Las Vegas Valley Watershed Advisory Committee (LVVWAC) Update

April 27, 2021

LVVWAC Update:
February 9, 2021 Meeting

Received update on EPA recommendations regarding selenium standard development study

- EPA wants more fish collected (carp only):
  - Amount to be determined
  - Collection likely to occur in late summer
- CCRFCD consultants developing monitoring plan

LVVWAC Update:
February 9, 2021 Meeting

Approved Las Vegas Wash 2021/2022 budget

Budgeted Items	**FY 21/22***
Equipment and Materials	$46,978
Training, Dues, Safety	$14,383
Professional Services	$0
Office Lease	$54,740
Salaries and Benefits	$638,830
Research and Studies Budget	$449,700
TOTAL OPERATING BUDGET	$1,204,631
BUREAU OF RECLAMATION CONTRIBUTION	$244,400
OTHER CONTRIBUTION/GRANTS	$67,500
LOCAL CONTRIBUTION	$892,731

LVVWAC Update:
April 13, 2021 Meeting

Reviewed and approved 2021 Las Vegas Wash Capital Improvements Plan (Wash CIP)

- The plan forecasts spending $5.5 million in 2021 with the final weir modifications scheduled to be completed by mid-2022
- The Wash CIP was adopted by the LVVWAC

LVVWAC Update:
April 13, 2021 Meeting

Received update on wastewater dischargers

- CCWRD plans to spend approximately $920 million over the next five years on expansions, plant and piping upgrades, small systems, pump stations, rehabilitation and other capital projects
- CCWRD saw influent flow decreases as a result of the pandemic shutdowns

- City of Las Vegas Water Pollution Control Facility's capital improvement projects include rehabilitation of the digester, the biological nutrient remover, dewatering and filtration, replacement of the process blower and site security improvements

LVVWAC Update:
April 13, 2021 Meeting

Received update on wastewater dischargers (cont.)

- City of North Las Vegas will upgrade its sludge conveyance, recoat or replace its membrane basins, develop a permanent solution for joint leakage in the Sloan Channel and rehabilitate the flow equalization basin

- City of Henderson treated 9 billion gallons of wastewater in 2020, delivered 2.5 billion gallons of reclaimed water and received the NACWA Platinum Award for 16 years of compliance with no permit violations
- The city plans to expand the plant's capacity in the coming years and rehabilitate its aging facilities

LVVWAC Update:
April 13, 2021 Meeting

Received legislative update

- Assembly Bill 97
  - Sponsor is Natural Resources Committee (NRC) Chair Howard Watts
  - Intent is to reduce PFAS pollution in Nevada's waters
  - Amended bill was passed by the NRC along party lines

- Assembly Bill 146
  - Sponsor is Assemblywoman Sarah Peters
  - Intent is to reduce diffuse source pollution in Nevada's waters
  - Amended bill was passed by the NRC along party lines

LVVWAC Update:
April 13, 2021 Meeting

Received update on Lower Las Vegas Wash stabilization program

- Constructing 6 new weirs and rehabilitating weirs #2 and #3
- As of 2020, the 7-year construction schedule, with an additional three years for revegetation, is projected to cost $127 million and will be primarily funded through quarter-cent sales tax revenues; NPS will contribute $6.1 million in SNPLMA funding
- SNWA leading design and construction: Atkins chosen as design consultant; completed review of CMAR proposals, conducted interviews and expect to award numerous Guaranteed Maximum Price packages.

Next Meeting

July 13, 2021

2 p.m.

Location: TBD

Razorback Sucker in Lake Mead and Las Vegas Wash

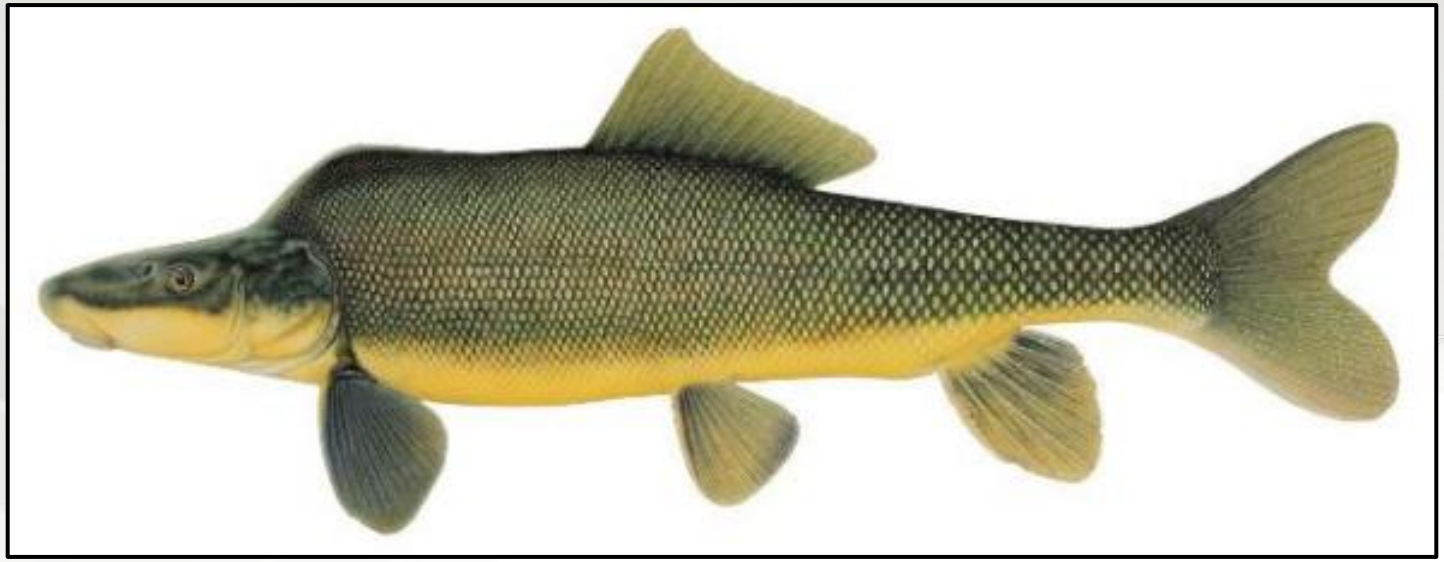
Brandon Albrecht[1], Ron Rogers[1],
Ron Kegerries[1], Eric Loomis[2],
and Jeff Lantow[2]

1=BIO-WEST, Inc.
2=Bureau of Reclamation

ESA and Recovery

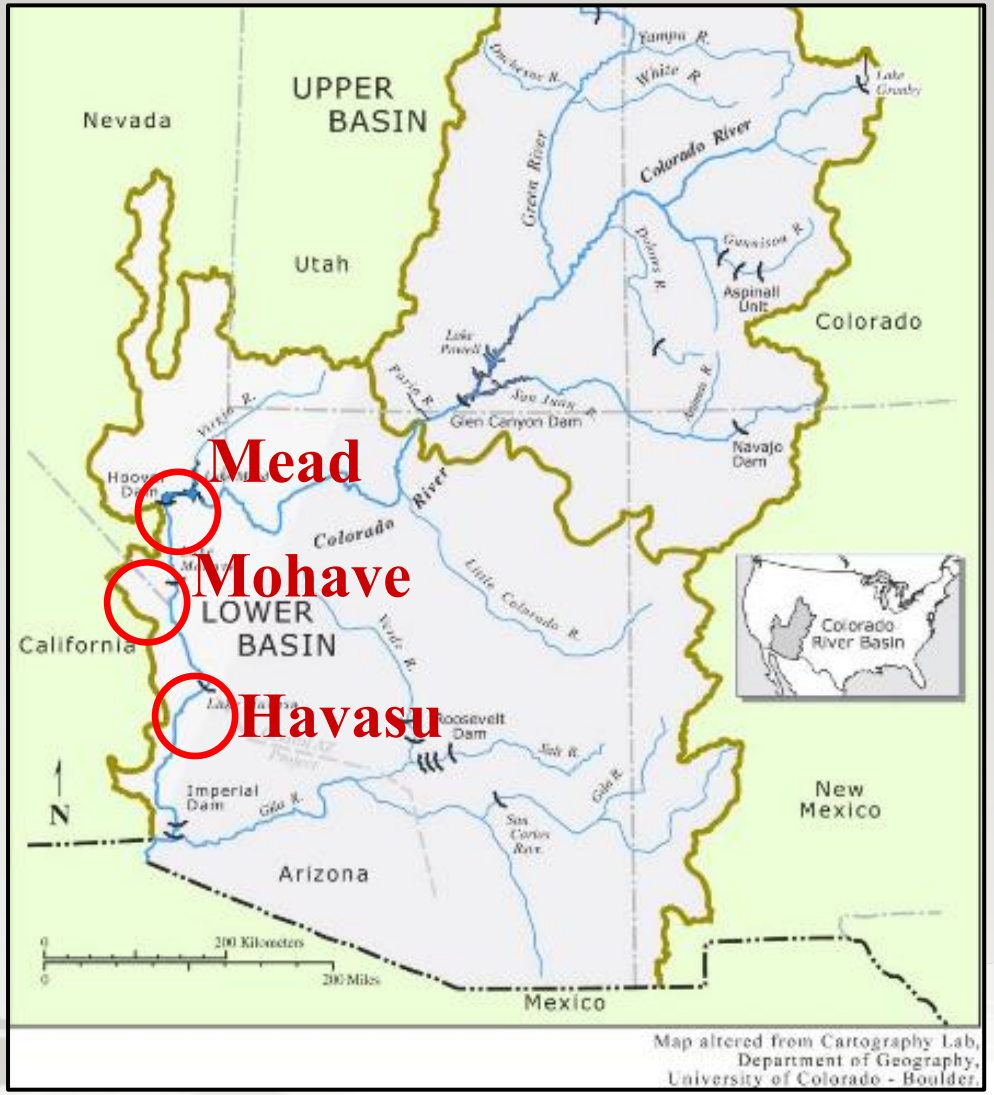
- Listed ESA 1991
- Critical Habitat designated 1994
- Recovery plan 1998
- Recovery goals 2002

- Recovery Goals require two populations in upper Basin, and two populations in the lower Basin (not specified where)



Razorback Sucker in the LCR

- Large Razorback Sucker populations in LCR reservoirs before nonnative fish predators were abundant
- Nonnative predators
  - Sport fishery
  - Prevented recruitment (Minckley et al. 1991, Mohave)
  - Population declines (40-50 years)



Lake Mead Razorback Sucker

- Population decline
  - 100,000+ RBS in the 50's and 60's
  - Noticeably reduced in the 70's
  - Thought extirpated by the 80's
  - Adults captured in early 90's
  - Lake Mead research and monitoring began in 1995.

Cooperators

BUREAU OF RECLAMATION

SOUTHERN NEVADA WATER AUTHORITY™

Lower Colorado River Multi-Species Conservation Program

BIO-WEST

NEVADA DEPARTMENT OF WILDLIFE

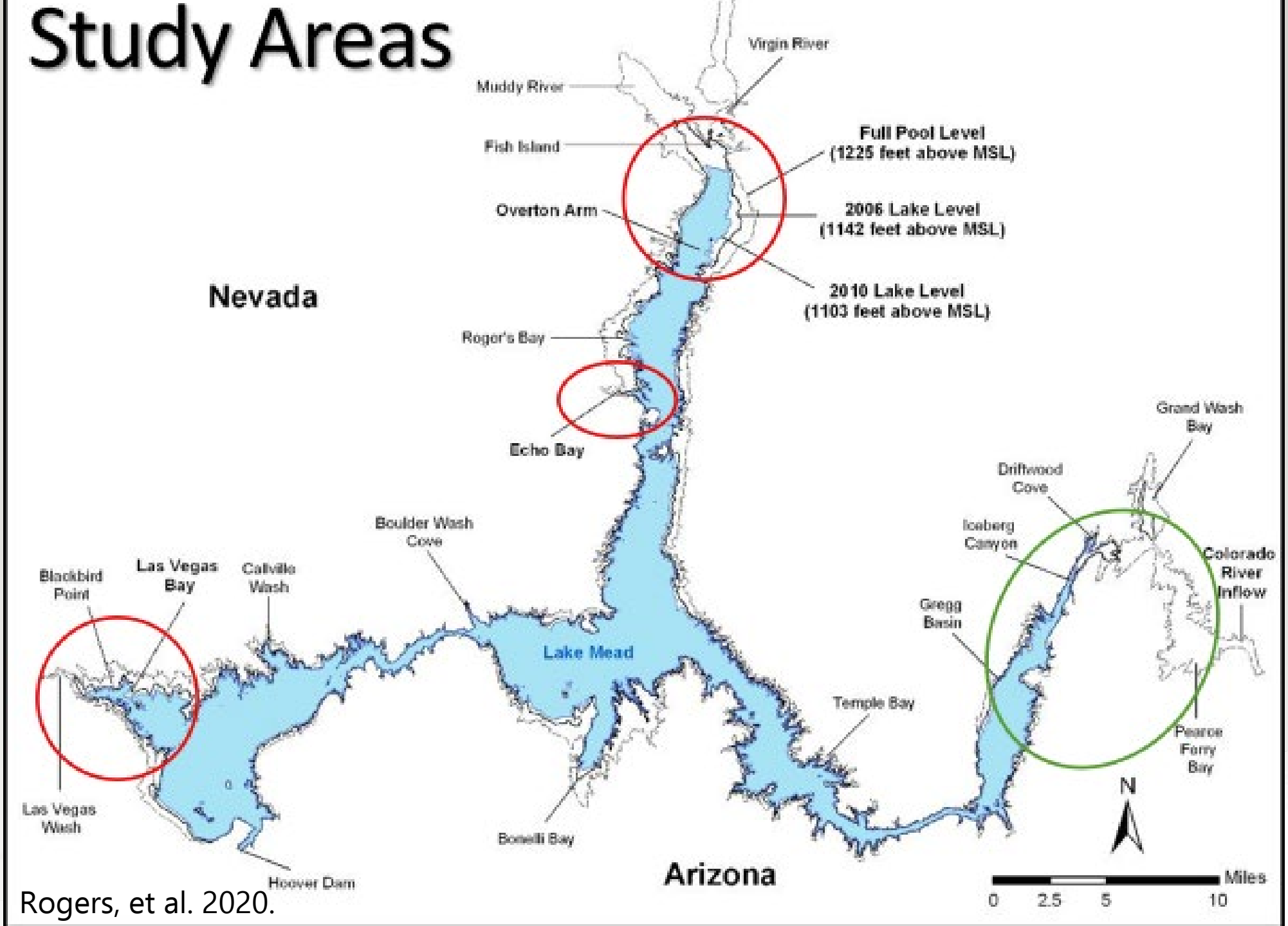
ARIZONA GAME & FISH

NATIONAL PARK SERVICE

U.S. FISH & WILDLIFE SERVICE
DEPARTMENT OF THE INTERIOR

LAKE MEAD RAZORBACK SUCKER WORKGROUP

Study Areas



Rogers, et al. 2020.

Methods

Field

- Sonic telemetry
- Trammel netting
- Larval sampling

Laboratory

- Age determination

Reporting/Modeling

- Population estimation
- Survival estimation
- Annual reporting and peer reviewed publications

Results Summary

- 24 years of study (1996-2020)
- Wild individuals
- 182 sonic-tagged individuals in Lake Mead/Grand Canyon
- 1,502 Razorback Suckers captured
- 4 areas of known, established reproduction
- 594 individuals aged, 2-36 years old
- Population estimates around 500 fish
- Survival estimates for adults 0.75-0.80
- Documented population of recruiting fish in Colorado River Basin
- Youthful population

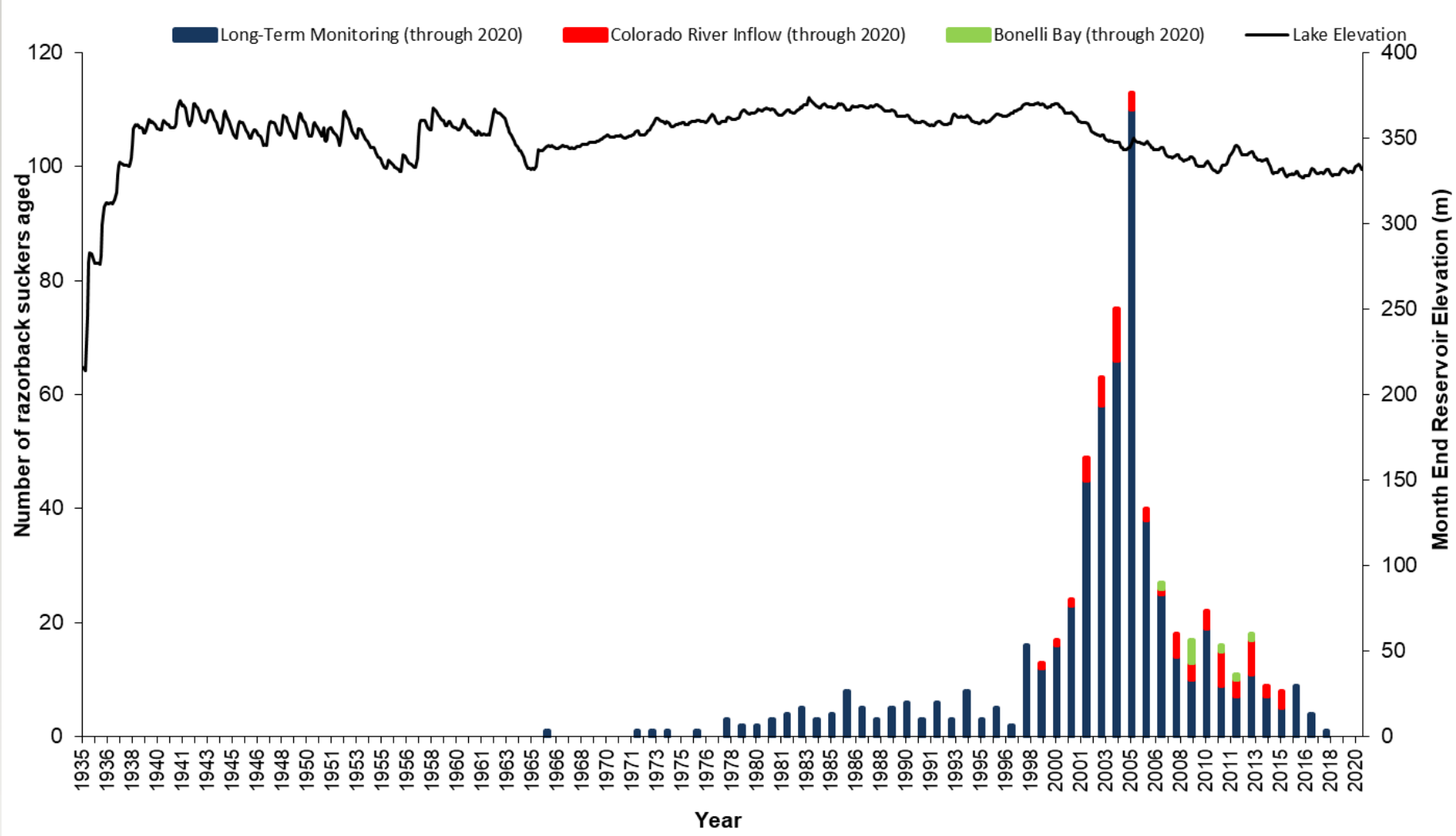
Kegerries, et al. 2020; Rogers, et al. 2020

Recruitment

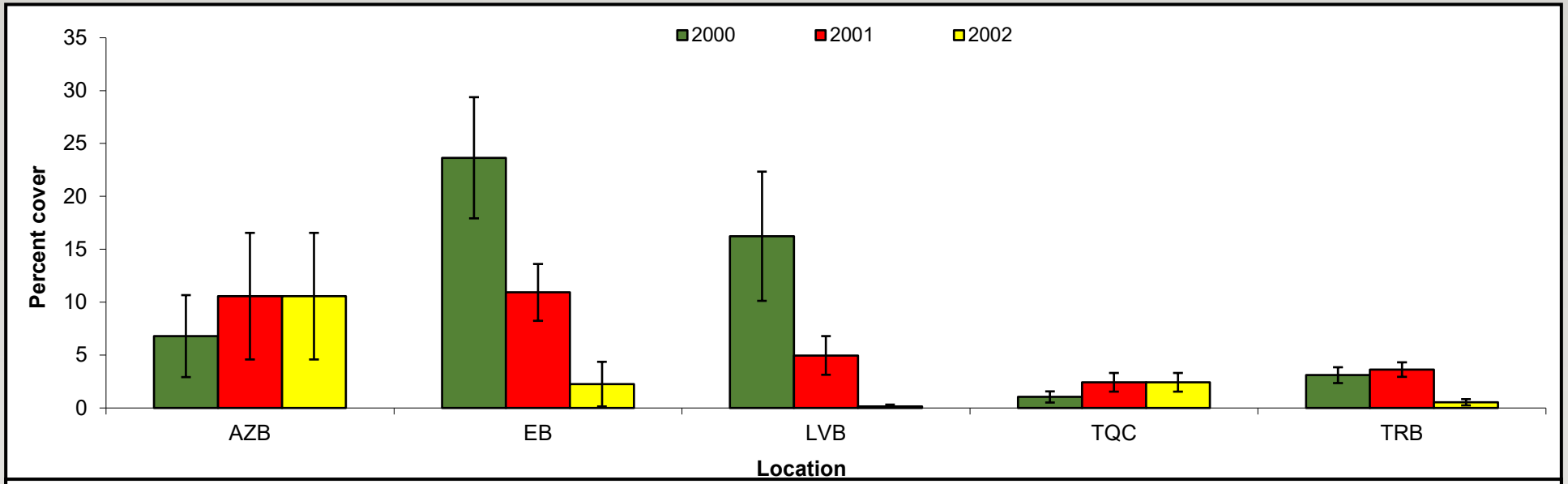
- 111 wild, juvenile and sexually immature fish captured.
- Most juveniles captured in Las Vegas Bay (*n*=76), at the MR/VR inflow (*n*=25), EB (*n*=5) and CRI (*n*=5)

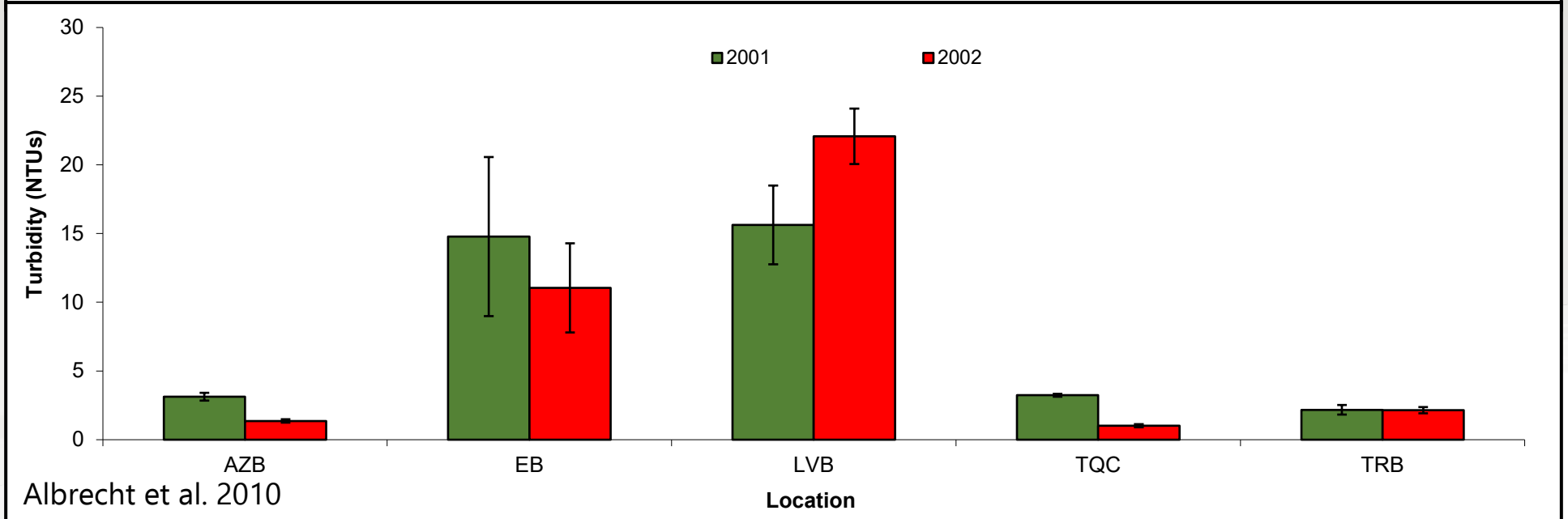
Rogers, et al. 2020

Recruitment continued



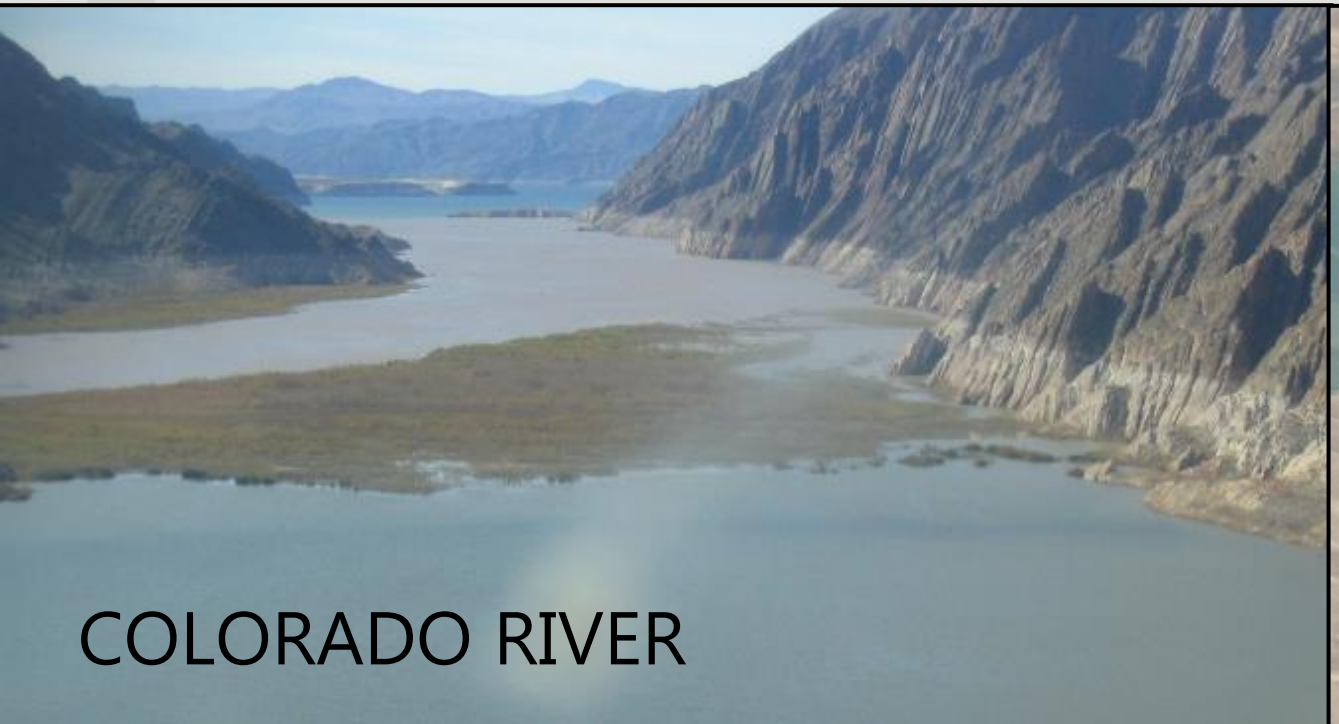
Why Lake Mead?



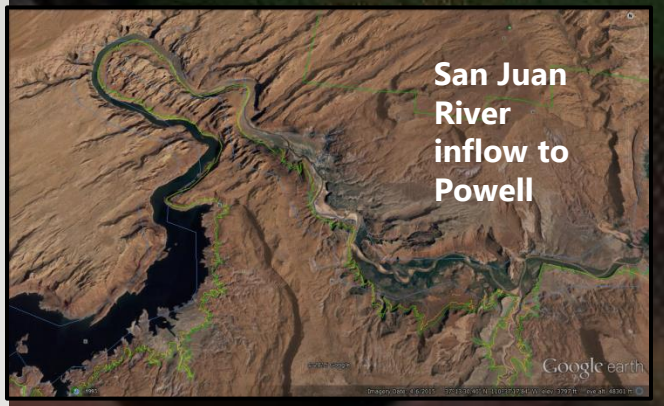


Albrecht et al. 2010

Inflows Create Diverse Habitat and Cover



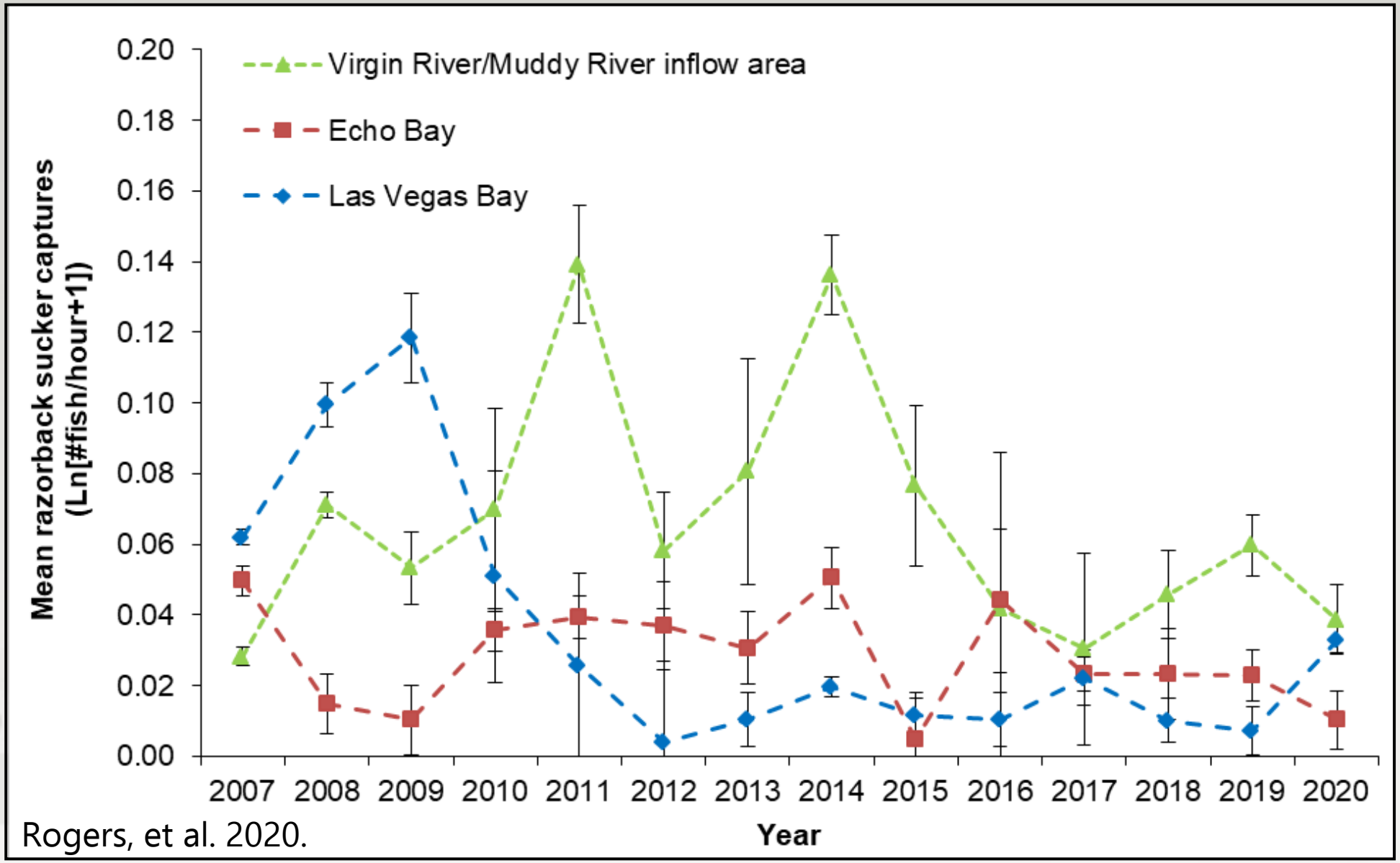
Inflow habitats appear to be important for native fishes basin-wide!



Reservoirs and Razorback Sucker recruitment…a historical perspective…

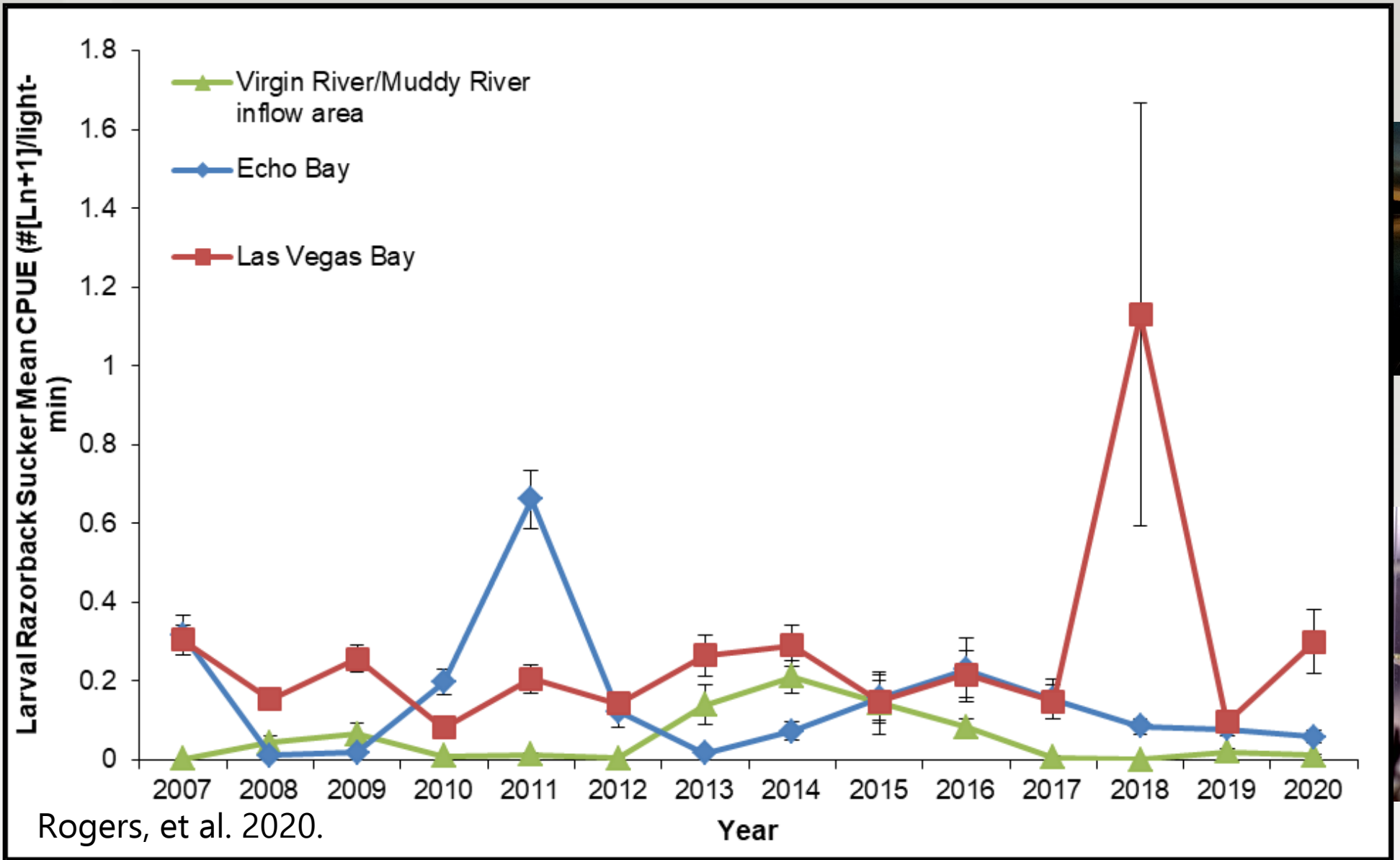
- Floodplain habitats historically were and will continue to be important for Razorback Sucker recruitment, now working better in upper basin.
- Lake Mead and the LGC may be a contemporary version of recruitment/floodplain habitat for this species for the lower basin.

Trammel Netting CPUE



Rogers, et al. 2020.

Larval CPUE



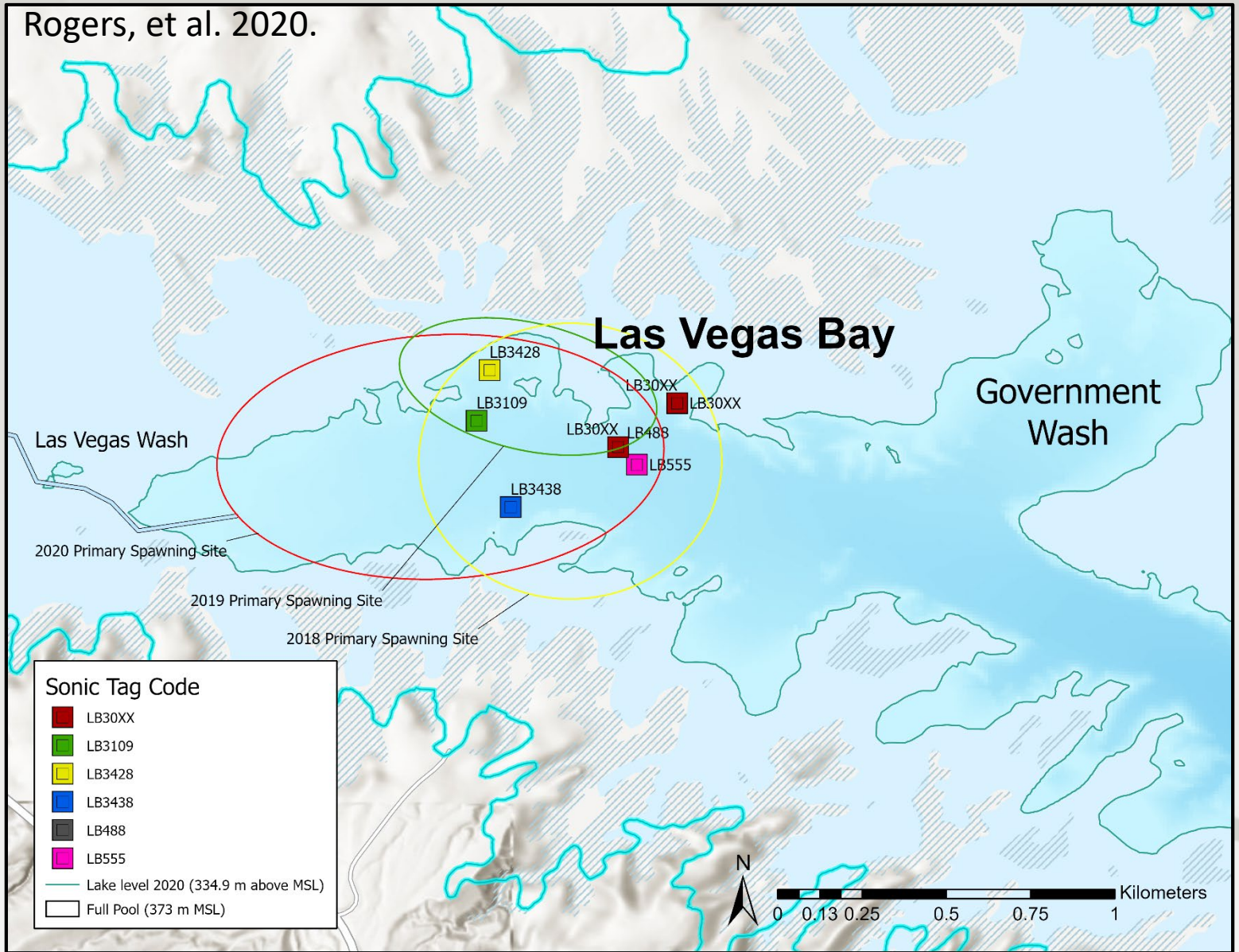
Rogers, et al. 2020.

The Wash…Relevant Literature

- From 2009– 2020, biologists have suspected that adult and juvenile Razorback Suckers use Las Vegas Wash for spawning or nursery habitats- larvae are frequently captured in or adjacent to the wash.
- This seems consistent with observations made during the 2021 field season.
- However, no study specific to the wash has been conducted to date.

- Kegerries, et al. 2009.
- Albrecht, et al. 2010.
- Shattuck, et al. 2011
- Albrecht, et al. 2012.
- Albrecht, et al. 2013a.
- Albrecht, et al. 2013b.
- Albrecht, et al. 2014.
- Shattuck and Albrecht. 2014.
- Kegerries, et al. 2015.
- Mohn, et al. 2015.
- Kegerries, et al. 2016.
- Mohn, et al. 2016.
- Rogers, et al. 2017.
- Rogers, et al. 2018.
- Rogers, et al. 2019.
- Rogers, et al. 2020.

Active Telemetry Observations



- We observe sonic tagged Razorback Sucker in deep habitats during summer months
- Nov-Jan we typically track them towards the back of the bay, near the wash inflow
- Sonic tagged Razorback Sucker then disappear for several months returning again to deeper habitats April-November (tagged fish are presumed to be upstream in LVW based on lakewide searches)

Passive Telemetry (2019)

Sonic Code	No.	Date
555	124	Feb-Mar 2019

N

Razorback Sucker Stocking (2017)

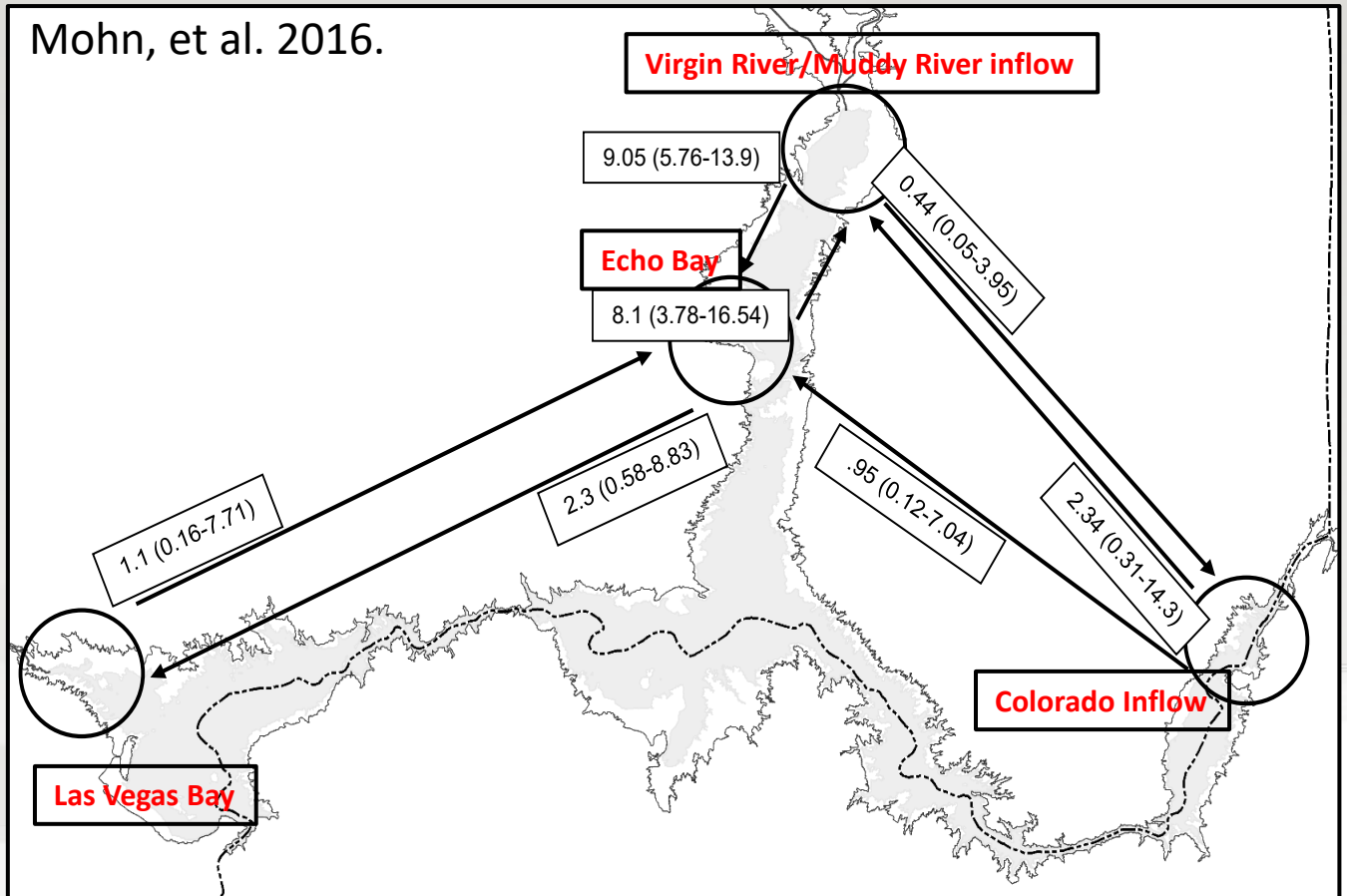
LOCATION	No.	TL RANGE (mm)
LB	82	103-470
LVW	86	105-473
TOTAL	**168**	

PIT Scanning

YEAR	LOCATION	UNIQUE CONTACTS
2016	LB	1
2018	LB	5
2019	LVW	30
2020	LVW	4

Lakewide Movement

- Program MARK, Rmark
  - Multistate Model
  - Extension of CJ models
- 712 fish captures, 12 years of data (2005-2016)
- Transition rates



Potential for Razorback Sucker in Las Vegas Wash

- Data suggests that there is a high potential that the wash is valuable habitat for Razorback Suckers during all life stages:
  - Adults appear to spawn in wash at least some years
  - Juveniles appear to use LVW and the delta as nursery habitat (warm, productive, and complex habitats)
  - Larval Razorback Sucker are being captured within the wash mouth and immediately adjacent to the LVW.

Data Gaps and Needs

- In 2006 moved from research to monitoring protocol keeps efforts within the “lake”
- When you look you often find (see VR/MR inflow and Colorado River Inflow/Grand Canyon
- A concerted effort in LVW, using appropriate and specific sampling is the only way to determine the extent of use of LVW by RBS
- These things take time to understand (rare fish, large lake, but possible--see locations listed above)
- What other native species may use the wash?

Bonytail *Gila elegans* captured just outside LVW (2020)

The Value of Lake Mead

- Young, resilient, naturally recruiting population
- Cover that likely promotes recruitment
- Able to sustain recruitment despite nonnative predators and competitors
- Evolution of the project, the idea of cover, and observations over time eventually took us to the MR/VR inflow, then to the CRI, and more recently on to the LGC (similar could happen at LVW)
- Venue for Upper and Lower Basin collaboration

The Story Continues….

Razorback Sucker in Mead150+ years and counting…

Questions?

HYDROLOGY UPDATE

Colby N. Pellegrino

DEPUTY GENERAL MANAGER, RESOURCES

April 2021

SOUTHERN NEVADA WATER AUTHORITY™

The Colorado River continues to experience hot and dry conditions, further exacerbating ongoing drought.

CLIMATE CONDITIONS

Seven Basin States Drought Monitor

Drought Impact Types:

Delineates dominant impacts

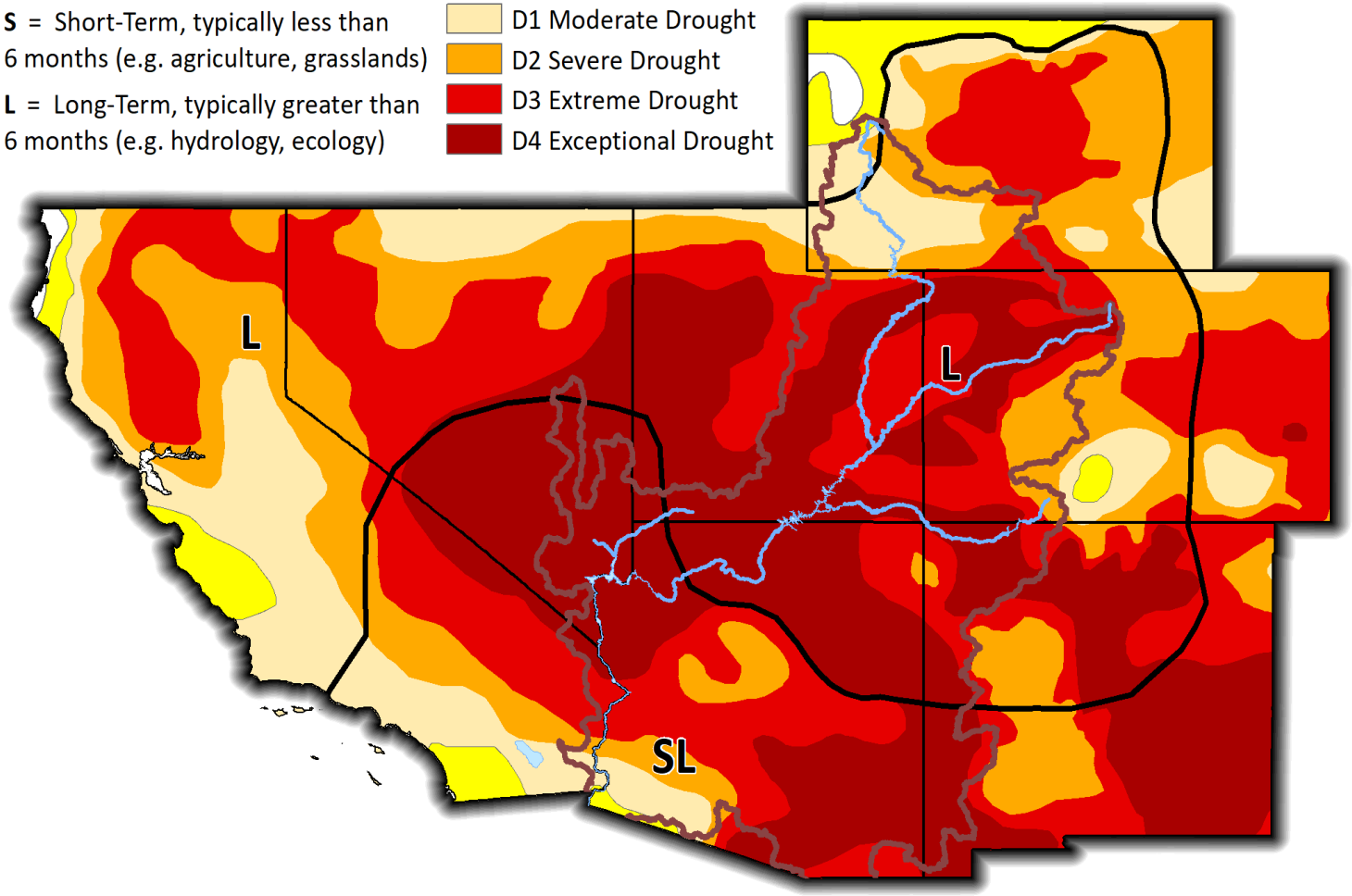
S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)

L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

Intensity:

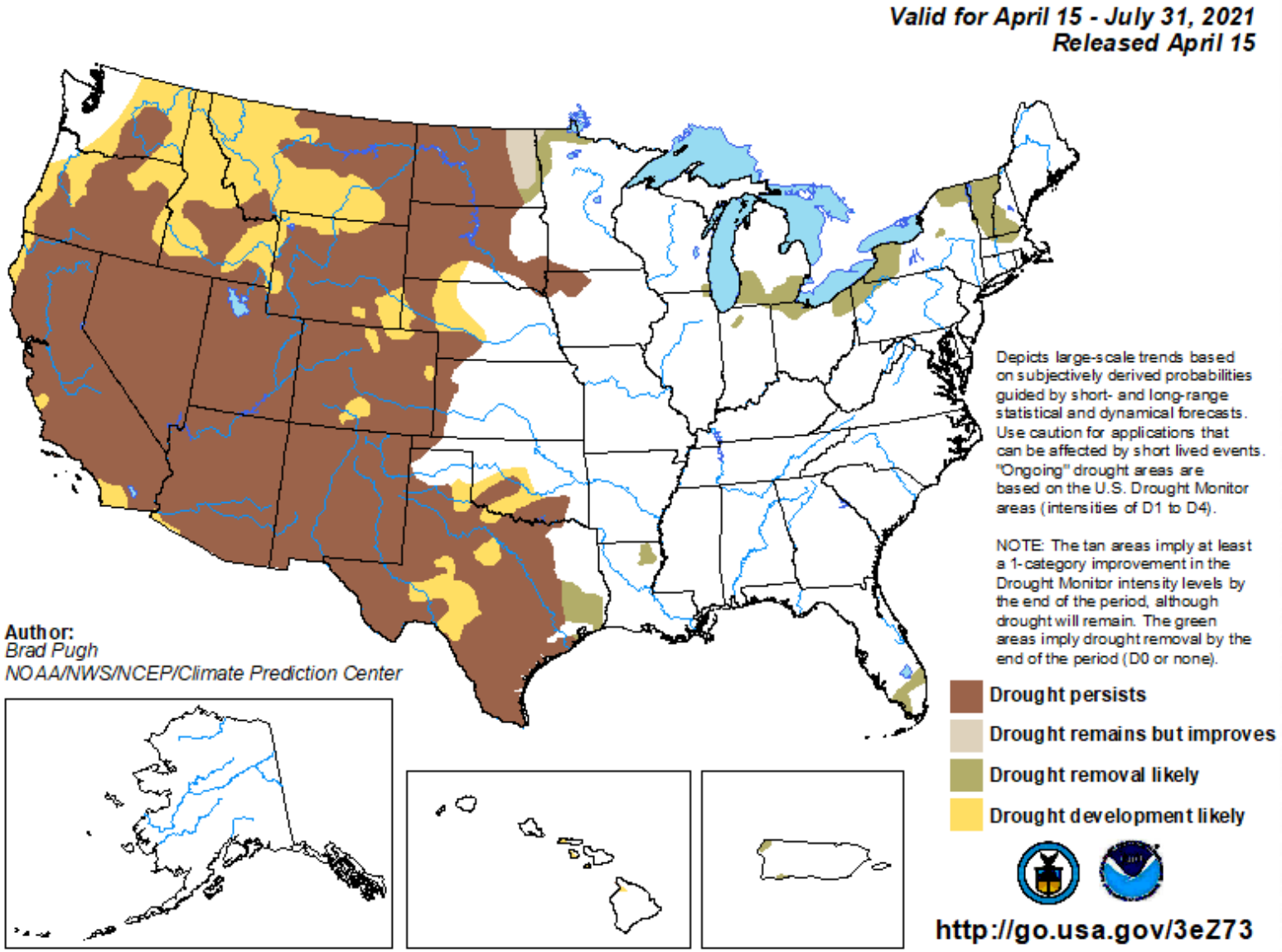
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

March 09, 2021



CLIMATE CONDITIONS

U.S. Seasonal Drought Outlook

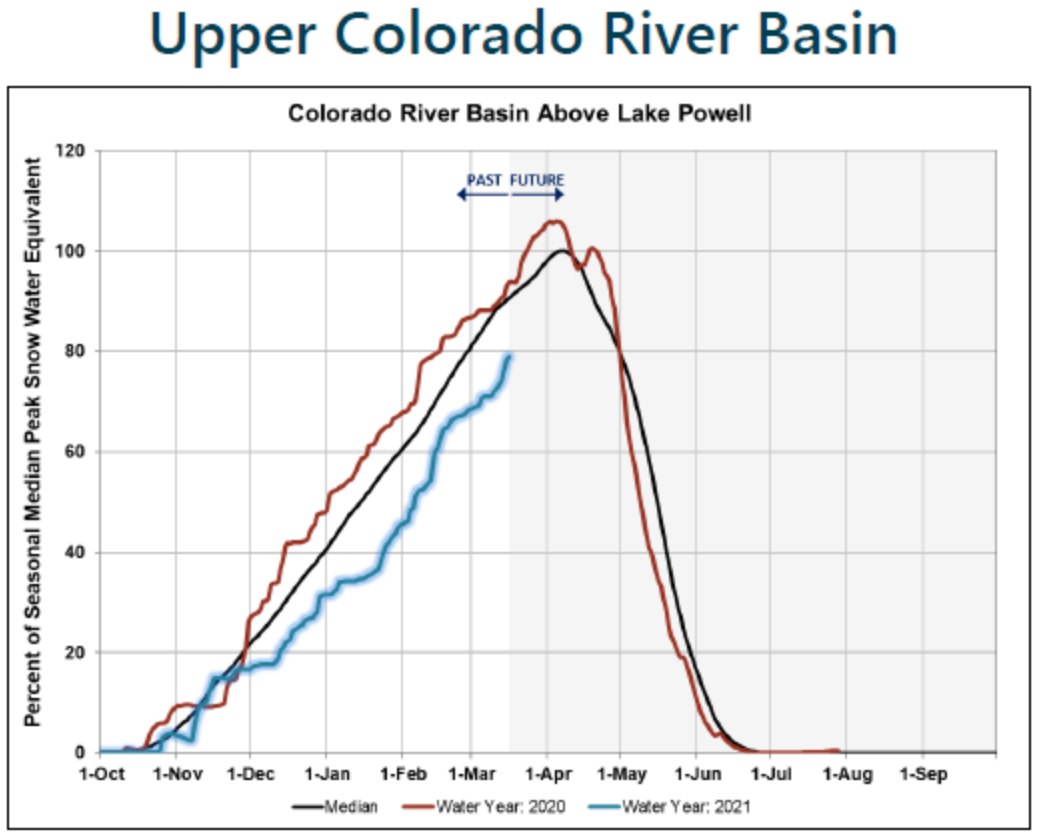


CLIMATE CONDITIONS
Upper Basin Snow Conditions

Water Supply
- Precipitation to date: 74% of average
- Snowpack to date: 72%

Forecasted Inflow to Lake Powell
- Forecasted WY 2021: 41% of average
- Forecasted Apr-Jul: 38% of average

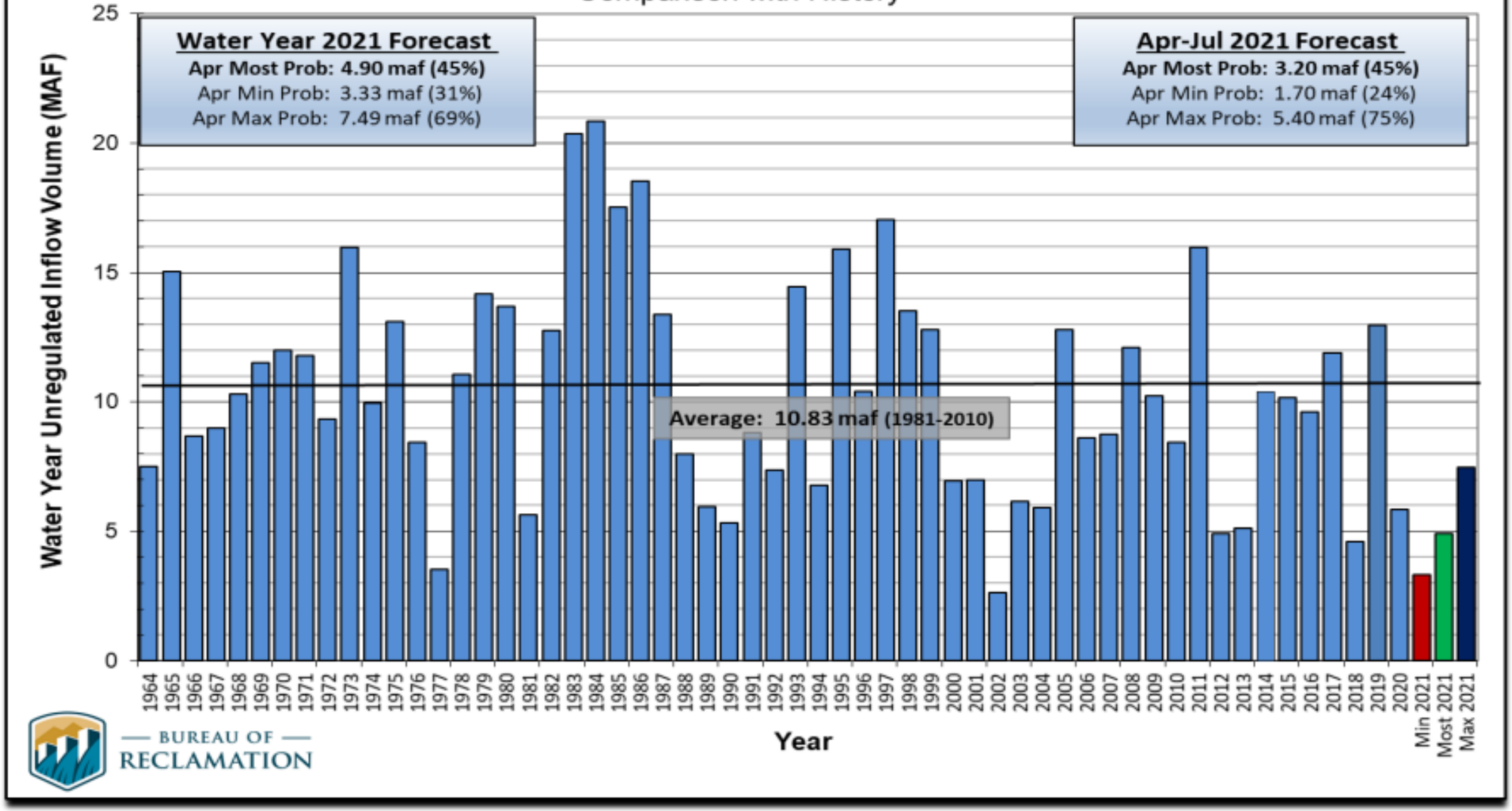
(As of Apr 19, 2021)



Lake Powell Unregulated Inflow

Water Year 2021 Forecast *(issued April 2)*

Comparison with History



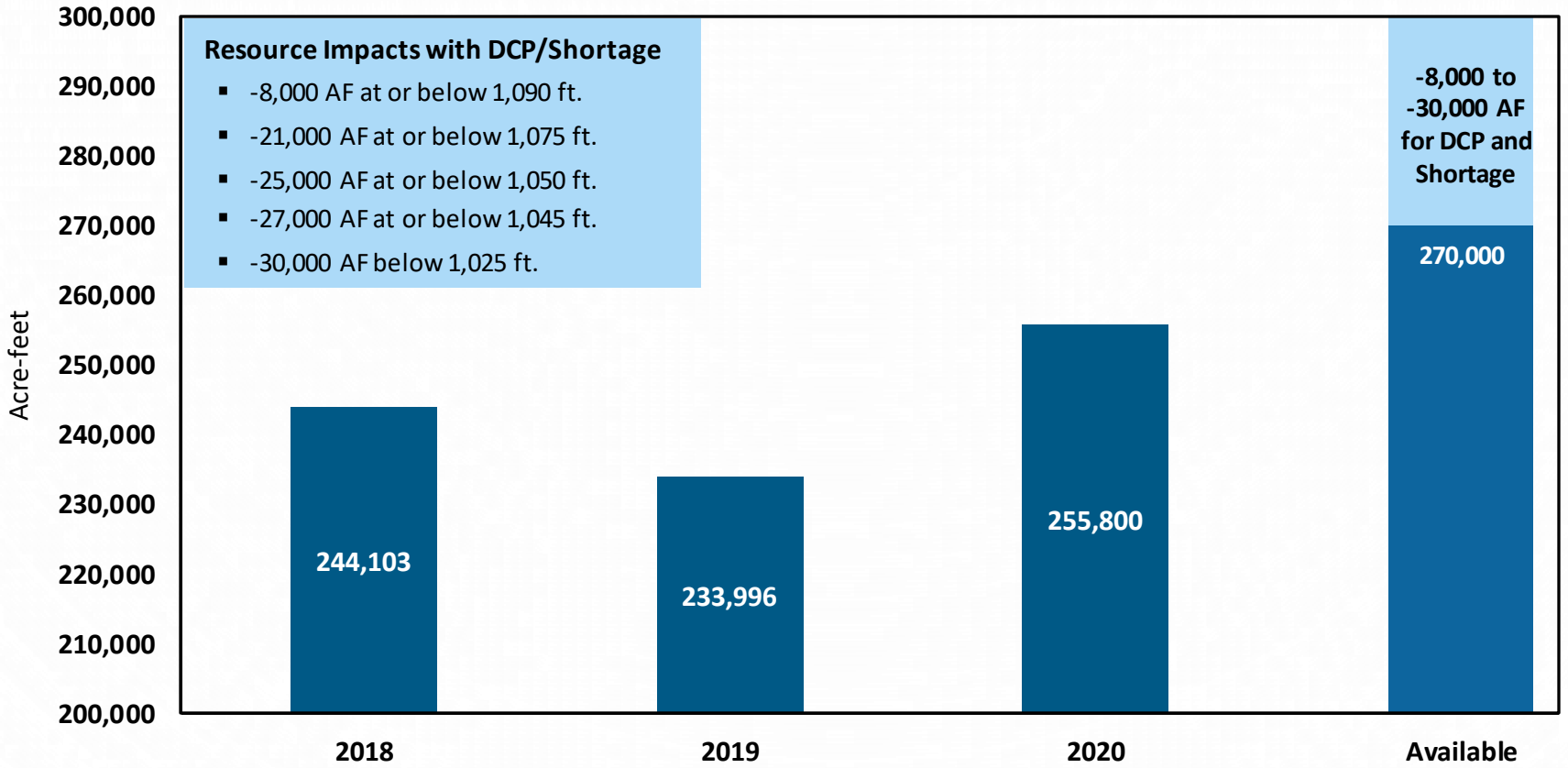
BUREAU OF RECLAMATION

NEVADA'S DCP REDUCTIONS AND SHORTAGES

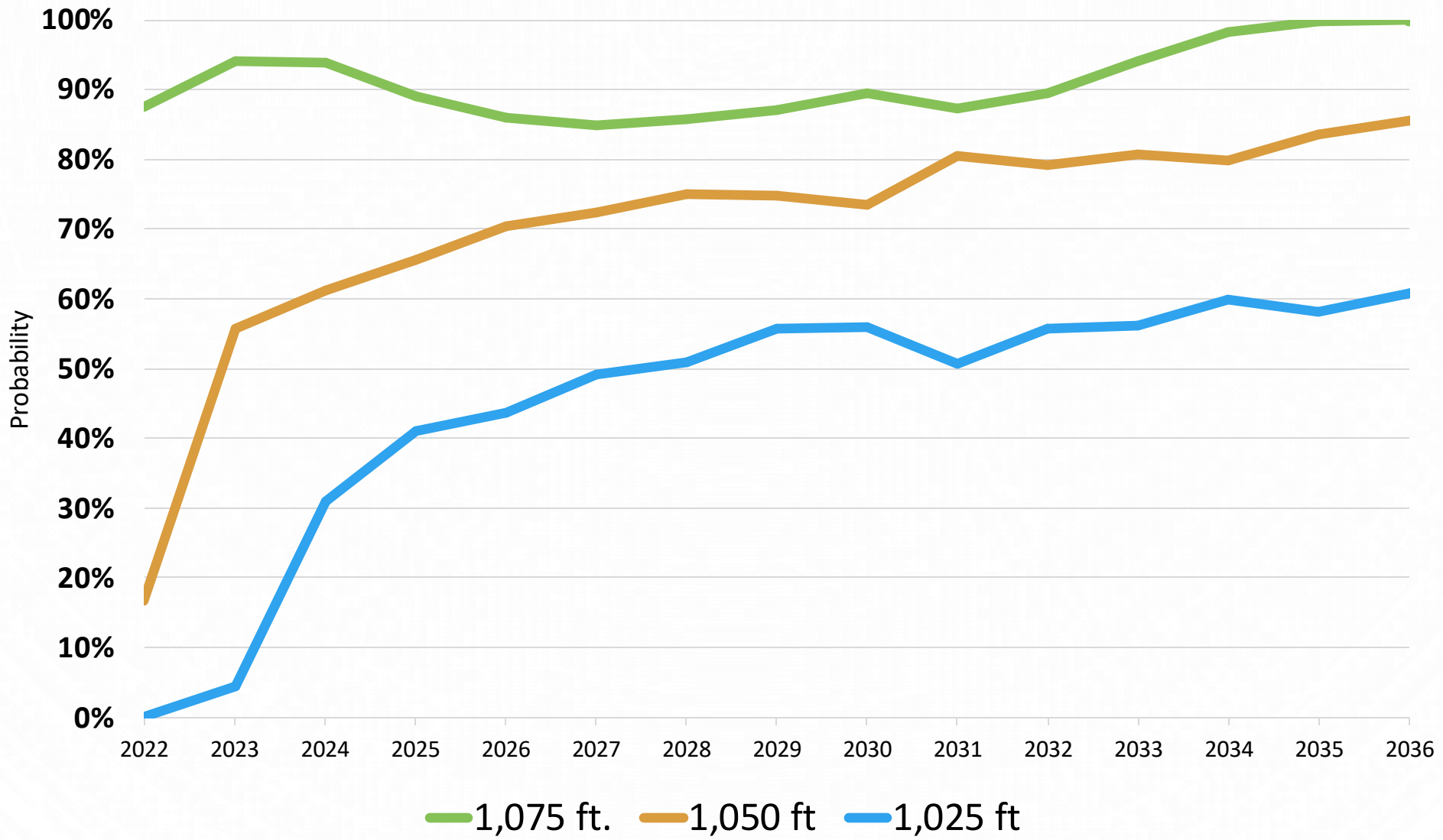
- -8,000 AF AT OR BELOW 1,090 FT.
- -21,000 AF AT OR BELOW 1,075 FT.
- -25,000 AF AT OR BELOW 1,050 FT.
- -27,000 AF AT OR BELOW 1,045 FT.
- -30,000 AF BELOW 1,025 FT.

NEVADA COLORADO RIVER CONSUMPTIVE USE

Consumptive use is up significantly for 2020.
The current trajectory is not sustainable.

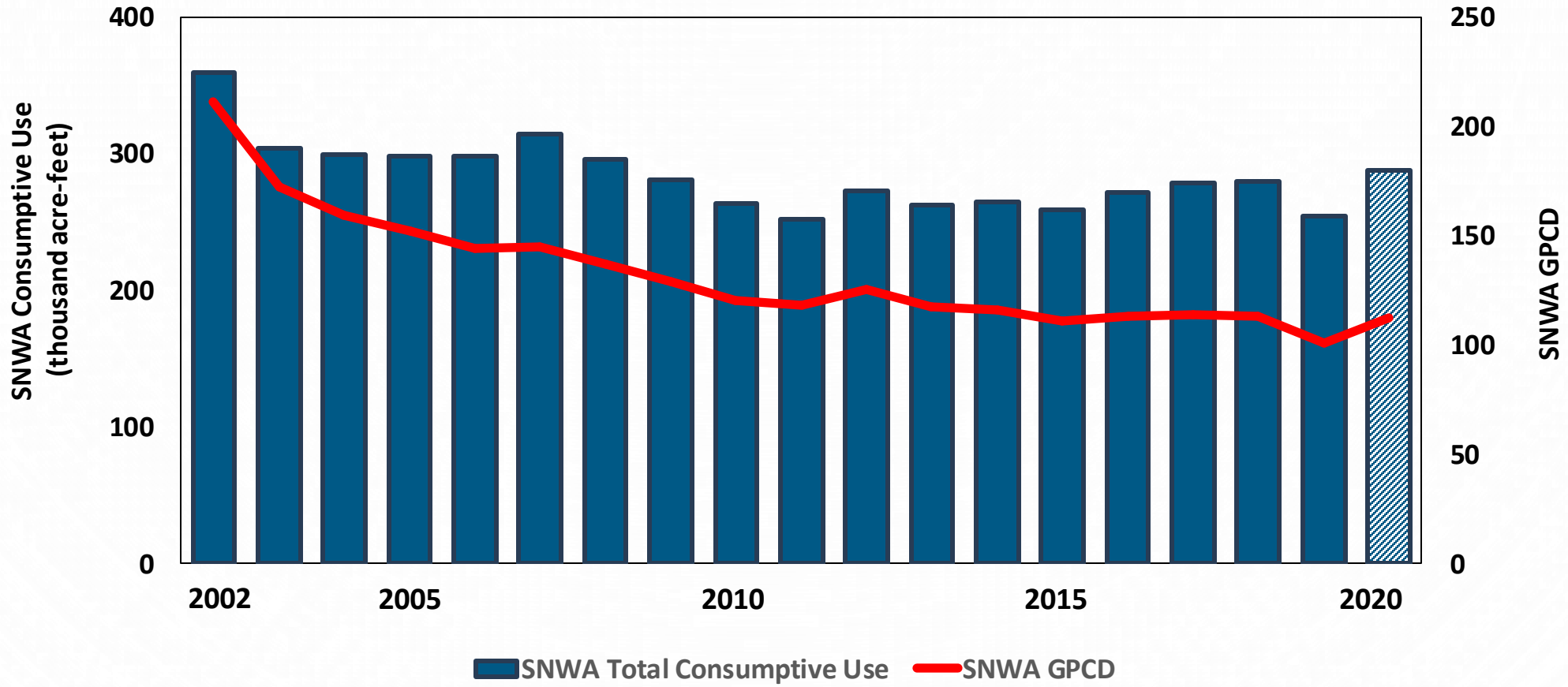


LAKE MEAD ELEVATION PROBABILITIES



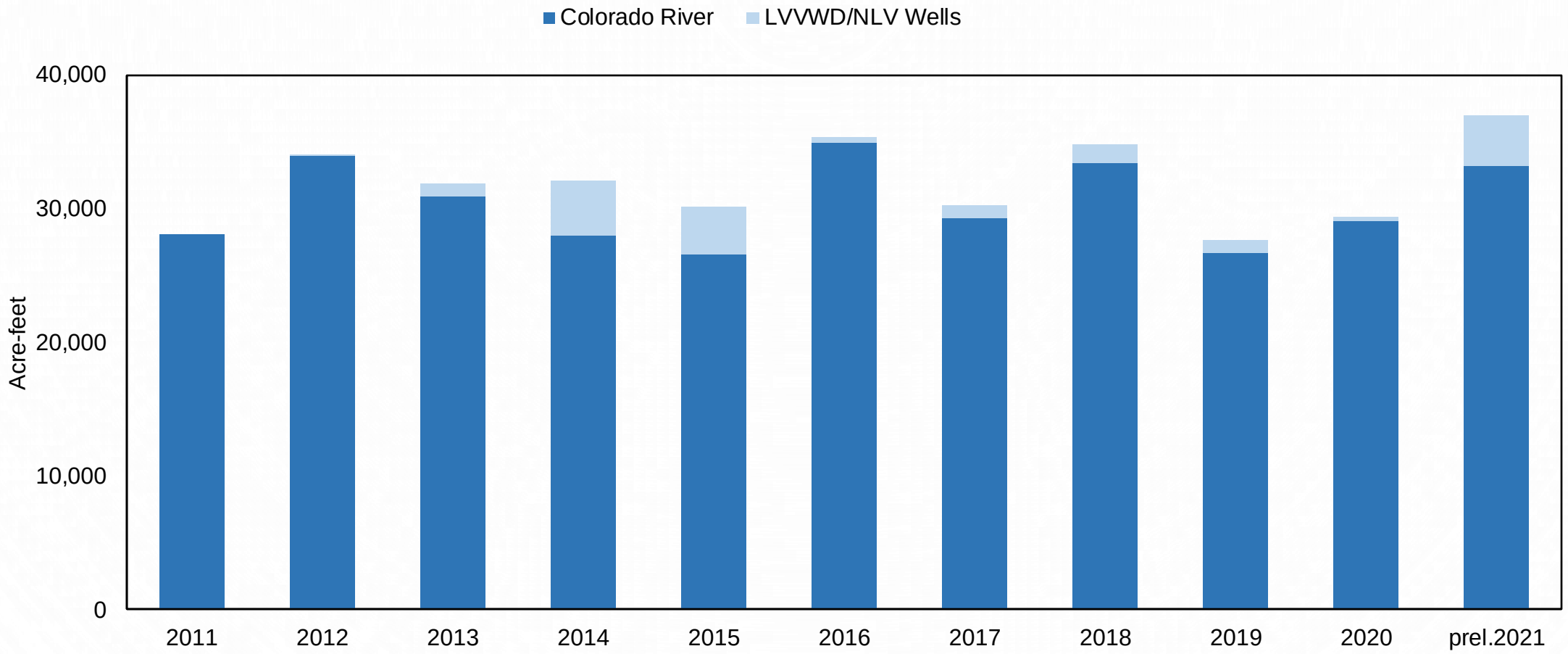
WATER USE

2020 consumptive water use ticked up from 2018 and was significantly higher than 2019. 2020 GPCD was on par with 2015 to 2018 trends.



SNWA Colorado River consumptive use without off-stream storage and SNWA member total well production.

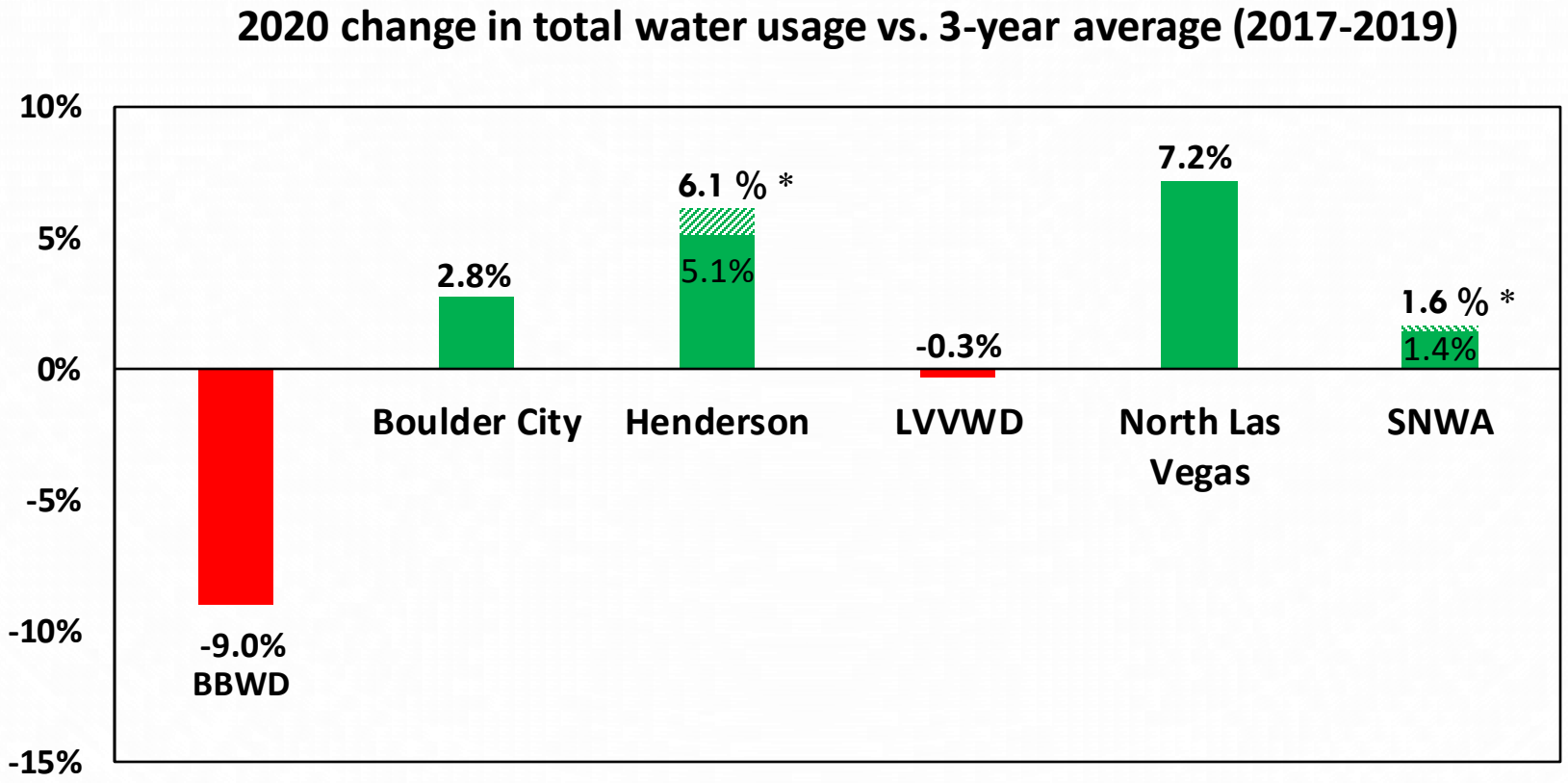
SNWA TOTAL CONSUMPTIVE USE
January – Preliminary March 2021



	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	prel.2021	
Total AF:	28,065	33,977	31,926	32,068	30,207	35,404	30,269	34,849	27,674	29,344	36,964	26.0%

WATER USE

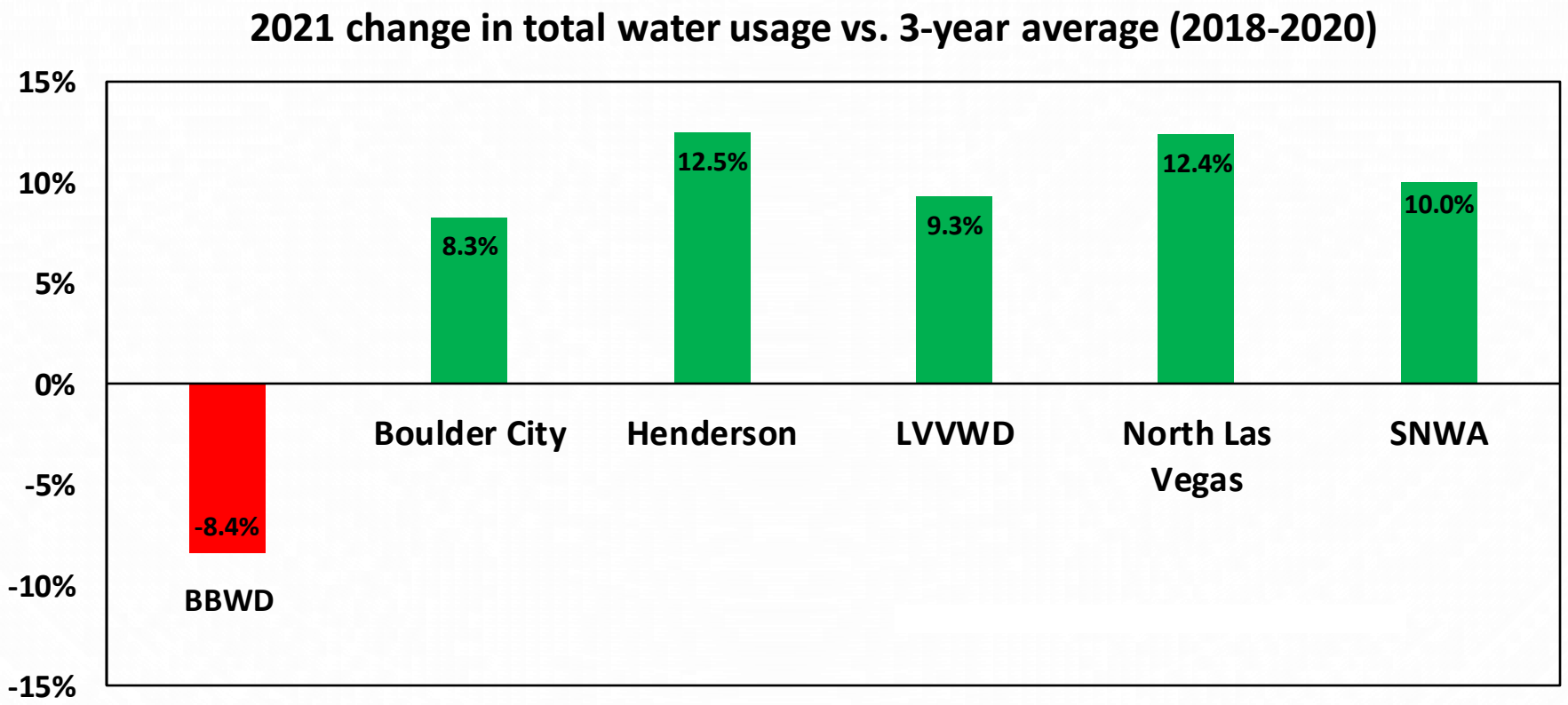
We saw increased water use across the SNWA member agency service area in 2020.



* Augmentation of potable water for reclaimed water due to pipeline outage.

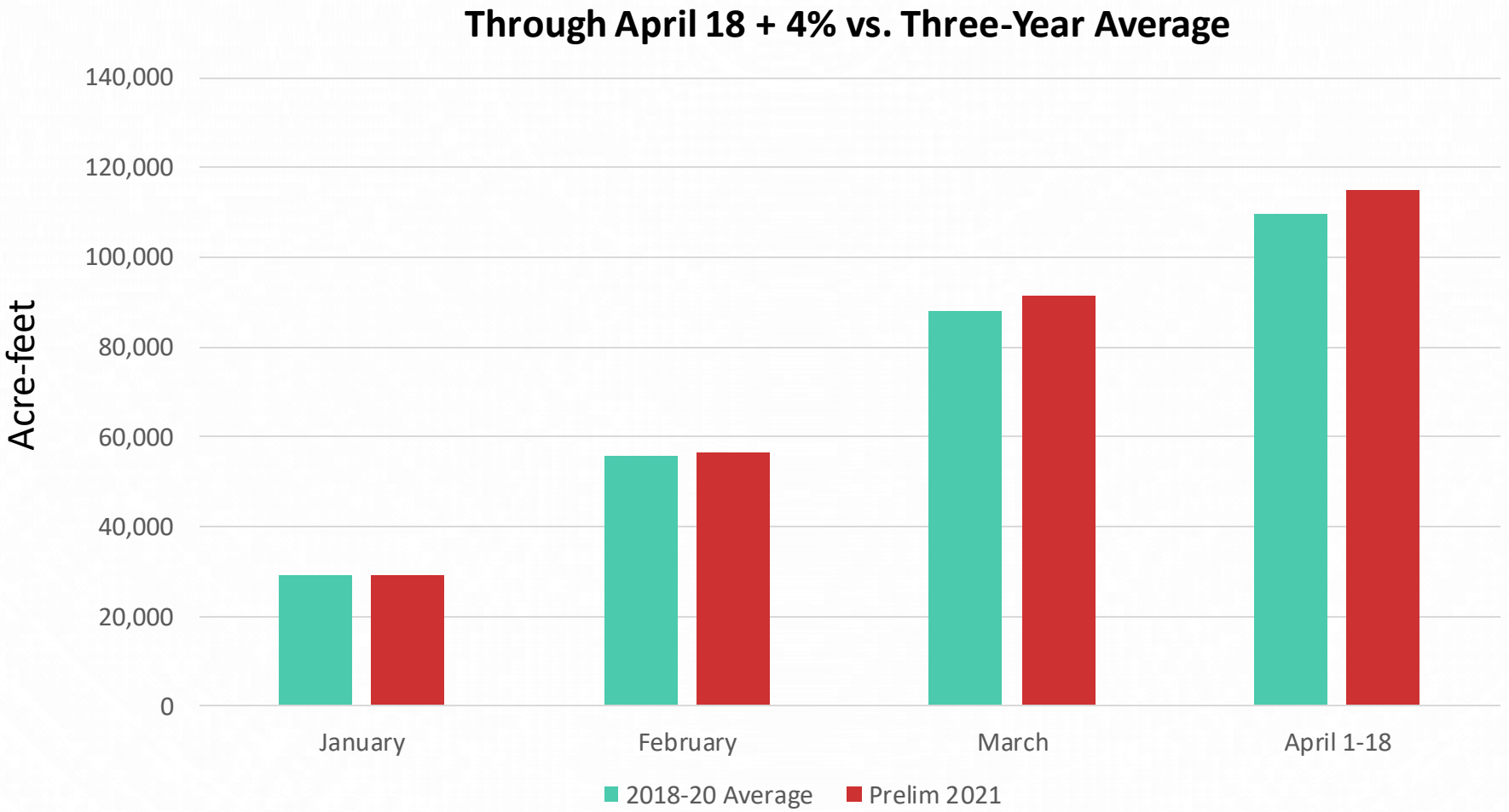
WATER USE

Early 2021 water use shows a somewhat similar pattern as 2020.



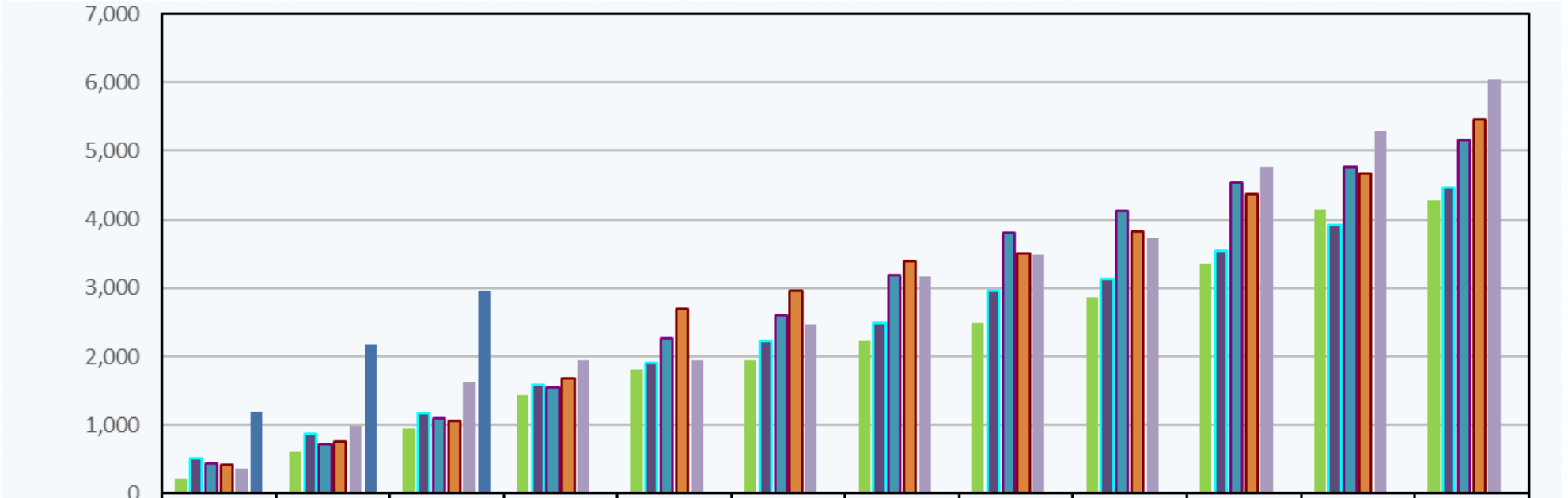
We have a lot of work to do.

SNWA WATER USE – YEAR TO DATE (ACTUAL)



Excludes direct (non-potable) reuse and Nellis AFB)

LVVWD ENGINEERING – NEW SERVICE POINTS



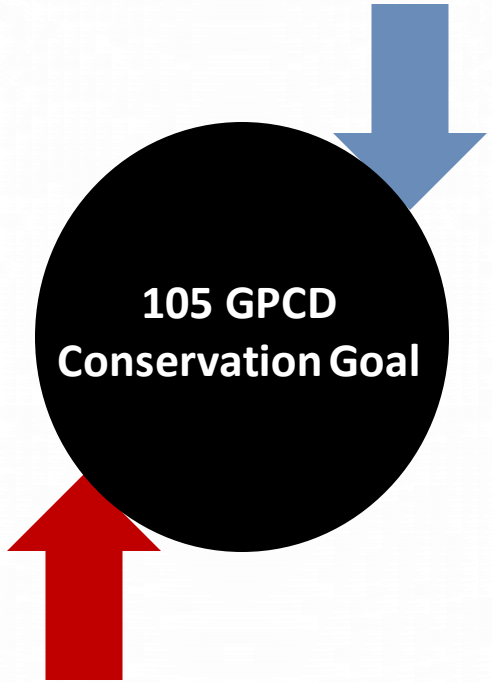
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2016	212	601	940	1,440	1,811	1,935	2,221	2,482	2,855	3,355	4,136	4,277
2017	515	869	1,172	1,594	1,903	2,230	2,483	2,950	3,135	3,536	3,917	4,464
2018	432	727	1,101	1,546	2,258	2,607	3,180	3,806	4,125	4,546	4,772	5,155
2019	426	754	1,056	1,672	2,696	2,965	3,391	3,512	3,816	4,367	4,668	5,464
2020	371	978	1,628	1,949	1,949	2,463	3,164	3,489	3,722	4,766	5,283	6,049
2021	1,200	2,172	2,949									

CONSERVATION PLANNING

The SNWA's Integrated Resource Planning Advisory Committee considered our current conservation goal and factors that will impact water use trends

Climate Change & Aging System

Increasing consumptive water demands due to warmer temperatures, drier soils lower precipitation, and increased system loss due to aging infrastructure.

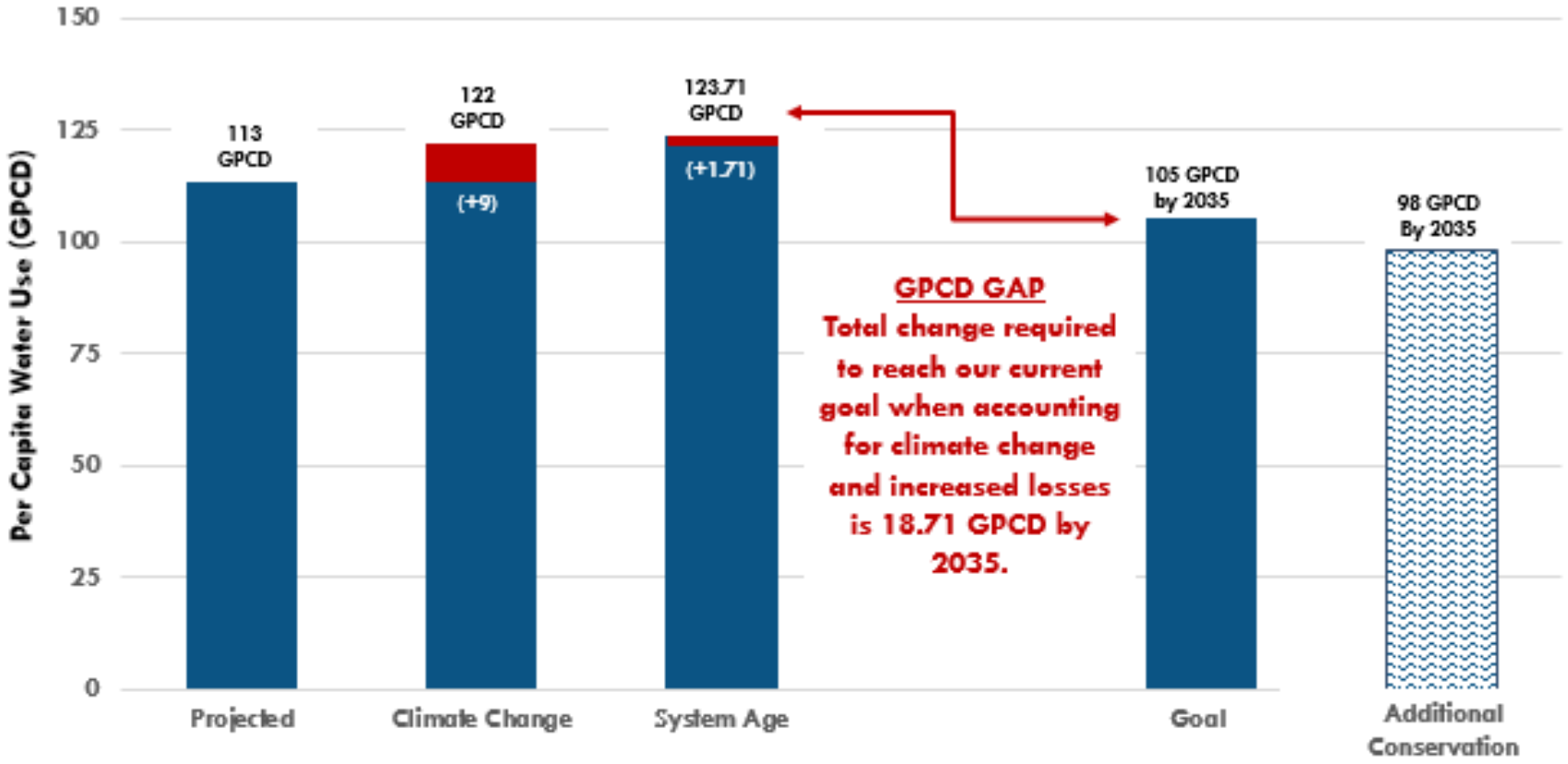


Adaptive Management

Significant additional effort will be required to reduce consumptive water use to meet our conservation goal and maximize the availability of water supplies.

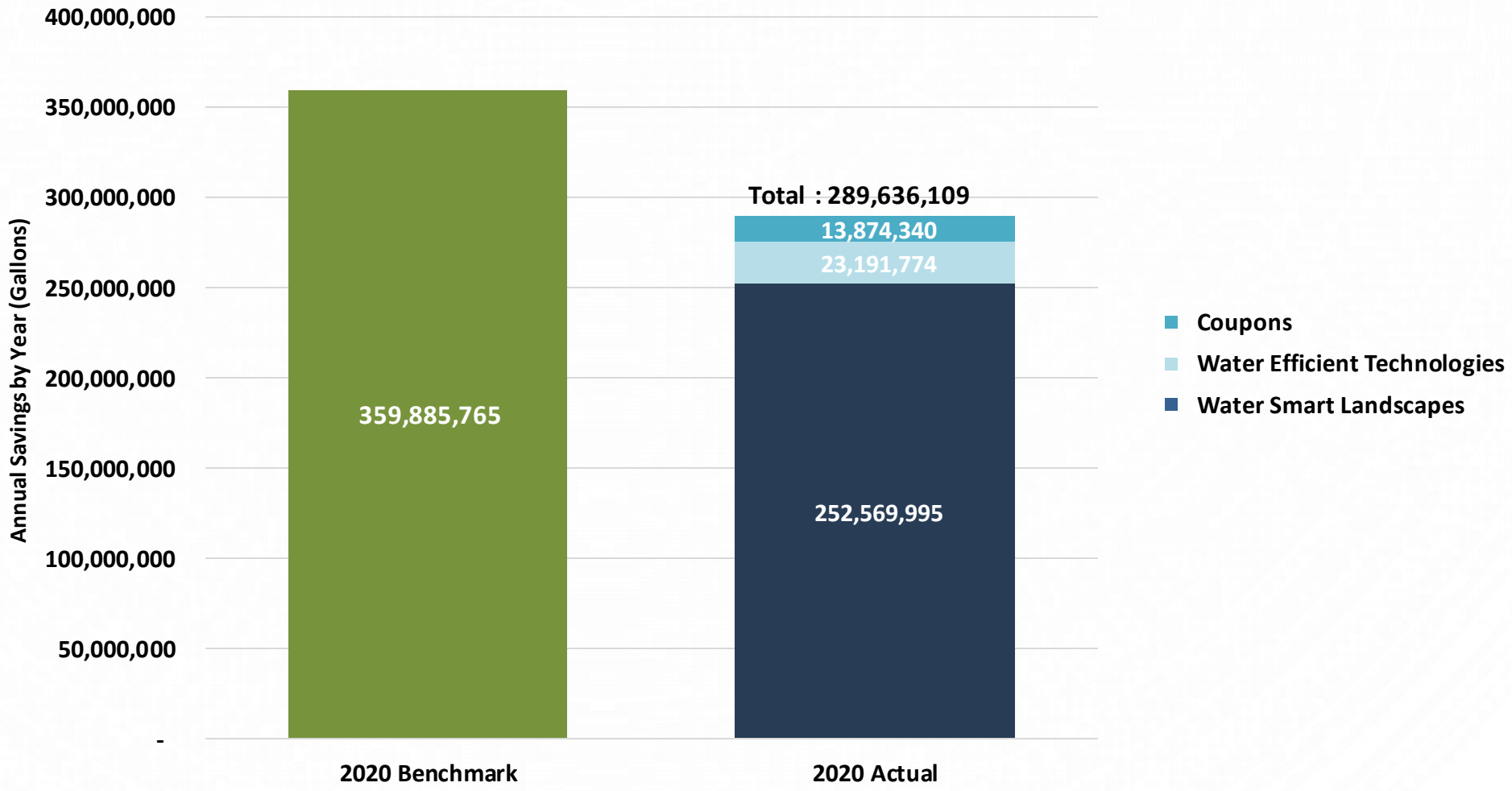
CONSERVATION PLANNING

The committee recognized that we will have to work harder to reach our conservation goal with upward pressure from climate change and system age.



CONSERVATION BENCHMARKS

Most programs underperformed, largely due to reduced demands associated the COVID-19 pandemic.



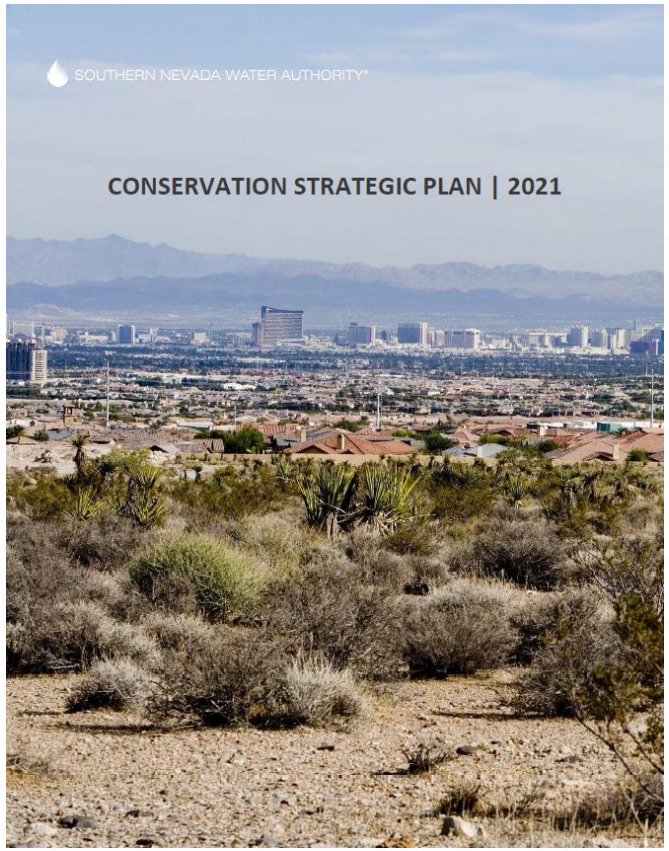
CONSERVATION STRATEGIC PLAN

The SNWA developed a Conservation Strategic Plan that integrates recommendations from IRPAC and that sets a path for continued conservation progress.

CONSERVATION STRATEGIC PLAN

Water Efficiency Goals:

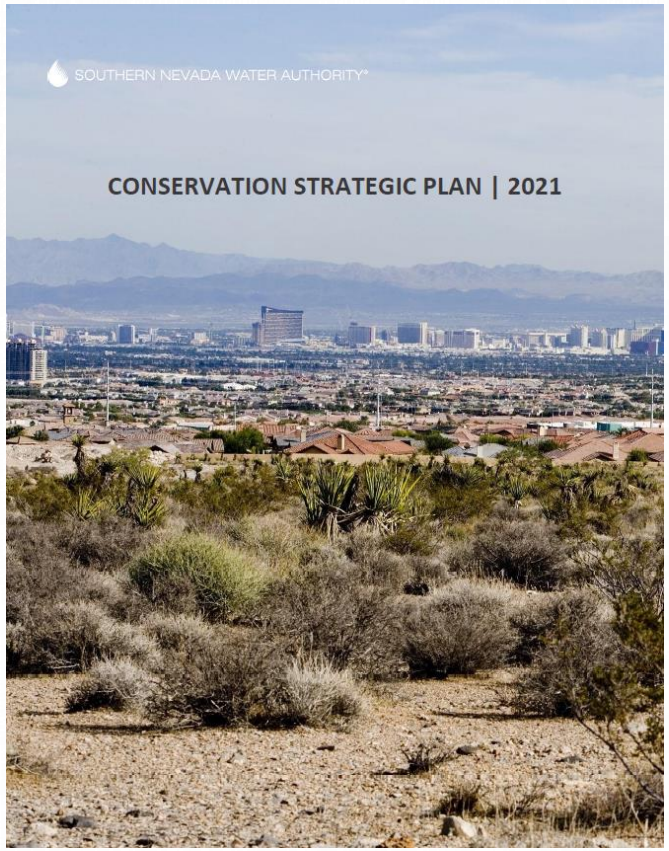
- Reduce and restrict the use of non-functional turf.
- Improve water efficiency in new development.
- Improve compliance with landscape watering restrictions and reduce water waste.
- Reduce water losses associated with evaporative cooling.
- Reduce losses associated with single-family leaks.
- Improve system efficiency through asset management.



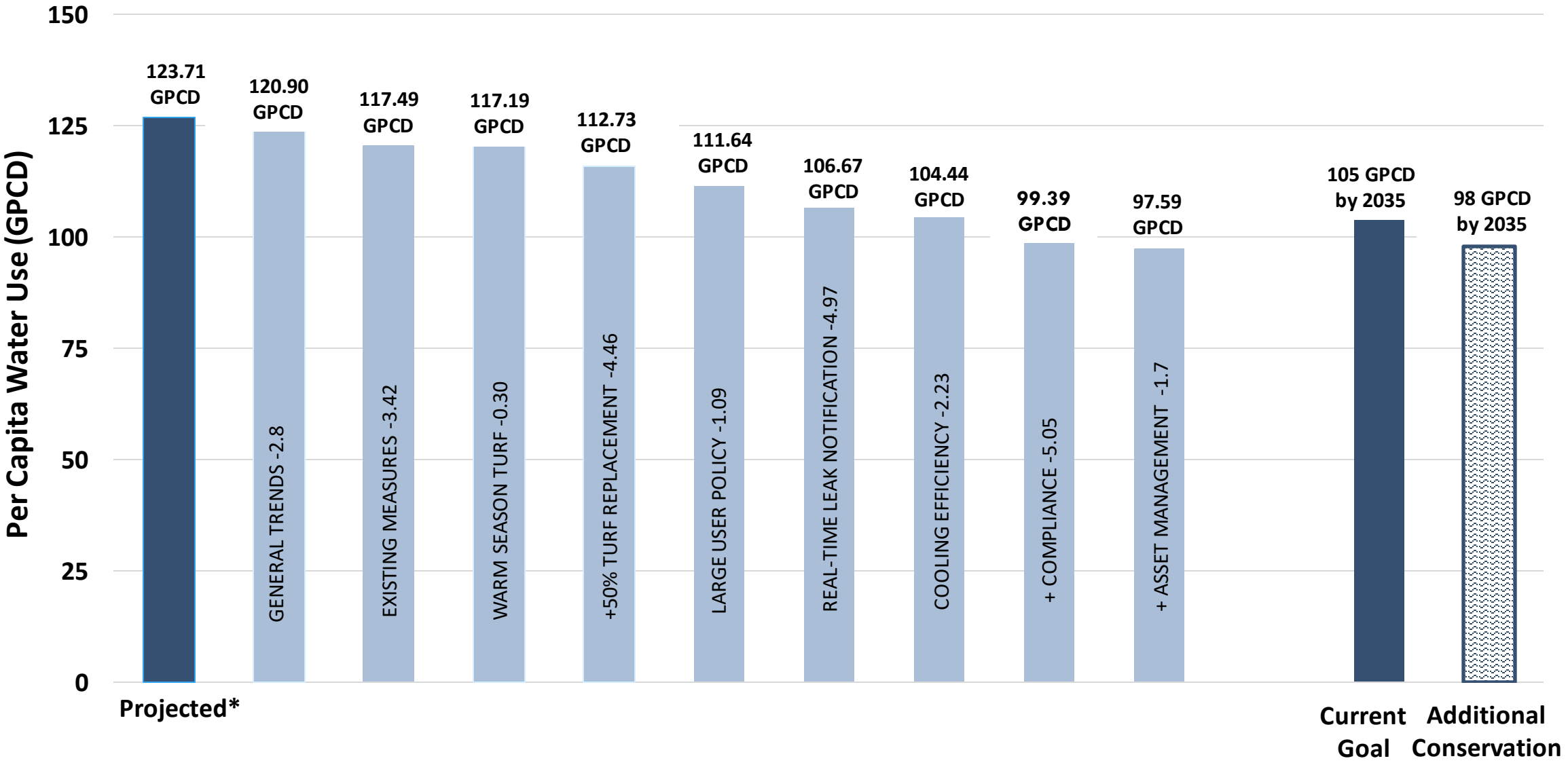
CONSERVATION STRATEGIC PLAN

Supporting Goals:

- Engage the public in water conservation efforts.
- Improve water efficiency in new development.
- Improve internal communication and collaboration.
- Use research to inform program and policy development.



THE PATH TO OUR CONSERVATION GOAL



*With climate change & system loss


SOUTHERN NEVADA WATER AUTHORITY™