Status of Fish and Sand Resources Related to Potential High Flow Event

Adaptive Management Work Group Meeting
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Scott VanderKooi
USGS Grand Canyon Monitoring and Research Center

U.S. Department of the Interior
U.S. Geological Survey

Review of Action Triggers for Humpback Chub

Tier 1

Early Intervention through Conservation Actions

Tier 2

Reduce threat of predation by trout using mechanical removal

USGS

Tier 1

Adult Metric

Adult HBC population
below 9,000
in and around LCR

OR

Juvenile Metric

Subadult abundance in LCR
in spring averages < 1,250
(3 year running average)

OR

Subadult abundance in
mainstem in the fall
averages < 810
(3 year running average)

USGS

Tier 2

Only has an Adult Metric

Adult abundance of Humpback Chub in and around the LCR is < 7,000

Off Ramps

Predator index < 60 RBT/Km
For 2 years with low immigration

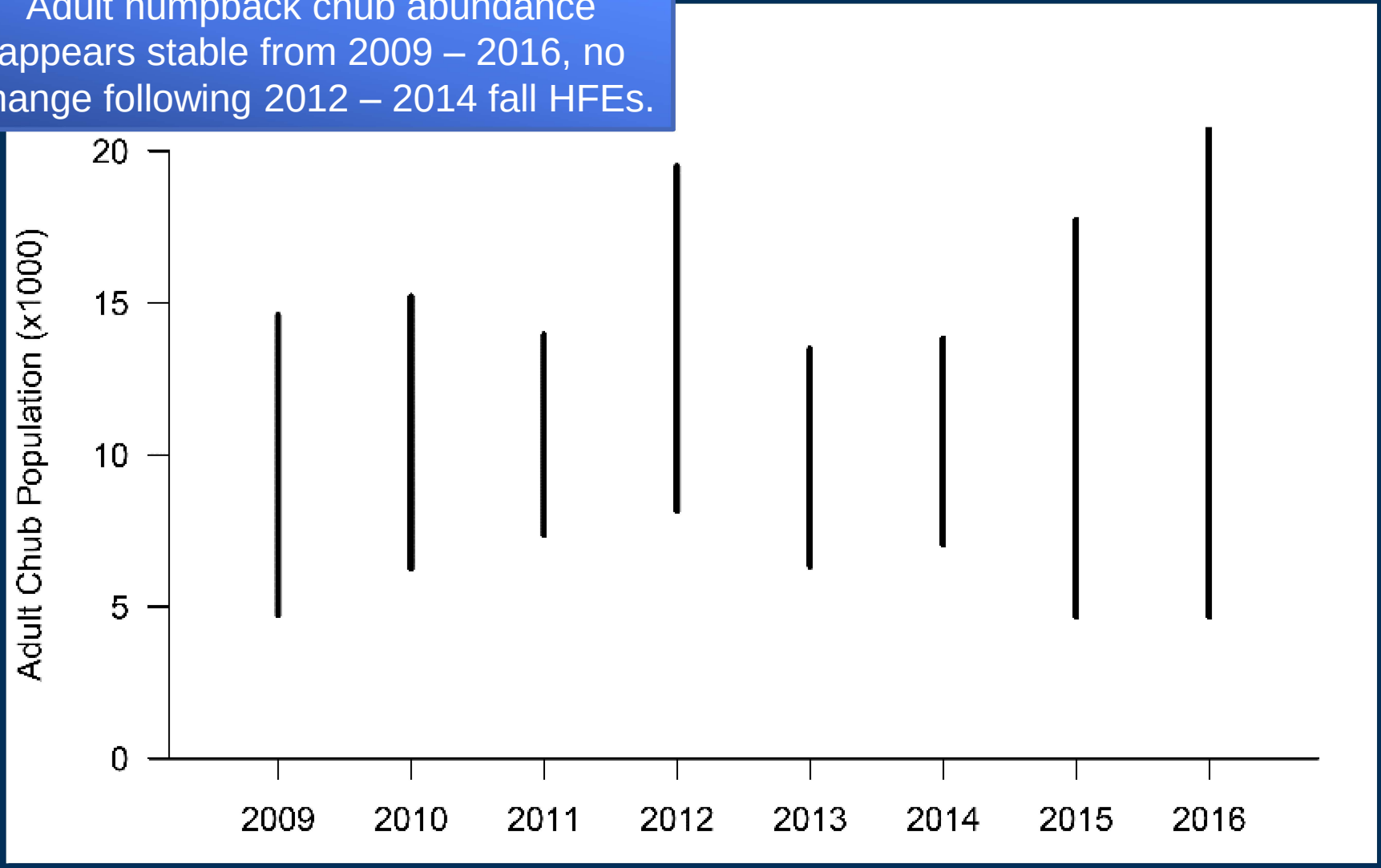
Or

Adult HBC pop estimate exceeds 7,500 with sub-adult recruitment
Exceeding adult mortality for 2 years

USGS

Adult Humpback Chub Abundance Estimates: Multistate Population Model

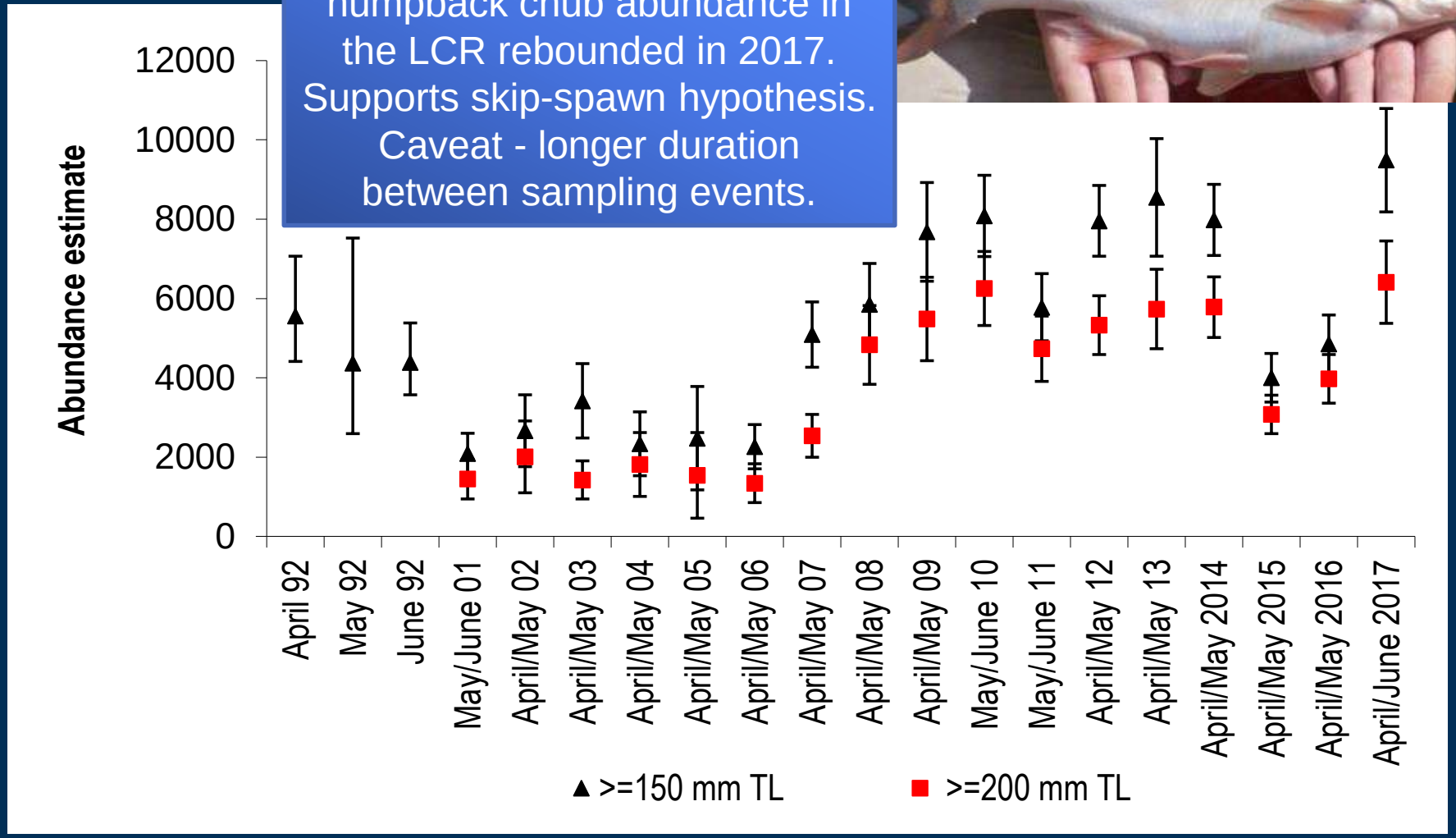
Adult humpback chub abundance appears stable from 2009 – 2016, no change following 2012 – 2014 fall HFEs.



(Preliminary Data from Yackulic 2016. Do Not Cite.)

USFWS - Annual Spring Abundances of Adult Humpback Chub in lower Little Colorado River

Preliminary results suggest humpback chub abundance in the LCR rebounded in 2017. Supports skip-spawn hypothesis. Caveat - longer duration between sampling events.

