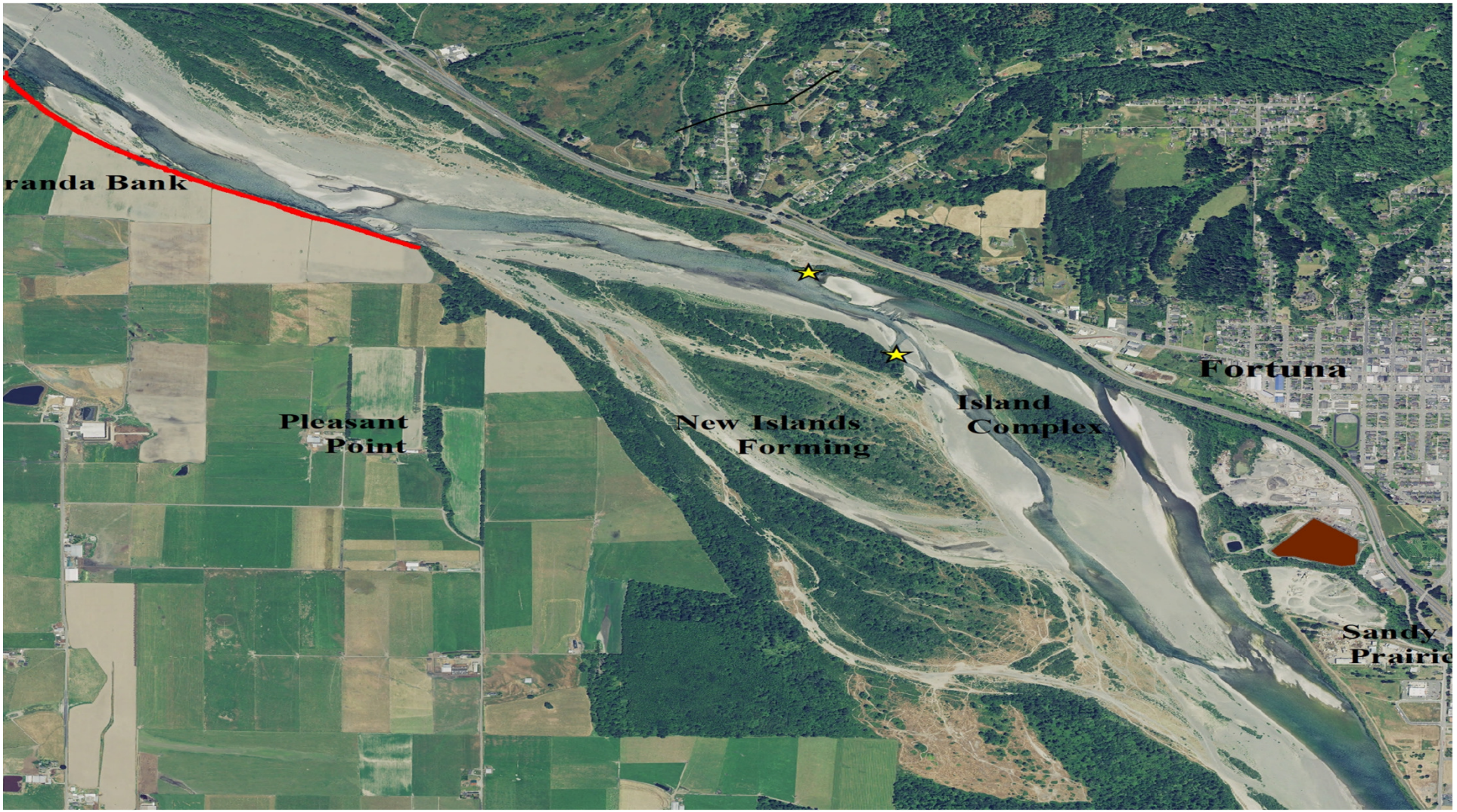
Lower Eel River Monitoring

Notes on Anadromous Fisheries and Habitat

by Eric Stockwell

Loleta Eric

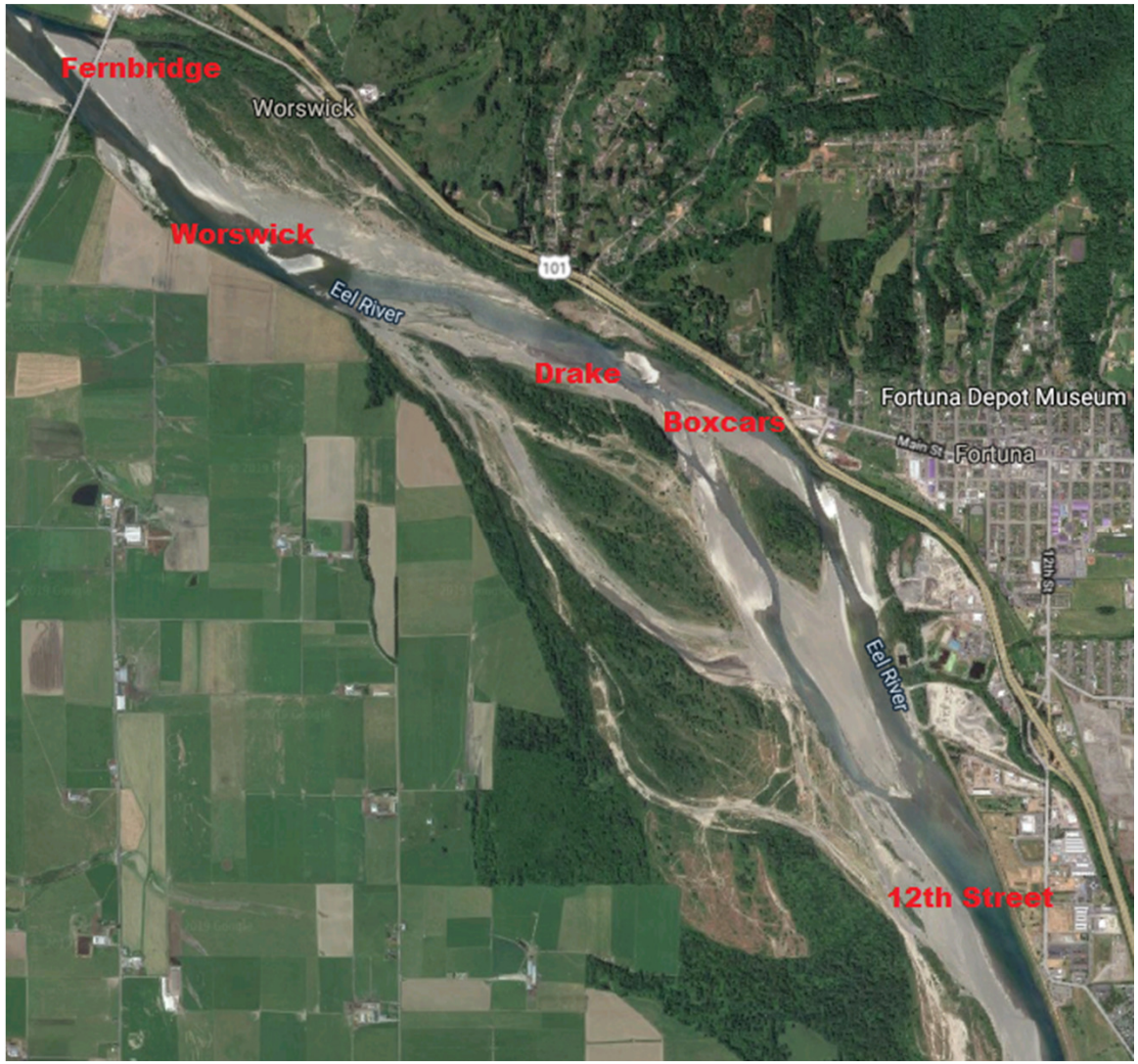
- Outdoor Guide and Naturalist
- Over 40 years on the Eel
- Taught to respect the fish
- Salmon should be drivers in our region:
  - Economically
  - Culturally
  - Spiritually


randa Bank
Pleasant Point
New Islands Forming
Island Complex
Fortuna
Sandy Prairie

What is the Fall Chinook Staging Area?

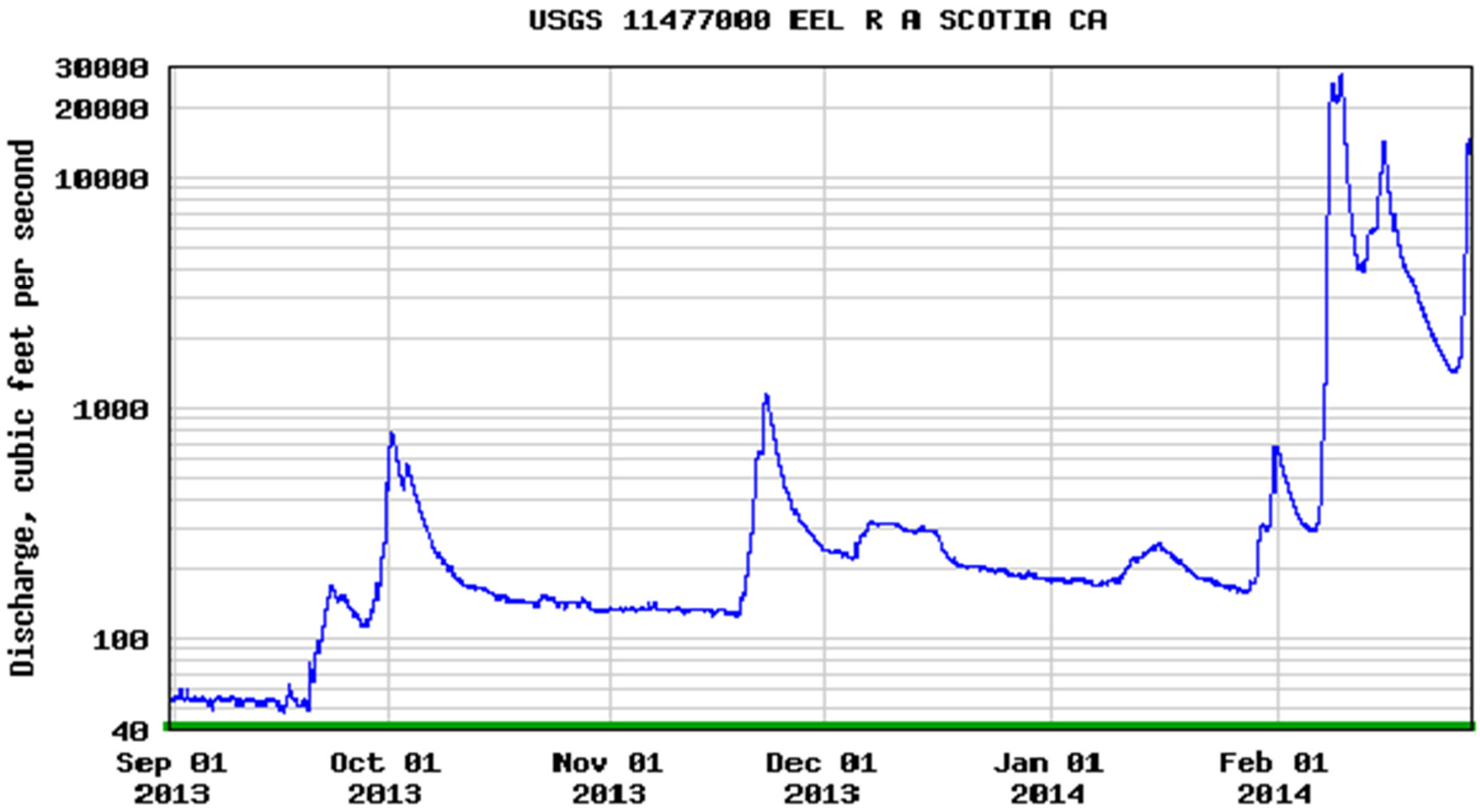
- “Every year at Labor Day”
- Tidewater extends to above Fernbridge
- **Every year by mid to late September, regardless of rainfall, Fall Chinook show up above tidewater between Fernbridge and Fortuna**.
- Long time holes hold the run
- 5000 kings by October in recent years
- Distribution stifled by lack of flow

- The One Place
- Distribution cannot occur
- Ecosystem dysfunction



Why monitor the early fish?

- Monitoring began with fishing activities
- 1997 listing prompted investigation and tracking
- Documented spawning surveys annually since ‘97
- By 2013 Drought and diminished flows led to further monitoring
  - Dives
  - Work with ERRP
  - Tracking the run from the Staging Area to spawning grounds
  - Population estimates
  - Development of SUP surveys
  - Observations of habitat loss and degradation
  - Realizations of the new normal based on inadequate flows...


USGS 11477000 EEL R A SCOTIA CA
Discharge, cubic feet per second
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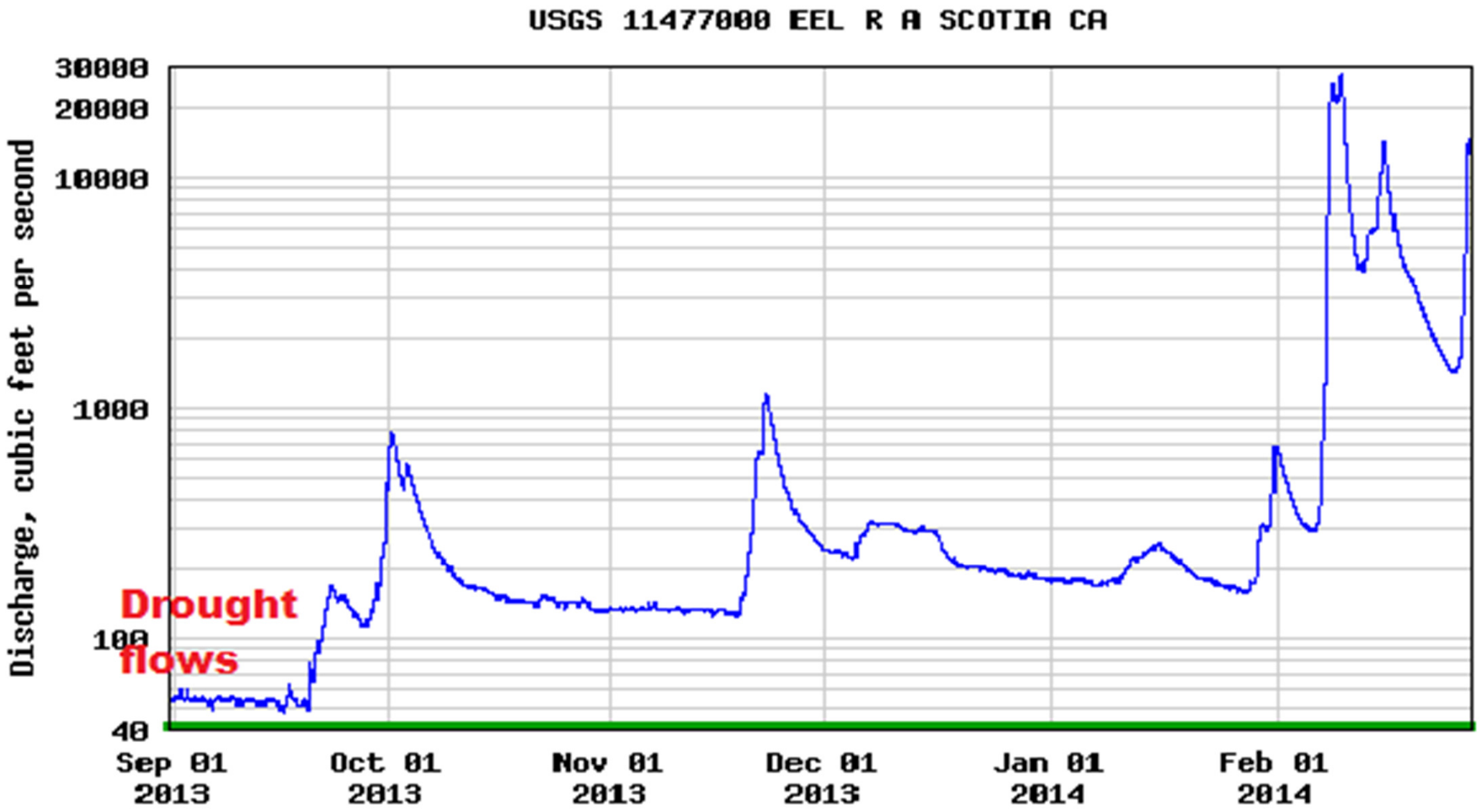
USGS 11477000 EEL R A SCOTIA CA
Discharge, cubic feet per second
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Drought
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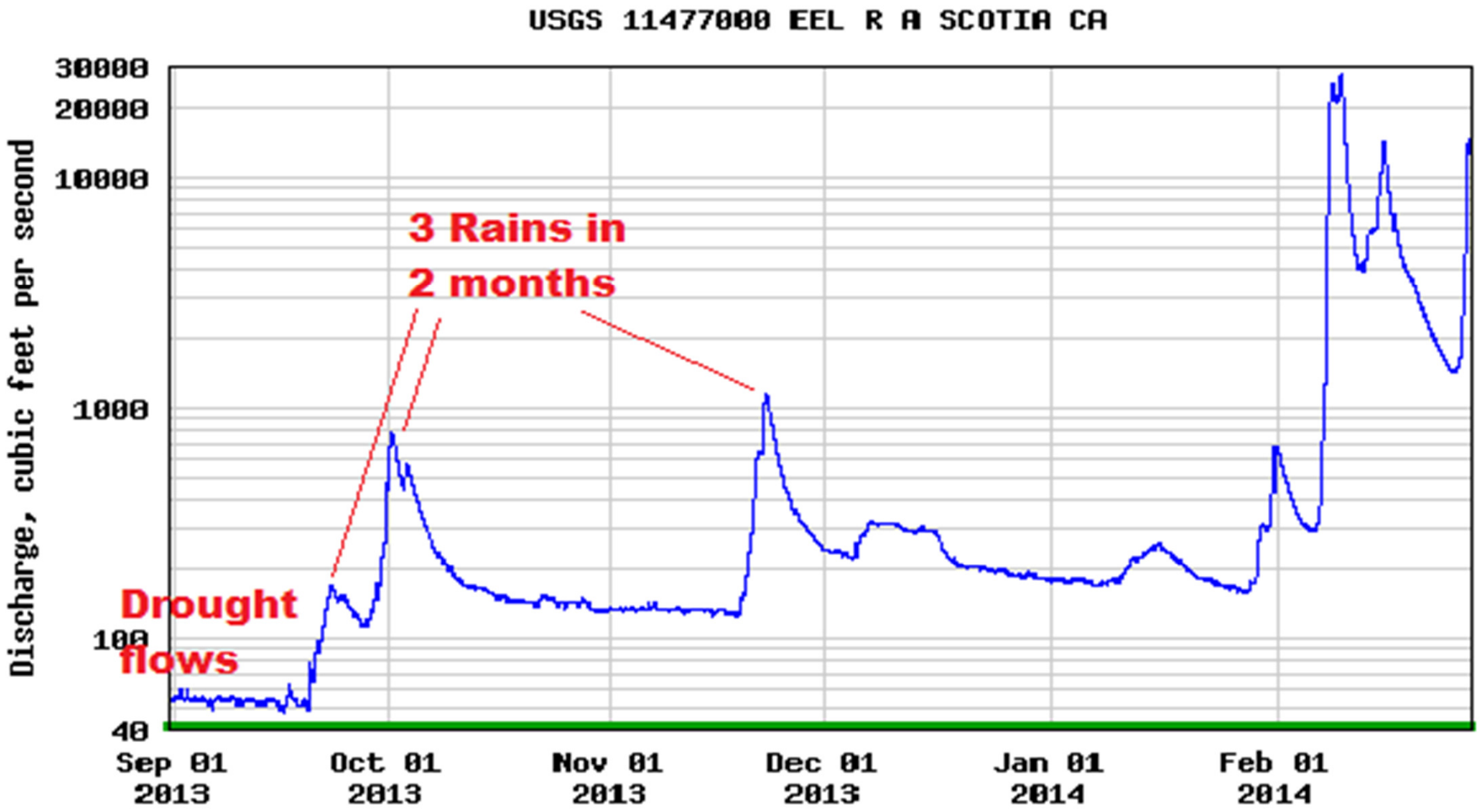
USGS 11477000 EEL R A SCOTIA CA
Discharge, cubic feet per second
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3 Rains in
2 months
Drought
flows
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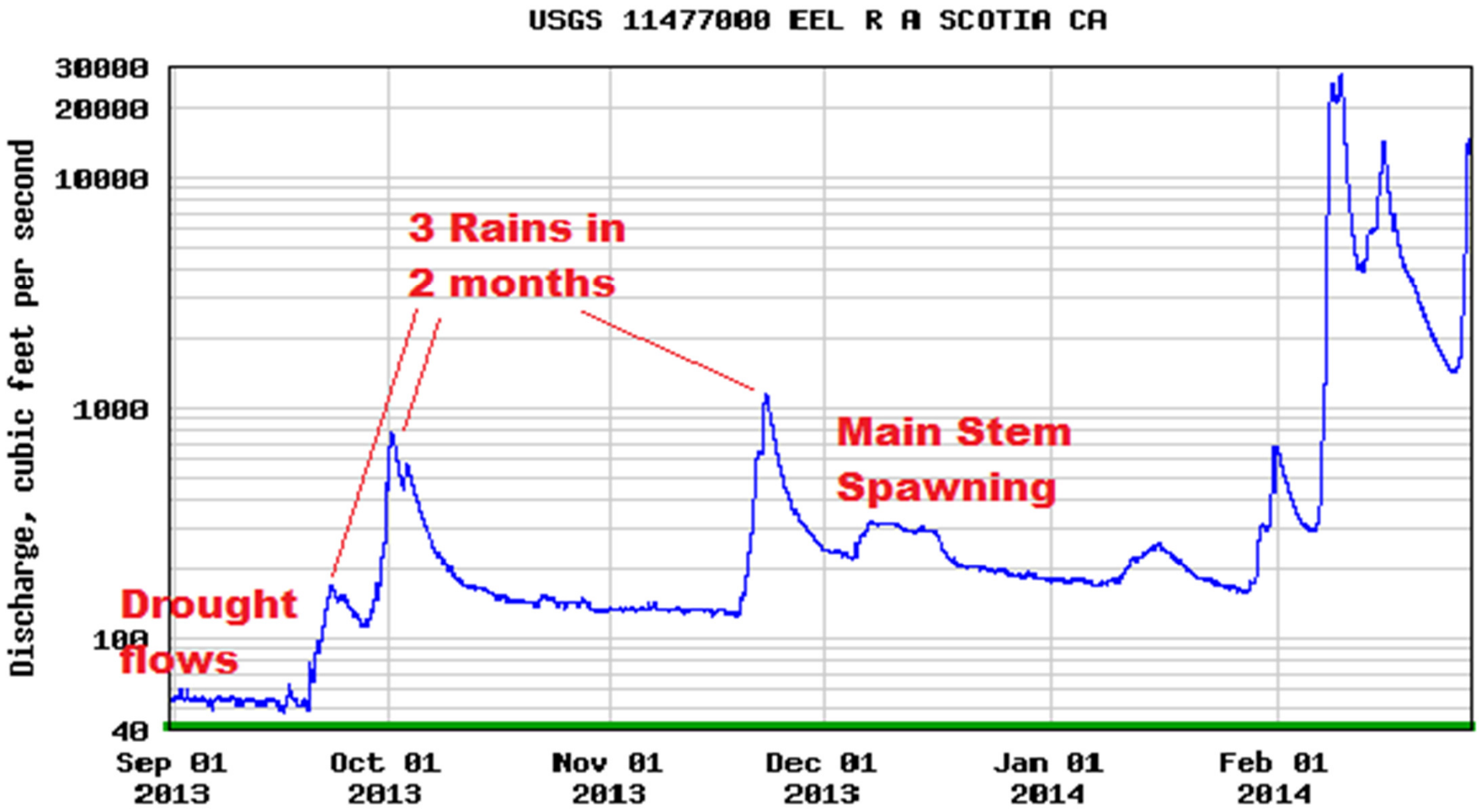
USGS 11477000 EEL R A SCOTIA CA
Discharge, cubic feet per second
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3 Rains in
2 months
Main Stem
Spawning
Drought
flows
Sep 01
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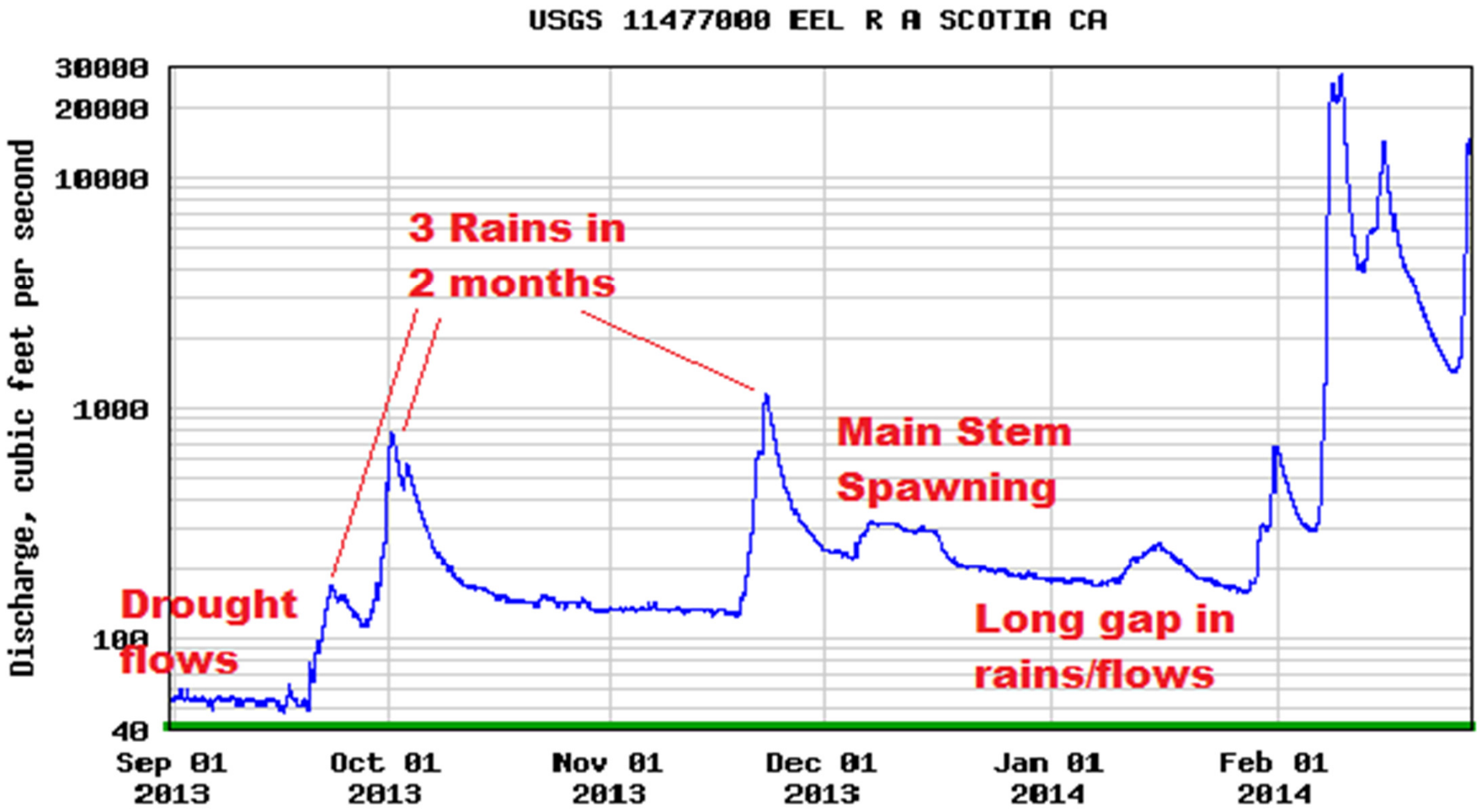
USGS 11477000 EEL R A SCOTIA CA
Discharge, cubic feet per second
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3 Rains in
2 months
Main Stem
Spawning
Drought
flows
Long gap in
rains/flows
Sep 01
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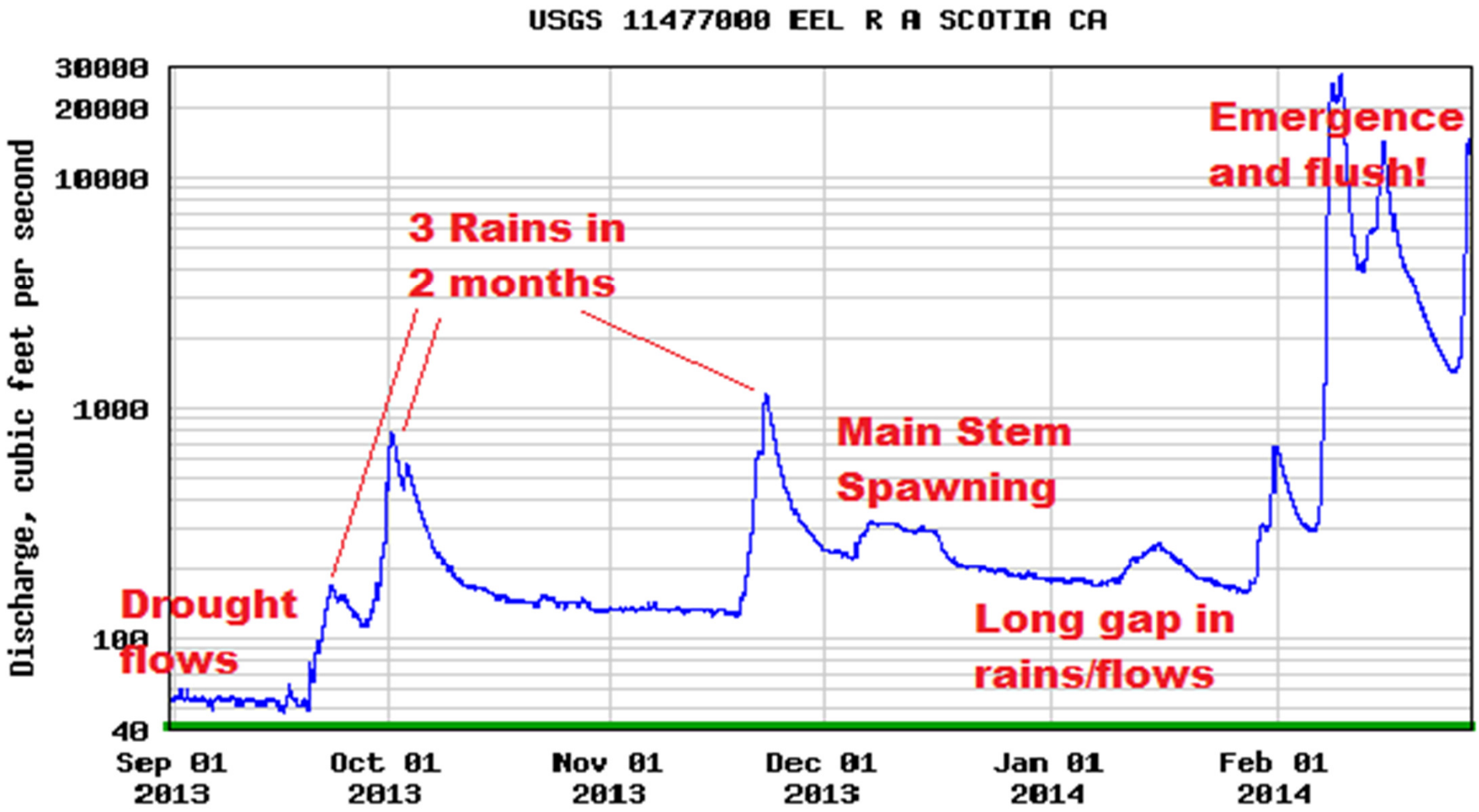
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Discharge, cubic feet per second
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Sep 01 2013
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Dec 01 2013
Jan 01 2014
Feb 01 2014
Drought flows
3 Rains in 2 months
Main Stem Spawning
Long gap in rains/flows
Emergence and flush!

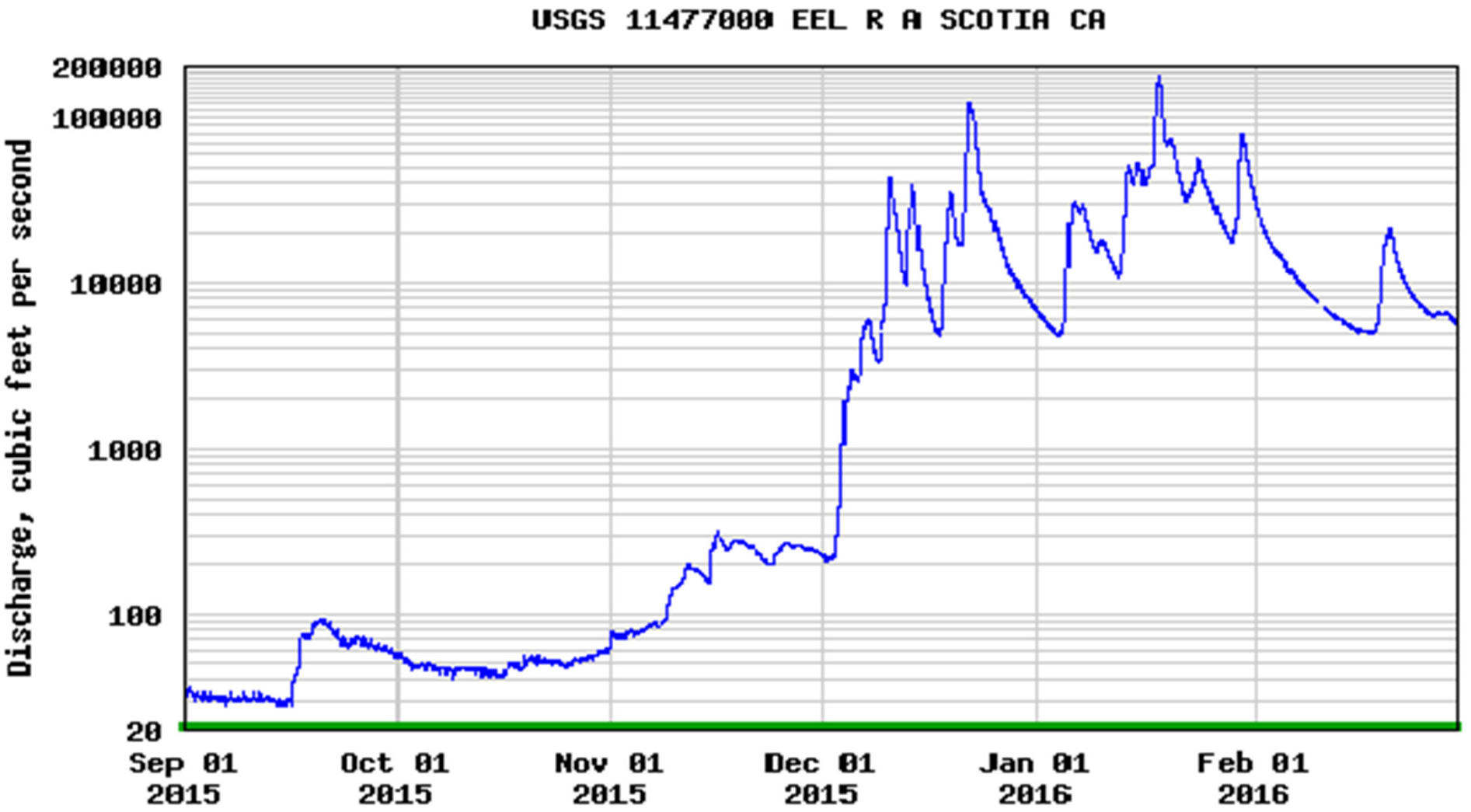
Main stem spawning in 2013 was the only Chinook spawning, so subsequent runs (2016) indicate main stem redd viability.

We can't have early main stem spawning without early rain or managed flows.

Jump forward -

2015 - the stressed/blind early run spawned in main stem right before scouring flows

