

**RECOVERY PROGRAM
FY 2016-2017 SCOPE OF WORK for:**

Recovery Program Project Number: 123a

Nonnative fish control in the Green River

Reclamation Agreement number: R11PG40024 & R14AP00007
Reclamation Agreement term: 9/16/2011-9/30/2016 & 05/01/2014-09/30/2018

Note: Recovery Program FY16-17 scopes of work are drafted in May 2015. They often are revised before final Program approval and may subsequently be revised again in response to changing Program needs. Program participants also recognize the need and allow for some flexibility in scopes of work to accommodate new information (especially in nonnative fish management projects) and changing hydrological conditions.

Lead agency: USFWS

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Category:

- Ongoing project
 Ongoing-revised project
 Requested new project
 Unsolicited proposal

Expected Funding Source:

- Annual funds
 Capital funds
 Other

I. Title of Proposal: Nonnative fish control in the Green River, Dinosaur National Monument, Desolation/Gray Canyons, lower Green River and in the Colorado River, Westwater Canyon and lower Colorado River.

II. Relationship to RIPRAP:

GREEN RIVER ACTION PLAN: MAINSTEM

III.A.4.b.(3) Reduce negative impacts to endangered fishes from sportfish management activities - smallmouth bass in the middle and lower Green River

II.A.4.d. Reduce negative impacts to endangered fishes from sportfish management activities - Direct new (or shift existing) nonnative fish removal efforts to address increasing numbers of walleye.

COLORADO RIVER ACTION PLAN: MAINSTEM

III.A.8. Reduce negative impacts to endangered fishes from sportfish management activities - Direct new (or shift existing) nonnative fish removal efforts to address increasing numbers of walleye in the lower river.

III. Study Background/Rationale and Hypotheses:

The Upper Colorado River Endangered Fish Recovery Program has determined that control of nonnative fish in the upper Colorado River basin is essential to the recovery of the four endangered fish species: Colorado pikeminnow, razorback sucker, humpback chub, and bonytail. Smallmouth bass abundance has dramatically increased in the Green River since 2000. This information resulted in a recommendation from the December 2003 Nonnative Fish Control Workshop (Grand Junction, CO) to attempt control of this species in the Green River. Based on data collected each year, investigators and the Recovery Program have modified this project in an effort to adapt to new insights and population dynamics. In particular, efforts have been focused on targeting adult smallmouth bass as they spawn, in an attempt to both remove large adults and reduce reproduction. In 2012 and 2013, dry conditions and low river discharge resulted in a large group of sub-adult fish in the Echo-Split reach. Crews also noted higher abundances of small bass in the Island Park area during these years, suggesting this may be a spawning reach. For 2014, passes through Island Park were coordinated between UDWR in Vernal and Moab, as well as FWS Vernal, in order to maximize removal during the period when bass were likely spawning. This approach will be repeated as needed, based on capture data. In 2015, bass will also be tagged in order to estimate population abundance, track movement, and monitor the effectiveness of control passes. Smallmouth bass will only be marked on one pass and will be removed on all subsequent passes.

In 2008, two control/monitoring trips were completed to assess smallmouth abundance and distribution within Desolation/Gray Canyons. The 2008 assessment showed relative abundance remained low and that although distribution had spread downstream 85% of bass captured were within the first 40 miles of the reach, similar to patterns seen in 2006. Intensive control efforts in this reach were deemed unnecessary at that time. Reports of increasing smallmouth bass captures in the upper most section of Desolation Canyon led to renewed sampling efforts in 2011 and 2012 which resulted in overall catch rates similar to previous years; however bass were present further downstream compared to the 2004-2006 period. No sampling occurred in 2013 but two sampling trips were completed in 2014. The 2014 assessment showed a four-fold increase of overall catch rate of bass increasing from approximately 4 fish/hour to 16 fish/hour. While the catch rate of adult bass doubled the four-fold increase in overall catch rate was attributed to an increase of juvenile bass (TL=100-199 mm) captured. These juveniles were produced during the low water years of 2012 and 2013; in 2014 these cohorts were seen in large numbers in most reaches where bass removal was occurring. Not only did the abundance of bass increase during 2014 sampling, but the distribution of bass also expanded downstream to include the entire 80 mile reach, with large numbers of fish seen below the areas commonly occupied in earlier surveys.

Walleye captures in the lower Green River tripled between 2008 and 2013. Responding to this threat, UDWR-Moab initiated a targeted walleye removal effort in 2014 in the lower Green River. In 2014 large numbers of walleye were removed from a 31-mile section of the lower Green River between Tusher Diversion and Ruby Ranch (RM 128.0-97.0). Based on these findings and recommendations from the 2014 Nonnative Fish Workshop (Grand Junction, December 2014), the 2015 field effort focused on early spring electrofishing on the Green River between Tusher Diversion and Ruby Ranch (RM 128.0-97.0), fall electrofishing on the

lower Green River between Tusher Diversion and Ruby Ranch and fall electrofishing on the lower Colorado River between Westwater and Potash (RM 127.5 -47.2).

Targeted removal efforts will continue in 2016 on both the lower Green and lower Colorado Rivers. Future effort will be guided by the previous years' findings and recommendations from the Nonnative Fish Workshop. When possible, effort will be combined with sampling under Project #128 (Abundance Estimates for Colorado Pikeminnow in the Green River) to maximize efficiency and reduce effects on native fish.

IV. Study Goals, Objectives, End Product(s):

Goal: Control and monitor abundance of smallmouth bass and walleye in the Green River between Echo Park and Split Mountain boat ramp, Desolation and Gray canyons, and the lower Green River.

Objectives:

1. Remove smallmouth bass and other nonnative fishes in the Green River from Echo Park (RM 344.5) to Split Mountain (RM 319.5).
2. Monitor adult and juvenile smallmouth bass to determine extent of control needed in the Green River, including marking and recapturing bass in the Echo-Split reach.
3. Remove smallmouth bass in the Green River between Tabyago Riffle (RM 207 and Swasey's Rapid (RM 129.8)
4. Remove walleye in the lower Green River from Tusher Diversion (RM 128.0) to Ruby Ranch (RM 97.0) and on the lower Colorado River from Westwater Ranger Station (RM 127.5) to Potash (RM 47.2).

End Products: Annual reports will provide the current year's data for: adult and juvenile total CPUE, CPUE by river mile and size class, monthly length frequency histograms, CPUE for other nonnative species, total catch numbers, and estimates of spawning periods and locations. Population abundances of smallmouth bass will be estimated using tag and recapture data from Echo-Split. Data from past years will be included for relevant metrics to provide background and demonstrate trends. Lower Colorado River walleye removal effort will be reported on under Project #126.

Study Area: Green River within Dinosaur National Monument from Echo Park to Split Mountain boat ramp (RM 344.5-319.5), Desolation/Gray Canyons from Tabyago Riffle to Swasey's boat ramp (RM 207-129.8), between Tusher Diversion and Ruby Ranch (RM 128.0-97.0), and the lower Colorado River between Westwater Ranger Station and Potash (RM 127.5 -47.2).

V. Study Methods/Approach:

Sampling: Smallmouth bass will be removed primarily by electrofishing. Two electrofishing boats will simultaneously electrofish each shoreline of the river. Effort will be focused on

shoreline habitat that is likely to contain smallmouth bass. Sampling crews will conduct removal activities in a manner that minimizes potential negative impacts to endangered fish as a result of electrofishing activities. This includes discontinuing electrofishing when elevated numbers of endangered fish are known to be present. Twelve electrofishing passes will be conducted in the Echo/Split reach beginning in June and ending in late September. Mark-recapture population estimates will be attempted in the Echo-Split reach using Floy tags. Bass >100mm total length will be marked and released on the first pass. Subsequent passes will consist of removal only. All bass removed will be deposited in shoreline areas deemed low use in consultation with Dinosaur National Monument. The Vernal USFWS office will coordinate passes with Moab UDWR in order to maximize the number of passes conducted during the bass spawning and nesting period. In the Desolation/ Gray reach, two smallmouth bass electrofishing passes will be conducted in June and July primarily to remove bass and to monitor changes in distribution of both adults and juveniles.

Walleye will be removed by electrofishing in a manner similar to smallmouth bass. Boat or raft mounted electrofishers will be used depending on flows and location of sampling. Effort will be focused on high-value walleye habitat on the Green River between Tusher Diversion and Ruby Ranch (RM 128.0-97.0) and on the Colorado River between Westwater and Potash (RM 127.5-47.2). Three electrofishing passes will be conducted on the Green River in spring and three passes will be conducted on the Colorado River during the fall. However, sampling effort allocation may be shifted in location and timing to maximize walleye exploitation. During years when sampling for Project #128 occurs (2016-2018), effort will be combined when possible to maximize efficiency and reduce effects on native fish.

Data Analysis: Adult and juvenile smallmouth bass catch rates, walleye catch rates, total catch-per-unit-effort (CPUE), CPUE by river mile and length frequency histograms, and CPUE for other nonnative fish will be calculated for both reaches. Data from past years of sampling will be included for relevant comparisons and to demonstrate trends.

Fish Handling and Disposal: All other centrarchids (green sunfish, bluegill, black crappie, and largemouth bass), northern pike and white sucker encountered will be removed. Any nonnative species of special concern such as grass carp, gizzard shad, or burbot which are encountered will be removed and the appropriate state Fish and Game agencies will be contacted. All nonnative fish removed in Dinosaur National Park and Canyonlands National Park will be euthanized and deposited within the river corridor, as advised by the National Park Service. Any endangered fish captured will be scanned for a PIT tag, tagged if needed, weighed (g), measured TL (mm), and released alive. Endangered fish data will then be reported to appropriate principal investigators and included in annual reporting.

VI. Task Description and Schedule:

Task 1. Eight removal passes from Echo Park to Split Mountain boat ramp (USFWS CRFP – Vernal; July-September).

Task 2. One marking and three removal passes from Echo Park to Split Mountain boat ramp (UDWR Moab; May - July).

Task 3. Two removal passes in Desolation and Gray Canyons (UDWR Moab; June-July).

Task 4. Three removal passes between Tusher Diversion and Ruby Ranch (UDWR Moab; March-May, October).

Task 5. Nine removal days between Westwater and Potash (UDWR Moab; October).

Task 6. Data entry, analysis, and reporting – October/November

Task	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept
1										X	X	X
2									X	X		
3								X	X	X		
4	X					X	X					
5	X											
6	X	X										

VII. Deliverables, Due Dates, and Budget by Fiscal Year:

FY2016: Annual Report by November 2016.