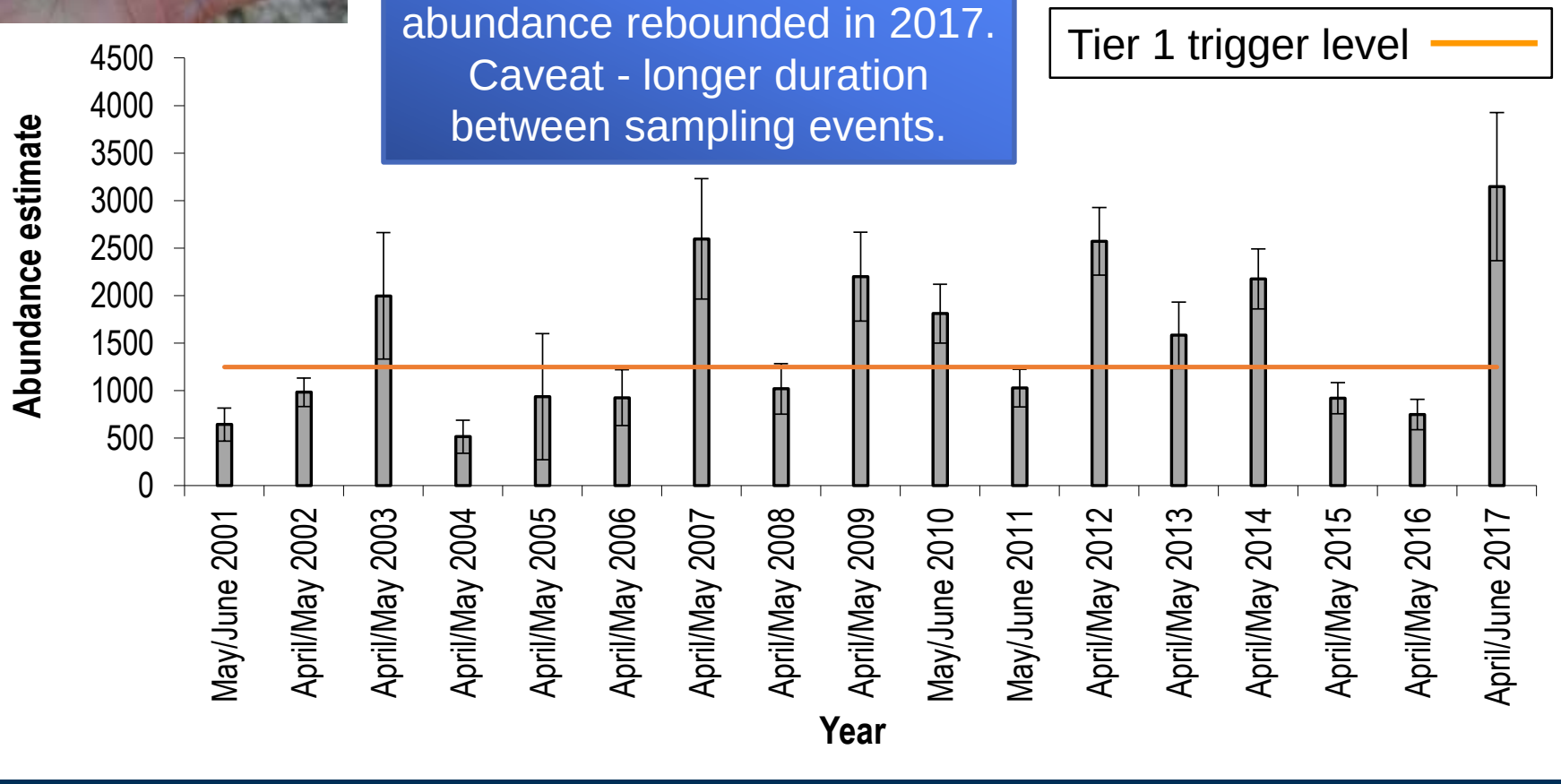


USGS

(Preliminary Data from VanHaverbeke et al. USFWS. 2017. Do Not Cite.)

USFWS - Spring Abundances of Sub-Adult (150-199 mm) Humpback Chub in the Little Colorado River