Light adult numbers this past fall (2018) indicate the failure of the early spawners in 2015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Discharge, cubic feet per second
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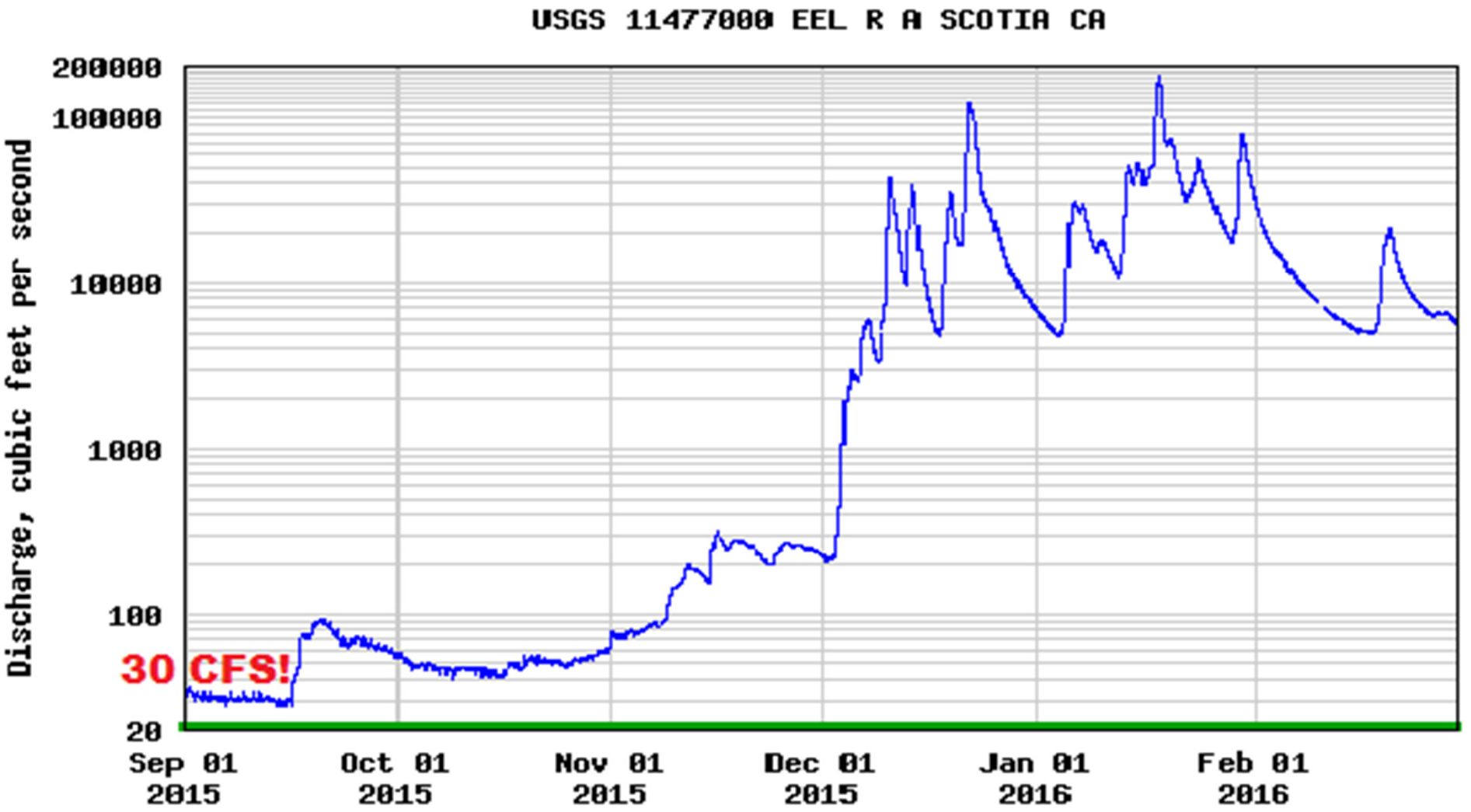
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Discharge, cubic feet per second
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30 CFS!
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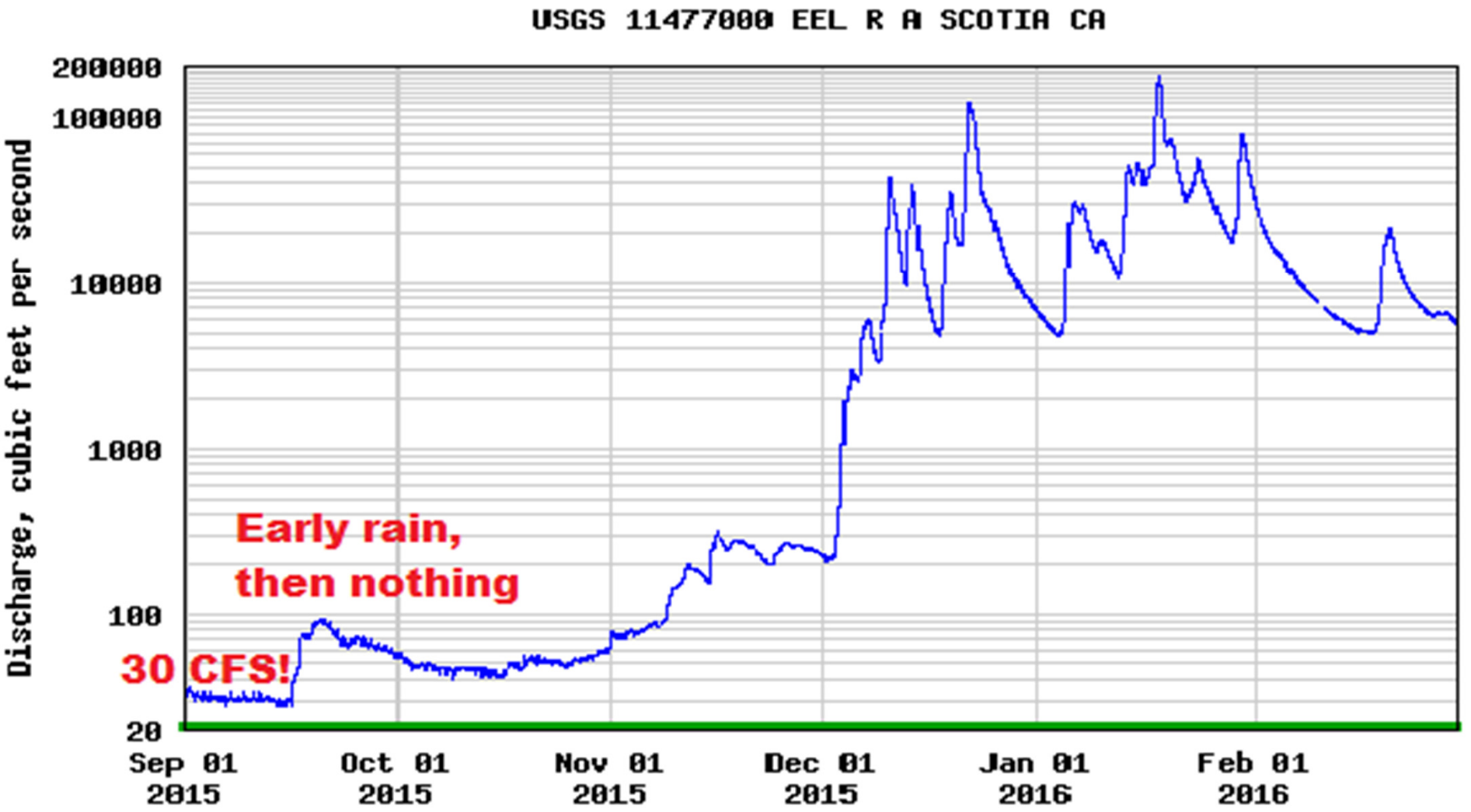
USGS 11477000 EEL R A SCOTIA CA
Discharge, cubic feet per second
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Early rain,
then nothing
30 CFS!
Sep 01
2015
Oct 01
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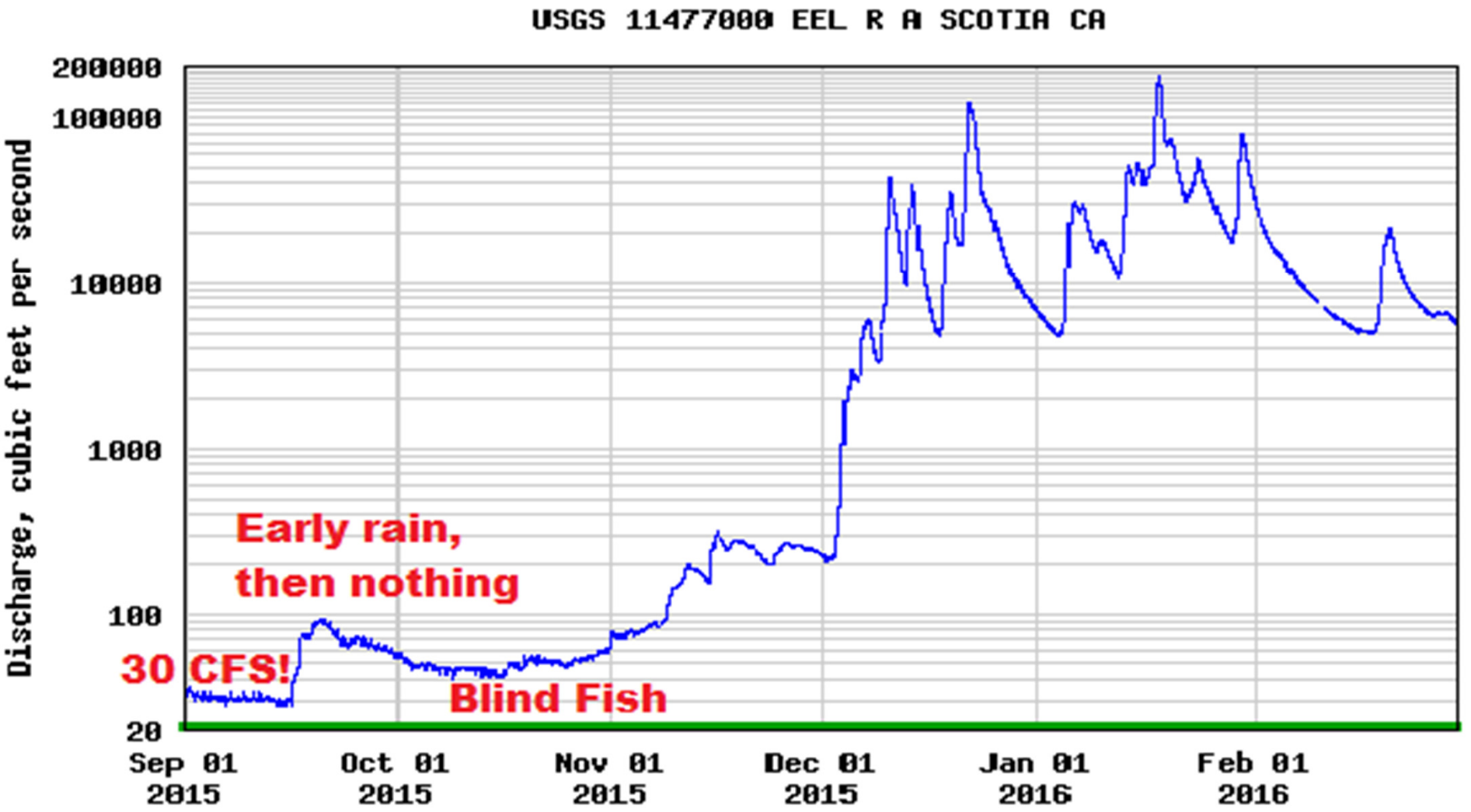
USGS 11477000 EEL R A SCOTIA CA
Discharge, cubic feet per second
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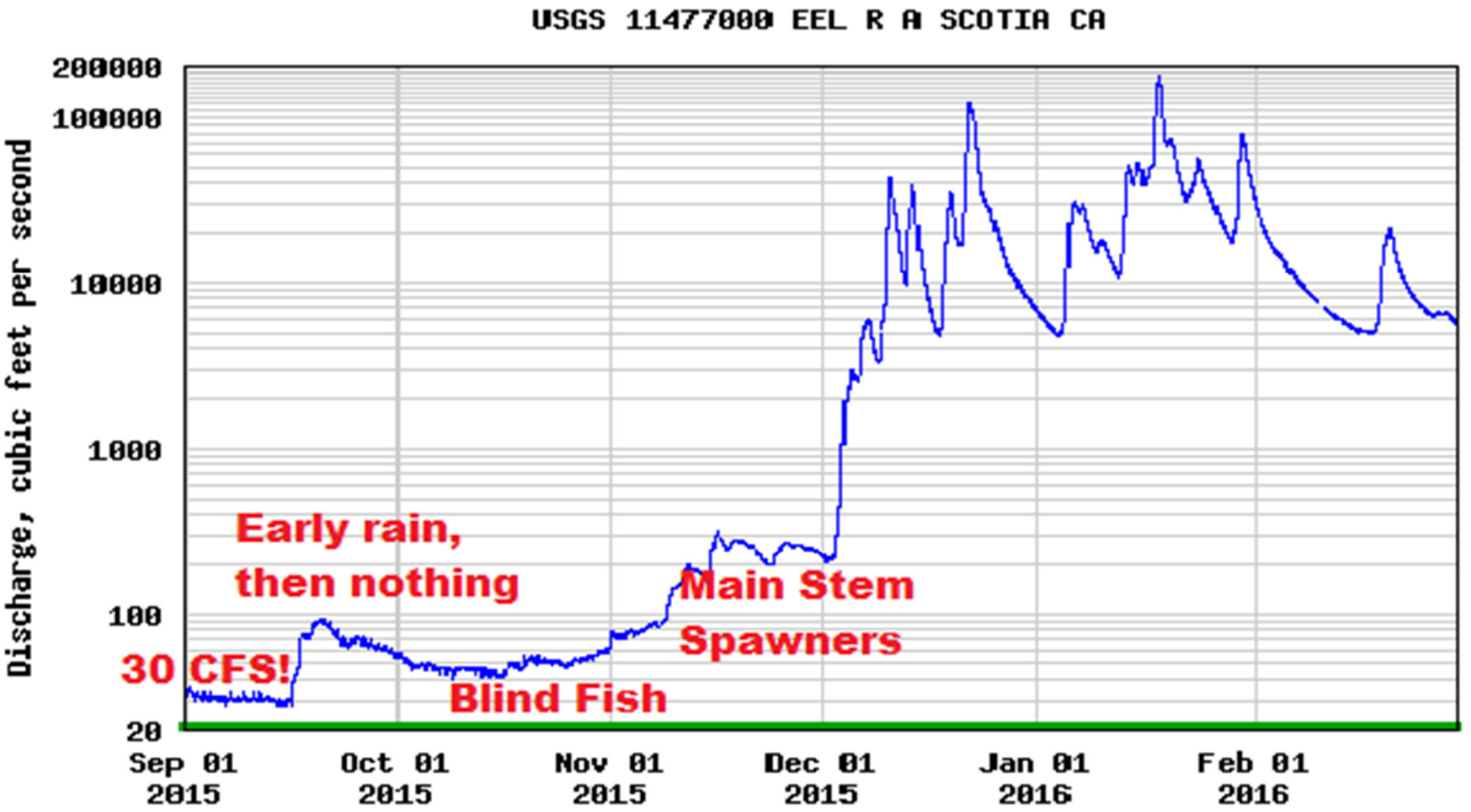
20
Early rain,
then nothing
30 CFS!
Blind Fish
Sep 01
2015
Oct 01
2015
Nov 01
2015
Dec 01
2015
Jan 01
2016
Feb 01
2016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Discharge, cubic feet per second
200000
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20
Early rain,
then nothing
30 CFS!
Blind Fish
Main Stem
Spawners
Sep 01
2015
Oct 01
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Nov 01
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Dec 01
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Jan 01
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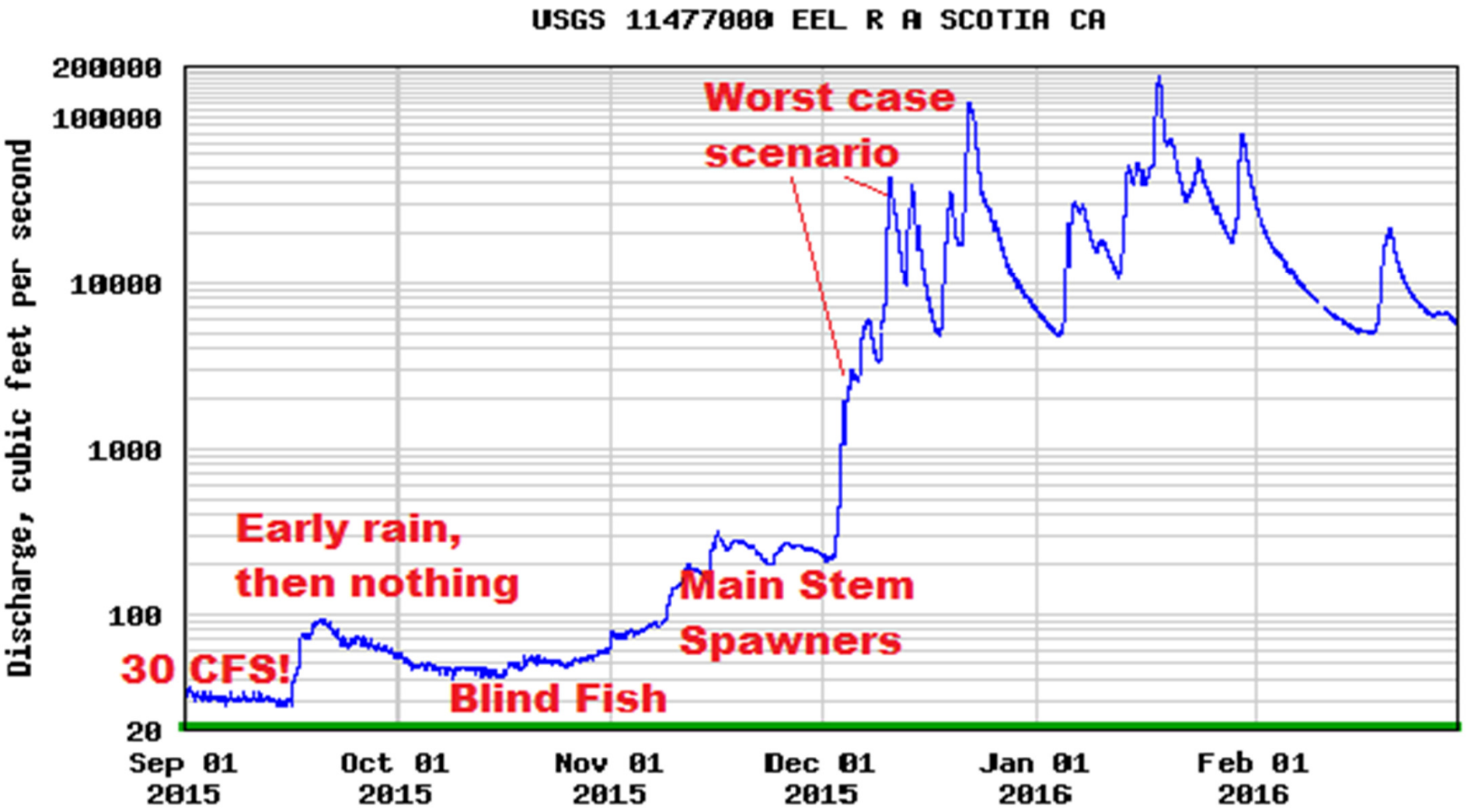
Feb 01
2016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Discharge, cubic feet per second
200000
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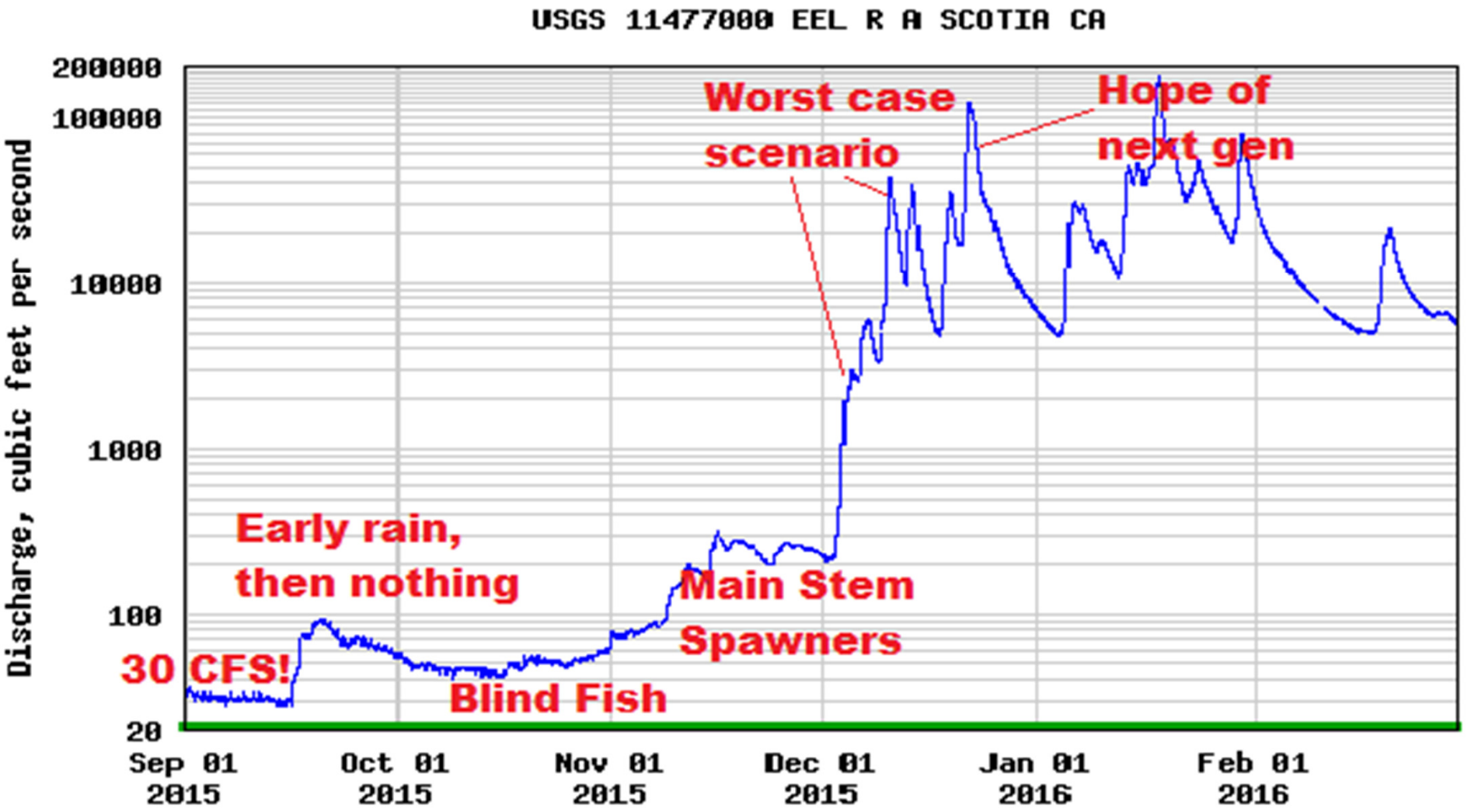
20
Worst case
scenario
Early rain,
then nothing
Main Stem
Spawners
30 CFS!
Blind Fish
Sep 01
2015
Oct 01
2015
Nov 01
2015
Dec 01
2015
Jan 01
2016
Feb 01
2016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Discharge, cubic feet per second
200000
100000
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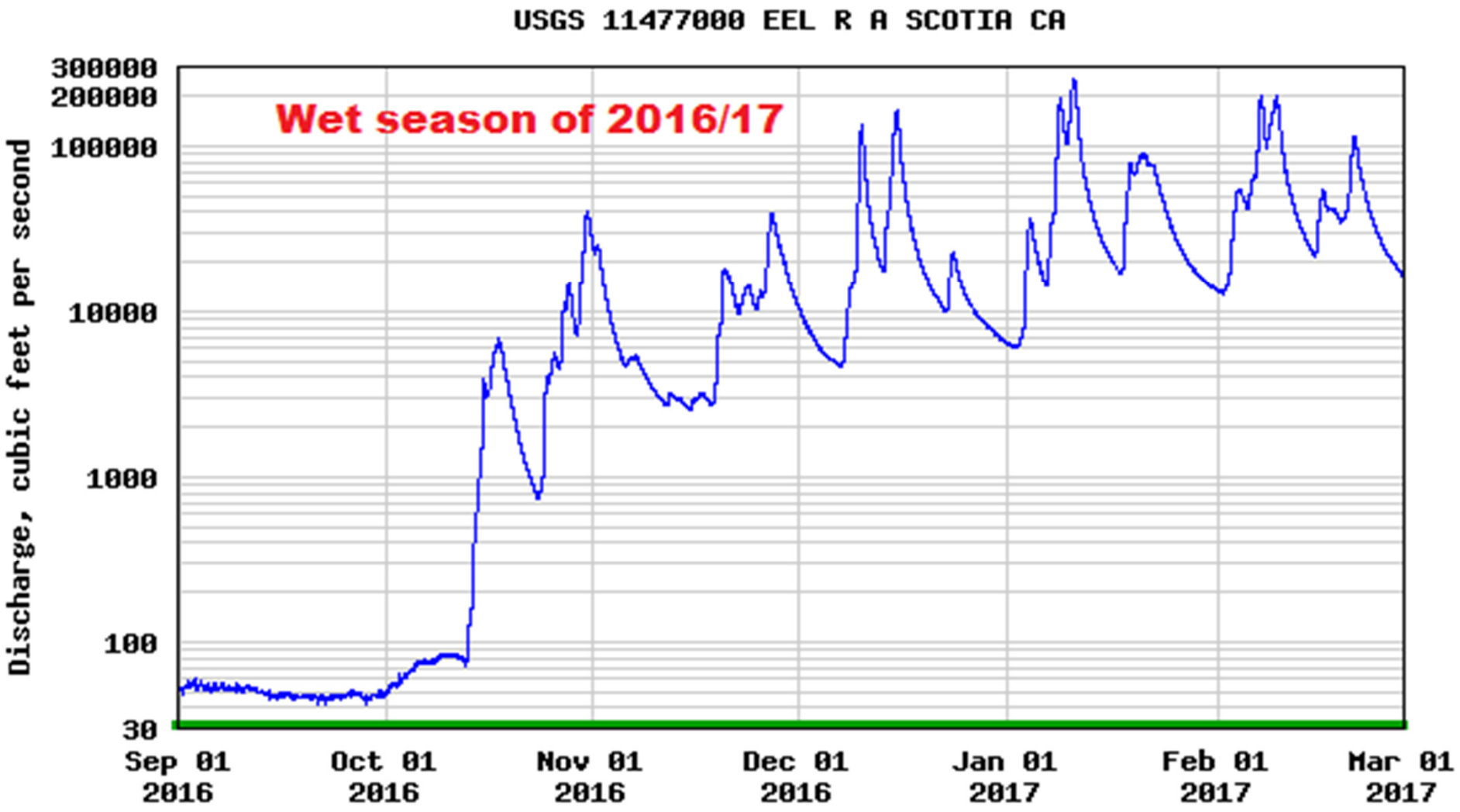
20
Worst case scenario
Hope of next gen
Early rain, then nothing
30 CFS!
Blind Fish
Main Stem Spawners
Sep 01 2015
Oct 01 2015
Nov 01 2015
Dec 01 2015
Jan 01 2016
Feb 01 2016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Wet season of 2016/17
Discharge, cubic feet per second
300000
200000
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10000
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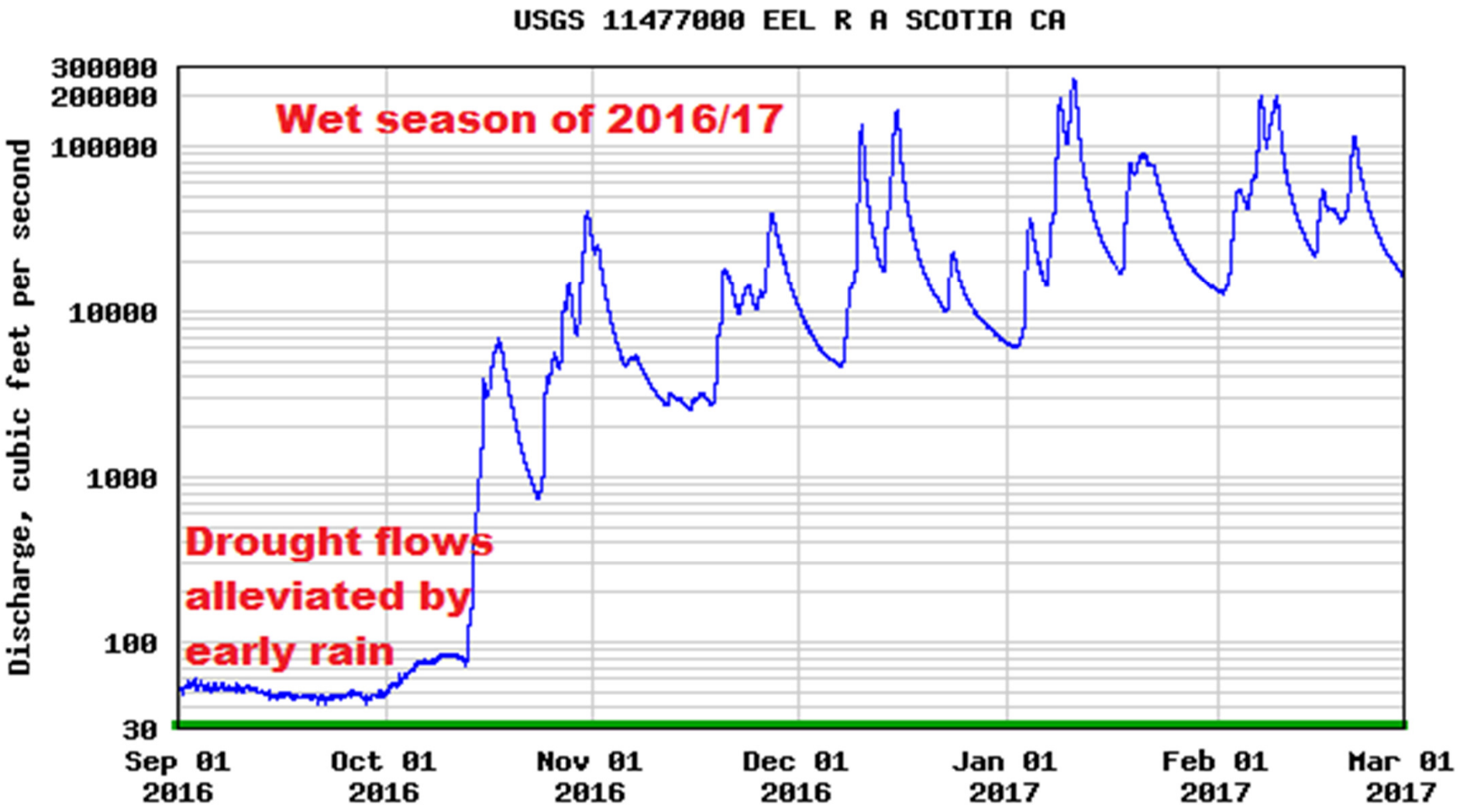
Sep 01 2016
Oct 01 2016
Nov 01 2016
Dec 01 2016
Jan 01 2017
Feb 01 2017
Mar 01 2017