2016			
Task 1 – USFWS Echo Sampling (8 trips)	Rate \$/hr	Total hours	Cost
Labor			
GS-12 Supervisory Fish Biologist	\$55.14	320	\$17,645
4 GS-5 Tech/ WG-5 Boat Operator	\$24.96	1280	\$31,949
Overtime for technicians (3 hrs/week x 8 weeks x 4 techs)	\$37.44	96	\$3,594
Subtotal			\$53,188
Travel			
Shuttle (3 trucks/trip x \$160/truck x 8 trips) Echo to Split Mountain			\$3,840
Per diem (5 people/day x \$30/person x 3 days/trip x 8 trips)			\$3,600
Subtotal			\$7,440
Equipment			
(3 trucks/trip x 175 mi/truck x \$0.31/mi x 8 trips) Vernal to Echo Park, round trip			\$1,302
(12 gal gas/boat x 3 boats/trip x \$4.00/gal x 8 trips)			\$768
GSA trucks (3 trucks x 2 months)	\$313	6	\$1,878
Maintenance/replacement of rafting gear (oars, repair kit supplies, raft repairs/patching, motor maintenance), sampling nets, electrofishing gear (generator maintenance, electrode replacement), safety equipment (life jackets, control pedals/mats), camping equipment (based on average annual expenses from prior years).			\$1,022
Honda 9.9hp 4 stroke motor replacement (2016 only)	\$2,351	1	\$2,351
GS-8 Fish Tech maintenance work	\$38.72	196	\$7,589
Subtotal			\$14,910
Task 1 Total			\$75,538
Task 6 - USFWS, Data analysis, reporting, administration			
	Rate \$/hr	Total hours	Cost
Labor			
GS-12 Supervisory Fish Biologist	\$55.14	336	\$18,527
GS-9 Admin. Officer	\$39.19	80	\$3,135
Subtotal			\$21,662
Travel			
Per diem (1 person x \$129/day x 3 days) Vernal to Grand Junction			\$387
Travel to give presentations at workshops and meetings (1 truck/trip x 288 mi/truck x \$0.31/mi)			\$89
Subtotal			\$476
Task 6 USFWS Total			\$22,138
SOW USFWS Total			\$97,676

FY 2016 Costs for UDWR- Moab**Task 2. Four Echo/Split SMB Removal Passes**

<u>Personnel Costs (salary + fringe costs)</u>	Rate	Hours	Cost
Project Leader	\$33.71	80	\$2,697
Biologist	\$30.76	250	\$7,690
Technician	\$16.77	780	\$13,081
		subtotal	\$23,467
<u>Food and Travel</u>	Rate	Quantity	Cost
Fleet Costs ^a (2 trucks for 10% of total fleet costs)	\$40,800.00	0.10	\$4,080
Food (6 people, 4 days, 4 passes)	\$30.00	96	\$2,880
Shuttle (2 trucks, 4 passes)	\$150.00	8	\$1,200
		subtotal	\$8,160
<u>Equipment</u>	Rate	Quantity	Cost
Camping gear repair/replacement ^b :			\$1,079
Sampling gear repair/replacement ^c :			\$1,551
Boating gear repair/replacement ^d :			\$1,560
Fuel for motors (10 gallons/pass)	\$4.00	40	\$160
		subtotal	\$4,350
Task 2 subtotal			\$35,977

Task 3. Two Desolation/Grey SMB Removal Passes

<u>Personnel Costs (salary + fringe costs)</u>	Rate	Hours	Cost
Project Leader	\$33.71	80	\$2,697
Biologist	\$30.76	240	\$7,382
Technician	\$16.77	1100	\$18,447
		subtotal	\$28,526
<u>Food and Travel</u>	Rate	Quantity	Cost
Fleet Costs ^a (3 trucks for 10% of total fleet costs)	\$40,800.00	0.10	\$4,080
Food (6 people, 8 days, 2 passes)	\$30.00	96	\$2,880
Shuttle (3 trucks, 2 passes)	\$175.00	6	\$1,050
		subtotal	\$8,010
<u>Equipment</u>	Rate	Quantity	Cost
Camping gear repair/replacement ^b :			\$902
Sampling gear repair/replacement ^c :			\$1,401
Boating gear repair/replacement ^d :			\$1,650
Fuel for motors (40 gallons/pass)	\$4.00	80	\$320
		subtotal	\$4,273
Task 3 subtotal			\$40,809

Task 4. Lower Green WLY Removal: Tusher Diversion to Green River State Park (3 Passes)

Note: Three WLY removal passes will be conducted simultaneously with sampling under Project #128 between Green River State Park and the confluence with the Colorado River. This budget only reflects removal effort between Tusher Diversion and Green River State Park.

<u>Personnel Costs (salary + fringe costs)</u>	Rate	Hours	Cost
Project Leader	\$33.71	20	\$674
Biologist	\$30.76	90	\$2,768
Technician	\$16.77	90	\$1,509
		subtotal	\$4,952
<u>Food and Travel</u>	Rate	Quantity	Cost
Fleet Costs ^a (3 trucks for 1% of total fleet costs)	\$40,800.00	0.01	\$408
Food (4 people, 3 days)	\$30.00	12	\$360
		subtotal	\$768
<u>Equipment</u>	Rate	Quantity	Cost
Camping gear repair/replacement ^b :			\$0
Sampling gear repair/replacement ^c :			\$175
Boating gear repair/replacement ^d :			\$325
Fuel for motors/generators	\$4.00	20	\$80
		subtotal	\$580
Task 4 subtotal			\$6,300

Task 5. Westwater and/or Lower Colorado WLY Removal (3 Passes- 12 days)

<u>Personnel Costs (salary + fringe costs)</u>	Rate	Hours	Cost
Project Leader	\$33.71	80	\$2,697
Biologist	\$30.76	360	\$11,073
Technician	\$16.77	400	\$6,708
		subtotal	\$20,478
<u>Food and Travel</u>	Rate	Quantity	Cost
Fleet Costs ^a (3 trucks for 2% of total fleet costs)	\$40,800.00	0.02	\$816
Food (5 people, 12 days)	\$30.00	60	\$1,800
		subtotal	\$2,616
<u>Equipment</u>	Rate	Quantity	Cost
Camping gear repair/replacement ^b :			\$741

Sampling gear repair/replacement ^c :			\$838
Boating gear repair/replacement ^d :			\$950
Fuel for motors/generators	\$4.00	25	\$100
		subtotal	\$2,629

Task 5 subtotal **\$25,723**

Task 6. Data management, reporting, administration

Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$33.71	100	\$3,371
Biologist	\$30.76	360	\$11,073
		subtotal	\$14,444

Task 6 subtotal **\$14,444**

UDWR Total FY 2016	\$123,253
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^a The State of Utah uses Automotive Resources Inc. for motor pool operations. Rental is approximately \$6,800/year/vehicle (includes fleet rental, mileage, and gas), which is based on the average annual cost for all trucks used in our program.

^b Includes, but is not limited to, tents, sleeping pads, toilet system, cookware, stoves, propane, charcoal, satellite phone and service, drybags, coolers, first aid supplies.

^c Includes, but is not limited to, scales, PIT tag supplies, measuring boards, wiring, ETS repair, generator repair, batteries.

^d Includes, but is not limited to, raft repair, outboard motor parts and maintenance, propellers, oars, raft frame repair, dry boxes.

^{b,c,d} Estimated costs are based on actual costs from previous years plus an estimated 2% cost of living increase each year following.

Total 2016 Budget Request (FWS + UDWR): \$220,929

FY2017: Annual Report by November 2017.

2017			
Task 1 – USFWS Echo Sampling (8 trips)	Rate \$/hr	Total hours	Cost
Labor			
GS-12 Supervisory Fish Biologist	\$56.25	320	\$18,000
4 GS-5 Tech/ WG-5 Boat Operator	\$25.70	1280	\$32,896
Overtime for technicians (6 hrs/week x 8 weeks x 4 techs)	\$38.55	96	\$3,701
Subtotal			\$54,597
Travel			
Shuttle (3 trucks/trip x \$160/truck x 8 trips) Echo to Split Mountain			\$3,840
Per diem (5 people/day x \$30/person x 3 days/trip x 8 trips)			\$3,600
Subtotal			\$7,440
Equipment			
(3 trucks/trip x 175 mi/truck x \$0.32/mi x 8 trips) Vernal to Echo Park, round trip			\$1,344
(12 gal gas/boat x 3 boats/trip x \$4.00/gal x 8 trips)			\$768
GSA trucks (3 trucks x 2 months)	\$320	6	\$1,920
Maintenance/replacement of rafting gear (oars, repair kit supplies, raft repairs/patching, motor maintenance), sampling nets, electrofishing gear (generator maintenance, electrode replacement), safety equipment (life jackets, control pedals/mats), camping equipment (based on average annual expenses from prior years).			\$1,022
GS-8 Fish Tech maintenance work	\$39.74	196	\$7,789
Subtotal			\$12,843
Task 1 Total			\$74,880
Task 6 - USFWS, Data analysis, reporting, administration			
	Rate \$/hr	Total hours	Cost
Labor			
GS-12 Supervisory Fish Biologist	\$56.25	336	\$18,900
GS-9 Admin. Officer	\$39.98	80	\$3,198
Subtotal			\$22,099
Travel			
Per diem (1 person x \$137/day x 3 days) Vernal to Grand Junction			\$411
Travel to give presentations at workshops and meetings (1 truck/trip x 288 mi/truck x \$0.32/mi)			\$92
Subtotal			\$503
Task 6 USFWS Total			\$22,602
SOW USFWS Total			\$97,482

FY 2017 Costs for UDWR- Moab**Task 2. Four Echo/Split SMB Removal Passes**Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$34.38	80	\$2,751
Biologist	\$31.37	250	\$7,844
Technician	\$17.11	780	\$13,342
		subtotal	\$23,936

Food and Travel

	Rate	Quantity	Cost
Fleet Costs ^a (2 trucks for 10% of total fleet costs)	\$41,616.00	0.1	\$4,162
Food (6 people, 4 days, 4 passes)	\$30.60	96	\$2,938
Shuttle (2 trucks, 4 passes)	\$153.00	8	\$1,224
		subtotal	\$8,323

Equipment

	Rate	Quantity	Cost
Camping gear repair/replacement ^b :			\$1,100
Sampling gear repair/replacement ^c :			\$1,582
Boating gear repair/replacement ^d :			\$1,591
Fuel for motors (10 gallons/pass)	\$4.08	40	\$163
		subtotal	\$4,436

Task 2 subtotal**\$36,696****Task 3. Two Desolation/Grey SMB Removal Passes**Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$34.38	80	\$2,751
Biologist	\$31.37	240	\$7,530
Technician	\$17.11	1100	\$18,816
		subtotal	\$29,096

Food and Travel

	Rate	Quantity	Cost
Fleet Costs ^a (3 trucks for 10% of total fleet costs)	\$41,616.00	0.1	\$4,162
Food (6 people, 8 days, 2 passes)	\$30.60	96	\$2,938
Shuttle (3 trucks, 2 passes)	\$178.50	6	\$1,071
		subtotal	\$8,170

Equipment

Rate	Quantity	Cost
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Camping gear repair/replacement ^b :			\$920
Sampling gear repair/replacement ^c :			\$1,429
Boating gear repair/replacement ^d :			\$1,683
Fuel for motors (40 gallons/pass)	\$4.08	80	\$326
		subtotal	\$4,359

Task 3 subtotal **\$41,625**

Task 4. Lower Green WLY Removal: Tusher Diversion to Green River State Park (3 Passes)

Note: Three WLY removal passes will be conducted simultaneously with sampling under Project #128 between Green River State Park and the confluence with the Colorado River. This budget only reflects removal effort between Tusher Diversion and Green River State Park.

Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$34.38	20	\$688
Biologist	\$31.37	90	\$2,824
Technician	\$17.11	90	\$1,539
		subtotal	\$5,051

Food and Travel

	Rate	Quantity	Cost
Fleet Costs ^a (3 trucks for 1% of total fleet costs)	\$41,616.00	0.01	\$416
Food (5 people, 3 days)	\$30.60	12	\$367
		subtotal	\$783

Equipment

	Rate	Quantity	Cost
Camping gear repair/replacement ^b :			\$0
Sampling gear repair/replacement ^c :			\$179
Boating gear repair/replacement ^d :			\$332
Fuel for motors/generators	\$4.08	20	\$82
		subtotal	\$592

Task 4 subtotal **\$6,426**

Task 5. Westwater and/or Lower Colorado WLY Removal (3 Passes- 12 days)

Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$34.38	80	\$2,751
Biologist	\$31.37	360	\$11,295
Technician	\$17.11	400	\$6,842

		subtotal	\$20,888
<u>Food and Travel</u>			
	Rate	Quantity	Cost
Fleet Costs ^a (3 trucks for 2% of total fleet costs)	\$41,616.00	0.02	\$832
Food (5 people, 12 days)	\$30.60	60	\$1,836
		subtotal	\$2,668
<u>Equipment</u>			
	Rate	Quantity	Cost
Camping gear repair/replacement ^b :			\$756
Sampling gear repair/replacement ^c :			\$855
Boating gear repair/replacement ^d :			\$969
Fuel for motors/generators	\$4.08	25	\$102
		subtotal	\$2,682
Task 5 subtotal			\$26,238

Task 6. Data management, reporting, administration

Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$34.38	100	\$3,438
Biologist	\$31.37	360	\$11,295
		subtotal	\$14,733
Task 6 subtotal			\$14,733

UDWR Total FY 2017	\$125,718
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Total 2017 Budget Request (FWS + UDWR): \$223,200

FY2018: Annual Report by November 2018.

2018			
Task 1 – USFWS Echo Sampling (8 trips)	Rate \$/hr	Total hours	Cost
Labor			
GS-12 Supervisory Fish Biologist	\$57.38	320	\$18,362
4 GS-5 Tech/ WG-5 Boat Operator	\$26.48	1280	\$33,894
Overtime for technicians (6 hrs/week x 8 weeks x 4 techs)	\$39.72	96	\$3,813
Subtotal			\$56,069
Travel			
Shuttle (3 trucks/trip x \$163/truck x 8 trips) Echo to Split Mountain			\$3,912
Per diem (5 people/day x \$30/person x 3 days/trip x 8 trips)			\$3,600
Subtotal			\$7,512
Equipment			
(3 trucks/trip x 175 mi/truck x \$0.33/mi x 8 trips) Vernal to Echo Park, round trip			\$1,386
(12 gal gas/boat x 3 boats/trip x \$4.00/gal x 8 trips)			\$768
(1 qts motor boat oil/boat x 3 boats/trip x \$11/qt)			\$33
GSA trucks (3 trucks x 2 months)	\$325	6	\$1,950
Maintenance/replacement of rafting gear (oars, repair kit supplies, raft repairs/patching, motor maintenance), sampling nets, electrofishing gear (generator maintenance, electrode replacement), safety equipment (life jackets, control pedals/mats), camping equipment (based on average annual expenses from prior years).			\$1,022
GS-8 Fish Tech maintenance work	\$40.53	196	\$7,944
Subtotal			\$13,103
Task 1 Total			\$76,684
Task 6 - USFWS, Data analysis, reporting, administration	Rate \$/hr	Total hours	Cost
Labor			
GS-12 Supervisory Fish Biologist	\$57.38	336	\$19,280
GS-9 Admin. Officer	\$40.78	80	\$3,262
Subtotal			\$22,542
Travel			
Per diem (1 person x \$137/day x 3 days) Vernal to Grand Junction			\$411
Travel to give presentations at workshops and meetings (1 truck/trip x 288 mi/truck x \$0.33/mi)			\$95
Subtotal			\$506
Task 6 USFWS Total			\$23,048
SOW USFWS Total			\$99,732

FY 2018 Costs for UDWR- Moab**Task 2. Four Echo/Split SMB Removal Passes**Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$35.07	80	\$2,806
Biologist	\$32.00	250	\$8,000
Technician	\$17.45	780	\$13,609
		subtotal	\$24,415

Food and Travel

	Rate	Quantity	Cost
Fleet Costs ^a (2 trucks for 10% of total fleet costs)	\$42,448.32	0.1	\$4,245
Food (6 people, 4 days, 4 passes)	\$31.21	96	\$2,996
Shuttle (2 trucks, 4 passes)	\$156.06	8	\$1,248
		subtotal	\$8,490

Equipment

	Rate	Quantity	Cost
Camping gear repair/replacement ^b :			\$1,122
Sampling gear repair/replacement ^c :			\$1,614
Boating gear repair/replacement ^d :			\$1,623
Fuel for motors (10 gallons/pass)	\$4.16	40	\$166
		subtotal	\$4,525

Task 2 subtotal**\$37,430****Task 3. Two Desolation/Grey SMB Removal Passes**Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$35.07	80	\$2,806
Biologist	\$32.00	240	\$7,680
Technician	\$17.45	1100	\$19,192
		subtotal	\$29,678

Food and Travel

	Rate	Quantity	Cost
Fleet Costs ^a (3 trucks for 10% of total fleet costs)	\$42,448.32	0.1	\$4,245
Food (6 people, 8 days, 2 passes)	\$31.21	96	\$2,996
Shuttle (3 trucks, 2 passes)	\$182.07	6	\$1,092
		subtotal	\$8,334

Equipment**Rate Quantity Cost**

Camping gear repair/replacement ^b :			\$939
Sampling gear repair/replacement ^c :			\$1,458
Boating gear repair/replacement ^d :			\$1,717
Fuel for motors (40 gallons/pass)	\$4.16	80	\$333
		subtotal	\$4,446

Task 3 subtotal **\$42,458**

Task 4. Lower Green WLY Removal: Tusher Diversion to Green River State Park (3 Passes)

Note: Three WLY removal passes will be conducted simultaneously with sampling under Project #128 between Green River State Park and the confluence with the Colorado River. This budget only reflects removal effort between Tusher Diversion and Green River State Park.

Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$35.07	20	\$701
Biologist	\$32.00	90	\$2,880
Technician	\$17.45	90	\$1,570
		subtotal	\$5,152

Food and Travel

	Rate	Quantity	Cost
Fleet Costs ^a (3 trucks for 1% of total fleet costs)	\$42,448.32	0.01	\$424
Food (5 people, 3 days)	\$31.21	12	\$375
		subtotal	\$799

Equipment

	Rate	Quantity	Cost
Camping gear repair/replacement ^b :			\$0
Sampling gear repair/replacement ^c :			\$182
Boating gear repair/replacement ^d :			\$338
Fuel for motors/generators	\$4.16	20	\$83
		subtotal	\$603

Task 4 subtotal **\$6,554**

Task 5. Westwater and/or Lower Colorado WLY Removal (3 Passes- 12 days)

Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$35.07	80	\$2,806
Biologist	\$32.00	360	\$11,521
Technician	\$17.45	400	\$6,979

	subtotal	\$21,305
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Food and Travel

	Rate	Quantity	Cost
Fleet Costs ^a (3 trucks for 2% of total fleet costs)	\$42,448.32	0.02	\$849
Food (5 people, 12 days)	\$31.21	60	\$1,873
		subtotal	\$2,722

Equipment

	Rate	Quantity	Cost
Camping gear repair/replacement ^b :			\$771
Sampling gear repair/replacement ^c :			\$872
Boating gear repair/replacement ^d :			\$988
Fuel for motors/generators	\$4.16	25	\$104
		subtotal	\$2,735

Task 5 subtotal	\$26,762
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Task 6. Data management, reporting, administration

Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$35.07	100	\$3,507
Biologist	\$32.00	360	\$11,521
		subtotal	\$15,028

Task 6 subtotal	\$15,028
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Grand Total FY 2018	\$128,232
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Total 2018 Budget Request (FWS + UDWR): \$227,964

FY2019: Annual Report by November 2019.

2019			
Task 1 – USFWS Echo Sampling (8 trips)	Rate \$/hr	Total hours	Cost
Labor			
GS-12 Supervisory Fish Biologist	\$58.52	320	\$18,726
4 GS-5 Tech/ WG-5 Boat Operator	\$27.27	1280	\$34,906
Overtime for technicians (6 hrs/week x 8 weeks x 4 techs)	\$40.91	96	\$3,927
Subtotal			\$57,559
Travel			
Shuttle (3 trucks/trip x \$166/truck x 8 trips) Echo to Split Mountain			\$3,984
Per diem (5 people/day x \$30/person x 3 days/trip x 8 trips)			\$3,600
Subtotal			\$7,584
Equipment			
(3 trucks/trip x 175 mi/truck x \$0.34/mi x 8 trips) Vernal to Echo Park, round trip			\$1,428
(12 gal gas/boat x 3 boats/trip x \$4.00/gal x 8 trips)			\$768
GSA trucks (3 trucks x 2 months)	\$332	6	\$1,992
Maintenance/replacement of rafting gear (oars, repair kit supplies, raft repairs/patching, motor maintenance), sampling nets, electrofishing gear (generator maintenance, electrode replacement), safety equipment (life jackets, control pedals/mats), camping equipment (based on average annual expenses from prior years).			\$1,022
GS-8 Fish Tech maintenance work	\$41.35	261	\$10,792
Subtotal			\$16,002
Task 1 Total			\$81,146
Task 6 - USFWS, Data analysis, reporting, administration	Rate \$/hr	Total hours	Cost
Labor			
GS-12 Supervisory Fish Biologist	\$58.52	336	\$19,663
GS-9 Admin. Officer	\$41.60	116	\$4,826
Subtotal			\$24,488
Travel			
Per diem (1 person x \$137/day x 3 days) Vernal to Grand Junction			\$411
Travel to give presentations at workshops and meetings (1 truck/trip x 288 mi/truck x \$0.34/mi)			\$98
Subtotal			\$509
Task 6 USFWS Total			\$24,997
SOW USFWS Total			\$106,143

FY 2019 Costs for UDWR- Moab

Task 2. Four Echo/Split SMB Removal Passes

Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$35.77	80	\$2,862
Biologist	\$32.64	250	\$8,160
Technician	\$17.80	780	\$13,881
		subtotal	\$24,903

Food and Travel

	Rate	Quantity	Cost
Fleet Costs ^a (2 trucks for 10% of total fleet costs)	\$43,297.29	0.1	\$4,330
Food (6 people, 4 days, 4 passes)	\$31.84	96	\$3,056
Shuttle (2 trucks, 4 passes)	\$159.18	8	\$1,273
		subtotal	\$8,659

Equipment

	Rate	Quantity	Cost
Camping gear repair/replacement ^b :			\$1,145
Sampling gear repair/replacement ^c :			\$1,646
Boating gear repair/replacement ^d :			\$1,655
Fuel for motors (10 gallons/pass)	\$4.24	40	\$170
		subtotal	\$4,616

Task 2 subtotal **\$38,179**

Task 3. Two Desolation/Grey SMB Removal Passes

Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$35.77	80	\$2,862
Biologist	\$32.64	240	\$7,834
Technician	\$17.80	1100	\$19,576
		subtotal	\$30,272

Food and Travel

	Rate	Quantity	Cost
Fleet Costs ^a (3 trucks for 10% of total fleet costs)	\$43,297.29	0.1	\$4,330
Food (6 people, 8 days, 2 passes)	\$31.84	96	\$3,056
Shuttle (3 trucks, 2 passes)	\$185.71	6	\$1,114
		subtotal	\$8,500

Equipment

	Rate	Quantity	Cost
Camping gear repair/replacement ^b :			\$957
Sampling gear repair/replacement ^c :			\$1,487
Boating gear repair/replacement ^d :			\$1,751
Fuel for motors (40 gallons/pass)	\$4.24	80	\$340
		subtotal	\$4,535

Task 3 subtotal **\$43,307**

Task 4. Lower Green WLY Removal: Tusher Diversion to Green River State Park (3 Passes)

Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$35.77	80	\$2,862
Biologist	\$32.64	360	\$11,751
Technician	\$17.80	400	\$7,119
		subtotal	\$21,731

Food and Travel

	Rate	Quantity	Cost
Fleet Costs ^a (3 trucks for 1% of total fleet costs)	\$43,297.29	0.06	\$2,598
Food (5 people, 12 days)	\$31.84	60	\$1,910
		subtotal	\$4,508

Equipment

	Rate	Quantity	Cost
Camping gear repair/replacement ^b :			\$787
Sampling gear repair/replacement ^c :			\$889
Boating gear repair/replacement ^d :			\$1,008
Fuel for motors/generators	\$4.24	25	\$106
		subtotal	\$2,790

Task 4 subtotal **\$29,030**

Task 5. Westwater and/or Lower Colorado WLY Removal (3 Passes- 12 days)

Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$35.77	80	\$2,862
Biologist	\$32.64	360	\$11,751
Technician	\$17.80	400	\$7,119

			subtotal	\$21,731
<u>Food and Travel</u>				
	Rate	Quantity		Cost
Fleet Costs ^a (3 trucks for 2% of total fleet costs)	\$43,297.29	0.02		\$866
Food (5 people, 12 days)	\$31.84	60		\$1,910
			subtotal	\$2,776
<u>Equipment</u>				
	Rate	Quantity		Cost
Camping gear repair/replacement ^b :				\$787
Sampling gear repair/replacement ^c :				\$889
Boating gear repair/replacement ^d :				\$1,008
Fuel for motors/generators	\$4.24	25		\$106
			subtotal	\$2,790
Task 5 subtotal				\$27,298

Task 6. Data management, reporting, administration

<u>Personnel Costs (salary + fringe costs)</u>				
	Rate	Hours		Cost
Project Leader	\$35.77	100		\$3,577
Biologist	\$32.64	360		\$11,751
			subtotal	\$15,328
Task 6 subtotal				\$15,328

Grand Total FY 2019	\$153,141
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Total 2019 Budget Request (FWS + UDWR): \$259,284

FY2020: Annual Report by November 2020.

2020			
Task 1 – USFWS Echo Sampling (8 trips)	Rate \$/hr	Total hours	Cost
Labor			
GS-12 Supervisory Fish Biologist	\$59.69	320	\$19,101
4 GS-5 Tech/ WG-5 Boat Operator	\$28.09	1280	\$35,955
Overtime for technicians (6 hrs/week x 8 weeks x 4 techs)	\$42.14	96	\$4,045
Subtotal			\$59,101
Travel			
Shuttle (3 trucks/trip x \$170/truck x 8 trips) Echo to Split Mountain			\$4,080
Per diem (5 people/day x \$30/person x 3 days/trip x 8 trips)			\$3,600
Subtotal			\$7,680
Equipment			
(3 trucks/trip x 175 mi/truck x \$0.35/mi x 8 trips) Vernal to Echo Park, round trip			\$1,470
(12 gal gas/boat x 3 boats/trip x \$4.00/gal x 8 trips)			\$768
(1 qts motor boat oil/boat x 3 boats/trip x \$11/qt)			\$33
GSA trucks (3 trucks x 2 months)	\$338	6	\$2,028
Maintenance/replacement of rafting gear (oars, repair kit supplies, raft repairs/patching, motor maintenance), sampling nets, electrofishing gear (generator maintenance, electrode replacement), safety equipment (life jackets, control pedals/mats), camping equipment (based on average annual expenses from prior years).			\$1,022
GS-8 Fish Tech maintenance work	\$42.17	261	\$11,006
Subtotal			\$16,327
Task 1 Total			\$83,109
Task 6 - USFWS, Data analysis, reporting, administration	Rate \$/hr	Total hours	Cost
Labor			
GS-12 Supervisory Fish Biologist	\$59.69	336	\$20,056
GS-9 Admin. Officer	\$42.43	116	\$4,922
Subtotal			\$24,978
Travel			
Per diem (1 person x \$137/day x 3 days) Vernal to Grand Junction			\$411
Travel to give presentations at workshops and meetings (1 truck/trip x 288 mi/truck x \$0.35/mi)			\$101
Subtotal			\$512
Task 6 USFWS Total			\$25,490
SOW USFWS Total			\$108,599

FY 2020 Costs for UDWR- Moab**Task 2. Four Echo/Split SMB Removal Passes**Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$36.49	80	\$2,919
Biologist	\$33.29	250	\$8,324
Technician	\$18.15	780	\$14,159
		subtotal	\$25,402

Food and Travel

	Rate	Quantity	Cost
Fleet Costs ^a (2 trucks for 10% of total fleet costs)	\$44,163.23	0.1	\$4,416
Food (6 people, 4 days, 4 passes)	\$32.47	96	\$3,117
Shuttle (2 trucks, 4 passes)	\$162.36	8	\$1,299
		subtotal	\$8,833

Equipment

	Rate	Quantity	Cost
Camping gear repair/replacement ^b :			\$1,167
Sampling gear repair/replacement ^c :			\$1,679
Boating gear repair/replacement ^d :			\$1,689
Fuel for motors (10 gallons/pass)	\$4.33	40	\$173
		subtotal	\$4,708

Task 2 subtotal**\$38,942****Task 3. Two Desolation/Grey SMB Removal Passes**Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$36.49	80	\$2,919
Biologist	\$33.29	240	\$7,991
Technician	\$18.15	1100	\$19,968
		subtotal	\$30,877

Food and Travel

	Rate	Quantity	Cost
Fleet Costs ^a (3 trucks for 10% of total fleet costs)	\$44,163.23	0.1	\$4,416
Food (6 people, 8 days, 2 passes)	\$32.47	96	\$3,117
Shuttle (3 trucks, 2 passes)	\$189.43	6	\$1,137
		subtotal	\$8,670

Equipment

	Rate	Quantity	Cost
Camping gear repair/replacement ^b :			\$977
Sampling gear repair/replacement ^c :			\$1,516
Boating gear repair/replacement ^d :			\$1,786
Fuel for motors (40 gallons/pass)	\$4.33	80	\$346
		subtotal	\$4,626

Task 3 subtotal **\$44,173**

Task 4. Lower Green WLY Removal: Tusher Diversion to Green River State Park (3 Passes- 12 days)

Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$36.49	80	\$2,919
Biologist	\$33.29	360	\$11,986
Technician	\$18.15	400	\$7,261
		subtotal	\$22,166

Food and Travel

	Rate	Quantity	Cost
Fleet Costs ^a (3 trucks for 1% of total fleet costs)	\$44,163.23	0.06	\$2,650
Food (5 people, 3 days)	\$32.47	60	\$1,948
		subtotal	\$4,598

Equipment

	Rate	Quantity	Cost
Camping gear repair/replacement ^b :			\$802
Sampling gear repair/replacement ^c :			\$907
Boating gear repair/replacement ^d :			\$1,028
Fuel for motors/generators	\$4.33	25	\$0
		subtotal	\$2,738

Task 4 subtotal **\$29,502**

Task 5. Westwater and/or Lower Colorado WLY Removal (3 Passes- 12 days)

Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$36.49	80	\$2,919
Biologist	\$33.29	360	\$11,986
Technician	\$18.15	400	\$7,261

		subtotal	\$22,166
<u>Food and Travel</u>			
	Rate	Quantity	Cost
Fleet Costs ^a (3 trucks for 2% of total fleet costs)	\$44,163.23	0.02	\$883
Food (5 people, 12 days)	\$32.47	60	\$1,948
		subtotal	\$2,832
<u>Equipment</u>			
	Rate	Quantity	Cost
Camping gear repair/replacement ^b :			\$802
Sampling gear repair/replacement ^c :			\$907
Boating gear repair/replacement ^d :			\$1,028
Fuel for motors/generators	\$4.33	25	\$0
		subtotal	\$2,738
Task 5 subtotal			\$27,735

Task 6. Data management, reporting, administration

<u>Personnel Costs (salary + fringe costs)</u>			
	Rate	Hours	Cost
Project Leader	\$36.49	100	\$3,649
Biologist	\$33.29	360	\$11,986
		subtotal	\$15,635
Task 6 subtotal			\$15,635

Grand Total FY 2020	\$155,988
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Total 2020 Budget Request (FWS + UDWR): \$264,587

VIII. Budget Summary:

	USFWS Vernal	UDWR Moab	Total
FY2016	\$97,676	\$123,253	\$220,929
FY2017	\$97,482	\$125,718	\$223,200
FY2018	\$99,732	\$128,232	\$227,964
FY2019	\$106,143	\$153,141	\$259,284
FY2020	\$108,599	\$155,988	\$264,587
Total	\$509,632	\$686,332	\$1,195,964

IX. Reviewers: **Kevin McAbee, June 2015;**

X. References: