

COLORADO RIVER RECOVERY PROGRAM
FY-2012 and FY-2013 PROPOSED SCOPE OF WORK for:
(Colorado River smallmouth bass removal)

Project #: 126(a)

Federal Assistance Agreement Number: R10PG40045
Period of Performance: FY-2012 and FY-2013

Lead Agency: U. S. Fish and Wildlife Service
Colorado River Fishery Project

Submitted by: Dale Ryden, Acting Project Leader
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Date: 23 February 2012

Major revisions for FY-2012:

- **Changed Title of Proposal to reflect river reaches being sampled**
- **Three boats will continue to be used on marking pass.**
- **Total number of removal passes will be 6, all done in the Grand Valley.**
- **Complimentary removal and recon work being performed by Colorado Parks and Wildlife (CPW) under SOW 126(b) will take place exclusively in the upper Colorado River from Silt downstream to Beavertail Mountain**
- **White sucker may be removed at researcher’s discretion (following previously-described protocols), if numbers and storage space allow**
- **Purchase ETS electrofishing units and generators in FY-2012 to begin updating and standardizing station electrofishing fleet to Recovery Program specifications**
 - **Prices for ETS units and generators adjusted as per quotes provided by Pat Martinez**
- **FY-2013 funding levels held at amount agreed to during March 2011 BC meeting (this effects number of removal passes)**

Category:

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

Expected Funding Source:

- Annual funds
 Capital funds
 Other (explain)

- I. Title of Proposal: **Removal of smallmouth bass in the upper Colorado River between Palisade and Loma, CO.**
- II. Relationship to RIPRAP:
Colorado River Action Plan: Mainstem
- III. Reduce negative impacts of nonnative fishes and sportfish management activities.
III.A. Develop and implement control programs in reaches of the Colorado River occupied by endangered fishes.

III. Study Background/Rationale and Hypotheses:

General

Significant anthropogenic changes to the physical riverine habitat have undoubtedly played an important role in the decline and endangered status of Colorado pikeminnow, humpback chub, bonytail, and razorback sucker, but changes in the biological environment may also have been equally significant. Physical changes in the riverine habitat have been accompanied by the introduction, establishment, and proliferation of nonnative fishes, and concomitant declines in native fishes in the upper Colorado River basin. The role of nonnative fishes is often identified, in association with habitat changes, as a major obstacle to conservation of native fish communities.

At least 67 nonnative fishes have been introduced actively or passively into the Colorado River system during the last 100 years (Minckley 1982; Tyus et al. 1982; Carlson and Muth 1989; Minckley and Deacon 1991; Maddux et al. 1993). By 1980, more than 50 nonnative fishes had been actively introduced into rivers and reservoirs of the Colorado River basin (Minckley 1982; Tyus et al. 1982; Carlson and Muth 1989). Native big river fishes have disappeared from about three-fourths of their original habitat while introduced fishes have become more widespread and abundant. Former studies have also documented a decline in the abundance of native fish species as nonnative species increased in abundance (Joseph et al. 1977; Behnke 1980; Osmundson and Kaeding 1989; Quarterone 1993).