USGS 11477000 EEL R A SCOTIA CA
Discharge, cubic feet per second
300000
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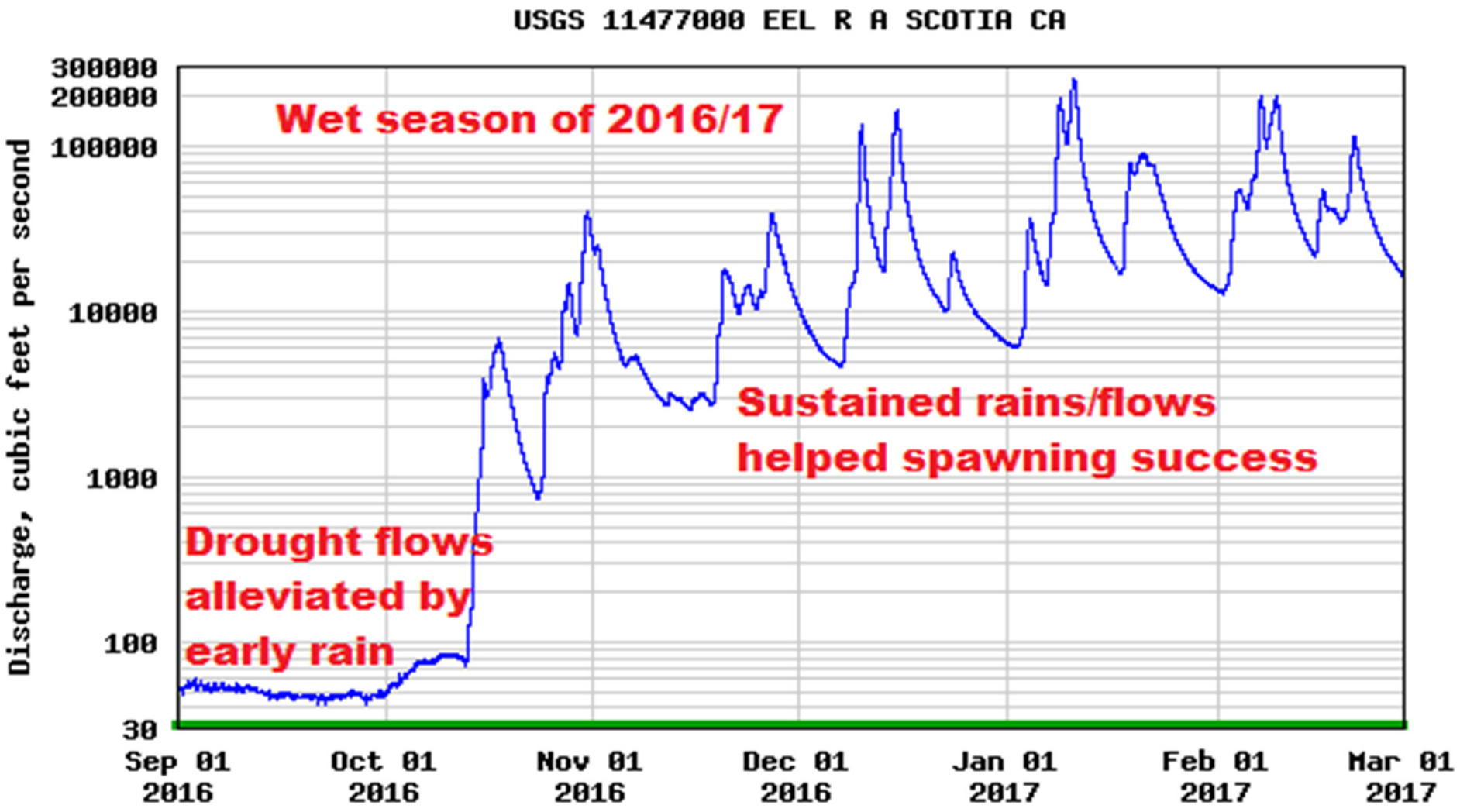
Wet season of 2016/17
Drought flows alleviated by early rain
Sep 01 2016
Oct 01 2016
Nov 01 2016
Dec 01 2016
Jan 01 2017
Feb 01 2017
Mar 01 2017


USGS 11477000 EEL R A SCOTIA CA
Discharge, cubic feet per second
300000
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Wet season of 2016/17
Sustained rains/flows
helped spawning success
Drought flows
alleviated by
early rain
Sep 01
2016
Oct 01
2016
Nov 01
2016
Dec 01
2016
Jan 01
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Feb 01
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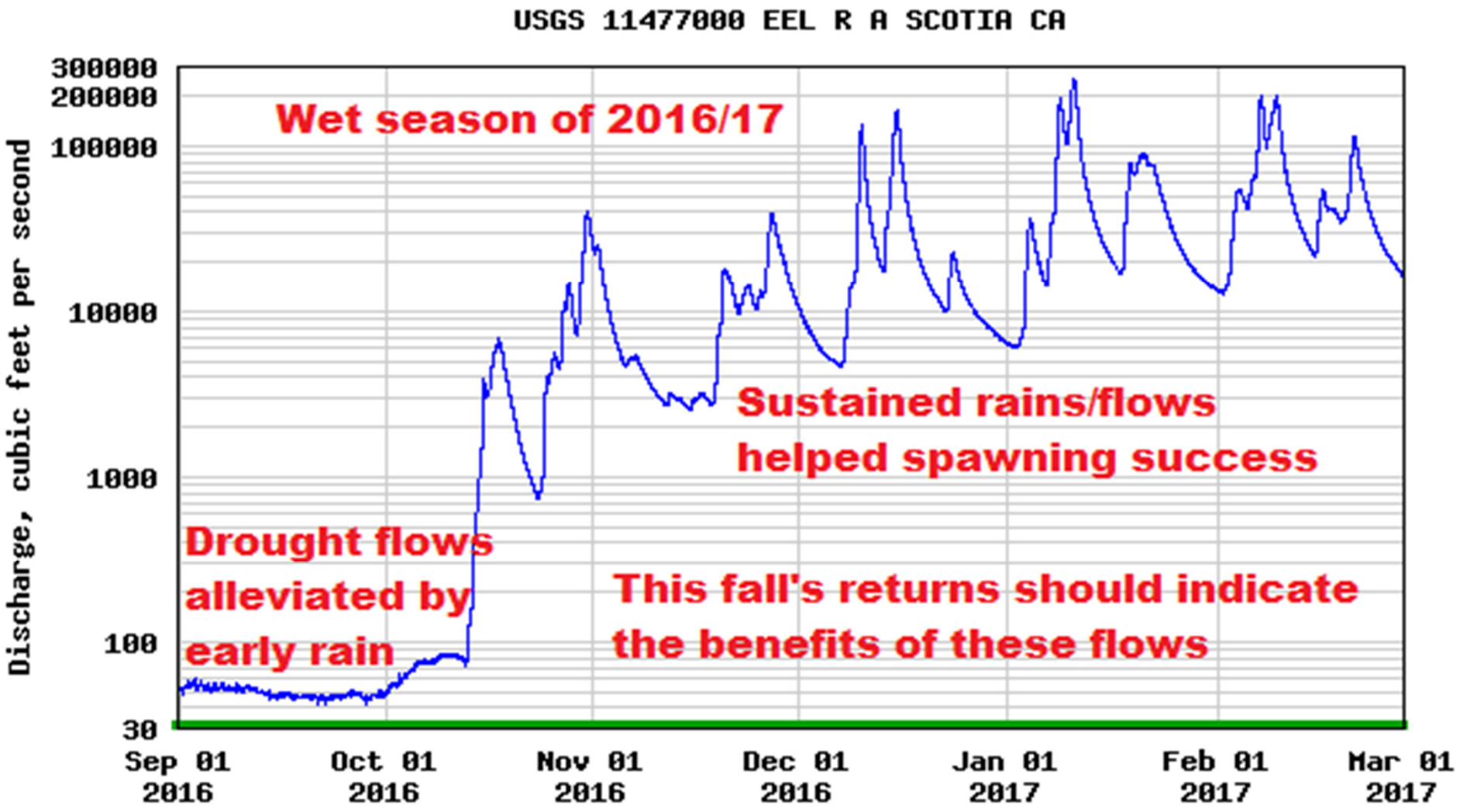
Mar 01
2017


USGS 11477000 EEL R A SCOTIA CA
Discharge, cubic feet per second
300000
200000
100000
10000
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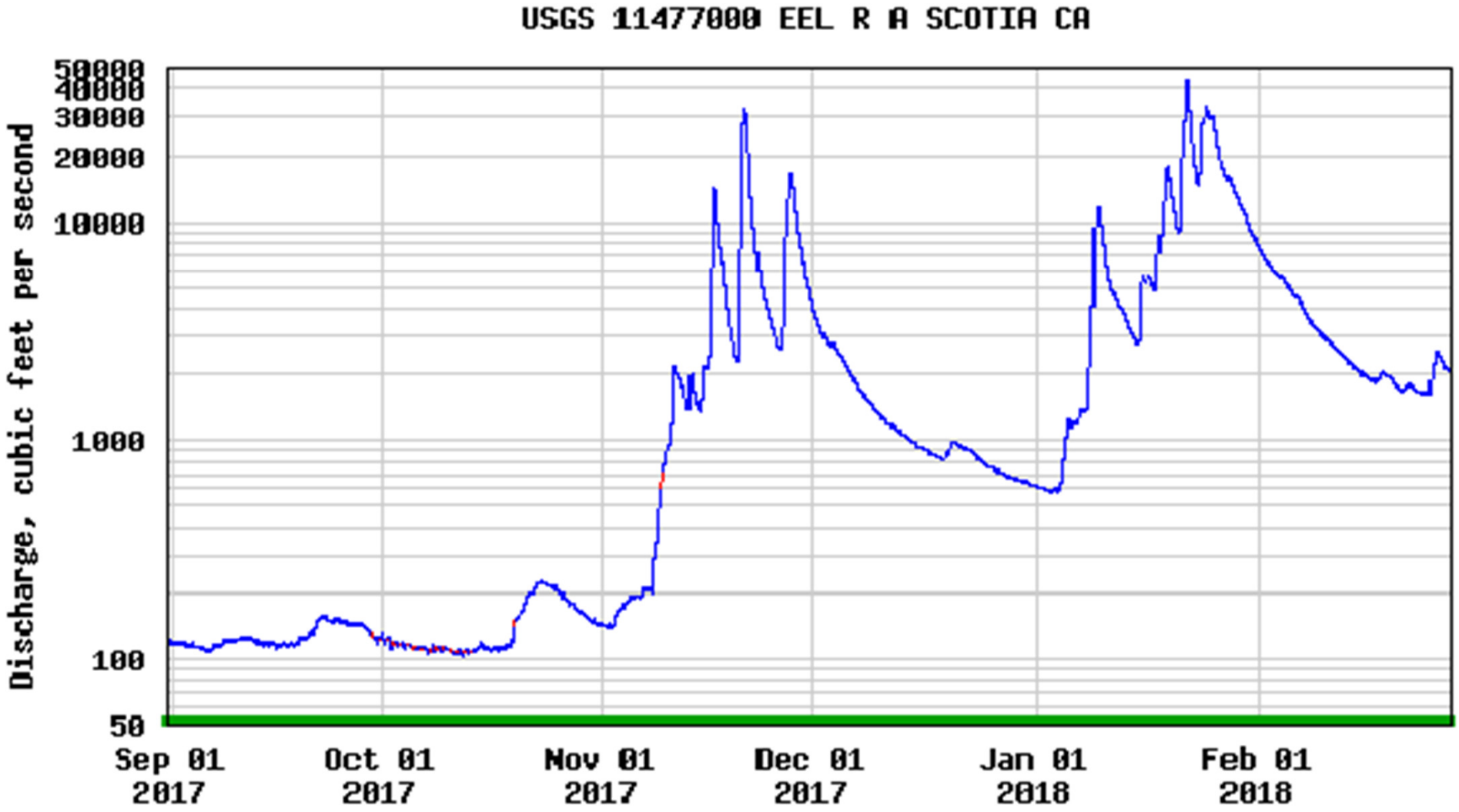
100
30
Wet season of 2016/17
Sustained rains/flows
helped spawning success
Drought flows
alleviated by
early rain
This fall's returns should indicate
the benefits of these flows
Sep 01
2016
Oct 01
2016
Nov 01
2016
Dec 01
2016
Jan 01
2017
Feb 01
2017
Mar 01
2017

Late 2017

- Holes filled in
- Wide and flat riffles right below gravel mining
- Worst I’ve seen
- Dennis Halligan didn’t concur


