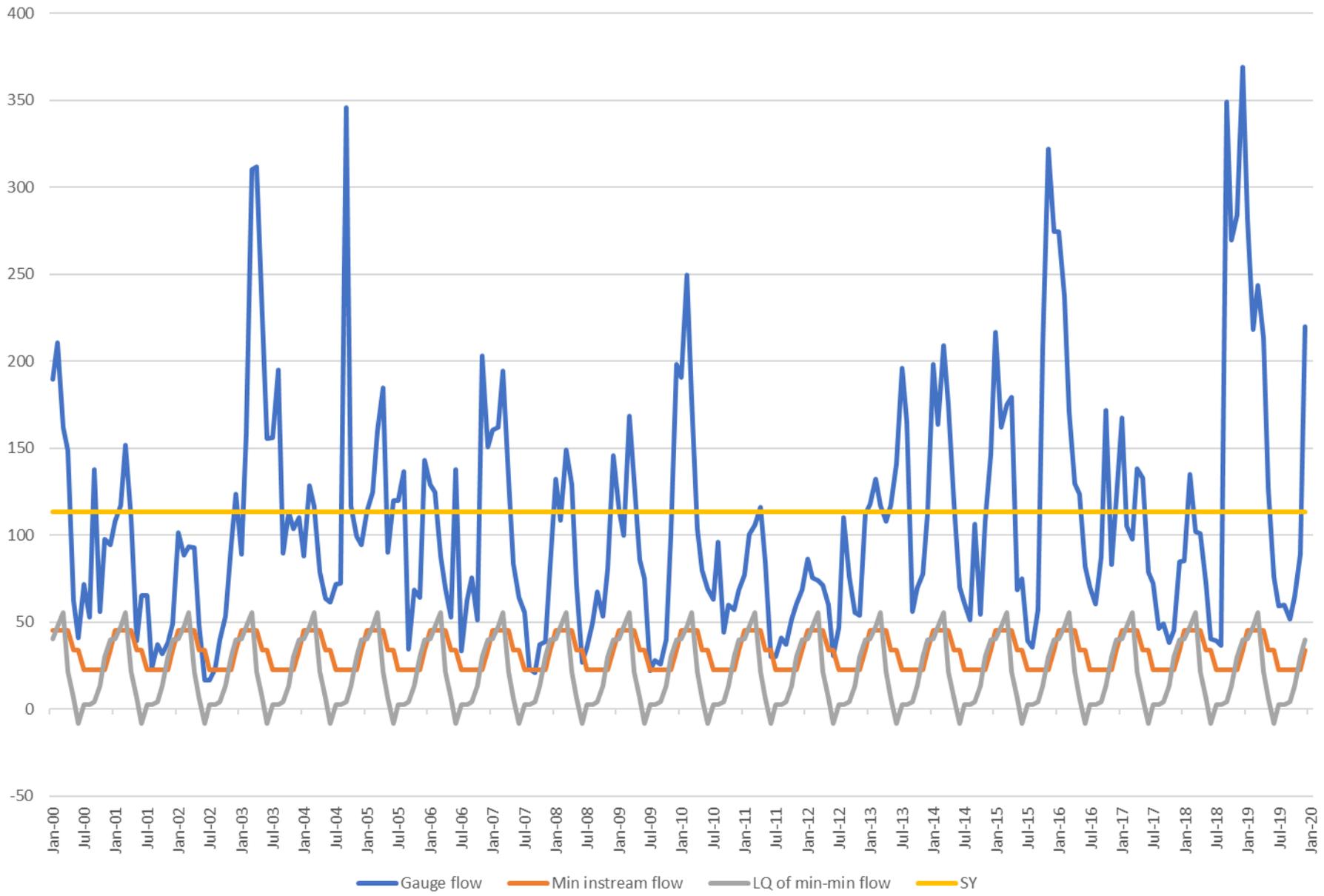
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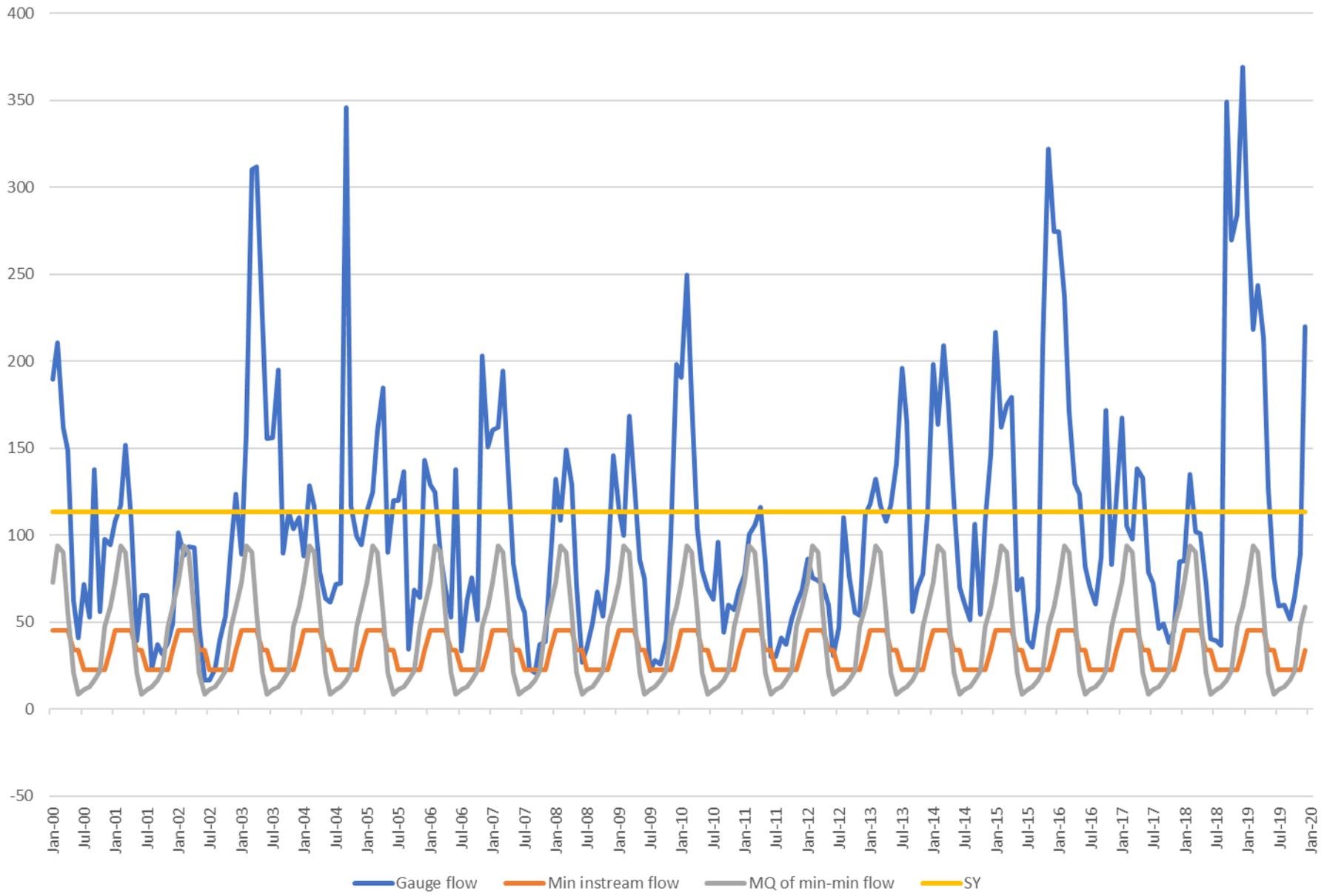
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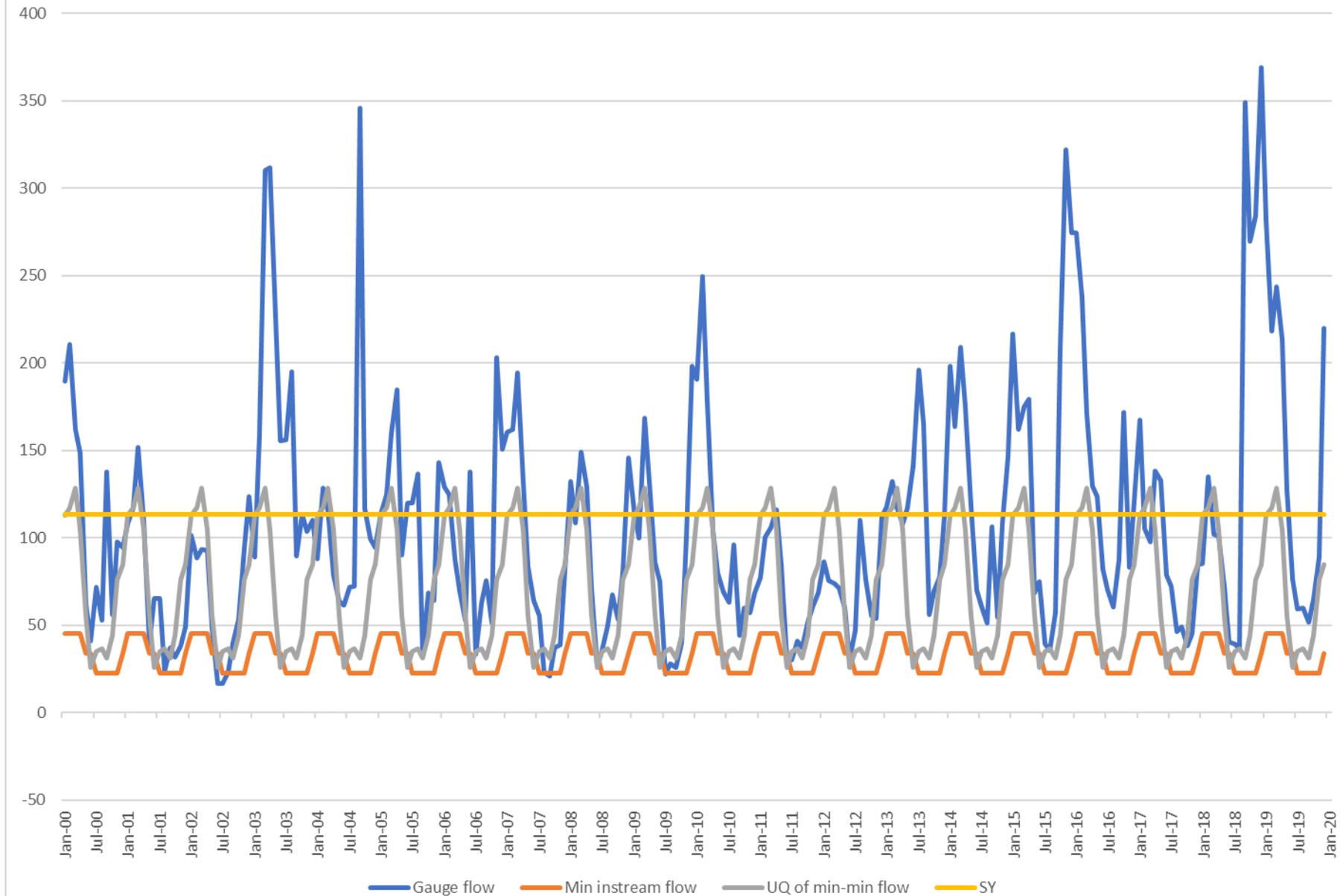
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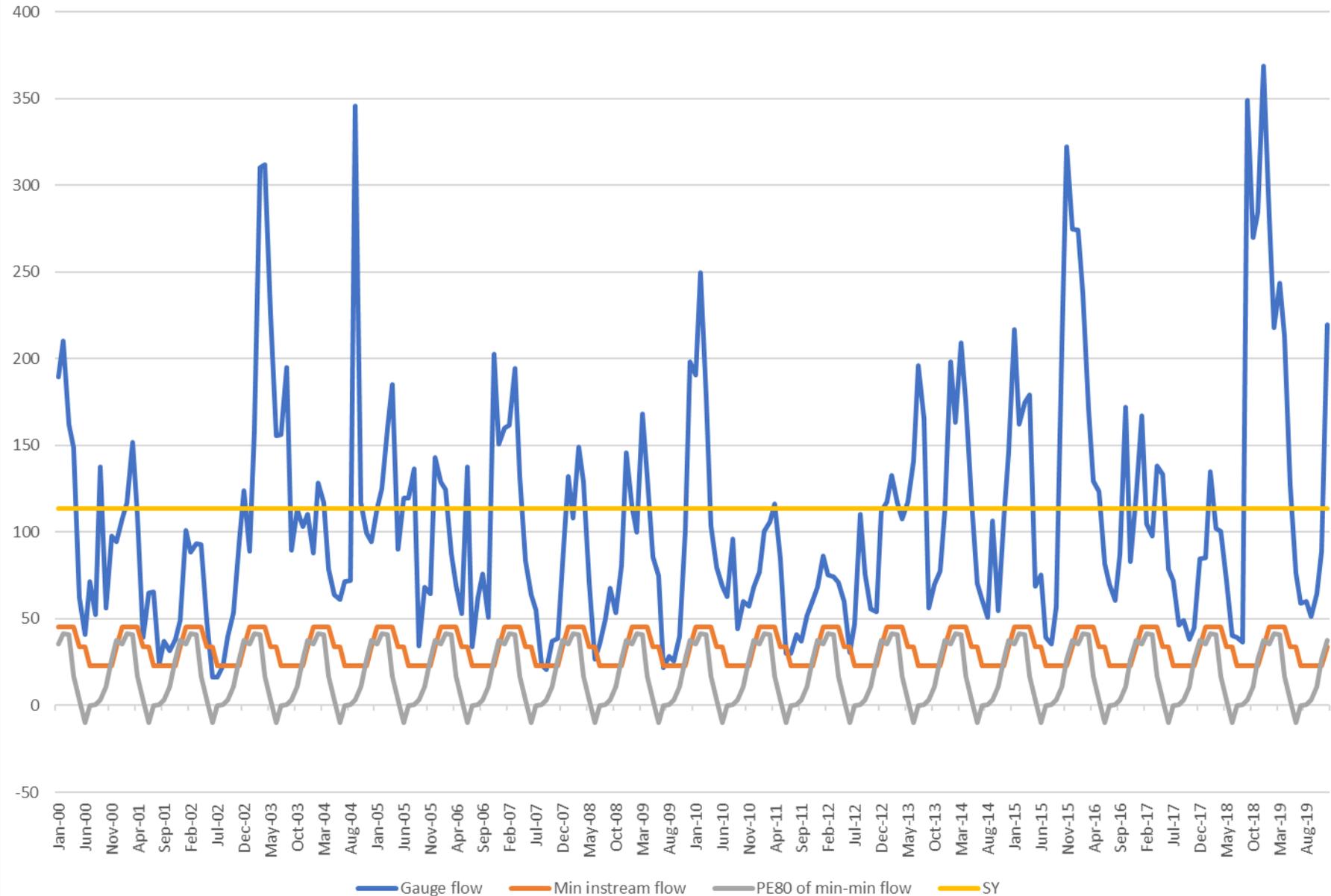
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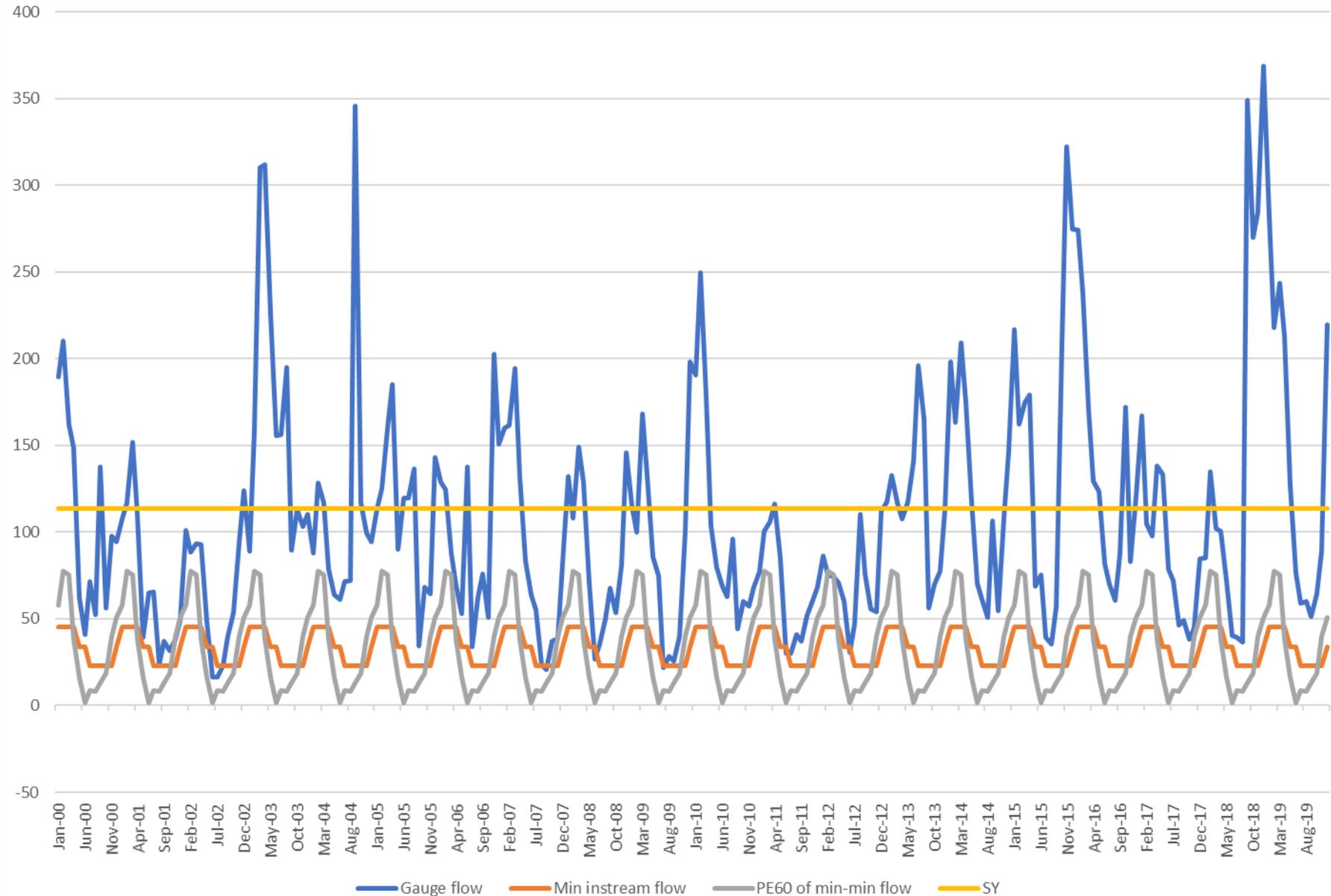
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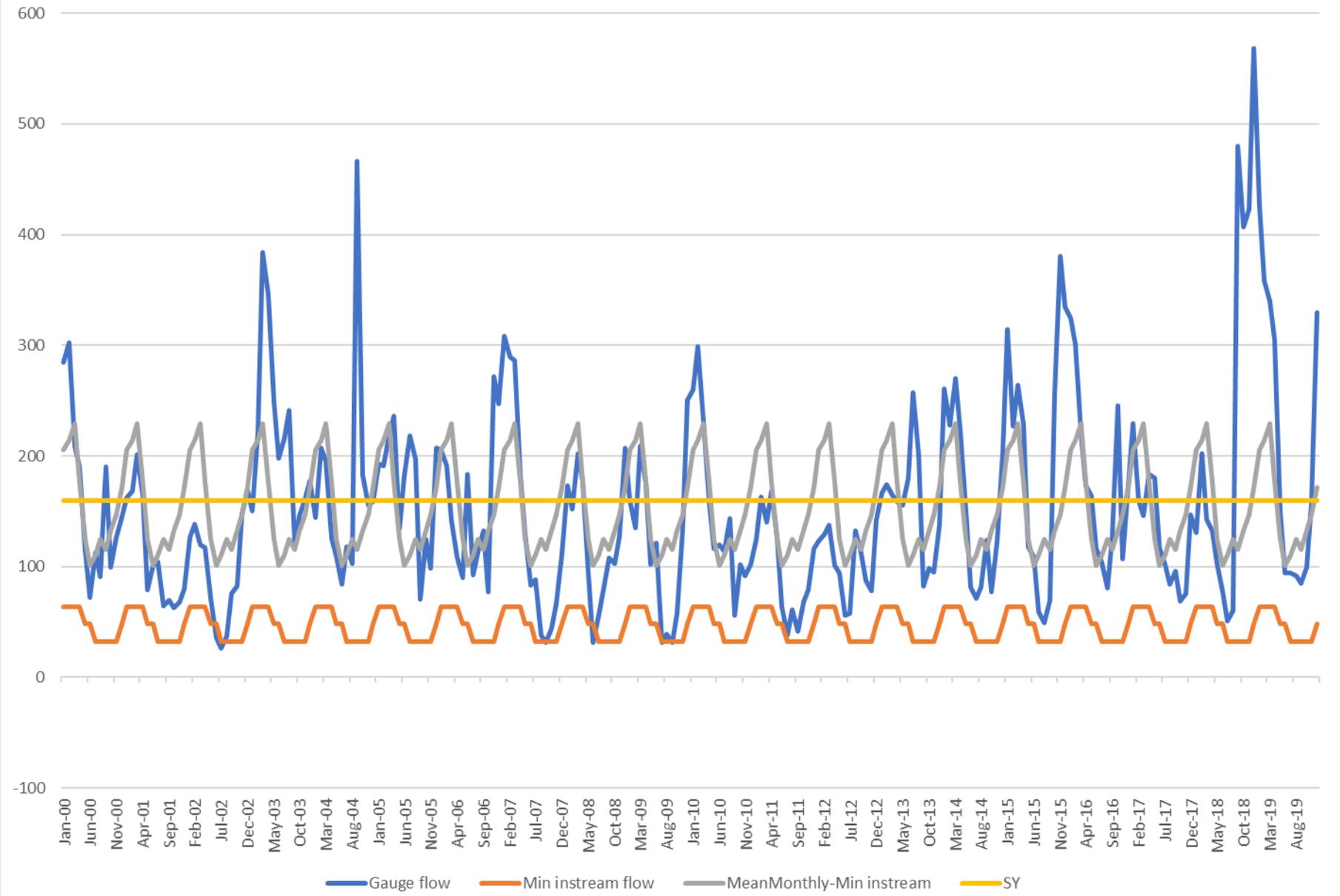
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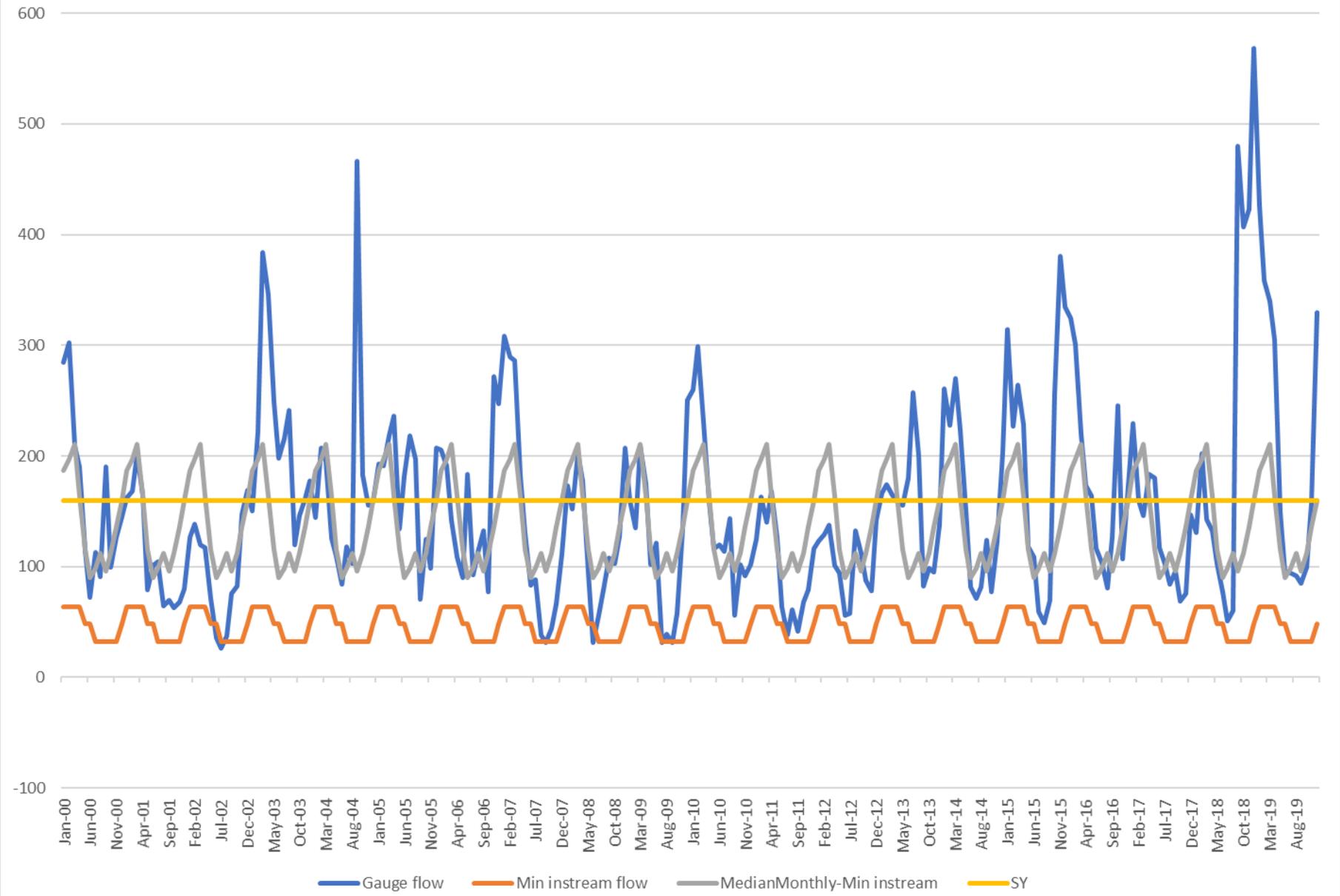
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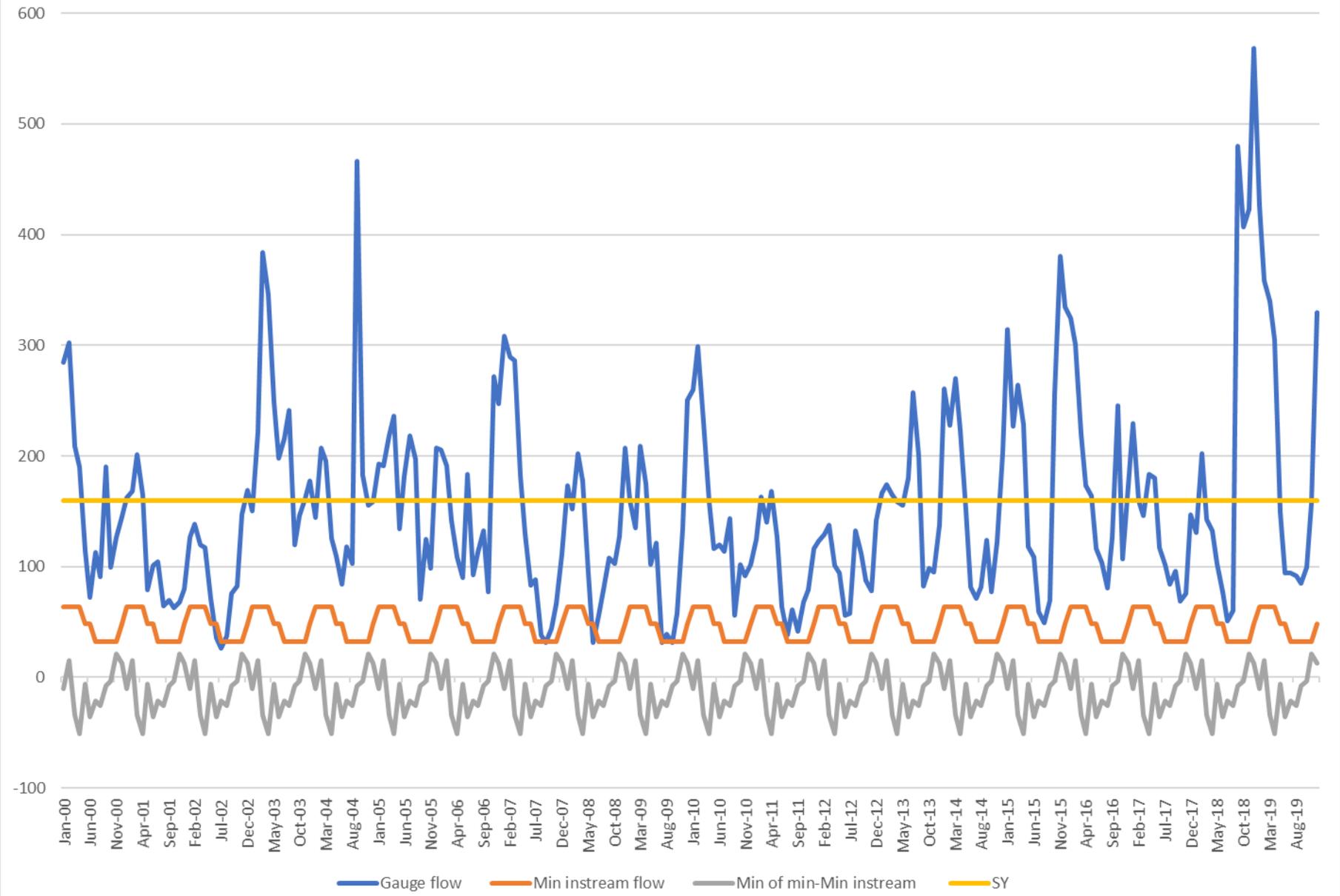
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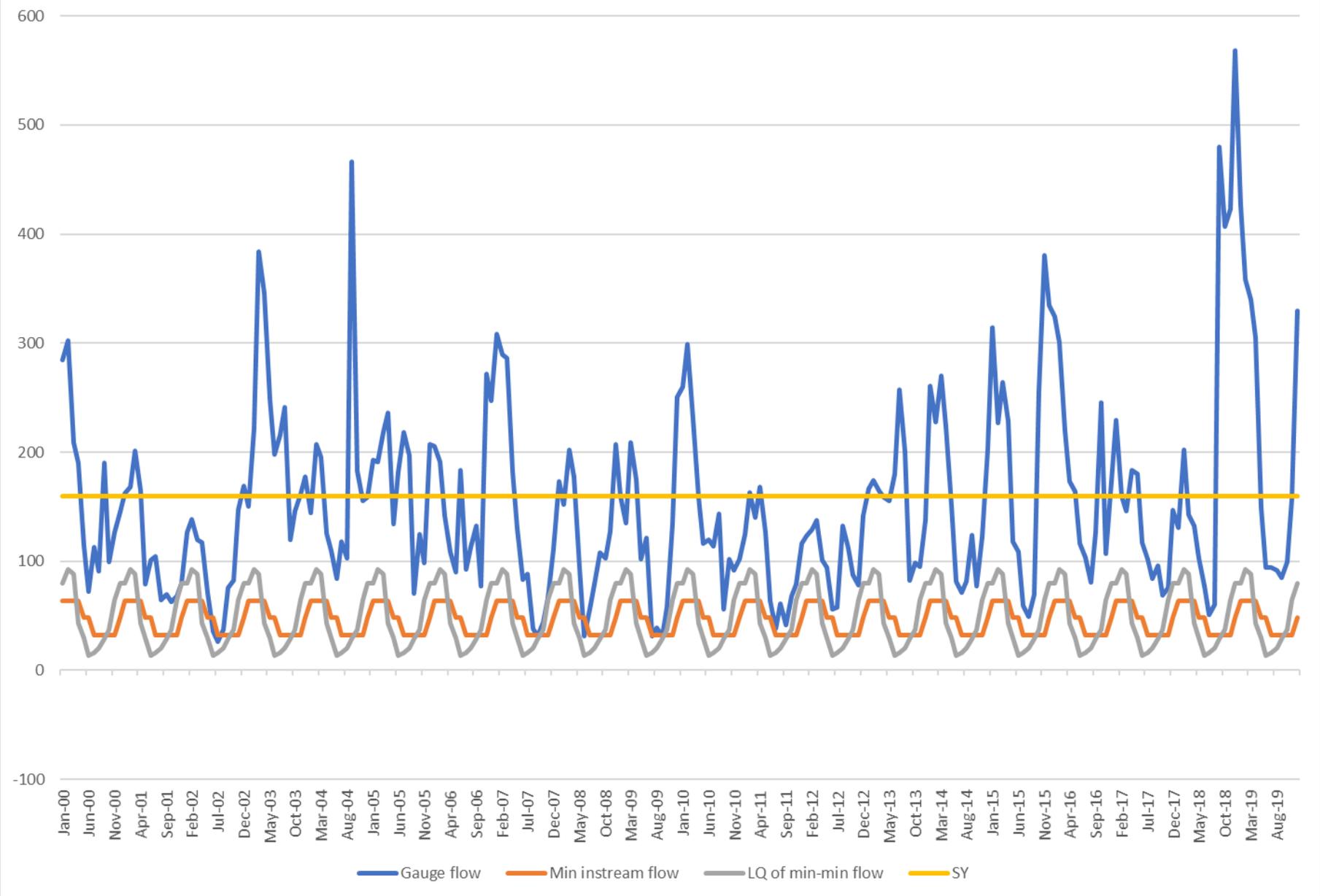
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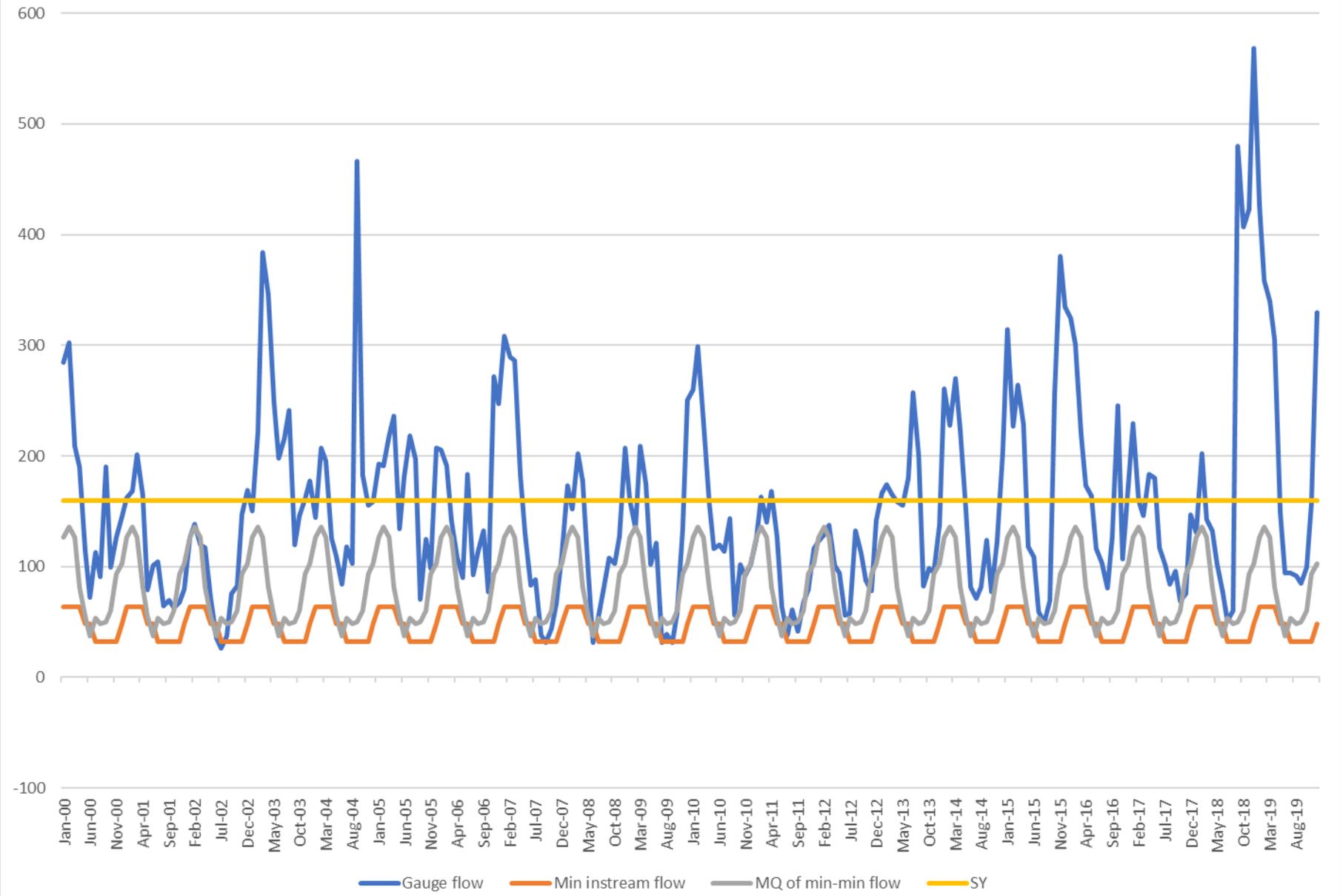
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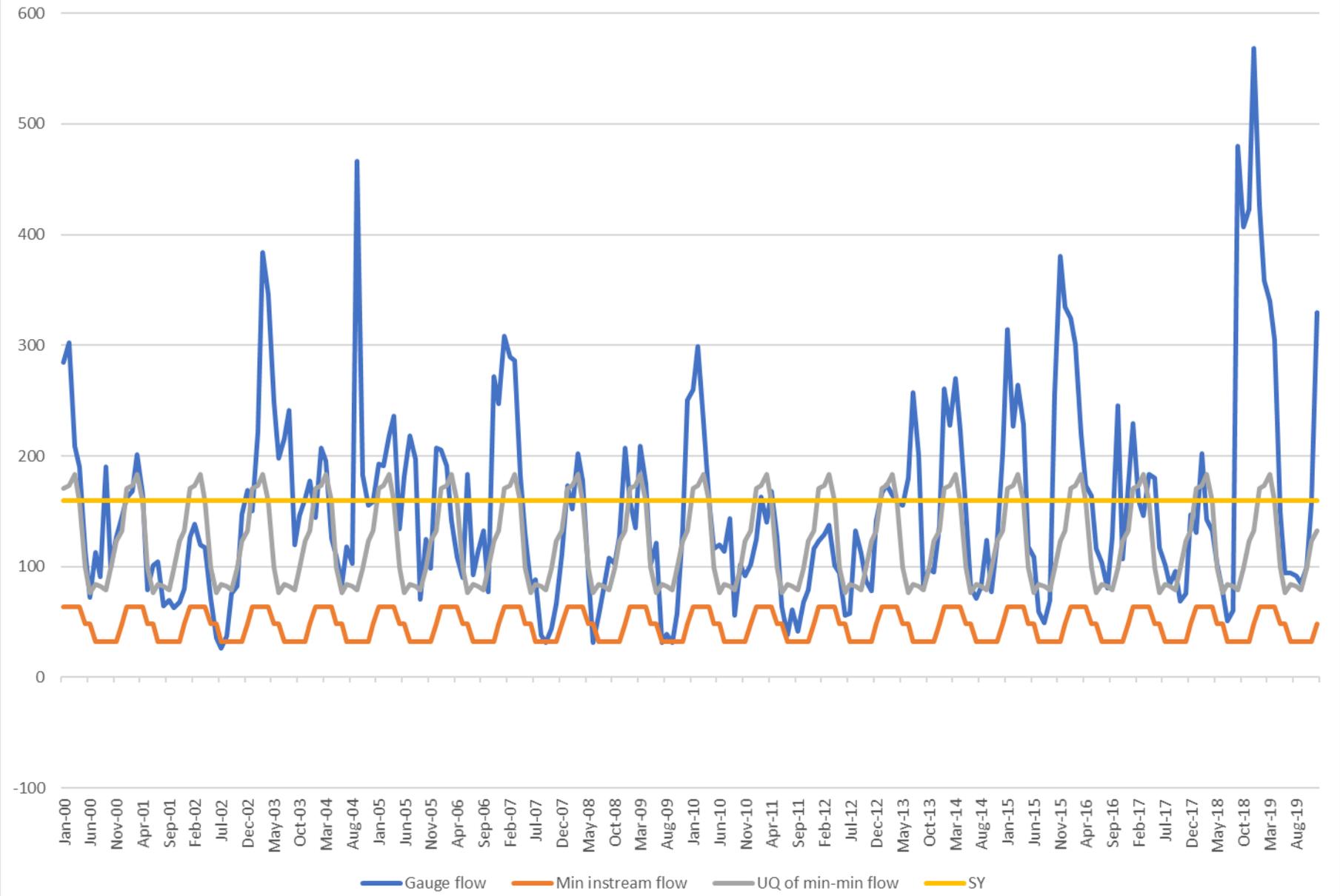
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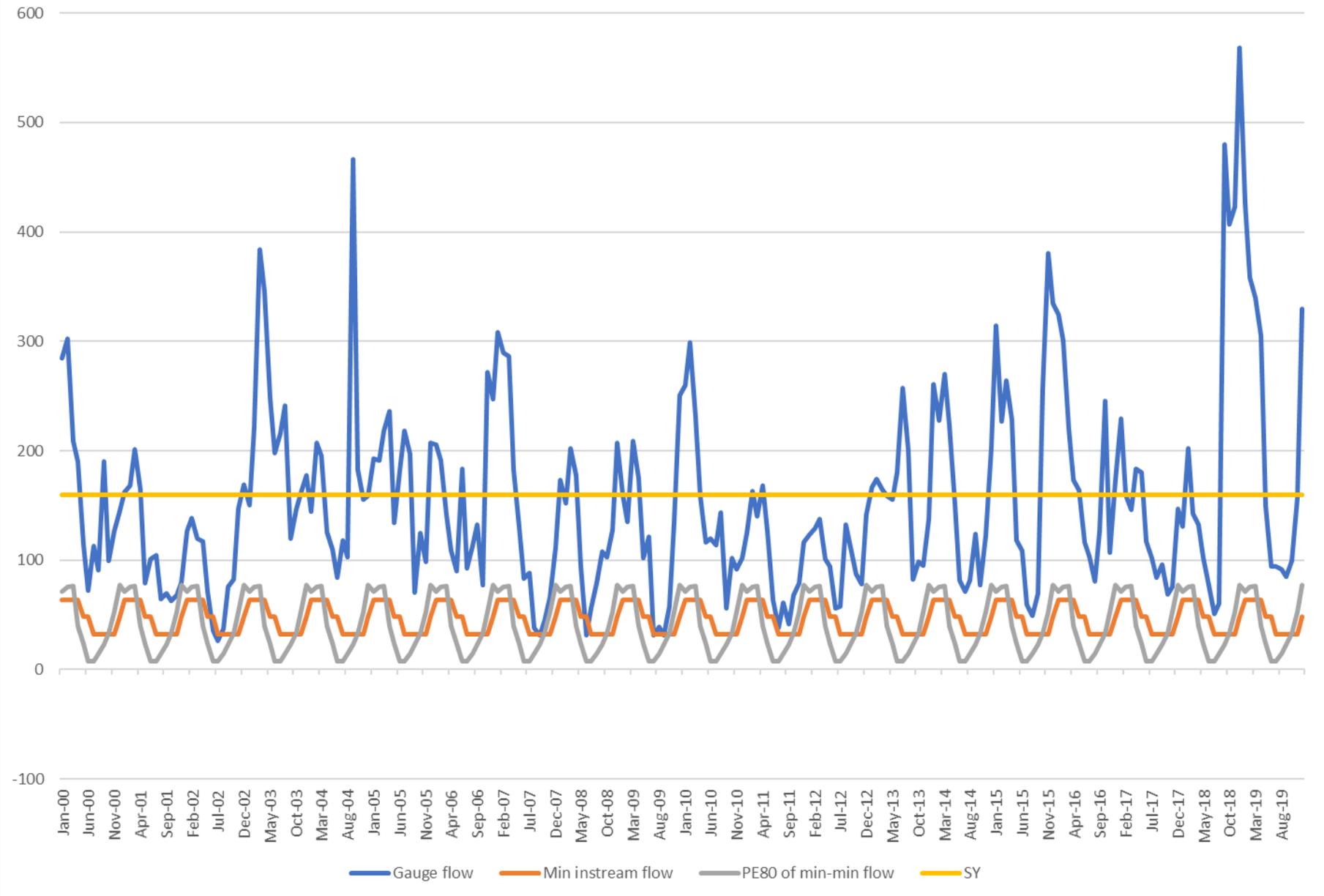
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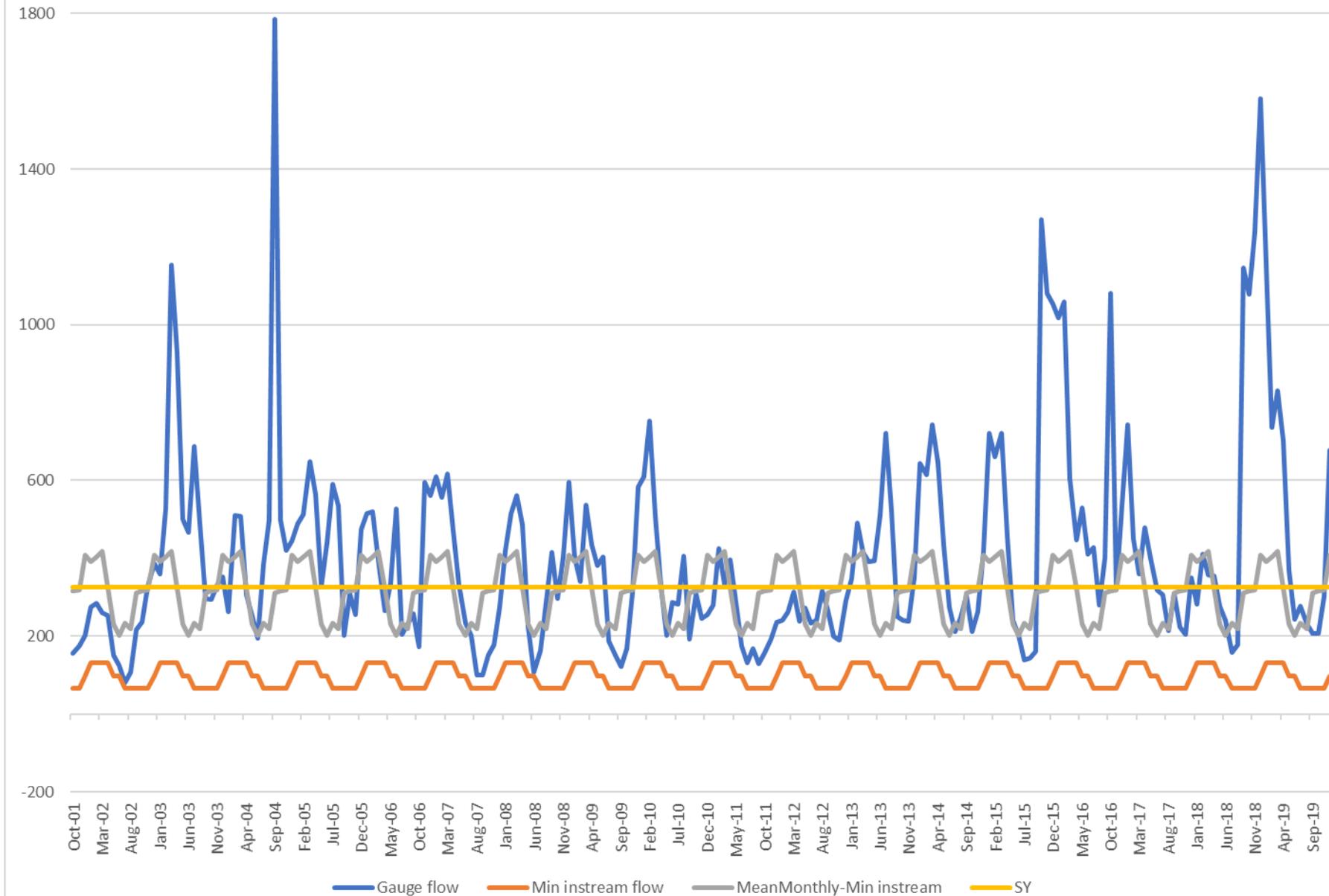
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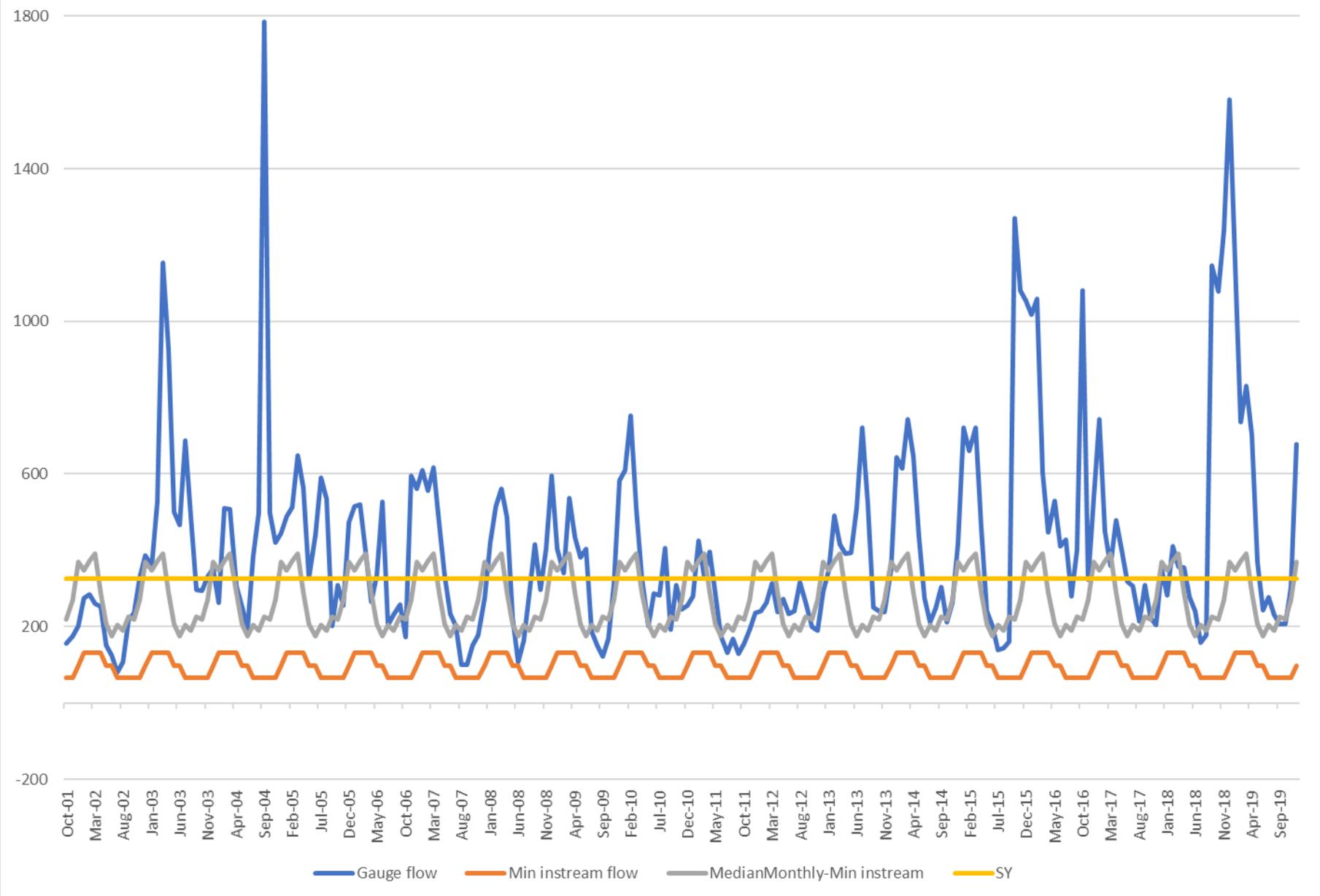
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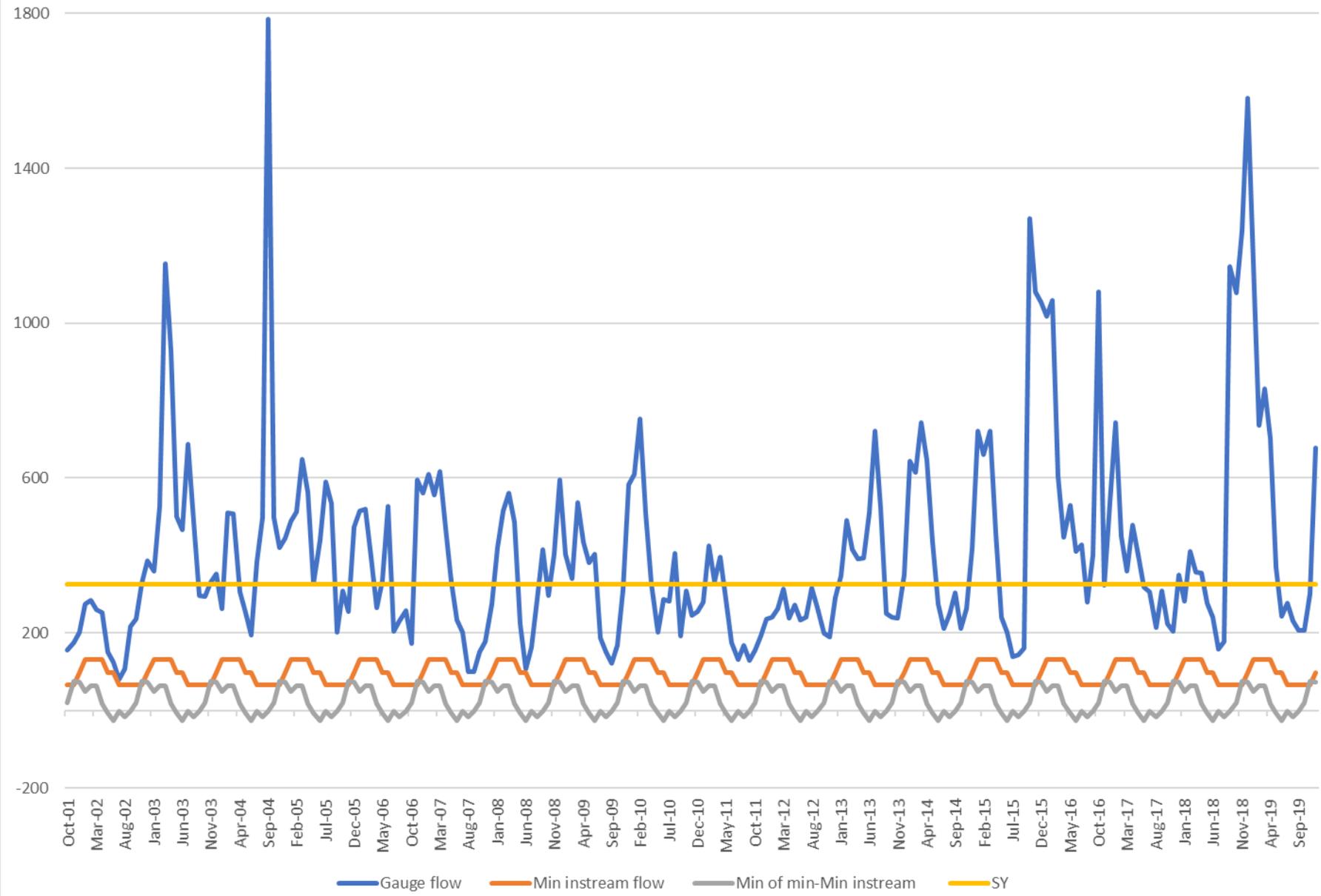
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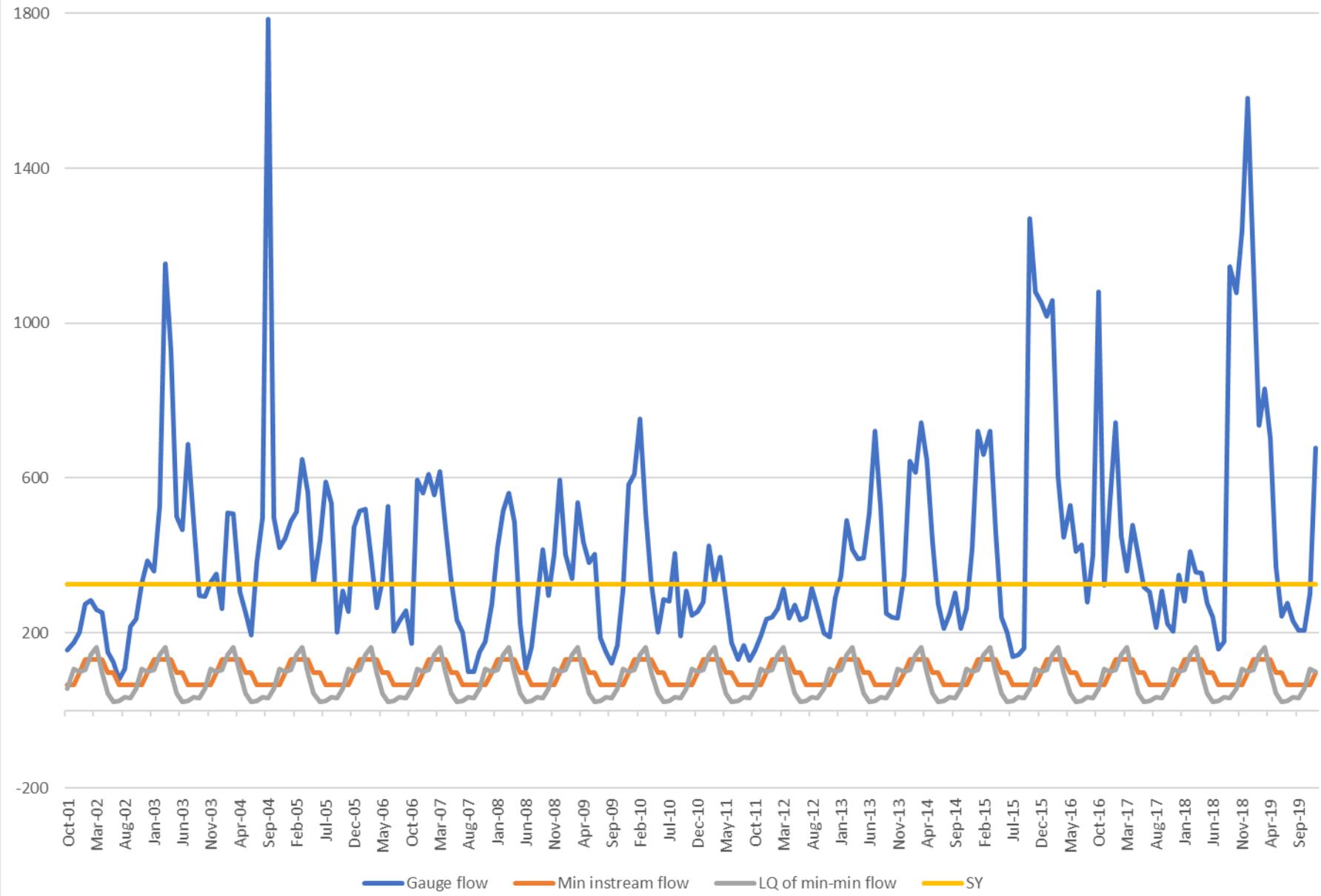
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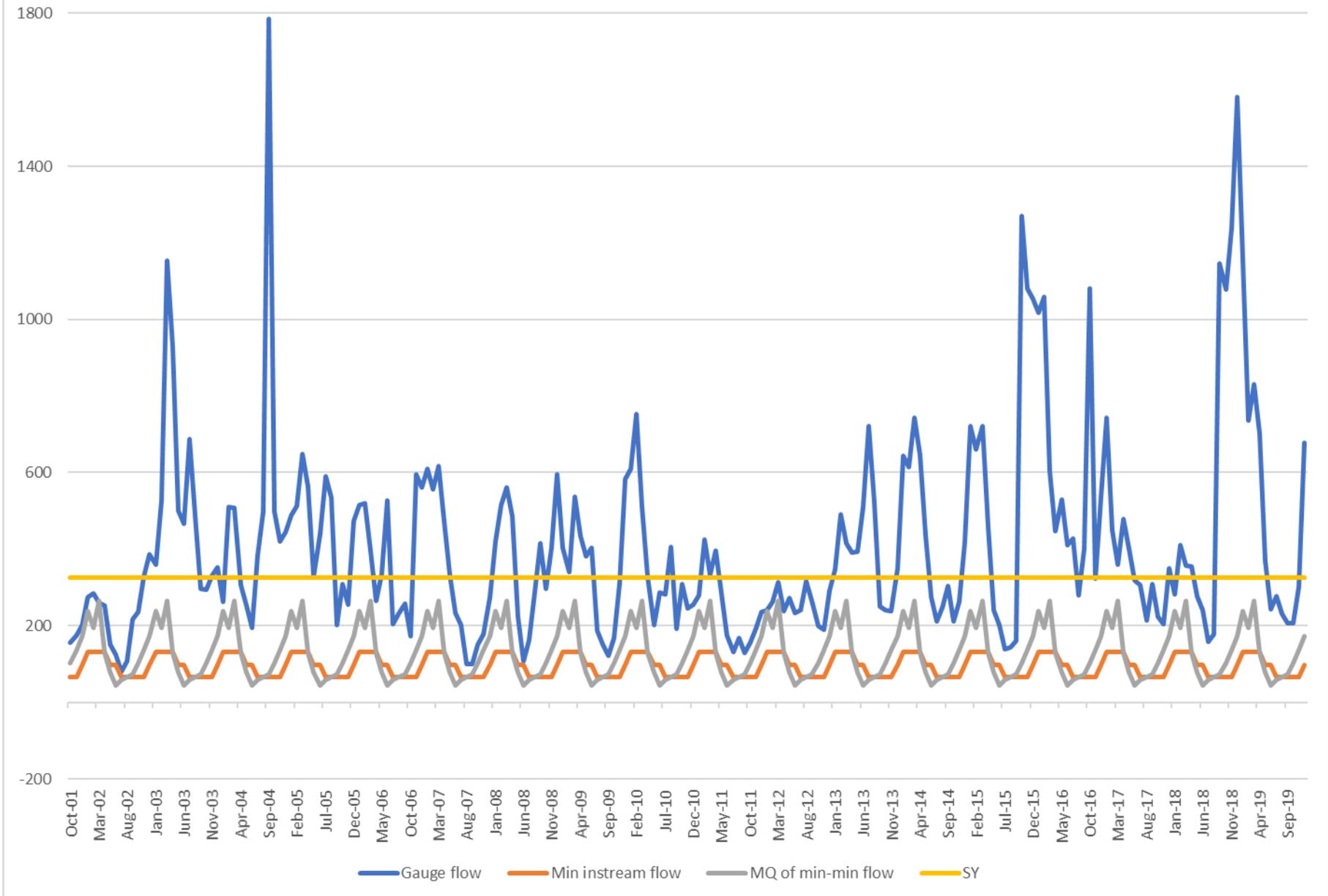
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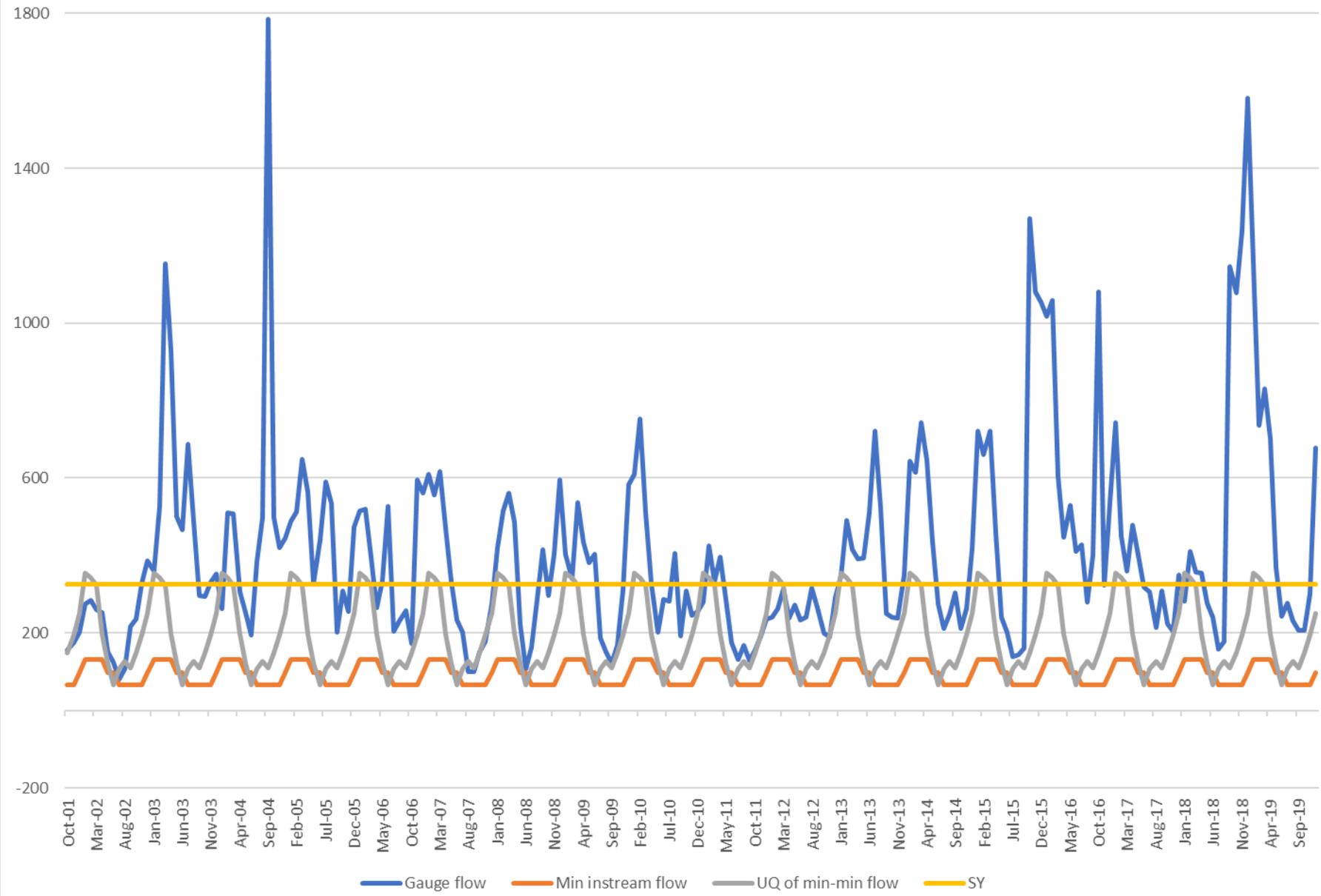
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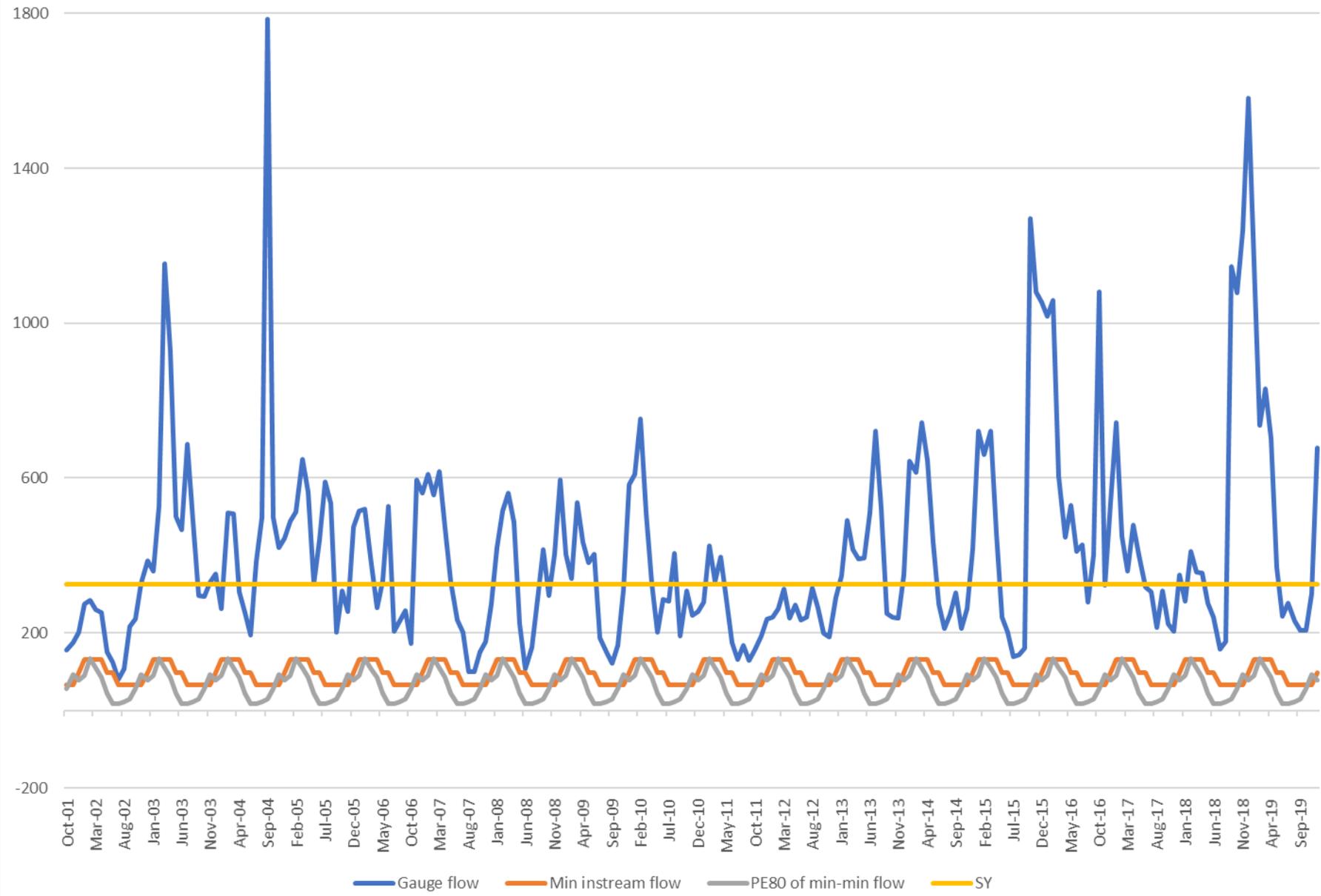
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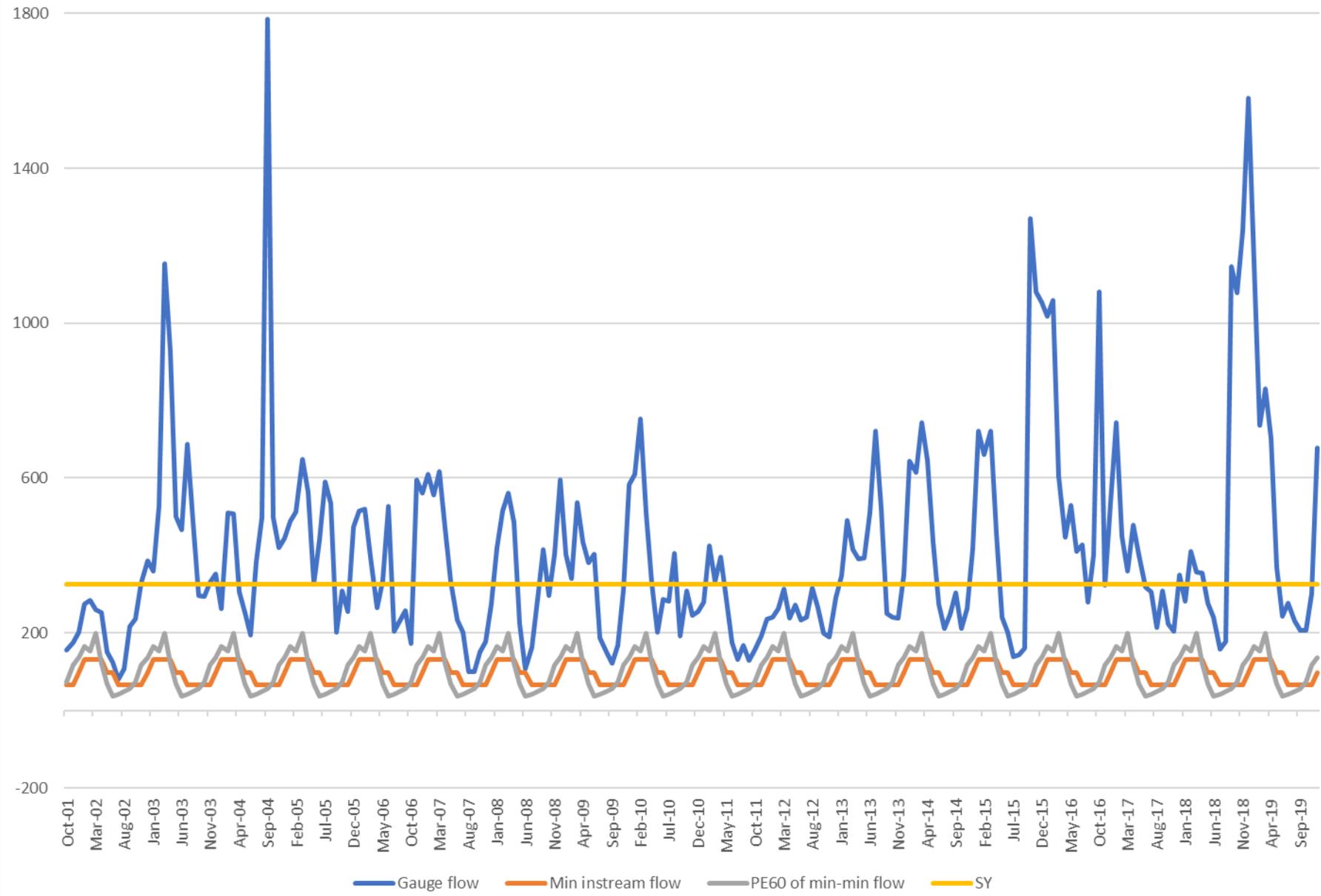
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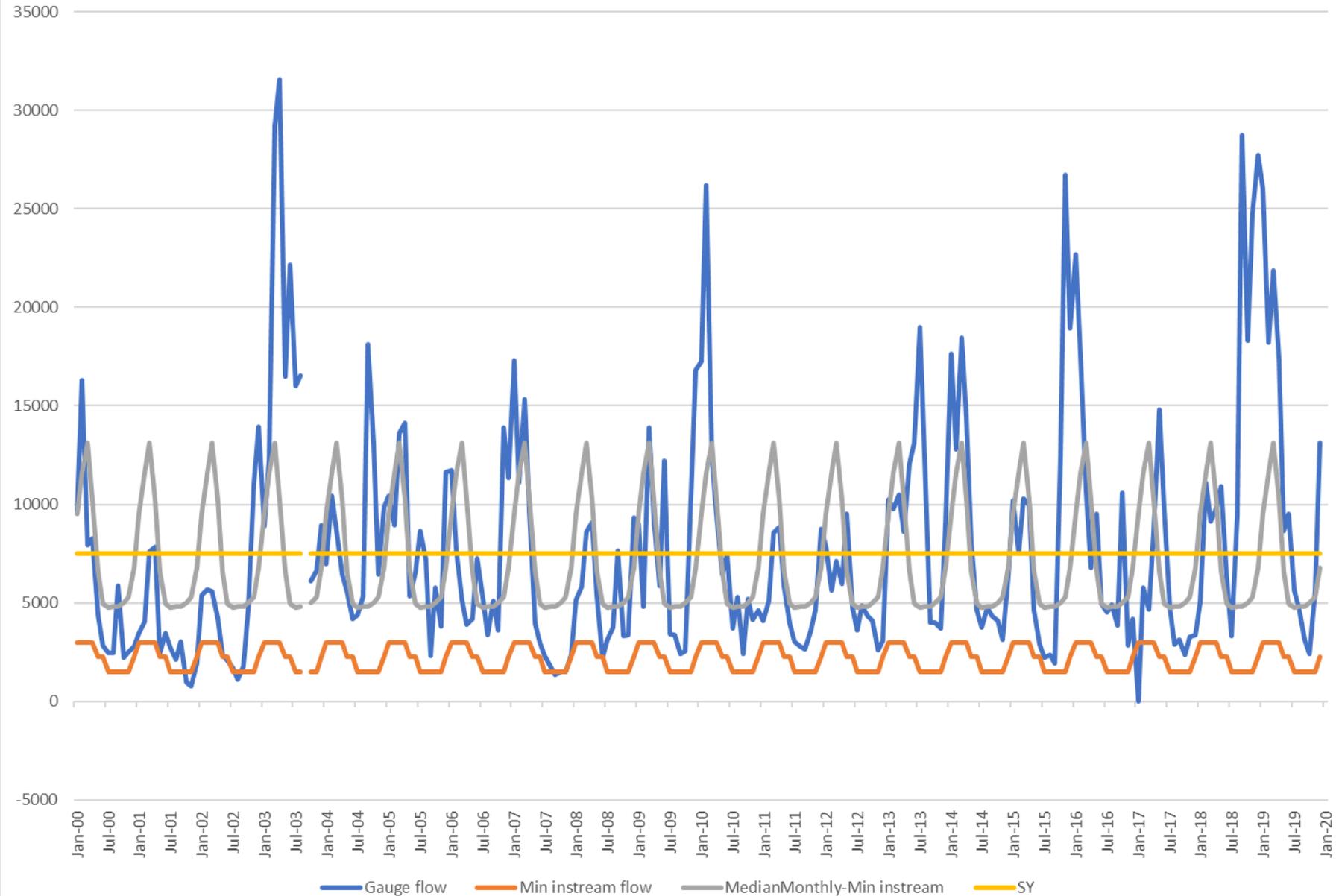
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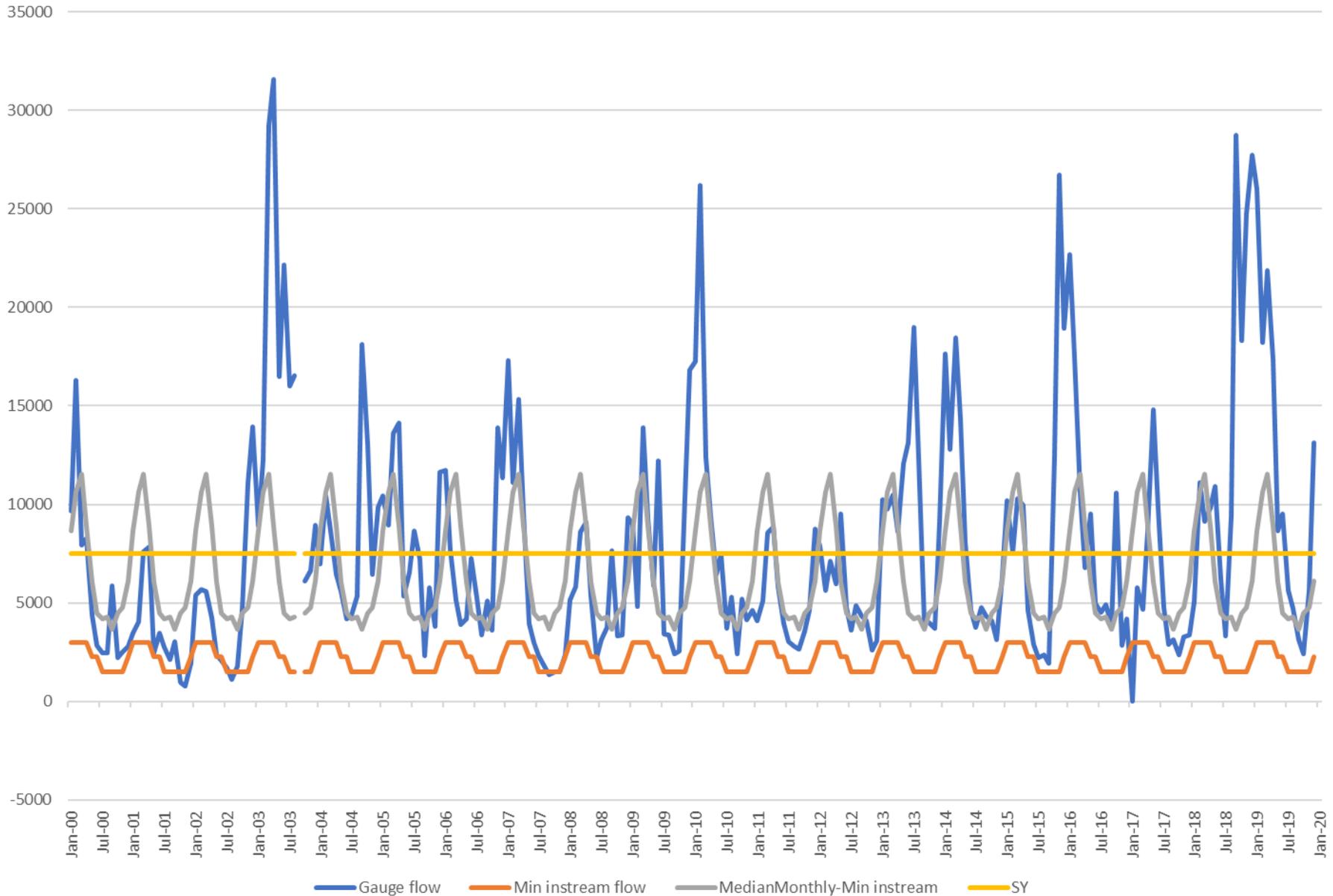
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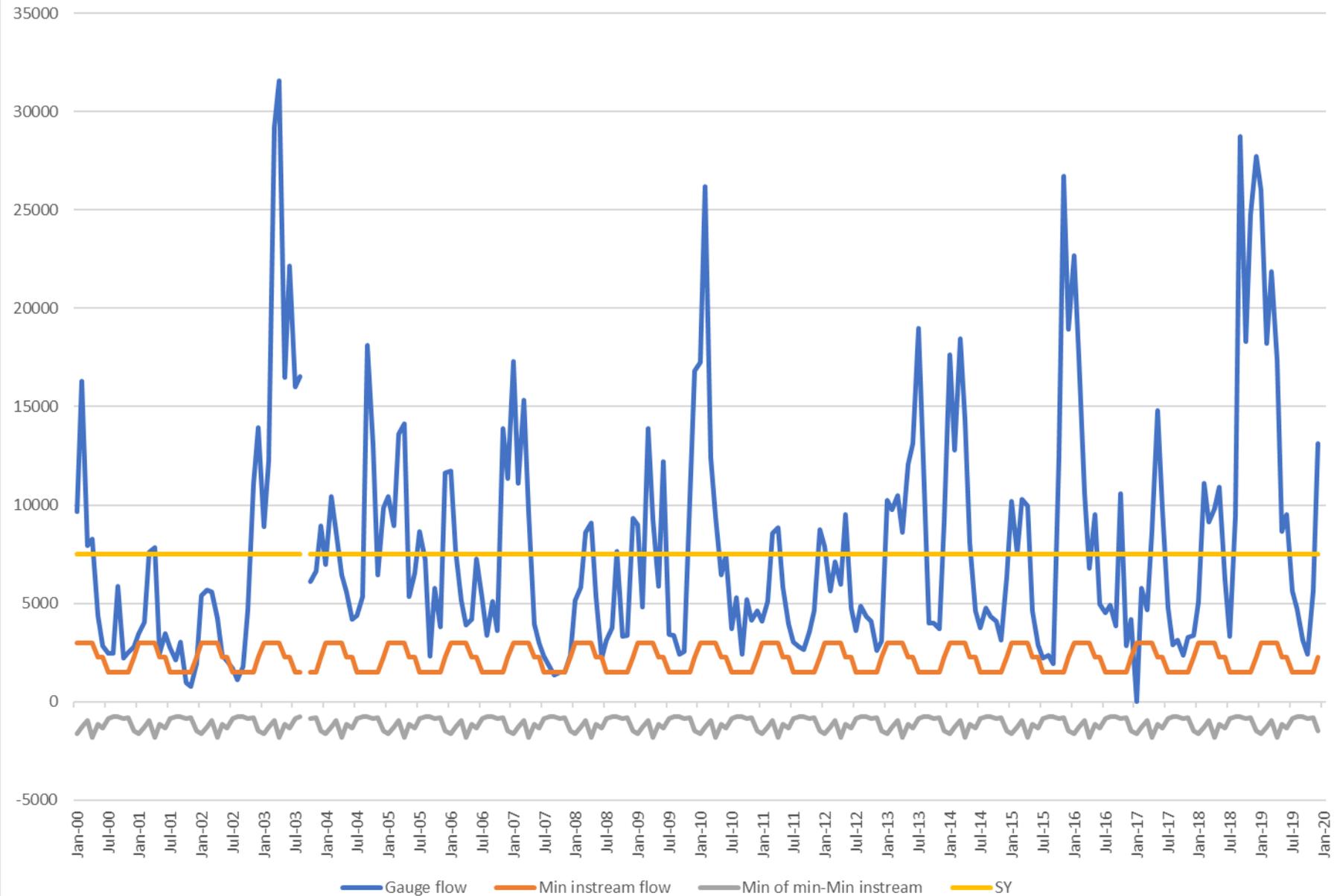
