RECOVERY PROGRAM   Recovery Program Project Number: 170
FY 2018-2019 SCOPE OF WORK for:

***Development and Maintenance of a Centralized PIT tag Database for the San Juan and
Upper Basin Recovery Programs***

Reclamation Agreement number: R14AC00084
Reclamation Agreement term: Oct 1, 2014 – June. 30, 2019

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.

Lead agency: Colorado Natural Heritage Program
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Date Last Modified: 7/17/2017 12:36:00 PM *[This field is set to update automatically.]*

Category: Expected Funding Source:
_X_ Ongoing project   _X_ Annual funds
__ Ongoing-revised project   __ Capital funds
__ Requested new project   __ Other *[explain]*
__ Unsolicited proposal

  I. Title of Proposal: *Development and Maintenance of a Centralized PIT tag Database for the
      San Juan and Upper Basin Recovery Programs*

 II. Relationship to RIPRAP: V.A.1. Conduct interagency data management program to compile,
      manage, and maintain all research and monitoring data collected by the Recovery Program.

III. Study Background/Rationale and Hypotheses: STReaMS, the master database of the Upper
      Colorado and San Juan River endangered fish recovery programs (recovery programs), creates
      a consolidated system to assist researchers and stakeholders with uploading, managing, editing
      and accessing data. Data support the recovery of endangered species and removal of non-
      native fishes, assessment of effects of non-native fish removal, effects of new flow and
      temperature regimes based on the fish community response, and effects of continued water
      development.

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

Investigators of the Upper Colorado River Endangered Fish Recovery Program and the San Juan River Endangered Fish Recovery Program have been collecting large quantities of data on stocked and wild endangered fishes. These data are stored in the STReaMS database which makes it easy to identify individual fish and capture histories and integrate data from various active capture projects as well as Passive Interrogation Arrays (PIAs). The sharing of data between investigators and stakeholders is streamlined to improve efficiency of data entry and retrieval, and to prevent duplication of records and efforts between and among the various investigations.   The master database standardizes content and provides convenient, easy access to all available data.

V.   Study Area: STReaMS will house data from the entire Upper Colorado and San Juan River Basins, including Lake Powell.

VI.   Study Methods/Approach: *CNHP and the data managers use standard data management and assessment techniques to ensure data are accurate and as complete as possible.*

VII.   Task Description and Schedule:

CNHP will continue to develop and maintain the STReaMS database during the Federal FY18 (October 1, 2017 - September 30, 2018). Tasks are broken out below.

Server Maintenance
- Maintain the server, server security, and perform regular database backups
- Maintain the test server and development environment
- Perform necessary software upgrades including Windows Updates, SQL Server updates, and PHP Updates. Ensure all code performs as expected following updates.
- Assess overall performance and optimize resources as needed
- Maintain Database Manager credentials to access SQL Server

Website Maintenance and New Features
- Develop advanced SQL Query Builder and Query Builder User Guide
- Create a collaborative resources page to share SQL queries and other helpful information
- Develop QC Tools
    - Change relationships (merge/split records)
    - QC Encounter attributes
    - Recalculate spatial attributes
- Create calculated fields
    - Known distance travelled (based on Encounter history)
    - Days in river
- Batch Upload enhancements
- Bug fixes
- Internal testing and stress tests
- Update online help, data dictionary, user manuals, and system documentation
- Train Recovery Program participants on new features and enhancements

- Other priorities identified by Recovery Program Database Managers

Project Management
- Prepare annual reports
- Perform project management and CSU compliance
- Maintain regular communication with Database Managers

CNHP will continue to maintain the STReaMS database and troubleshoot as necessary in Federal FY19-23. Tasks are broken out below.