USGS 11477000 EEL R A SCOTIA CA
Discharge, cubic feet per second
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Feb 01
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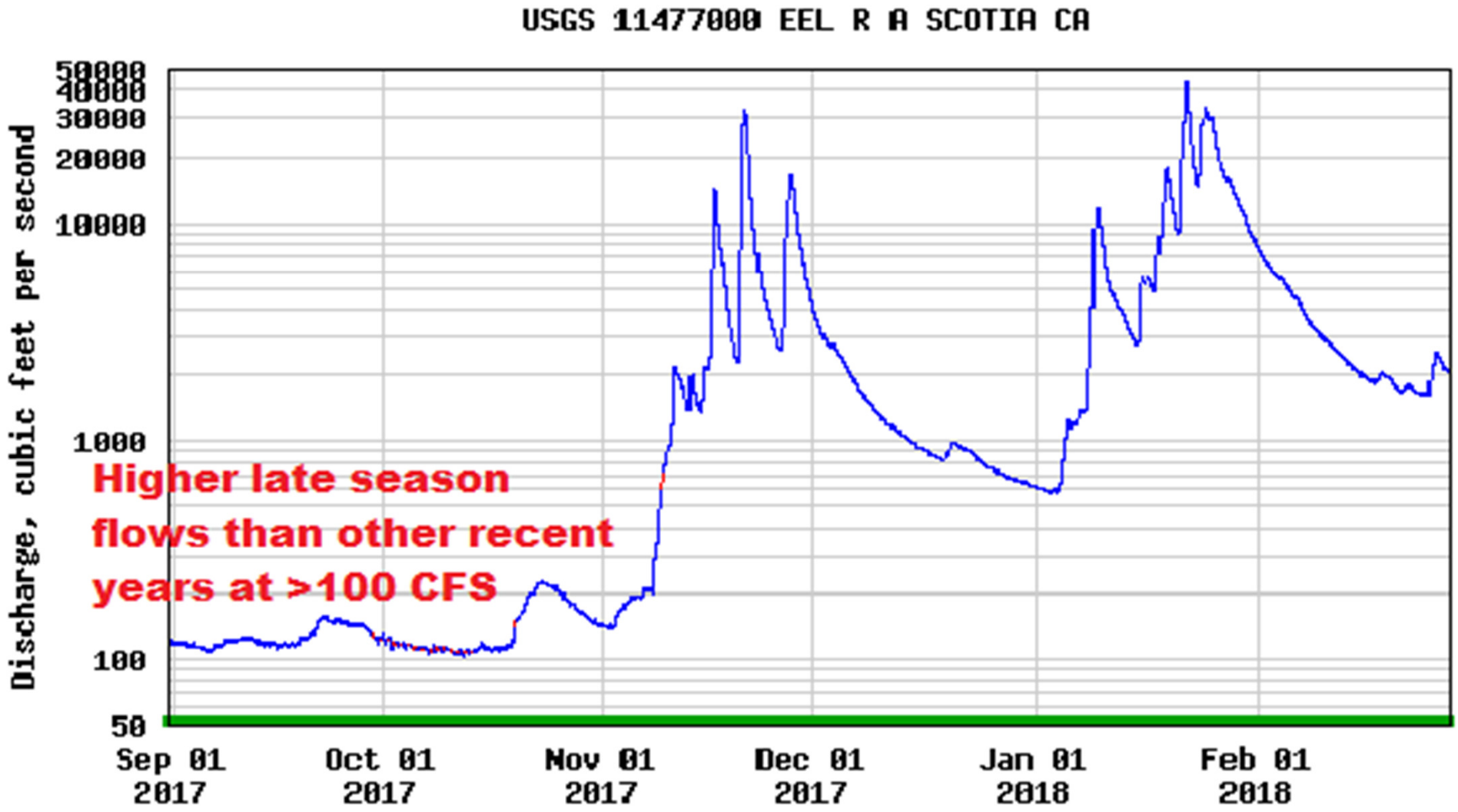
USGS 11477000 EEL R A SCOTIA CA
Discharge, cubic feet per second
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Higher late season
flows than other recent
years at >100 CFS
Sep 01
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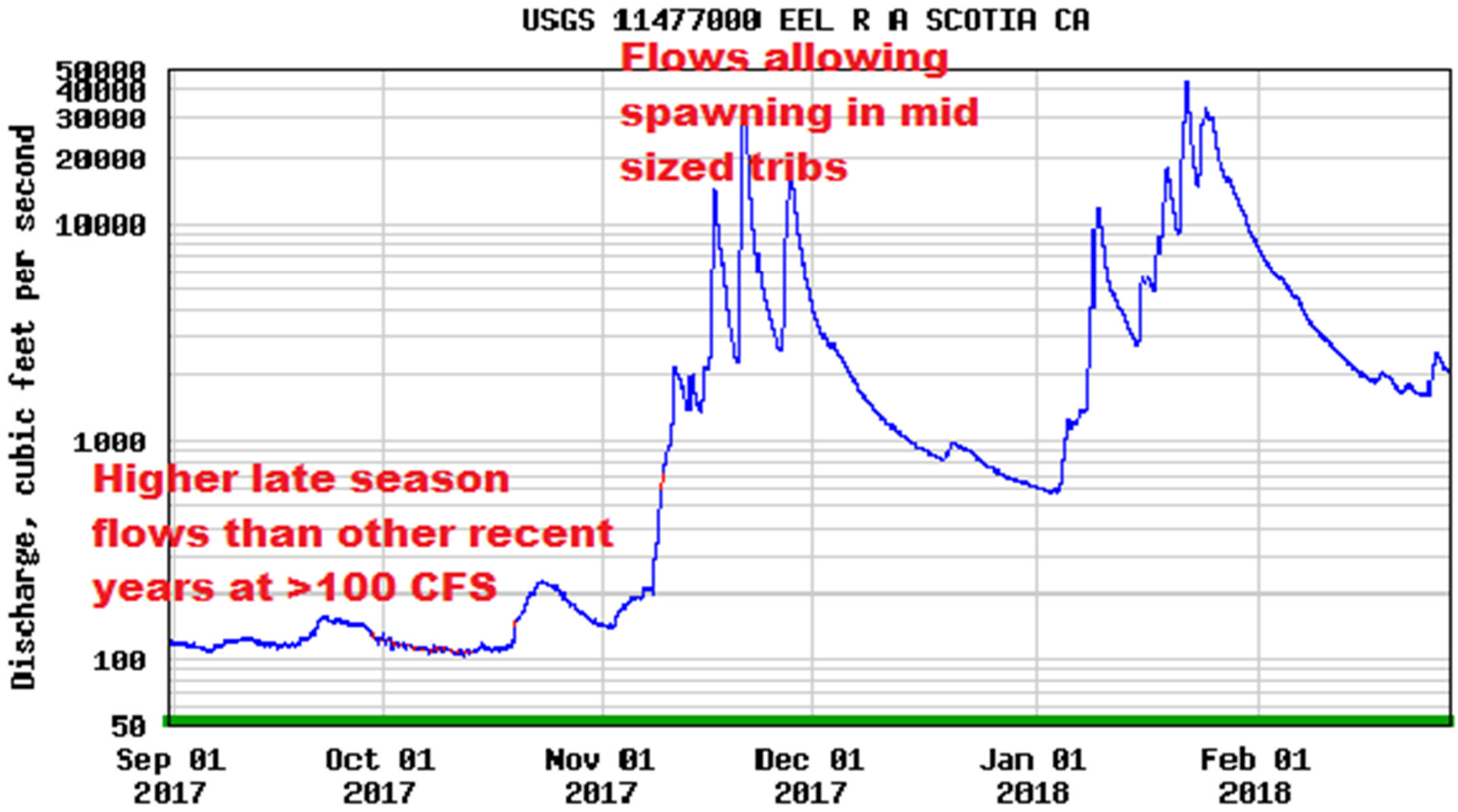
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Flows allowing spawning in mid sized tribs
Higher late season flows than other recent years at >100 CFS
Discharge, cubic feet per second
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Sep 01 2017
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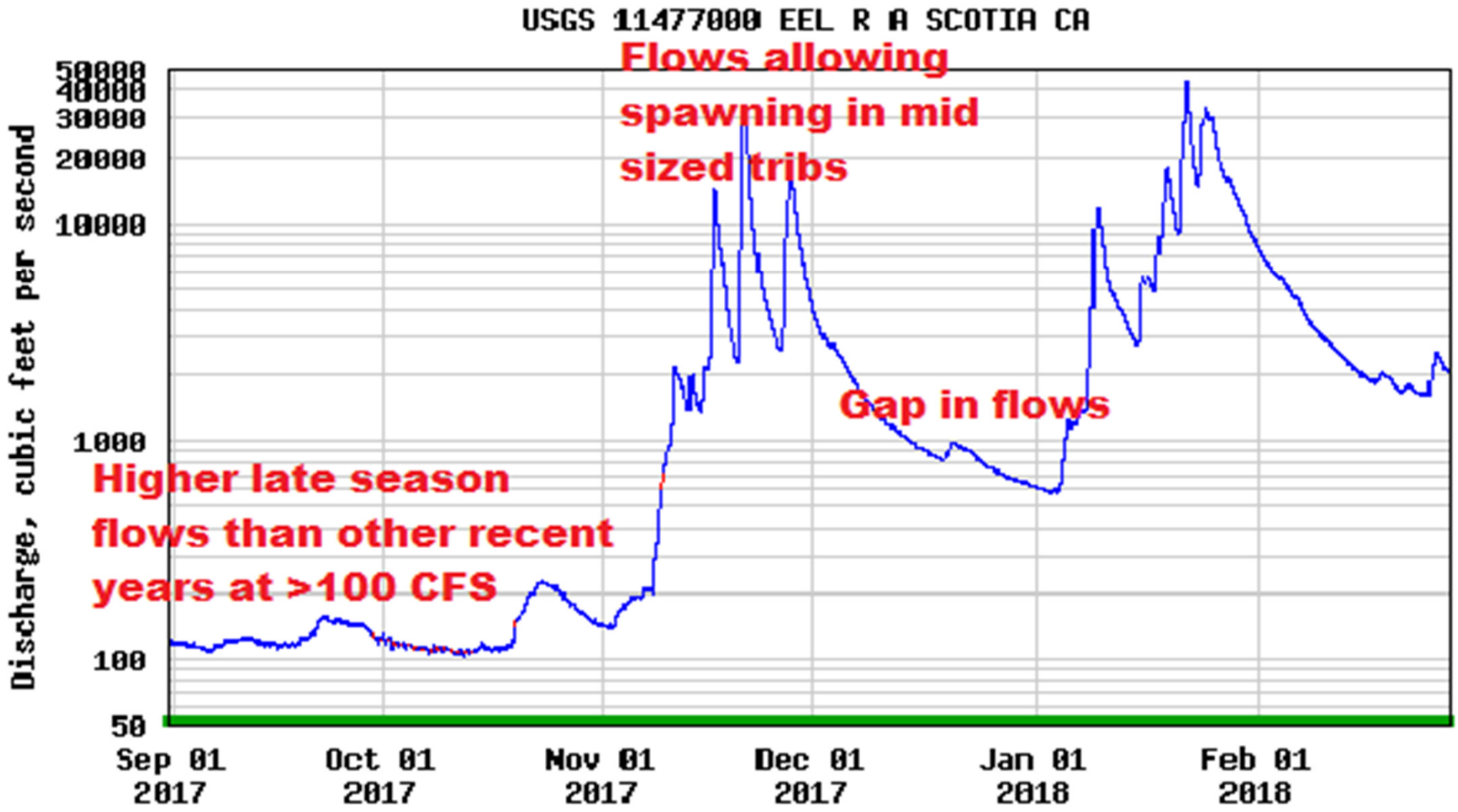
Nov 01 2017
Dec 01 2017
Jan 01 2018
Feb 01 2018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Discharge, cubic feet per second
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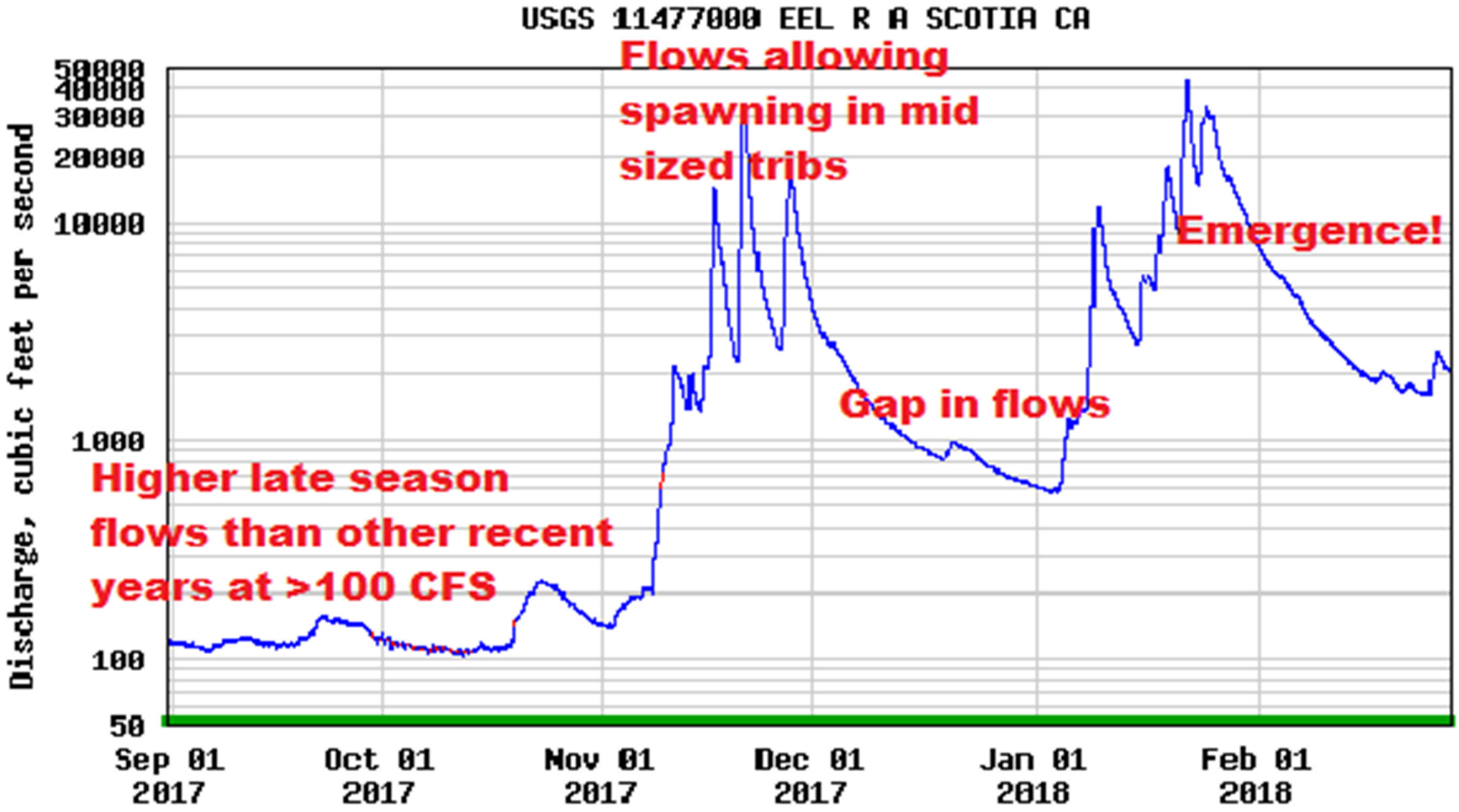
Flows allowing spawning in mid sized tribs
Gap in flows
Higher late season flows than other recent years at >100 CFS
Sep 01 2017
Oct 01 2017
Nov 01 2017
Dec 01 2017
Jan 01 2018
Feb 01 2018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Discharge, cubic feet per second
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Flows allowing spawning in mid sized tribs
Emergence!
Gap in flows
Higher late season flows than other recent years at >100 CFS
Sep 01 2017
Oct 01 2017
Nov 01 2017
Dec 01 2017
Jan 01 2018
Feb 01 2018

The 2017/2018 season was unique for its gaps in rainfall and flows.

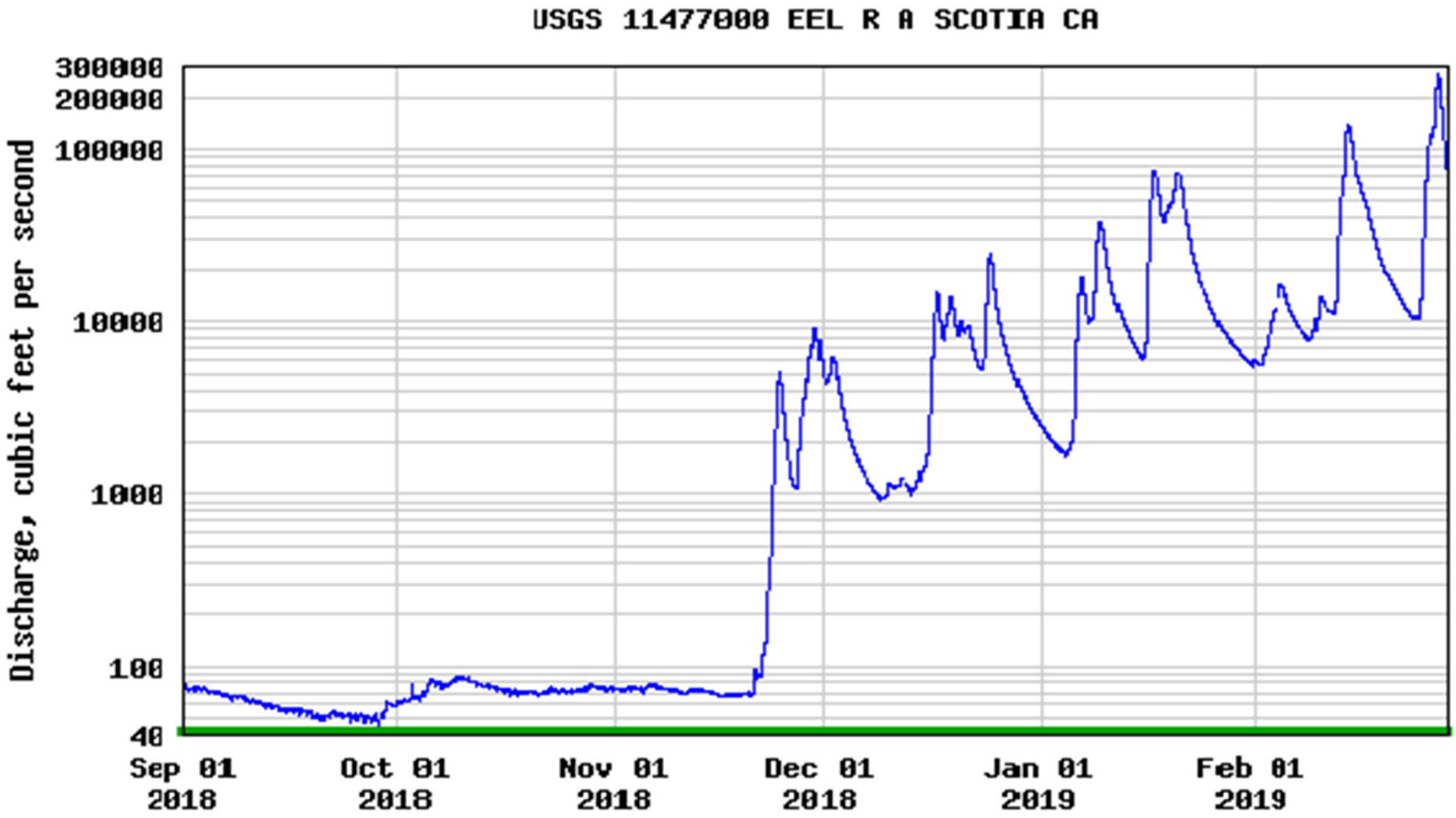
Was trib spawning accentuated?

Was rain/flow timing ideal?

These are the mysteries of the spawning science, and every year presents a new set of criteria to consider. Can we increase the temporal potential?...

Late 2018

- Holes filled in even worse than 2017
- More wide and flat riffles below the mining
- Accompanied Dennis, he concurred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Discharge, cubic feet per second
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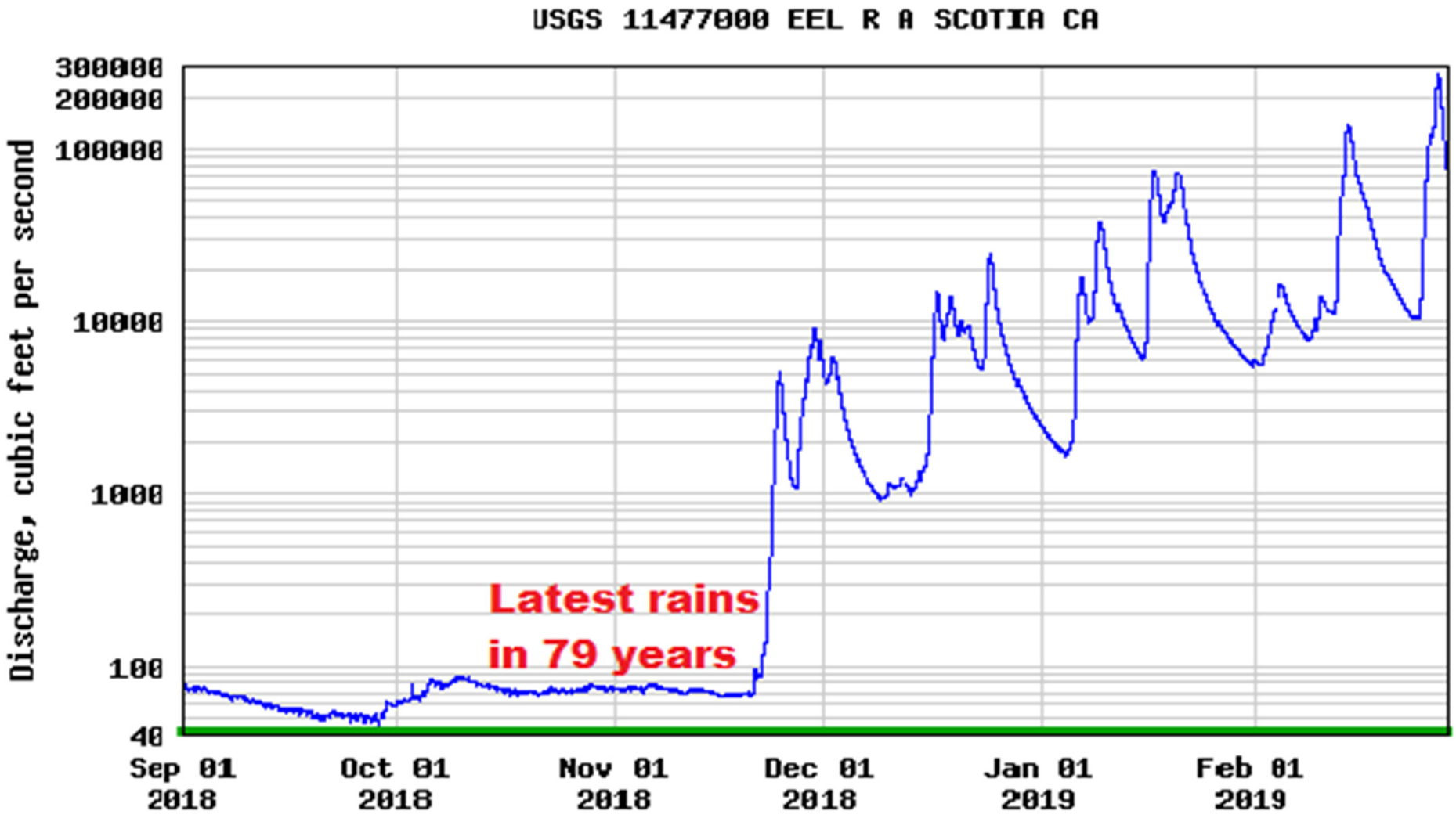
USGS 11477000 EEL R A SCOTIA CA
Discharge, cubic feet per second
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Latest rains
in 79 years
Sep 01
2018
Oct 01
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Nov 01
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Dec 01
2018
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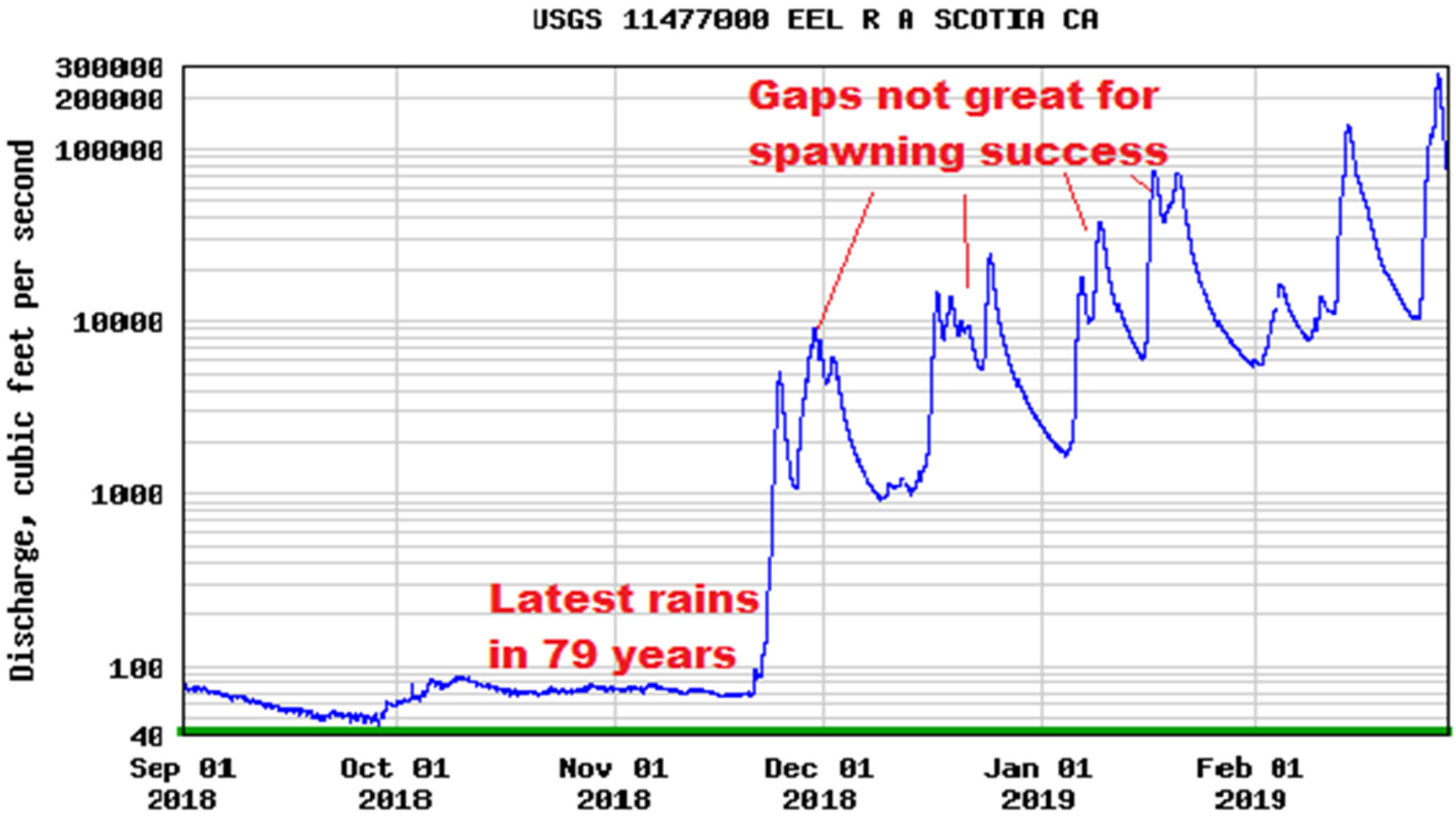
Feb 01
2019


USGS 11477000 EEL R A SCOTIA CA
Discharge, cubic feet per second
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Gaps not great for
spawning success
Latest rains
in 79 years
Sep 01
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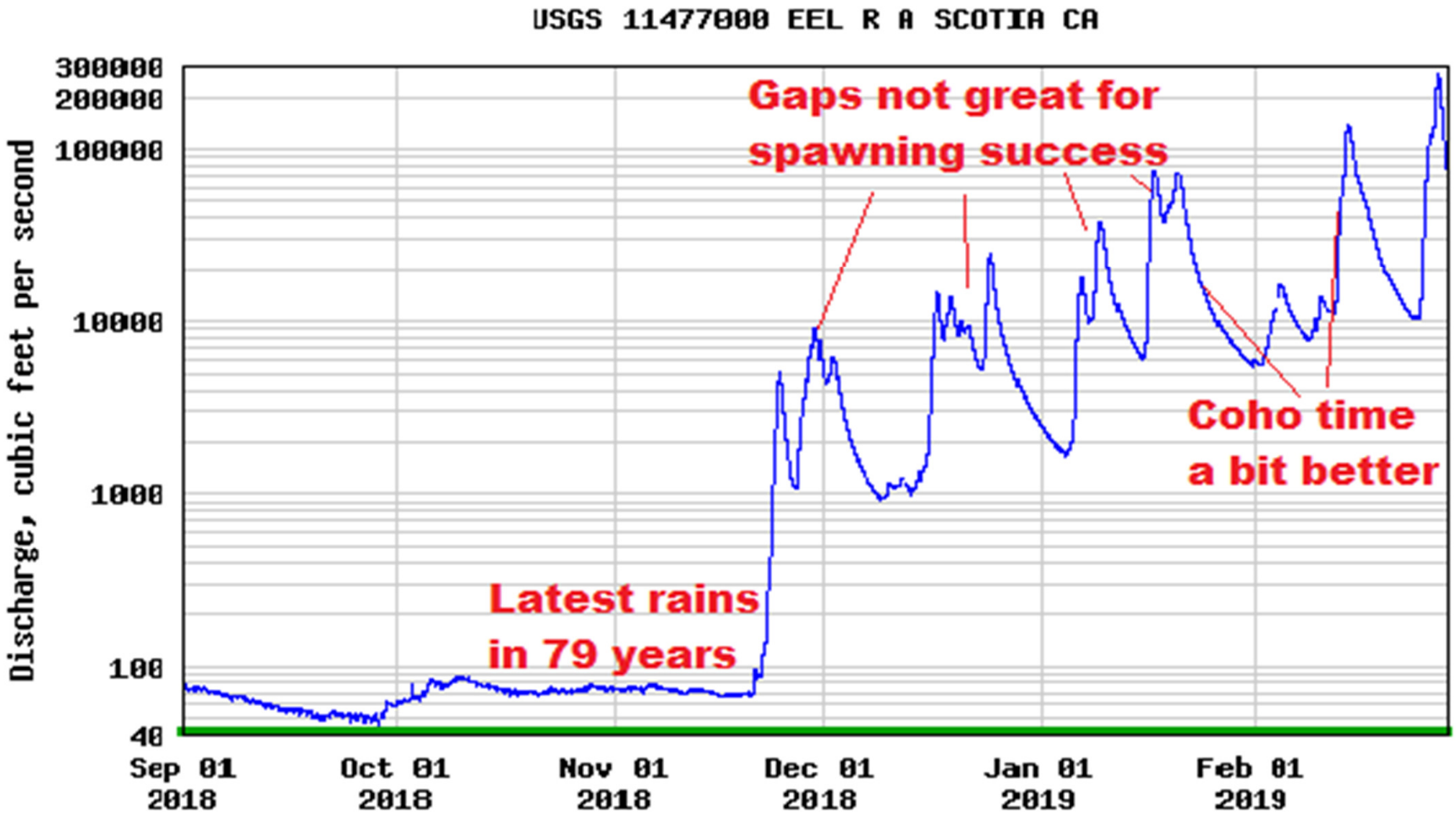
Feb 01
2019


USGS 11477000 EEL R A SCOTIA CA
Discharge, cubic feet per second
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Sep 01
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Nov 01
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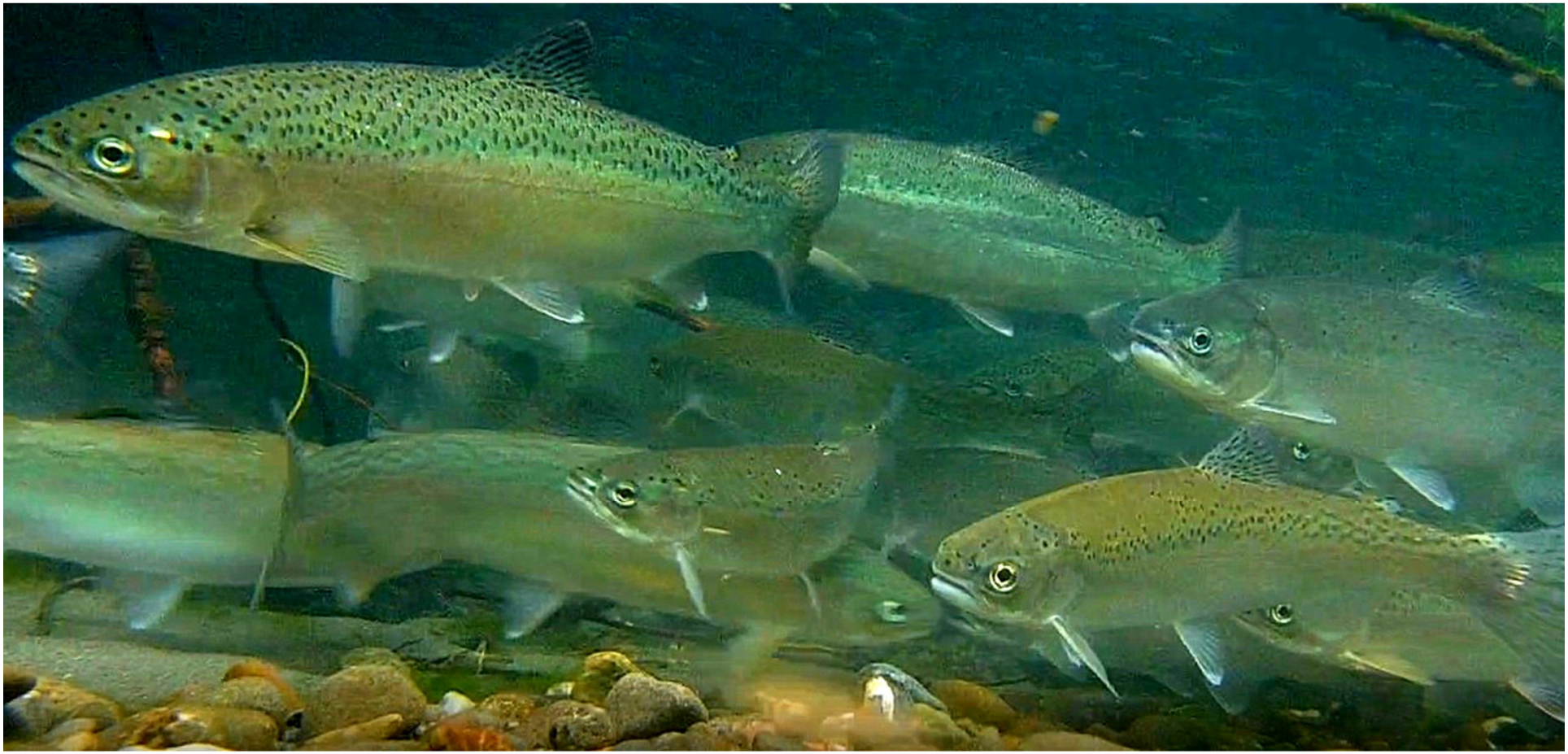
Dec 01
2018
Jan 01
2019
Feb 01
2019
Gaps not great for
spawning success
Coho time
a bit better
Latest rains
in 79 years

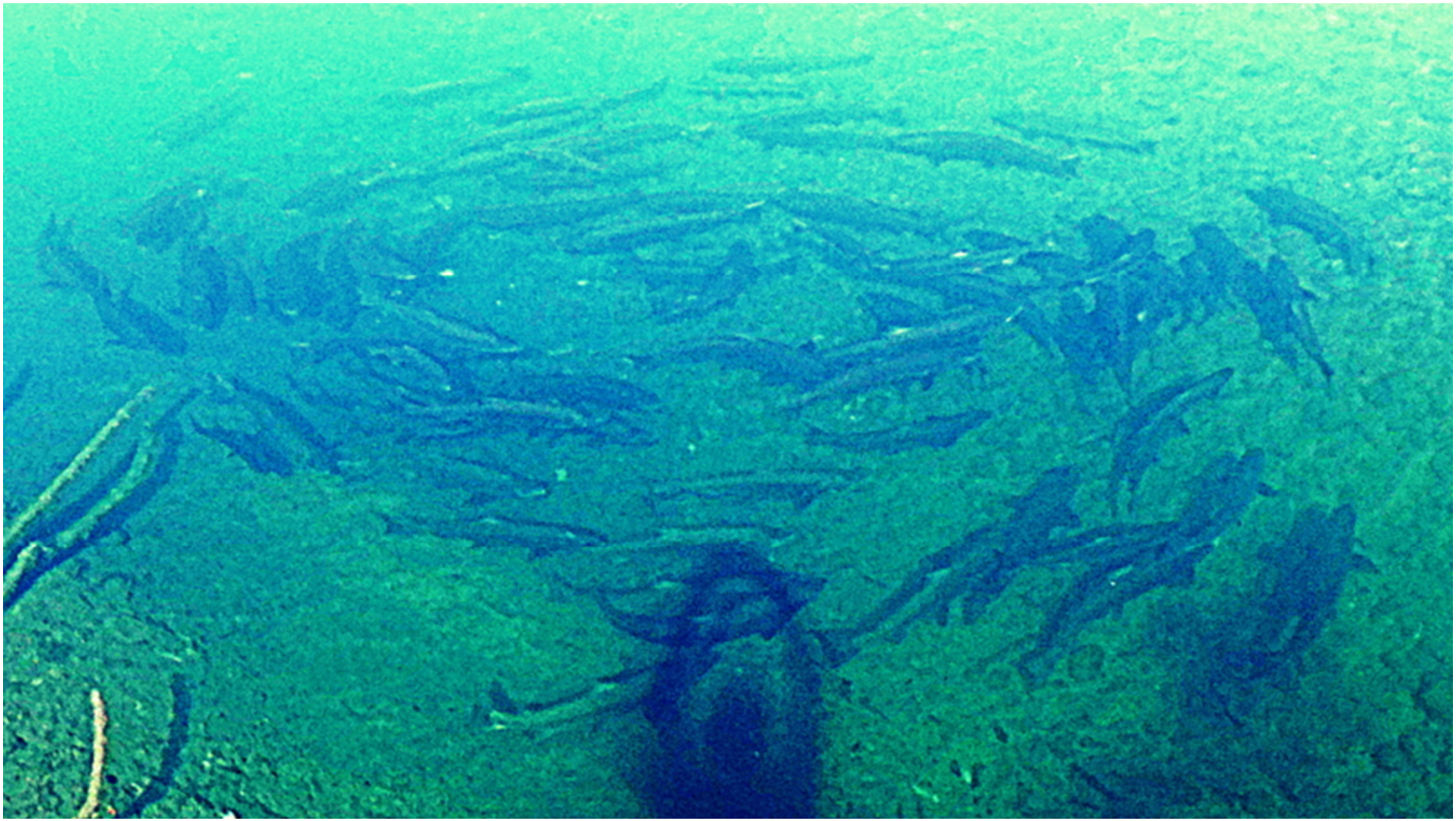
2018

- Flows at Scotia were around 70 CFS until late November
- This was the lowest the Eel has been after November 15th since 1940, and there are only 3 years on record where lower flows persisted that late (1930, 1937 and 1940) - think how different the river was then
- SUP surveys and drone work confirmed ~4000 adults in the Staging Area with around half being jacks or possible steelhead and coho
- With ~3000 Chinook “safe” at the big hole in Fortuna, ~1000 adult Chinook lingered in shallow pools and runs below Fortuna for several weeks
- Three to four hundred steelhead (~10% large adults) lingered below willow branches in the only good riffle for months

“Gaps not great for spawning success” = my theory

What’s your theory?





Fall 2018 SUP Surveys yielded excellent viewing and confirmed counts of adult salmonids present as well as a large sturgeon and dozens of striped bass at Fortuna.

We've seen as many as 7 sturgeon in one survey, and stripers for years.

Considerations:

- “It’ll be better when it rains” is not good enough, but it’s been the main strategy in terms of assisting the early fish or dealing with habitat degradation.
- 2016/17 wet year production to show up this fall
- PLUS 2017/18 gappy year jacks
- How will the Staging Area shape up after flows drop?
  - PREDICTION: more of same - flat and too much gravel. I floated it yesterday...
- Where will the fish go?
  - PREDICTION: like 2018, they’ll crowd into inadequate space for prolonged periods because there’s no alternative.

Bottom Lines:

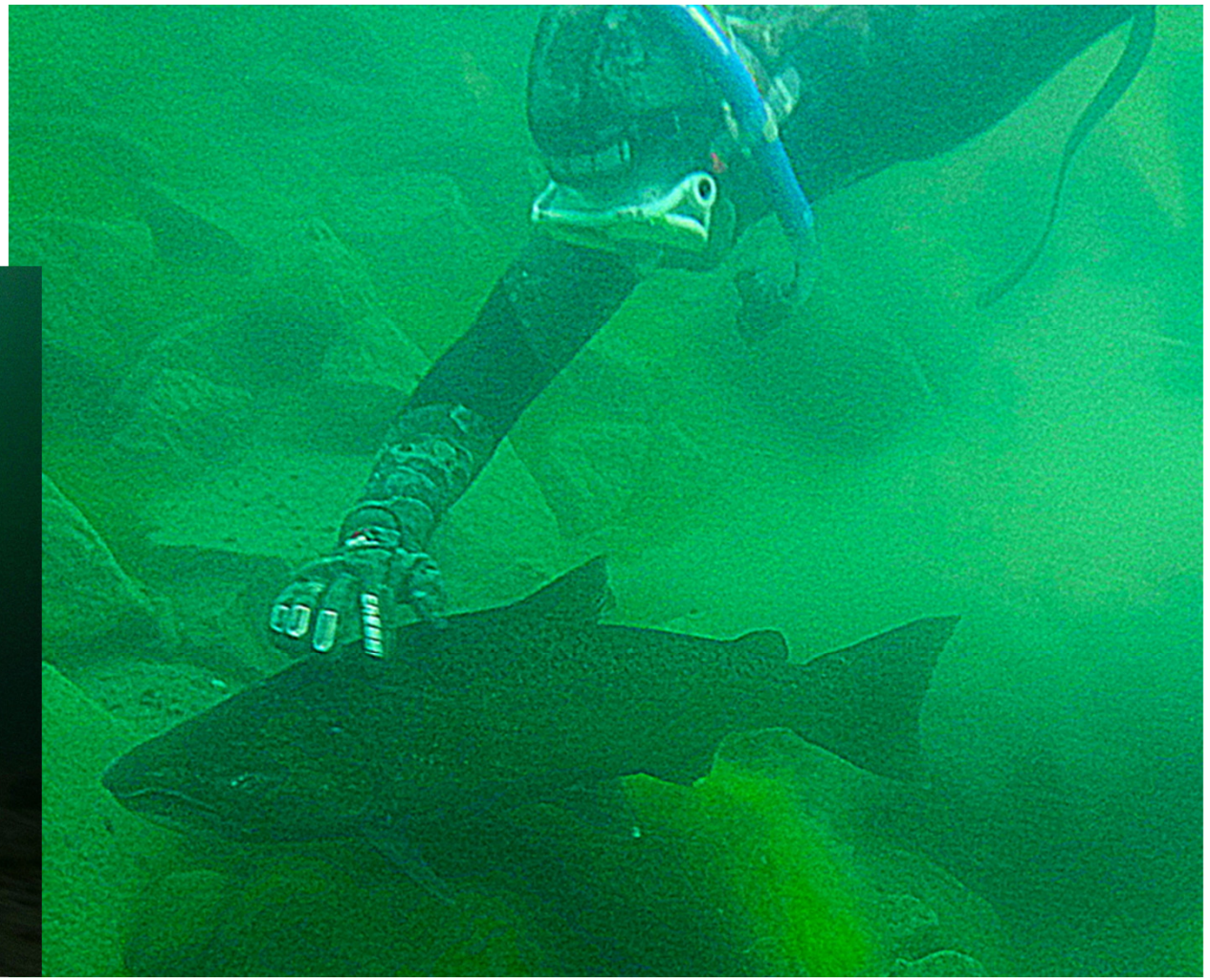
- There is no plan in place to protect or assist early arriving adult fish
- These fish can represent up to 50% of the entire run
- Gravel mining isn't being used to accentuate habitat directly
- The Eel River has very little flow management, so users across the basin have added up to a more significant reduction in flows than the PVP
- Early arriving fish that would distribute and begin spawning are instead sequestered in limited and degraded habitat until rains allow migration
- The spawning window for Fall Chinook is too tight due to our lack of policies that would assist the run - we rely on luck
- We won't see increases in salmon populations without good rain timing

Opinions:

- The Staging Area needs an overhaul - major volume expansion
- Gravel mining should occur in the channel instead of adjacent to it
- Managed flows from PVP should be used to assist early arriving fish - not as “pulse flows” or “block water” but as sustained releases from mid September until rains allow for full migration
- **280 miles of habitat above PVP isn’t going to fix the lack of flow in the Eel River**
- Pikeminnow dominance in the main stems may only be effectively mitigated with increased flows
- *The future of our culture is hanging in the balance with the flows and the fish*

Thank you!

2015 - Diving on blind adult Chinook




The Steelhead Run

Hank Seamann

October 2015

Adult fish present

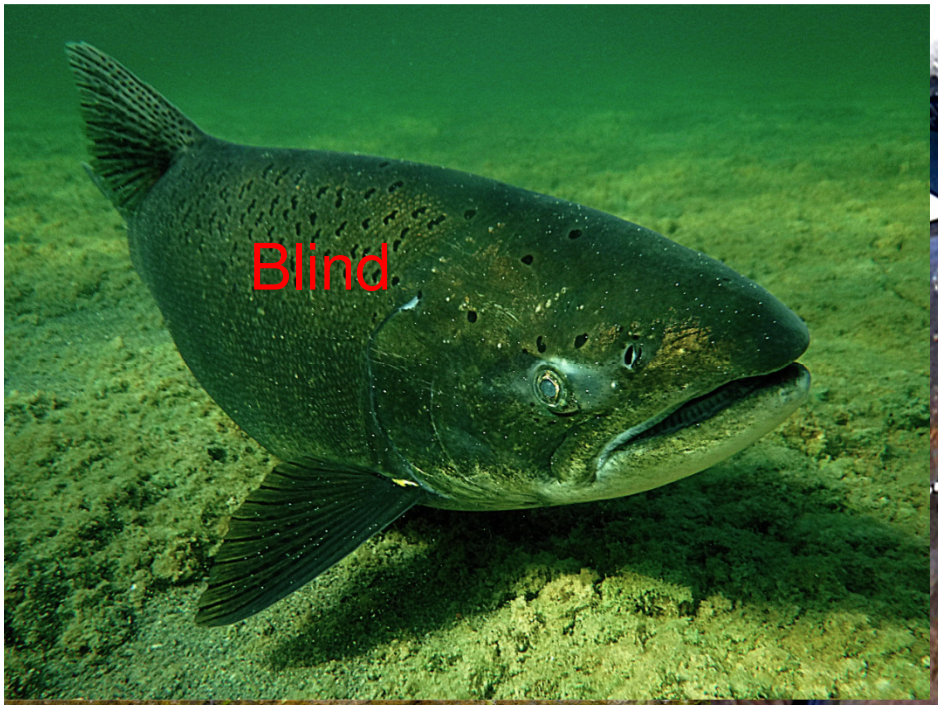
Shane Anderson

Jason Hartwick

A River’s Last Chance


ERRP Dive Team at Fortuna


Blind, but will fight until the end to fulfill the drive of the species


Blind


Sick


Exotic!

Driving on redds is way too common in low flow years

Baldy at Fortuna
eating a coot