Many of the nonnative fishes introduced into the Colorado River basin are suspected of adversely affecting the native mainstem fishes in some fashion. Warmwater gamefish are thought to have the greatest adverse effect on endangered native fishes. Centrarchids (e. g., largemouth bass, green sunfish, bluegill, black crappie, and smallmouth bass), ictalurids (e. g., channel catfish and black bullhead), and esocids (northern pike) are frequently listed as contributors to the decline of native fishes. An increasing body of evidence characterizes the negative interactions of nonnative fishes with the endangered big river fishes (Hawkins and Nesler 1991; Minckley et al. 1991; Maddux et al. 1993; Lentsch et al. 1996). Some of this evidence is indirect, including inferences from field data or results from laboratory studies of predation by nonnatives on natives. Laboratory studies have documented agonistic behavior, resource sharing, and vulnerability to predation (Papoulias and Minckley 1990; Karp and Tyus 1990; Ruppert et al. 1993; Johnson et al. 1993). Direct evidence of predation includes native fishes obtained from stomach contents of nonnative fishes and by visual observation of predation. Other means by which nonnative fishes may adversely affect native fishes are by competition for food, which limits the success of razorback sucker (Papoulias and Minckley 1990). The extent of predation pressure by some nonnative fishes on populations of native fishes is not exactly known. Tyus and Saunders (1996) went on to conclude that smallmouth bass along with channel catfish and northern pike were the main threat to juvenile Colorado pikeminnow and razorback sucker. During the 1990s the Yampa River experienced a dramatic increase in northern pike and then smallmouth bass in critical habitat. Predation by these two piscivorous species wreaked havoc on the native fish community. Anderson (2004; 2005) documented significant declines of native fish densities in

parts of the Yampa River between 1998 and 2004 coincident with an increase in smallmouth bass abundance. Bioenergetic modeling by Johnson et al. (2008) indicated that smallmouth bass fish consumption was similar to northern pike and about 65 times greater than channel catfish, but if more prey fish were available, piscivory by smallmouth bass could be 10 fold the piscivory by northern pike and channel catfish. They concluded that smallmouth bass presented the greatest predatory threat to native fishes of the Yampa River.

Smallmouth Bass

Until 2003, smallmouth bass were only reported as incidental, rare captures in the upper Colorado River from Price Stubb Dam (river mile 188.3) to the Colorado/Green River confluence. However, Fish and Wildlife sampling crews involved with the channel catfish removal evaluation recorded and documented the capture of 318 smallmouth bass in main channel riverine habitats in a 39-mile reach of the upper Colorado River from the Gunnison/Colorado River confluence to the Utah/Colorado stateline (Burdick 2003a). Catch rates (fish/hour and fish/mile) steadily increased throughout the 4-month sampling period (30 June to 31 October) and reached a high of 4.07 fish/hr. The source(s) of these smallmouth bass are unknown.

Upper Colorado River (Colorado)

In the upper Colorado River between Price-Stubb Dam (river mile [RM] 188.3) and the head of Westwater Canyon, (RM 125), abundance and distribution information is limited for smallmouth bass. However, the increase in the number of smallmouth bass reported during the channel catfish removal evaluation had biologists and managers concerned that smallmouth bass abundance could increase quickly, and further impact recovery of native endangered fishes. Smallmouth bass have the potential to predate or compete with different life stages of the four native endangered fishes.

Fish passage has been restored at the Grand Valley Irrigation Company (GVIC) Diversion Dam near Palisade, the Government Highline Diversion Dam, and recently (March 2008) at the Price-Stubb Diversion Dam. For the first time in over 100 years fish now have upstream access from the Grand Valley to upstream reaches in the upper Colorado River. Only a fish trap at the Government Highline fish passageway can prevent unimpeded movement upstream. Smallmouth bass are located in Rifle Gap Reservoir and Highline Lake and adult smallmouth bass have been collected in the Colorado River between Rifle and Price-Stubb Dam (Anderson 1997; Burdick 2008a).

Lower Gunnison River

In the fish trap of the Redlands Dam fish passageway in the lower Gunnison River, the number of smallmouth bass have increased ($n = 19$ in 2002-2003; Burdick 2002; Burdick 2003b) over previous years of monitoring ($n = 1$ in 1996–2001; Burdick 2001). Nine smallmouth bass were collected in the fish trap at Redlands during 2004 (Burdick 2004) and 21 during 2005 (Burdick 2005a). No smallmouth bass were collected in the fish trap during 2006 (Burdick 2006) or 2007 (Burdick 2007). Four were collected in 2008, one in 2009 (Burdick 2008(b); 2009), and three in 2010 (Burdick 2010a). About 1,800 fingerling smallmouth bass were stocked by the

Colorado Division of Wildlife (CDOW) in 1973 in the Gunnison River near Delta (Wiltzius 1978) upstream from Redlands Diversion Dam. None of these stocked smallmouth bass have been subsequently captured upstream from the diversion dam (Wiltzius 1978, Valdez et al. 1982; Burdick 1995). Redlands Dam (RM 3.0) provides an effective barrier to smallmouth bass and all other fish attempting to move further upstream in the Gunnison River.