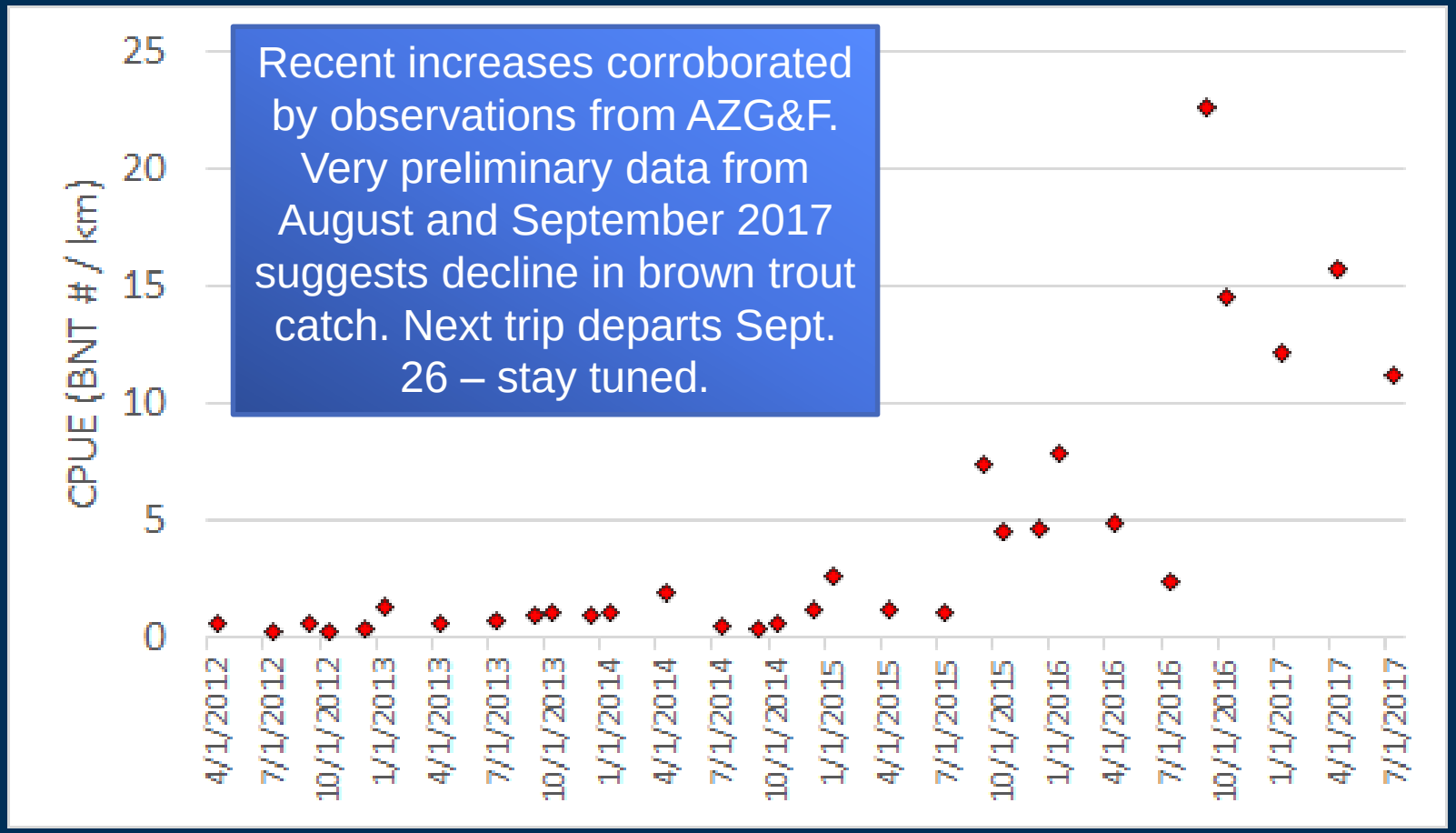
Preliminary results suggest humpback chub sub-adult abundance rebounded in 2017. Caveat - longer duration between sampling events.



USGS

(Preliminary Data from VanHaverbeke et al. USFWS. 2017. Do Not Cite.)

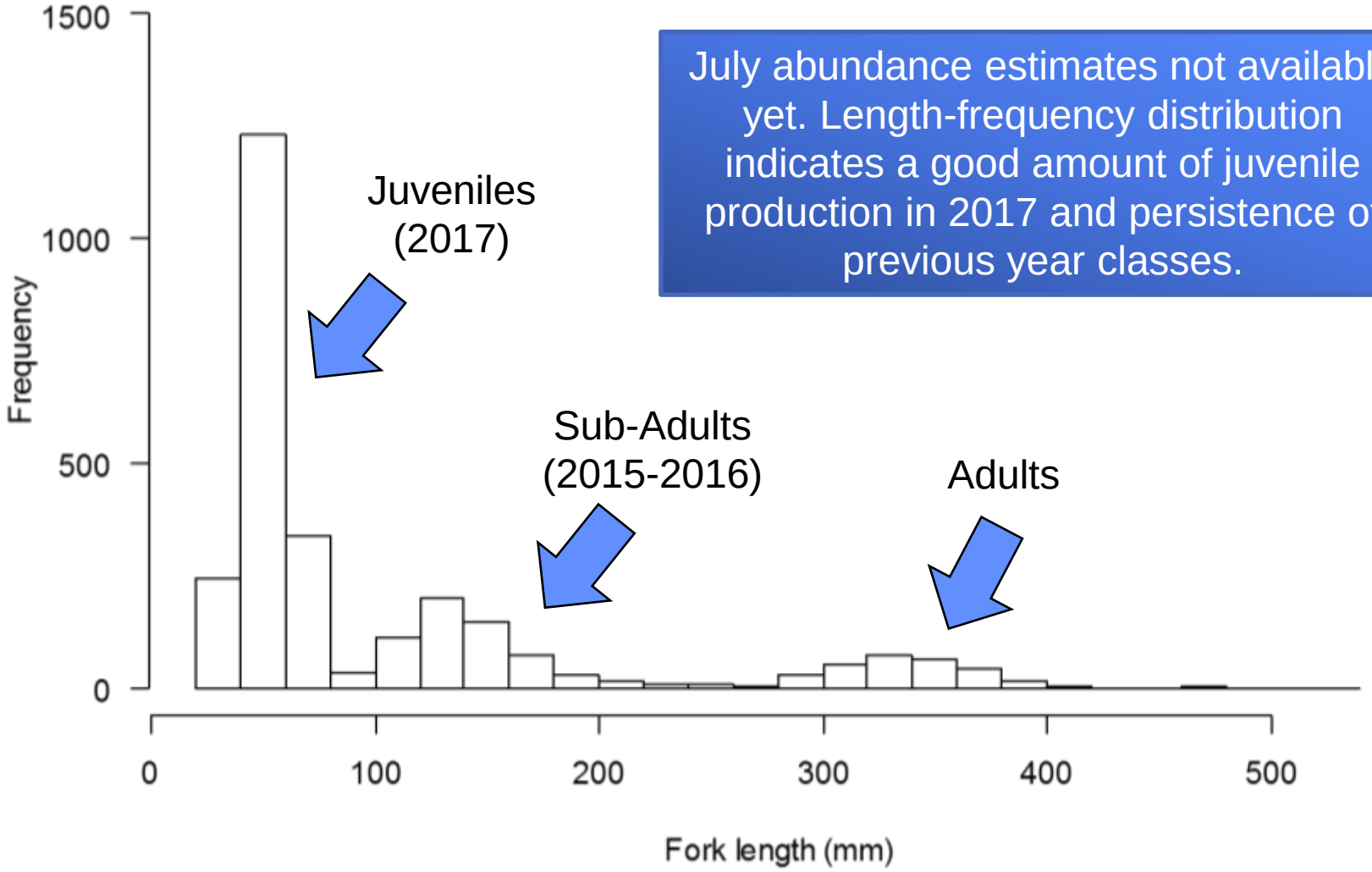
Brown trout Catch Per Unit Effort in Glen Canyon – Natal Origins Study



USGS

(Preliminary Data from Yard and Korman. 2017. Do Not Cite.)

Rainbow trout length frequency in Glen Canyon – July 2017



July abundance estimates not available yet. Length-frequency distribution indicates a good amount of juvenile production in 2017 and persistence of previous year classes.

USGS

(Preliminary Data from Yard and Korman. 2017. Do Not Cite.)

November 2016 High-flow Experiment Sandbar Deposition

Analysis of repeat photos at 43 monitored sites:

- Deposition at 56% of the sites
- No change at 32% of the sites
- Erosion at 12% of the sites.

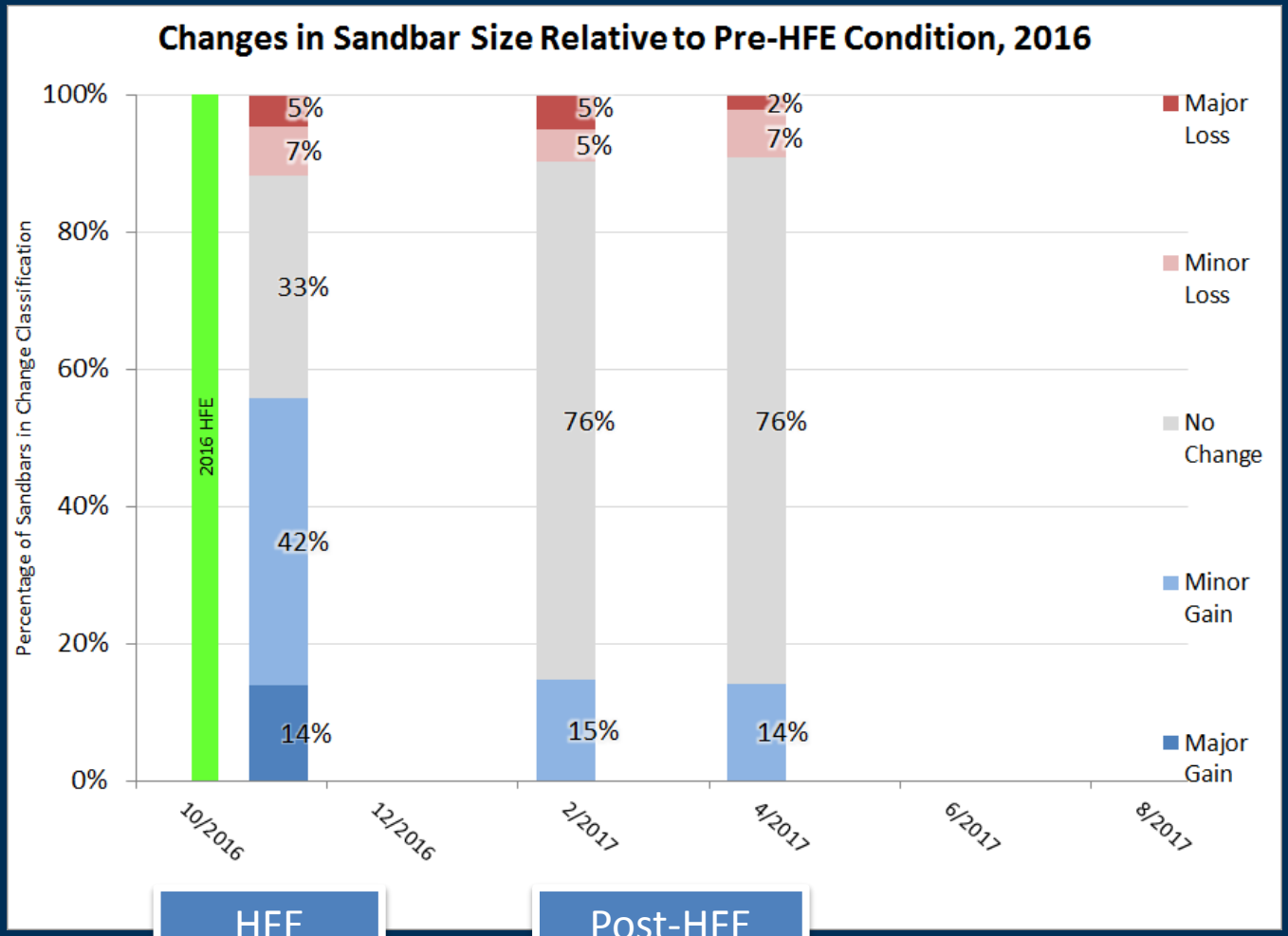
Deposition or no net change at most sites monitored. Similar response to HFEs in 2012, 2013, and 2014.

Sandbar Images available at:
https://grandcanyon.usgs.gov/gisapps/sandbartour2016/index.html?

USGS

(Preliminary Data from GCMRC. 2017. Do Not Cite.)

Initial response is deposition or no net change at most sites followed by erosion during normal operations. Similar response to HFEs in 2012, 2013, and 2014.



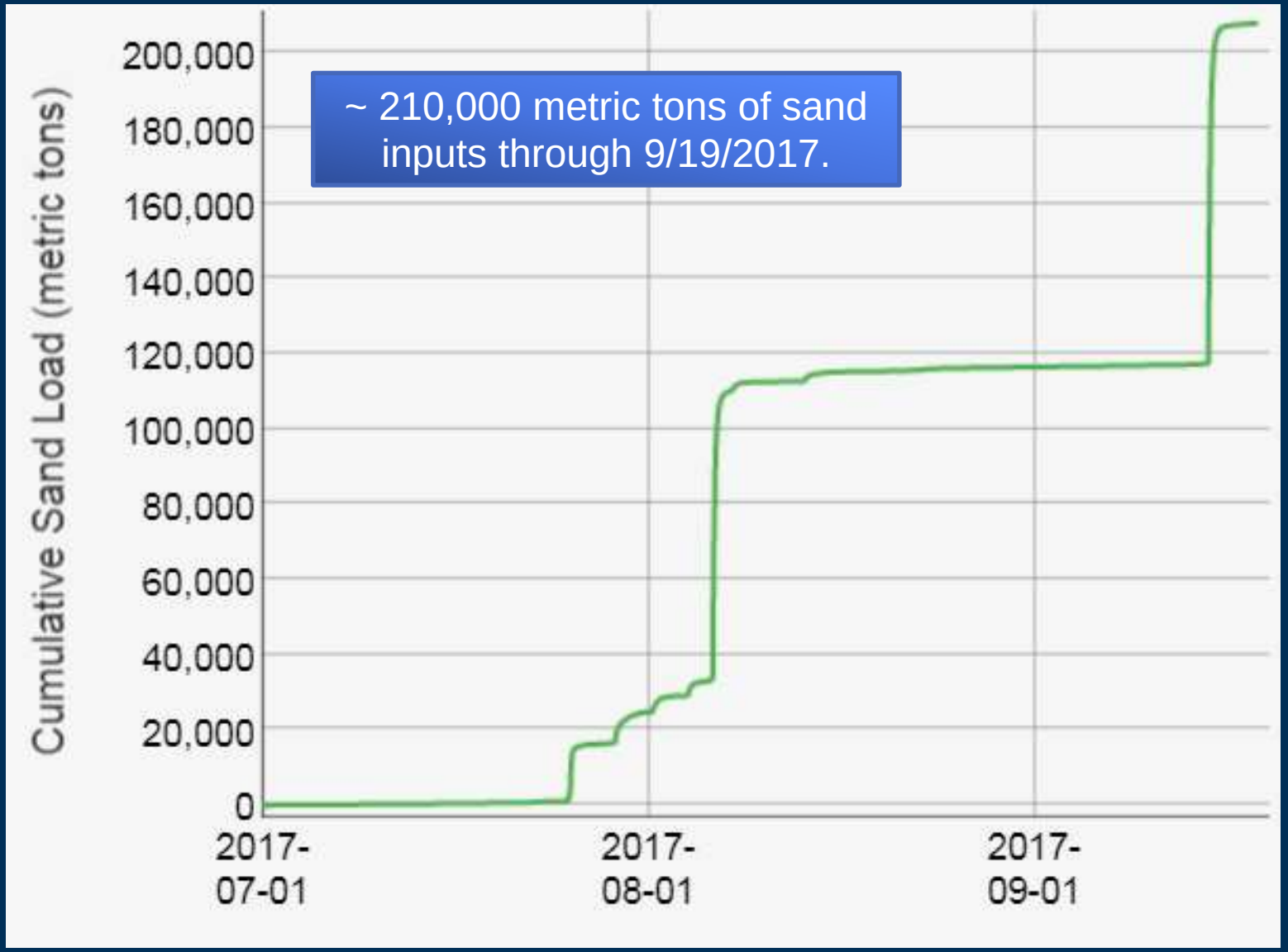
HFE Response

Post-HFE Erosion

USGS

(Preliminary Data from GCMRC. 2017. Do Not Cite.)

Paria River Sand Inputs



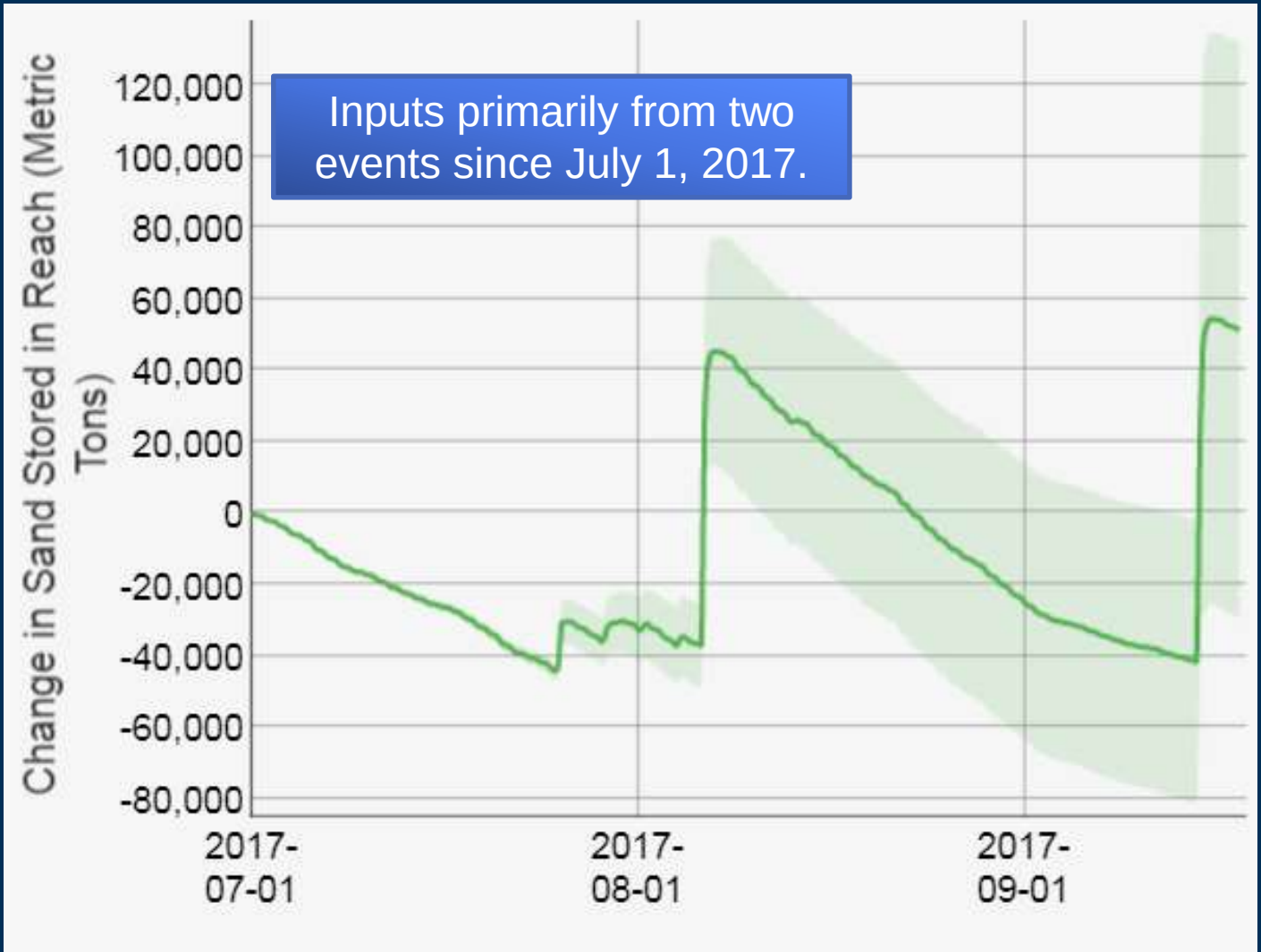
https://www.gcmrc.gov/discharge_qw_sediment/station/GCDAMP/09382000

USGS

(Preliminary Data from GCMRC. 2017. Do Not Cite.)

2017-09-19

Sand Mass Balance – Upper Marble Canyon



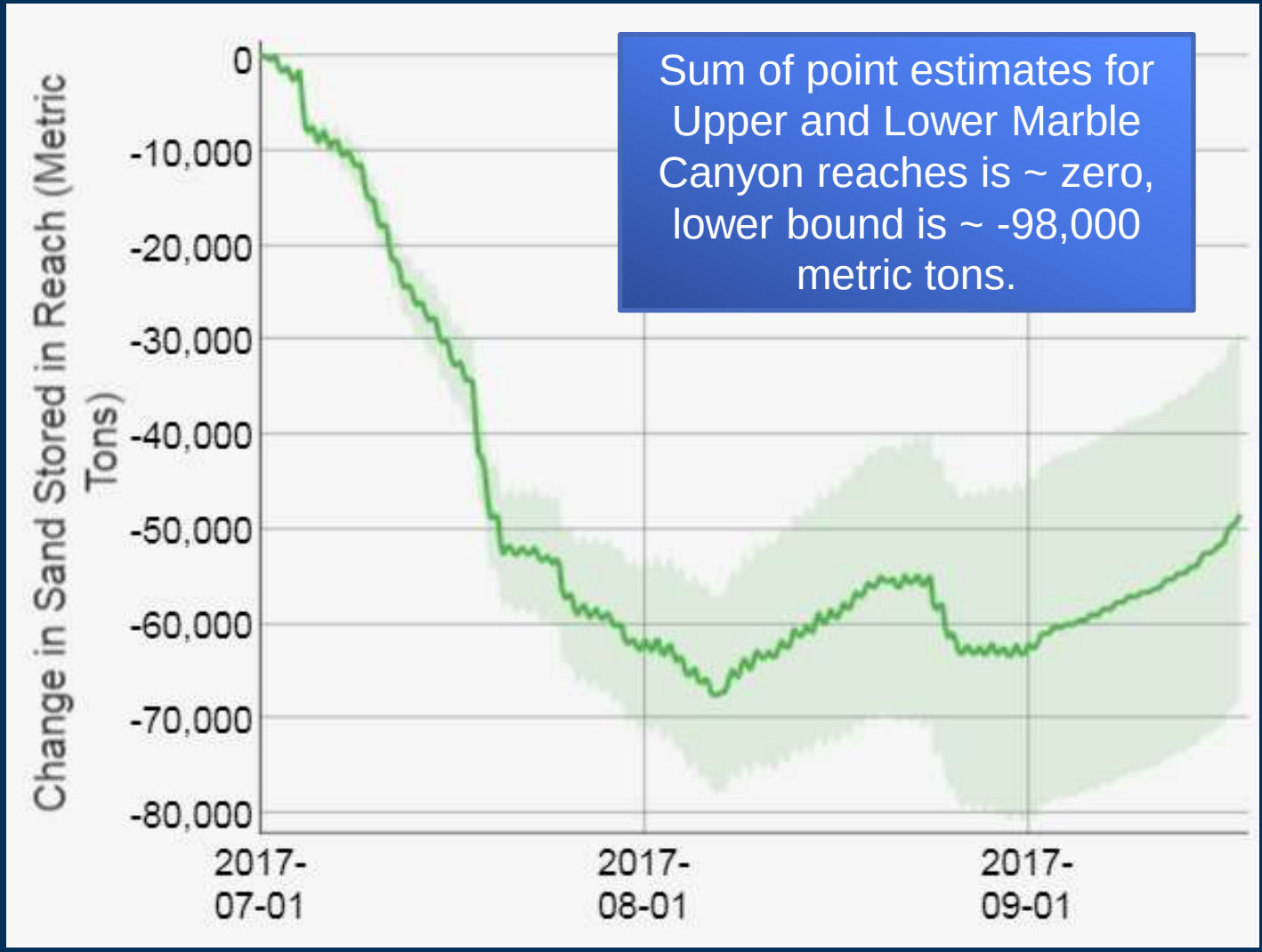
https://www.gcmrc.gov/discharge_qw_sediment/reach/GCDAMP/09380000/09383050

USGS

(Preliminary Data from GCMRC. 2017. Do Not Cite.)

2017-09-18

Sand Mass Balance – Lower Marble Canyon



https://www.gcmrc.gov/discharge_qw_sediment/reach/GCDAMP/09383050/09383100

USGS

(Preliminary Data from GCMRC. 2017. Do Not Cite.)

2017-09-18


Questions ?
USGS