Server Maintenance
- Maintain the server, server security, and perform regular database backups
- Maintain the test server and development environment
- Perform necessary software upgrades including Windows Updates, SQL Server updates, and PHP Updates. Ensure all code performs as expected following updates.
- Assess overall performance and optimize resources as needed
- Maintain Database Manager credentials to access SQL Server

Website Maintenance and New Features
- Bug fixes
- Internal testing and stress tests
- Update online help, data dictionary, user manuals, and system documentation
- Other priorities identified by Recovery Program Database Managers

Project Management
- Prepare annual reports
- Perform project management and CSU compliance
- Maintain regular communication with Database Managers

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

FY18 Deliverables: Annual Report in November. Fully functional database.

FY18-19 BUDGET ITEM	$/Unit	Quantity	TOTAL COST
PROFESSIONAL SERVICES	$/mo		
Amy Greenwell	$7,798.90	2.0	$16,341.31
David Anderson	$10,101.72	0.35	$3,707.10
Puja Gurung	$6,668.43	3.0	$20,946.45
Ben Johnke	$5,237.00	1.0	$5,237.00
Michael Menefee	$7,544.83	0.75	$5,927.66
Subtotal			**$ 52,160**
TRAVEL			
2 day trips to Denver, 140 mi/trip @ 50 cents/mi	$70	2	$140
Subtotal			**$140**
MATERIALS/SUPPLIES			
8TB Hard drive for back-ups, 7200 rpm	$300	1	$300
Books (Microsoft SQL Server 2016 Unleashed $45, PHP Security $65)	varies	2	$110
Domain for website	$20	1	$20
Subtotal			**$430**
OTHER			
Long Distance Phone Calls	$50	1	$50
Subtotal			**$50**
TOTAL DIRECT			**$52,780**
INDIRECT COSTS (@31.3%)			$16,520
TOTAL PROJECT COSTS			**$69,300**
San Juan Contribution			$15,000
TOTAL UPPER BASIN COST			**$54,300**

FY19-FY23 Deliverables: Annual reports due in November. Continued functionality of the database and online interface.

BUDGET ITEM	$/Unit	Quantity	FY19 COST	FY20 COST	FY21 COST	FY22 COST
PROFESSIONAL SERVICES	$/mo					
Amy Greenwell	$7,798.90	1.5	$11,698	$8,353	$8,520	$8,690
David Anderson	$10,101.72	0.15	$1,515	$1,082	$1,104	$1,126
Puja Gurung	$6,668.43	2	$13,337	$9,523	$9,713	$9,907
Ben Johnke	$5,237.00	1	$5,237	$3,739	$3,814	$3,890
Michael Menefee	$7,544.83	0.35	$2,641	$1,885	$1,923	$1,962
Subtotal			**$34,428**	**$24,582**	**$25,073**	**$25,575**
TRAVEL						
2 day trips to Denver, 140 mi/trip @ 50 cents/mi	$70	2	$140	$140	$140	$140
Subtotal			**$140**	**$140**	**$140**	**$140**
MATERIALS/SUPPLIES						
8TB Hard drive for back-ups, 7200 rpm	$300	1			$300	$300
Server	$6,500	1	$6,500			
Back-up power supplies	$650	1		$650		
Books (Microsoft SQL Server 2016 Unleashed $45, PHP Security $65)	varies	2	$110	$110	$110	$110
Domain for website	$20	1	$20	$20	$20	$20
Subtotal			**$6,610**	**$760**	**$410**	**$410**
OTHER						
Long Distance Phone Calls	$50	1	$50	$50	$50	$50
Subtotal			**$50**	**$50**	**$50**	**$50**
TOTAL DIRECT			**$41,228**	**$25,532**	**$25,673**	**$26,175**
INDIRECT COSTS (@31.3%)			$12,904	$7,991	$8,036	$8,193
TOTAL PROJECT COSTS			**$54,133**	**$33,523**	**$33,709**	**$34,368**
San Juan Contribution			$10,000	$10,000	$10,000	$10,000
TOTAL UPPER BASIN COST			**$44,300**	**$23,523**	**$23,709**	**$24,368**

IX.   Budget Summary:

Total budget to CNHP by Fiscal Year:
FY2018: $69,300
FY2019: $54,133
FY2020: $33,523
FY2021: $33,709
FY2020: $34,368

X.   Reviewers:

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XI.   References: