

**RECOVERY PROGRAM
FY 2018-2019 SCOPE OF WORK for:**

Recovery Program Project Number: 138

Annual fall monitoring of YOY Colorado pikeminnow and small-bodied native fishes, Green River Canal endangered fish salvage, nursery habitat pilot study, and Colorado pikeminnow broodstock collection.

Reclamation Agreement number: R14AP00007
Reclamation Agreement term: May 01, 2014 - Sept 30, 2018

Note: Recovery Program FY18-19 scopes of work are drafted in May 2017. 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.

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Category:

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

Expected Funding Source:

- Annual funds
 Capital funds
 Other [*explain*]

Title of Proposal: Annual fall monitoring of YOY Colorado pikeminnow and small-bodied native fishes, Green River Canal endangered fish salvage, nursery habitat pilot study, and Colorado pikeminnow broodstock collection.

I.

II. Relationship to RIPRAP:

GENERAL RECOVERY PROGRAM SUPPORT ACTION PLAN

- V. Monitor populations and habitat and conduct research to support recovery actions (research, monitoring, and data management).
- V.A. Measure and document population and habitat parameters to determine status and biological response to recovery actions.
- V.B.2. Conduct appropriate studies to provide needed life history information.
- IV.A.4.d(1) Upper Colorado River Basin (Broodstock currently represented at Southwest Native ARRC and by wild fish in the river.)

GREEN RIVER ACTION PLAN: MAINSTEM

- V. Monitor populations and habitat and conduct research to support recovery actions (research, monitoring, and data management).
- V.A. Conduct research to acquire life history information and enhance scientific techniques required to complete recovery actions.
- II.B. Restore native fish passage at instream barriers.

COLORADO RIVER ACTION PLAN: MAINSTEM

- V. Monitor populations and habitat and conduct research to support recovery actions (research, monitoring, and data management).
- V.A. Conduct research to acquire life history information and enhance scientific techniques required to complete recovery actions.

III. Study Background/Rationale and Hypotheses:

Larval Colorado pikeminnow (*Ptychocheilus lucius*) monitoring is an ongoing effort to evaluate spawning success. Monitoring of juvenile Colorado pikeminnow occurs in conjunction with adult population estimates in the Green and Colorado rivers. However, survival of young-of-year (YOY) can vary greatly between years independent of spawning success and can have an impact on the juvenile component of Colorado pikeminnow populations. For example, biotic and abiotic factors such as flow variation, backwater temperatures, competition and predation by nonnative fish (e.g., gamefish and small-bodied cyprinids), and over-winter mortality can hinder spawning success (i.e., high mortality of YOY fish) resulting in a smaller number of juvenile Colorado pikeminnow available for recruitment into the adult population (Bestgen et al. 2006). Recruitment of other native species such as bluehead sucker (*Catostomus discobolus*), flannelmouth sucker (*C. latipinnis*), roundtail chub (*Gila robusta*), and speckled dace (*Rhinichthys osculus*) is affected similarly.

As a result of decreased recruitment, control actions targeting nonnative gamefish species, primarily smallmouth bass (*Micropterus dolomieu*), northern pike (*Esox lucius*), and walleye (*Sander vitreus*), are being evaluated across the upper Colorado River basin to determine the level of reduction necessary to minimize the threat to the recovery of

Colorado pikeminnow and other endangered Colorado River fishes. Successful implementation of nonnative fish removal will likely be measured by the response of endangered fish and other native species (i.e., increased abundance). However, nonnative fish removal efforts are preliminary, thus the first observed response will likely be evident in early life-stages of the native fish community (Bestgen et al. 2007a). An adult response to nonnative removal may not be detectable initially for a number of reasons (e.g., Skorupski et al. 2012), one of which is the large home range of adults. Furthermore, a positive response by adult endangered species may be difficult to measure statistically without extensive observations due to generation times of endangered fish populations (e.g. Bestgen et al. 2007b).

Data necessary to evaluate the recovery status of native fishes will be generated by current and future YOY sampling in conjunction with nonnative fish removal efforts. For instance, documenting size and relative abundance of YOY Colorado pikeminnow and other native species (e.g., UDWR 2006) may provide valuable information about the probable survival of any particular year class. Together with existing YOY data compiled from the Interagency Standardized Monitoring Program (ISMP; 1987 - present), results from this project should provide the basis for monitoring distribution and recruitment rates of YOY Colorado pikeminnow. Efforts to control nonnatives will likely have the greatest affect on YOY fish (i.e., decreased predation and increased survival). Therefore, monitoring this component of the Colorado pikeminnow population will provide information toward evaluating nonnative control projects. Additionally, this project ensures continuation of existing, standardized data series (ISMP) that document trends in abundance of early-life stage Colorado pikeminnow (USFWS 1987). Finally, response of early life-stages of native and small-bodied fish to removal of nonnative predators will serve as indicators of the response that would be experienced by endangered fish species occupying the same habitats.

The Tusher Diversion, which supplies irrigation water to the Green River Canal near the town of Green River, UT, presents both a barrier to fish passage and a risk of entrainment and mortality for endangered fishes of the lower Green River. Design of structures to exclude fish and reduce resultant negative impacts on endangered fish populations is in progress. Sampling of the canal and translocation of endangered fishes may help to mitigate these negative effects in the interim.

Between 1992 and 1996, biologists with the UDWR conducted a survey of Colorado pikeminnow nursery habitat on the middle and lower Green and Colorado Rivers (Trammell et al. 1999, Trammell and Chart 1999). Researchers collected extensive data on the morphology of all zero-velocity habitats encountered within three 10-mile sub-reaches. In addition to habitat metrics, crews executed one to three seine hauls within each backwater. All fish were enumerated and identified to species. For 2018, UDWR Moab will conduct a single pass in all three previously sampled sites on the Colorado, and lower Green rivers. Biologists will collect data using an identical protocol to the one used during the 1992-1996 field seasons. The goal of this project is to assess the feasibility of running a multiple-pass nursery habitat study comparable to the 1992-1996

effort. If successful, this study could yield valuable information on trends in habitat availability and use by native and nonnative species over the past 25 years.

Maintaining a healthy and robust Colorado pikeminnow broodstock has been identified as a priority in both the Upper Colorado and San Juan River Basins. Southwestern Native Aquatic Resource and Recovery Center (SNARRC) has requested 1,000 individual YOY Colorado pikeminnow, collected over approximately five years, from the Green and Colorado Rivers to replenish the existing broodstock and augment a new captive population.

IV. Study Goals, Objectives, End Products

Goals: Monitor YOY Colorado pikeminnow to assess long-term trends in annual fall recruitment, salvage endangered fish entrained in the Green River Canal and assess the feasibility and utility of a habitat availability and use study on the lower Green and Colorado Rivers.

Objectives:

1. Determine size and relative abundance of YOY Colorado pikeminnow at the end of their first growing season to complement larval and juvenile sampling data. (September- October)
2. Remove entrained endangered fish from the Green River Canal and return them to the Green River at the end of the irrigation season. (November)
3. Collect data on habitat availability and small-bodied fish use. Assess the feasibility of comparison to historic data sets.

End Products: continuation of long-term data set for YOY pikeminnow and associated habitat information and annual Recovery Program reports. Findings will be reported annually. Green River Canal salvage effort will be reported on under Project #29a.

V. Study Area:

The study area for this project includes identified Colorado pikeminnow nursery habitat areas in the Green and Colorado rivers in Utah (Valdez et al. 1982; Archer et al. 1985; Tyus and Haines 1991). Specifically, Split Mountain to Sand Wash (RM 319 – RM 215) on the middle Green River, Green River State Park to the confluence with the Colorado River (RM 120 – RM 0) on the lower Green River, and Cisco to the confluence with the Green River (RM 111 – RM 0) on the Colorado River.

The Green River Canal is a 7.5 mile system spanning from the Tusher Diversion Dam (RM 128) through the Green River Valley to Saleratus Wash (RM 119.6).

The nursery habitat pilot study area includes one sub-reach on the lower Green River

(RM 57-47) and two sub-reaches on the lower Colorado River (RM 65-55 and 30-20).

VI. Study Methods/Approach:

Annual YOY Colorado pikeminnow and native fish sampling will be conducted in late summer/early fall between the second week of September and the third week of October. The first two backwater/low velocity habitats encountered every five river-miles will be sampled dependent upon availability of suitable habitats within each sub-reach. One additional backwater/low velocity habitat will be sampled every five miles in the middle Green River only to collect additional information on small-bodied and YOY native fish that may not necessarily be well represented while sampling under the constraints of the ISMP protocol. Field sampling will be conducted using the ISMP protocol (USFWS 1987) so that long-term trends can be maintained. However, habitat selection criteria will be relaxed for additional habitats (i.e., third backwater).

Backwater/low velocity habitats will be sampled using a 1.2 m x 4 m seine with 3 mm mesh. At least two non-overlapping seine hauls will be conducted in each habitat sampled (or one seine haul if 25% of the habitat is sampled). Seine hauls will be parallel to one another and perpendicular to the axis of the backwater. However, if water depth is too great seine hauls will be completed along one shoreline. The first two seine hauls in each five mile reach will be taken at $\frac{1}{3}$ and $\frac{2}{3}$ the distance from the mouth of the backwater. Additional seine hauls may be completed in any portion of the backwater including the mouth or shallow tail end. Length of each seine haul, maximum depth, and average depth will be recorded for each sample. All endangered and native fish will be enumerated, identified, measured (total length in mm), and returned alive to the habitat. Fin ray counts will be completed for all chubs (*Gila* spp.) captured. All nonnative fishes will be enumerated (first seine haul only) and removed. In subsequent seine hauls, common (i.e., highly abundant) nonnative species will be ignored and other less common nonnative species will be enumerated.

In addition, physical habitat measurements to be collected at each site include habitat type, habitat length, habitat width, backwater temperature, main channel temperature, backwater turbidity, and main channel turbidity. Location of each habitat will be recorded as the approximate river mile and in UTM coordinates using GPS technology.

Crews will sample the Green River Canal with backpack electrofishing gear in November of 2018. Portable PIT interrogators may be utilized to investigate fish retention in underground siphons, which cannot be sampled with electrofishing gear. All native species will be measured, weighed and translocated to the Green River immediately adjacent to the canal. Endangered species will be scanned for a PIT tag, and marked before release if previously untagged. Nonnative species will be enumerated and returned to the canal.

UDWR will conduct one nursery habitat pilot study pass in mid-August. Crews will sample all habitats greater than 15m² within each sub-reach. Habitats will be divided by three transects; a suite of metrics will be collected at each transect including multiple

depth and substrate measurements. One to three seine hauls will be completed within each habitat and all fish will be enumerated and identified to species. Total length of all native fish will be recorded.

Utah Division of Wildlife Resources will coordinate with SNARRC to collect YOY Colorado pikeminnow from the Green and Colorado Rivers to augment the captive broodstock. Collection will occur in the fall and will be triggered by presence of a strong cohort (determined during summer and early fall sampling under Projects #160 and #138). Collection may not occur every year and will continue until the target numbers are reached for each river.

VII. Task Description and Schedule:

Task 1. Seine backwater/low velocity habitats to collect data for endangered, native and nonnative fish; collect physical habitat data: middle Green River. (UDWR Vernal; September-October).

Task 2. Seine backwater/low velocity habitats to collect data for endangered, native and nonnative fish; collect physical habitat data: lower Green River and lower Colorado River (UDWR Moab; September).

Task 3. Data entry, analysis, and report preparation (UDWR Vernal and UDWR Moab; October-December).

Task 4. Green River Canal salvage (UDWR Moab; November, FY 18 only).

Task 5. Nursery habitat pilot study (UDWR Moab; August, FY 18-19 only)

Task 6. Colorado pikeminnow broodstock collection (UDWR Moab; September-October)

Schedule: FY18–FY22

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

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

Key for UDWR-Vernal budget tables: (a) The State of Utah uses Automotive Resources Inc. for motor pool operations. Rental is approximately \$8,000/year/vehicle (includes fleet rental, mileage, and gas), which is based on the average annual cost for all trucks used in our program. (b) Boat/motor repair and maintenance: oil (3 qts./motor x \$11 qt. x 1 motor x 1 oil change = \$75), props (2 @ \$150), water pump/filters/lower unit oil/grease/gas can/misc. maintenance items (\$300), shop supplies/tools/safety gear/misc. small parts (\$300); Yamaha motor parts. (c) Camping supplies: 1 tent (REI-\$150), 1 sleeping pad (Aire-\$150), cooking utensils & supplies/propane/toilet supplies/toilet system (\$450).

(d) Sampling equipment: handheld GPS (Garmin-\$400), batteries (\$100), SPOT locator & service plan (\$250/year), waders (Simms-\$400), livewell/buckets/fish nets/measuring boards (\$100), rangefinder (Nikkon-\$200), seine repair/replacement (Memphis Net & Twine-\$200).

UDWR-Moab costs are based on previous year's actual costs (when applicable) plus a 2% increase. Personnel rates reflect previous year's hourly rates and fringe costs. Vehicle rental is approximately \$8,000/year/vehicle (includes fleet rental, mileage, and gas), which is based on the average annual cost for all trucks used in our program. Vehicle costs for this budget are an estimated percentage of this total based on previous year's usage. Equipment costs are based on previous year costs and rates with a 2% increase on all line items for each year following. Equipment includes but is not limited to seines, GPS units, jon boat repair, outboard motor repair, raft repair, oars, dry boxes, tents, sleeping pads, coolers, PFDs, first aid supplies, satellite phone services, fuel, etc.

FY2018: Annual Report by November 2018.

Task 1. Seining Middle Green River (UDWR-Vernal).

	Rate	Hours/Units	Cost
Labor			
Project Leader	36.95	80	2956.00
Biologist II	33.77	80	2701.60
Journey Maintenance/Construction Specialist	34.34	160	5494.40
28 Technician I	16.89	160	2701.71
Shuttle Drivers	17.25	80	1379.99
	Subtotal		\$15,234
Travel			
2 trucks @ 12.5% of annual use ^a	16000.00	0.125	2000.00
Per diem (2 overnights & 6 day trips x 3 people)	20.75	24	498.00
	Subtotal		\$2,498
Equipment			
Boat fuel (gallons)	4.00	80	320.00
Boat/motor repair and maintenance ^b			975.00
Camping supplies ^c			750.00
Sampling equipment ^d			1650.00
	Subtotal		\$3,695
	Task 1 Total		\$21,427

Task 3. Data entry, analysis, and reporting (UDWR-Vernal).

	Rate	Hours/units	Cost
Labor			
Project Leader	36.95	50	1847.50
Biologist II	33.77	120	4052.40
Technician II	18.19	60	\$1,091
	Task 3 Total		\$6,991

FY 2018 Costs for UDWR- Moab

Task 2. Seining Lower Green and Lower Colorado

Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$35.07	80	\$2,805
Biologist	\$32.32	250	\$8,079
Technician	\$16.96	400	\$6,784
		subtotal	\$17,668

Food and Travel

	Rate	Quantity	Cost
Fleet Costs (5 trucks for 6% of total fleet costs)	\$40,800.00	0.06	\$2,448
Food (8 people, 4 days)	\$30.00	32	\$960
		subtotal	\$3,408

Equipment

	Rate	Quantity	Cost
Camping gear repair/replacement:			\$572
Sampling gear repair/replacement:			\$805
Boating gear repair/replacement:			\$2,300
Fuel for motors (75 gallons)	\$4.00	75	\$300
		subtotal	\$3,977

Task 2 subtotal	\$25,053
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Task 3. Data Entry, Analysis, and Reporting

Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$35.07	40	\$1,403
Biologist	\$32.32	140	\$4,524
Technician	\$16.96	80	\$1,357
		subtotal	\$7,284

Task 3 subtotal	\$7,284
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Task 4. Green River Canal Salvage

Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$35.07	20	\$701
Biologist	\$32.32	160	\$5,171
Technician	\$16.96	160	\$2,714
		subtotal	\$8,585

Food and Travel

	Rate	Quantity	Cost
Fleet Costs (2 trucks for 1% of total fleet costs)	\$40,800.00	0.01	\$408
		subtotal	\$408

Equipment

	Rate	Quantity	Cost
Camping gear repair/replacement:			\$0
Sampling gear repair/replacement:			\$500
Boating gear repair/replacement:			\$0
Fuel for motors/generators	\$4.00	10	\$40
		subtotal	\$540

Task 4 subtotal **\$9,533**

Task 5. Nursery Habitat Pilot Project (preliminary site assessment)

Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$35.07	45	\$1,578
Biologist	\$32.32	145	\$4,686
Technician	\$16.96	195	\$3,307
		subtotal	\$9,571

Food and Travel

	Rate	Quantity	Cost
Fleet Costs (2 trucks, 1% of fleet costs)	\$40,800.00	0.02	\$816
Food (3 people X 3days/site X 3sites)	\$30.00	27	\$810
		subtotal	\$1,626

Equipment

	Rate	Quantity	Cost
Camping gear repair/replacement:			\$200
Sampling gear repair/replacement:			\$500
Boating gear repair/replacement:			\$1,000
Fuel for motors	\$4.00	30	\$120

	subtotal	\$1,820
Task 5 subtotal		\$13,017

Task 6. Colorado Pikeminnow Broodstock Collection

Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$35.07	10	\$351
Biologist	\$32.32	80	\$2,585
Technician	\$16.96	60	\$1,018
		subtotal	\$3,954

Food and Travel

	Rate	Quantity	Cost
Fleet Costs (2 trucks, 1% of fleet costs)	\$40,800.00	0.01	\$408
Food (5 people X 3days)	\$30.00	15	\$450
		subtotal	\$858

Equipment

	Rate	Quantity	Cost
Camping gear repair/replacement:			\$100
Sampling gear repair/replacement:			\$200
Boating gear repair/replacement:			\$500
Fuel for motors	\$4.00	50	\$200
		subtotal	\$1,000

Task 6 subtotal	\$5,812
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Total UDWR Moab FY2018	\$60,699
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FY2019: Annual Report by November 2019.

Task 1. Seining Middle Green River (UDWR-Vernal).

	Rate	Hours/Units	Cost
Labor			
Project Leader	37.69	80	3015.12
Biologist II	34.45	80	2755.63
Journey Maintenance/Construction Specialist	35.03	160	5604.29
Technician I	17.22	160	2755.74
Shuttle Drivers	17.59	80	1407.59
		Subtotal	\$15,538

Travel			
2 trucks @ 12.5% of annual use ^a	16320.00	0.125	2040.00
Per diem (2 overnights & 6 day trips x 3 people)	21.17	24	507.96
		Subtotal	\$2,548
Equipment			
Boat fuel (gallons)	4.08	80	326.40
Boat/motor repair and maintenance ^b			994.50
Camping supplies ^c			765.00
Sampling equipment ^d			1683.00
		Subtotal	\$3,769
		Task 1 Total	\$21,855

Task 3. Data entry, analysis, and reporting (UDWR-Vernal).

	Rate	Hours/units	Cost
Labor			
Project Leader	37.69	50	1884.45
Biologist II	34.45	120	4133.45
Technician II	18.55	60	\$1,113
		Task 3 Total	\$7,131
		VERNAL-FY19 TOTAL	\$28,986

FY 2019 Costs for UDWR- Moab (2% increase from FY18)

Task 2. Seining Lower Green and Lower Colorado

Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$35.77	80	\$2,861
Biologist	\$32.96	250	\$8,241
Technician	\$17.30	400	\$6,920
		subtotal	\$18,022

Food and Travel

	Rate	Quantity	Cost
Fleet Costs (5 trucks for 6% of total fleet costs)	\$41,616.00	0.06	\$2,497
Food (8 people, 4 days)	\$30.60	32	\$979
		subtotal	\$3,476

Equipment

	Rate	Quantity	Cost
Camping gear repair/replacement:			\$466
Sampling gear repair/replacement:			\$813
Boating gear repair/replacement:			\$1,785
Fuel for motors (75 gallons)	\$4.08	75	\$306

subtotal	\$3,370
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Task 2 subtotal	\$24,868
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Task 3. Data Entry, Analysis, and Reporting

Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$35.77	40	\$1,431
Biologist	\$32.96	140	\$4,615
Technician	\$17.30	80	\$1,384
		subtotal	\$7,429

Task 3 subtotal	\$7,429
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Task 5. Nursery Habitat Pilot Project (preliminary site assessment)

Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$35.77	45	\$1,610
Biologist	\$32.96	145	\$4,780
Technician	\$17.30	195	\$3,373
		subtotal	\$9,762

Food and Travel

	Rate	Quantity	Cost
Fleet Costs (2 trucks, 1% of fleet costs)	\$41,616.00	0.02	\$832
Food (3 people X 3days/site X 3sites)	\$30.60	27	\$826
		subtotal	\$1,659

Equipment

	Rate	Quantity	Cost
Camping gear repair/replacement:			\$200
Sampling gear repair/replacement:			\$500
Boating gear repair/replacement:			\$1,000
Fuel for motors	\$4.08	30	\$122
		subtotal	\$1,822

Task 5 subtotal	\$13,243
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Task 6. Colorado Pikeminnow Broodstock Collection

Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$35.77	10	\$358

Biologist	\$32.96	80	\$2,637
Technician	\$17.30	60	\$1,038
		subtotal	\$4,033
<u>Food and Travel</u>			
	Rate	Quantity	Cost
Fleet Costs (2 trucks, 1% of fleet costs)	\$41,616.00	0.01	\$416
Food (5 people X 3days)	\$30.60	15	\$459
		subtotal	\$875
<u>Equipment</u>			
	Rate	Quantity	Cost
Camping gear repair/replacement:			\$102
Sampling gear repair/replacement:			\$204
Boating gear repair/replacement:			\$510
Fuel for motors	\$4.08	50	\$204
		subtotal	\$1,020
Task 6 subtotal			\$5,928
Total UDWR Moab FY2019			\$51,468

FY2020: Annual Report by November 2020.

Task 1. Seining Middle Green River (UDWR-Vernal).			
	Rate	Hours/Units	Cost
Labor			
Project Leader	38.44	80	3075.42
Biologist II	35.13	80	2810.74
Journey Maintenance/Construction Specialist	35.73	160	5716.37
Technician I	17.57	160	2810.86
Shuttle Drivers	17.95	80	1435.74
		Subtotal	\$15,849
Travel			
2 trucks @ 12.5% of annual use ^a	16646.40	0.125	2080.80
Per diem (2 overnights & 6 day trips x 3 people)	21.59	24	518.12
		Subtotal	\$2,599
Equipment			
Boat fuel (gallons)	4.16	80	332.93
Boat/motor repair and maintenance ^b			1014.39
Camping supplies ^c			780.30
Sampling equipment ^d			1716.66
		Subtotal	\$3,844

	Task 1 Total	\$22,292	
Task 3. Data entry, analysis, and reporting (UDWR-Vernal).			
	<u>Rate</u>	<u>Hours/units</u>	<u>Cost</u>
Labor			
Project Leader	38.44	50	1922.14
Biologist II	35.13	120	4216.12
Technician II	18.92	60	\$1,135
	Task 3 Total		\$7,274
	VERNAL-FY20 TOTAL		\$29,566

FY 2020 Costs for UDWR- Moab (2% increase from FY19)

Task 2. Seining Lower Green and Lower Colorado

Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$36.48	80	\$2,919
Biologist	\$33.62	250	\$8,405
Technician	\$17.65	400	\$7,058
		subtotal	\$18,382

Food and Travel

	Rate	Quantity	Cost
Fleet Costs (5 trucks for 6% of total fleet costs)	\$42,448.32	0.06	\$2,547
Food (8 people, 4 days)	\$31.21	32	\$999
		subtotal	\$3,546

Equipment

	Rate	Quantity	Cost
Camping gear repair/replacement:			\$475
Sampling gear repair/replacement:			\$830
Boating gear repair/replacement:			\$1,821
Fuel for motors (75 gallons)	\$4.16	75	\$312
		subtotal	\$3,437

Task 2 subtotal **\$25,365**

Task 3. Data Entry, Analysis, and Reporting

Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$36.48	40	\$1,459
Biologist	\$33.62	140	\$4,707
Technician	\$17.65	80	\$1,412

	subtotal	\$7,578
Task 3 subtotal		\$7,578

Task 6. Colorado Pikeminnow Broodstock Collection

Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$36.48	10	\$365
Biologist	\$33.62	80	\$2,690
Technician	\$17.65	60	\$1,059
		subtotal	\$4,113

Food and Travel

	Rate	Quantity	Cost
Fleet Costs (2 trucks, 1% of fleet costs)	\$42,448.32	0.01	\$424
Food (5 people X 3days)	\$31.21	15	\$468
		subtotal	\$893

Equipment

	Rate	Quantity	Cost
Camping gear repair/replacement:			\$104
Sampling gear repair/replacement:			\$208
Boating gear repair/replacement:			\$520
Fuel for motors	\$4.16	50	\$208
		subtotal	\$1,040

Task 6 subtotal		\$6,046
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Total UDWR Moab FY2020	\$38,989
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FY2021: Annual Report by November 2021.

Task 1. Seining Middle Green River (UDWR-Vernal).

	Rate	Hours/Units	Cost
Labor			
Project Leader	39.21	80	3136.93
Biologist II	35.84	80	2866.96
Journey Maintenance/Construction Specialist	36.44	160	5830.70
Technician I	17.92	160	2867.08
Shuttle Drivers	18.31	80	1464.45
		Subtotal	\$16,166
Travel			

2 trucks @ 12.5% of annual use ^a	16979.33	0.125	2122.42
Per diem (2 overnights & 6 day trips x 3 people)	22.02	24	528.48
		Subtotal	\$2,651
Equipment			
Boat fuel (gallons)	4.24	80	339.59
Boat/motor repair and maintenance ^b			1034.68
Camping supplies ^c			795.91
Sampling equipment ^d			1750.99
		Subtotal	\$3,921
		Task 1 Total	\$22,738
Task 3. Data entry, analysis, and reporting (UDWR-Vernal).			
	<u>Rate</u>	<u>Hours/units</u>	<u>Cost</u>
Labor			
Project Leader	39.21	50	1960.58
Biologist II	35.84	120	4300.44
Technician II	19.30	60	\$1,158
		Task 3 Total	\$7,419
		VERNAL-FY21 TOTAL	\$30,157

FY 2021 Costs for UDWR- Moab (2% increase from FY20)

Task 2. Seining Lower Green and Lower Colorado

Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$37.21	80	\$2,977
Biologist	\$34.29	250	\$8,573
Technician	\$18.00	400	\$7,199
		subtotal	\$18,750

Food and Travel

	Rate	Quantity	Cost
Fleet Costs (5 trucks for 6% of total fleet costs)	\$43,297.29	0.06	\$2,598
Food (8 people, 4 days)	\$31.84	32	\$1,019
		subtotal	\$3,617

Equipment

	Rate	Quantity	Cost
Camping gear repair/replacement:			\$484
Sampling gear repair/replacement:			\$846
Boating gear repair/replacement:			\$1,857
Fuel for motors (75 gallons)	\$4.24	75	\$318
		subtotal	\$3,506

Task 2 subtotal				\$25,872
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Task 3. Data Entry, Analysis, and Reporting

Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$37.21	40	\$1,489
Biologist	\$34.29	140	\$4,801
Technician	\$18.00	80	\$1,440
		subtotal	\$7,730

Task 3 subtotal				\$7,730
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Task 6. Colorado Pikeminnow Broodstock Collection

Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$37.21	10	\$372
Biologist	\$34.29	80	\$2,744
Technician	\$18.00	60	\$1,080
		subtotal	\$4,196

Food and Travel

	Rate	Quantity	Cost
Fleet Costs (2 trucks, 1% of fleet costs)	\$43,297.29	0.01	\$433
Food (5 people X 3days)	\$31.84	15	\$478
		subtotal	\$911

Equipment

	Rate	Quantity	Cost
Camping gear repair/replacement:			\$106
Sampling gear repair/replacement:			\$212
Boating gear repair/replacement:			\$531
Fuel for motors	\$4.24	50	\$212
		subtotal	\$1,061

Task 6 subtotal				\$6,167
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Total UDWR Moab FY2021				\$39,769
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FY2022: Annual Report by November 2022.

Task 1. Seining Middle Green River (UDWR-Vernal).

	Rate	Hours/Units	Cost
Labor			
Project Leader	40.00	80	3199.67
Biologist II	36.55	80	2924.30
Journey Maintenance/Construction Specialist	37.17	160	5947.32
Technician I	18.28	160	2924.42
Shuttle Drivers	18.67	80	1493.74
		Subtotal	\$16,489
Travel			
2 trucks @ 12.5% of annual use ^a	17318.91	0.125	2164.86
Per diem (2 overnights & 6 day trips x 3 people)	22.46	24	539.05
		Subtotal	\$2,704
Equipment			
Boat fuel (gallons)	4.33	80	346.38
Boat/motor repair and maintenance ^b			1055.37
Camping supplies ^c			811.82
Sampling equipment ^d			1786.01
		Subtotal	\$4,000
		Task 1 Total	\$23,193

Task 3. Data entry, analysis, and reporting (UDWR-Vernal).

	Rate	Hours/units	Cost
Labor			
Project Leader	40.00	50	1999.79
Biologist II	36.55	120	4386.45
Technician II	19.69	60	\$1,181
		Task 3 Total	\$7,568
		VERNAL-FY22 TOTAL	\$30,761

FY 2022 Costs for UDWR- Moab (2% increase from FY21)

Task 2. Seining Lower Green and Lower Colorado

Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$37.96	80	\$3,037
Biologist	\$34.98	250	\$8,745
Technician	\$18.36	400	\$7,343
		subtotal	\$19,125

Food and Travel

Rate	Quantity	Cost
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Fleet Costs (5 trucks for 6% of total fleet costs)	\$44,163.23	0.06	\$2,650
Food (8 people, 4 days)	\$32.47	32	\$1,039
		subtotal	\$3,689

Equipment

	Rate	Quantity	Cost
Camping gear repair/replacement:			\$494
Sampling gear repair/replacement:			\$863
Boating gear repair/replacement:			\$1,894
Fuel for motors (75 gallons)	\$4.33	75	\$325
		subtotal	\$3,576

Task 2 subtotal **\$26,390**

Task 3. Data Entry, Analysis, and Reporting

Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$37.96	40	\$1,518
Biologist	\$34.98	140	\$4,897
Technician	\$18.36	80	\$1,469
		subtotal	\$7,884

Task 3 subtotal **\$7,884**

Task 6. Colorado Pikeminnow Broodstock Collection

Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$37.96	10	\$380
Biologist	\$34.98	80	\$2,798
Technician	\$18.36	60	\$1,101
		subtotal	\$4,279

Food and Travel

	Rate	Quantity	Cost
Fleet Costs (2 trucks, 1% of fleet costs)	\$44,163.23	0.01	\$442
Food (5 people X 3days)	\$32.47	15	\$487
		subtotal	\$929

Equipment

	Rate	Quantity	Cost
Camping gear repair/replacement:			\$108
Sampling gear repair/replacement:			\$216
Boating gear repair/replacement:			\$541
Fuel for motors	\$4.33	50	\$216

	subtotal	\$1,082
Task 6 subtotal		\$6,291
Total UDWR Moab FY2022		\$40,565

IX. Budget Summary:

	UDWR Vernal	UDWR Moab	Total
FY2018	\$28,418	\$60,699	\$89,117
FY2019	\$28,986	\$51,468	\$80,454
FY2020	\$29,566	\$38,989	\$68,555
FY2021	\$30,157	\$39,769	\$69,926
FY2022	\$30,761	\$40,565	\$71,326
Subtotal	\$147,888	\$231,490	\$379,378

X. Reviewers:

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