Juanita Reservoir, which can connect to Kannah Creek and eventually to the lower Gunnison River near the town of Whitewater, also contains smallmouth bass.

Control of Nonnative Fish by Mechanical Removal

Control of smallmouth bass and other nonnative fish species is a primary emphasis, along with habitat restoration, propagation and stocking, and instream flow management within the Recovery Program for the four endangered fish species. In the strategic plan for the control of nonnative fishes in the upper Colorado River Basin (Tyus and Saunders 1996), “control” was defined as “reducing the numbers of one or more nonnative species to levels below which they are no longer an impediment to the recovery of endangered fish species.” The goal for nonnative fish control or management in the upper Colorado River Basin is to reduce the adverse impacts of nonnative fishes on the endangered fishes which will hopefully increase the distribution and abundance of the endangered fishes and contribute to their recovery. It is not likely that nonnative fishes that have become established in the upper Colorado River Basin can be eliminated. However, preventive measures and active control programs could be implemented to reduce the abundance of nonnative fishes in riverine and adjacent floodplain habitats. Consequently, then, reducing the abundance of some problematic, nonnative fishes would reduce the potential for predation and competition on native listed and non-listed fishes. Management to promote recovery of listed fish species may have to include long-term or periodic suppression of some problematic nonnatives, such as mechanical removal, that minimizes impacts to remaining native fishes.

IV. Study Goals, Objectives, End Product:

Study Goals/Objectives

The purpose of this proposed study is to remove as many smallmouth bass of all sizes in main channel riverine habitats in two sections of river. The first being a 35.7-mile reach of the upper Colorado River between Price-Stubb Dam (RM 188.3) and the BLM boat landing at Loma, CO (RM 152.6). The second being a 2.3-mile reach of the lower Gunnison River, between the Redlands Dam (RM 3.0) and the Gunnison/Colorado confluence (RM 0.7). The goal is to reduce the abundance of smallmouth bass as quickly as possible in this reach which will ultimately benefit native listed fishes, and possibly contribute to their recovery. The study objectives are to:

1. Remove all sizes of smallmouth bass in the upper Colorado River by boat and raft-mounted electrofishing
2. Obtain an abundance estimate for smallmouth bass juvenile (100-199 mm) and adults (≥ 200 mm) by mark and recapture methods for the upper Colorado River between GVIC Dam (RM 185.6) and Loma Boat Landing and the lower

Gunnison River between Redlands Dam and the Colorado/Gunnison river confluence.

FINAL PRODUCT: Computerize and analyze field data;
Prepare annual RIP reports.

- V. FY-2012/FY-2013 Study Area: Upper Colorado River and lower Gunnison River
- 1) Price-Stubb Diversion Dam to Loma boat landing (RM 188.3 – 152.6)
 - 2) The lower Gunnison River (RM 3.0 – 0.7)
- VI. Study Methods/Approach:

The proposed study area and number of electrofishing passes encompassed by the SOW changed several times from March 2011 to February 2012. The latest direction from the Recovery Program (at the 26 January 2012 meeting) was to restore this SOW to previous funding levels for FY-2012 (\$164,411). The direction received from the Biology Committee at that meeting was to put together a SOW that, in conjunction with SOW 126b being performed by the Colorado Division of Wildlife (renamed Colorado Parks and Wildlife {CPW} in 2011), would perform smallmouth bass removal from Silt, CO downstream to the Loma Boat Landing. The main emphasis of field work being done in the Grand Valley would be to remove smallmouth bass, while field work being performed in upstream reaches would be done both to remove smallmouth bass and gather more information on the elevated number of northern pike that were removed near Rifle, CO in fall 2011.

Unfortunately, funding for FY-2012 was restored after our hiring of seasonal employees for the upcoming field season had already been completed. Therefore, a determination had to be made as to how much of the reallocated funding could realistically be translated into on-the-ground removal efforts (i.e., which river reaches could realistically be sampled and how often) based upon available resources. On a 1 February 2012 conference call with CPW, it was decided that the Grand Junction CRFP office would concentrate their mark/removal efforts exclusively in the Grand Valley, making a total of 7 full passes through the Grand Valley (1 for marking and 6 for removal). This amount of effort can be done for \$136,155 (see FY-2012 budget). The remainder of restored funding will be directed to purchasing four ETS brand electrofishing control boxes and four new 5000 Watt generators to help us partially refit our station's electrofishing fleet to meet standardized guidelines set forth by Recovery Program. CPW will concentrate their FY-2012 recon and removal efforts exclusively in the river reaches upstream of the Grand Valley, with emphasis on the Silt, CO to Beavertail Mountain reach. This suggested division of labor will help eliminate scheduling conflicts that have occurred in previous years, as well as allowing project biologists to become more intimately familiar with their specific study area and any nonnative fish "hot spots" that may occur in those river reaches.

In this SOW, funding levels for FY-2013 have been left at the level decided upon during the March 2011 Biology Committee meeting (i.e., \$125,760). If indeed funding levels in FY-2013 remain at that level, the sampling proposed for FY-2013 would need to be modified to reflect a reduced presence in the field (possibly including the complete removal of CPW's SOW 126(b), as was decided upon during the March 2011 Biology Committee meeting). If this is the case, it would result in

our only being able to do a total of six passes in the Grand Valley (1 for marking and five for removal) and two days of sampling in the upper Colorado River (1 day from Silt and Rifle, CO and 1 day from Rifle to Rulison, CO) to partially replace the work CPW is being funded to do in FY-2012, under SOW 126(b).

Removal Passes. Given the budget constraints for FY-2012 and FY-2013 (originally imposed at the March 2011 BC meeting), an effort was made to prioritize the river reaches where removal efforts should be focused in 2012 and 2013. A quantitative metric (catch/effort, measured as fish/hr of electrofishing) was used to identify the river reaches that harbored the highest concentrations of smallmouth bass collected during seven consecutive years (2004-2010) of this study. They were as follows (from Burdick 2010b):

<u>Rank</u>	<u>River Reach</u>	<u>Catch/Effort (fish/hr)</u>
1	Corn Lake to the Colorado/Gunnison River confluence	8.79
2	Colorado/Gunnison River confluence to Fruita State Park	6.79
3	GVIC to Corn Lake	4.9
4	Lower Gunnison River	4.54
5	Fruita State Park to Loma	4.07
6	Price-Stubb Dam to GVIC	3.2
7	Loma to Salt Creek	2.82
8	Salt Creek to Utah/Colorado state line	2.52
9	Rifle to Beavertail Mountain	1.76
10	Utah/Colorado state line to Westwater, Utah	0.43
11	Grand Valley Water User's Dam to Cameo XCEL Bridge	0.11

Based on that analysis and given the preceding discussion in Section VI (Study Methods/Approach), the removal reaches and number of removal passes to be performed in FY-2012 are as follows:

<u>River Reach</u>	<u>No. of Removal Passes</u>
Price-Stubb Dam to GVIC	6
GVIC to Corn Lake	6
Corn Lake to the Colorado/Gunnison River confluence	6
Colorado/Gunnison River confluence to Fruita State Park	6
Fruita State Park to Loma	6
Lower Gunnison River	6

If funding levels for FY-2013 remain at \$125,760, then the removal reaches and number of removal passes to be performed in FY-2013 will be as follows:

<u>River Reach</u>	<u>No. of Removal Passes</u>
Silt to Rifle	1
Rifle to Rulison	1
Price-Stubb Dam to GVIC	5
GVIC to Corn Lake	5
Corn Lake to the Colorado/Gunnison River confluence	5
Colorado/Gunnison River confluence to Fruita State Park	5
Fruita State Park to Loma	5
Lower Gunnison River	5

Marking Pass. In FY-2012 and FY-2013, smallmouth bass will continue to be marked to obtain an abundance estimate to compare with former years. In the Grand Valley reaches of the Colorado and Gunnison rivers, one pass using three electrofishing boats will be devoted to mark juvenile (100-199 mm) and adult (≥ 200 mm) smallmouth bass. This will be followed by six passes to lethally remove all centrarchids. Only marked smallmouth bass recaptured from the first removal pass will be used for the population estimate. However, while not used in the population estimate, marked smallmouth bass will continue to be noted on every subsequent removal pass. The population estimate in FY-2012 and FY-2013 will be for the section of the Colorado River from of the GVIC Dam (RM 185.6) downstream to Loma Boat Landing (RM 152.6) and the 2.3 miles of the lower Gunnison River from the Redlands Dam to the Colorado/Gunnison rivers, the same reaches and mileages that juvenile and adult smallmouth bass population estimates were calculated for between 2006 and 2011.

Juvenile and adult smallmouth bass collected during the first pass will be marked and released. For the population estimate in 2012 and 2013, juvenile smallmouth bass (100-199 mm) will be marked by removing the ventral lobe of the caudal fin with scissors. Adult smallmouth bass (≥ 200 mm) will be marked by removing the dorsal lobe of the caudal fin with scissors. Subsequent recaptures of smallmouth bass marked during the marking pass will be recorded for determining an abundance estimate. In 2012 and 2013, field data will be recorded from all juvenile and adult endangered fish collected. They will be also checked for a PIT tag, weighed, measured, and immediately returned to the river.

Fish Disposal. All smallmouth bass (except for fish marked and released during the marking pass) and all other centrarchids plus any opportunistically-collected northern pike, walleye, burbot, gizzard shad, grass carp, and yellow perch collected will be lethally removed. White sucker may also be lethally removed at the researcher's discretion, if fish numbers and storage space allows. Disposal of all the aforementioned fishes will be as follows: following capture, fish will be euthanized in the field and preserved on ice. All dead fish will be held on station in freezers and disposed of in the Mesa County landfill southeast of Grand Junction.

Data Analyses. All smallmouth bass captured within each of the sub-reaches will be enumerated in 2012 and 2013 similar to that during former years (2004 – 2011). Total numbers of smallmouth bass and largemouth bass collected and catch/effort (fish/hr) will be also determined for each sub-reach per sampling pass for each of these 3 years. Length data will be recorded for 2012-2013 similar to that during former years (2004 – 2011) to determine the size structure of smallmouth bass removed.

Data summary analyses similar to that employed between 2004 and 2011 will be used to analyze the 2012 and 2013 field data. During 2012 and 2013, a mark-recapture estimator will be used to obtain a population estimate for juvenile (100-199 mm) and adult (≥ 200 mm) smallmouth bass from the 15- and 18-mile reaches and the lower 2.3 miles of the Gunnison River. Chapman's (1951) modification of the Petersen-Lincoln estimator was used to determine the abundance of smallmouth bass in 2006 through 2011, and will be used again in 2012 and 2013. Also, other population estimators could be used, based on recommendations from the smallmouth bass programmatic synthesis (Breton et al.).

Probability of capture (\hat{p} ; after White et al. 1982), the coefficient of variation (CV: $SE/\hat{N} \times 100$ [where N =estimated population size]; Pollock et al. 1990), and exploitation rates will also be computed. All centrarchid fishes captured during the 2012 and 2013 field work will also be analyzed similar to the data analyzed between 2004 and 2011 for among year comparisons.

VII. Task Description and Schedule

Description

Task 1. Remove all sizes of smallmouth bass and other centrarchid fishes.
Sub-task 1a. Mark and release smallmouth bass during pass 1.

Task 2. a) computerize field data; b) analyze data; c) prepare annual RIP reports.

Schedule

Task 1. 6/2012 – 10/2012; 6/2013 – 10/2013
Sub-task 1a. 7/2012; 7/2013

Task 2. a) 9/2012-11/2012; 9/2013-11/2013, b) & c) 11/2012, 11/2013

VIII. FY-2012 Work (ninth year of multi-year study)

Deliverables/Due Dates: Annual Report due 11/2012

Budget (salary + benefits; actual salary rates w/ benefits provided by CRFP Administrative Officer used for labor)

Task 1. Remove all smallmouth bass; sub-task 1a: mark & release smallmouth bass on pass 1 for population estimate

1. Labor (salary and benefits, with salaries rounded to the nearest dollar)		
Project Leader (1-GS-14 @ \$ 74.16/hr)	0 hrs	\$ 0
Acting Project Leader (1-GS-13 @ \$ 61.38/hr)	191 hrs	\$ 11,724
Fish Biologist (1-GS-12 @ 49.84/hr)	1,040 hrs	\$ 51,834
Admin. Officer (GS-9, @ \$ 39.63/hr)	258 hrs	\$ 10,225
Bio Tech (4-GS-5 @ \$ 17.45/hr)	520 hrs ea.	\$ 36,296
	Subtotal	<u>\$110,079</u>
2. Travel (RP meetings/workshops)		
	Subtotal	<u>\$ 1,100</u>
3. Equipment		
a) Vehicles: GSA-lease (rate=\$ 334/month; 0.30.mile)		
Number of vehicles: 3.25 (three needed for one week for marking pass)		
Lease: \$ 334/month X 3.25 months X 2 vehicles=\$ 2,171		
(5 Removal Passes); \$ 334/month X 0.25 month= \$ 84		
(Removal Pass - 1 additional vehicle)		
		\$ 2,255
Mileage: 3,648 miles X 0.30/mile=\$ 3,026.40		
		\$ 1,094
b) Outboard Motor Gasoline (est. 40 gals X \$ 4.50/gal of 91 Octane)		
		\$ 180
c) EF generator Gasoline (est. 200 gals X \$ 4.50/gal of 91 Octane)		
		\$ 900
d) 2-cycle outboard oil for outboards, EF generator oil, props, jet-pump impellers, liners, plastic bags (fish disposal), parts		
		\$ 1,200
e) Maintenance (outboards, generators, EF units, aluminum boat repair, jet shoe replacement parts)		
		\$ 3,155
f) Repair 2 Smith-Root GPP 5.0 units (2 units @ \$1,000 each)		
		\$ 2,000
g) Dip nets, stainless steel spheres, cable, EF hardware		
		\$ 600
h) Marking tools (Fiskars® scissors/punches)		
		\$ 130
i) Sampling bottles (polyethylene, 250 ml)		
		\$ 300
j) Office supplies/paper, telephones, copy machine, computer software/support, postage		
		<u>\$ 1,200</u>
	Subtotal	<u>\$ 13,014</u>
4. Other: Purchases to upgrade sampling equipment		
a) ETS boat electrofishing control boxes, with options to meet standardized guidelines set forth by Recovery Program (4 units @ \$5,725.00 each)		
		\$ 22,900
b) 5000 Watt portable generator (specified by Pat Martinez) (3 units @ \$2,500 each)		
		\$ 7,500
c) YSI Pro20 Handheld Dissolved Oxygen Meter		
		\$ 1,000
d) YSI pH100 Handheld pH Meter		
		<u>\$ 300</u>
	Subtotal	<u>\$ 31,700</u>
	Task 1 Subtotal	<u>\$155,893</u>

Task 2. Cross-agency coordination; apply for collection permits; data reporting requirements; computerize field data; analyze data; prepare RIP annual report.

1. Labor (salary and benefits, with salaries rounded to the nearest dollar)		
Fish Biologist (1-GS-12 @ \$ 49.84/hr)	240 hrs	\$ 11,962
	Subtotal	\$ 11,962
	Task 2 Subtotal	\$ 11,962
	FY-2012 All Tasks Total	\$167,855

FY-2013 Work (tenth year of multi-year study):

Deliverables/Due Dates: Annual Report due 11/2013

Budget (salary + benefits; actual salary rates w/ benefits provided by CRFP
Administrative Officer used for labor)

Task 1. Remove all smallmouth bass; sub-task 1a: mark & release smallmouth bass on pass 1 for population estimate

1. Labor (salary and benefits, with salaries rounded to the nearest dollar)		
Project Leader (1-GS-14 @ \$ 76.34/hr)	0 hrs	\$ 0
Asst. Project Leader (1-GS-13 @ \$ 65.05/hr)	191 hrs	\$ 12,425
Fish Biologist (1-GS-12 @ 51.29/hr)	1,040 hrs	\$ 53,342
Admin. Officer (GS-9, @ \$ 40.78/hr)	258 hrs	\$ 10,521
Bio Tech (3-GS-5 @ \$ 17.95/hr)	500 hrs ea.	\$ 26,925
	Subtotal	\$103,213
2. Travel (RP meetings/workshops)		\$ 1,100
	Subtotal	\$ 1,100

3. Equipment

- a) Vehicles: GSA-lease (rate=\$ 334/month; 0.30.mile)
 Number of vehicles: 3.25 (three needed for one week for marking pass)
 Lease: \$ 334/month X 3.25 months X 2 vehicles=\$ 2,171
 (5 Removal Passes); \$ 334/month X 0.25 month= \$ 84
 (Removal Pass—1 additional vehicle) \$ 2,255
 Mileage: 3,648 miles X 0.30/mile=\$ 3,026.40 \$ 1,094
- b) Outboard Motor Gasoline (est. 30 gals X \$ 4.00/gal of 91 Octane) \$ 120
- c) EF generator Gasoline (est. 175 gals X \$ 4.00/gal (91 Octane) \$ 700
- d) 2-cycle outboard oil for outboards, EF generator oil,

	props, jet-pump impellers, liners, plastic bags (fish disposal), parts	\$ 1,147
e)	Maintenance (outboards, generators, EF units, aluminum boat repair)	\$ 2,000
f)	Dip nets, stainless steel spheres, cable, EF hardware	\$ 600
g)	Marking tools (Fiskars® scissors/punches)	\$ 121
h)	Office supplies/paper, telephones, copy machine, office supplies, computer software/support, postage	\$ 1,100
	Subtotal	\$ 9,137
4.	Other	\$ 0
	Subtotal	\$ 0
	Task 1 Subtotal	\$113,450

Task 2. Cross-agency coordination; apply for collection permits; data reporting requirements; computerize field data; analyze data; prepare RIP annual report.

1.	Labor (salary and benefits, with salaries rounded to the nearest dollar)	
	Fish Biologist (1-GS-12 @ \$ 51.29/hr)	240 hrs
		\$ 12,310
	Subtotal	\$ 12,310
	Task 2 Subtotal	\$ 12,310
	FY2013 All Tasks Total	\$125,760

IX. Budget Summary

FY-2012 \$ 167,855 (increase of \$3,444 from the 2/2/2012 version of this SOW)
 FY-2013 \$ 125,760
 Total: \$ 293,615

X. Reviewers: Program Staff and Biology Committee

XI. References

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