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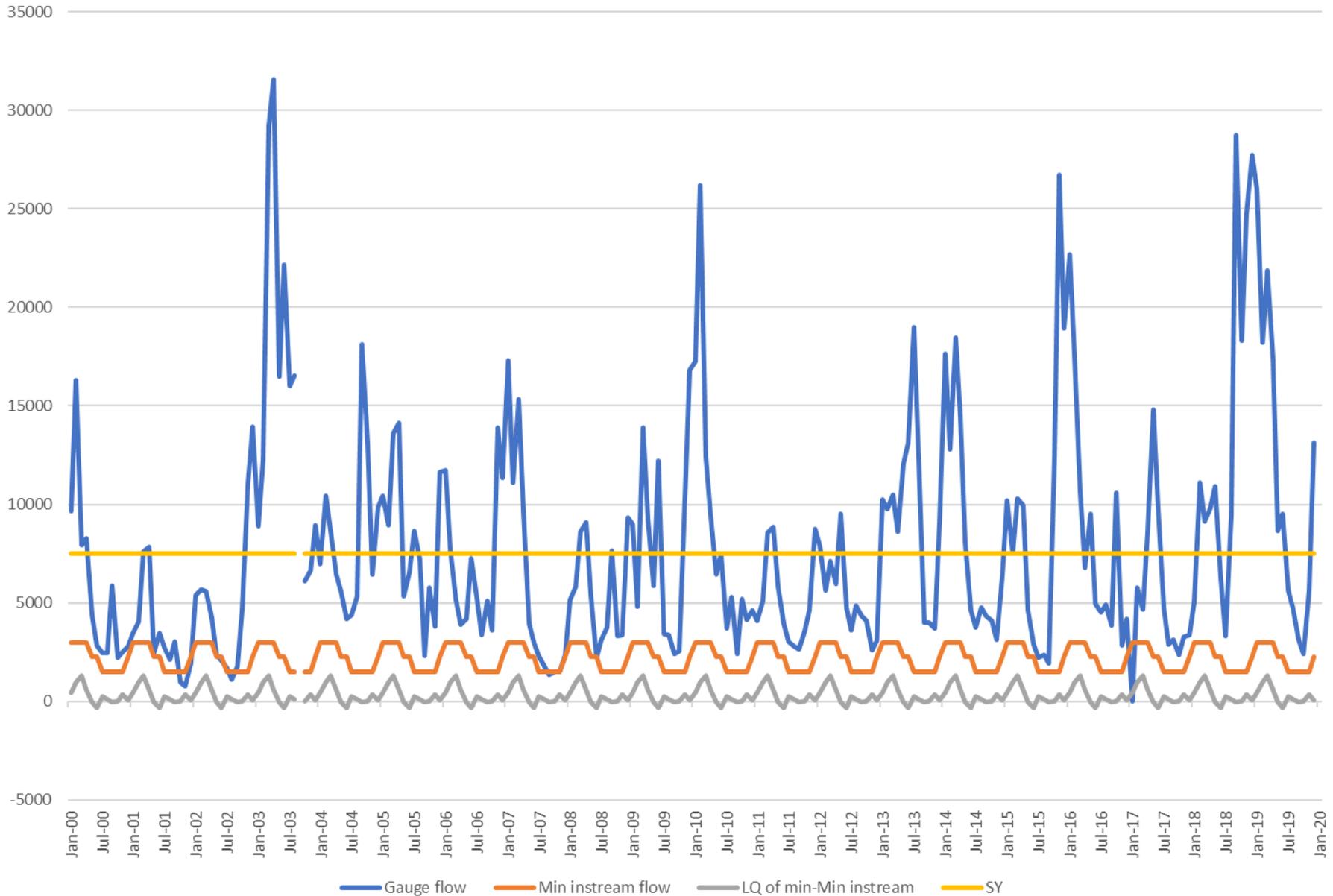
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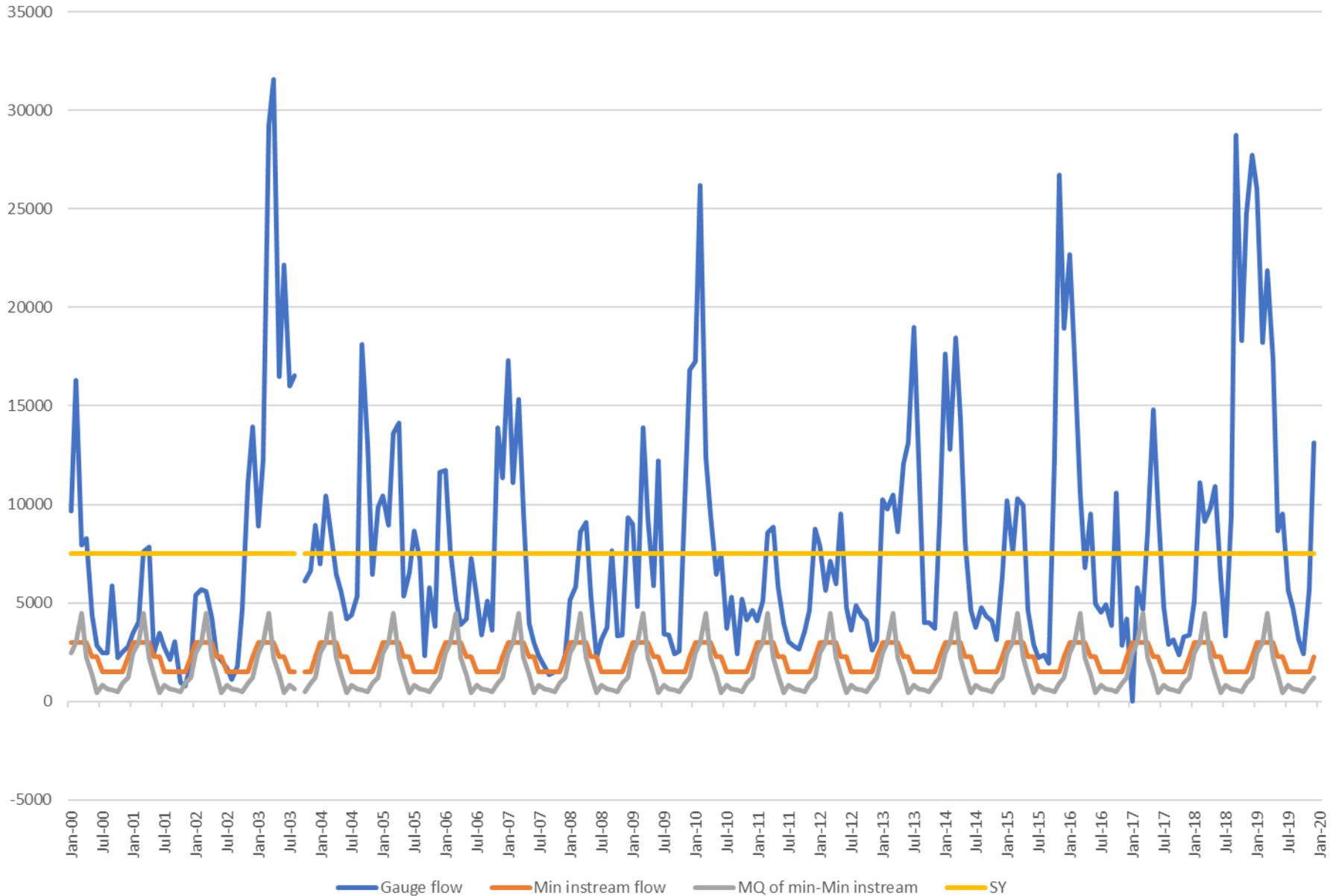
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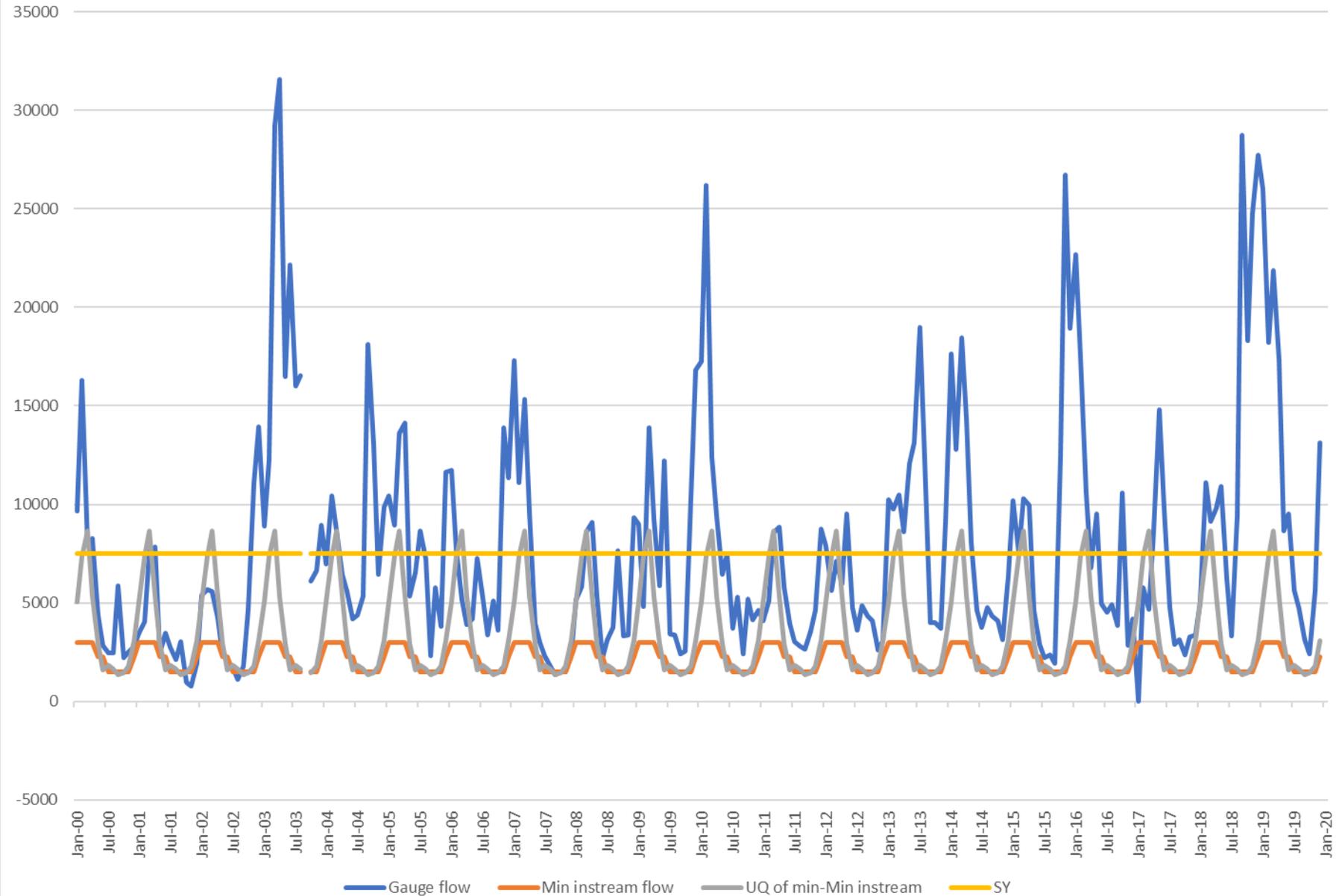
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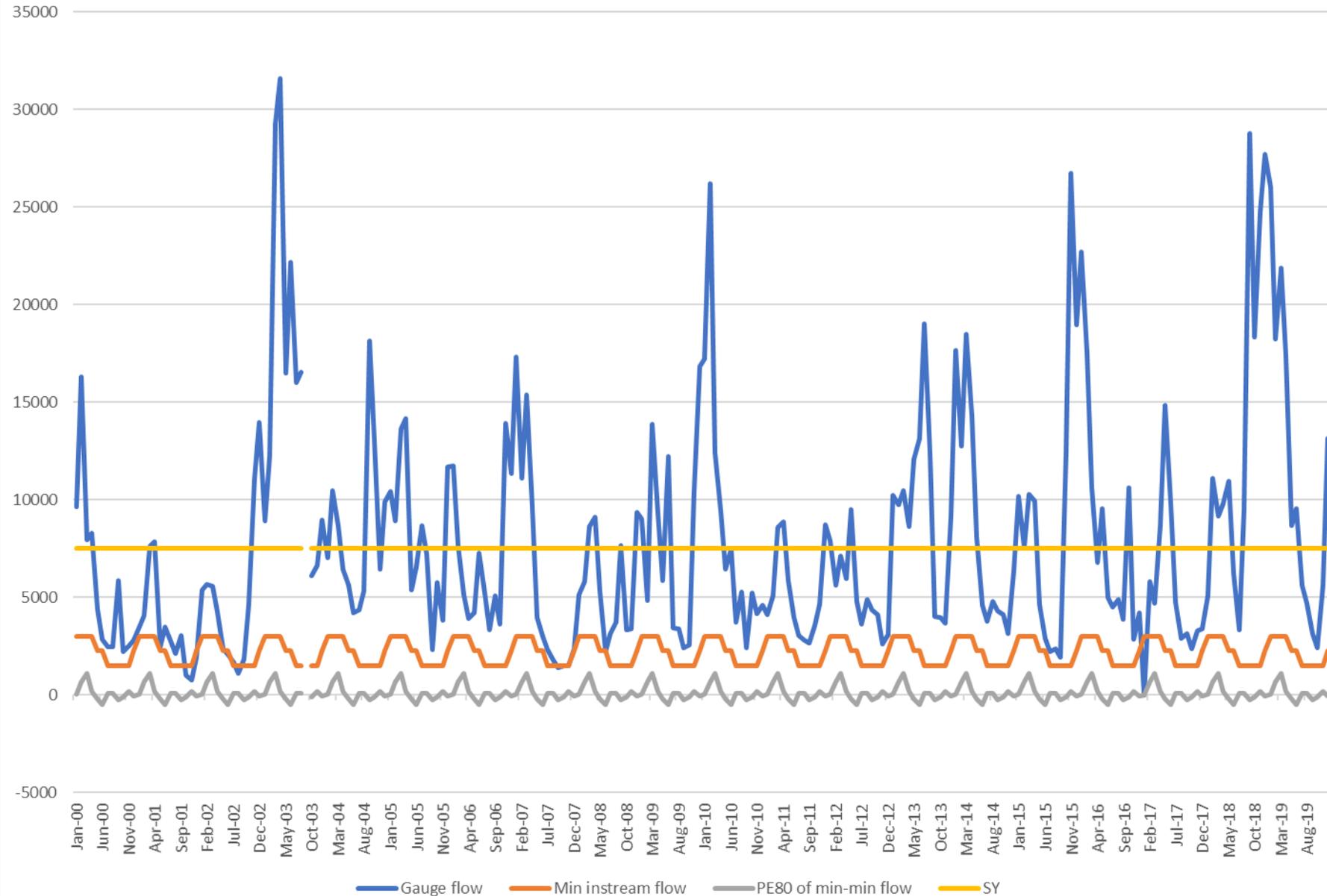
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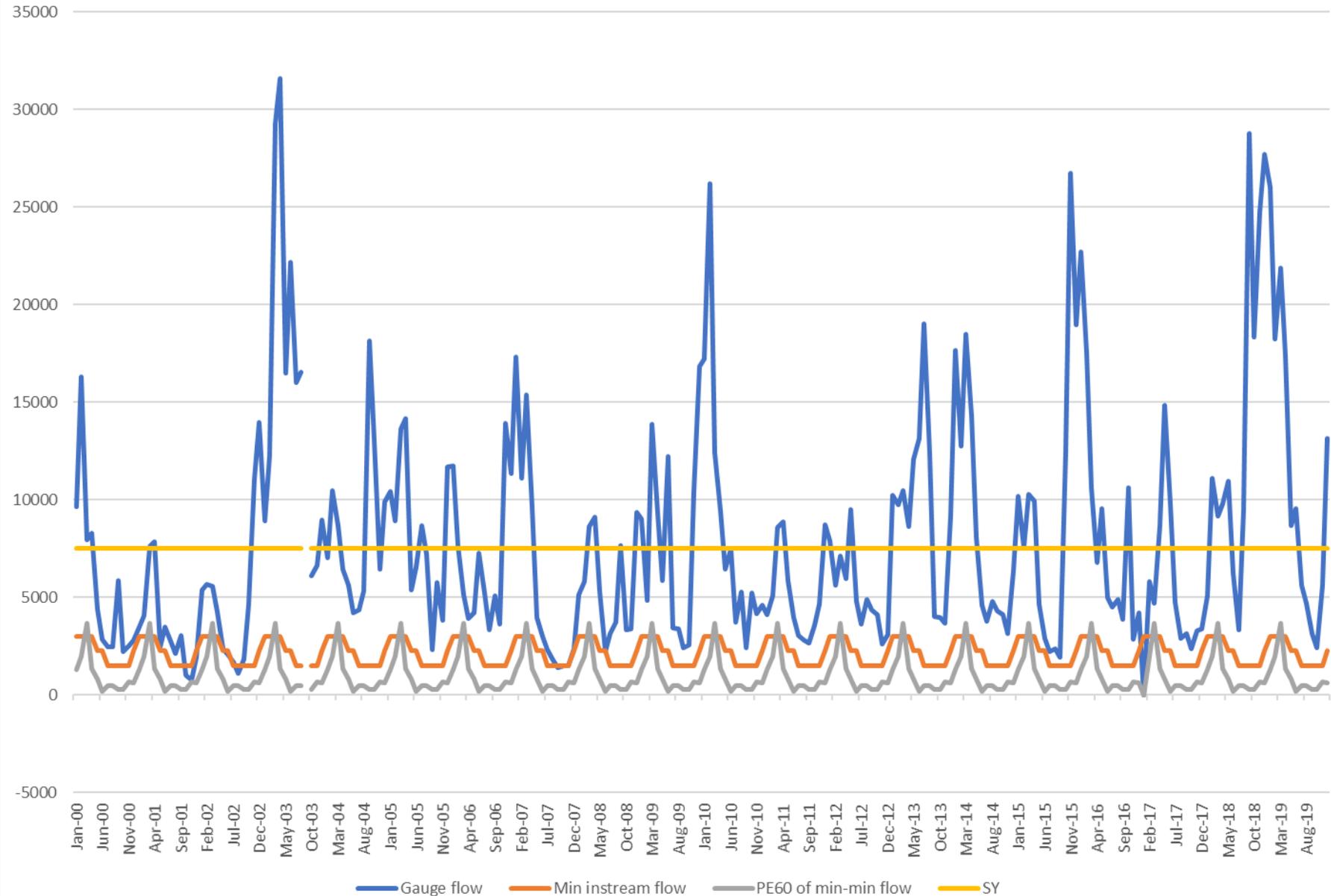
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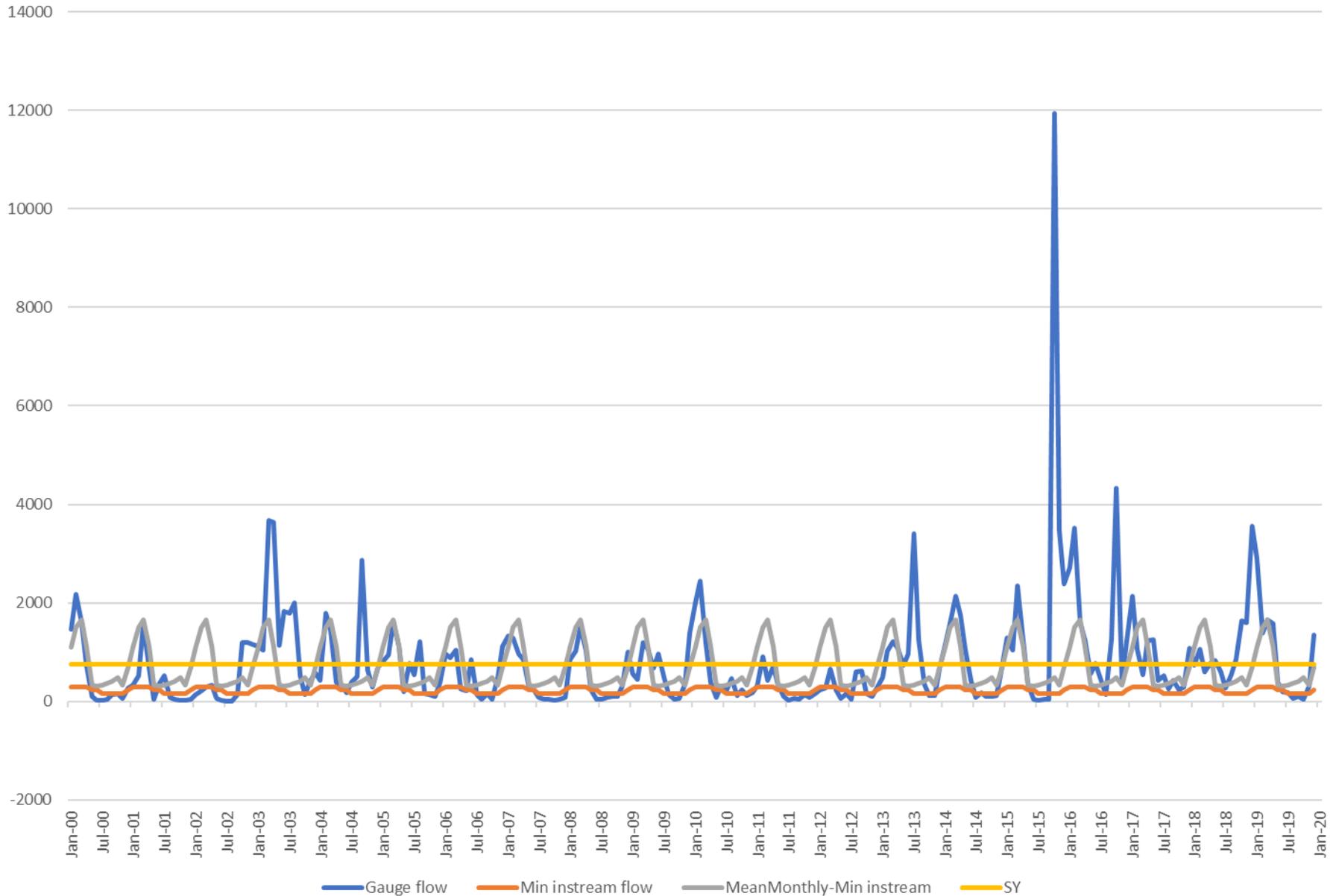
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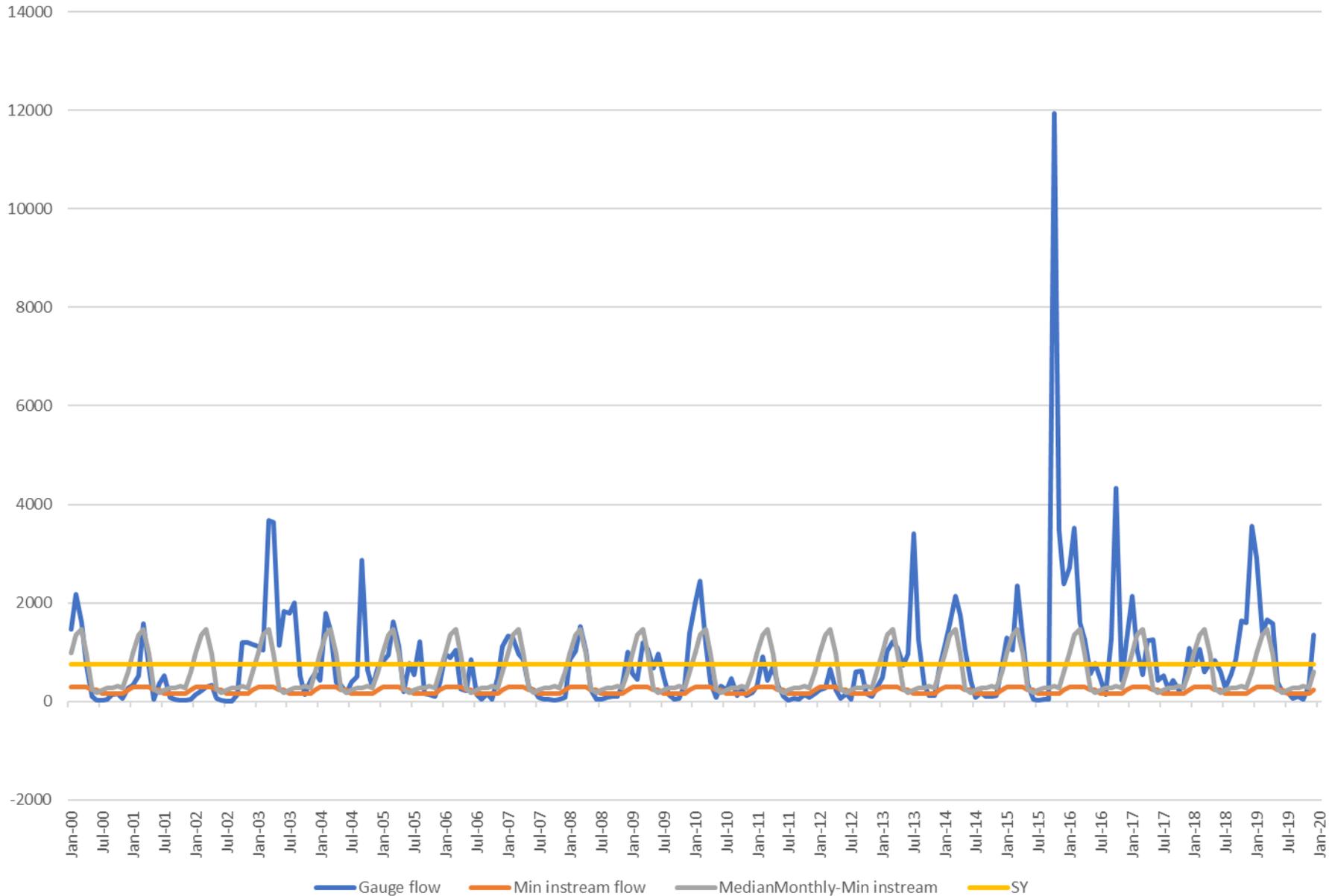
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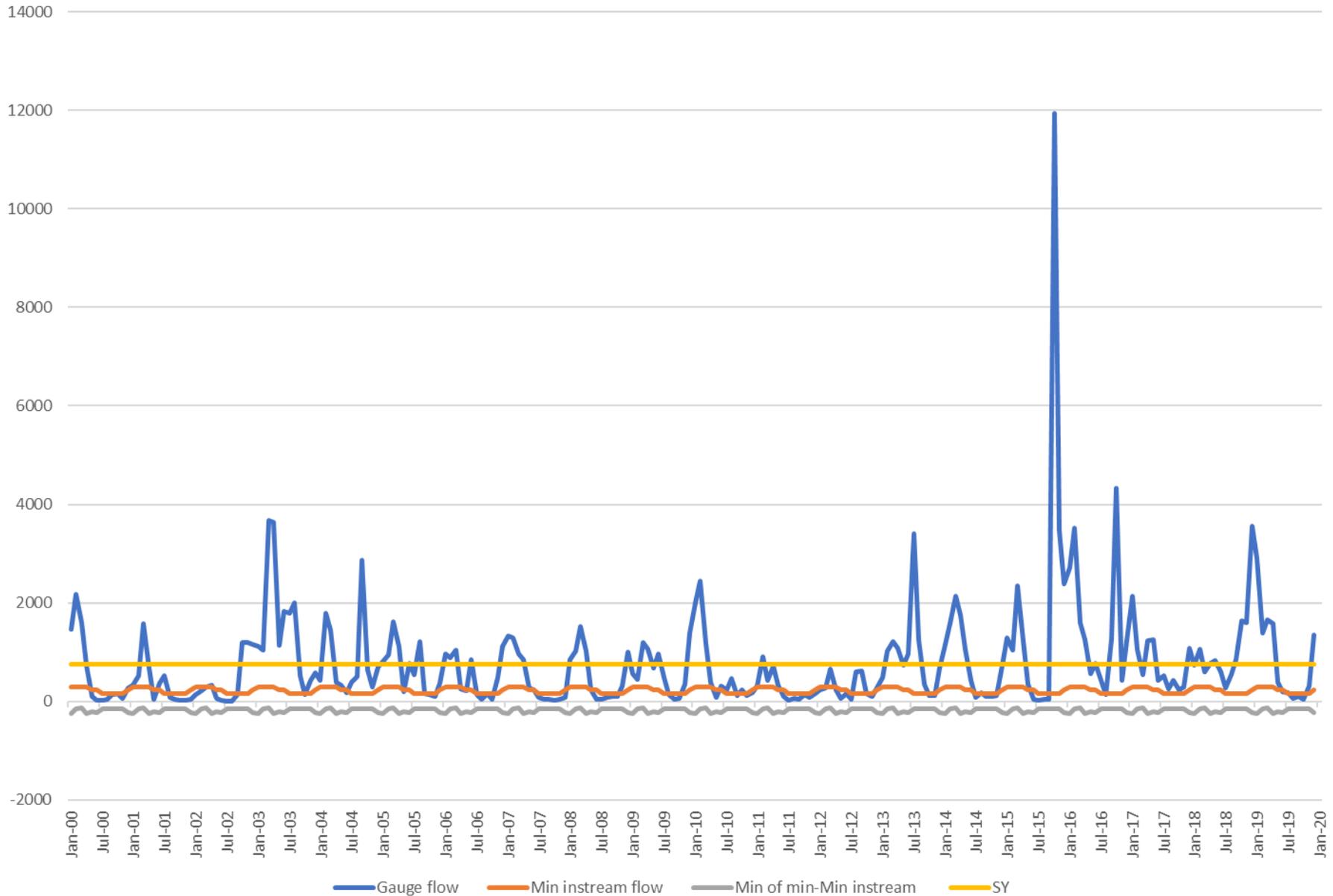
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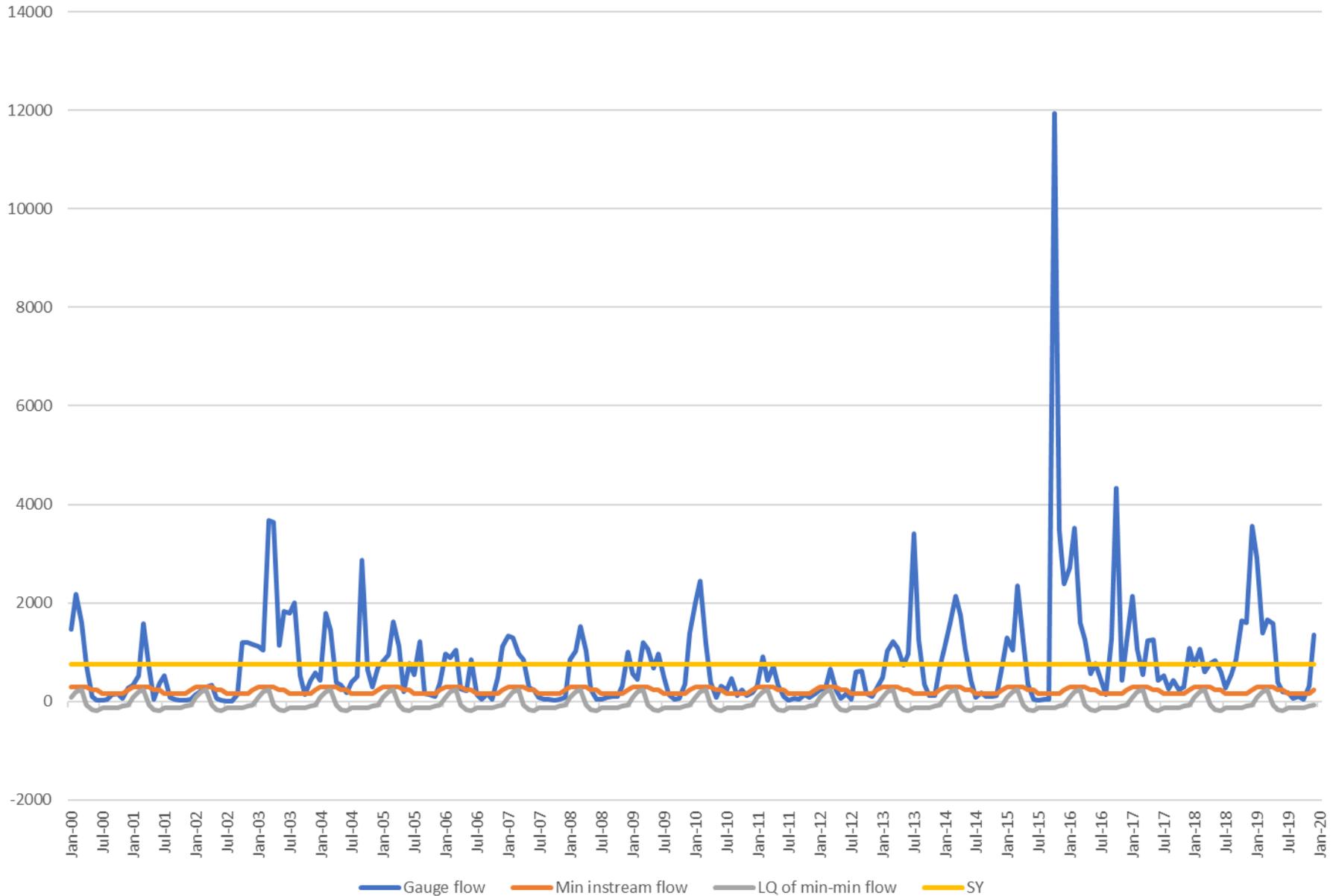
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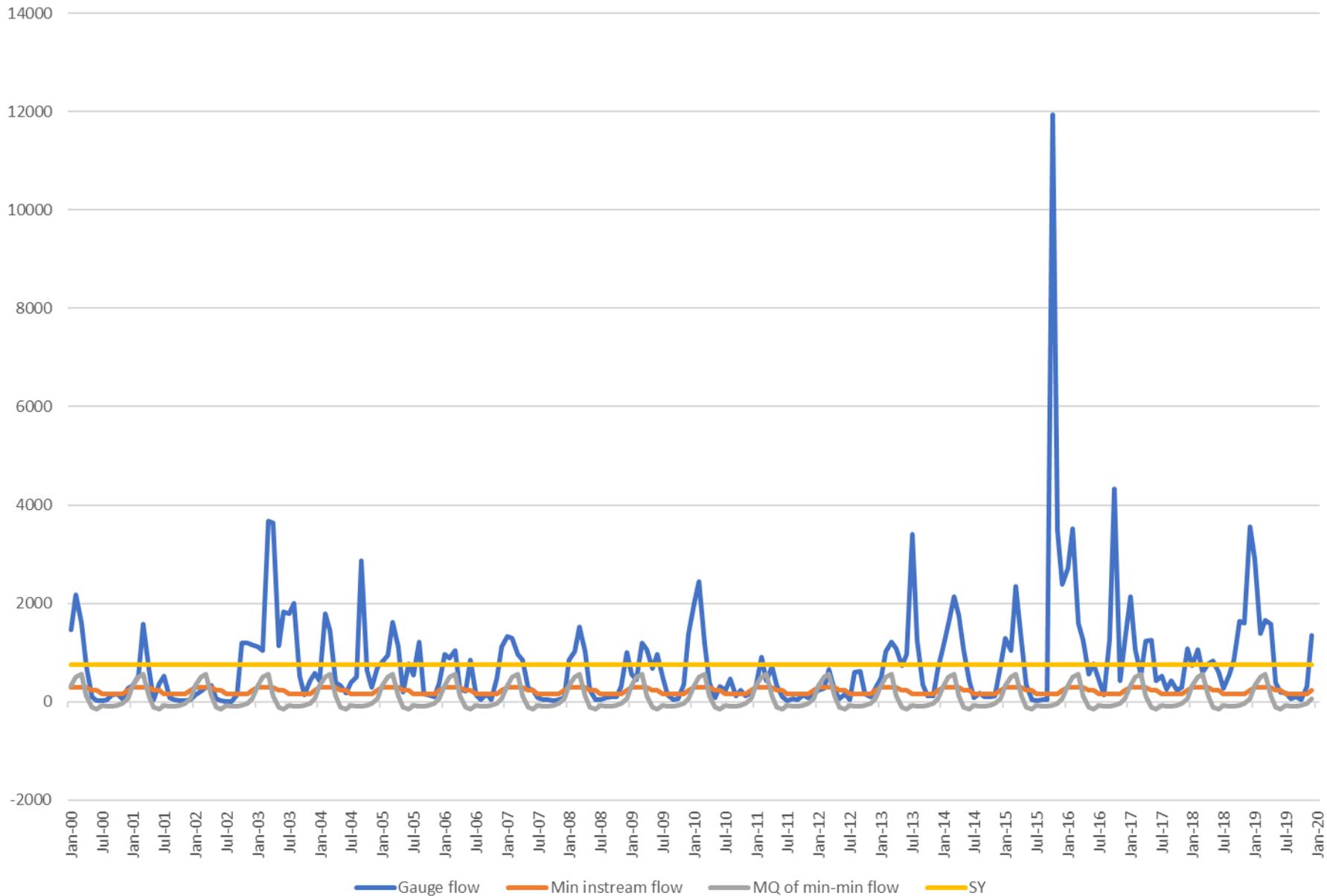
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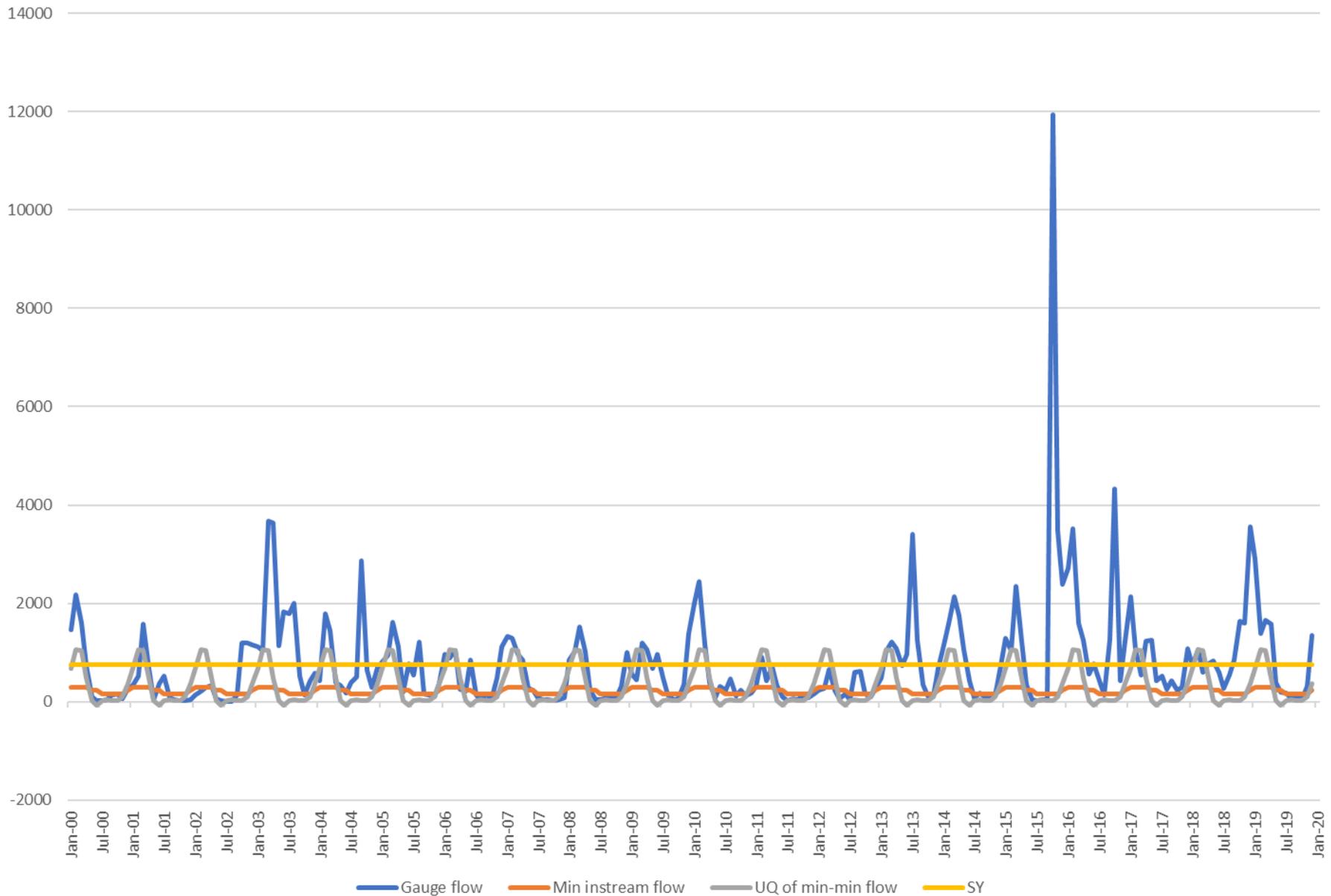
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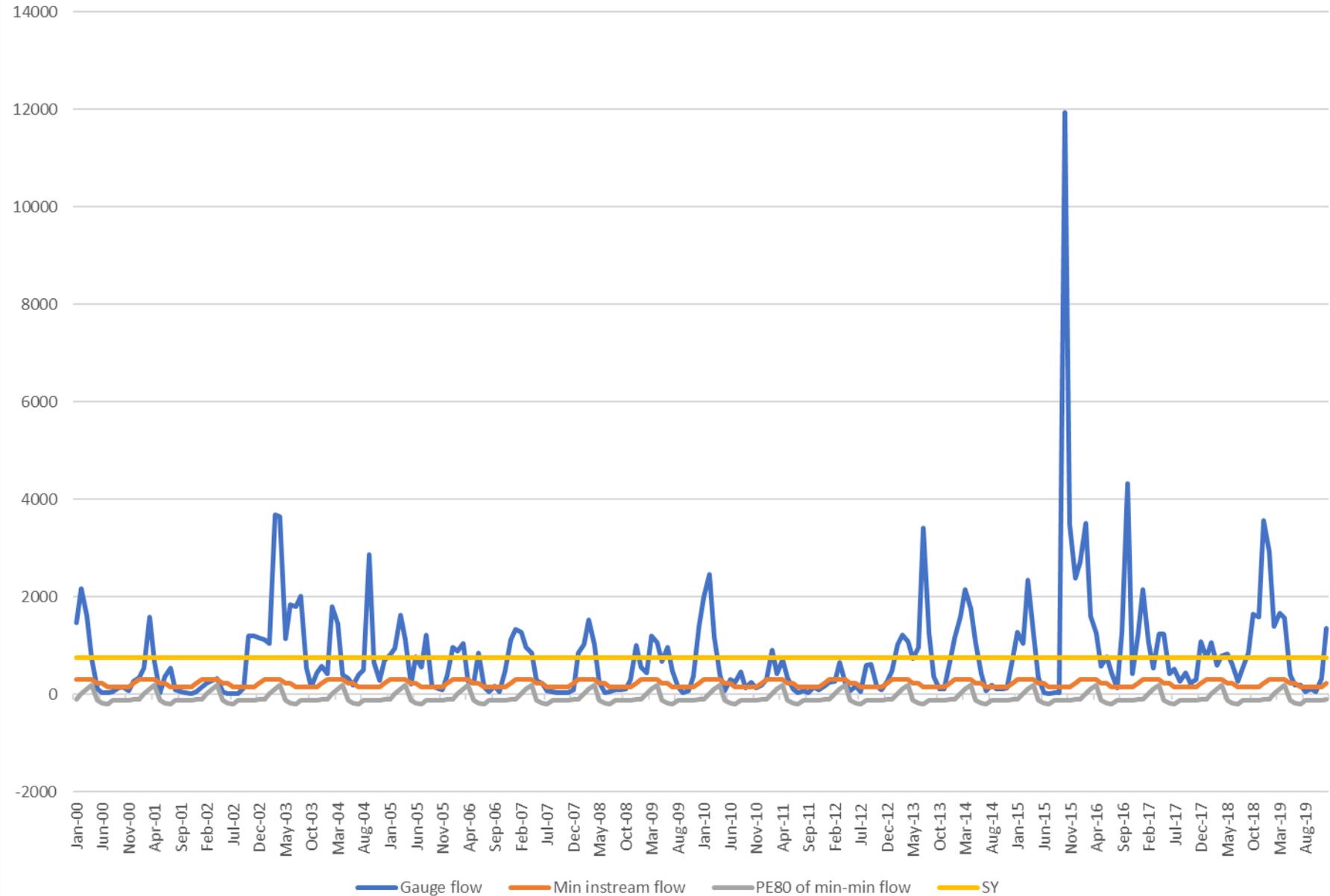
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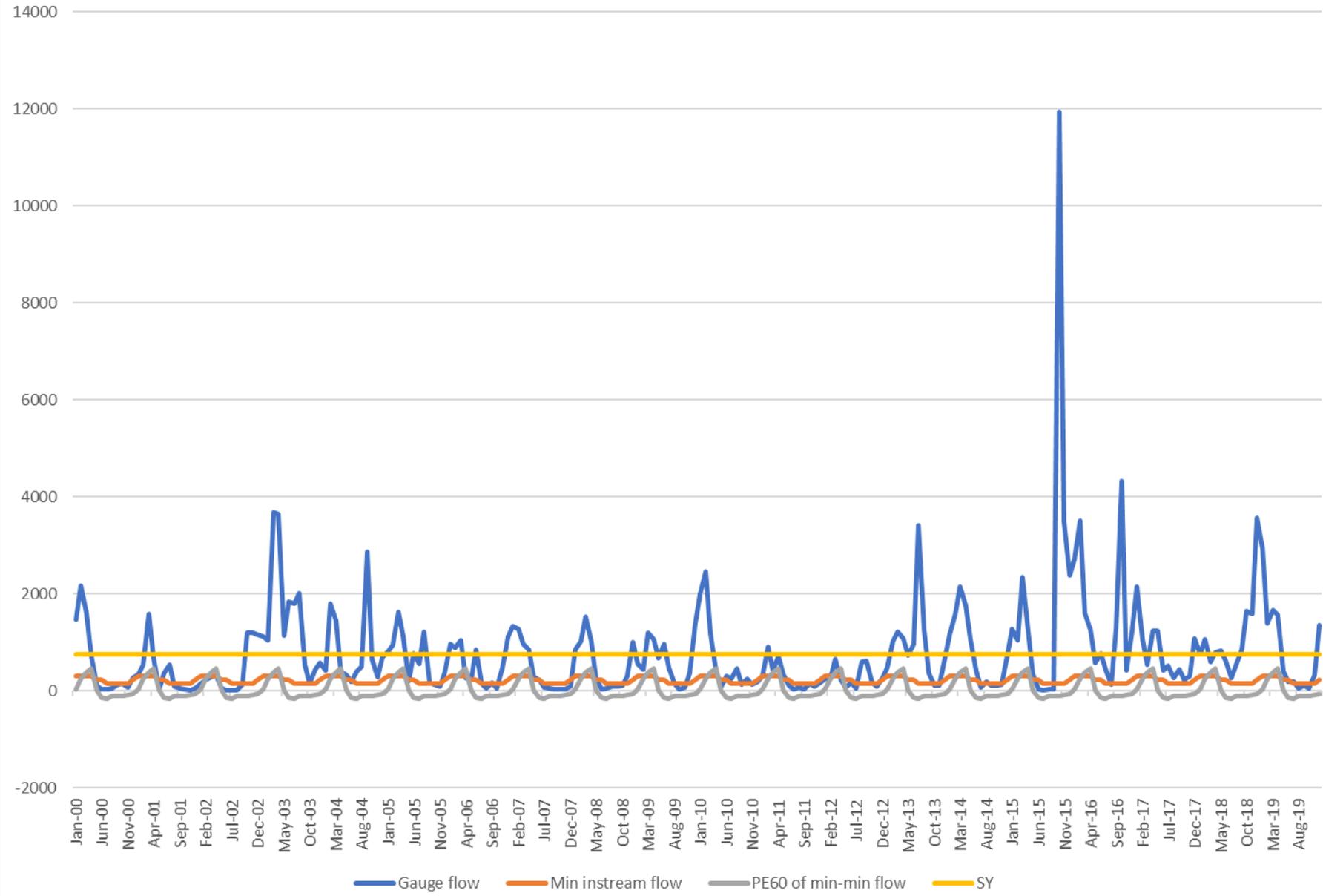
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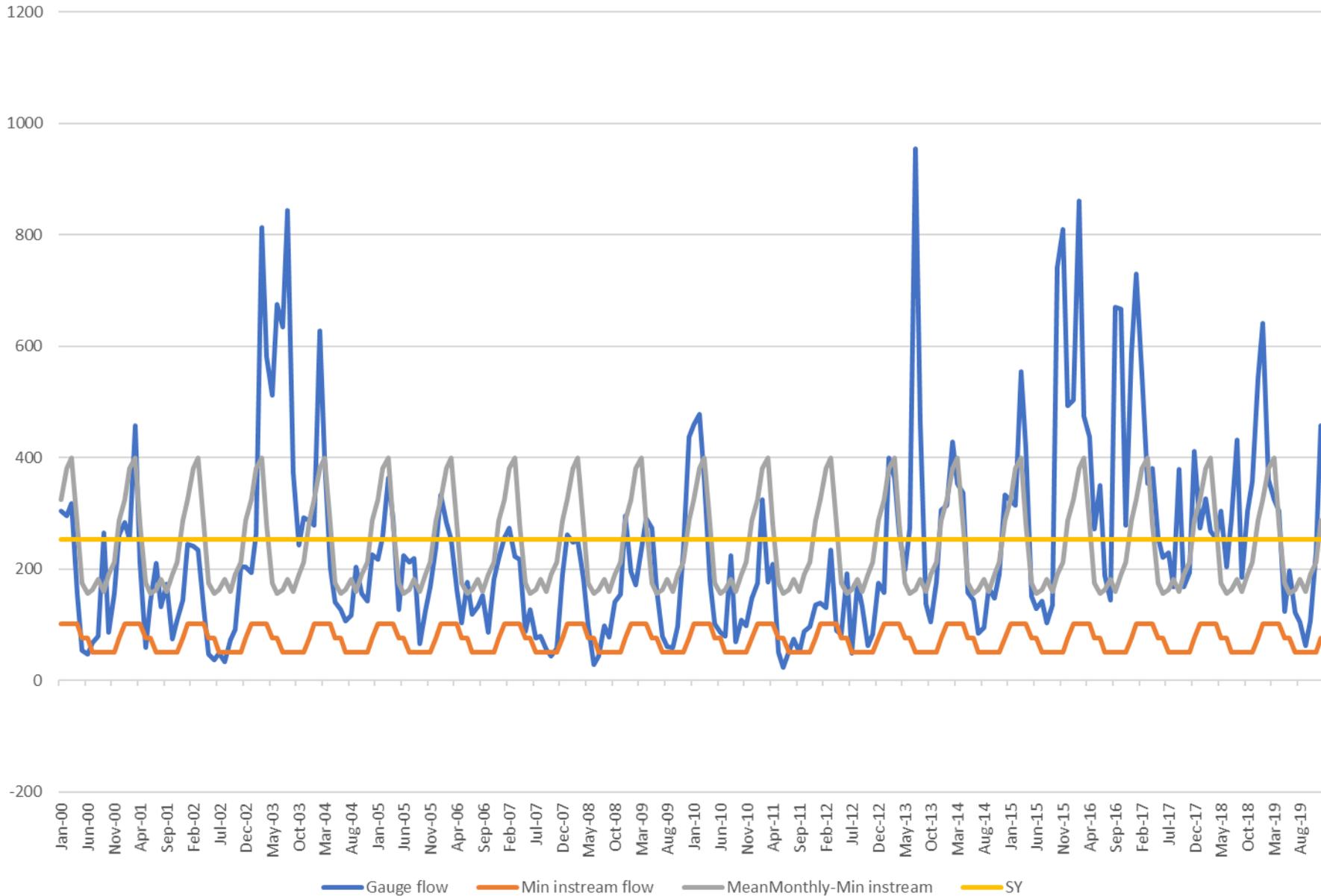
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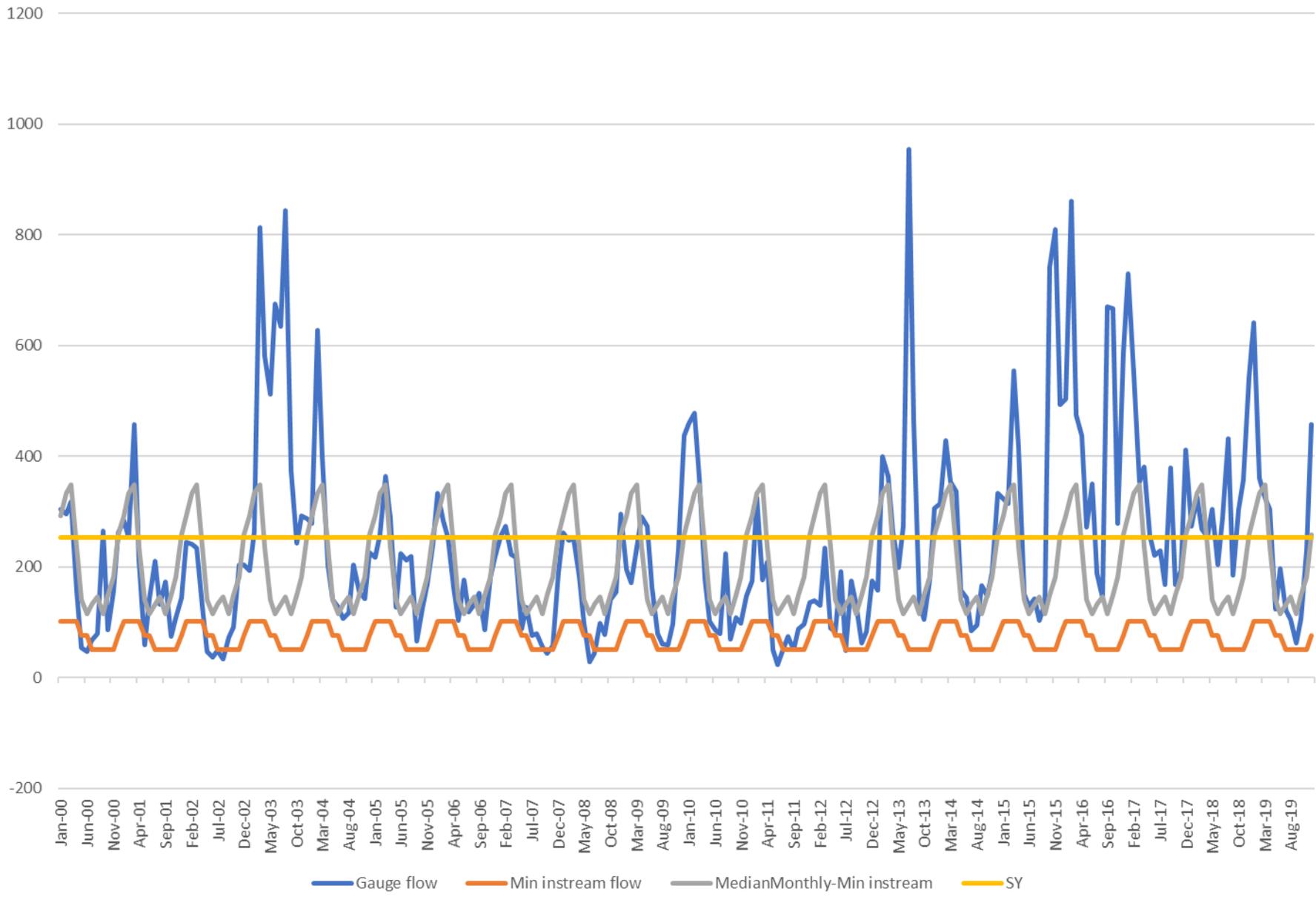
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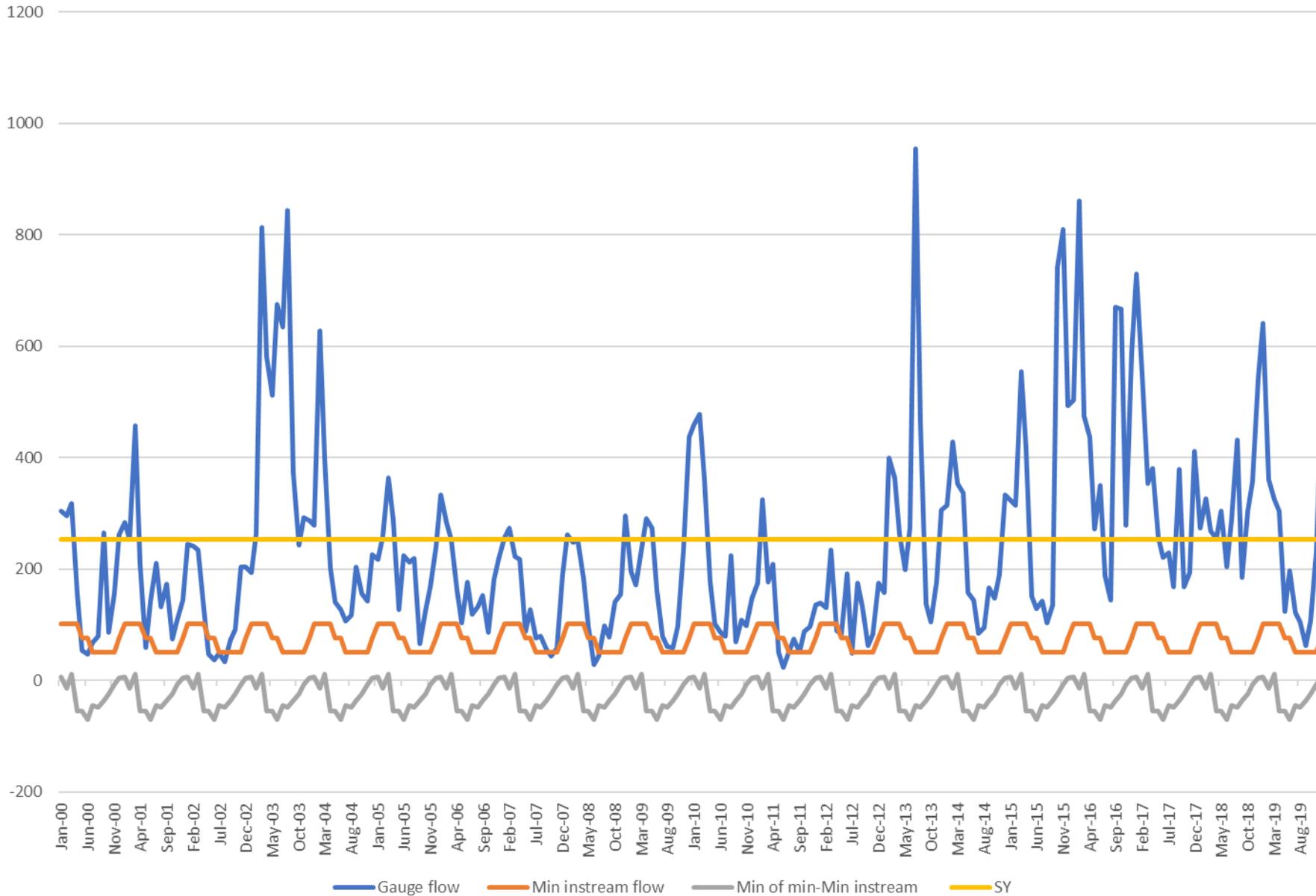
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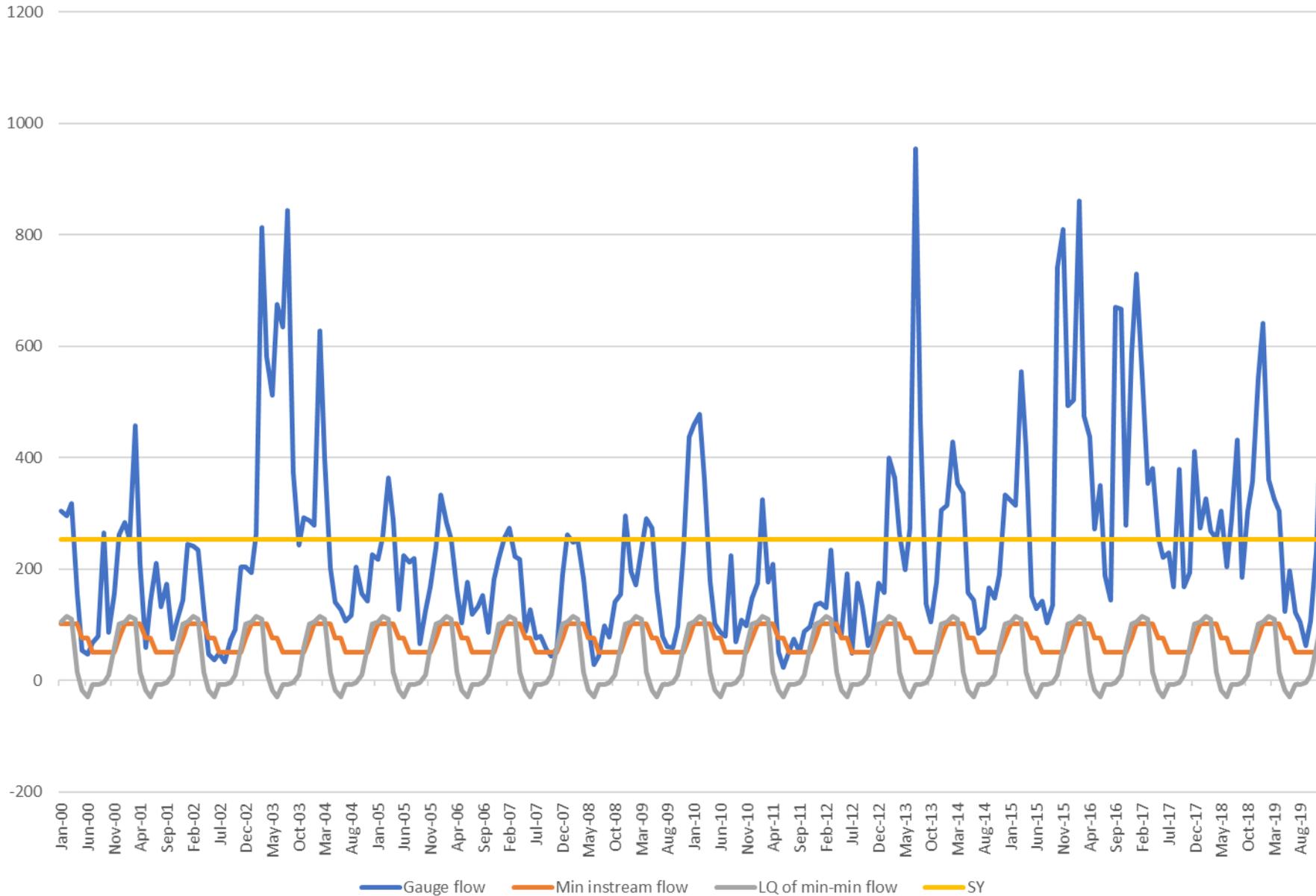
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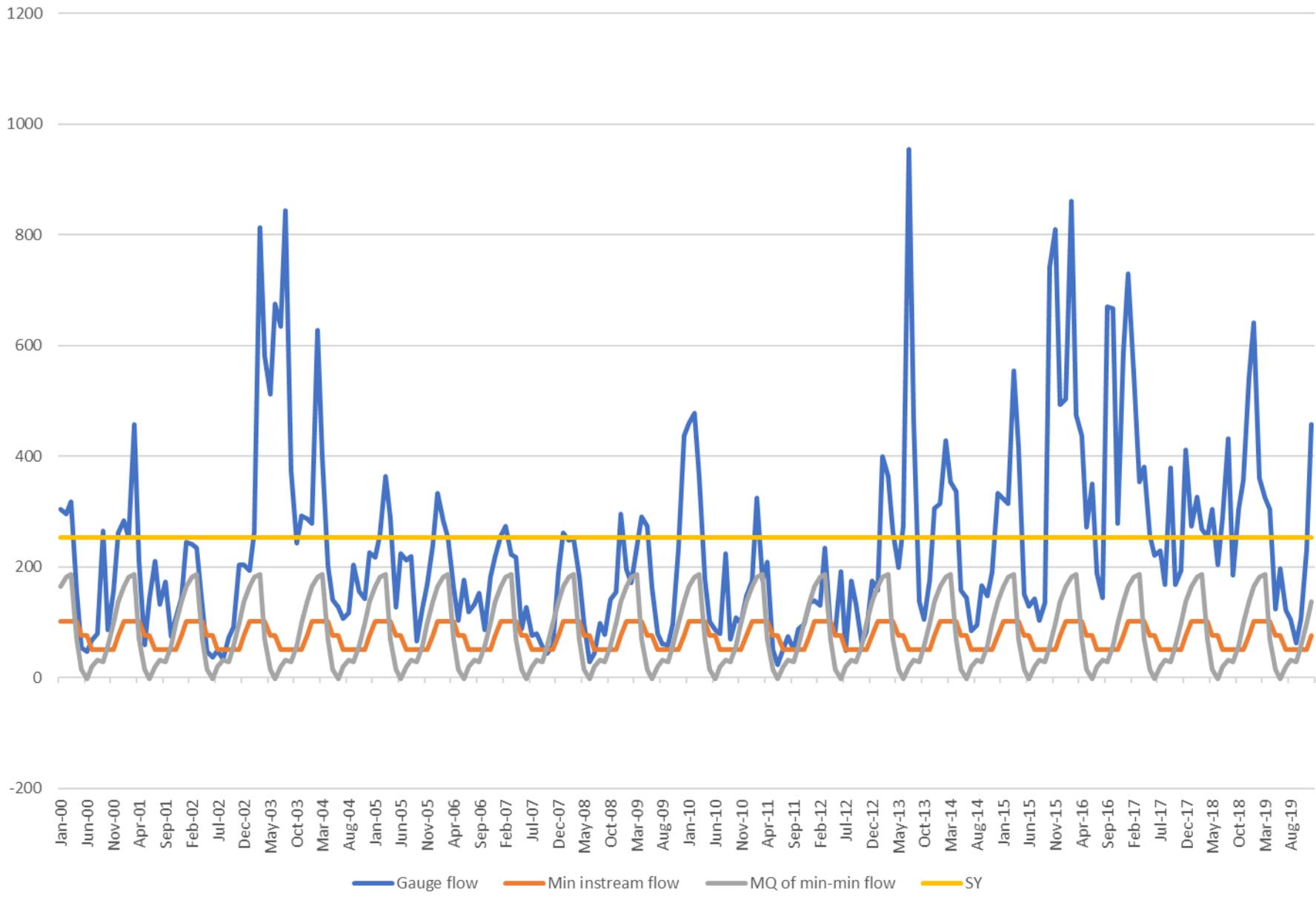
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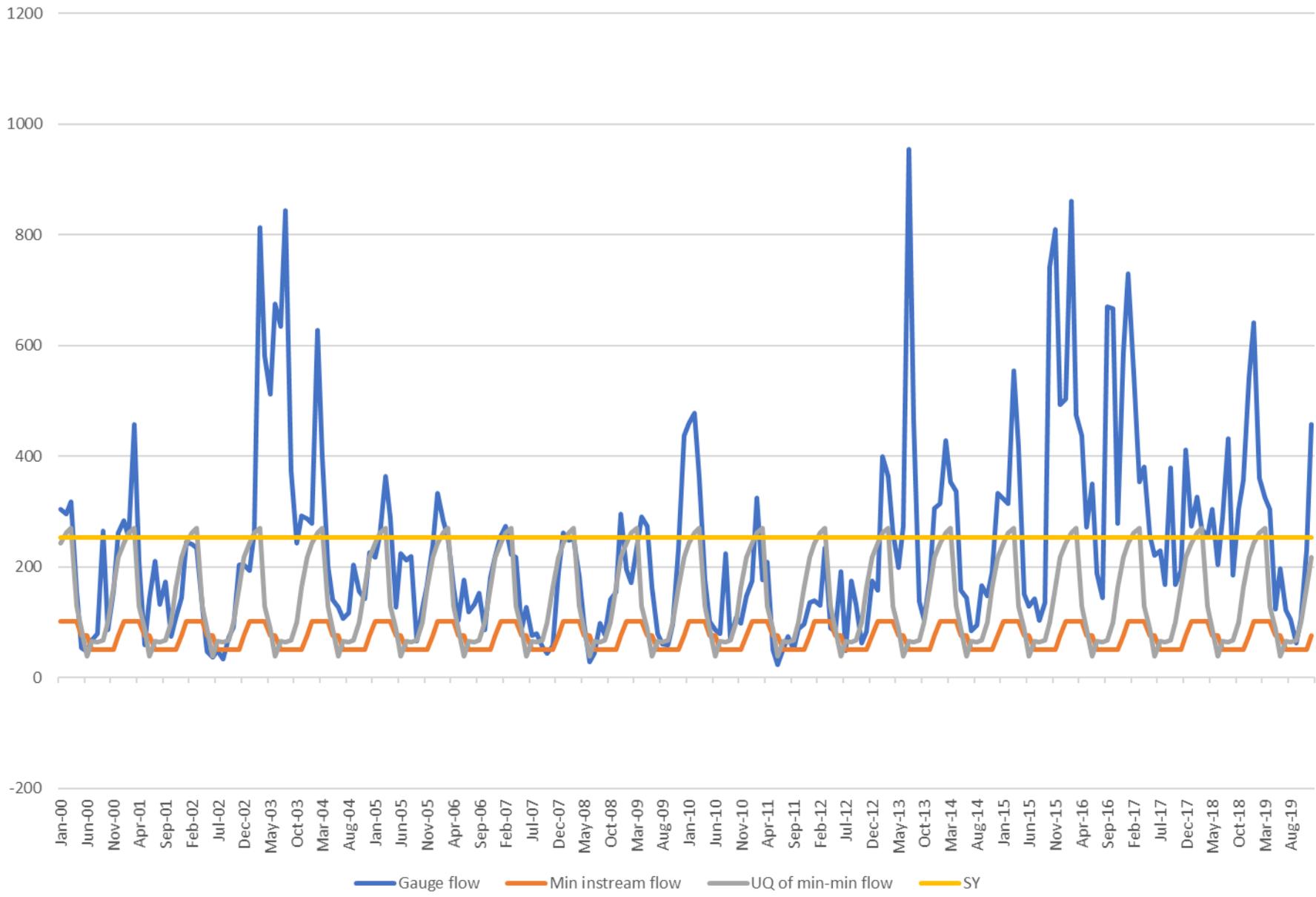
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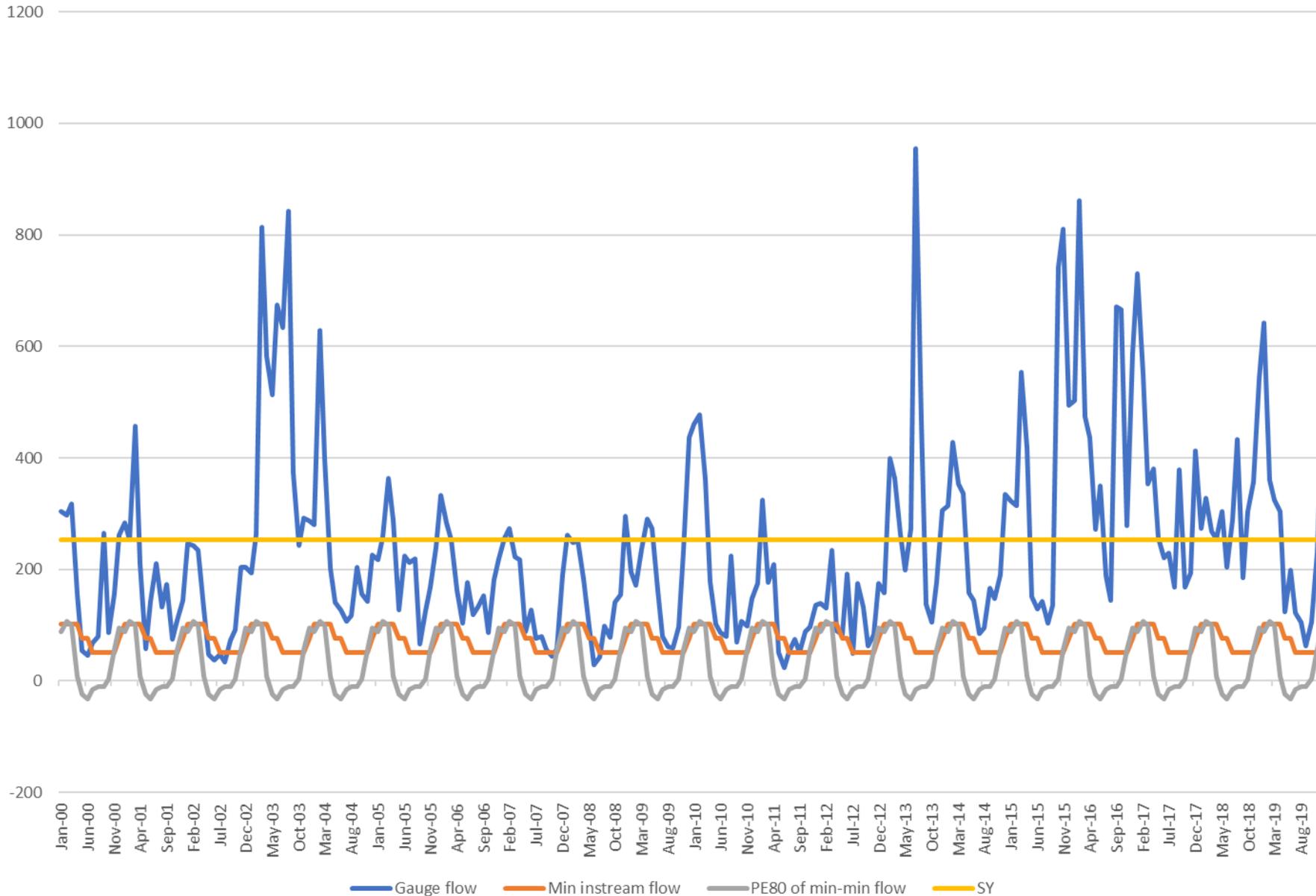
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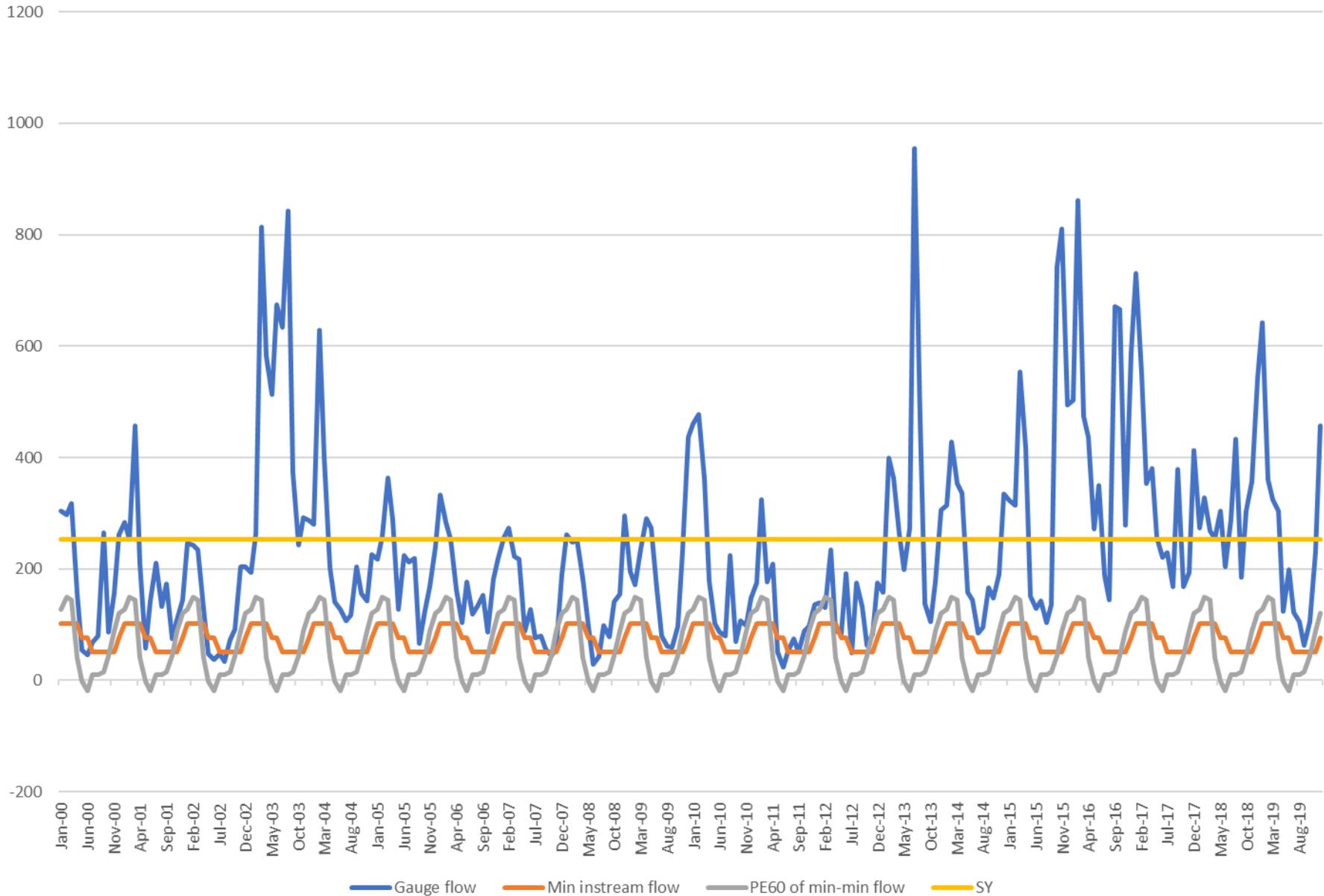
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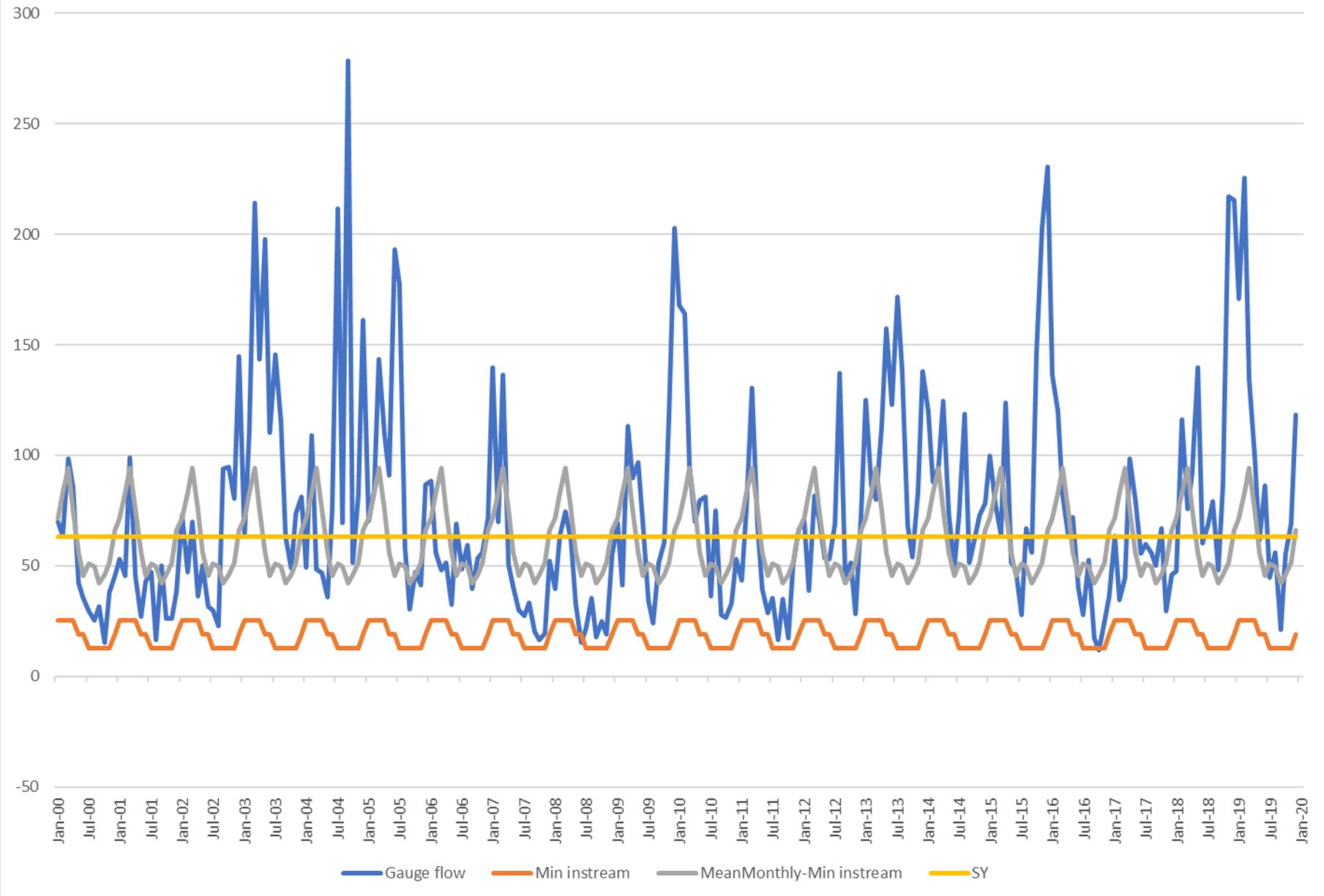
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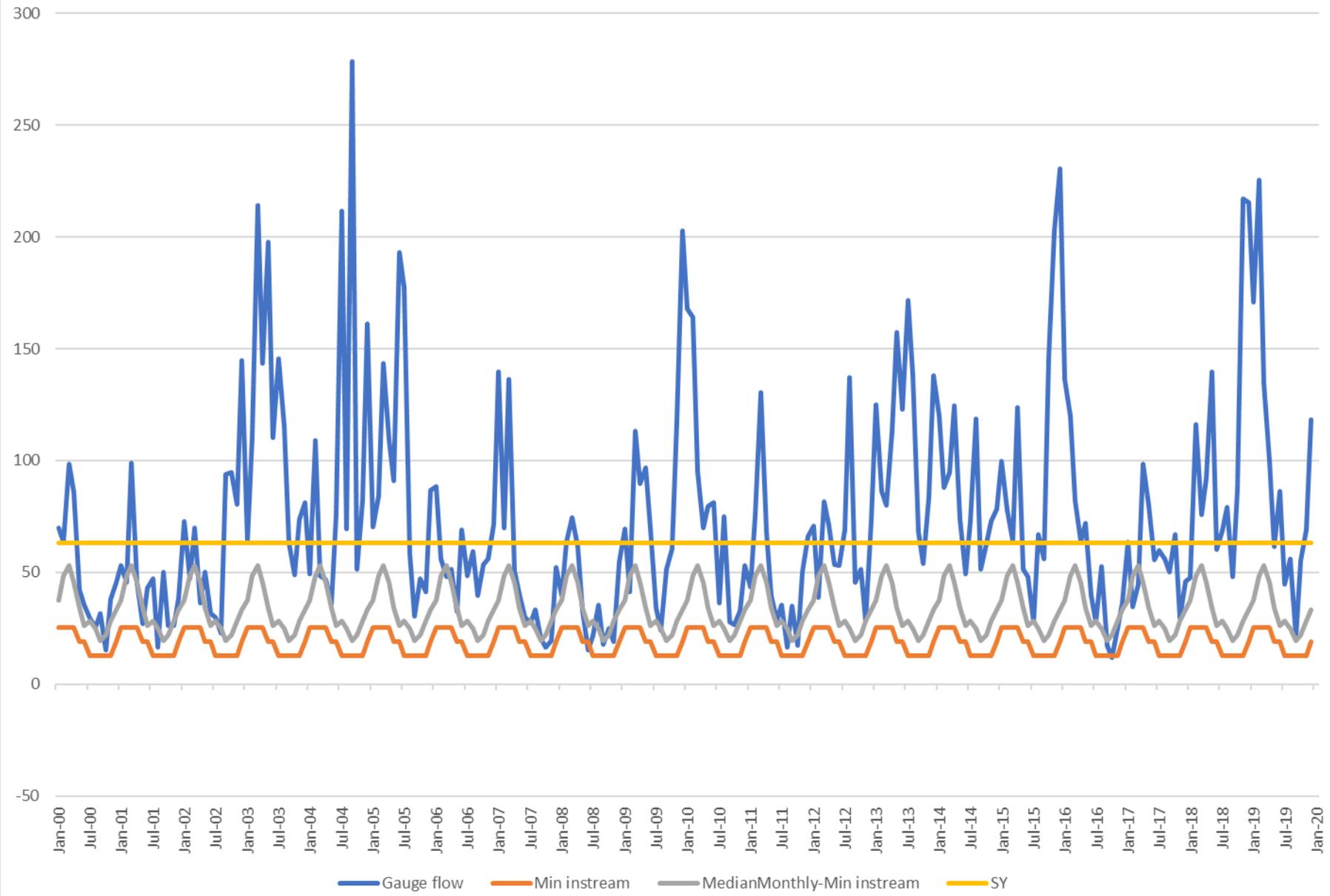
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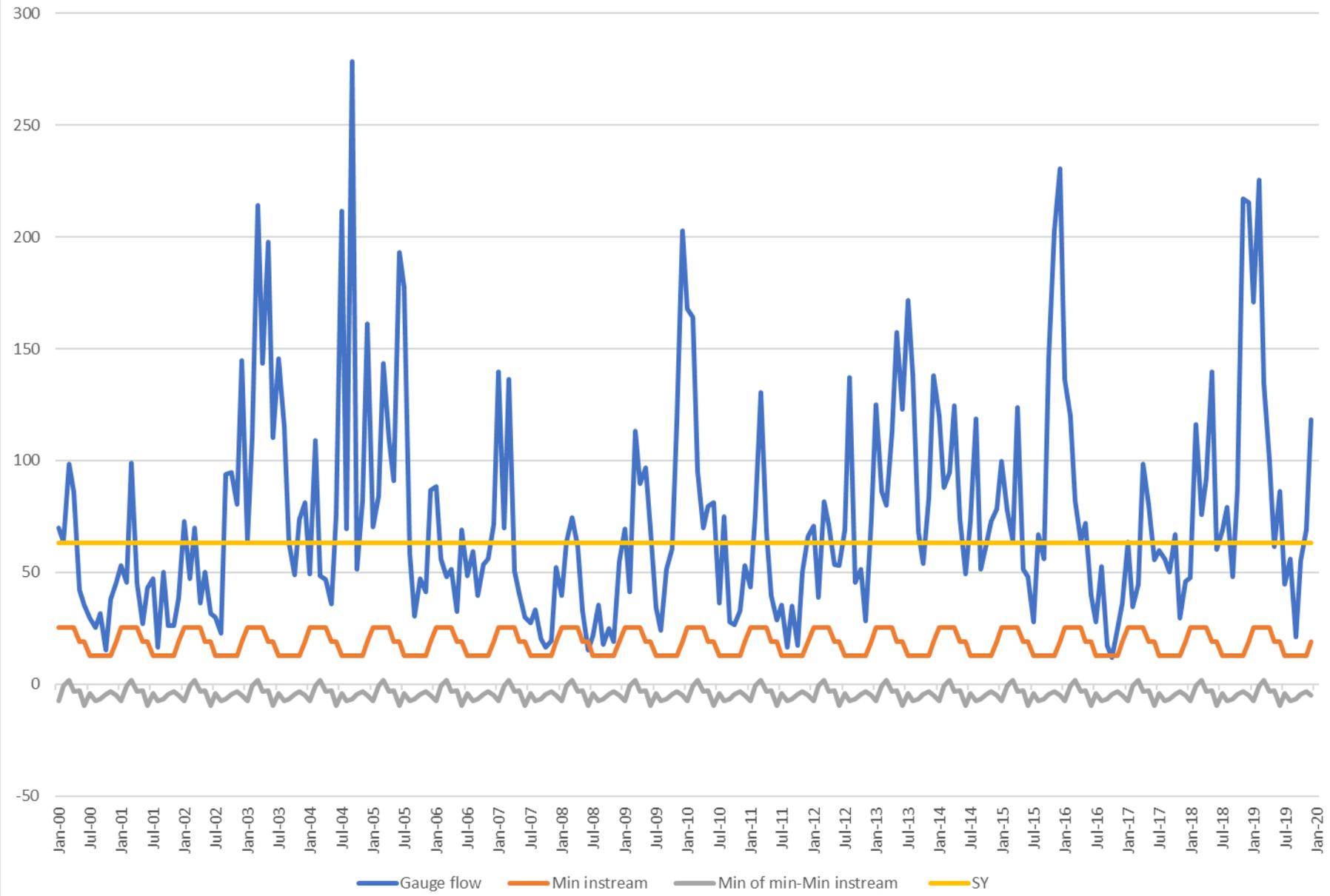
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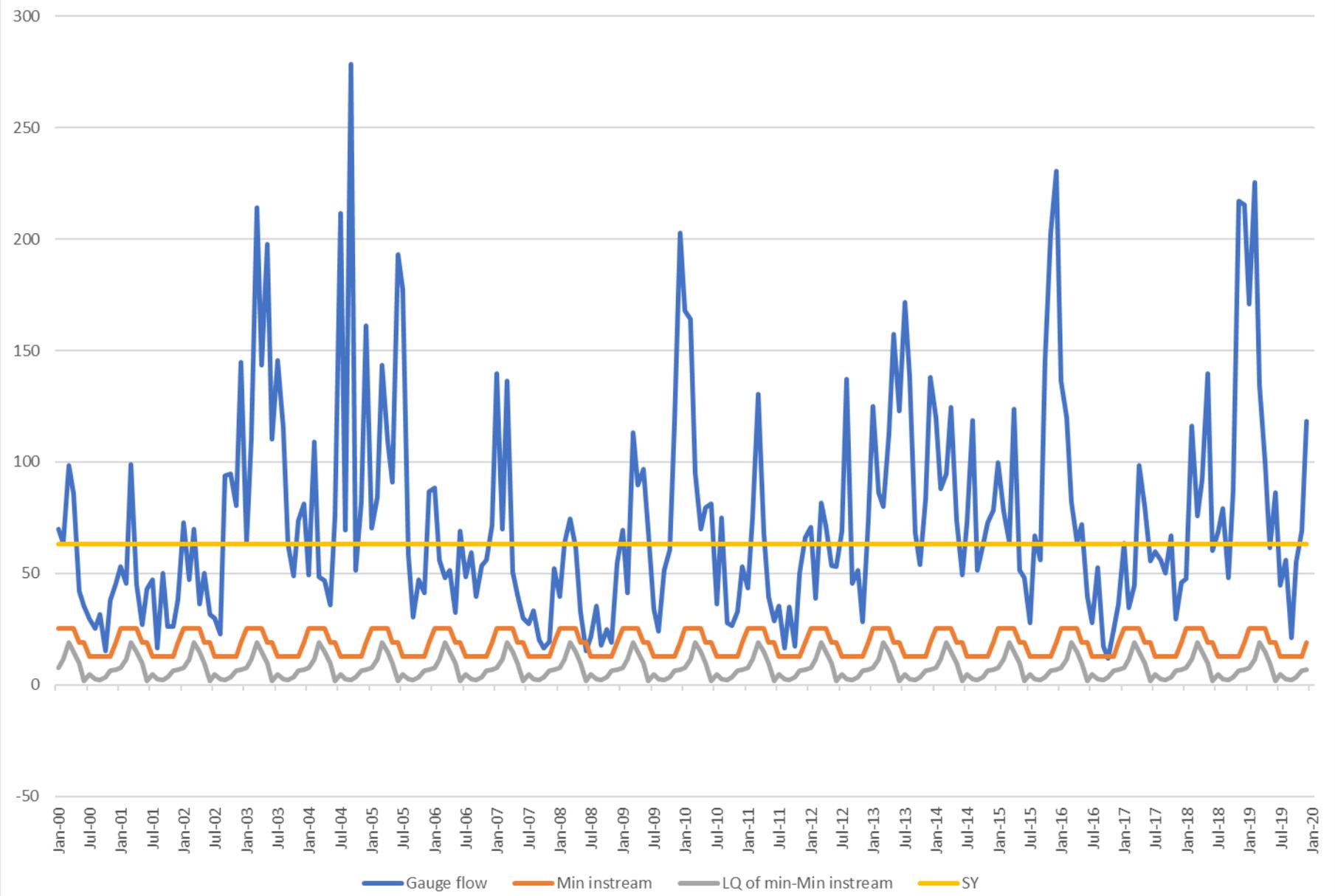
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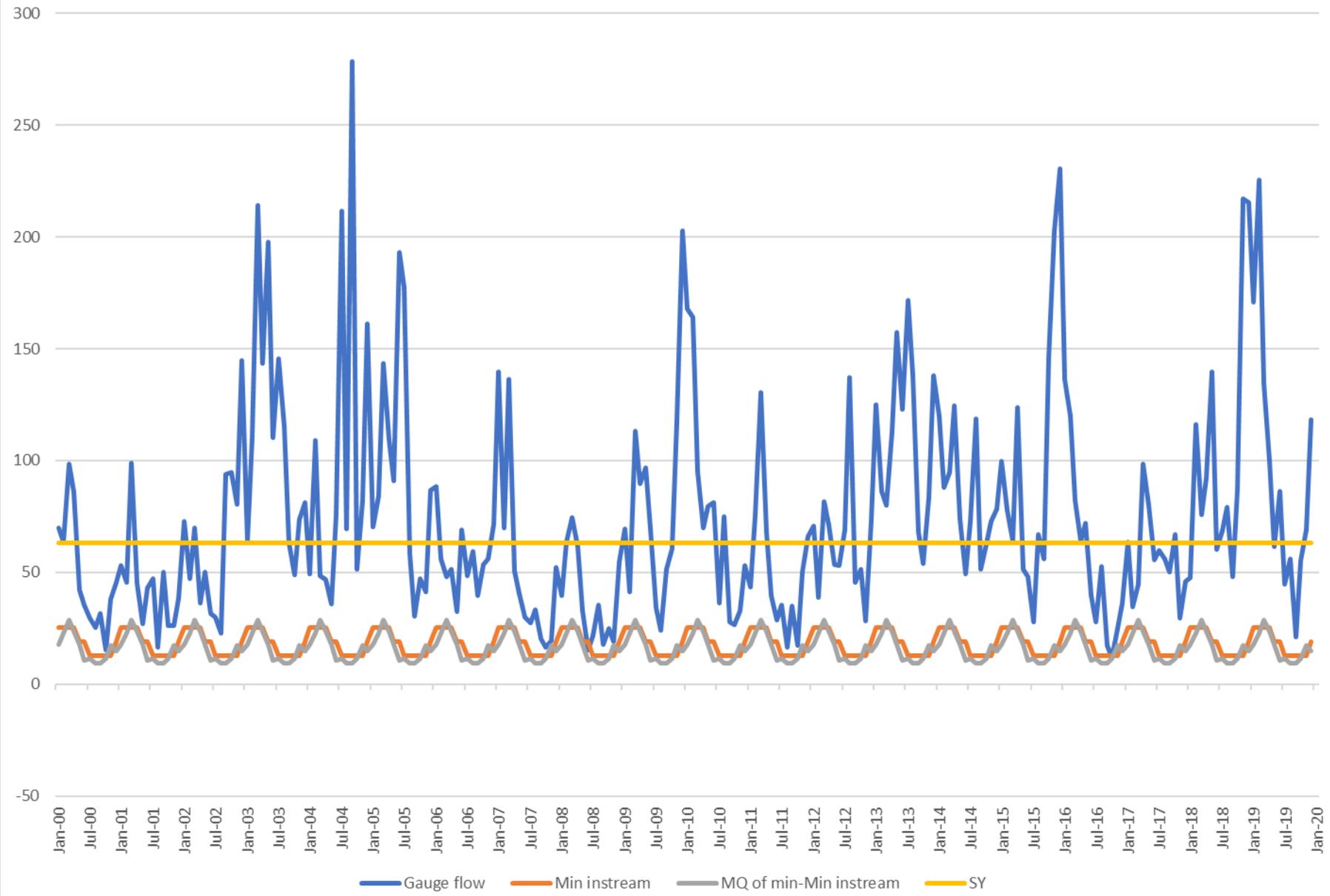
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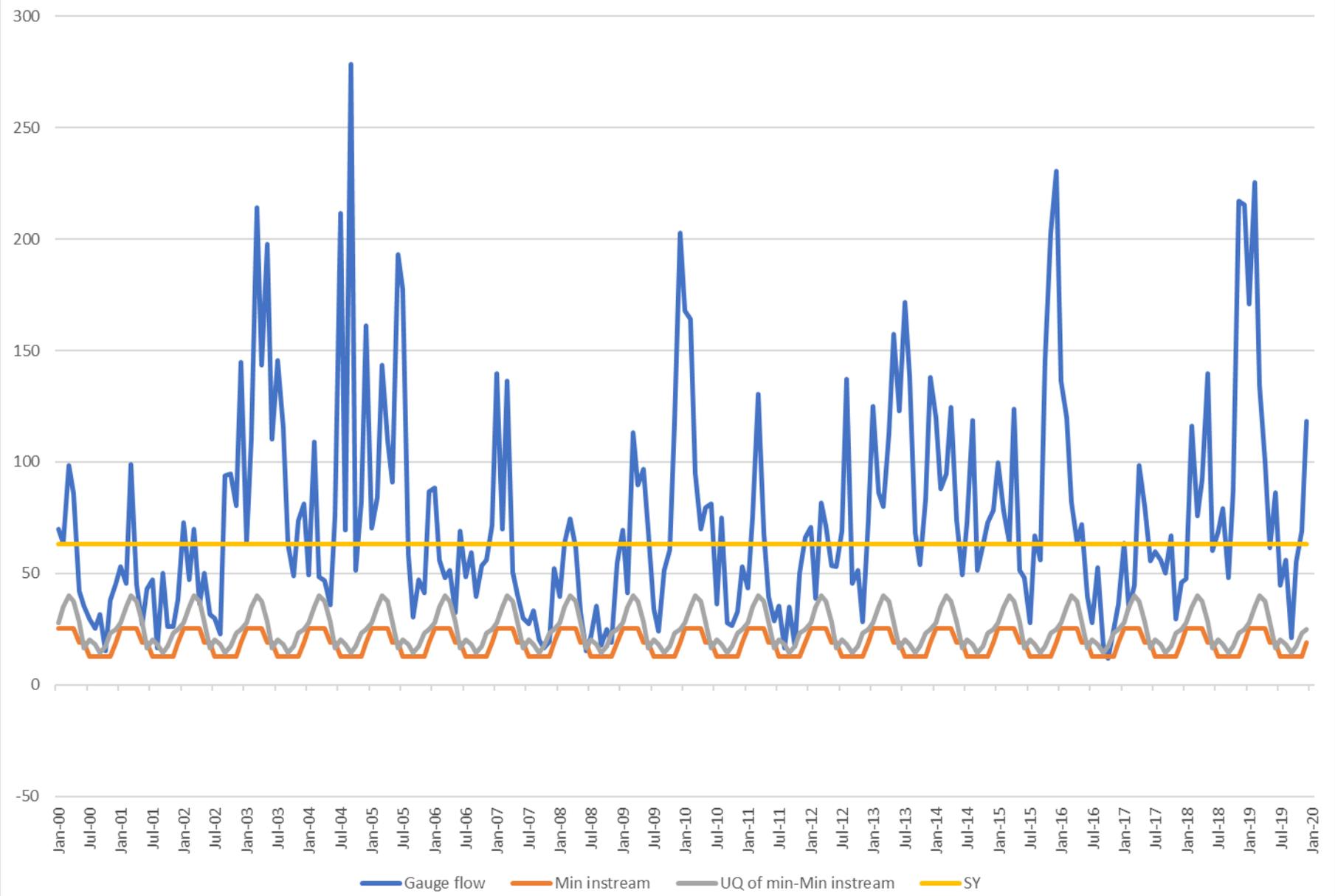
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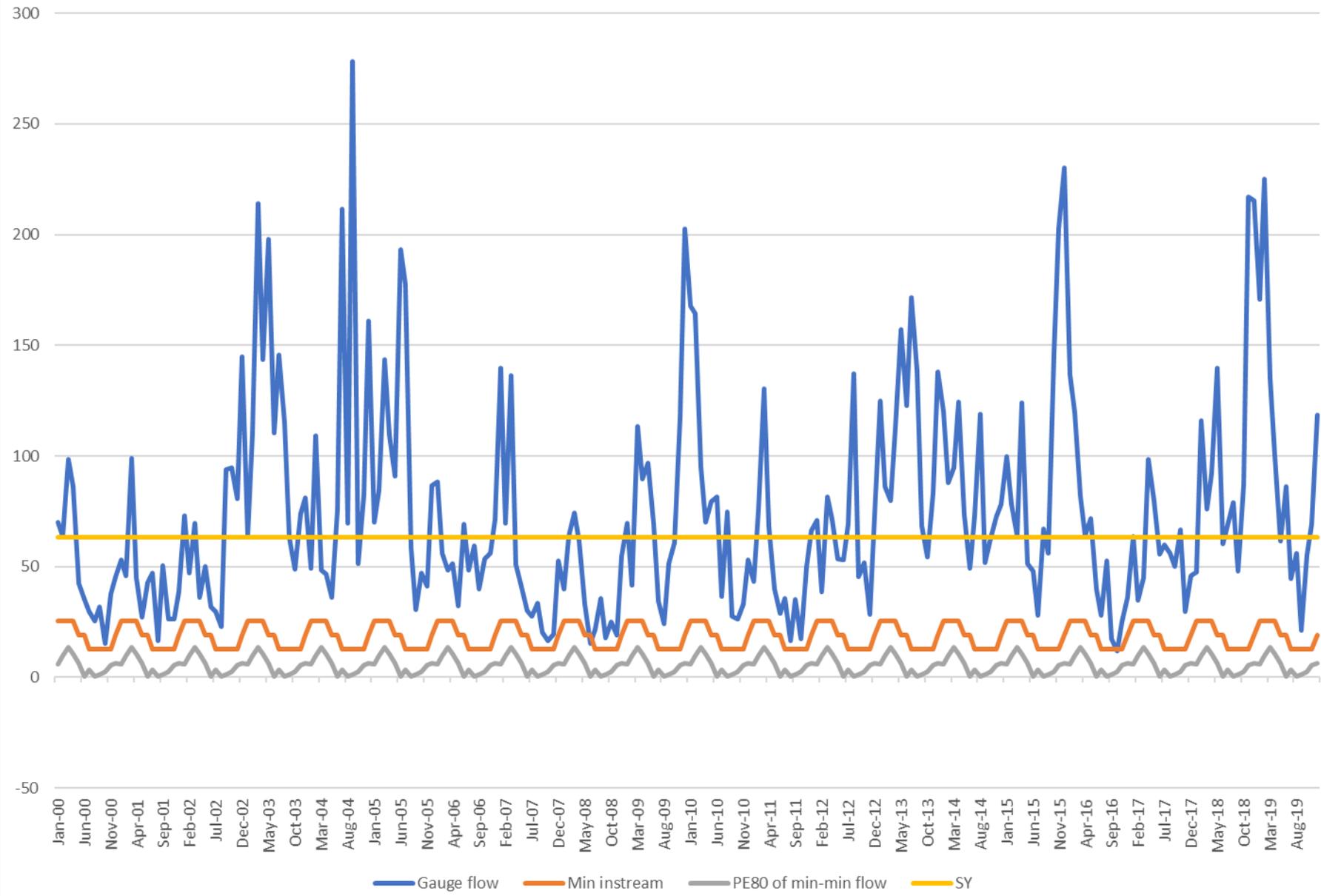
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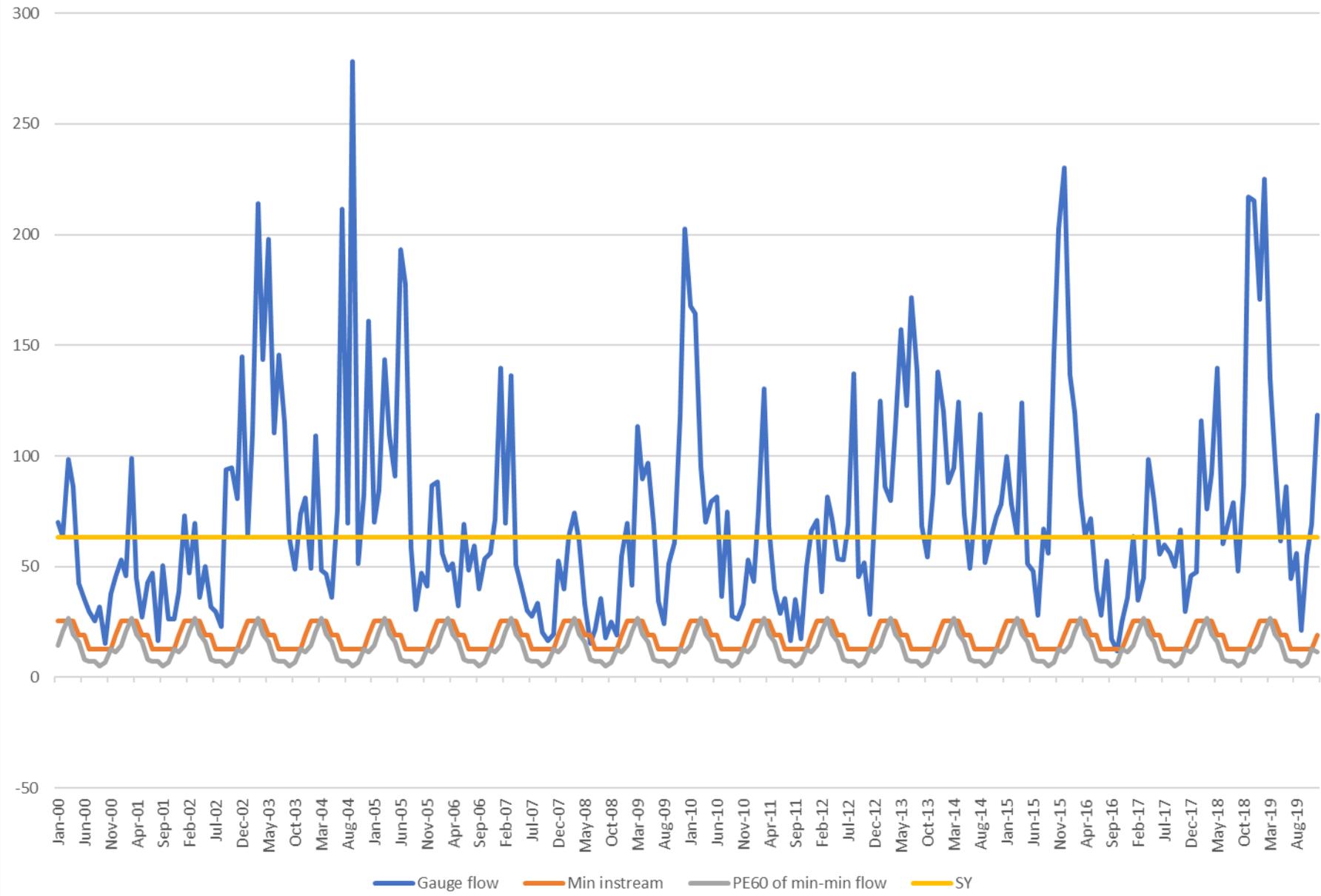
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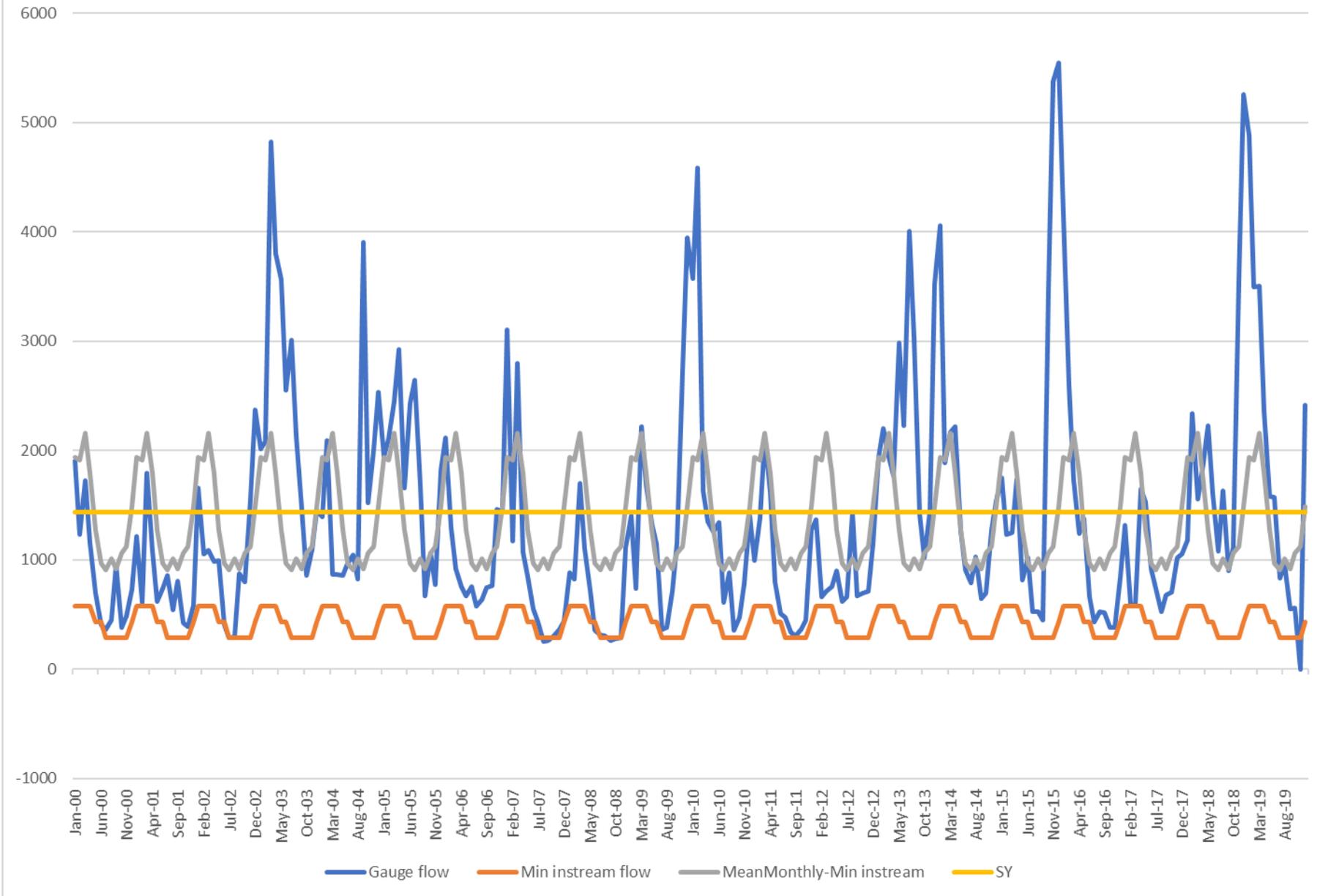
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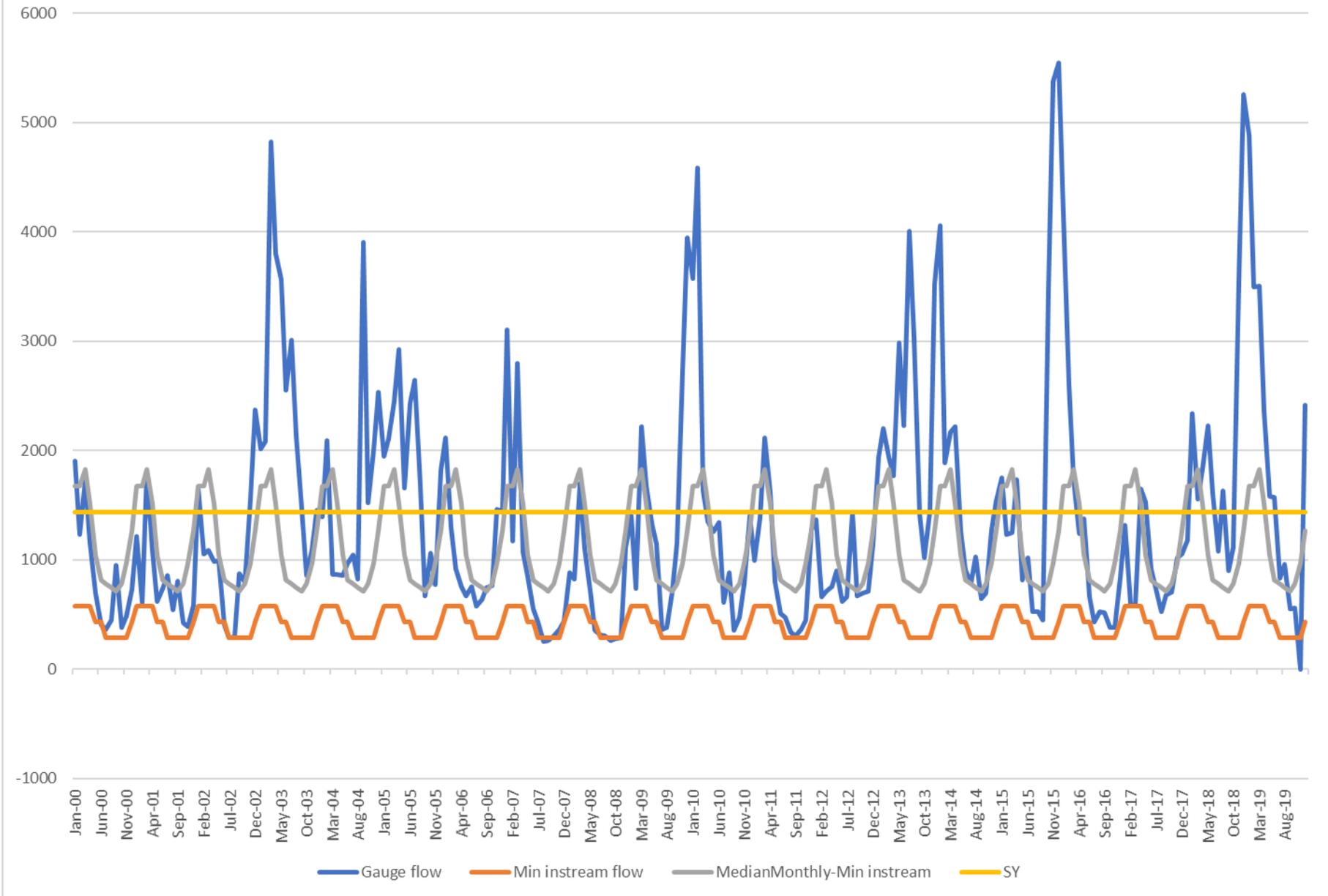
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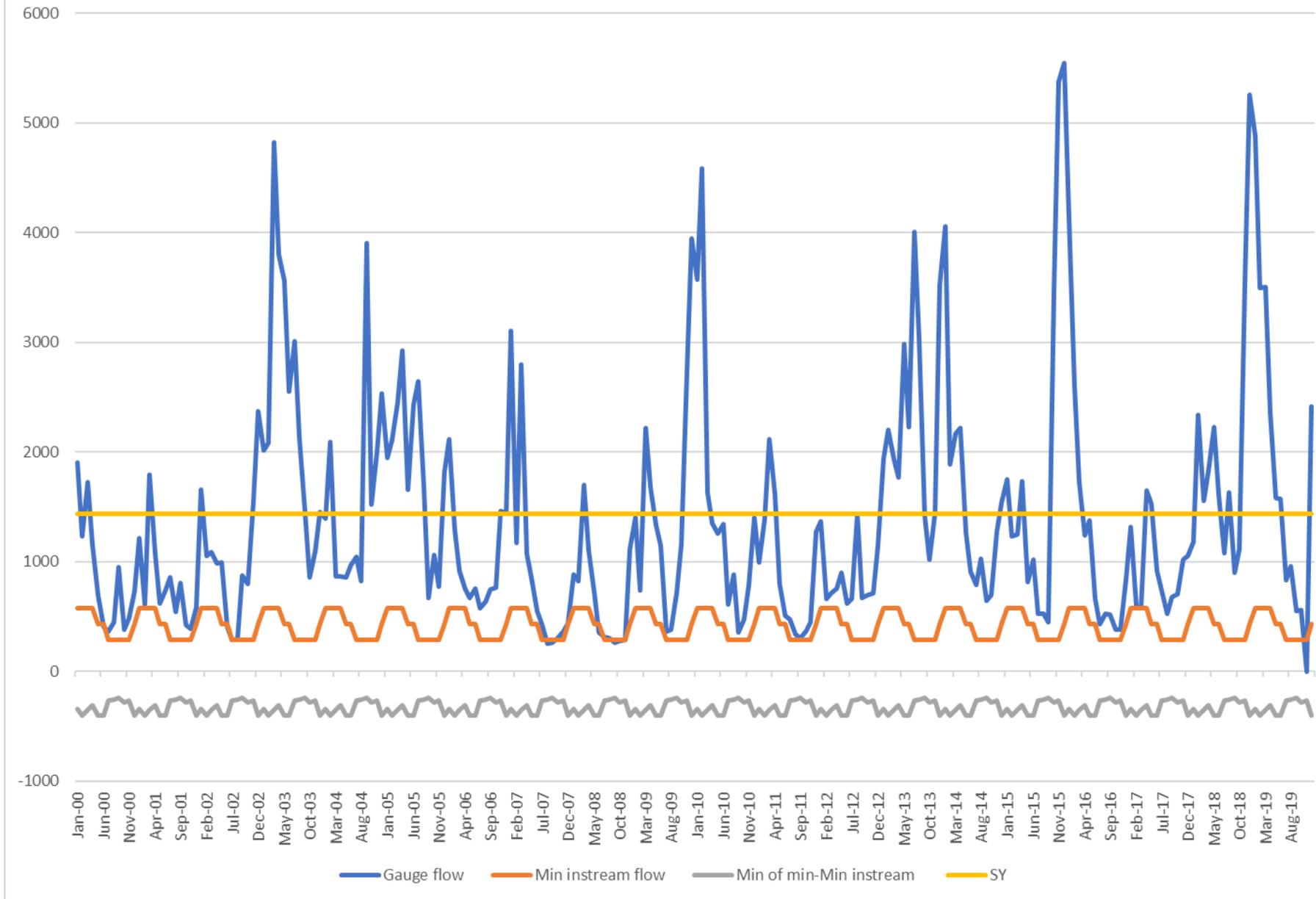
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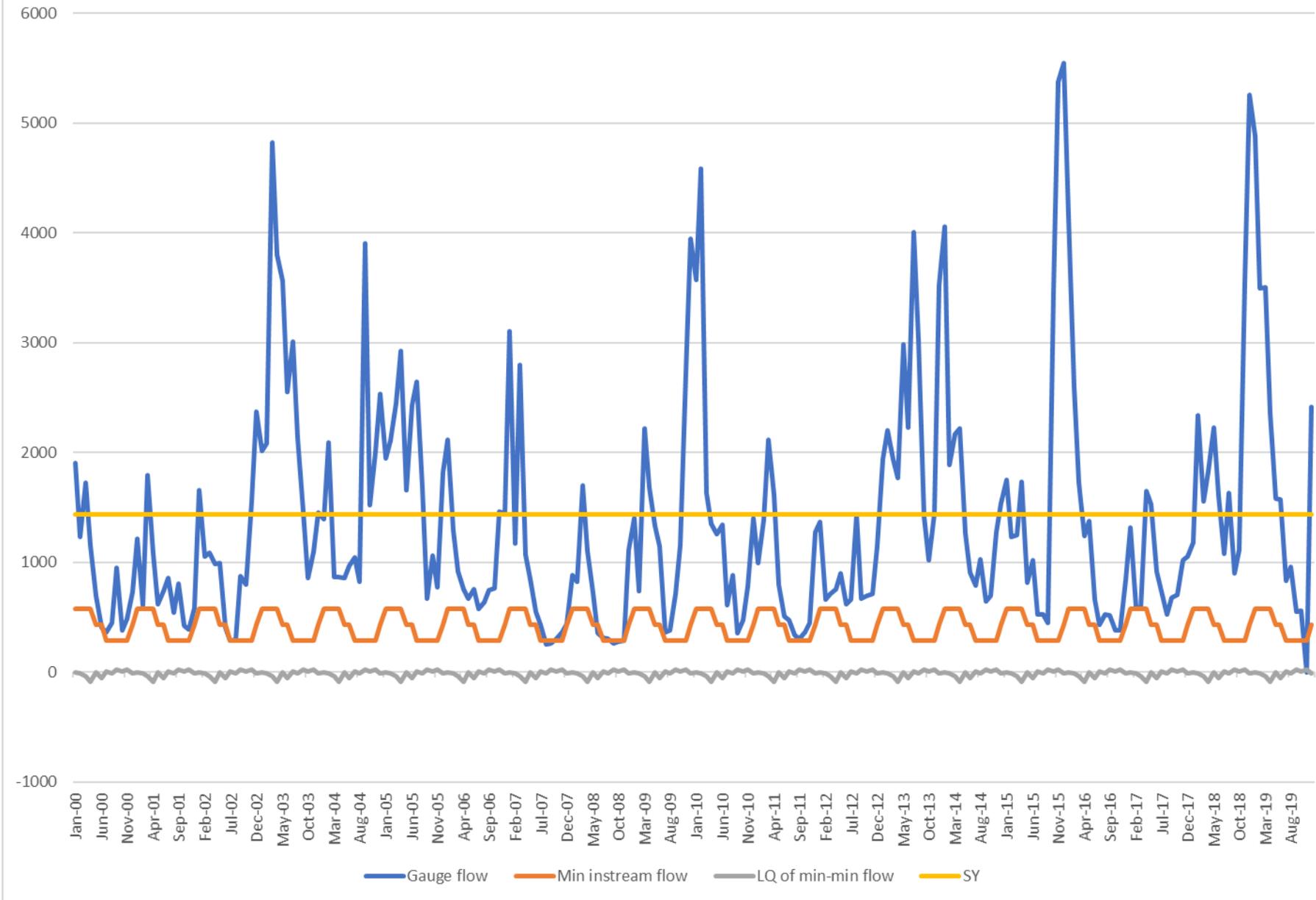
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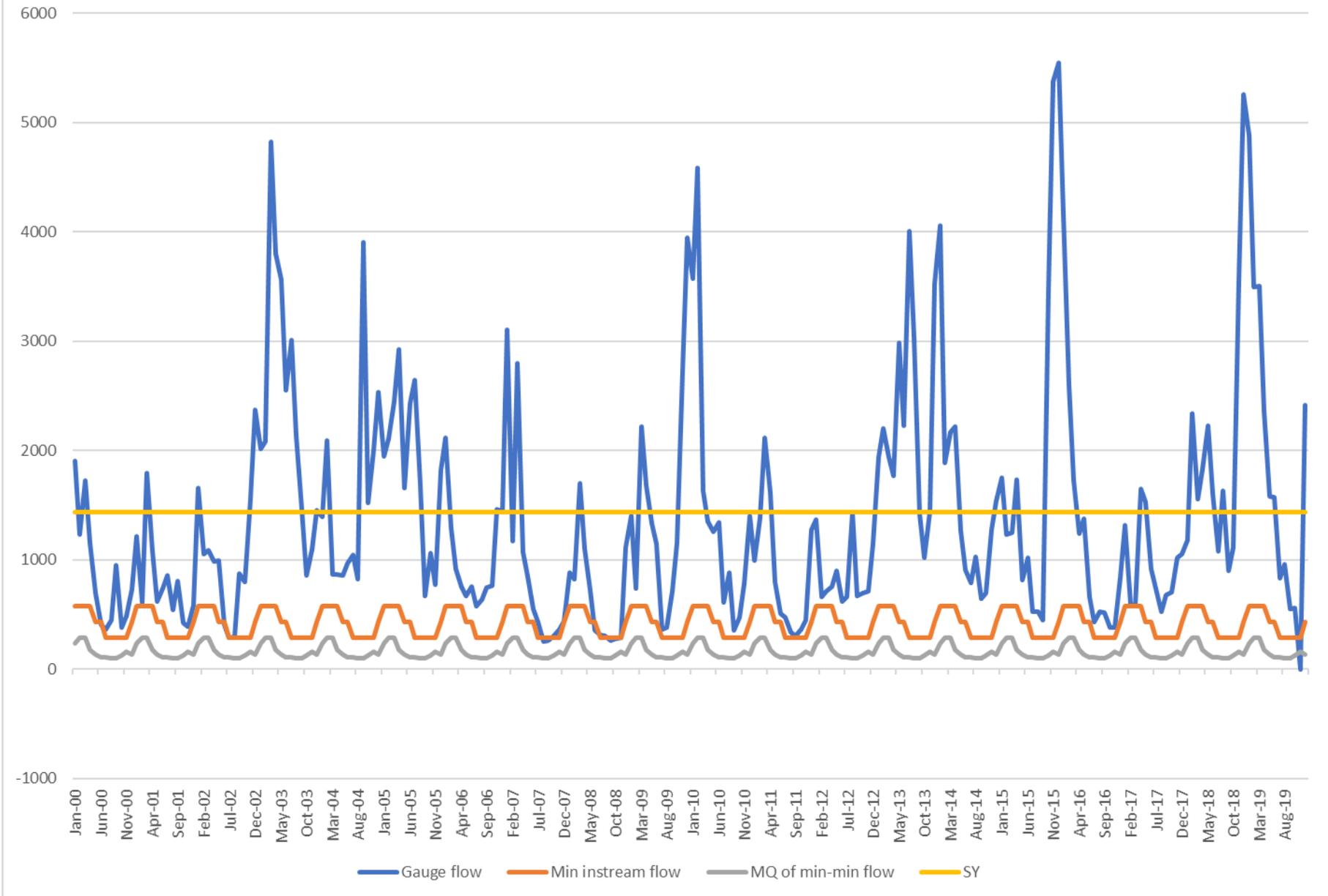
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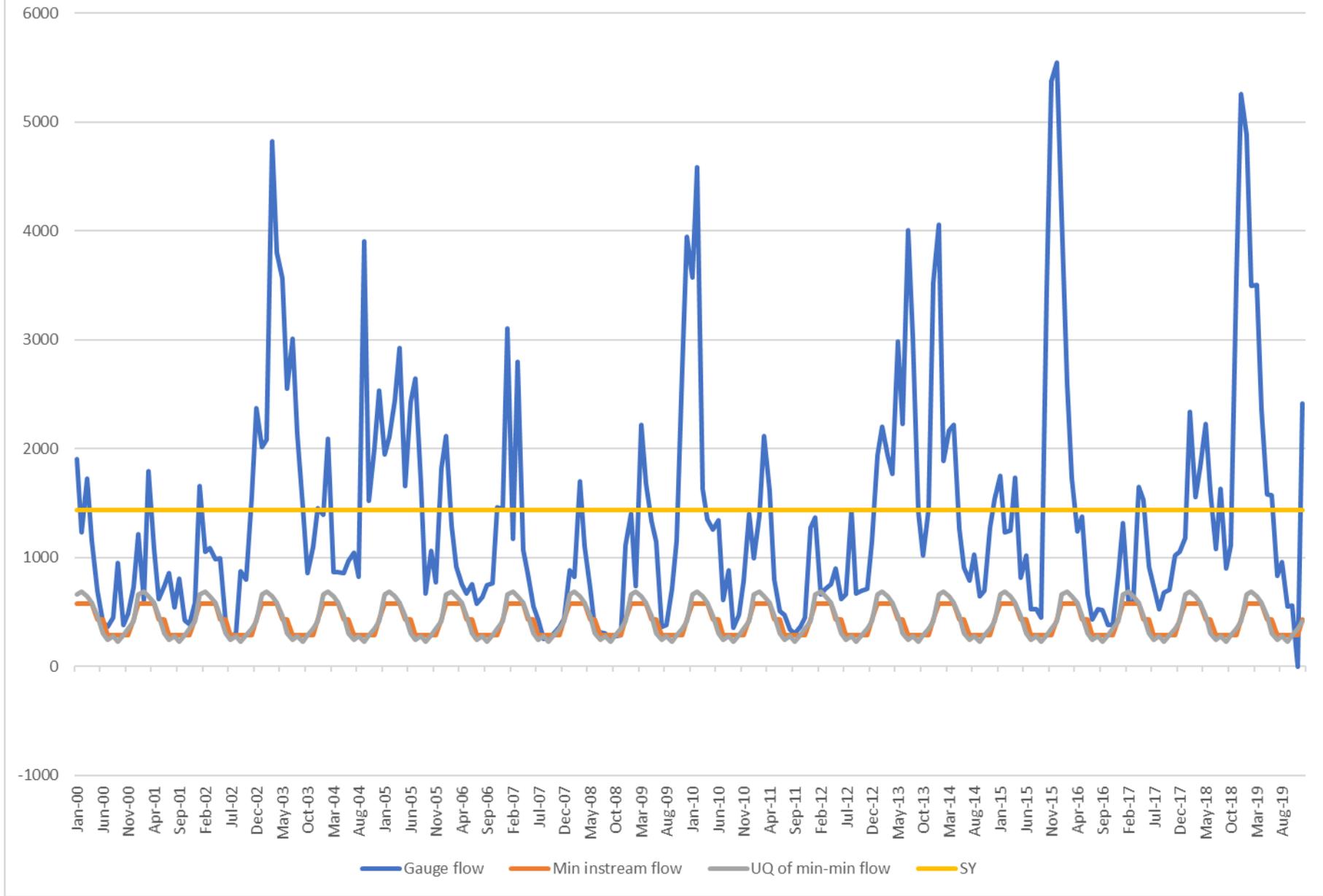
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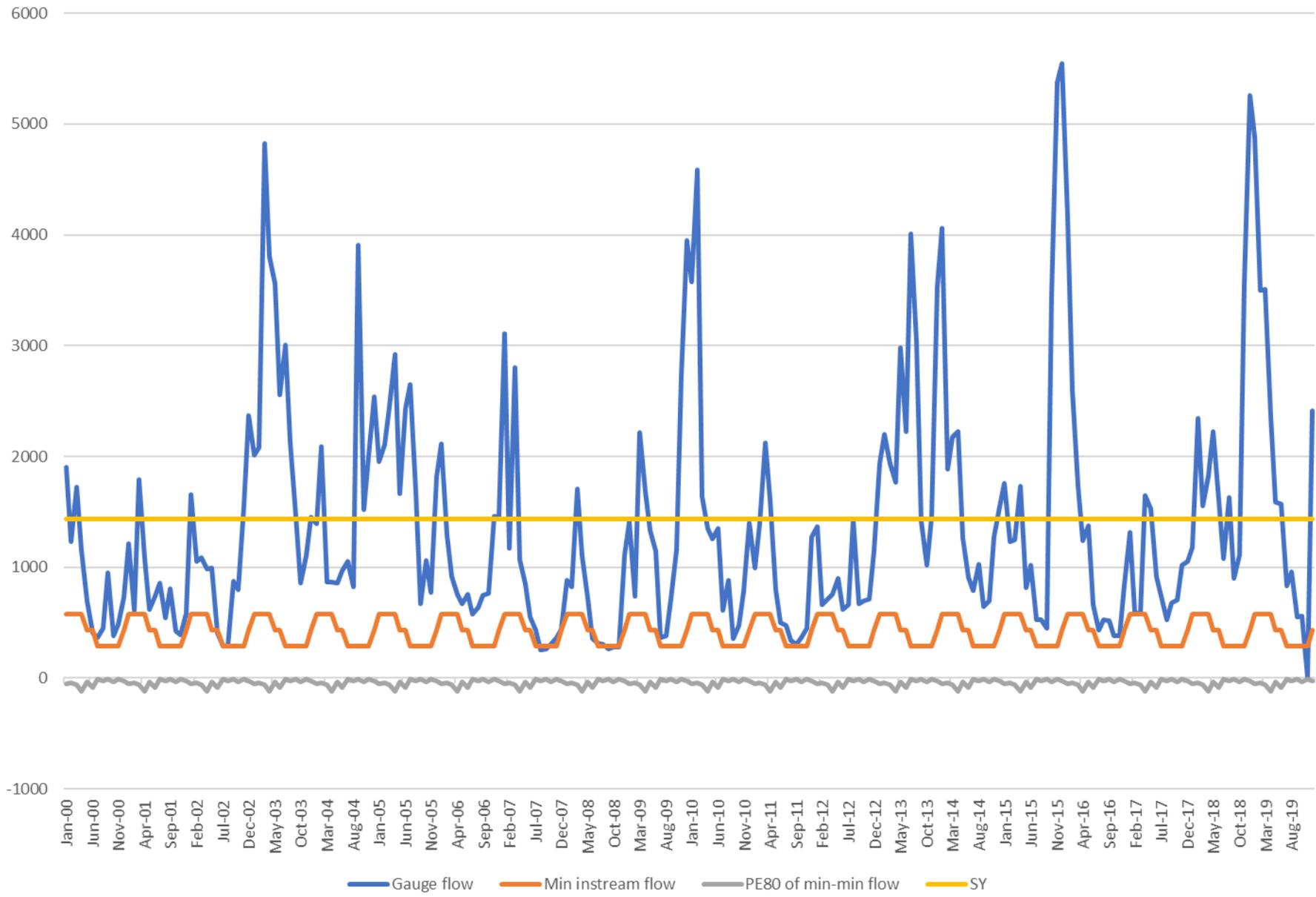
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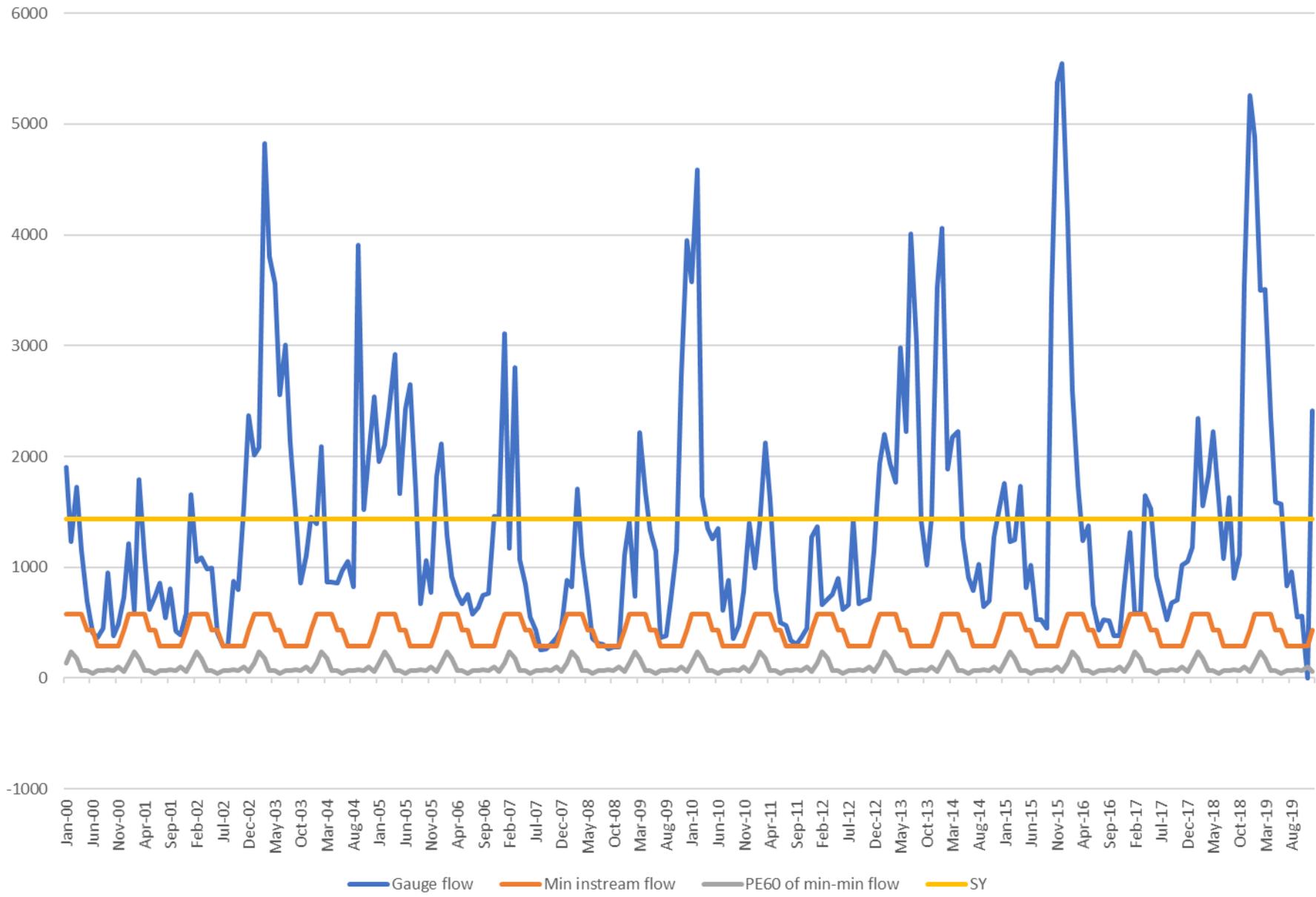
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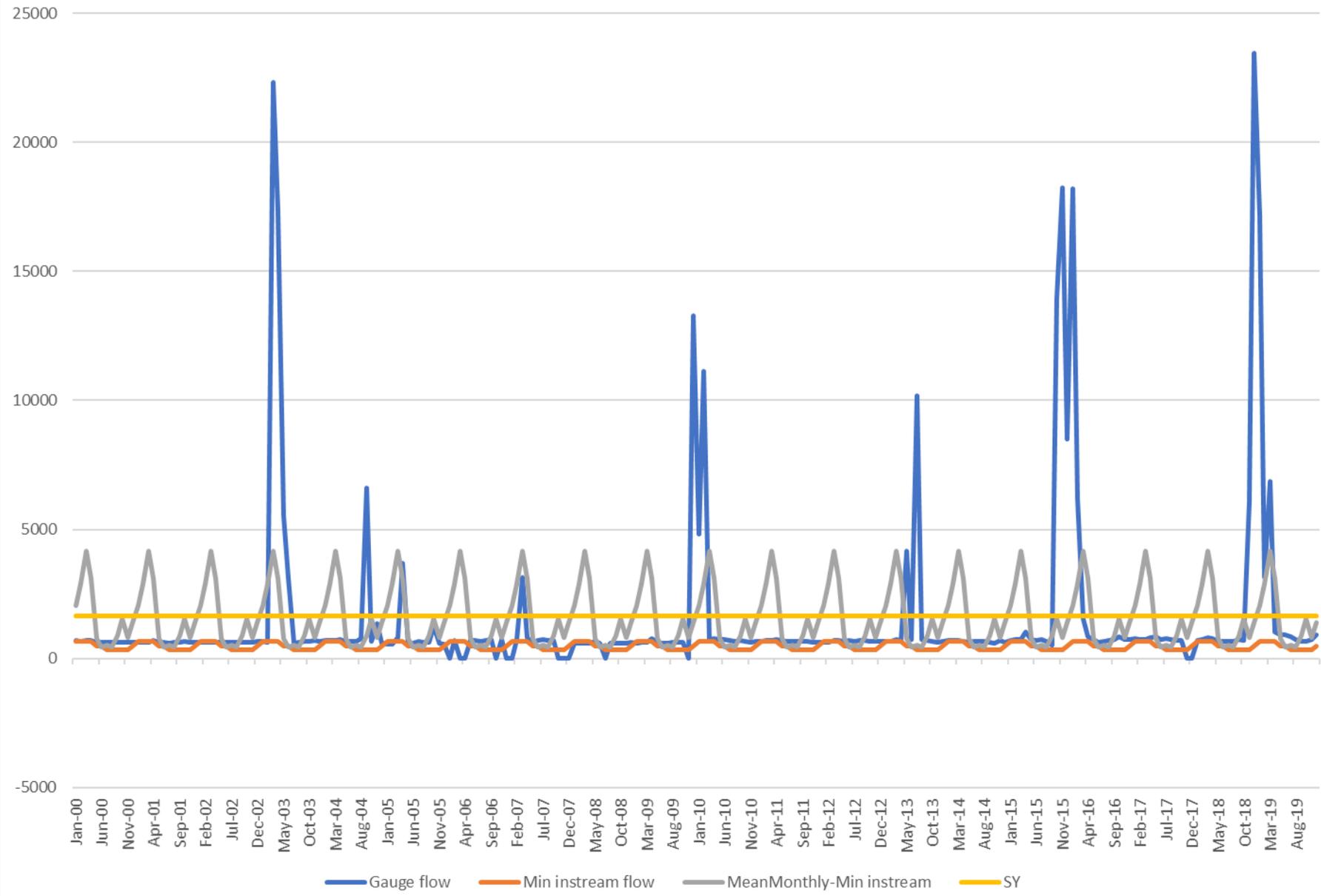
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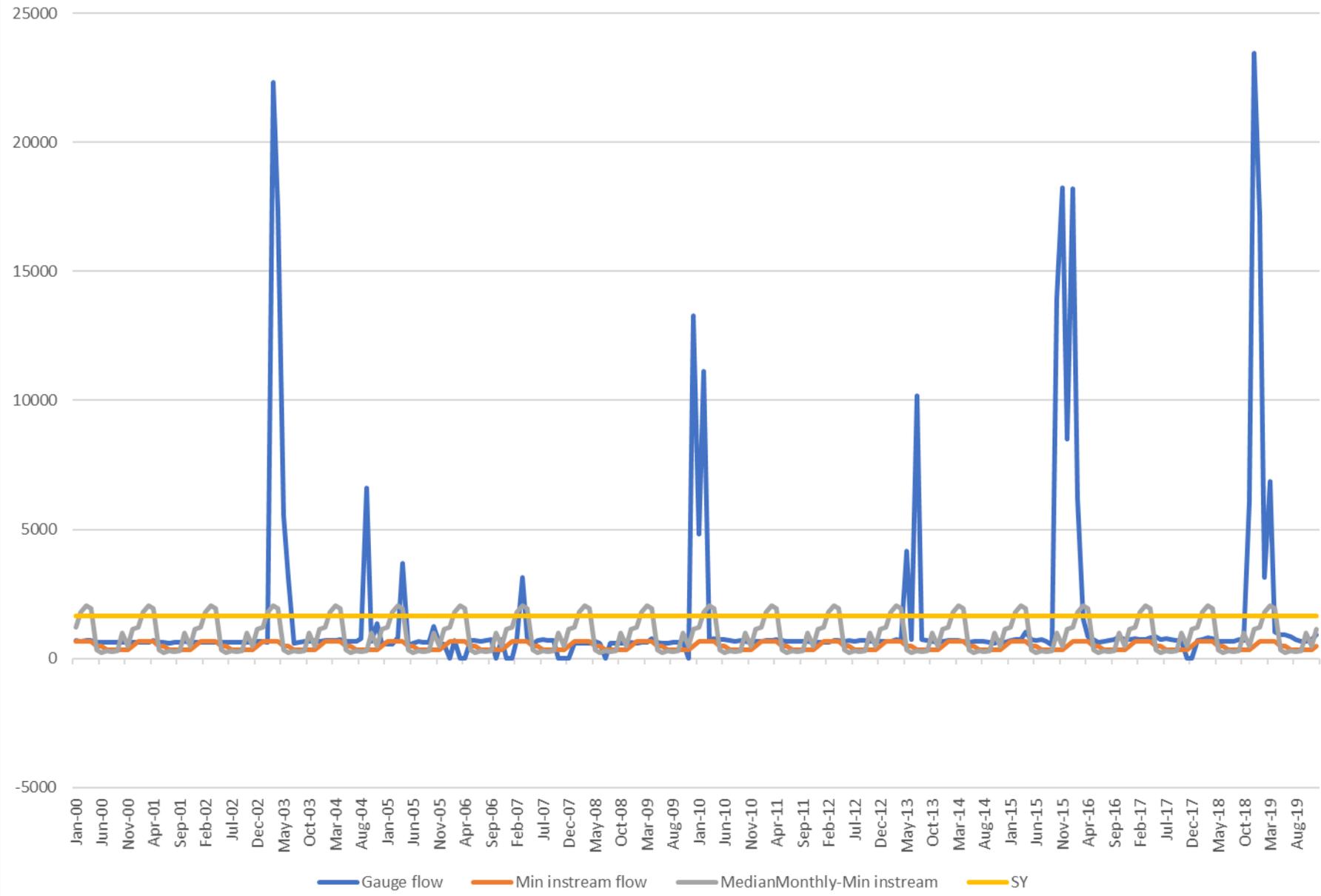
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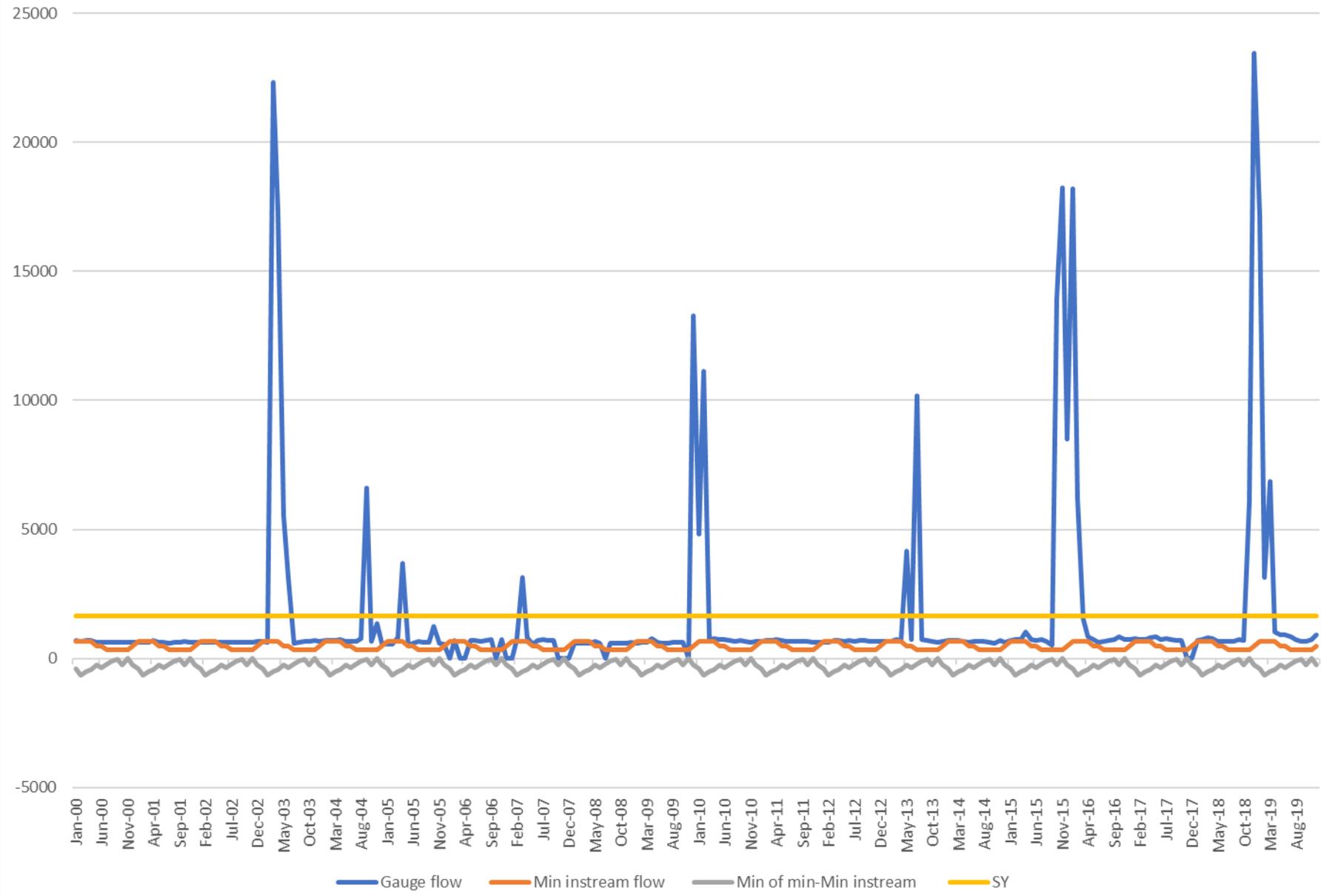
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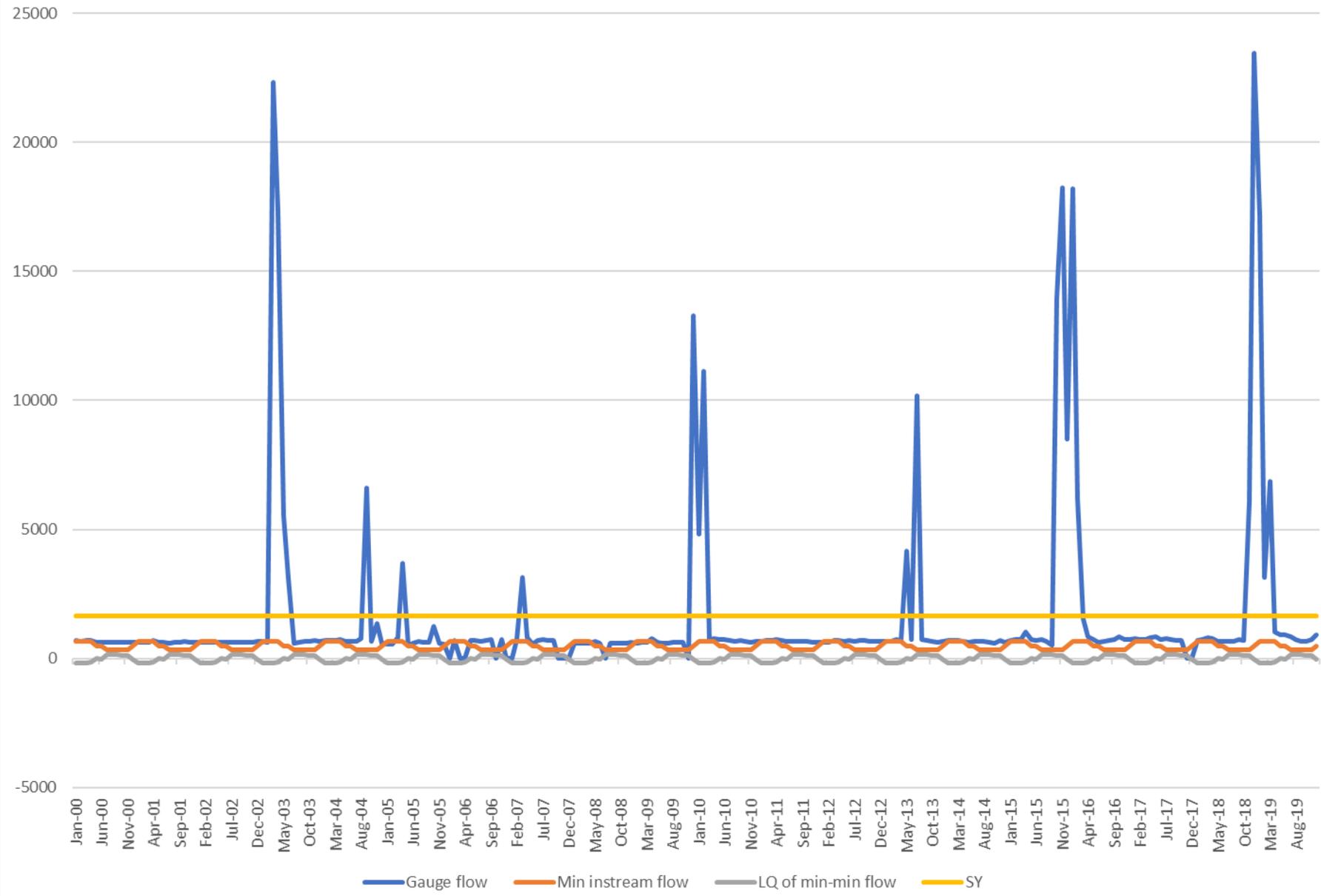
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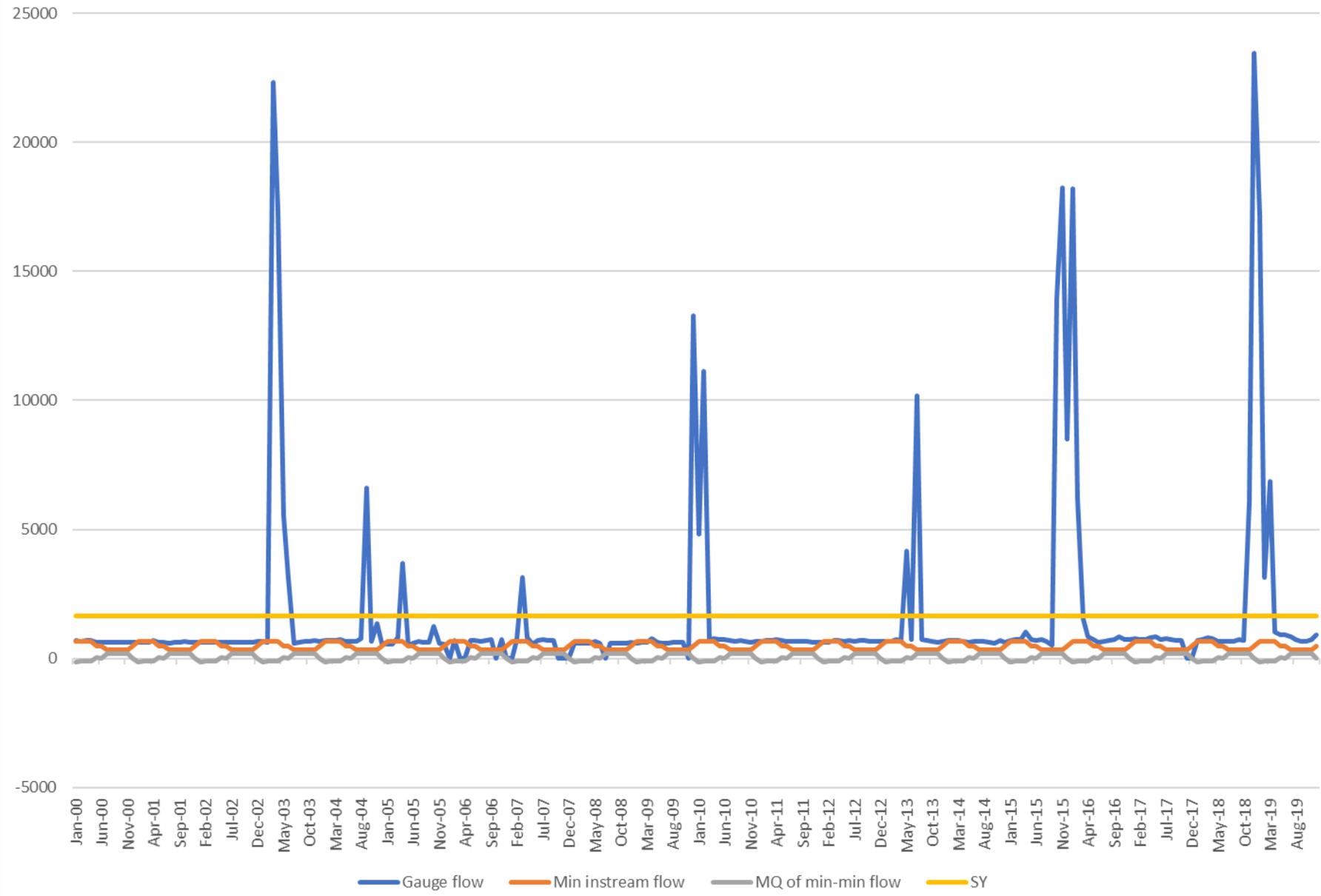
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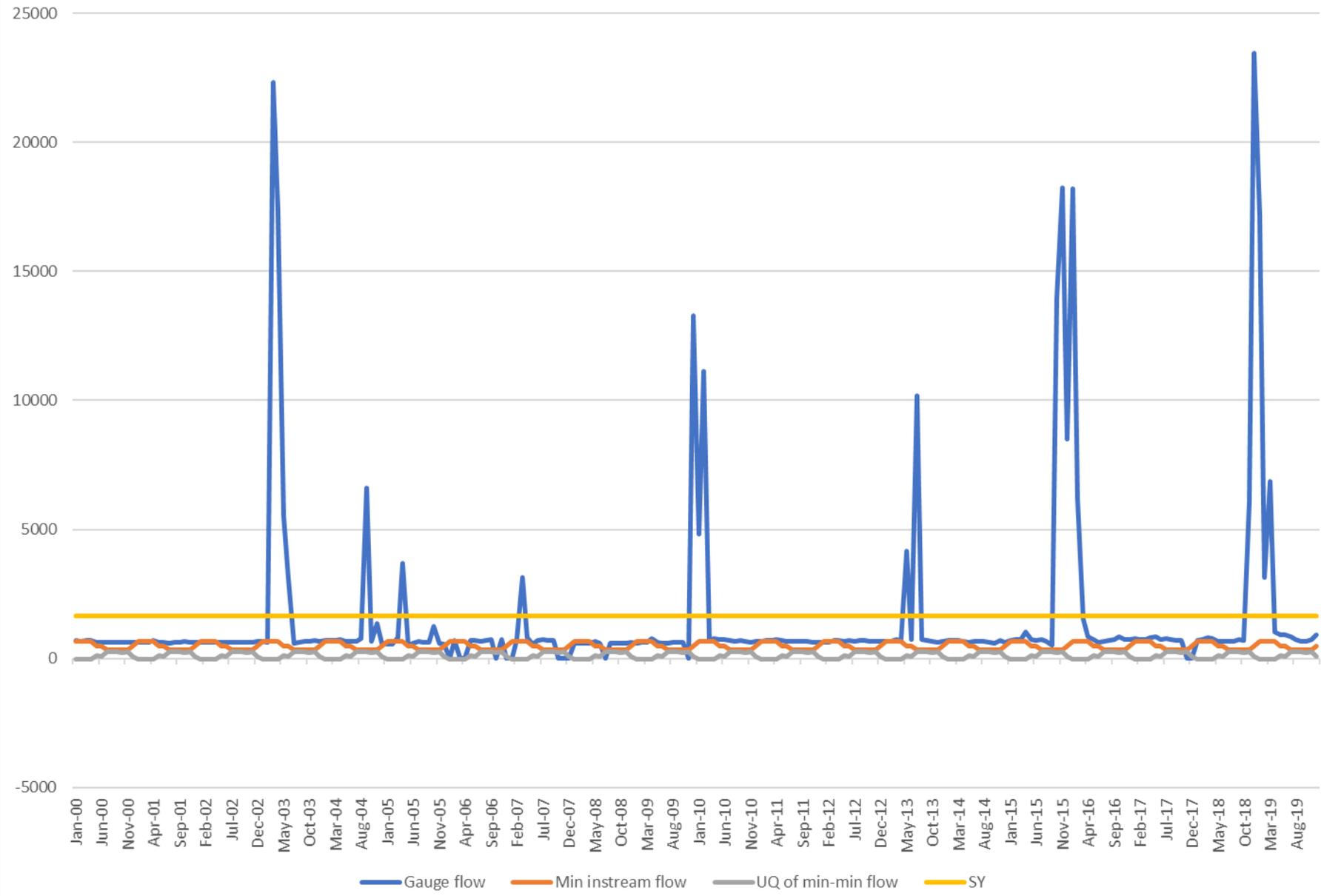
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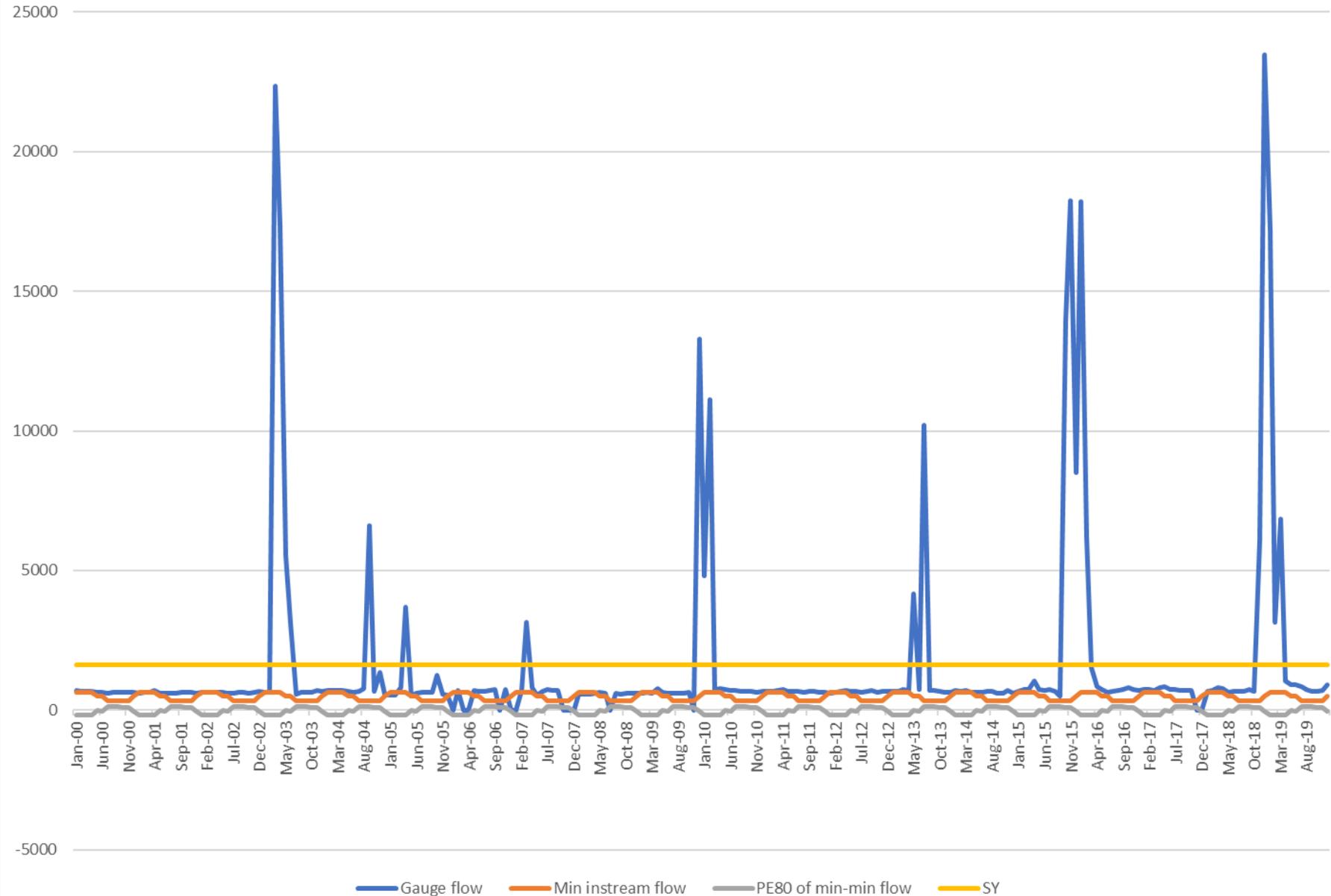
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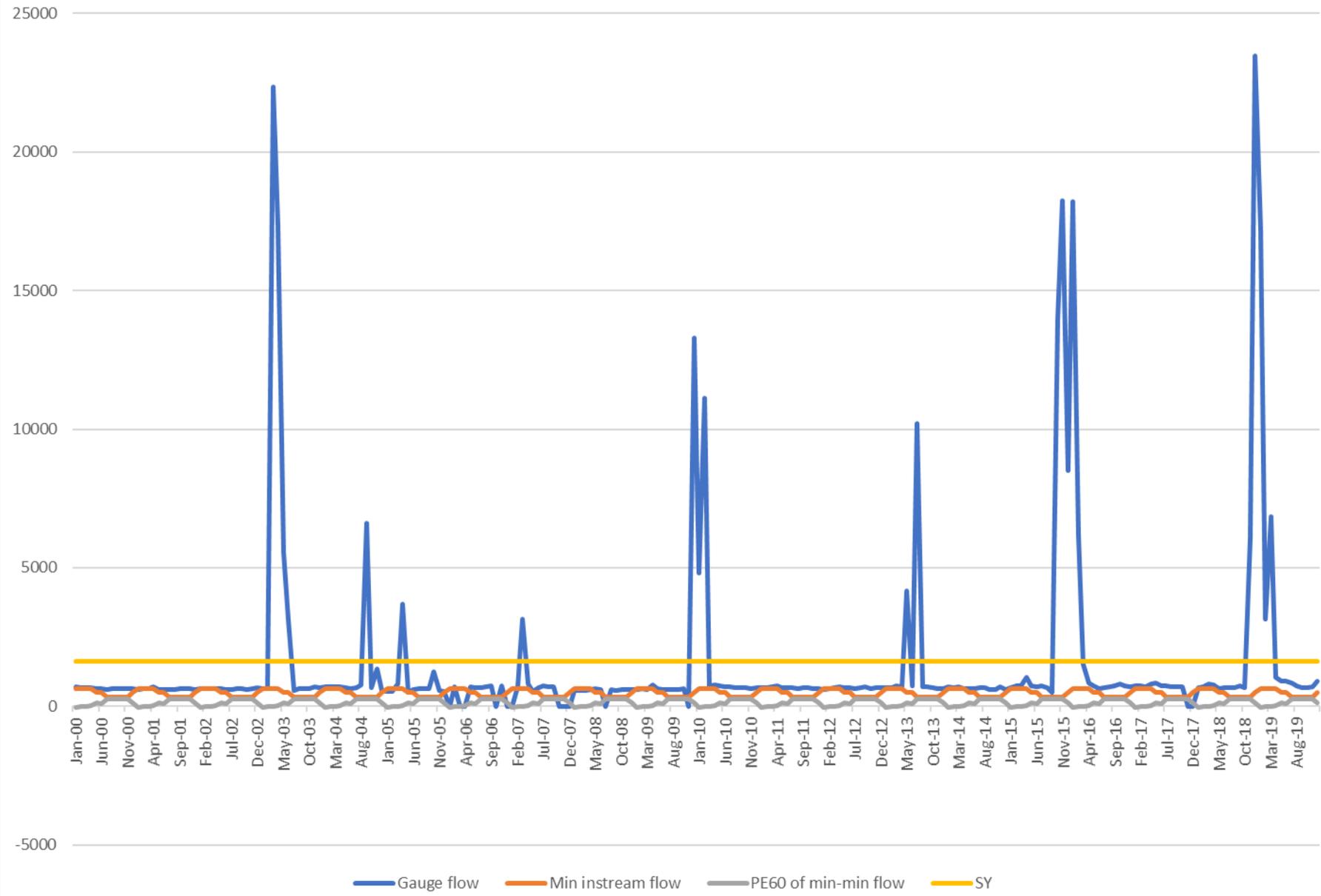
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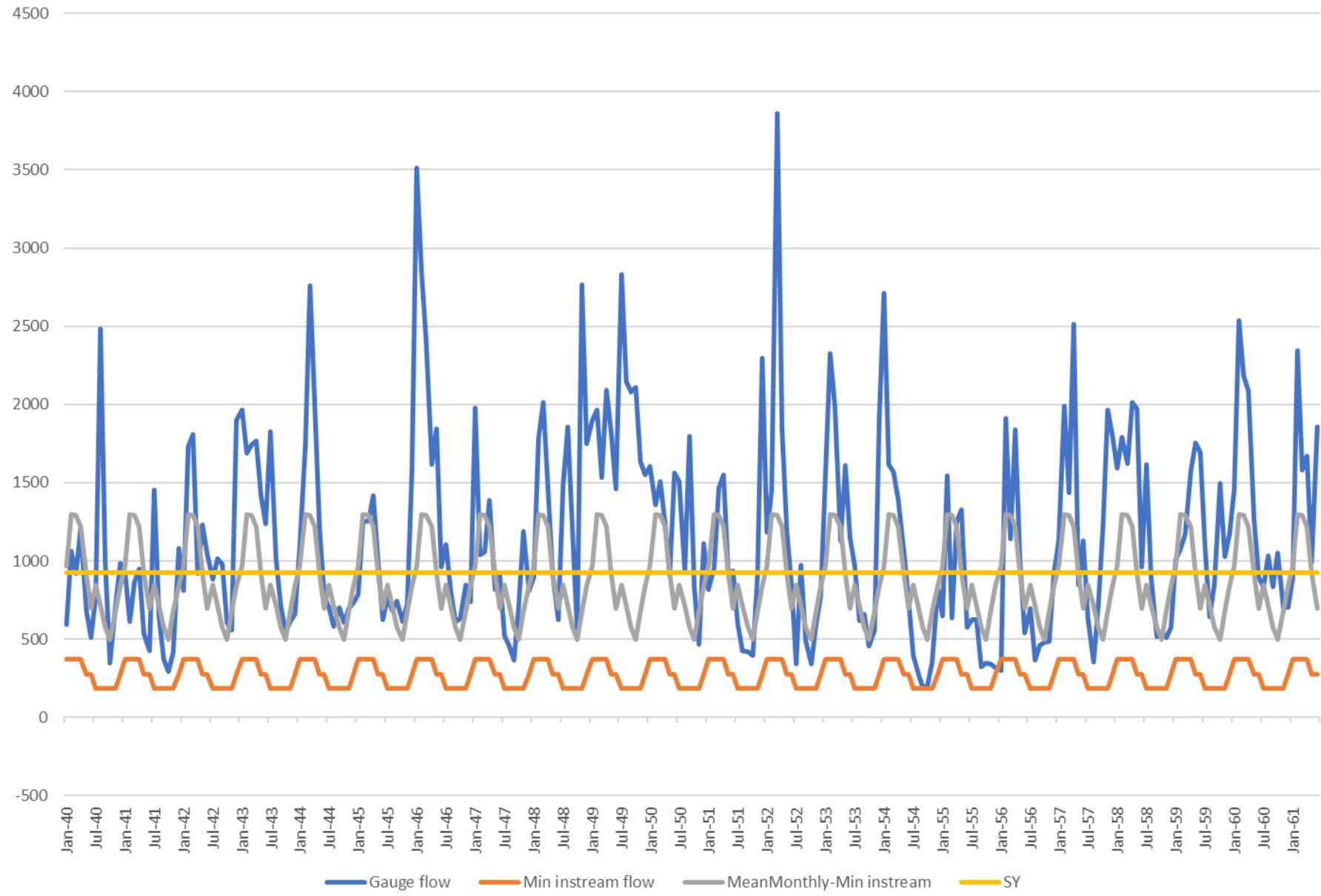
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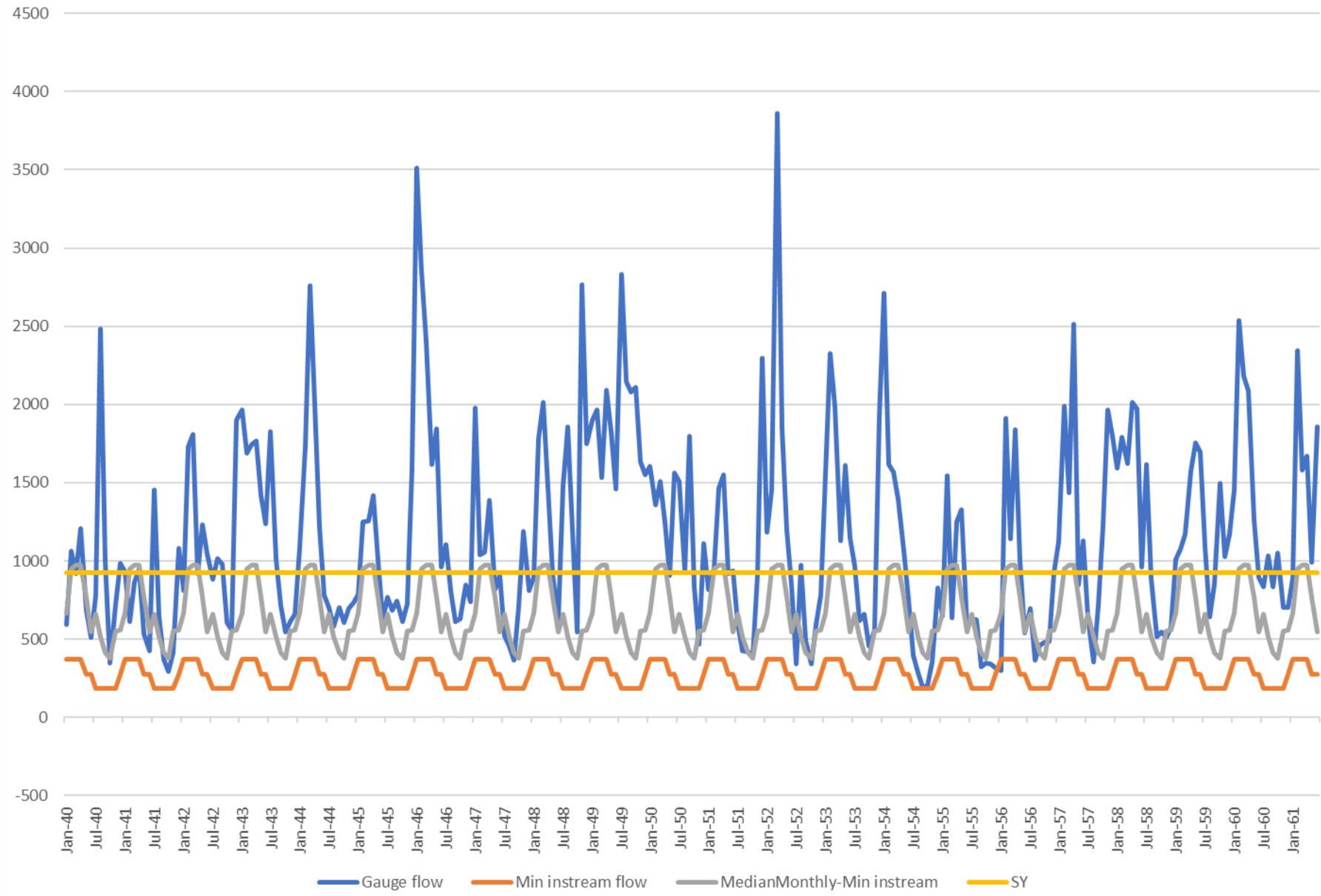
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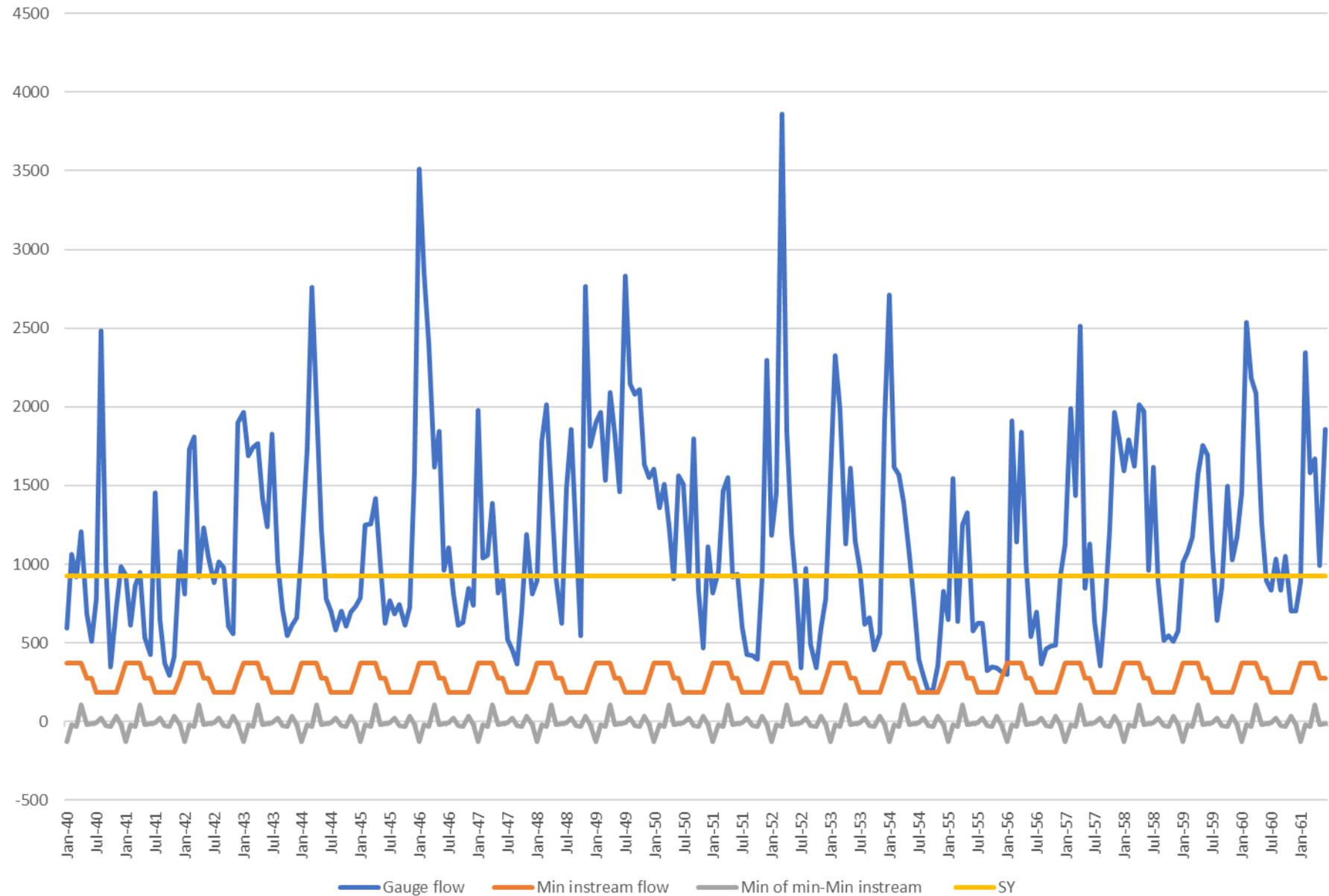
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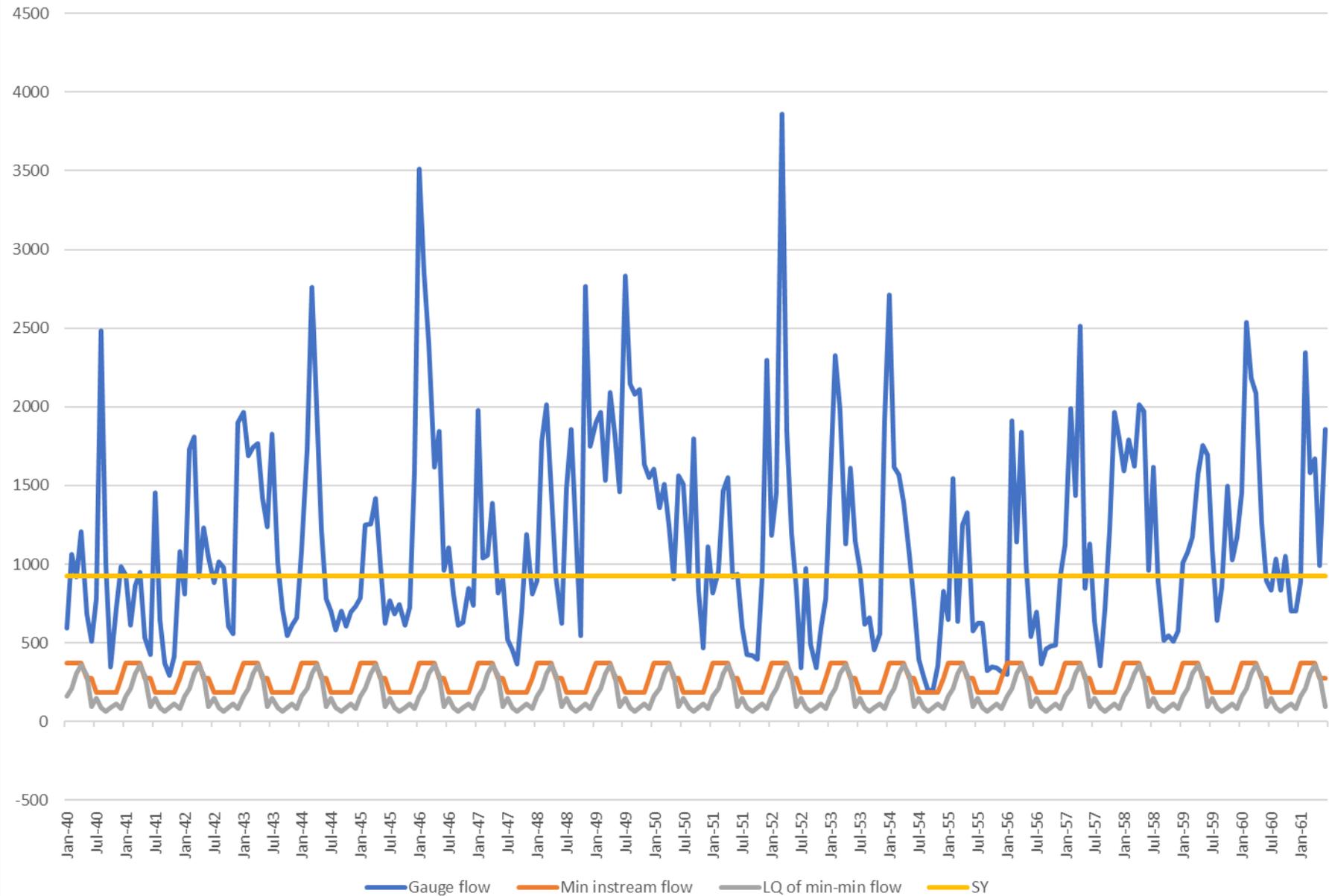
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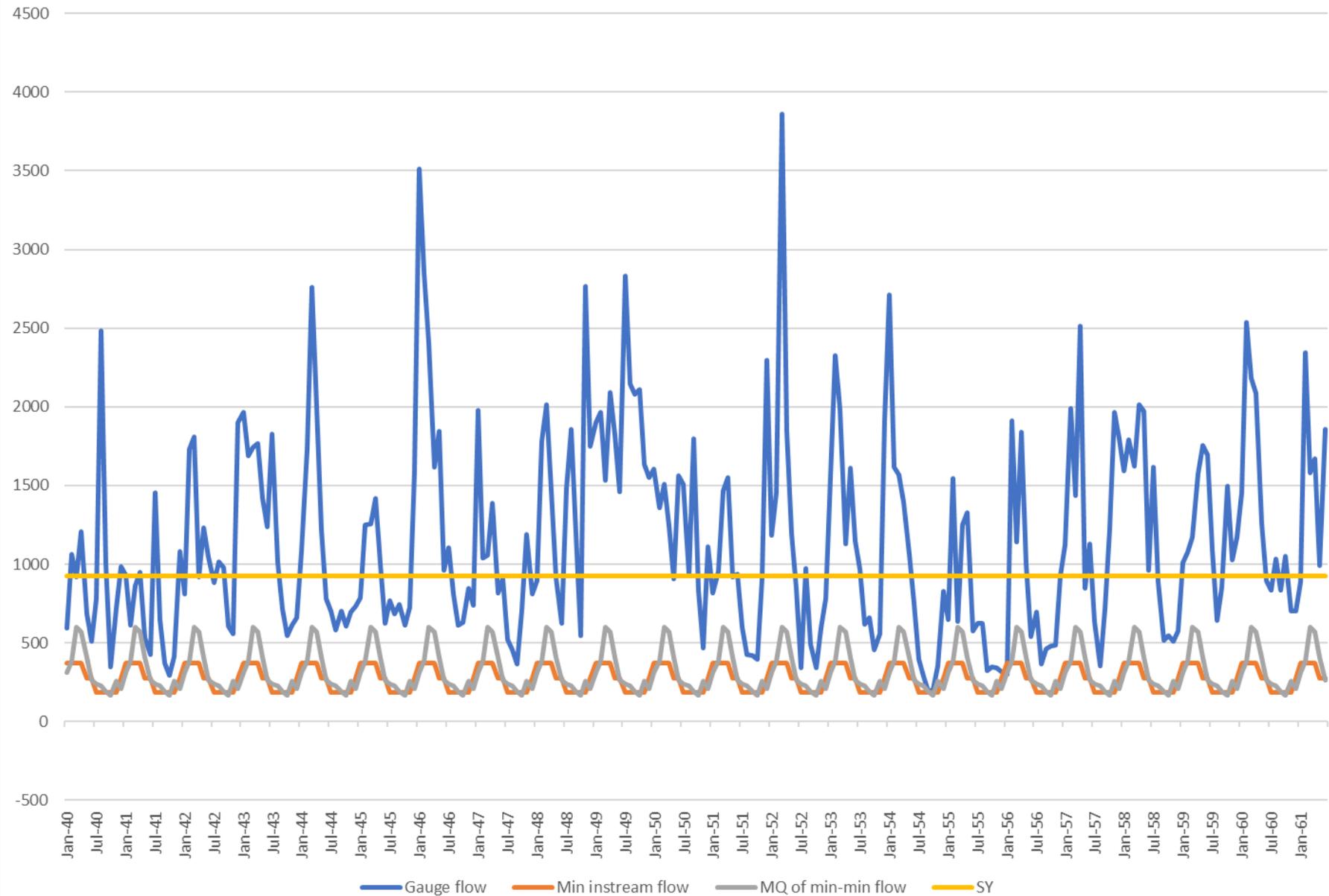
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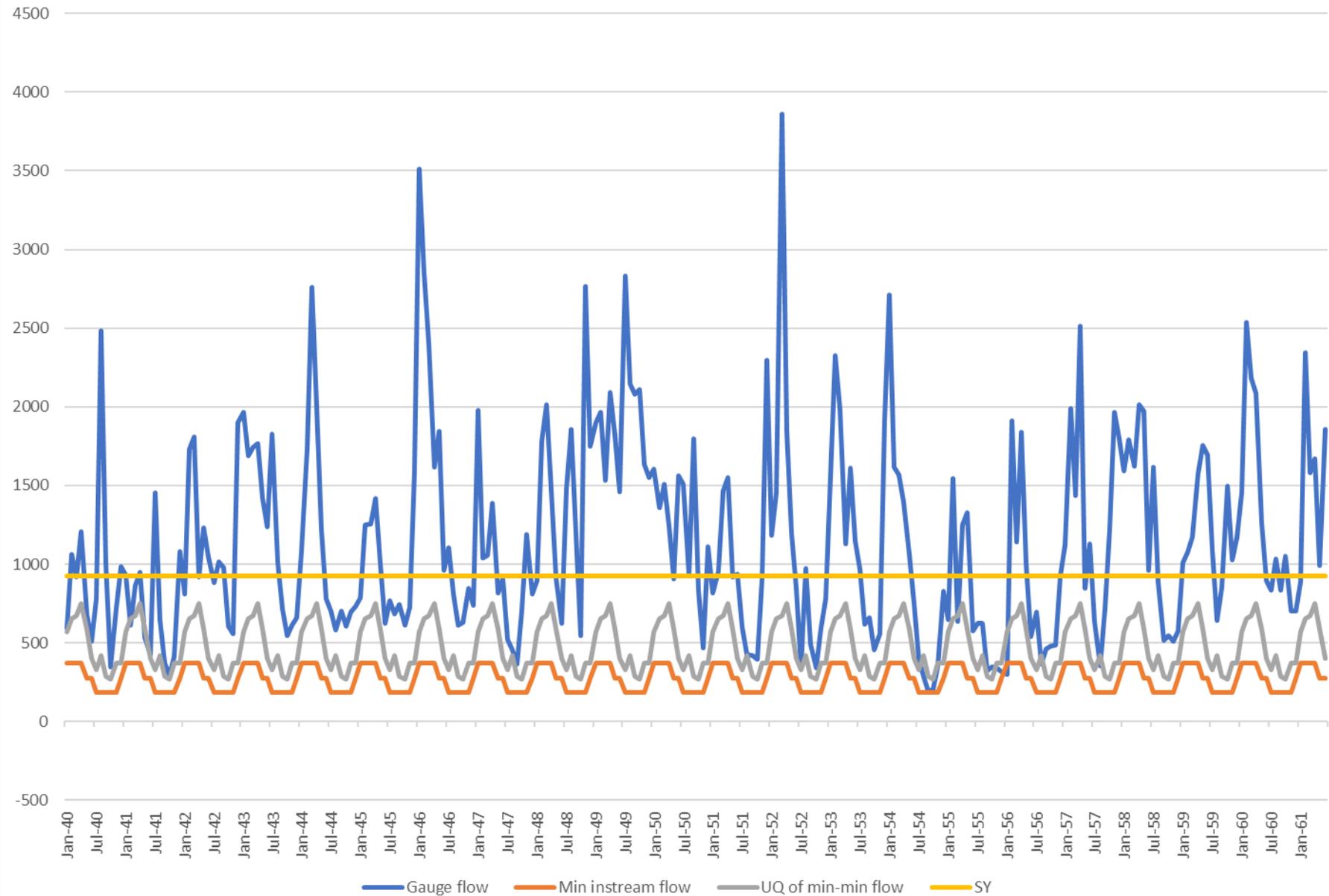
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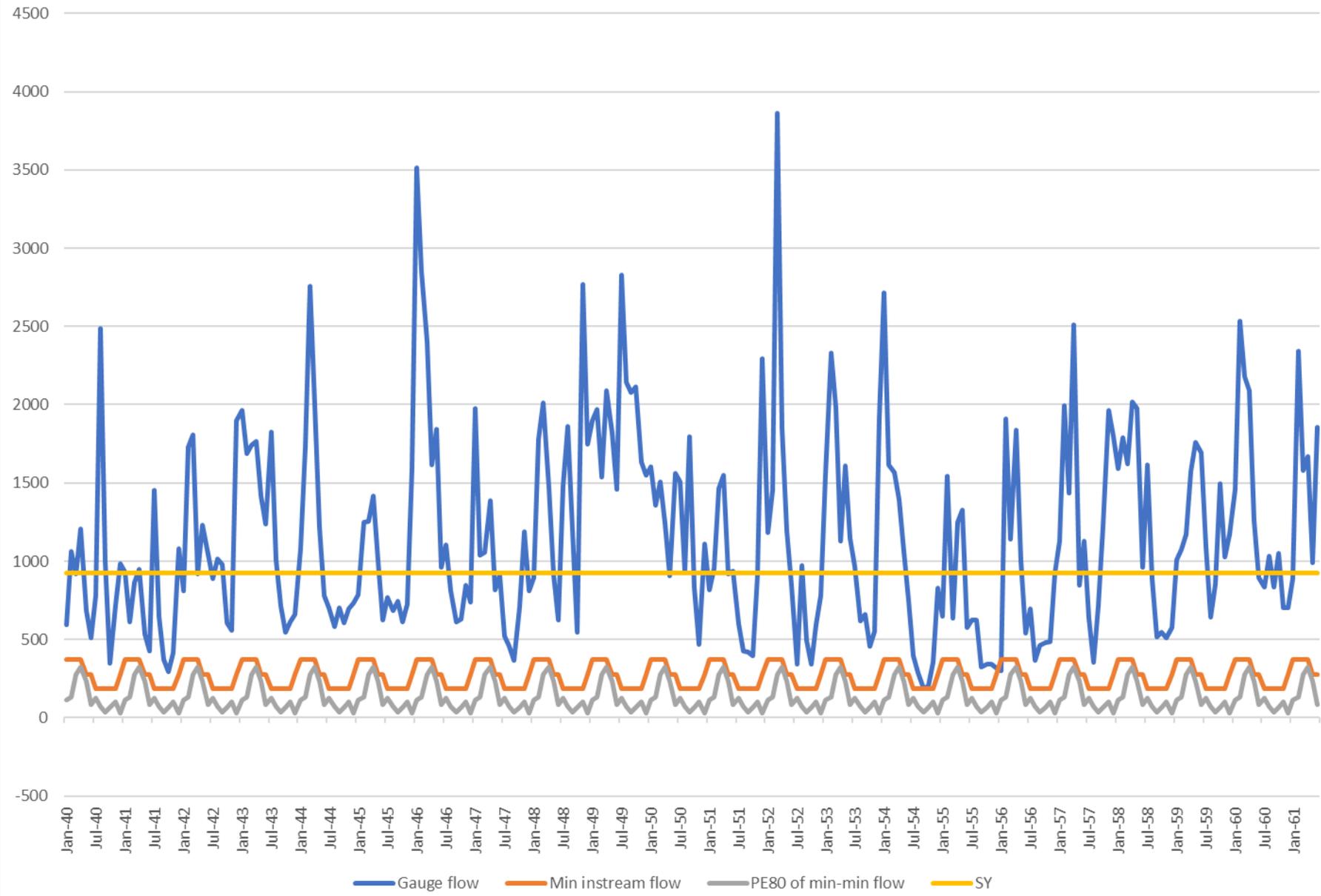
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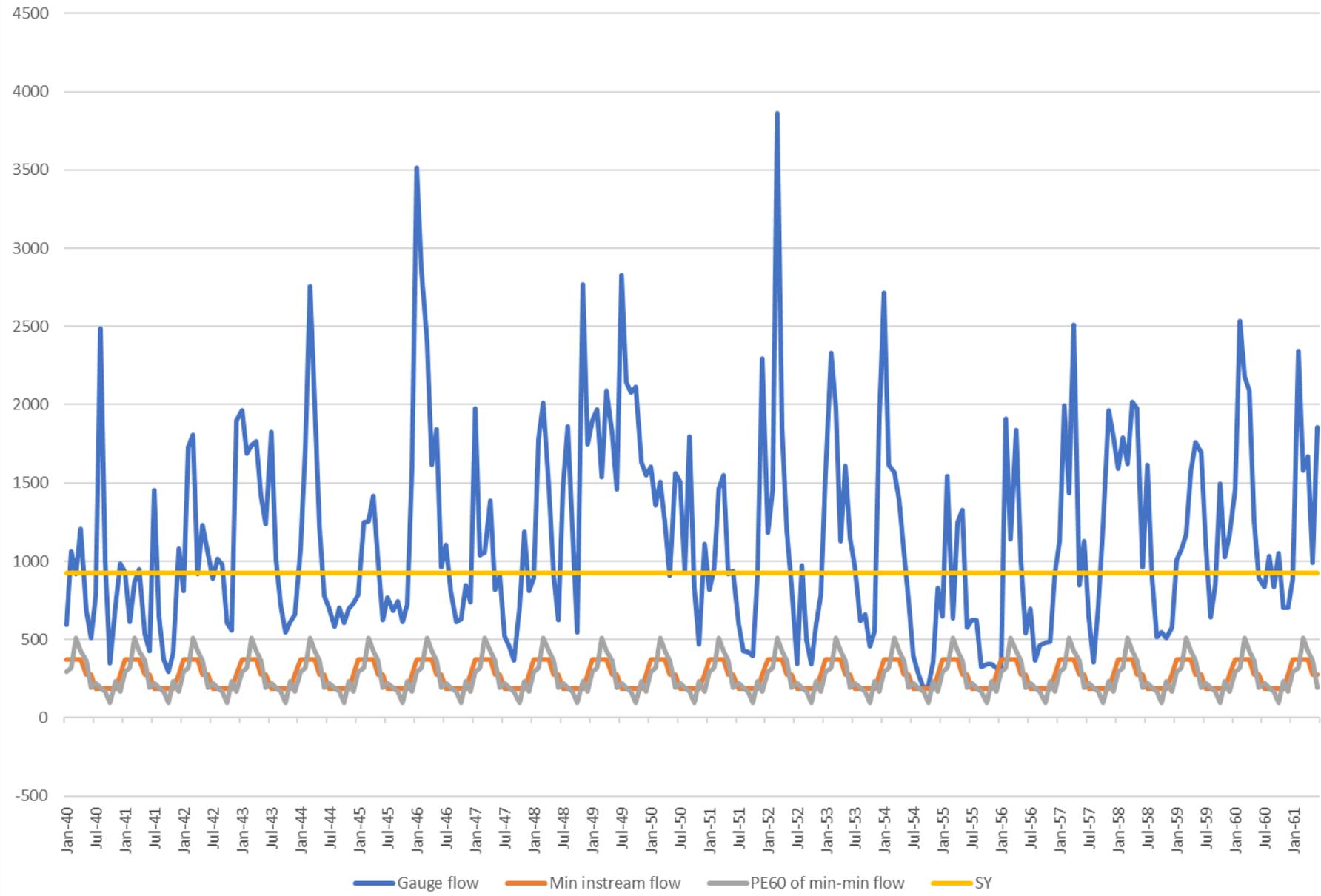
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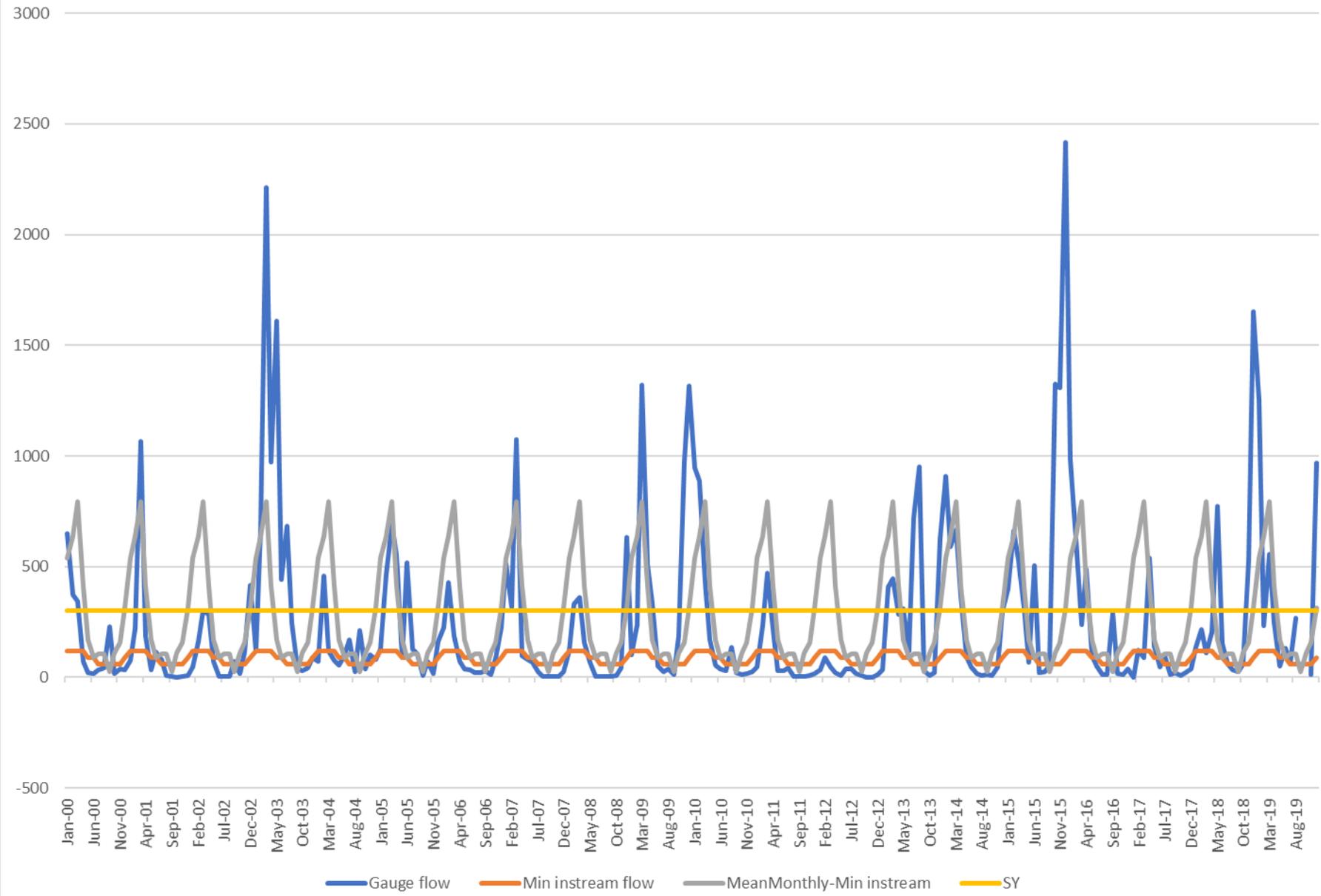
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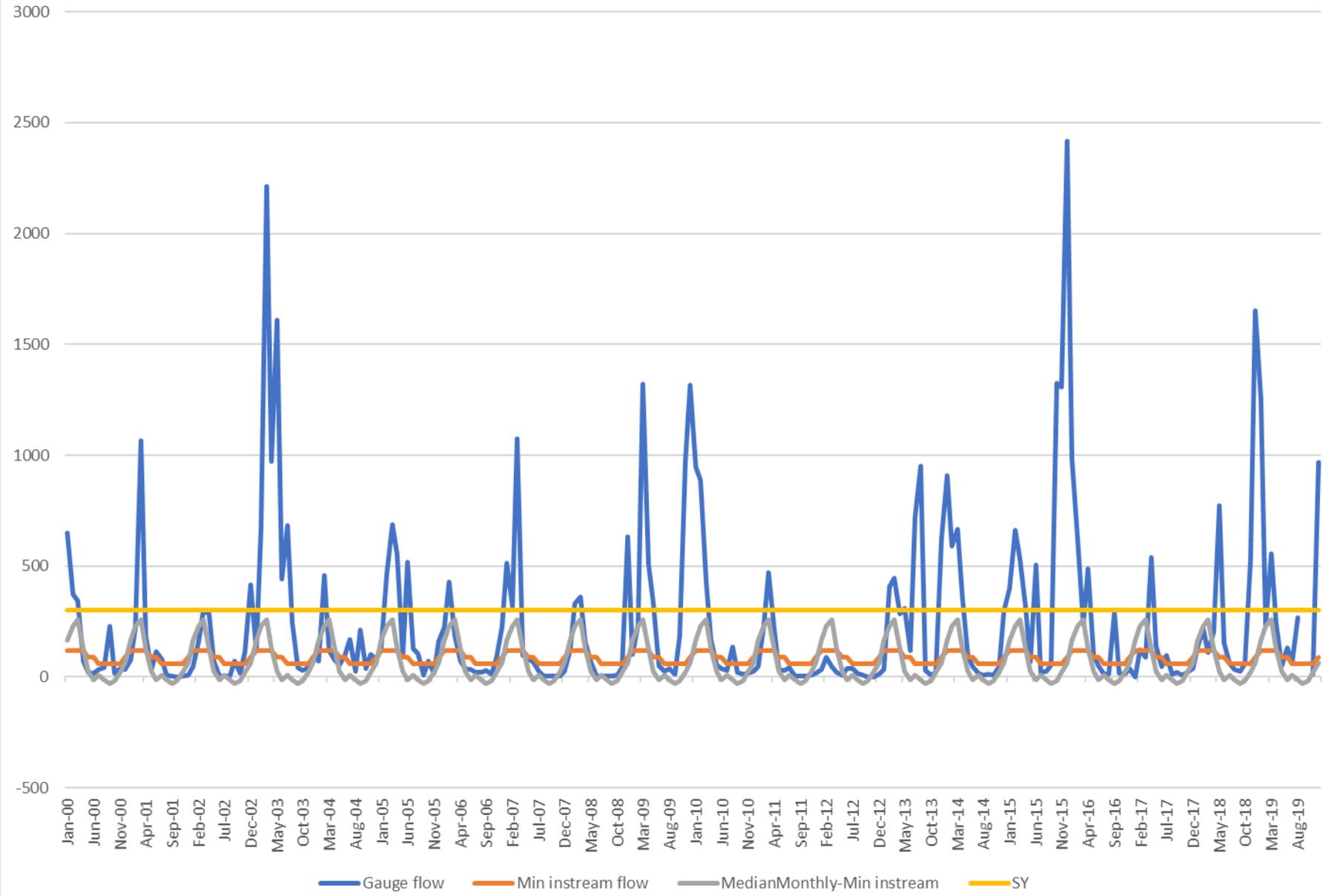
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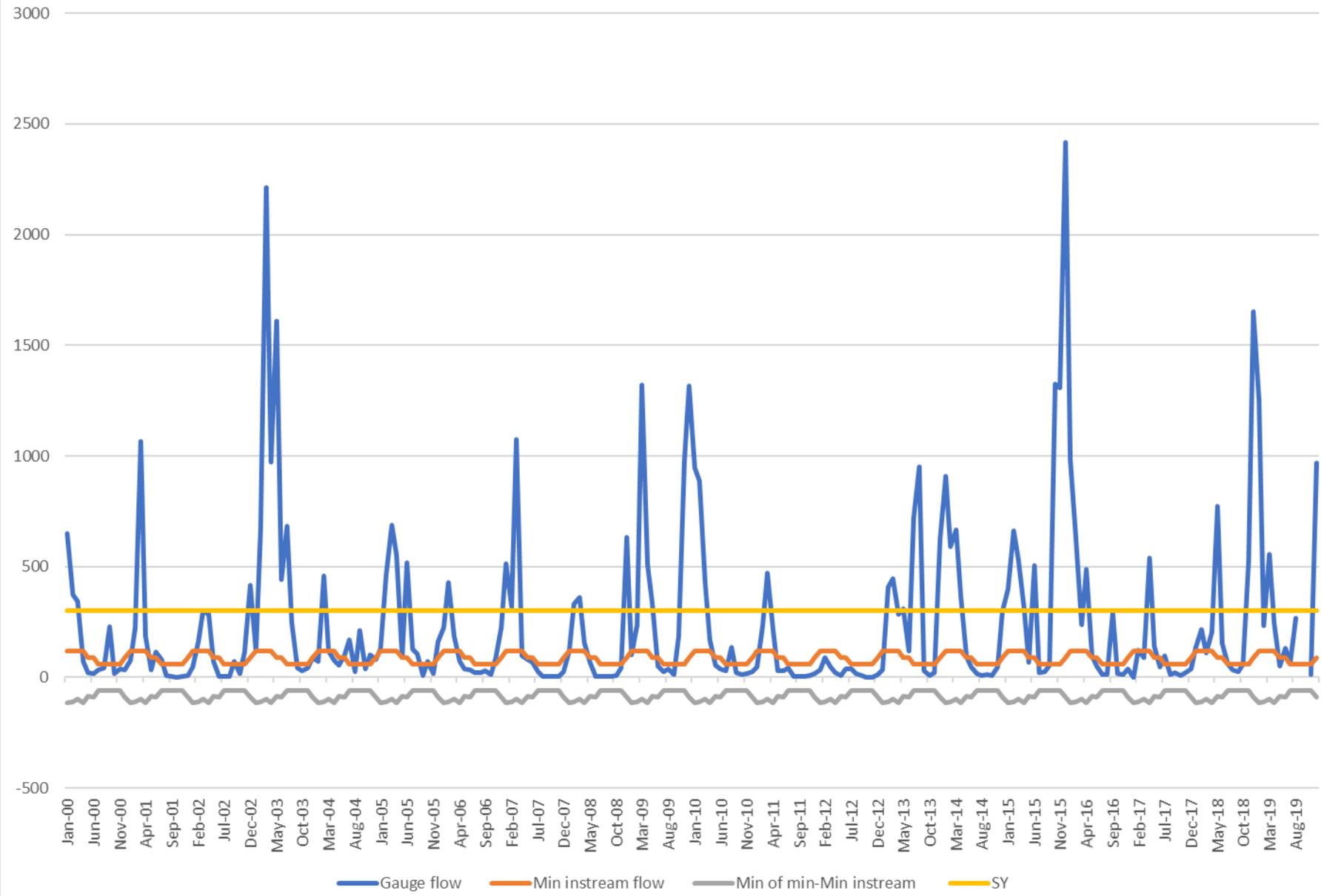
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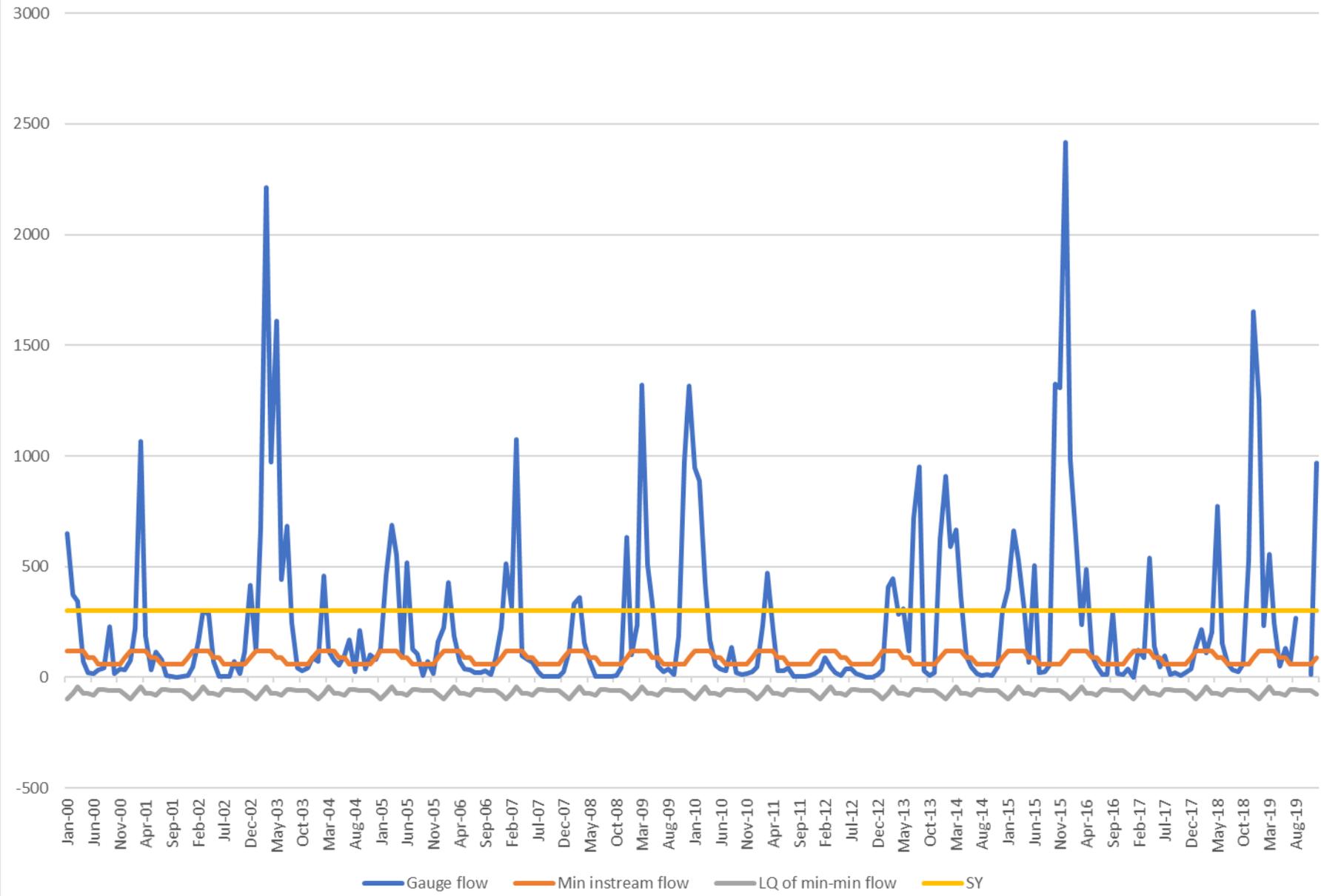
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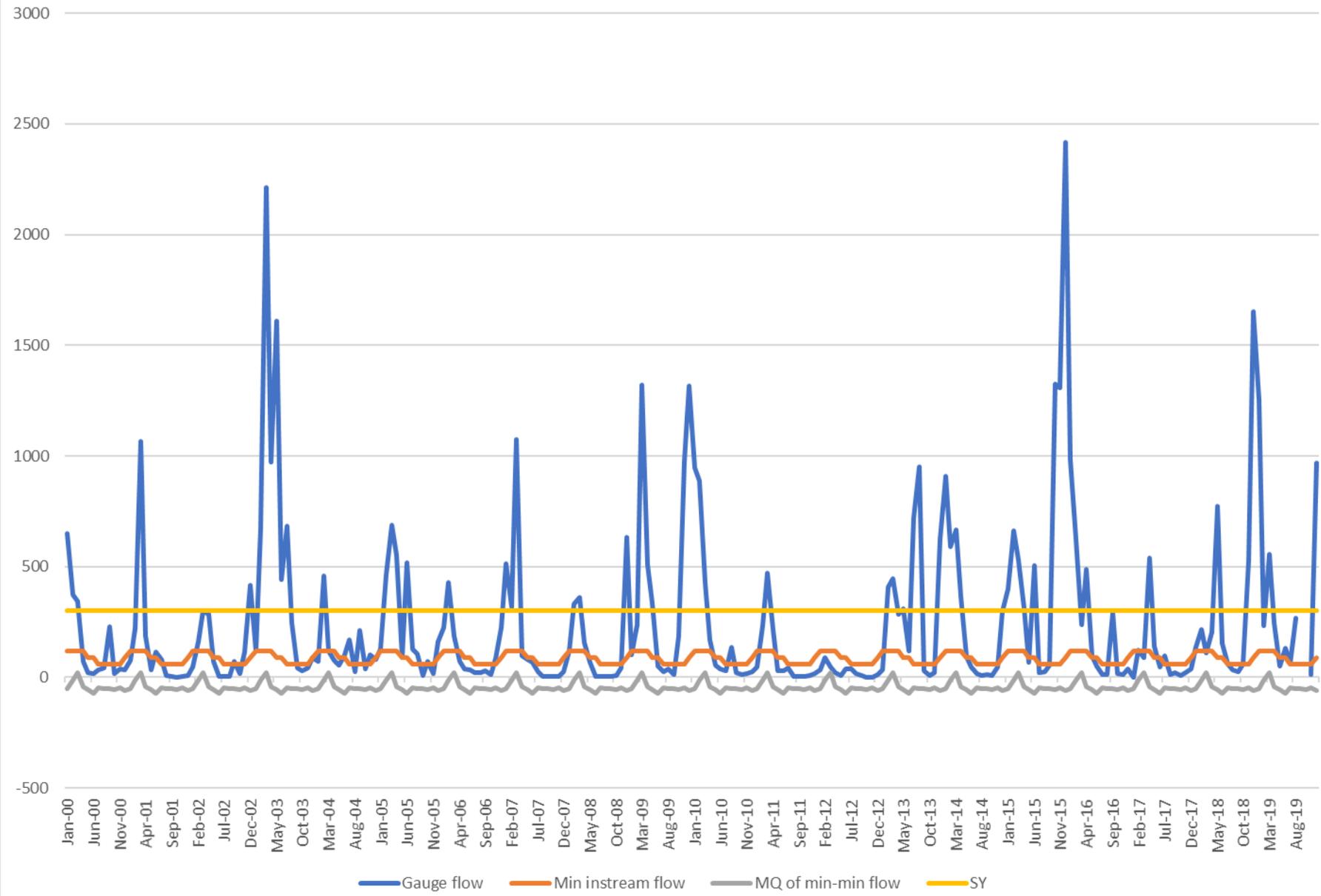
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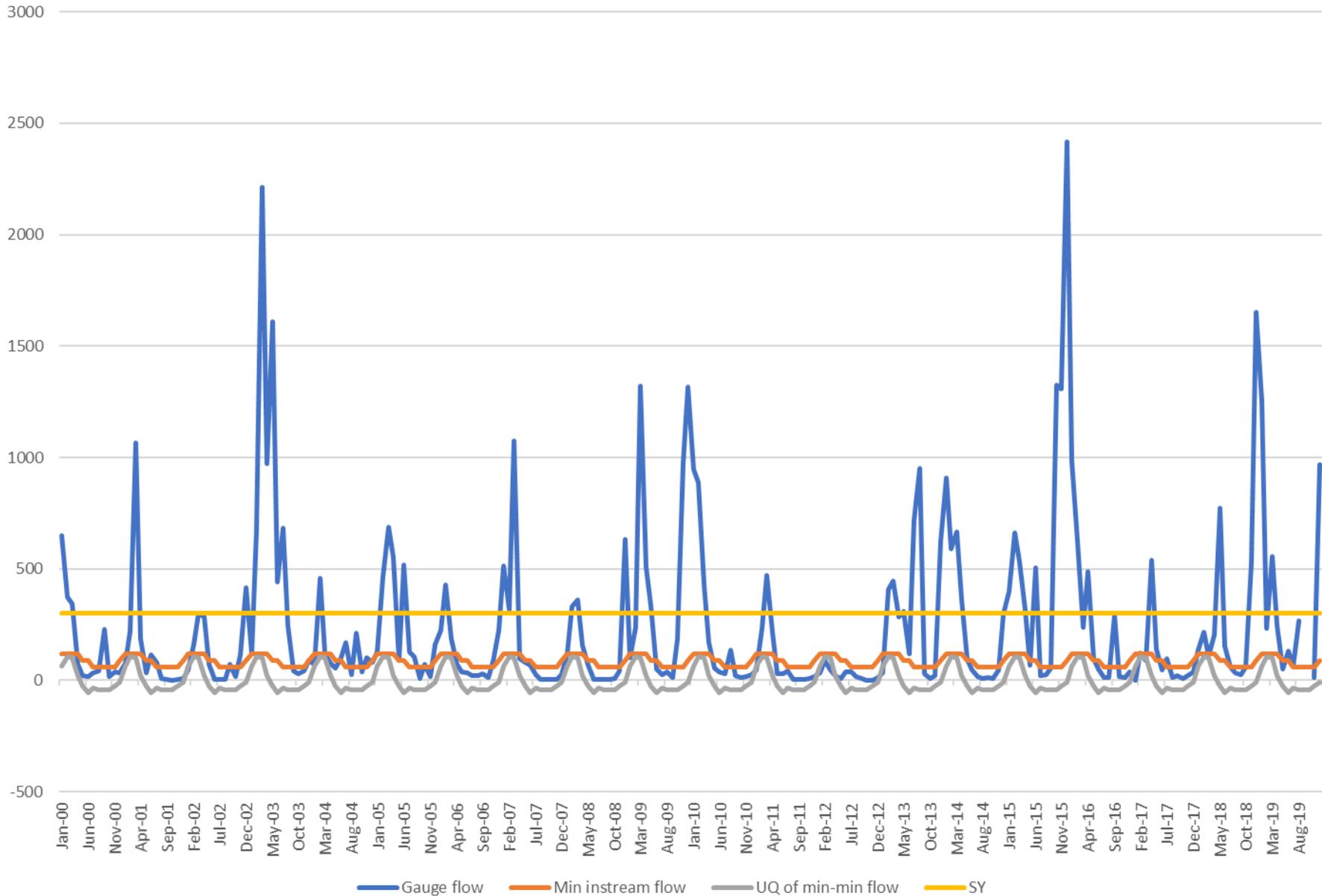
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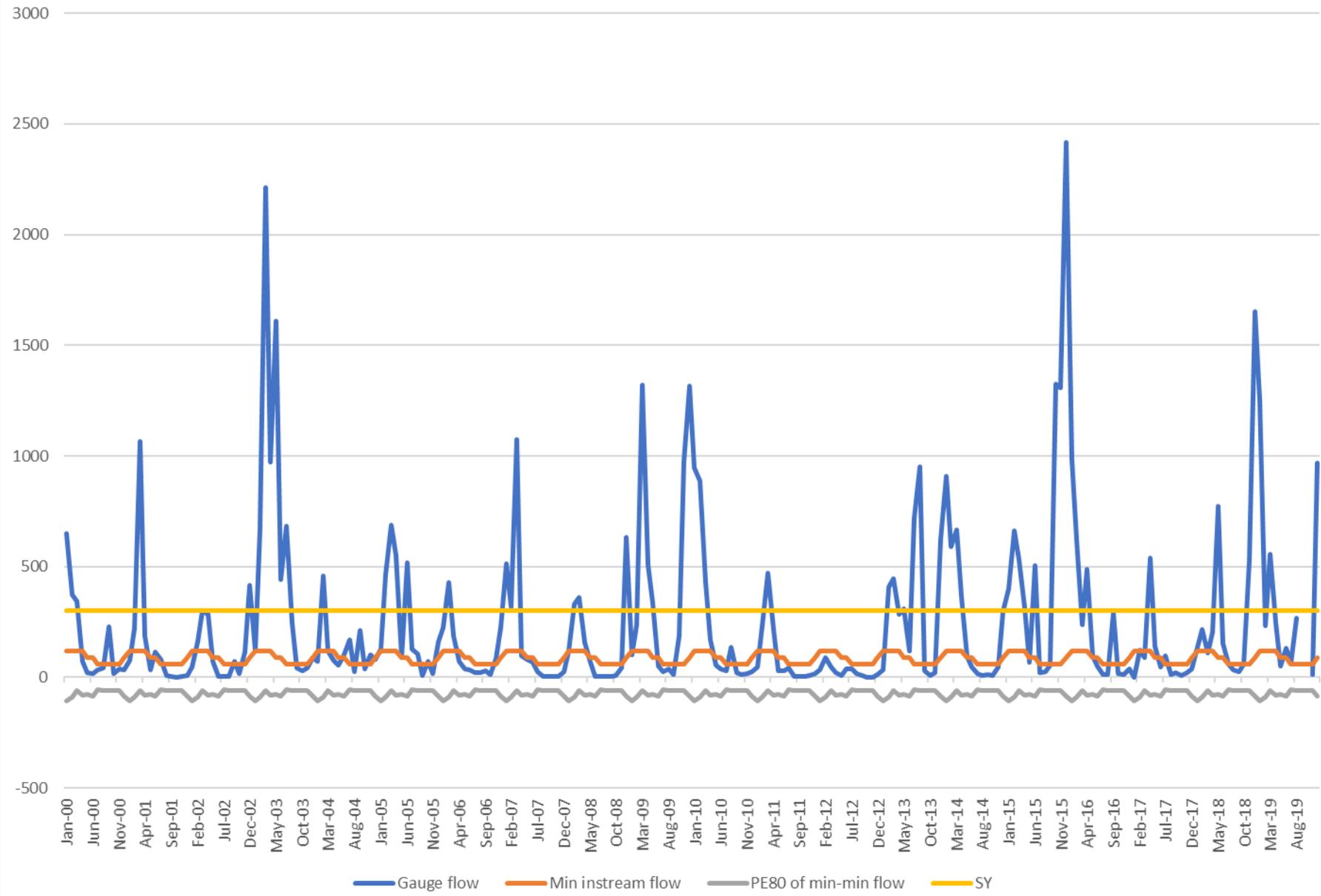
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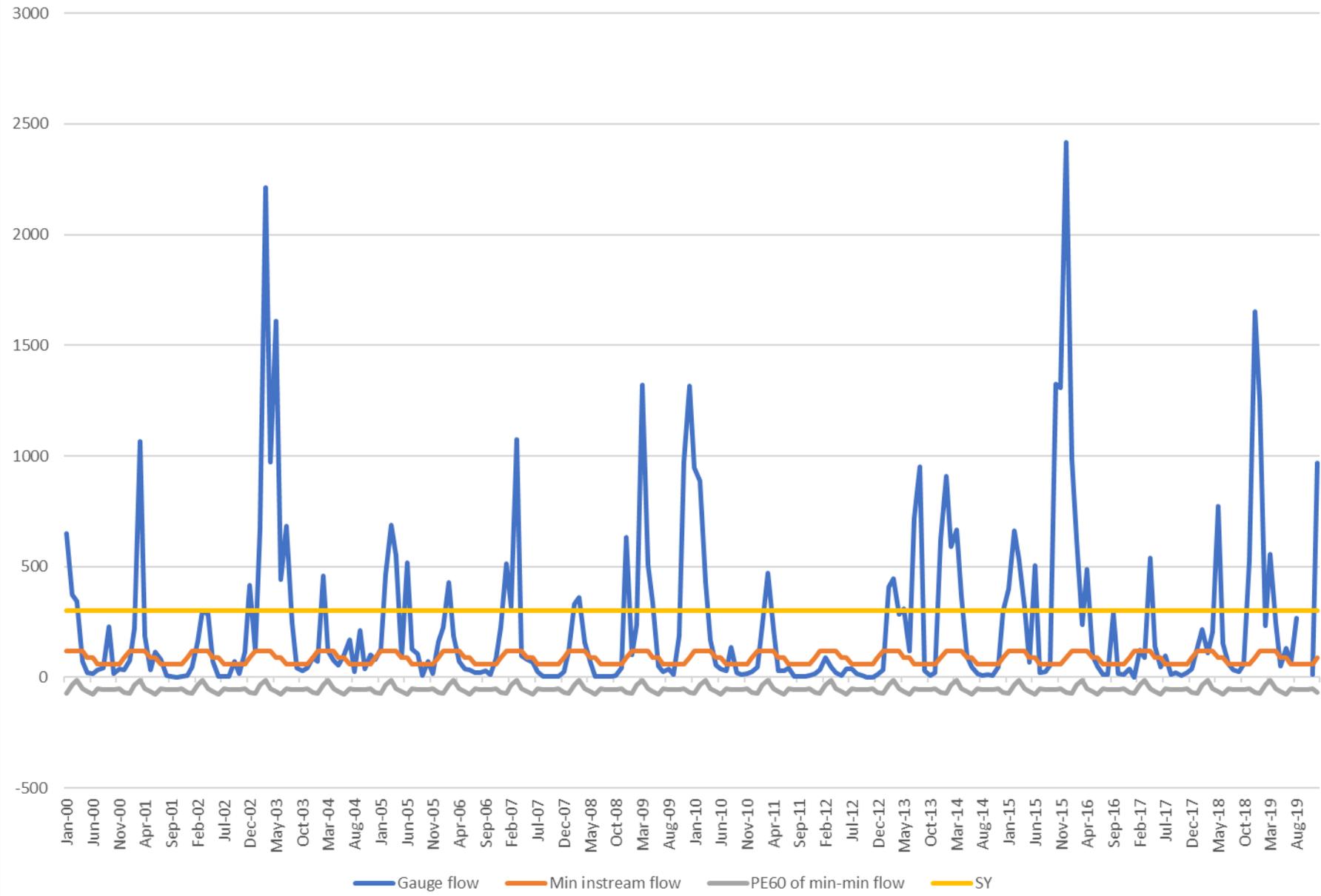
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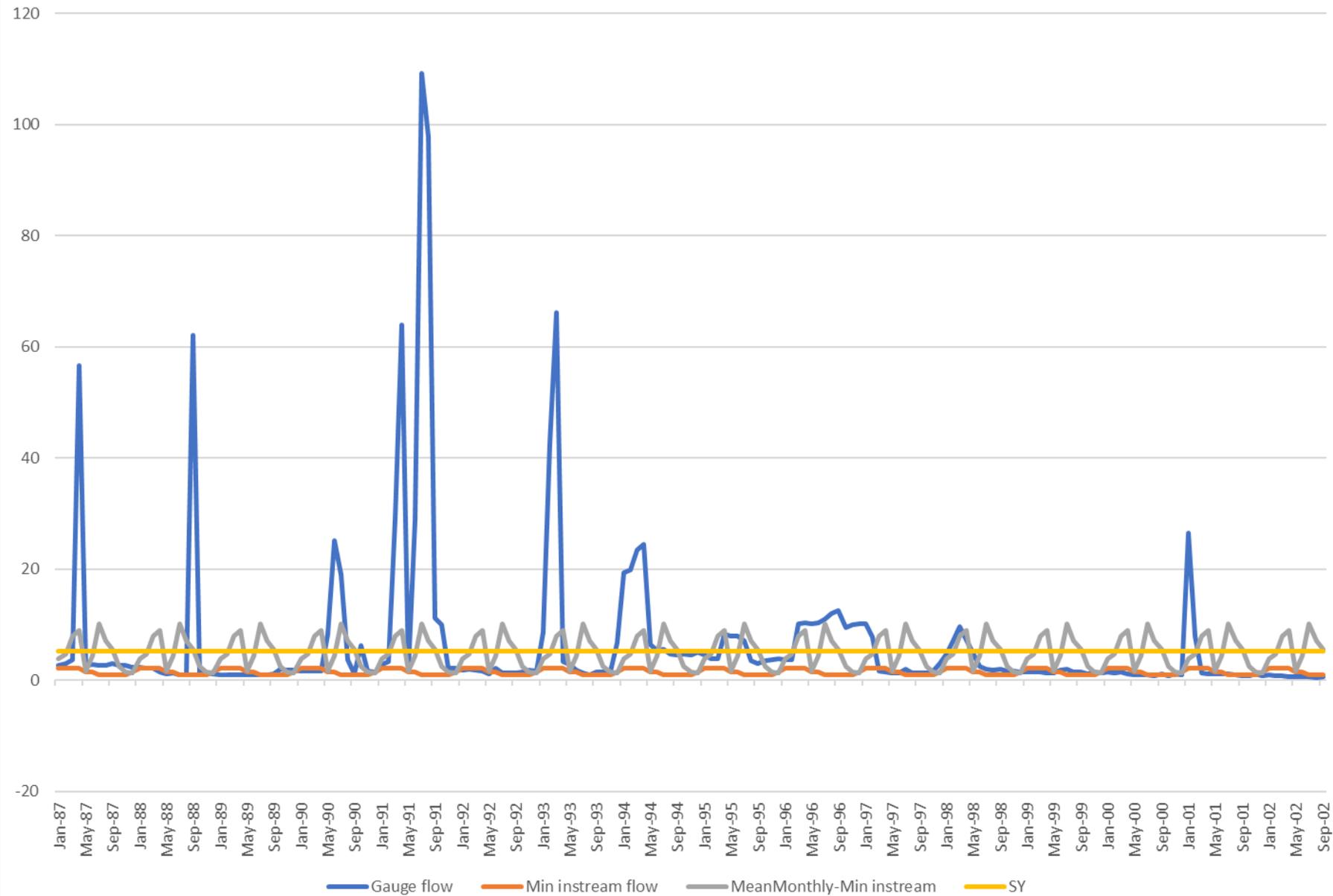
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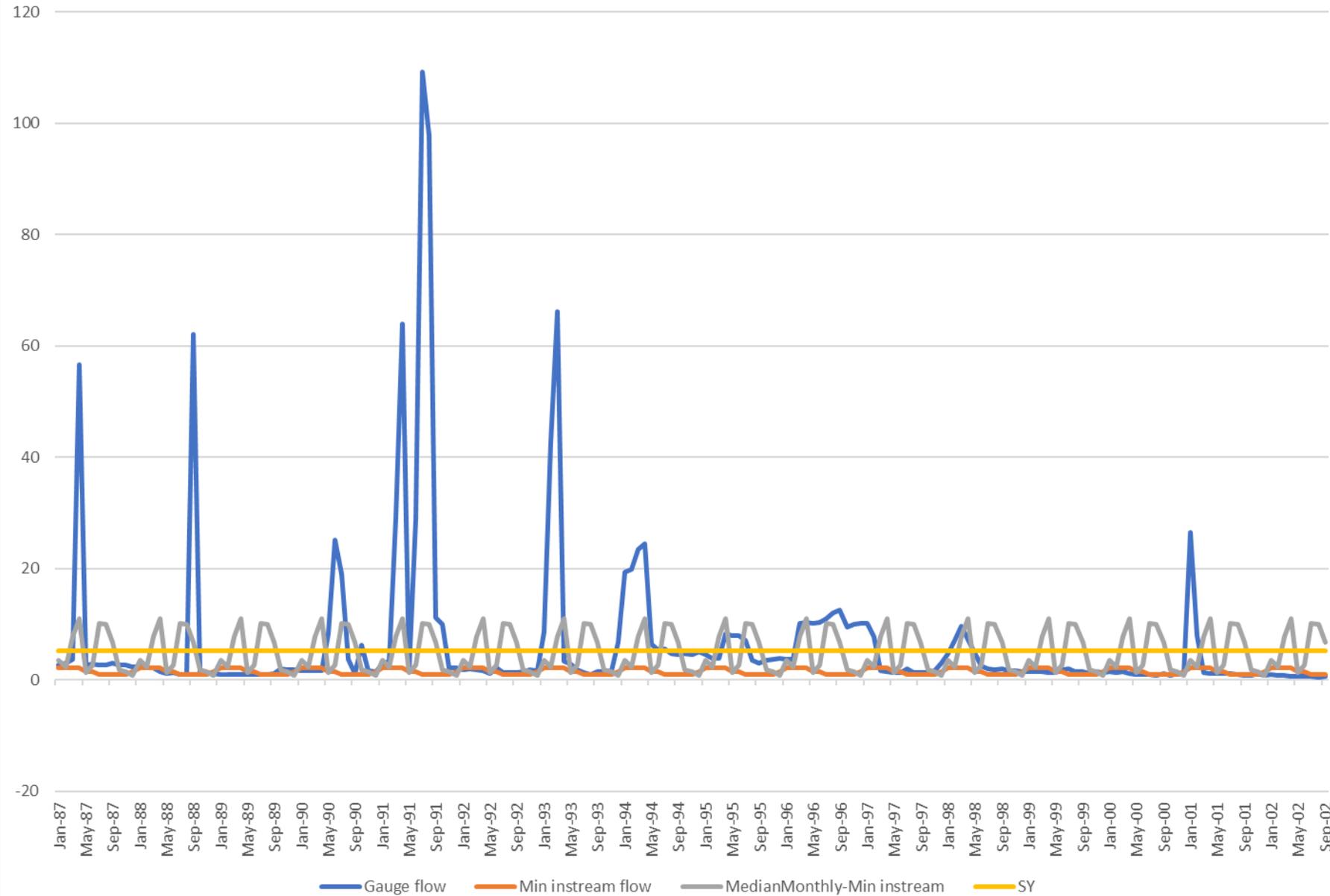
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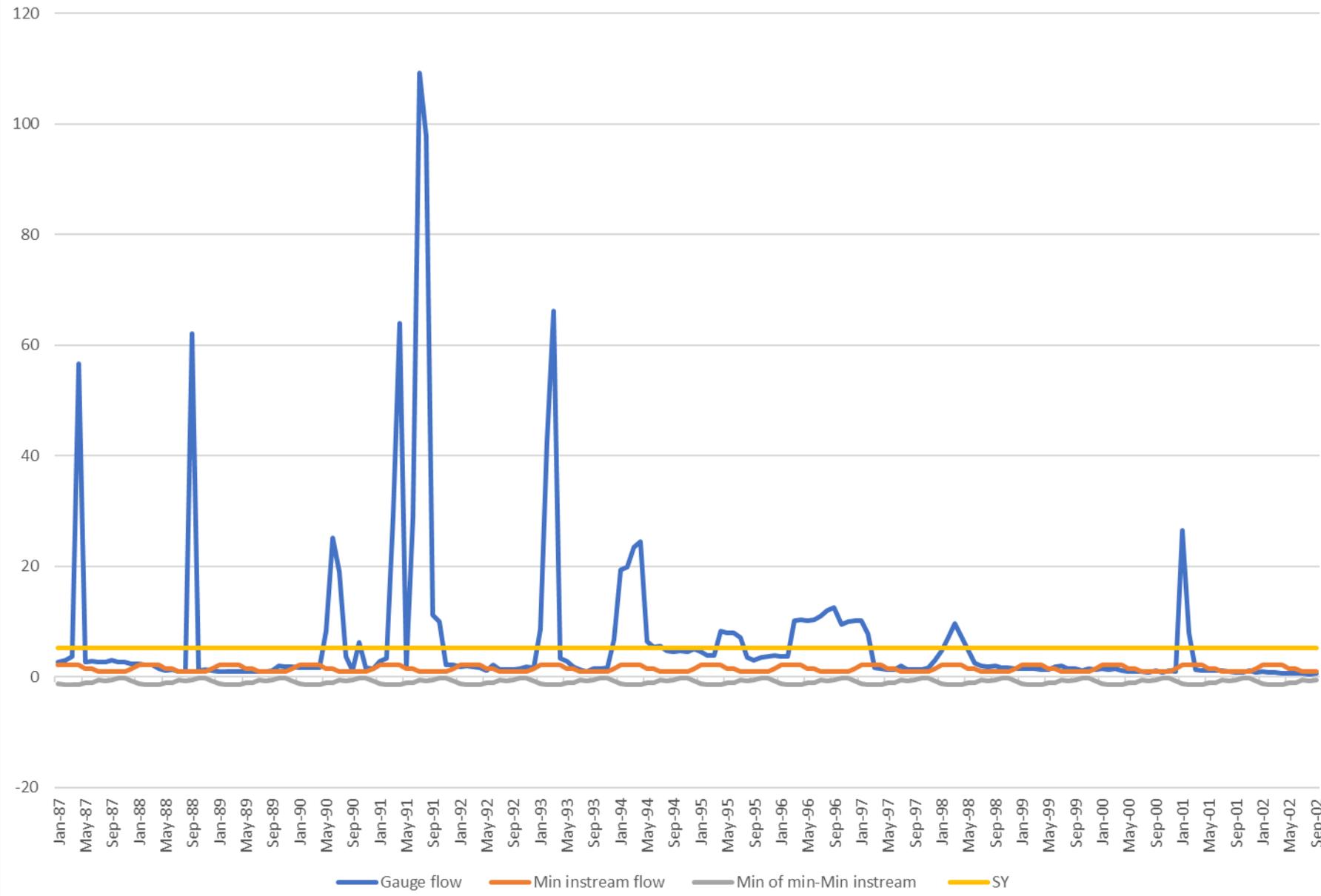
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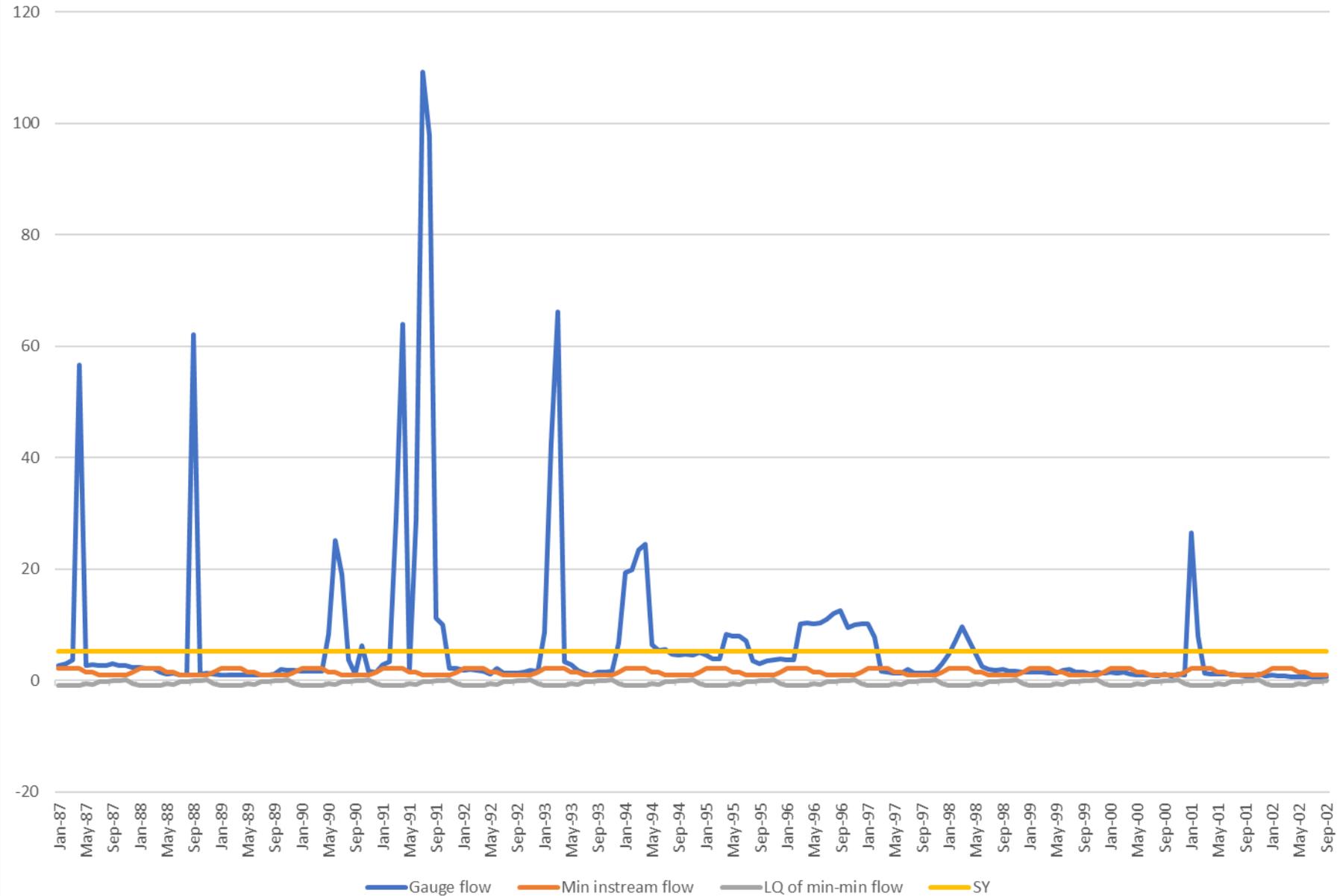
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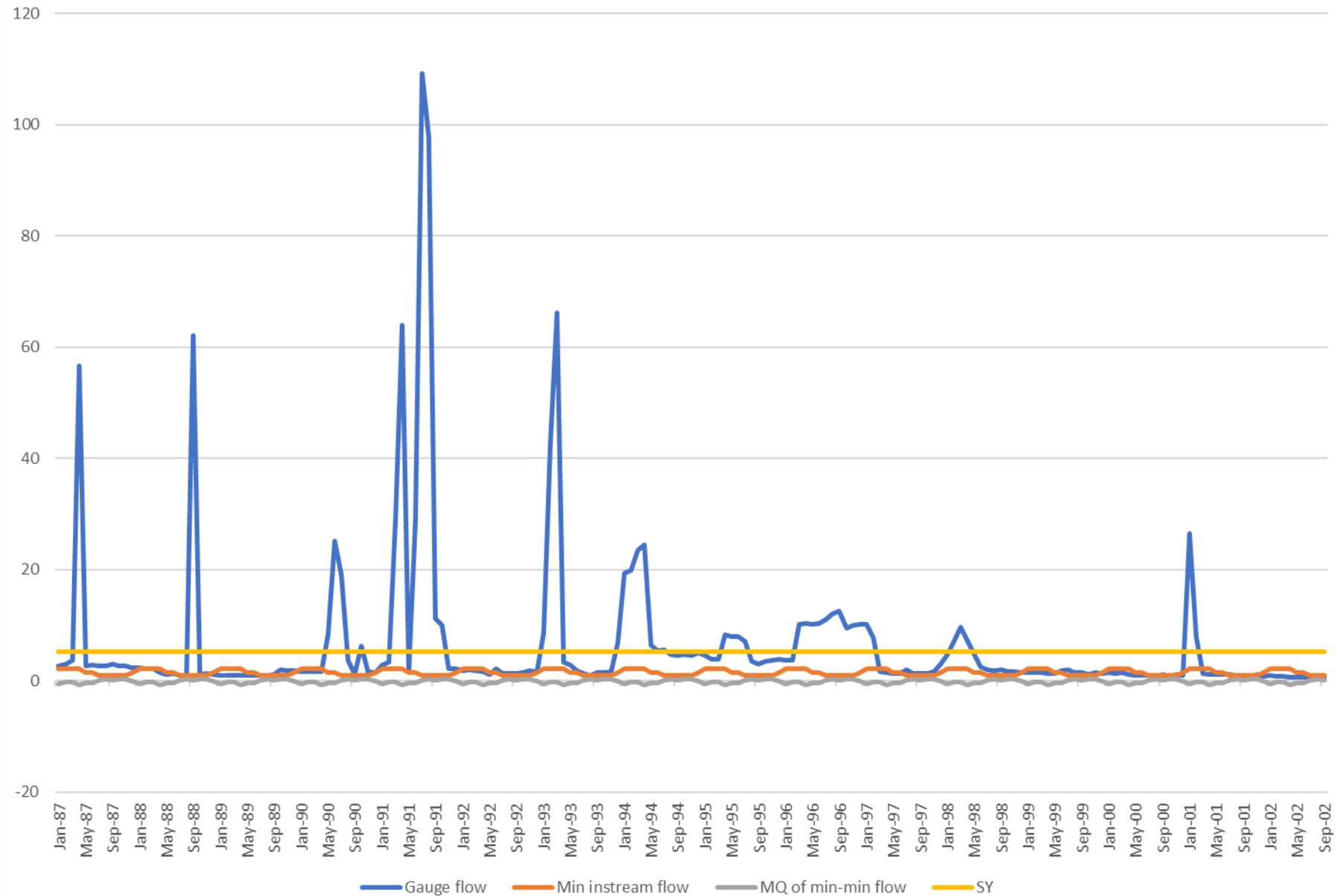
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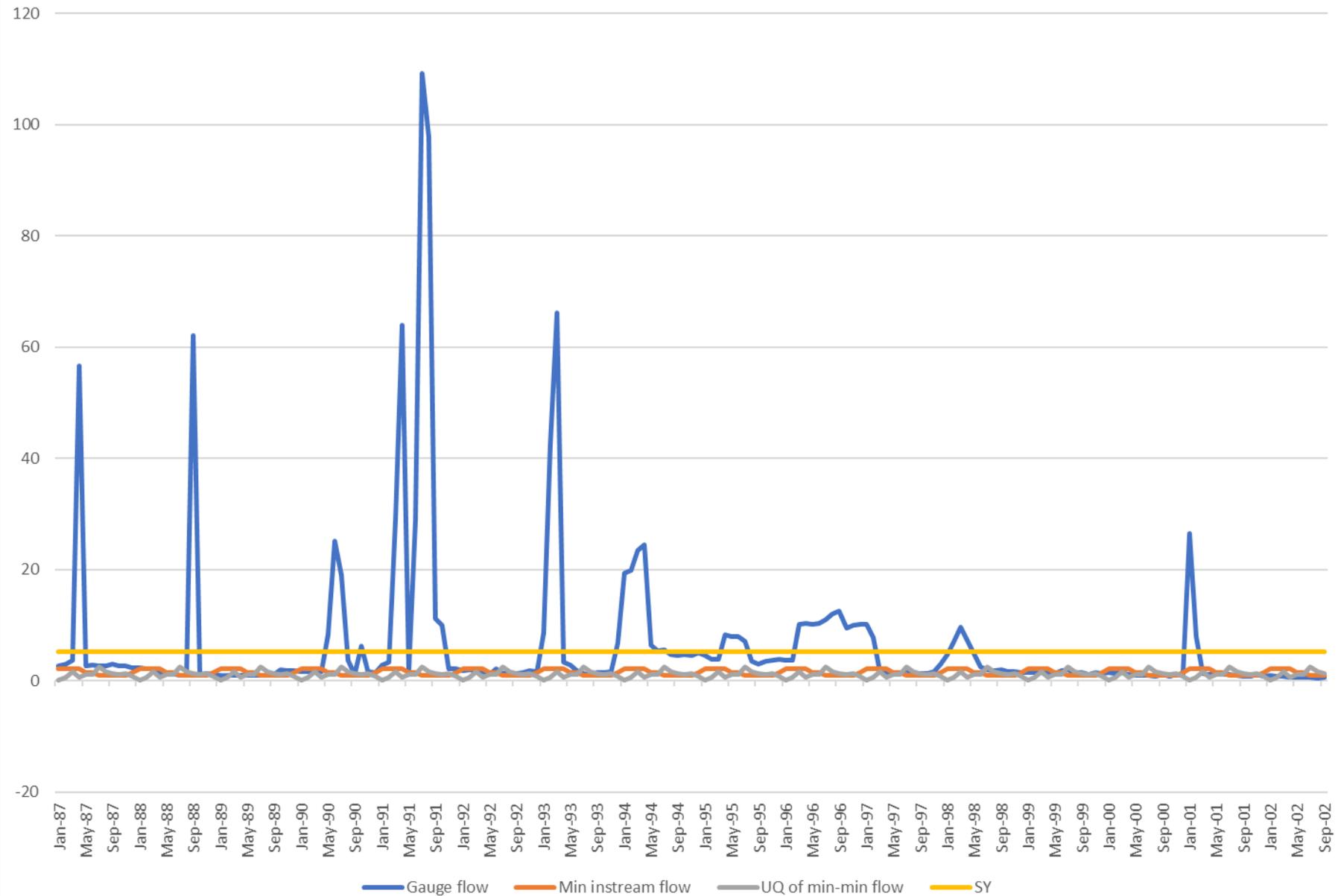
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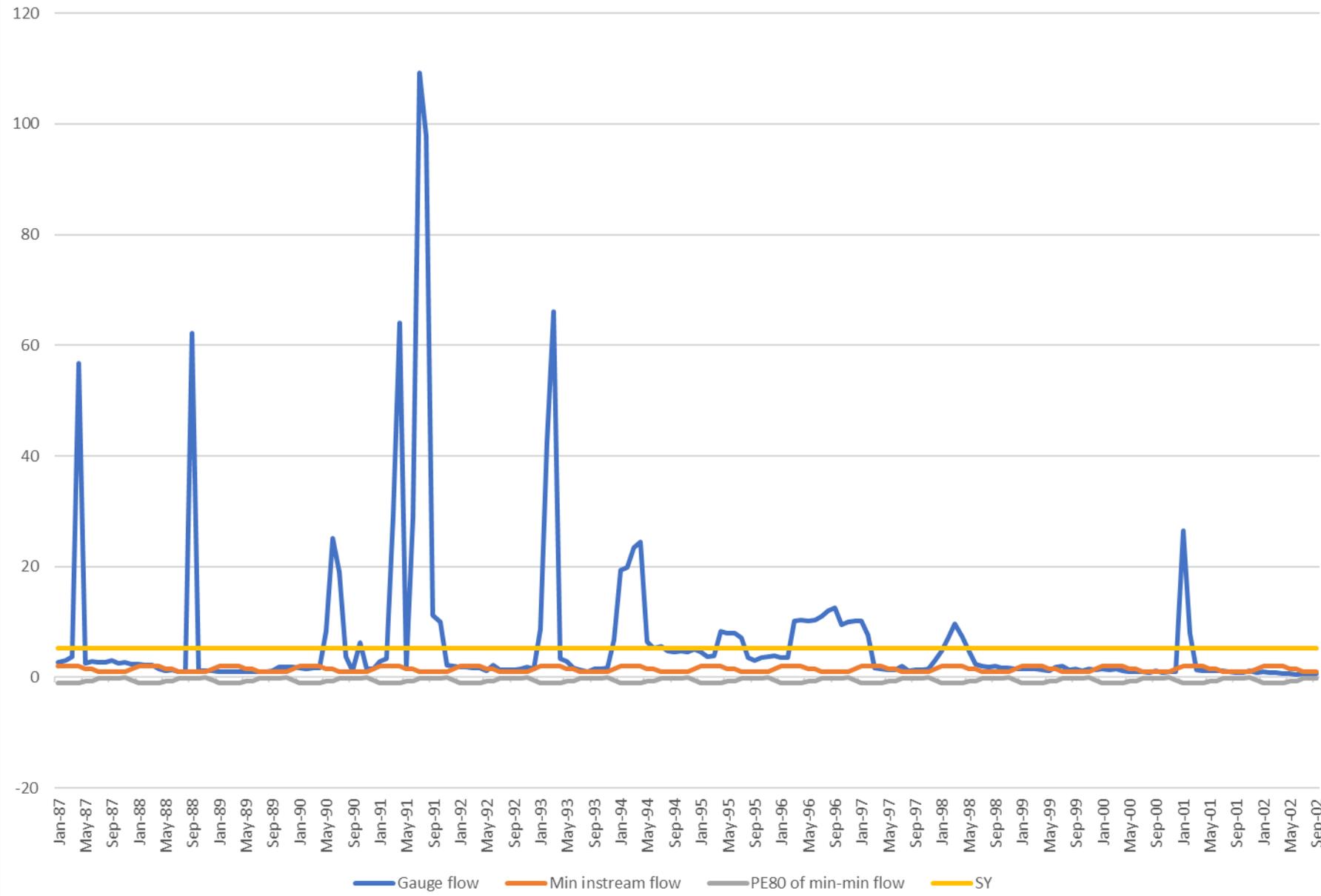
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