

Glen Canyon Dam Adaptive Management Program FY27 Proposed Grand Canyon Monitoring and Research Center Science Activities Budget Reductions – 02 July 2026

The Bureau of Reclamation has indicated that a reduced Glen Canyon Dam Adaptive Management Program (GCDAMP) budget for FY27 is anticipated. The extent of the reduction is currently unknown but is expected to be at least 15% lower than the \$10 million funding amount anticipated in the FY25-27 Triennial Work Plan (TWP) in FY27. To accommodate a timely recommendation from the Adaptive Management Work Group, new budgets have been developed by the Bureau of Reclamation and the USGS Grand Canyon Monitoring and Research Center (GCMRC) projecting budgets at reduced levels.

The GCMRC budget plan presented here (Plan 4) was developed among GCMRC leadership and staff and seeks to maintain high-priority research and monitoring needs identified by Department of the Interior (DOI) and the Budget Ad Hoc Group (BAHG) at funding levels comparable to the original TWP while maintaining only a basic level of monitoring across other resources goals that were lower priority. We present budget reduction scenarios at the 15, 19.25, and 23.5% (19.25% and 23.5% represent an additional 5% and 10% reduction from the minimum 15% reduction; total reduction amounts at each level are \$1,500,000 at 15%, \$1,925,000 at 19.25%, and \$2,350,000 at 23.5%).

This planning assumes the federal hiring freeze will continue, and therefore any staff lost will not be replaced; cooperators may be limited in the ability to replace staff as well. Loss of staff during the hiring freeze would create a lasting impact on GCMRC and GCDAMP science capabilities that would extend into the next TWP.

For background, the GCDAMP BAHG was presented with three draft reduction plans from May 26-June 10th. The first draft reduction plan by GCMRC was distributed on May 26, 2026 (Plan 1); it preserved, fully intact, field monitoring efforts for each resource goal, which was identified as a priority in the BAHG. Evaluation of the plan produced written comments from 8 member organizations, and it was found to be lacking, particularly in the effort to support monitoring concerns regarding Humpback Chub.

Plan 2 was considered by the BAHG on June 5th. Plan 2 fully protected the priorities planned in the TWP regarding threatened Humpback Chub; however, the required budget reductions resulted in the complete elimination of effort on several Long Term Experimental and Management Plan (LTEMP) resources. The BAHG noted that the elimination of effort on entire LTEMP goals from the monitoring plan and budget would result in a loss of GCMRC expertise from the program providing no support for potential emerging issues, scientist

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participation in stakeholder meetings, or the completion of work previously invested in by the program. Additionally, questions were raised regarding the sufficiency of Plan 2 to address GCDAMP LTEMP responsibilities.

A third draft budget plan (Plan 3) was evaluated by the BAHG on June 8 that addressed the program support concerns that were generated so sharply in Draft 2. For Plan 3, Project Lead funding was protected to ensure continuity of the workplan/science and retention of capacity and expertise to complete the investment the GCDAMP has put forth in the FY25-27 workplan. FY27 is the final year in the current work plan; efforts need to be concluded to preserve the work conducted over the previous two years. Future TWP's may not include aspects that were included in the current work plan, especially if funding levels remain reduced. Additional identified program interests that were accommodated in Plan 3 include full support as needed for meetings (ad hoc groups, TWG, AMWG, etc.), expert participation in FY28-30 TWP planning that starts this fall, participation in workshops and knowledge assessments etc. related to the program's 10-year review, support for emerging issues, and a sustained program effort and attention to the relevant LTEMP resources.

Following presentation of Plans 1-3 on June 8, the BAHG concluded that more time was needed for GCMRC staff to develop a plan that minimizes impact to program priorities. Each of the previous plans was developed with a different strategy, protecting various program priorities, but the extent of the reduction makes it difficult to address all concerns. More careful planning between projects and with cooperators, in consideration of existing capacity limits, was expected to better generate a "middle-of-the-road" plan to protect all program priorities to the extent possible. Draft plans 2 and 3 were identified as preferred of the three drafts for continued planning. The BAHG also recommended prioritizing the capture of data related to the current unique and rapidly changing resource conditions expected in FY27.

The Technical Work Group (TWG) met on June 10, endorsing the BAHG recommendation to continue developing the budget plan. The result of this additional time and effort afforded by the BAHG and TWG recommendations is Plan 4, presented in detail, below.

GCMRC Budget Plan and Process

Plan 4 presented here was developed collaboratively by GCMRC leadership and staff. The plan outlines project funding that is maximally responsive to BAHG feedback and survey results without creating lasting negative impacts on long-term capability. Project Leads will be required to carefully examine their efforts and find ways to reach target reductions while minimizing the impact on the information anticipated in the TWP.

For Plan 4, a new budget, referred to here as the Capacity-Limited Budget, was developed internally at GCMRC as a starting point. Project Leads considered the staff losses and funding reductions applied in FY26 and replanned their FY27 Project Plan from the TWP in light of the new constraints. Target

reduction amounts, which are derived from BAHG survey scores, were applied to travel, operating expenses, logistics, and cooperative agreements. Critical close cooperators (e.g., FWS, AGFD, and AZ Water Science Center) were not reduced when that reduction was expected to create a long-term capacity reduction for the program.

For the development of the previous plans (Plans 1-3 described above) and the effort in for FY26, reduction targets were modified proportionally to relative element funding amount to ease the burden on project elements with relatively small budgets. Plan 4 has no such budget modifier applied since elements were protected from reductions impacting long-term capacity (elements cannot be eliminated by targets in this plan) and to maximize the influence of BAHG survey scores.

For the previous FY27 plans (1-3), certain project elements were excluded from reductions to avoid impacts to science. For this plan, all project elements are given reduction targets since there is time to potentially find creative ways of reaching those reductions.

In FY26, the GCMRC budget was reduced by 15%, but many impacts to science (and basic operations) were minimized through sharing of staff and combining field efforts to recoup what was possible of unfunded TWP efforts. That planning takes considerable time and contribution from the involved Project Leads to consider details of the planned efforts and the specific capacity limitations faced by each project. The plan presented here is expected to improve as sharing and other cost reduction strategies are identified. Plan 4 provides BAHG survey score derived reduction goals for each project element that collectively can meet the total reduction required.

With time to develop cost saving strategies through negotiation with cooperators, assessment of data sufficiency within specific elements, staff sharing arrangements, proposal writing for external funding (outside GCDAMP) to cover staff, etc., it is hoped that many project elements will be maintained as close to TWP planning as possible with target reductions, but there will inevitably be situations where cost savings identified are unable to compensate for the reduction targets. At the higher reduction levels, finding the amount of savings that would be required to offset the reduction targets with minimal impact is likely not possible. Survey results and feedback from the BAHG will be used to reduce elements as needed (including some impacts to science and potential capacity loss when necessary) to support higher scoring elements.

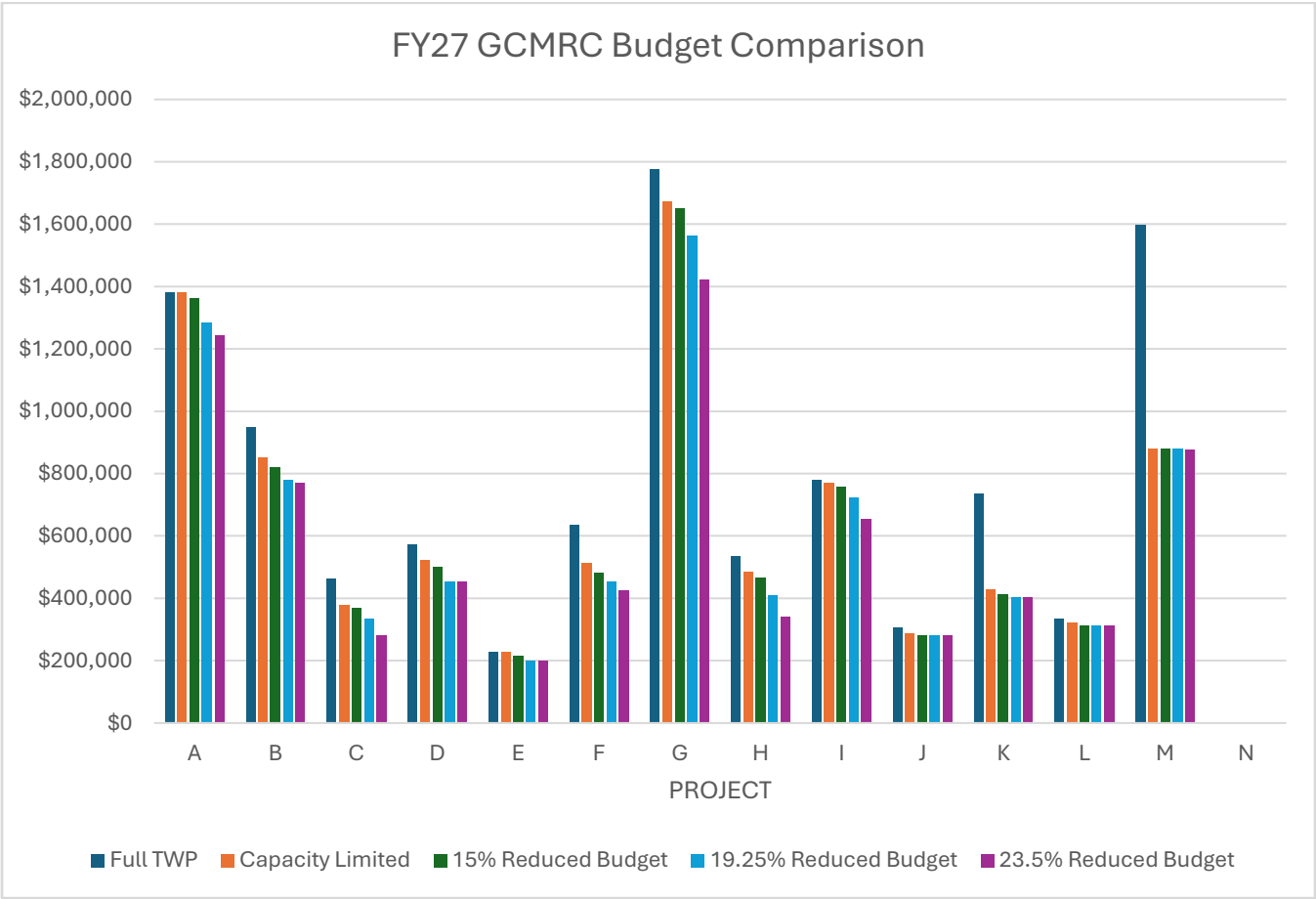
Presented below is the GCMRC Budget Reduction Plan for FY27 for 15%, 19.25%, and 23.5% reductions from the FY25-27 TWP.

Fiscal Year 2027													
Project	Project Description	FY27 Capacity Limited Total	Capacity Percent Reduction from FY25-27 TWP	GRAND AVE RANK	15% Reduction	15% Reduction from capacity limit	15% Reduced Budget	19.25% Reduction	19.25% Reduction from capacity limit	19.25% Reduced Budget	23.5% Reduction	23.5% Reduction from capacity limit	23.5% Reduced Budget
A	Streamflow, Water Quality, and Sediment Transport and Budgeting in the Colorado River Ecosystem												
A.1	Stream gaging and hydrologic analyses	\$448,415	0.30%	3.2	\$2,818	0.64%	\$440,597	\$13,612	3.07%	\$429,803	\$34,389	7.76%	\$409,026
A.2	Continuous water quality parameters	\$228,735	5.34%	8.7	\$3,979	1.74%	\$224,756	\$19,217	8.40%	\$209,518	\$37,679	16.47%	\$191,056
A.3	Sediment transport and budgeting	\$709,490	-2.06%	9.3	\$13,291	1.87%	\$696,199	\$64,192	9.05%	\$645,298	\$68,605	9.67%	\$640,885
	Total A	\$1,381,640	0.00%	7.1	\$20,088	1.45%	\$1,361,552	\$97,020	7.02%	\$1,284,620	\$140,673	10.18%	\$1,240,967
B	Sandbar and Sediment Storage Monitoring and Research												
B.1	Sandbar and campsite monitoring with topographic surveys and remote cameras	\$366,309	6.88%	14.0	\$10,293	2.81%	\$356,016	\$49,713	13.57%	\$316,596	\$58,850	16.07%	\$307,459
B.2	Bathymetric and topographic mapping for monitoring sediment storage and riverbed dynamics	\$484,356	12.97%	30.5	\$22,344	4.61%	\$462,012	\$22,344	4.61%	\$462,012	\$22,344	4.61%	\$462,012
B.3	Control network and survey support	\$-			\$0	0.00%	\$0	\$0	0.00%	\$0	\$0	0.00%	\$0
B.4	Streamflow, sediment, and sandbar modeling	\$-			\$0	0.00%	\$0	\$0	0.00%	\$0	\$0	0.00%	\$0
	Total B	\$850,665	10.45%	22.3	\$32,637	3.84%	\$818,028	\$72,057	8.47%	\$778,608	\$81,194	9.54%	\$769,471
C	Riparian Vegetation Monitoring and Research												
C.1	Ground-based riparian vegetation monitoring	\$300,593	1.22%	15.2	\$9,150	3.04%	\$291,443	\$44,194	14.70%	\$256,399	\$99,032	32.95%	\$201,561
C.2	Determining hydrological tolerances and management tools for plant species of interest	\$-		42.7	\$0	0.00%	\$0	\$0	0.00%	\$0	\$0	0.00%	\$0
C.3	Predictive models and synthesis	\$25,911	34.08%	39.5	\$0	0.00%	\$25,911	\$0	0.00%	\$25,911	\$0	0.00%	\$25,911
C.4	Biogeomorphic Linkages between streamflow, sediment transport, and vegetation composition	\$51,613	3.85%	35.7	\$0	0.00%	\$51,613	\$0	0.00%	\$51,613	\$0	0.00%	\$51,613
C.5	Vegetation management decision support	\$-			\$0	0.00%	\$0	\$0	0.00%	\$0	\$0	0.00%	\$0
	Total C	\$378,117	18.09%	33.3	\$9,150	2.42%	\$368,967	\$44,194	11.69%	\$333,923	\$99,032	26.19%	\$279,085
D	Effects of Dam Operations and Vegetation Management for Archaeological Sites						\$0						
D.1	Monitoring the effects of dam operations on archaeological sites	\$345,133	9.21%	16.3	\$11,315	3.28%	\$333,818	\$54,646	15.83%	\$290,487	\$56,521	16.38%	\$288,612
D.2	Monitoring landscape-scale ecosystem change with repeat photography	\$74,914	6.29%	38.7	\$2,940	3.92%	\$71,974	\$2,940	3.92%	\$71,974	\$2,940	3.92%	\$71,974
D.3	Evaluating effects of LTEMP non-flow actions and other experimental vegetation management on archaeological sites	\$101,134	10.76%	33.0	\$6,699	6.62%	\$94,435	\$9,800	9.69%	\$91,334	\$9,800	9.69%	\$91,334
D.4	Pilot study to evaluate potential to extract cultural and ecological information from Colorado River deposits using eDNA and pollen	\$-			\$0	0.00%	\$0	\$0	0.00%	\$0	\$0	0.00%	\$0
D.5	Monitoring petroglyphs and pictographs with photogrammetry and lidar	\$-			\$0	0.00%	\$0	\$0	0.00%	\$0	\$0	0.00%	\$0
	Total D	\$521,181	9.11%	29.3	\$20,953	4.02%	\$500,228	\$67,386	12.93%	\$453,795	\$69,261	13.29%	\$451,920
E	Controls on Ecosystem Productivity: Nutrients, Flow, and Temperature												
E.1	Phosphorus budgeting in the Colorado River	\$64,719	-8.96%	33.7	\$3,430	5.30%	\$61,289	\$3,430	5.30%	\$61,289	\$3,430	5.30%	\$61,289
E.2	Rates and composition of primary producers in the Colorado River	\$93,534	8.77%	33.3	\$6,258	6.69%	\$87,276	\$19,276	20.61%	\$74,258	\$19,276	20.61%	\$74,258
E.3	Understanding the energetic basis of the food web in Western Grand Canyon	\$-			\$0	0.00%	\$0	\$0	0.00%	\$0	\$0	0.00%	\$0
E.4	Productivity at higher trophic levels	\$68,182	-3.30%	34.8	\$2,940	4.31%	\$65,242	\$2,940	4.31%	\$65,242	\$2,940	4.31%	\$65,242
	Total E	\$226,435	0.65%	33.9	\$12,628	5.58%	\$213,807	\$25,646	11.33%	\$200,789	\$25,646	11.33%	\$200,789
F	Aquatic Invertebrate Ecology												
F.1	Invertebrate and bat monitoring in Marble and Grand Canyons	\$237,951	-1.84%	36.7	\$17,512	7.36%	\$220,439	\$17,640	7.41%	\$220,311	\$17,640	7.41%	\$220,311
F.2	Aquatic invertebrate monitoring in Glen Canyon	\$142,931	18.67%	30.5	\$3,247	2.27%	\$139,684	\$3,247	2.27%	\$139,684	\$3,247	2.27%	\$139,684
F.3	Aquatic invertebrate monitoring of Grand Canyon tributaries	\$82,804	28.20%	34.5	\$5,734	6.92%	\$77,070	\$27,693	33.44%	\$55,111	\$57,500	69.44%	\$25,304
F.4	Invertebrate and fish diet studies	\$49,154	54.71%	38.8	\$3,831	7.79%	\$45,323	\$10,607	21.58%	\$38,547	\$10,607	21.58%	\$38,547
	Total F	\$512,840	19.02%	35.1	\$30,324	5.91%	\$482,516	\$59,186	11.54%	\$453,654	\$88,993	17.35%	\$423,847

Project	Project Description	FY27 Capacity Limited Total	Capacity Percent Reduction from FY25-27 TWP	GRAND AVE RANK	15% Reduction	15% Reduction from capacity limit	15% Reduced Budget	19.25% Reduction	19.25% Reduction from capacity limit	19.25% Reduced Budget	23.5% Reduction	23.5% Reduction from capacity limit	23.5% Reduced Budget
G	Humpback Chub Population Dynamics throughout the Colorado River Ecosystem												
G.1	Humpback chub population modeling	\$261,104	-1.98%	4.8	\$2,533	0.97%	\$258,571	\$12,234	4.69%	\$248,870	\$12,740	4.88%	\$248,364
G.2	Annual spring/fall HBC abundance estimates in the lower 13.6 km of the LCR	\$586,363	1.91%	6.0	\$7,064	1.20%	\$579,499	\$34,116	5.82%	\$552,447	\$86,193	14.69%	\$500,370
G.3	Juvenile chub monitoring near the LCR confluence (JCM-East)	\$549,789	12.77%	7.5	\$8,276	1.51%	\$541,513	\$39,972	7.27%	\$509,817	\$100,986	18.37%	\$448,803
G.4	Remote PIT-tag array monitoring in the LCR	\$28,463	43.03%	20.5	\$879	3.09%	\$27,584	\$4,248	14.92%	\$24,215	\$5,670	19.92%	\$22,793
G.5	Monitoring humpback chub aggregation relative abundance and distribution	\$246,063	2.81%	7.7	\$3,786	1.54%	\$242,277	\$18,287	7.43%	\$227,776	\$46,202	18.78%	\$199,861
G.6	Juvenile chub monitoring - Western Grand Canyon (JCM-West)	\$0			\$0	0.00%	\$0	\$0	0.00%	\$0	\$0	0.00%	\$0
G.7	Chute Falls translocations	\$-			\$0	0.00%	\$0	\$0	0.00%	\$0	\$0	0.00%	\$0
G.8	Sampling of springs in the upper LCR	\$-			\$0	0.00%	\$0	\$0	0.00%	\$0	\$0	0.00%	\$0
G.9	Movement in western Grand Canyon from system-wide antenna monitoring	\$-			\$0	0.00%	\$0	\$0	0.00%	\$0	\$0	0.00%	\$0
	Total G	\$1,671,982	5.80%	9.3	\$22,539	1.35%	\$1,649,443	\$108,856	6.51%	\$1,563,126	\$251,791	15.06%	\$1,420,191
H	Salmonid Research and Monitoring												
H.1	Rainbow trout fishery monitoring in Glen Canyon	\$99,578	0.30%	18.2	\$0	0.00%	\$99,578	\$0	0.00%	\$99,578	\$0	0.00%	\$99,578
H.2	Experimental flow assessment of trout recruitment (TRGD)	\$292,641	13.14%	24.2	\$14,195	4.85%	\$278,446	\$68,556	23.43%	\$224,085	\$138,984	47.49%	\$153,657
H.3	Salmonid modeling	\$92,095	4.28%	32.3	\$5,880	6.38%	\$86,215	\$5,880	6.38%	\$86,215	\$5,880	6.38%	\$86,215
	Total H	\$484,314	9.14%	24.9	\$20,075	4.14%	\$464,239	\$74,436	15.37%	\$409,878	\$144,864	29.91%	\$339,450
I	Non-native Invasive Species Monitoring and Research												
I.1	System-wide native fishes and invasive aquatic species monitoring	\$374,698	2.47%	3.2	\$2,382	0.64%	\$372,316	\$11,502	3.07%	\$363,196	\$29,060	7.76%	\$345,638
I.2	Estimating kinship and spawner abundance of warm-water non-natives	\$18,408	0.50%	16.5	\$610	3.31%	\$17,798	\$2,058	11.18%	\$16,350	\$2,058	11.18%	\$16,350
I.3	Identifying emerging threats to the Colorado River Ecosystem using environmental DNA	\$111,044	1.53%	17.0	\$3,789	3.41%	\$107,255	\$18,299	16.48%	\$92,745	\$46,233	41.63%	\$64,811
I.4	Modeling population dynamics and improving forecasting tools for smallmouth bass and other non-native fish	\$263,798	0.11%	5.7	\$3,000	1.14%	\$260,798	\$14,491	5.49%	\$249,307	\$36,610	13.88%	\$227,188
	Total I	\$767,948	1.49%	10.6	\$9,781	1.27%	\$758,167	\$46,350	6.04%	\$721,598	\$113,961	14.84%	\$653,987
J	Socioeconomic Research												
J.1	Integrated models for adaptive management	\$156,853	5.14%	19.3	\$3,920	2.50%	\$152,933	\$3,920	2.50%	\$152,933	\$3,920	2.50%	\$152,933
J.2	Recreation monitoring and research	\$130,991	6.38%	31.7	\$1,960	1.50%	\$129,031	\$1,960	1.50%	\$129,031	\$1,960	1.50%	\$129,031
J.3	Tribal resources research	\$-		34.5	\$0	0.00%	\$0	\$0	0.00%	\$0	\$0	0.00%	\$0
	Total J	\$287,844	5.71%	28.5	\$5,880	2.04%	\$281,964	\$5,880	2.04%	\$281,964	\$5,880	2.04%	\$281,964
K	Geospatial Science, Data Management, and Technology												
K.1	Enterprise GIS, geospatial analysis, and processing	\$168,161	23.57%	30.2	\$9,408	5.59%	\$158,753	\$9,408	5.59%	\$158,753	\$9,408	5.59%	\$158,753
K.2	Data management and database administration	\$216,261	56.47%	14.7	\$4,453	2.06%	\$211,808	\$4,704	2.18%	\$211,557	\$4,704	2.18%	\$211,557
K.3	Data telemetry and field engineering	\$42,417	74.83%	20.8	\$1,774	4.18%	\$40,643	\$8,566	20.20%	\$33,851	\$9,849	23.22%	\$32,568
	Total K	\$426,839	50.84%	21.9	\$15,634	3.66%	\$411,205	\$22,678	5.31%	\$404,161	\$23,961	5.61%	\$402,878
L	Overflight Remote Sensing in Support of GCDAMP and LTEMP												
L.1	Analysis and interpretation of overflight remote sensing data	\$322,233	3.03%	34.3	\$11,760	3.65%	\$310,473	\$11,760	3.65%	\$310,473	\$11,760	3.65%	\$310,473
L.2	Acquisition of overflight remote sensing imagery	\$-			\$0	0.00%	\$0	\$0	0.00%	\$0	\$0	0.00%	\$0
L.3	Acquisition of airborne lidar in conjunction with overflight remote sensing imagery	\$-			\$0	0.00%	\$0	\$0	0.00%	\$0	\$0	0.00%	\$0
	Total L	\$322,233	3.03%	34.3	\$11,760	3.65%	\$310,473	\$11,760	3.65%	\$310,473	\$11,760	3.65%	\$310,473
M	Leadership, Management, and Support												
M.1	Leadership, management, and support	\$490,891	51.79%	27.0	\$0	0.00%	\$490,891	\$0	0.00%	\$490,891	\$0	0.00%	\$490,891
M.2	Logistics staff	\$308,305	37.84%	12.7	\$0	0.00%	\$308,305	\$0	0.00%	\$308,305	\$0	0.00%	\$308,305
M.3	IT	\$80,215	1.13%	40.8	\$0	0.00%	\$80,215	\$1,000	1.25%	\$79,215	\$4,435	5.53%	\$75,780
	Total M	\$879,411	44.87%	26.8	\$0	0.00%	\$879,411	\$1,000	0.11%	\$878,411	\$4,435	0.50%	\$874,976
N	Native Fish Population Dynamics												
N.1	Sucker and dace distribution and demographics (SADDAD)	\$-			\$0	0.00%	\$0	\$0	0.00%	\$0	\$0	0.00%	\$0
N.2	Predictive modeling and Decision support for native fishes	\$-			\$0	0.00%	\$0	\$0	0.00%	\$0	\$0	0.00%	\$0
N.3	Evaluating dispersal and sources of mortality (Razorback sucker) using new technology	\$-			\$0	0.00%	\$0	\$0	0.00%	\$0	\$0	0.00%	\$0
N.2	Predictive modeling and Decision support for native fishes	\$0			\$0	0.00%	\$0	\$0	0.00%	\$0	\$0	0.00%	\$0
N.3	Evaluating dispersal and sources of mortality (Razorback sucker) using new technology	\$0			\$0	0.00%	\$0	\$0	0.00%	\$0	\$0	0.00%	\$0
	Total N	\$0			\$0	\$0	\$0	\$0	0.00%	\$0	\$0	0.00%	\$0
	TOTALS-->	\$8,711,449			\$211,449		\$8,500,000	\$636,449		\$8,075,000	\$1,061,449		\$7,650,000

REDUCTION SUMMARY GRAPH

The previous plans were evaluated using a chart of reductions comparing the final reduction proposed to the target reductions generated; however, in this version, based in maintaining capacity, as much as possible, the targets lose their meaning as a suitable comparison, no elements are maintained at full funding (“M” designation in previous charts), and no elements are paused (“P” designation in the previous charts). The graph below is provided as an overview of the funding levels for each project (not element, for simplicity) as it compares between the original TWP, Capacity Limited Budget, and the proposed reduction levels.



BUDGET REDUCTION SCENARIOS BY PROJECT

PROJECT A – Streamflow, Water Quality, and Sediment Transport

FY27 TWP Budget

Fiscal Year 2027									
Project A Streamflow, Water Quality, and Sediment Transport and Budgeting in the Colorado River Ecosystem	Salaries	Travel & Training	Operating Expenses	Logistics Expenses	Cooperative Agreements	To other USGS Centers	AMP Special Burden Rate*	Total	USGS Contributing Funds**
							23.40%		Est Full Rate = 56%
A.1. Stream gaging and hydrologic analyses	\$168,847	\$6,000	\$6,000	\$29,000	\$0	\$185,800	\$49,104	\$444,752	
A.2. Continuous water-quality parameters	\$130,384	\$1,000	\$12,000	\$27,400	\$0	\$30,900	\$39,963	\$241,647	
A.3. Sediment transport and budgeting	\$356,915	\$6,000	\$38,000	\$28,000	\$0	\$165,900	\$100,366	\$695,181	
Total Project A	\$656,146	\$13,000	\$56,000	\$84,400	\$0	\$382,600	\$189,434	\$1,381,580	\$87,139

Survey Rank

ELEMENT	GRAND AVE RANK
A.1	3.166667
A.2	8.666667
A.3	9.333333

Project A supports the following LTEMP resource goals:

- Archaeological and Cultural Resources
- Natural Processes
- Humpback Chub
- Hydropower and Energy
- Other Native Fish
- Recreational Experience
- Sediment
- Rainbow Trout Fishery
- Nonnative Invasive Species
- Riparian Vegetation

Reductions

Project	Project Description	FY27 Capacity Limited Total	Capacity Percent Reduction from FY25-27 TWP	GRAND AVE RANK	15% Reduction	15% Reduction from capacity limit	15% Reduced Budget	19.25% Reduction	19.25% Reduction from capacity limit	19.25% Reduced Budget	23.5% Reduction	23.5% Reduction from capacity limit	23.5% Reduced Budget
A	Streamflow, Water Quality, and Sediment Transport and Budgeting in the Colorado River Ecosystem												
A.1	Stream gaging and hydrologic analyses	\$443,415	0.30%	3.2	\$2,836	0.64%	\$440,579	\$13,729	3.10%	\$429,686	\$34,389	7.76%	\$409,026
A.2	Continuous water quality parameters	\$228,735	5.34%	8.7	\$4,004	1.75%	\$224,731	\$19,382	8.47%	\$209,353	\$37,679	16.47%	\$191,056
A.3	Sediment transport and budgeting	\$709,490	-2.06%	9.3	\$13,374	1.88%	\$696,116	\$64,743	9.13%	\$644,747	\$68,605	9.67%	\$640,885
	Total A	\$1,381,640	0.00%	7.1	\$20,213	1.46%	\$1,361,427	\$97,854	7.08%	\$1,283,786	\$140,673	10.18%	\$1,240,967

Elements A.1-3

A.1 partially funds the collection, serving, and interpretation of continuous 15-minute measurements of stage and discharge on the main-stem Colorado River at USGS streamflow gaging stations, and at gaging stations on the major tributaries and in a representative subset of the smaller tributaries.

A.2 funds the collection, serving, and interpretation of continuous 15-minute measurements of water temperature, specific conductance (a measure of salinity), turbidity, and dissolved oxygen at the outlet of Glen Canyon Dam and at the six main-stem Colorado River gaging stations.

A.3 funds the collection, serving, and interpretation of continuous 15-minute measurements and episodic measurements of suspended sediment and bed sediment at gaging stations on the Colorado River and its tributaries as well as the sand supply interpretive work from the Paria River, Little Colorado River, and the Colorado River between Glen Canyon Dam and Lake Mead. This element funds most of the data collection required to trigger, design, and evaluate HFEs; some funding for this requirement is within Element A.1.

Savings from decommissioning gages are minimal but preclude any data collection. Consistent effort through years has minimized gage costs through partnerships.

Reduction Strategy and Potential Impacts to Science

Proposed reductions would necessarily require decommissioning of gages and measured parameters used in many projects. Significant reductions may be indicated in the future by eliminating project elements and having reduced information needs, but all gage data is currently used by projects. Some gages are more important than others from an individual project perspective. Gages will be considered for elimination to reach these targets, but critical data will be protected. Some gages have importance for non-GCDAMP entities that might be able to provide additional support (many gages currently have outside support). Support of some gages may be moved to the projects for which the data is important (if the gage data importance exceeds the need for alternate uses of the funding within the relevant project).

Substantial cuts to element A.3 will end the ability of the GCMRC to support planning of HFEs.

If savings cannot be found, to achieve the proposed cuts, Project A would have to end support for the following activities in the following order.

1. Streamflow and realtime water temperature at the Little Colorado River above the mouth near Desert View, AZ, gaging station. Removal of this gage does not result in removing all information on the Little Colorado River because of the presence of the Little Colorado River near Cameron, AZ, gaging station upstream. Because removal of this gage does not result in a complete loss of information on the Little Colorado River, this gage is the first to go. Removal of GCDAMP support will result in the transfer of the partial support for this gage from the USGS uranium monitoring program to Kanab Creek. Consequently, the Little Colorado River above the mouth near Desert View, AZ, gaging station would be decommissioned and removed.

2. Streamflow at the Havasu Creek above the mouth near Supai, AZ, gaging station. This gage is the only streamflow gaging station on Havasu Creek, and its removal would end all information on Havasu Creek. Consequently, this gage is more important to maintain than is the Little Colorado River above the mouth near Desert View, AZ, gaging station. Removal of GCDAMP support would result in the transfer of the partial support for this gage from the USGS uranium monitoring program to Kanab Creek. Consequently, the Havasu Creek above the mouth near Supai, AZ, gaging station would be decommissioned and removed.
3. Streamflow at the Kanab Creek above the mouth near Supai, [AZ, gaging station](#). This gage is the only streamflow gaging station on Kanab Creek (lower Kanab Creek is disconnected from its gaged headwaters), and its removal would end all information on Kanab Creek. Consequently, this gage is more important to maintain than is the Little Colorado River above the mouth near Desert View, AZ, gaging station. Removal of GCDAMP support for this gage would likely be offset by the transfer of USGS funds from the Little Colorado River above the mouth near Desert View, AZ, and Havasu Creek above the mouth near Supai, AZ, gaging stations; therefore, this gage would likely continue without GCDAMP support if those other two gages were decommissioned.
4. Streamflow at Moenkopi Wash at Moenkopi, AZ. This gage is partially supported by GCDAMP, so we would need to look for other funding if the GCDAMP funds were retracted. This gage is required to support the sediment fieldwork at the downstream Little Colorado River near Cameron, AZ, gaging station that is required to evaluate HFEs. If we had extra funding from [decommissioning](#) the Little Colorado River above the mouth near Desert View, AZ, and Havasu Creek above the mouth near Supai, AZ, gaging stations, we would transfer those funds to this gage to make it whole.
5. All water-quality monitoring at the base of Glen Canyon Dam. This action would end our ability to monitor water quality in Glen Canyon below the dam. We would then use the realtime water-quality data at the Colorado River at Lees Ferry, AZ, gaging station (funded by USGS-NGWOS, not GCDAMP) to inform on downstream water quality.

Gage data is used in all projects, and each element of Project A scored well in the BAHG survey. To the extent that saving cannot be found, needed gage data will be supported with further reduction in lower ranked projects.

PROJECT B – Sandbar and Sediment Storage

FY27 TWP Budget

Fiscal Year 2027									
Project B Sandbar and Sediment Storage Monitoring and Research	Salaries	Travel & Training	Operating Expenses	Logistics Expenses	Cooperative Agreements	To other USGS Centers	AMP Special Burden Rate*	Total	USGS Contributing Funds**
							23.40%		Est Full Rate = 56%
B.1. Sandbar and campsite monitoring with topographic surveys and remote cameras	\$260,273	\$2,000	\$4,000	\$32,895	\$23,500	\$0	\$70,710	\$393,378	
B.2. Bathymetric and topographic mapping for monitoring sediment storage and riverbed dynamics	\$431,301	\$2,000	\$2,000	\$0	\$18,800	\$0	\$102,424	\$556,526	
B.3. Control network and survey support (<i>unfunded at this time</i>)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
B.4. Streamflow, sediment, and sandbar modeling (<i>unfunded at this time</i>)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Total Project B	\$691,574	\$4,000	\$6,000	\$32,895	\$42,300	\$0	\$173,135	\$949,904	\$79,057

Survey Rank

ELEMENT	GRAND AVE RANK
B.1	14
B.2	30.5
B.3	43.5
B.4	43

Project B supports the following LTEMP Resource Goals:

- Sediment
- Recreational Experience
- Archaeological and Cultural Resources
- Tribal Resources

Reductions

Project	Project Description	FY27 Capacity Limited Total	Capacity Percent Reduction from FY25-27 TWP	GRAND AVE RANK	15% Reduction	15% Reduction from capacity limit	15% Reduced Budget	19.25% Reduction	19.25% Reduction from capacity limit	19.25% Reduced Budget	23.5% Reduction	23.5% Reduction from capacity limit	23.5% Reduced Budget
B	Sandbar and Sediment Storage Monitoring and Research												
B.1	Sandbar and campsite monitoring with topographic surveys and remote cameras	\$366,309	6.88%	14.0	\$10,357	2.83%	\$355,952	\$50,140	13.69%	\$316,169	\$58,850	16.07%	\$307,459
B.2	Bathymetric and topographic mapping for monitoring sediment storage and riverbed dynamics	\$484,356	12.97%	30.5	\$22,344	4.61%	\$462,012	\$22,344	4.61%	\$462,012	\$22,344	4.61%	\$462,012
B.3	Control network and survey support	\$-			\$0	0.00%	\$0	\$0	0.00%	\$0	\$0	0.00%	\$0
B.4	Streamflow, sediment, and sandbar modeling	\$-			\$0	0.00%	\$0	\$0	0.00%	\$0	\$0	0.00%	\$0
Total B		\$850,665	10.45%	22.3	\$32,701	3.84%	\$817,964	\$72,484	8.52%	\$778,181	\$81,194	9.54%	\$769,471

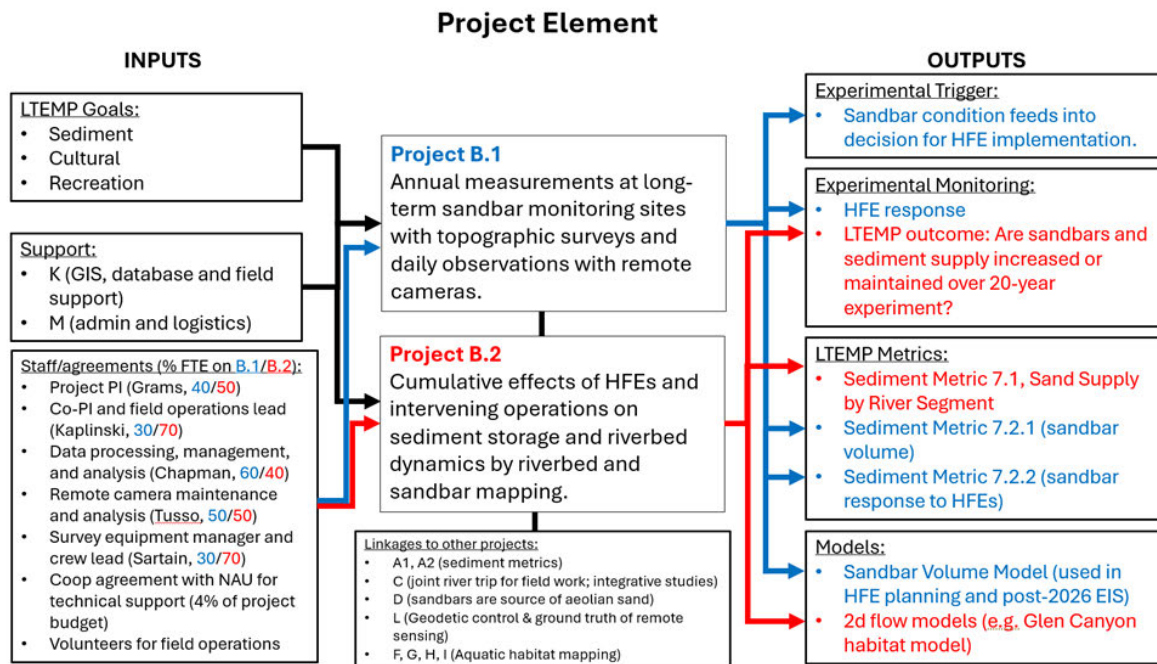
Element B.1-2

B.1 funds annual measurements at long-term sandbar monitoring sites with topographic surveys and remote cameras to assess cumulative effects of HFEs and intervening operations on sandbars and campsites. Provides the data for annual reporting on LTEMP metric 7.2, Sandbar Volume, which are not provided by any other project.

B.2 assesses cumulative effects of HFEs and intervening operations on riverbed sand storage and riverbed dynamics through mapping surveys. No fieldwork was planned for FY27, which included completion of the processing and reporting for data collected in FY26, the only channel mapping effort

in the FY25-7 TWP (River Mile 166 to 225). Provides data used for evaluating LTEMP metric 7.1, Sand Supply by River Segment, together with data collected by Project A.

Below is a flow Chart of Project B.



Reduction Strategy and Potential Impacts to Science

Without recouping the target reduction through savings (as discussed in the intro), this plan threatens numerous products anticipated in the TWP (TWP pg. 49) and analysis of recently collected (FY26) sediment mapping data. Data collection and analysis for B.1 Sandbar monitoring will be minimally impacted at lower reduction levels. The project will need additional support from volunteers and/or other GCMRC staff, which is difficult, because specific skills are required.

PROJECT C – Riparian Vegetation

FY27 TWP Budget

Fiscal Year 2027									
Project C Riparian Vegetation Monitoring and Research	Salaries	Travel & Training	Operating Expenses	Logistics Expenses	Cooperative Agreements	To other USGS Centers	AMP Special Burden Rate*	Total	USGS Contributing Funds**
							23.40%		Est Full Rate = 56%
C.1. Ground-based riparian vegetation monitoring	\$141,592	\$1,615	\$3,500	\$88,103	\$14,112	\$0	\$55,369	\$304,291	
C.2. Determining hydrological tolerances and management tools for plant species of interest	\$11,397	\$0	\$0	\$0	\$48,820	\$0	\$4,131	\$64,348	
C.3. Predictive models and synthesis	\$10,854	\$0	\$0	\$0	\$25,156	\$0	\$3,294	\$39,304	
C.4. Biogeomorphic linkages between streamflow, sediment transport, and vegetation composition (<i>unfunded at this time</i>)	\$43,503	\$0	\$0	\$0	\$0	\$0	\$10,180	\$53,682	
Total Project C	\$207,345	\$1,615	\$3,500	\$88,103	\$88,088	\$0	\$72,974	\$461,625	\$32,352

Survey Rank

ELEMENT	GRAND AVE RANK
C.1	15.16667
C.2	42.66667
C.3	39.5
C.4	35.66667
C.5	47.5

Project C supports the following LTEMP resource goals:

- Goal 1. Archaeological and Cultural Resources.
- Goal 2. Natural Processes.
- Goal 6. Recreational Experience.
- Goal 7. Sediment.
- Goal 11. Riparian Vegetation.

Reductions

Project	Project Description	FY27 Capacity Limited Total	Capacity Percent Reduction from FY25-27 TWP	GRAND AVE RANK	15% Reduction	15% Reduction from capacity limit	15% Reduced Budget	19.25% Reduction	19.25% Reduction from capacity limit	19.25% Reduced Budget	23.5% Reduction	23.5% Reduction from capacity limit	23.5% Reduced Budget
C	Riparian Vegetation Monitoring and Research												
C.1	Ground-based riparian vegetation monitoring	\$300,593	1.22%	15.2	\$9,207	3.06%	\$291,386	\$44,574	14.83%	\$256,019	\$99,032	32.95%	\$201,561
C.2	Determining hydrological tolerances and management tools for plant species of interest	\$-		42.7	\$0	0.00%	\$0	\$0	0.00%	\$0	\$0	0.00%	\$0
C.3	Predictive models and synthesis	\$25,911	34.08%	39.5	\$0	0.00%	\$25,911	\$0	0.00%	\$25,911	\$0	0.00%	\$25,911
C.4	Biogeomorphic Linkages between streamflow, sediment transport, and vegetation composition	\$51,613	3.85%	35.7	\$0	0.00%	\$51,613	\$0	0.00%	\$51,613	\$0	0.00%	\$51,613
C.5	Vegetation management decision support	\$-			\$0	0.00%	\$0	\$0	0.00%	\$0	\$0	0.00%	\$0
	Total C	\$378,117	18.09%	33.3	\$9,207	2.44%	\$368,910	\$44,574	11.79%	\$333,543	\$99,032	26.19%	\$279,085

Element C.1

C.1 funds annual measurement of plant species cover and composition for multiple geomorphic features representative of the CRE and long-term monitoring sandbars and campsites surveyed as a part of Project B. These data are used for metrics reporting and tracking how dam operations change plant communities.

This element was already at its minimum form. These data are collected annually and reduced frequency (e.g., every other year or every third year) means that we would miss plant responses to specific flow patterns, like low steady flows, HFEs, SMB flows, bug flows, etc.

Element C.2

C.2 funds greenhouse experiments on how daily fluctuations effect various species of the riparian plant community to better understand and predict the effects of daily water level fluctuations.

In all scenarios, funding for this element is paused in FY27 due to being discontinued to reach the budget reduction required in FY26; the element cannot be restarted in FY27 due to the inactivity in FY26 (no plants to work with).

Element C.3

C.3 funds predictive modeling of riparian vegetation community responses to dam operations.

Element C.4

C.4 partially funds a multi-phased, interdisciplinary study aimed at quantifying large-scale changes to channel morphology relative to vegetation change in cooperation with Projects B, D, and L and external partners. C.4 is one of the few interdisciplinary, cross-cutting projects in the TWP. It evaluates linkages between plant communities, sand, and river flow in collaboration with other Projects and external partners.

Reduction Strategy and Potential Impacts to Science

Reductions in C.1 result in the removal of annual data collection efforts (as opposed to reduced data collection efforts each year) and the loss of annual monitoring metrics for Goal 11. We would not be able to say how dam operations are changing plant communities.

Products related to the Greenhouse Experiment (C.2) in the TWP (pg. 89) will not be produced. We will have limited abilities to inform stakeholders how plant communities will be affected if lake levels drop below power pool.

Only C.1 was judged as having potential reductions that did not create lasting capacity impacts. However, C.1 cannot be reduced without ending the field monitoring effort. The data quality and organization of C.1 will be reduced (products TWP pg. 78). The monitoring data might not be available for Goal 11 Metrics reporting.

Savings will need to be found across the project elements. Elements without target reductions may be reduced; reductions in C.3 and C.4 result in a narrowing of scope for each element and could threaten products being produced from work conducted in FY25 and FY26 (products TWP pg. 85). The modeling that examines how dam operations and plant interactions affect plant communities may not be conducted fully as planned in FY27. The multi-phased, interdisciplinary study aimed at quantifying

large-scale changes to channel morphology relative to vegetation change in cooperation with Projects B, D, and L and external partners (C.4) may be reduced (products TWP pg. 94).

These potential reductions leave limited abilities to tease apart the influence of plant interactions versus flow patterns on plant communities. The Project Lead will focus on finding savings and organizing the Project as the most effective overall science plan for riparian vegetation monitoring and research, given funding constraints. C.1 is scored in the survey such that lower ranked elements may be reduced to recoup the field mission potentially precluded in this budget.

PROJECT D – Archeological and Cultural

FY27 TWP Budget

Fiscal Year 2027									
Project D Effects of Dam Operations and Vegetation Management for Archeological Sites	Salaries	Travel & Training	Operating Expenses	Logistics Expenses	Cooperative Agreements	To other USGS Centers	AMP Special Burden Rate*	Total	USGS Contributing Funds**
							23.40%		Est Full Rate = 56%
D.1. Monitoring the effects of dam operations on archaeological sites	\$247,813	\$9,000	\$15,000	\$36,257	\$0	\$0	\$72,088	\$380,158	
D.2. Monitoring landscape-scale ecosystem change with repeat photography	\$61,782	\$2,000	\$1,000	\$0	\$0	\$0	\$15,159	\$79,941	
D.3. Evaluating effects of LTEMP non-flow actions and other experimental vegetation management on archaeological sites	\$81,837	\$7,500	\$2,500	\$0	\$0	\$0	\$21,490	\$113,326	
D.4. Pilot study to evaluate potential to extract cultural and ecological information from Colorado River deposits using eDNA and pollen (<i>unfunded at this time</i>)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
D.5. Monitoring petroglyphs and pictographs with photogrammetry and lidar (<i>unfunded at this time</i>)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Total Project D	\$391,431	\$18,500	\$18,500	\$36,257	\$0	\$0	\$108,737	\$573,425	\$50,018

Survey Rank

ELEMENT	GRAND AVE RANK
D.1	16.33333
D.2	38.66667
D.3	33
D.4	44
D.5	46.83333

Project D supports the following LTEMP resource goals:

- Archaeological and Cultural Resources

Reductions

Project	Project Description	FY27 Capacity Limited Total	Capacity Percent Reduction from FY25-27 TWP	GRAND AVE RANK	15% Reduction	15% Reduction from capacity limit	15% Reduced Budget	19.25% Reduction	19.25% Reduction from capacity limit	19.25% Reduced Budget	23.5% Reduction	23.5% Reduction from capacity limit	23.5% Reduced Budget
D	Effects of Dam Operations and Vegetation Management for Archaeological Sites						\$0						
D.1	Monitoring the effects of dam operations on archaeological sites	\$345,133	9.21%	16.3	\$11,385	3.30%	\$333,748	\$55,115	15.97%	\$290,018	\$56,521	16.38%	\$288,612
D.2	Monitoring landscape-scale ecosystem change with repeat photography	\$74,914	6.29%	38.7	\$2,940	3.92%	\$71,974	\$2,940	3.92%	\$71,974	\$2,940	3.92%	\$71,974
D.3	Evaluating effects of LTEMP non-flow actions and other experimental vegetation management on archaeological sites	\$101,134	10.76%	33.0	\$6,740	6.66%	\$94,394	\$9,800	9.69%	\$91,334	\$9,800	9.69%	\$91,334
D.4	Pilot study to evaluate potential to extract cultural and ecological information from Colorado River deposits using eDNA and pollen	\$-			\$0	0.00%	\$0	\$0	0.00%	\$0	\$0	0.00%	\$0
D.5	Monitoring petroglyphs and pictographs with photogrammetry and lidar	\$-			\$0	0.00%	\$0	\$0	0.00%	\$0	\$0	0.00%	\$0
Total D		\$521,181	9.11%	29.3	\$21,065	4.04%	\$500,116	\$67,855	13.02%	\$453,326	\$69,261	13.29%	\$451,920

Elements D.1, D.2, D.3

These three elements are very closely intertwined and share staff, logistics, data collection, data analysis, interpretation and reporting resources. Reductions to specific elements need to be discussed as impacts among elements.

- D.1 specifically focuses on long-term monitoring of archaeological sites using lidar to quantify the effects of dam operations and other factors on the geomorphic condition of a sample of archaeological sites in the Colorado River corridor.
- D.2 focuses on repeat photography to monitor vegetation and geomorphic changes that affect the condition of cultural resources in the river corridor.
- D.3 is collaboration with NPS, the Hopi Tribe, and other parties, to study effects of experimental vegetation management LTEMP non-flow actions that contribute to archaeological site preservation.

Reduction Strategy and Potential Impacts to Science

15% - Monitoring data is collected D.1, but is not collected in D.2 or D.3 during FY27. Analysis, modeling, and reporting will focus on new (acquired in FY27) and existing (acquired prior to FY27) data in D.1, but analysis and reporting will be limited to existing data in D.2 and D.3. Collaborative activities with other projects will be eliminated. GCMRC evaluation of LTEMP Vegetation Management Experiment work conducted by NPS in FY27 by BOR TWP Project 4.D: GRCA and GLCA Experimental Vegetation Treatment will not be conducted. Planned collaborations with Hopi Tribe, NPS, and others on traditional vegetation management strategies to enhance cultural resource preservation may be reduced in FY27. Project Leads will participate in program meetings and the TWP development process.

19.25% and 23.5% - Monitoring data is not collected in D.1, D.2, or D.3. Analysis, modeling, and reporting will focus on existing data (acquired prior to FY27) in D.1, D.2, and D.3. Reporting on metrics for LTEMP Goal 1 will be delayed. Collaborative activities with other projects are

eliminated. GCMRC evaluation of LTEMP Experiment work conducted by NPS in FY26 by BOR TWP Project 4.D: GRCA and GLCA Experimental Vegetation Treatment will not be conducted. Planned collaborations with Hopi Tribe, NPS, and others on traditional vegetation management strategies to enhance cultural resource preservation will be reduced or possibly not occur in FY27. Project Leads will participate in program meetings and the TWP development process.

PROJECT E – Ecosystem Productivity

FY27 TWP Budget

Project E Controls on Ecosystem Productivity: Nutrients, Flow, and Temperature	Fiscal Year 2027							Total	USGS Contributing Funds**
	Salaries	Travel & Training	Operating Expenses	Logistics Expenses	Cooperative Agreements	To other USGS Centers	AMP Special Burden Rate*		
							23.40%		Est Full Rate = 56%
E.1. Phosphorus budgeting in the Colorado River	\$44,632	\$0	\$3,500	\$0	\$0	\$0	\$11,263	\$59,395	
E.2. Rates and composition of primary producers in the Colorado River	\$63,290	\$0	\$18,044	\$1,750	\$0	\$0	\$19,442	\$102,526	
E.3. Understanding the energetic basis of the food web in Western Grand Canyon (<i>unfunded at this time</i>)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
E.4. Productivity at higher trophic levels	\$50,485	\$0	\$3,000	\$0	\$0	\$0	\$12,516	\$66,001	
Total Project E	\$158,408	\$0	\$24,544	\$1,750	\$0	\$0	\$43,220	\$227,922	\$19,881

Survey Rank

ELEMENT	GRAND AVE RANK
E.1	33.66667
E.2	33.33333
E.3	44.33333
E.4	34.83333

Project E supports the following LTEMP resource goals:

- Natural Processes
- Humpback Chub
- Other Native Fish
- Rainbow Trout Fishery
- Nonnative Aquatic Species

Reductions

Project	Project Description	FY27 Capacity Limited Total	Capacity Percent Reduction from FY25-27 TWP	GRAND AVE RANK	15% Reduction	15% Reduction from capacity limit	15% Reduced Budget	19.25% Reduction	19.25% Reduction from capacity limit	19.25% Reduced Budget	23.5% Reduction	23.5% Reduction from capacity limit	23.5% Reduced Budget
E	Controls on Ecosystem Productivity: Nutrients, Flow, and Temperature												
E.1	Phosphorus budgeting in the Colorado River	\$64,719	-8.96%	33.7	\$3,430	5.30%	\$61,289	\$3,430	5.30%	\$61,289	\$3,430	5.30%	\$61,289
E.2	Rates and composition of primary producers in the Colorado River	\$93,534	8.77%	33.3	\$6,297	6.73%	\$87,237	\$19,276	20.61%	\$74,258	\$19,276	20.61%	\$74,258
E.3	Understanding the energetic basis of the food web in Western Grand Canyon	\$-			\$0	0.00%	\$0	\$0	0.00%	\$0	\$0	0.00%	\$0
E.4	Productivity at higher trophic levels	\$68,182	-3.30%	34.8	\$2,940	4.31%	\$65,242	\$2,940	4.31%	\$65,242	\$2,940	4.31%	\$65,242
	Total E	\$226,435	0.63%	33.9	\$12,667	5.59%	\$213,768	\$25,646	11.33%	\$200,789	\$25,646	11.33%	\$200,789

Element E.1

E.1 funds development of predictive models of phosphorus and various sources and sinks and potential linkages with turbidity to understand the relative importance of these drivers of ecosystem effects in the river.

Element E.2

E.2 funds the underlying modeling to support the natural processes gross primary productivity metric and aims to disentangle the drivers of both rates and types of riverine primary production and their link back to fish production.

Element E.4

E.4 funds development of ecosystem models incorporating multiple trophic levels to understand how bottom-up and top-down processes interact to drive ecosystem dynamics and determine carrying capacity, following the approach recently taken on the rainbow trout population in Glen Canyon.

Reduction Strategy and Potential Impacts to Science

In E.1, funding is mostly for salary to analyze and write up results from previous year's work. The proposed cuts are flat across all funding scenarios for this element. We will eliminate funding from the operating expenses budget, which was planned to cover publication expenses for a peer reviewed paper. The lead PI will look for outside funding to cover publication fees.

In E.2, funding covers salary for analyzing and serving gross primary production data from Grand Canyon as well as for maintaining two water quality sondes that are used to estimate gross primary production (GPP) in Glen Canyon. These sondes also provide water quality information that is relevant to Project H. Operating expenses are for a combination of publication fees, replacement oxygen sensors, and sonde repair and maintenance. At the 15% cut level, the operating expenses budget will be reduced and no funding will be available for publication fees; salary would be reduced for the lead PI by half a pay period (down from 3 pay periods under the capacity limited total). At the 19.25% and 23.5% cut, funding for ecosystem metabolism measurements in Glen Canyon is proposed as eliminated. Water quality measurements will only be collected from the -8 mile sonde during times of special interest as funded in Project H.

For E.4, funding is mostly for salary to analyze and write up results from previous year's work. The proposed cuts are flat across all funding scenarios for this element. We will eliminate funding from the operating expenses budget, which was planned to cover publication expenses for a peer reviewed paper. The lead PI will look for outside funding to cover publication fees.

Savings as discussed in the introduction will be pursued by the Project Lead to minimize the impacts to science discussed above and maintain data collection related to the current unique and rapidly changing resource conditions expected in FY27.

PROJECT F – Aquatic Invertebrates

FY27 TWP Budget

Fiscal Year 2027									
Project F Aquatic Invertebrate Ecology	Salaries	Travel & Training	Operating Expenses	Logistics Expenses	Cooperative Agreements	To other USGS Centers	AMP Special Burden Rate*	Total	USGS Contributing Funds**
							23.40%		Est Full Rate = 56%
F.1. Invertebrate and bat monitoring in Marble and Grand Canyons	\$171,354	\$1,000	\$17,000	\$0	\$0	\$0	\$44,309	\$233,663	
F.2. Aquatic invertebrate monitoring in Glen Canyon	\$139,043	\$1,000	\$1,500	\$875	\$0	\$0	\$33,326	\$175,744	
F.3. Aquatic invertebrate monitoring of Grand Canyon tributaries	\$42,302	\$1,000	\$0	\$8,961	\$49,350	\$0	\$13,710	\$115,324	
F.4. Invertebrate and fish diet studies	\$76,487	\$1,000	\$1,500	\$8,961	\$0	\$0	\$20,580	\$108,527	
Total Project F	\$429,186	\$4,000	\$20,000	\$18,797	\$49,350	\$0	\$111,924	\$633,257	\$50,804

Survey Rank

ELEMENT	GRAND AVE RANK
F.1	36.66667
F.2	30.5
F.3	34.5
F.4	38.83333

Project F supports the following LTEMP resource goals:

- Natural Processes
- Humpback Chub
- Other Native Fishes
- Rainbow Trout Fishery

Reductions

Project	Project Description	FY27 Capacity Limited Total	Capacity Percent Reduction from FY25-27 TWP	GRAND AVE RANK	15% Reduction	15% Reduction from capacity limit	15% Reduced Budget	19.25% Reduction	19.25% Reduction from capacity limit	19.25% Reduced Budget	23.5% Reduction	23.5% Reduction from capacity limit	23.5% Reduced Budget
F	Aquatic Invertebrate Ecology												
F.1	Invertebrate and bat monitoring in Marble and Grand Canyons	\$237,951	-1.84%	36.7	\$17,621	7.41%	\$220,330	\$17,640	7.41%	\$220,311	\$17,640	7.41%	\$220,311
F.2	Aquatic invertebrate monitoring in Glen Canyon	\$142,931	18.67%	30.5	\$3,247	2.27%	\$139,684	\$3,247	2.27%	\$139,684	\$3,247	2.27%	\$139,684
F.3	Aquatic invertebrate monitoring of Grand Canyon tributaries	\$82,804	28.20%	34.5	\$5,770	6.97%	\$77,034	\$27,931	33.73%	\$54,873	\$57,500	69.44%	\$25,304
F.4	Invertebrate and fish diet studies	\$49,154	54.71%	38.8	\$3,855	7.84%	\$45,299	\$10,607	21.58%	\$38,547	\$10,607	21.58%	\$38,547
	Total F	\$512,840	19.02%	35.1	\$30,492	5.95%	\$482,348	\$59,424	11.59%	\$453,416	\$88,993	17.35%	\$423,847

Element F.1

F.1 funds identification of links between Glen Canyon Dam operations, environmental conditions (e.g., tributary flooding, water temperature), and the downstream aquatic food base through invertebrate citizen science invertebrate light trapping that has been ongoing since 2012. This represents the longest and most extensive dataset of aquatic insect emergence from a river segment in the United States and a valuable dataset for documenting ecological change in the Grand Canyon.

Element F.2

F.2 funds continuation of a Glen Canyon monitoring program that has been ongoing since 2007 for identifying status and trends in the aquatic food base supporting rainbow trout populations in Glen Canyon.

Element F.3

F.3 funds eDNA monitoring of tributary streams that are important spawning and rearing habitat for native fishes, and some are also sites of humpback chub translocations.

Element F.4

F.4 funds DNA analysis of fish fecal samples and isotope analysis of fin clips to document fish feeding habits, trophic position, trophic niche breadth, and other measures of food web structure.

Reduction Strategy and Potential Impacts to Science

Food base monitoring and research will be maintained to the extent possible given the constraints of the selected budget with effort apportioned to elements according to rankings to minimize the impacts to science and maintain data collection related to the current unique and rapidly changing resource conditions expected in FY27.

PROJECT G – Humpback Chub

FY27 TWP Budget

Fiscal Year 2027									
Project G Humpback Chub Population Dynamics throughout the Colorado River Ecosystem	Salaries	Travel & Training	Operating Expenses	Logistics Expenses	Cooperative Agreements	To other USGS Centers	AMP Special Burden Rate*	Total	USGS Contributing Funds**
							23.40%		Est Full Rate = 56%
G.1. Humpback chub population modeling	\$194,482	\$8,000	\$5,000	\$0	\$0	\$0	\$48,551	\$256,033	
G.2. Annual spring/fall HBC abundance estimates in the lower 13.6 km of the LCR	\$3,051	\$0	\$20,222	\$108,272	\$422,944	\$0	\$43,470	\$597,958	
G.3. Juvenile chub monitoring near the LCR confluence (JCM-East)	\$153,851	\$2,000	\$30,156	\$324,740	\$0	\$0	\$119,515	\$630,262	
G.4. Remote PIT-tag array monitoring in the LCR	\$24,405	\$0	\$3,000	\$3,000	\$0	\$0	\$7,115	\$37,519	
G.5. Monitoring humpback chub aggregation relative abundance and distribution	\$3,051	\$0	\$12,436	\$66,912	\$147,083	\$0	\$23,694	\$253,176	
G.6. Juvenile chub monitoring - Western Grand Canyon (JCM-West) (unfunded at this time)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
G.7. Chute Falls translocations (unfunded at this time)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
G.8. Sampling of springs in the upper LCR (FY25 project only)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
G.9. Movement in western Grand Canyon from system-wide antenna monitoring (unfunded at this time)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Total Project G	\$378,839	\$10,000	\$70,814	\$502,924	\$570,027	\$0	\$242,344	\$1,774,948	\$103,611

Survey Rank

ELEMENT	GRAND AVE RANK
G.1	4.833333
G.2	6
G.3	7.5
G.4	20.5
G.5	7.666667
G.6	24.333333
G.7	41.666667
G.8	38.166667
G.9	36.5

Project G supports the following LTEMP resource goals:

- Humpback Chub
- Other Native Fishes
- Nonnative Species

Reductions

Project	Project Description	FY27 Capacity Limited Total	Capacity Percent Reduction from FY25-27 TWP	GRAND AVE RANK	15% Reduction	15% Reduction from capacity limit	15% Reduced Budget	19.25% Reduction	19.25% Reduction from capacity limit	19.25% Reduced Budget	23.5% Reduction	23.5% Reduction from capacity limit	23.5% Reduced Budget
G	Humpback Chub Population Dynamics throughout the Colorado River Ecosystem												
G.1	Humpback chub population modeling	\$261,104	-1.98%	4.8	\$2,549	0.98%	\$258,555	\$12,339	4.73%	\$248,765	\$12,740	4.88%	\$248,364
G.2	Annual spring/fall HBC abundance estimates in the lower 13.6 km of the LCR	\$586,563	1.91%	6.0	\$7,108	1.21%	\$579,455	\$34,409	5.87%	\$552,154	\$86,193	14.69%	\$500,370
G.3	Juvenile chub monitoring near the LCR confluence (JCM-East)	\$549,789	12.77%	7.5	\$8,328	1.51%	\$541,461	\$40,315	7.33%	\$509,474	\$100,986	18.37%	\$448,803
G.4	Remote PIT-tag array monitoring in the LCR	\$28,463	43.03%	20.5	\$885	3.11%	\$27,578	\$4,284	15.05%	\$24,179	\$5,670	19.92%	\$22,793
G.5	Monitoring humpback chub aggregation relative abundance and distribution	\$246,063	2.81%	7.7	\$3,810	1.55%	\$242,253	\$18,444	7.50%	\$227,619	\$46,202	18.78%	\$199,861
G.6	Juvenile chub monitoring - Western Grand Canyon (JCM-West)	\$0			\$0	0.00%	\$0	\$0	0.00%	\$0	\$0	0.00%	\$0
G.7	Chute Falls translocations	\$-			\$0	0.00%	\$0	\$0	0.00%	\$0	\$0	0.00%	\$0
G.8	Sampling of springs in the upper LCR	\$-			\$0	0.00%	\$0	\$0	0.00%	\$0	\$0	0.00%	\$0
G.9	Movement in western Grand Canyon from system-wide antenna monitoring	\$-			\$0	0.00%	\$0	\$0	0.00%	\$0	\$0	0.00%	\$0
	Total G	\$1,671,982	5.80%	9.3	\$22,679	1.36%	\$1,649,303	\$109,792	6.57%	\$1,562,190	\$251,791	15.06%	\$1,420,191

Element G.1

G.1 funds humpback chub modeling, including 1) estimating abundance of various size classes in the LCR-spawning population as defined in the 2016 Biological Opinion, 2) using antenna detections from a wide geographic area in Grand Canyon to obtain a better estimate of adult survival in JCM-west (to differentiate emigration from mortality), 3) estimating abundance of humpback chub adults in western Grand Canyon based on data collected by USFWS aggregation trips, 4) estimating the effects of environmental covariates on demographic parameters (e.g., survival, growth, movement), and 5) developing an occupancy model that accounts for detection probability to look at long-term, large-scale changes to humpback chub distribution with the Colorado River ecosystem.

Element G.2

G.2 funds USFWS sampling trips into the LCR to estimate humpback chub abundance at different life stages. Spring trips inform adult, large subadult, and age-1 abundance estimates in the LCR and provide information about the migratory component of LCR-spawners. USFWS fall trips provide estimates of age-0 abundances in the LCR and abundances of LCR residents.

Element G.3

G.3 funds three sampling trips to the JCM-east reach as well as one annual sampling trip to the lower LCR (July) to estimate abundance and outmigration of age-0 humpback chub born the previous spring. This project provides information on survival, growth, and abundance of humpback chub in the LCR and in the mainstem Colorado River.

Element G.4

G.4 funds PIT-tag arrays in the LCR that read and record codes from previously tagged fish that swim over antennas anchored to the river bottom or riverbank. These data are used to increase detection probabilities for all humpback chub and detection of a subset of the humpback chub population that is relatively invulnerable to capture. These data are important because humpback chub models without antenna data underestimate the proportion and number of migratory adult humpback chub that move into the LCR in spring months and also underestimate adult survival compared to models with these data.

Element G.5

G.5 funds USFWS sampling that is focused on using hoop nets to sample known humpback chub aggregations in the mainstem Colorado River (e.g., RM 30-36, LCR, Bright Angel, Shinumo, Stephens Aisle/Middle Granite Gorge, Havasu, Pumpkin Spring) as well as other sites that are targeted for biological interest. Backwater seining for nonnatives was not included in the approved FY27 budget (as it was in FY25 and FY26), so seining is not scheduled to occur next year.

Reduction Strategy and Potential Impacts to Science

The required reductions identified represent progressive reductions to operating expenses, travel, publication costs, and cooperating agreements to the extent possible without creating long-term capacity limits in each element as indicated by BAHG survey scores. The previous plans evaluated protected various aspects of project G even more than the BAHG scores would suggest, but no protections were applied for this plan.

In G.1 (humpback chub modeling), reductions at the 15.0% and 19.25% level would reduce travel to meetings and conferences and reduce our ability to pay required open access publication fees for products on humpback chub growth, abundance, and environmental drivers that affect survival. Elimination of the discretionary budget at the 23.5% level would stop all travel and hinder our ability to publish products.

In G.2 (USFWS LCR monitoring), the cooperative agreement with the USFWS was preserved. Under the 15.0% reduction scenario, logistics costs and the number of pit tags purchased would need to be reduced by ~5.8% relative to the approved TWP budget. Under a 19.25% cut, this project loses ~28.2% of its pit tag and logistics budget (which is compounded by the higher boatman contract costs), so trip length reductions or other configurations will need to occur. Under a 23.5% reduction, G.2 would lose

~71.4% of its logistics and pit tag budget, which would eliminate this trip and impact data collection used to inform triggers for humpback chub management actions.

In G.3 (juvenile humpback chub monitoring in the mainstem and LCR, i.e., JCM-east and the LCR trip), a 15% reduction would result in ~2.5% of its travel, pit tag/supply, and logistics budget – a reduction that may be assumed by reducing expenditures and trip days. Under the 19.25% reduction, this element loses ~12.3% of its discretionary funding, and under a 23.5% reduction this element loses ~30.9% of its discretionary funding (travel, supplies, logistics). Under the latter two reduction scenarios our ability to provide data on humpback chub abundance and survival that is used to make management decisions would be severely hindered. Reductions in G.3 would reduce/eliminate monitoring of non-native species near the LCR confluence, such that expansions of warmwater non-natives fishes into habitats occupied by humpback chub will be unobservable or very hard to detect.

In G.4 (remote PIT tag array in the LCR), the budget to fly into and service the PIT tag arrays in the LCR would be reduced by ~15.3% under the 15.5% cut. The majority of discretionary budget (~74.0%) is cut in the 19.25% scenario, and logistics and supply budget is completely cut in the 23.5% reduction scenario. In the latter two cut scenarios we would no longer be able to effectively service and fix the PIT tag array in the LCR that provides information on emigration and movement of humpback chub. These data are important because models without antenna data underestimate the proportion and number of migratory adult humpback chub that move into the LCR in spring while also underestimating adult survival compared to models with these data.

In G.5 (USFWS Aggregations monitoring in the mainstem), the cooperative agreement with the USFWS was preserved. The discretionary budget for G.5 is composed of supply costs to purchase pit tags and logistics costs for 1 mainstem river trip. Under the 15.0% cut, G.5 would lose ~5.1% of its discretionary budget, which would impact the number of pit tags purchased and trip length (due to this cut but also increased boatman costs). Under the 19.25% cut, G.5 would lose ~24.7% of its logistics and supply budget, and under the 23.5% cut it will lose ~61.9% of its discretionary budget. Under the latter two cut scenarios this element will no longer be able to provide data to the program on humpback chub abundance estimates in western Grand Canyon and it will be hindered in its ability to provide data used to make management decisions.

Evaluation with partners regarding data sufficiency, especially for triggers for management actions and critical information on invasive species will be closely examined; to the extent that saving cannot be found, lower ranked project elements will be reduced to maintain data sufficiency and effective invasive species detection in Project G.

Impacts that may remain in Project G after all adjustments include leaving the project in a vulnerable position if equipment were to break. Science could suffer from reduced collaboration and information product output and analysis from lead scientists. The potential for these impacts increases

progressively as the reductions are increased at each reduction level. Because staff is shared across projects H, I, and G, reductions in staff would have effects on other projects as well.

PROJECT H – Trout

FY27 TWP Budget

Fiscal Year 2027									
Project H Salmonid Research and Monitoring	Salaries	Travel & Training	Operating Expenses	Logistics Expenses	Cooperative Agreements	To other USGS Centers	AMP Special Burden Rate*	Total	USGS Contributing Funds**
							23.40%		Est Full Rate = 56%
H.1. Rainbow trout fishery monitoring in Glen Canyon	\$7,484	\$0	\$0	\$0	\$88,000	\$0	\$4,391	\$99,875	
H.2. Experimental flow assessment of trout recruitment (TRGD)	\$82,735	\$2,500	\$68,800	\$118,998	\$0	\$0	\$63,890	\$336,923	
H.3. Salmonid modeling	\$71,972	\$0	\$6,000	\$0	\$0	\$0	\$18,245	\$96,217	
Total Project H	\$162,191	\$2,500	\$74,800	\$118,998	\$88,000	\$0	\$86,526	\$533,015	\$38,587

Survey Rank and Target

ELEMENT	GRAND AVE RANK
H.1	18.16667
H.2	24.16667
H.3	32.33333

Project H supports the following LTEMP resource goals:

- Rainbow Trout Fishery
- Non-native species

Reductions

Project	Project Description	FY27 Capacity Limited Total	Capacity Percent Reduction from FY25-27 TWP	GRAND AVE RANK	15% Reduction	15% Reduction from capacity limit	15% Reduced Budget	19.25% Reduction	19.25% Reduction from capacity limit	19.25% Reduced Budget	23.5% Reduction	23.5% Reduction from capacity limit	23.5% Reduced Budget
H	Salmonid Research and Monitoring												
H.1	Rainbow trout fishery monitoring in Glen Canyon	\$99,578	0.30%	18.2	\$0	0.00%	\$99,578	\$0	0.00%	\$99,578	\$0	0.00%	\$99,578
H.2	Experimental flow assessment of trout recruitment (TRGD)	\$292,641	13.14%	24.2	\$14,195	4.85%	\$278,446	\$68,556	23.43%	\$224,085	\$138,984	47.49%	\$153,657
H.3	Salmonid modeling	\$92,095	4.28%	32.3	\$5,880	6.38%	\$86,215	\$5,880	6.38%	\$86,215	\$5,880	6.38%	\$86,215
	Total H	\$484,314	9.14%	24.9	\$20,075	4.14%	\$464,239	\$74,436	15.37%	\$409,878	\$144,864	29.91%	\$339,450

Element H.1-3

In the TWP, this element was extensively modified with sampling reduced by the discontinuation of trout monitoring surveys outside of TRGD sites. Additionally, the trout projects were made more collaborative to reduce costs and to minimize the information lost related to these modifications/reductions. The consolidation of projects resulted in a budget reduction of ~29% from the previous TWP; however, the cuts early in the 2025-2027 TWP led to insufficient funding to support the time required of the PI to support the project and provide requested updates and reporting to the TWG and AMWG.

Element H.1

H.1 funds Arizona Game and Fish Rainbow Trout monitoring and creel surveys that directly measure the satisfaction of anglers.

Element H.2

H.2 funds the field data collection component of the Trout Reproductive and Growth Dynamics (TRGD) project, including costs for PIT tags and salaries for the PI and term fish biologists tasked with supporting the field components and data organization and analysis. This element also funds contracted analytical support, currently provided by Ecometric, Inc. The field component also detects non-native aquatic species (warmwater nonnatives).

Element H.3

H.3 funds the modeling and analysis of the data collected in H.1 and H.2. The element funds staff time for estimation of LTEMP metrics (trout abundance), assesses linkages between dam operations and environmental conditions to trout population dynamics and the quality of the fishery, and informs dam operational recommendations by the P&I team. Data analysis can support estimates of entrainment or detect reproduction of warmwater nonnative fishes.

Reduction Strategy and Potential Impacts to Science

Reductions are not possible without pausing field data collection. Extensive changes to consolidate partner efforts were applied in development of the TWP; further reduction of effort will have severe impacts to monitoring and detection of warmwater nonnative fishes, creel surveys (potentially not worth conducting if reduced), and precision in trout monitoring data.

15% - H.1 would be maintained as funded in the TWP for all scenarios. Under this budget reduction scenario, in H.2, one TRGD trip would be cut, and publication costs budgeted in H.3 would have to be cut. We will try to maintain consecutive planned trips to maintain consistency and precision in estimates for as long as possible, to enable the assessment of linkages between Glen Canyon Dam operations and trout demographics. Thus, the summer (June) 2027 TRGD trip would be cut under this scenario, which would reduce our ability to detect warmwater nonnatives in addition to compromising the integrity of the analysis of trout demographics. The data from the June trip are also important for modeling April abundance, suggesting the age-0+ abundance LTEMP metric may not be estimable for 2026-2027. We will also need to explore ways to reduce logistics costs, to enable the other 3 mark-recapture trips to be conducted, including in the fall 2026, and winter and spring 2027.

19.25% - The severity of the cuts to H.2 in this scenario would require cutting 2 TRGD trips and push the project towards a cliff; due to insufficient funding for trip logistics and salary for staff to run them, the project nears the point where inadequate data would be collected for the intended purpose (linking trout demographics and trout catch to operations). Staff are also shared among other higher priority projects (e.g., G and I), which may be compromised. We would again prioritize cutting later trips, to maintain continuity and data consistency to the extent possible, meaning the April and June trips would be cut rather than the fall and winter trips. This would limit our ability to understand annual recruitment rates, prevent calculation of the rainbow trout abundance metric, and detect warmwater nonnatives to provide insights into entrainment rates through Glen Canyon Dam. Cuts to H.3 would be

the same as in the 15% scenario. Our understanding of the implications of management actions to trout demographics and angler catch may be limited to those actions enacted during the summer 2026 (e.g., coolmix decisions).

23.5% - Under this scenario all TRGD trips would be cut, which would have ramifications to understanding trends in trout demographics and abundance beyond 2027. Remaining staff time would be devoted to analysis of data collected through 2026. The trout monitoring project would have to be redesigned for the next TWP, and if mark-recapture was continued in the future, it may require a minimum of 3-5 more trips beyond 2027 before precision in demographic rate estimates may be suitable to understand the effects of management actions to the trout fishery.

Savings will be sought to minimize these impacts, but they may be very difficult to find given the reductions that were in the original TWP and the further reductions applied in FY26.

PROJECT I – Nonnative Aquatic Species

FY27 TWP Budget

Fiscal Year 2027									
Project I Non-native Invasive Species Monitoring and Research	Salaries	Travel & Training	Operating Expenses	Logistics Expenses	Cooperative Agreements	To other USGS Centers	AMP Special Burden Rate*	Total	USGS Contributing Funds**
							23.40%		Est Full Rate = 56%
I.1. System-wide native fishes and invasive aquatic species monitoring	\$10,965	\$0	\$4,650	\$114,150	\$217,550	\$0	\$36,892	\$384,207	
I.2. Estimating kinship and spawner abundance of warm-water non-natives	\$12,892	\$2,000	\$100	\$0	\$0	\$0	\$3,508	\$18,500	
I.3. Identifying emerging threats to the Colorado River Ecosystem using environmental DNA	\$33,418	\$300	\$0	\$17,104	\$48,600	\$0	\$13,350	\$112,772	
I.4. Modeling population dynamics and improving forecasting tools for smallmouth bass and other non-native fish	\$212,212	\$0	\$1,800	\$0	\$0	\$0	\$50,079	\$264,091	
Total Project I	\$269,487	\$2,300	\$6,550	\$131,254	\$266,150	\$0	\$103,829	\$779,570	\$44,088

Survey Rank

ELEMENT	GRAND AVE RANK
I.1	3.166667
I.2	16.5
I.3	17
I.4	5.666667

Project I supports the following LTEMP resource goals:

- Nonnative Invasive Species
- Other Native Fish Species
- Humpback Chub

Reductions

Project	Project Description	FY27 Capacity Limited Total	Capacity Percent Reduction from FY25-27 TWP	GRAND AVE RANK	15% Reduction	15% Reduction from capacity limit	15% Reduced Budget	19.25% Reduction	19.25% Reduction from capacity limit	19.25% Reduced Budget	23.5% Reduction	23.5% Reduction from capacity limit	23.5% Reduced Budget
I	Non-native Invasive Species Monitoring and Research												
I.1	System-wide native fishes and invasive aquatic species monitoring	\$374,698	2.47%	3.2	\$2,396	0.64%	\$372,302	\$11,601	3.10%	\$363,097	\$29,060	7.76%	\$345,638
I.2	Estimating kinship and spawner abundance of warm-water non-natives	\$18,408	0.50%	16.5	\$613	3.33%	\$17,795	\$2,058	11.18%	\$16,350	\$2,058	11.18%	\$16,350
I.3	Identifying emerging threats to the Colorado River Ecosystem using environmental DNA	\$111,044	1.53%	17.0	\$3,813	3.43%	\$107,231	\$18,457	16.62%	\$92,587	\$46,233	41.63%	\$64,811
I.4	Modeling population dynamics and improving forecasting tools for smallmouth bass and other non-native fish	\$263,798	0.11%	5.7	\$3,019	1.14%	\$260,779	\$14,615	5.54%	\$249,183	\$36,610	13.88%	\$227,188
Total I		\$767,948	1.49%	10.6	\$9,841	1.28%	\$758,107	\$46,731	6.09%	\$721,217	\$113,961	14.84%	\$653,987

Element I.1

I.1 provides long-term data on the distribution, catch per unit effort, species composition and status and trends of the fishes in the mainstem Colorado River from Lees Ferry (RM 0) to Pierce Ferry Rapid (RM 281) through hoop netting, electrofishing, angling, and a pilot project in collaboration with Project Element G.1 to deploy more submersible PIT tag antennas to track fish movement.

Element I.2

I.2 uses kinship genetic analysis to better understand the ongoing expansion of smallmouth bass into the Colorado River in Glen, Marble, and Grand Canyons, determine the extent to which juveniles are locally produced or entrained from Lake Powell, and potentially estimate spawner abundance and survival for species being removed from the system via close-kin mark recapture.

Element I.3

I.3 funds eDNA analysis of water samples to identify aquatic invasive species being entrained from Lake Powell while increasing biosurveillance of nonnative species including smallmouth bass throughout the Colorado River and its tributaries. I.3 also funds monitoring for parasites including the Asian fish tapeworm and anchor worm (*Lernaea*) in Humpback Chub, data that is collected per the Biological Opinion.

Element I.4

I.4 funds modeling work that includes updating forecasting tools for smallmouth bass, understanding the drivers of entrainment of smallmouth bass from Lake Powell, evaluating the effectiveness of management actions including LTEMP Experimental Flows on smallmouth bass catch rates, dispersal, and recruitment, and develops a workflow process for an occupancy model that evaluates data across fish projects to determine the presence and reproduction of nonnative aquatic species (LTEMP Goal #10). This project also supports laboratory work to determine how turbidity and temperature effect the growth and survival of early life stages of smallmouth bass.

Reduction Strategy and Potential Impacts to Science

For the previously evaluated plans, various elements of Project I were protected due to high scoring in survey results and the critical timely requirement for the information Project I produces. For this plan target reductions are identified.

In I.1 (AZGFD system-wide monitoring), the cooperative agreement with the state of Arizona was preserved. Discretionary budget reductions to logistics combined with higher boatmen costs that were finalized post-TWP would result in a reduction in the number of sampling days under the 15.0 and 19.25% reduction scenarios. Those 2 trips would likely be reduced in number from 17 days to 14-15 days unless savings can be found by combining those trips with other trips in the work plan (e.g., spring aquatic food base trip). High reductions in the 23.5% scenario would likely lead to the elimination of 1 full 17-d trip and replacement with a diamond down trip, which is similar in effort to the FY23-25 work plan.

In I.2 (kinship), salary was preserved but travel and operating costs were eliminated in the 19.25% and 23.5% reduction scenarios. This would reduce the PI's ability to collect smallmouth bass samples in Lake Powell and/or present results from this research at meetings or a conference.

In I.3 (biosurveillance using eDNA; parasite monitoring), Asian tapeworm and *Lernaea* monitoring would continue as planned in collaboration with G.2 and G.3. The eDNA work is minimally affected under the 15% cut scenario, with slightly fewer samples collected. Under the 19.25% cut scenario, one gear type (electrofishing or hoop netting) would be eliminated from the eDNA gear comparison project. Under the 23.5% cut scenario, we would need to re-design year 3 of this work and focus on gear comparison in Lees Ferry only, thus eliminating the downstream component of this work. The latter two reduction scenarios would reduce the robustness of the product that compares detection of nonnative aquatic species using eDNA vs. traditional sampling gear (seines, electrofishing, hoop nets).

In I.4 (smallmouth bass and nonnative fish modeling), cuts under the 19.25 and 23.5% reduction scenarios would reduce or eliminate progress on development of an occupancy model related to LTEMP metrics reporting and reduce modeling efforts associated with understanding the drivers of entrainment of smallmouth bass from Lake Powell and the effectiveness of LTEMP experimental flows on smallmouth bass growth, distribution, and survival in the Colorado River. TWP products would be progressively threatened by the target reductions (TWP products pg. 270, 279-280, and 285).

The potential impacts above will be avoided to the extent possible. If costs are unable to be reduced, lower ranked project elements will be reduced to maintain a robust effort regarding invasive species, in accordance with BAHG survey rankings and to maintain data collection related to the current unique and rapidly changing resource conditions expected in FY27.

PROJECT J – Socioeconomic

FY27 TWP Budget

Fiscal Year 2027									
Project J Socioeconomic Research	Salaries	Travel & Training	Operating Expenses	Logistics Expenses	Cooperative Agreements	To other USGS Centers	AMP Special Burden Rate*	Total	USGS Contributing Funds**
							23.40%		Est Full Rate = 56%
J.1. Integrated models for adaptive management	\$129,999	\$2,000	\$2,000	\$0	\$0	\$0	\$31,356	\$165,355	
J.2. Recreation monitoring and research	\$111,386	\$1,000	\$1,000	\$0	\$0	\$0	\$26,532	\$139,918	
J.3. Tribal resources research (unfunded at this time)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Total Project J	\$241,385	\$3,000	\$3,000	\$0	\$0	\$0	\$57,888	\$305,273	\$26,628

Survey Rank

ELEMENT	GRAND AVE RANK
J.1	19.33333
J.2	31.66667
J.3	34.5

Project J supports the following LTEMP resource goals:

- Recreational Experience
- Tribal Resources

Reductions

Project	Project Description	FY27 Capacity Limited Total	Capacity Percent Reduction from FY25-27 TWP	GRAND AVE RANK	15% Reduction	15% Reduction from capacity limit	15% Reduced Budget	19.25% Reduction	19.25% Reduction from capacity limit	19.25% Reduced Budget	23.5% Reduction	23.5% Reduction from capacity limit	23.5% Reduced Budget
J	Socioeconomic Research												
J.1	Integrated models for adaptive management	\$156,853	5.14%	19.3	\$3,920	2.50%	\$152,933	\$3,920	2.50%	\$152,933	\$3,920	2.50%	\$152,933
J.2	Recreation monitoring and research	\$130,991	6.38%	31.7	\$1,960	1.50%	\$129,031	\$1,960	1.50%	\$129,031	\$1,960	1.50%	\$129,031
J.3	Tribal resources research	\$0		34.5	\$0	0.00%	\$0	\$0	0.00%	\$0	\$0	0.00%	\$0
	Total J	\$287,844	5.71%	28.5	\$5,880	2.04%	\$281,964	\$5,880	2.04%	\$281,964	\$5,880	2.04%	\$281,964

Element J.1

J.1 funds integrated modeling of rainbow trout (*Oncorhynchus mykiss*) and humpback chub (*Gila cypha*) population dynamics, evaluating cost-effective nonnative species management alternatives that meet humpback chub viability goals, and the assessment of the economic costs of experimental flows such as trout management and smallmouth bass (*Micropterus dolomieu*) flows. J.1 has recently expanded to include work on smallmouth bass screening tools, models to inform optimal smallmouth bass monitoring and research, and value of information analysis for the GCDAMP.

Element J.2

J.2 funds development of predictive modeling capability for assessment of whitewater rafting recreational experience under different future management scenarios, as recommended by the GCMRC Socioeconomic Research Review Panel.

Reduction Strategy and Potential Impacts to Science

Reduction targets for Project J are relatively small because additional reductions would have lasting impacts on program capability and likely affect the next TWP. Project J was redirected from some TWP purposes in FY26 to address critical emergent needs including the development of Smallmouth Bass tools to assess management actions; no development of a whitewater rafting simulation model to estimate recreational use, behavior, and economic value was planned to occur, meaning that individual trip-based simulation models will not be integrated with the revealed and stated preference research specific to whitewater rafting in Grand Canyon. The FY26 adjustments are expected to extend through FY27. Impacts of the reductions in this plan are expected to be minimal; saving will be sought, but due to the nature of the project and the program need, savings are unlikely to be significant (if capability is maintained).

PROJECT K – Geospatial Science, Data Management and Technology

FY27 TWP Budget

Fiscal Year 2027									
Project K Geospatial Science, Data Management, and Technology	Salaries	Travel & Training	Operating Expenses	Logistics Expenses	Cooperative Agreements	To other USGS Centers	AMP Special Burden Rate*	Total	USGS Contributing Funds**
							23.40%		Est Full Rate = 56%
K.1. Enterprise GIS, geospatial analysis, and processing	\$168,704	\$4,000	\$5,600	\$0	\$0	\$0	\$41,723	\$220,028	
K.2. Data management and database administration	\$276,796	\$1,800	\$3,000	\$0	\$0	\$0	\$65,893	\$347,489	
K.3. Data telemetry and field engineering	\$126,499	\$3,500	\$6,550	\$0	\$0	\$0	\$31,952	\$168,501	
Total Project K	\$571,999	\$9,300	\$15,150	\$0	\$0	\$0	\$139,569	\$736,018	\$64,201

Survey Rank

ELEMENT	GRAND AVE RANK
K.1	30.16667
K.2	14.66667
K.3	20.83333

Project K supports the following LTEMP resource goals:

- Archaeological and Cultural Resources
- Natural Processes
- Humpback Chub
- Other Native Fish
- Recreational Experience
- Sediment
- Rainbow Trout
- Nonnative Invasive Species
- Riparian Vegetation

Reductions

Project	Project Description	FY27 Capacity Limited Total	Capacity Percent Reduction from FY25-27 TWP	GRAND AVE RANK	15% Reduction	15% Reduction from capacity limit	15% Reduced Budget	19.25% Reduction	19.25% Reduction from capacity limit	19.25% Reduced Budget	23.5% Reduction	23.5% Reduction from capacity limit	23.5% Reduced Budget
K	Geospatial Science, Data Management, and Technology												
K.1	Enterprise GIS, geospatial analysis, and processing	\$168,161	23.57%	30.2	\$9,408	5.59%	\$158,753	\$9,408	5.59%	\$158,753	\$9,408	5.59%	\$158,753
K.2	Data management and database administration	\$216,261	56.47%	14.7	\$4,481	2.07%	\$211,780	\$4,704	2.18%	\$211,557	\$4,704	2.18%	\$211,557
K.3	Data telemetry and field engineering	\$42,417	74.83%	20.8	\$1,785	4.21%	\$40,632	\$8,640	20.37%	\$33,777	\$9,849	23.22%	\$32,568
	Total K	\$426,839	50.84%	21.9	\$15,673	3.67%	\$411,166	\$22,752	5.33%	\$404,087	\$23,961	5.61%	\$402,878

Element K.1

K.1 funds geospatial data management, GIS services and support. Staff in Project K have often had some overlapping planned hours among all three elements, as many data-centric initiatives for GCMRC involve geospatial data, data management and relational database administration, and providing access to online resources.

Element K.2

K.2 funds continued maintenance of existing enterprise relational databases in support of LTEMP related science efforts, and in some cases, the design and development of new databases for projects or resources. This includes a very large effort to begin building capacity to work with cloud computing resources, primarily using Amazon Web Services, and adhering to Department of the Interior mandatory directives to implement cloud migration strategies by end of calendar year 2027.

Element K.3

K.3 funds installing, maintaining, and collecting data telemetrically from field-based sensors in the Grand Canyon. Work in this element is responsible for managing both the field and power equipment deployed at sites across Grand Canyon in support of GCMRC science project needs and in response to almost all LTEMP goals. This project element was also responsible for managing the data telemetry, data and system security, and data ingest into the AWS cloud.

Project Elements K.1 - K.3 are highly integrated; reductions were applied across elements based on survey scores, with the assumption that a hiring freeze would continue through FY27. If the hiring freeze is lifted, this plan should be adjusted to meeting the very high priority of hiring a database manager/computer scientist to support the vast datasets housed and served out by GCMRC and used by researchers and stakeholders interested in AMP related monitoring in Glen and Grand Canyons.

Reduction Strategy and Potential Impacts to Science

Reductions in one or more project elements in Project K will continue to have compounding impacts to the support provided across GCMRC. Accounting for the impacts that these budget levels is nearly impossible as the lack of or reduction in capacity for data management, data science, web application development, data telemetry, field system engineering, etc., inherent in this exercise assuming the hiring freeze will continue, affects nearly all projects and the GCMRC as a whole. Staffing is already too low in Project K to fully assure continued data management and data accessibility that all science projects depend upon and that the GCDAMP uses for decision-making. If the hiring freeze continues, there is no opportunity to bring staffing above half of what was planned in the TWP. If hiring became allowed, a Data Manager/Computer Scientist would be hired to better ensure competent data management, although the staffing will still be lower than anticipated in the TWP; lower ranked elements will be reduced to accommodate the increased cost. Without the hiring of either the Physical

Scientist / Internet of Things engineer or a Computer Scientist / Database Administrator, there is a high likelihood that incidents can occur that will lead to data loss for these systems.

PROJECT L – Remote Sensing

FY27 TWP Budget

Fiscal Year 2027									
Project L Overflight Remote Sensing in Support of GCDAMP and LTEMP	Salaries	Travel & Training	Operating Expenses	Logistics Expenses	Cooperative Agreements	To other USGS Centers	AMP Special Burden Rate*	Total	USGS Contributing Funds**
							23.40%		Est Full Rate = 56%
L.1. Analysis and interpretation of overflight remote sensing data	\$257,300	\$7,000	\$5,000	\$0	\$0	\$0	\$63,016	\$332,316	
L.2. Acquisition of overflight remote sensing imagery (FY26 project only)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
L.3. Acquisition of airborne lidar in conjunction with overflight remote sensing imagery (FY26 project only)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Total Project L	\$257,300	\$7,000	\$5,000	\$0	\$0	\$0	\$63,016	\$332,316	\$28,987

Survey Rank

ELEMENT	GRAND AVE RANK
L.1	34.33333
L.2	44.66667
L.3	42.16667

Project L supports the following LTEMP resource goals:

- Archaeological and Cultural Resources
- Natural Processes
- Humpback Chub
- Hydropower and Energy
- Other Native Fish
- Recreational Experience
- Sediment
- Tribal Resources
- Rainbow Trout Fishery
- Nonnative Invasive Species
- Riparian Vegetation

Reductions

Project	Project Description	FY27 Capacity Limited Total	Capacity Percent Reduction from FY25-27 TWP	GRAND AVE RANK	15% Reduction	15% Reduction from capacity limit	15% Reduced Budget	19.25% Reduction	19.25% Reduction from capacity limit	19.25% Reduced Budget	23.5% Reduction	23.5% Reduction from capacity limit	23.5% Reduced Budget
L	Overflight Remote Sensing in Support of GCDAMP and LTEMP												
L.1	Analysis and interpretation of overflight remote sensing data	\$322,233	3.03%	34.3	\$11,760	3.65%	\$310,473	\$11,760	3.65%	\$310,473	\$11,760	3.65%	\$310,473
L.2	Acquisition of overflight remote sensing imagery	\$-			\$0	0.00%	\$0	\$0	0.00%	\$0	\$0	0.00%	\$0
L.3	Acquisition of airborne lidar in conjunction with overflight remote sensing imagery	\$-			\$0	0.00%	\$0	\$0	0.00%	\$0	\$0	0.00%	\$0
	Total L	\$322,233	3.03%	34.3	\$11,760	3.65%	\$310,473	\$11,760	3.65%	\$310,473	\$11,760	3.65%	\$310,473

Element L.1

L.1 funds analysis and interpretation of aerial imagery data from the 2021 and previous overflights that is used by all projects. Project L also conducts collaborative science efforts with other specific projects

(A, B, C, D), including development of landcover classification maps, analyses of topographic change and changes in landcover, and measuring system-wide changes in high-elevation sand deposits using the archive of remote sensing digital topography.

Reduction Strategy and Potential Impacts to Science

15%-23.5% - Data production, analysis, and interpretation, occur as described in the triennial workplan. However, there is no funding budgeted for required software licenses, publication of science findings, or in-person attendance of stakeholder meetings owing to the elimination of operating expenses and travel under these scenarios. Either an alternate source of funding for these expenses will need to be identified, or project staffing will need to be reduced to a level that frees up funding to pay for these expenses.

PROJECT M – Management

FY27 TWP Budget

Fiscal Year 2027									
Project M Leadership, Management, and Support	Salaries	Travel & Training	Operating Expenses	Logistics Expenses	Cooperative Agreements	To other USGS Centers	AMP Special Burden Rate*	Total	USGS Contributing Funds**
							23.40%		Est Full Rate = 56%
M.1. Leadership, management, and support	\$695,066	\$16,000	\$114,000	\$0	\$0	\$0	\$193,066	\$1,018,132	
M.2. Logistics staff	\$401,913	\$0	\$0	\$0	\$0	\$0	\$94,048	\$495,961	
M.3. IT	\$0	\$0	\$65,750	\$0	\$0	\$0	\$15,386	\$81,136	
Total Project M	\$1,096,980	\$16,000	\$179,750	\$0	\$0	\$0	\$302,499	\$1,595,228	\$139,148

Survey Rank

ELEMENT	GRAND AVE RANK
M.1	27
M.2	12.66667
M.3	40.83333

Project M supports the following LTEMP resource goals:

- Archaeological and Cultural Resources
- Natural Processes
- Humpback Chub
- Hydropower and Energy
- Other Native Fish
- Recreational Experience
- Sediment
- Tribal Resources
- Rainbow Trout Fishery
- Nonnative Invasive Species
- Riparian Vegetation

Reductions

Project	Project Description	FY27 Capacity Limited Total	Capacity Percent Reduction from FY25-27 TWP	GRAND AVE RANK	15% Reduction	15% Reduction from capacity limit	15% Reduced Budget	19.25% Reduction	19.25% Reduction from capacity limit	19.25% Reduced Budget	23.5% Reduction	23.5% Reduction from capacity limit	23.5% Reduced Budget
M	Leadership, Management, and Support												
M.1	Leadership, management, and support	\$490,891	51.79%	27.0	\$0	0.00%	\$490,891	\$0	0.00%	\$490,891	\$0	0.00%	\$490,891
M.2	Logistics staff	\$308,305	37.84%	12.7	\$0	0.00%	\$308,305	\$0	0.00%	\$308,305	\$0	0.00%	\$308,305
M.3	IT	\$80,215	1.13%	40.8	\$0	0.00%	\$80,215	\$1,000	1.25%	\$79,215	\$4,435	5.53%	\$75,780
	Total M	\$879,411	44.87%	26.8	\$0	0.00%	\$879,411	\$1,000	0.11%	\$878,411	\$4,435	0.50%	\$874,976

Element M.1

M.1 funds salaries, travel, and operating expenses for the management and operation of GCMRC.

Reductions were applied by maintaining current vacancies in support positions for information product production and data releases. The GCMRC Chief salary has been paused assuming the SBSC Center Director acting role will continue.

Element M.2

M.2 funds salaries for GCMRC Logistics operation.

Element M.3

M.3 covers GCMRC's information technology equipment and related support costs.

Reduction Strategy and Potential Impacts to Science

Reductions were not applied to M.1 (management) or M.2 (logistics); long-term capacity impacts would be created.

M.1 funds management staff, vehicles, and fuel for all projects. It was evaluated for reduction, but ultimately not reduced in recognition of increased fuel prices (especially from 2024 when the TWP was developed). Staffing losses included in the internal GCMRC Capacity Limited Budget remain and have impacts including the delay of information products (papers, presentations, posters, etc.) and the data releases. Managerial functions will remain stressed or overwhelmed.

M.2 is not reduced from the internal GCMRC Capacity Limited Budget, but existing staff losses in Logistics could still create problems that impact the ability to put trips on the river. If hiring were allowed, this plan would be altered to accommodate funding to better ensure functionality in Logistics.

M.3 is reduced but by amounts less than target reductions would suggest. IT needs were carefully considered and reduced as possible without compromising all projects with inability to maintain equipment and cover agreements that house data in the cloud. IT risk is minimized in this plan.

PROJECT N – Native Fish Population Dynamics

FY27 TWP Budget

Fiscal Year 2027									
Project N Native Fish Population Dynamics	Salaries	Travel & Training	Operating Expenses	Logistics Expenses	Cooperative Agreements	To other USGS Centers	AMP Special Burden Rate*	Total	USGS Contributing Funds**
							23.40%		Est Full Rate = 56%
N.1. Sucker and dace distribution and demographics (SADDAD) (unfunded at this time)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
N.2. Predictive modeling and Decision support for native fishes (unfunded at this time)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
N.3. Evaluating dispersal and sources of mortality (Razorback sucker) using new technology (unfunded at this time)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Total Project N	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Survey Rank

ELEMENT	GRAND AVE RANK
N.1	48.33333
N.2	50
N.3	42.5

Project N supports the following LTEMP resource goals:

- Other Native Fish

Reductions

Project	Project Description	FY27 Capacity Limited Total	Capacity Percent Reduction from FY25-27 TWP	GRAND AVE RANK	15% Reduction	15% Reduction from capacity limit	15% Reduced Budget	19.25% Reduction	19.25% Reduction from capacity limit	19.25% Reduced Budget	23.5% Reduction	23.5% Reduction from capacity limit	23.5% Reduced Budget
N	Native Fish Population Dynamics												
N.1	Sucker and dace distribution and demographics (SADDAD)	\$-			\$0	0.00%	\$0	\$0	0.00%	\$0	\$0	0.00%	\$0
N.2	Predictive modeling and Decision support for native fishes	\$-			\$0	0.00%	\$0	\$0	0.00%	\$0	\$0	0.00%	\$0
N.3	Evaluating dispersal and sources of mortality (Razorback sucker) using new technology	\$-			\$0	0.00%	\$0	\$0	0.00%	\$0	\$0	0.00%	\$0
N.2	Predictive modeling and Decision support for native fishes	\$0			\$0	0.00%	\$0	\$0	0.00%	\$0	\$0	0.00%	\$0
N.3	Evaluating dispersal and sources of mortality (Razorback sucker) using new technology	\$0			\$0	0.00%	\$0	\$0	0.00%	\$0	\$0	0.00%	\$0
Total N		\$0			\$0	\$0	\$0	\$0	0.00%	\$0	\$0	0.00%	\$0

Project N was almost entirely eliminated from the 2025-2027 TWP with the exception of a small amount of funding to support tuition of a PhD student (~\$22k) whose dissertation proposal is focused on supporting the GCDAMP and the other native fish goal. The PI was allocated zero salary to support and supervise the student, serve on the student's committee, and complete analysis and presentation of metrics requested by the GCDAMP. Additional cuts to salary of the PI in project H would further limit the volunteer time that the PI can devote to both Project H and N and metrics summaries and presentations. The PI would be required to find additional work outside the GCDAMP with its own set of deliverables.

Element N.1

N.1 involves the use and analysis of existing data to understand the influence of dam operations, environmental variation, expanding nonnative species, and other management actions on the population dynamics of ONF.

Element N.2

N.2 uses the results of demographic modeling in Project Element N.1 to develop predictive models to inform management and decision-making for ONF.

Element N.3

N.3 collects data that would be used to estimate predation mortality and movement rates for released razorback sucker, including evidence of where predation may occur to inform management of nonnative predators or mitigate other forms of mortality.

Reduction Strategy and Potential Impacts to Science

Project N was not funded in the FY27 TWP Budget.

Survey Results

The tables below include the survey results as shared from the DOI (average collective score), the BAHG (each survey result and an average), and the Grand Average (DOI and BAHG average scores averaged) used to generate targets in this plan.

PROJECT	DOI Total (Higher Score Higher Priority)	BAHG Points Rank	BAHG Agreeme nt	BAHG MaxDiff	BAHG Average	GRAND ave RANK
A.1 Stream	62	5	1	5	3.666667	3.17
A.2 Contir	56	18	8	8	11.333333	8.67
A.3 Sedim	50	8	12	10	10	9.33
B.1 Sandb	53	17	20	22	19.66667	14.00
B.2 Bathyr	24	26	27	11	21.333333	30.50
B.3 Contro	32	52	55	43	50	43.50
B.4 Stream	17	34	41	45	40	43.00
C.1 Groun	50	11	18	24	17.66667	15.17
C.2 Determ	30	48	43	42	44.333333	42.67
C.3 Predic	22	47	42	36	41.66667	39.50
C.4 Biogeo	37	38	36	34	36	35.67
C.5 Vegeta	4	56	39	54	49.66667	47.50
D.1 Monit	53	25	22	19	22	16.33
D.2 Monit	20	49	54	40	47.66667	38.67
D.3 Evalua	37	46	29	37	37.333333	33.00
D.4 Pilot s	11	45	56	56	52.333333	44.00
D.5 Monit	7	44	53	55	50.66667	46.83
E.1 Phosph	21	40	32	30	34	33.67
E.2 Rates a	22	33	31	21	28.333333	33.33
E.3 Under	27	53	52	48	51	44.33
E.4 Produ	16	42	30	27	33	34.83
F.1 Inverte	26	41	38	39	39.333333	36.67
F.2 Aquati	29	32	21	23	25.333333	30.50
F.3 Aquati	14	29	33	29	30.333333	34.50
F.4 Inverte	26	36	34	35	35	38.83
G.1 Hump	59	7	4	3	4.666667	4.83
G.2 Annua	62	4	16	2	7.333333	6.00
G.3 Juven	60	10	11	9	10	7.50
G.4 Remo	39	19	10	17	15.333333	20.50
G.5 Monit	47	1	7	7	5	7.67
G.6 Juven	25	13	15	25	17.66667	24.33
G.7 Chute	9	51	47	46	48	41.67
G.8 Sampl	34	21	51	52	41.333333	38.17
G.9 Mover	22	43	50	44	45.66667	36.50
H.1 Rainb	47	6	26	33	21.66667	18.17
H.2 Exper	40	14	25	38	25.66667	24.17
H.3 Salmo	15	27	37	32	32	32.33
I.1 System	61	2	6	1	3	3.17
I.2 Estim	43	16	14	15	15	16.50
I.3 Identif	44	12	24	12	16	17.00
I.4 Modeli	56	3	9	6	6	5.67
J.1 Integra	50	28	28	18	24.66667	19.33
J.2 Recrea	46	39	49	47	45	31.67
J.3 Tribal r	13	20	35	28	27.66667	34.50
K.1 Enterp	11	22	13	20	18.333333	30.17
K.2 Data n	32	23	3	4	10	14.67
K.3 Data te	35	24	23	14	20.333333	20.83
L.1 Analys	5	31	19	26	25.333333	34.33
L.2 Acquis	2	50	45	51	48.66667	44.67
L.3 Acquis	4	37	44	50	43.66667	42.17
M.1 Leade	7	15	5	16	12	27.00
M.2 Logist	42	9	2	13	8	12.67
M.3 IT \$70	1	30	17	31	26	40.83
N.1 Sucke	16	54	40	53	49	48.33
N.2 Predic	9	55	46	41	47.333333	50.00
N.3 Evalua	32	35	48	49	44	42.50

REDUCTION SUMMARY GRAPH

The previous plans were evaluated using a chart of reductions comparing the final reduction proposed to the target reductions generated; however, in this version, based in maintaining capacity, as much as possible, the targets lose their meaning as a suitable comparison, no elements are maintained at full funding (“M” designation in previous charts), and no elements are paused (“P” designation in the previous charts). The graph below is provided as an overview of the funding levels for each project (not element, for simplicity) as it compares between the original TWP, Capacity Limited Budget, and the proposed reduction levels.

