United States Department of the Interior
U.S. Fish and Wildlife Service

Ash Meadows Fish Conservation Facility

SNPLMA Round 16
Capital Improvement Program

Ash Meadows Fish Conservation Facility Expansion and Construction Project

Project location
N 36° 25’ 26”
W 116° 18’ 21”

Congressional District 4

Amount Requested $1,315,756

Project Manager: Corey Lee
Email address: corey lee@fws.gov
4701 North Torrey Pines Drive
Las Vegas, NV 89130
775-372-5435 ext. 120

Nomination reviewed and approved by: /s/ April 29, 2016

Christy Smith
Project Leader
DNWR Complex

Date

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Executive Summary:

The Ash Meadows Fish Conservation Facility was funded and built from Southern Nevada Public Land Management Act Round 6-6 (Ci23) as a refugium for Devils Hole pupfish (*Cyprinodon diabolis*). The U.S. Fish and Wildlife Service is proposing an expansion project focusing on two separate buildings: (1) a workshop building for fabricating and creating aquaria modifications, habitat structures for the refuge tank, etc, that will also include a room designed as network server storage and a video editing room that will assist providing a high quality video feed to the Ash Meadows National Wildlife Refuge (NWR) Visitor Center and other visitor centers; and (2) a greenhouse/solarium to encase two 1,000-gallon mesocosm tanks on the east side of the AMFCF to provide additional climate and environmental conrols for further invertebrate and algal cultures.

The workshop will be on west side of the existing building and will be approximately 30 ft. x 30 ft. with a 12 ft. ceiling, which will require moving the existing west fence and an electrical transformer. The area beyond the existing fence is still within the existing footprint of the original construction area of the AMFCF. Moving this fence further west will also allow expansion of the entrance and to replace the manual gate with an automated electric gate to improve security at the AMFCF. The building shall be cinderblock so that it matches the current design of the existing main building and refuge tank exterior walls.

The greenhouse/solarium will be on the east side of the existing building and will enclose two 1,000 gallon tanks. The structure will need to be approximately 18 ft. wide x 35 ft. long. The new structure will have to allow propper access distance from existing building, which will require moving the existing fence further to the east. The area beyond the existing fence to the east is still within the existing footpring of the original construction area of the AMFCF.

Purpose Statement:

The critically endangered Devils Hole pupfish has survived and evolved for potentially thousands of years in what may be the most restricted habitat of any vertebrate in the world (Lema 2008). Listed as Endangered in 1967, the wild population has twice dropped to an estimated 38 individuals since 2006, and in 2013 the population was at an all-time estimated low of 35 individuals. Under the umbrella of the Desert National Wildlife Refuge (DNWR) Complex, the AMFCF houses the only two captive populations of Devils Hole pupfish required by the Recovery Plan for the Endangered and Threatened Species of Ash Meadows, Nevada (Recovery Plan) (USFWS 1990). The AMFCF currently has a reproducing refuge population of Devils Hole pupfish that was initiated by collecting eggs from Devils Hole in an effort to reduce risk to the wild population.

The USFWS is proposing an expansion project focusing on two new structures at the AMFCF. The first is a workshop that will allow improved efficiency in production and modification of required aquaria, habitat structures, or any other fabrication needed on site. A section of the new workshop building will also be used to house network server equipment and a video editing station in order to provide digital visitor access to the AMFCF and Devils Hole pupfish. This will enable the AMFCF to provide a live stream and other high resolution footage to the Ash Meadows NWR Visitor Center and other visitor centers in the DNWR Complex. The second structure is a greenhouse/solarium that will provide a large scale controlled environment for propagating algae and invertebrates native to Devils Hole. This is essential to providing a constant supply of native food sources and natural environmental materials to ensure the success of the refuge tank at the AMFCF and continue to ensure the conservation of Devils Hole pupfish, the rarest vertebrate in the world.

Project Deliverables

- Primary deliverables
  - Construct Workshop
  - Connect live video feed from refuge tank to the Ash Meadow NWR Visitor Center
  - Construct greenhouse.
- Anticipated deliverables
  - Anticipated deliverables are those that are desirable and beneficial, but not minimally necessary to completion of the proposed project and project purpose.
- Standard deliverables
  - Endangered Species Act surveys to ensure no endangered or threatened plants are growing in the construction zones
  - Architecture and Engineers drawings prepared
  - Preparation of construction specifications and contract documents prepared
  - Award of contract for construction
  - Release of lien and FWS takes beneficial occupancy/accepts construction as complete
  - Preparation of close out package

Background Information:

Workshop

The existing building at the AMFCF is very limited for space for network servers, storage, and fabrication. Most fabrication is currently done outside in the heat and cold and storage is in two undersized conexes located behind the existing building. Only one conex is currently climate-controlled. Currently, video editing is done on a laptop in the mechanical room, which is noisy and not designed as a computer workstation.

The AMFCF is currently a "Net Zero" facility and with that, the new workshop building would be designed as a "green" facility to reduce energy consumption (LEEDS criteria), including the use of photo-voltaic system similar to the existing units at the AMFCF, use recycled materials where appropriate, and minimize operation and maintencance costs. The new workshop building will be located just to the west of the existing building to keep all activities centralized on the current AMFCF footprint.

The proposed workshop would be of similar construction to the exitsting building with cinder block walls to blend in to the refuge surroundings. The floor would be 12-inch thick and steel re-enforced concrete. Two 12 ft tall by 10 ft. wide steel roll-up doors would be located directly across from each other, one on the south side of the building and one on the north side, to allow for access through the building to service the wells as needed. There would be a minimum of three 3 feet by 6 foot 8 inch steel man-doors. A 10 foot by 10 foot room will be located in the workshop to house server equipment and a video editing station. The west fence of the AMFCF property will need to be moved further west, and this will also enable the addition of an electric automated gate to increase security at the AMFCF.

Greenhouse/Solarium

The AMFCF is also limited on climate-controled space for propagation of native Devils Hole algae and invertebrates. A large-scale 1,000 gallon mesocosm is currently used, but requires the use of may aquarium-style water heaters to maintain the water temperature. A greenhouse/solarium would allow for the expansion into a second 1,000 gallon tank and would limit the need for excess heaters for the system. The solar heat from the desert sun would be used to efficiently heat the water inside the greenhouse, as well as limit any airborne contaminants from entering the system.

The proposed greenhouse would help ensure large scale innoculations are able to continue in the refuge tank. This is important as the refuge tank is a young ecosystem, only having water in the tank for three years. The system needs to be maintained until the desired invertebrates are self-sustaining in the system. The 1,000 gallon mesocosms will continue

to provide a stock source for the refuge tank as needed to ensure the survival and viability of the Devils Hole pupfish refuge population.

Project Timeframe:

This is a Capital Improvement project which allows for a timeframe of five years. This project will be done in less than five years.

Project Deliverables:

Primary:

- Construct workshop.
- Connect live video feed from refuge tank to the Ash Meadows NWR Visitor Center.
- Construct greenhouse.

Standard:

- Endangered Species Act surveys to ensure no endangered or threatened plants are growing in the construction zones.
- Writing a request for construction bids.

Performance Measures:

Outcome: Provide visitors a rare opportunity to see Devils Hole pupfish live and increase visitor awareness and appreciation for the Devils Hole pupfish through a live high-defininition video feed into the Ash Meadows NWR Visitor Center. Achieving the following outputs will achieve this outcome.

Output: Complete workshop with network server room to complete the live video feed.
-Performance Measure O2

Output: Contact 100,000+ visitors per year with live Devils Hole pupfish networked feed.
-Performance Measure O5

Outcome: Further reduce energy consumption at the Ash Meadows Fish Conservation Facility

Output: Complete greenhouse to reduce need for heaters in the outdoor 1,000 gallon tanks.
-Performance Measure O8

Output: Complete installation of photo-voltaic array on top of workshop.
-Performance Measure O8

Project Implementation Process:

The goal of this project is to build a workshop that will house network servers that have the ability to send a live feed of the refuge tank down to the Ash Meadows NWR Visitor Center for visitors to enjoy, and also build a greenhouse to provide a stable, controled environment for

the 1,000 gallon mesocosms for thriving algal and invertebrate communities. The project will be deemed complete when the workshop and the greenhouse are completed and the live feed is streaming at the Visitor Center.

Relationship to Previous Phases:

The Ash Meadows Fish Conservation Facility was funded under SNPLMA Round 6-6 (Ci23). This project will be an addition to the current buildings on the site.

Level of Readiness for Project Implementation:

ESA survey work will be completed in-house. The rest of the project will need to be put out for bid.

How is the project completion determined?
When construction is complete, final invoices are paid and the Fish and Wildlif eService has accepted the project and taken possession and is using the facilities.

Operations and Maintenance Costs/Changes from Existing Costs

Contributed Funds
The University of Arizona will provide approximately $8,000 of in-kind services for videgraphy.

Proposed Project Budget:

Construction costs were rough estimates based on similar, recently completed projects. This project is a good value to build upon a successful SNPLMA project from Round 6. The Ash Meadows Fish Conservation Facility is the only place that has a captive population of Devils Hole pupfish, the rarest vertebrate in the world

See The Estimated Necessary Expenses and detailed cost estimate sheets below..

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Capital Improvement Project Proposal
Estimated Necessary Expenses

Project Name:	Ash Meadows Fish Concervation Facility Expansion	Date:	4/25/2016
Agency:	USFWS		
Project #:		Priority #	
Prepared by:	Corey Lee		
Phone #	702-372-5435 ext. 120		%

1	**Planning, Environmental Compliance & Preconstruction Engineering and Design** ***(Not to exceed 27% of total project costs)****	$188,000	14.3%
	(pre-design sketches and conceptual drawings; environmental assessment and permitting, specialist surveys/reports for archaeology, wildlife, biology, etc.; architectural and engineering analysis, design survey & field investigations; construction drawing, specifications, cost estimates, and engineering technical reports.)		
2	**Construction Contract Costs**	$750,000	57.0%
	(including labor, supplies & materials, construction management, etc.; sampling/testing; site restoration; and government furnished supplies and materials.		
3	**Project Equipment**	$10,000	0.8%
	(pg. 89 of the Implementation Agreement) SNPLMA funds can only be used for "project related necessary expenses" and SNPLMA can reimburse only for those equipment costs directly associated with completion of the approved project. Does not include office furnishings or equipment necessary for operations or maintenance of the project).		
4	**Travel**	$3,000	0.2%
	(including per diem where official travel status is required to carry out the project, such as to serve as COR, experts to review reports, etc.)		
5	**Official Vehicle Use**	$8,000	0.6%
	(pro rata cost for use of Official Vehicles when required to carry out the project)		
6	**Other Direct and Contracted Labor**	$218,556	16.6%
	Agency payroll for the Contracting Officer to do project procurements, COR Project Inspector, Section 106 Consultation, NEPA Lead, Project Manager, Project Supervisor, and subject experts to review contracted surveys, design/drawings, plans, reports, etc.; Also covered is the cost to contract for a Project Manager and/or Project Supervisor if contracted separately from other project costs.		
7	**FWS Consultation - Endangered Species Act**	$20,000	1.5%
8	**Federal Direct Labor** *(direct angency labor for construction, PI, CO, and COR work)*	$118,200	9.0%
9	**Other Necessary Expenses** (See IA Appendix B-3)	$0	
	Total Requested/Estimated Budget	**$1,315,756**	**100.00%**
10	**Total Estimated contributed funds**	$8,000	
	Total Estimated Project Value (*Requested funding plus contributed funds*)	**$1,323,756**	

Do not change any of the information on this page or the formulas. Totals will be automatically calculated and populated along with the percentages. Enter all estimated cost data on the detail cost sheets.

1	Estimated project start date:	1/1/2017
2	Planning, NEPA, and design phase complete	3/1/2017
3	Construction and build-out complete	3/1/2020
4	Project close-out (allow 120 days to process)	3/1/2021

1 Estimated costs for Planning, Conceptual Design, Environmental Compliance and Field Work/Surveys, NEPA & Pre-construction Architectural and Engineering Design Services

	Description	Units	Unit of measure	Unit Cost	Est. Cost
A&E Services	Engineering technical reports	1	Job	$40,000	**$40,000**
	Construction specifications	2	Job	$24,000	**$48,000**
	Construction design development	2	Job	$50,000	**$100,000**
					$0
				Estimated total	**$188,000**

2 Estimated Costs for Construction Contracts (Agency costs)

	Description	Units	Unit of measure	Unit Cost	Est. Cost
Construction Management Contract Services	Contract for construction (workshop)	1		$650,000	**$650,000**
	Contract for construction (greenhousep)	1		$100,000	**$100,000**
					$650,000
					$0
					$0
				Estimated total	**$1,400,000.00**

3 Estimated costs for Equipment necessary to complete the project (purchased or leased)

Lease of equipment for the period necessary to complete the project is the preferred alternative. Purchase of heavy equipment requires justification that purchase is more cost effective over leasing over the period the equipment is needed. See the Implementation Agreement for justificatio. Justification must be submitted for written approval prior to purchase of equipment.

Does not include equipment that is built in as part of a facility or a necessary expense for the funciton of a building or facility, i.e. projectors, LED displays for interpretation, etc.

	Description	Units	Unit of measure	Unit Cost	Est. Cost
Equipment	Computer(- Apple iMac (video/photo editing workstation)	1	ea	$2,500	**$2,500**
	Server (video storage/streaming to Visitor Center)	4	ea	$1,500	**$6,000**
	Video editing software	1	ea	$1,500	**$1,500**
			ea		**$0**
				Estimated total	**$10,000**

4. Estimated travel (not associated with construction contract administration)

Identify by title/position and purpose of travel

	Description	Units	Unit of measure	Unit Cost	Est. Cost
Government Travel	Contracting Officer initiate contracts and final close out	2	ea	$1,500	**$3,000**
					$0
					$0
				Estimated total	**$3,000**

5 Estimated costs for use of Government vehicles and equipment (FOR or hourly rate)

	Description	Units	Unit of measure	Unit Cost	Est. Cost
Heavy Equipment and government vehicles	Government owned Interior vehicles	4	Yrs	$2,000	**$8,000**
					$0
					$0
					$0
					$0
				Estimated total	**$8,000**

6 Labor costs for developing, managing and implementing contracts to complete the project.

This is an estimate of the total hours. Identify by Specialist title and role. Recommend use of Reimbursable Project Log to monitor and track agency labor charged to the project

	Description	Units	Units of measure	Unit Cost	Est. Cost
Federal and contract personnel involved with developing and executing contracts	Contracting Officer (CO)	240	Hrs	$90	**$21,600**
	Contracting Officer Representative (COR)	640	Hrs	$112	**$71,680**
	Agency Project Manager	240	Hrs	$135	**$32,400**
	Agency Project Engineer (s)	80	Hrs	$132	**$10,560**
	Agency Project Architect (s)	81	Hrs	$136	**$11,016**
	Contract Project Manager	2	Job	$12,700	**$25,400**
	Contract Project Inspector(s)	2	Job	$12,500	**$25,000**
	A&E Contractors and Subcontractors	220	hrs	$95	**$20,900**
					$0
				Estimated total	**$218,556**

7 Estimated costs for consultation with the FWS for endangered species review

Identify by title/position

	Description	Units	Units of measure	Unit Cost	Est. Cost
Agency personnel involved	Agency Biologist(s)	1	Job	$20,000	**$20,000**
					$0
					$0
					$0
				Estimated total	**$20,000**

8 Federal Direct Labor for project construction

Note: Identify by title/position and role. Recommend use of Reimbursible Project Log to track actual labor hours charged to the project.

	Description	Units	Units of measure	Unit Cost	Est. Cost
Federal personnel performing construction of the project	Facility Manager	1000	Hrs	$53	**$53,000**
	Biologist	400	Hrs	$48	**$19,200**
	Water Plant Operator	600	Hrs	$42	**$25,200**
	Budget Administration	4	Yrs	$5,200	**$20,800**
			Hrs		**$0**
			Hrs		**$0**
				Estimated total	**$118,200**

10 Contributed funding to complete construction

Does not include any agency or partner costs incurred prior to authorization to expend SNPLMA project funds or funding from other SNPLMA funded projects. Contributed funds, in-kind services and/or materials for the construction of the project.

	Description	Units	Unit of measure	Unit Cost	Est. Cost
Description of in-kind services, labor, or materials to complete construction			hrs.	$21.36	**$0**
	Partner contributed funds to the entity for construction	1	Job	$8,000	**$8,000**
					$0
					$0
					$0
				Estimated total	**$8,000**

Capital Improvement Ranking Criteria:

Workshop:

This project promotes sustainability by conserving resources to ensure availability to future generations by conserving the quality of the Devils Hole environment and mitigates future potential negative impacts conserving and preserving the natural resources in the area. The project will also employ "green construction" practices using recycled or renewable materials, improving energy efficiency, and utilizes low-maintenance products in construction.

This project also promotes connectivity by providing recreation opportunities and natural landscapes virtually and encouraging people to meaningfully connect with their natural environment. This project will improve virtual access to see Devils Hole pupfish live on camera, an experience that most people will never get to enjoy in person. This project also contains an outreach and education component to improve public awareness and engage the public in the conservation and protection of the surrounding natural environment through the use of resource interpretation via a live camera link to the visitor center from the refuge tank.

This project also promotes community by providing virtual outdoor recreation opportunities to improve the quality of life, especially for underserved communities. It conserves the funtionality, resiliency, and integrity of biological communities. This project also encourages partnerships, which in turn also builds community. This project provides new and enhanced existing recreation opportunities for under-served or under-represented communities that cannot be addressed with current funding. This project has also identified committed non-SNPLMA sources of funding or in-kind contribution for the development of the project.

This project will also reduce Operations and Maintenance costs.

Greenhouse:

This project promotes sustainability by conserving resources to ensure availability to future generations by conserving the quality of the Devils Hole environment and mitigates future potential negative impacts conserving and preserving the natural resources in the area. The project will also employ "green construction" practices using recycled or renewable materials, improving energy efficiency, and utilizes low-maintenance products in construction.
This project will also reduce Operations and Maintenance costs.

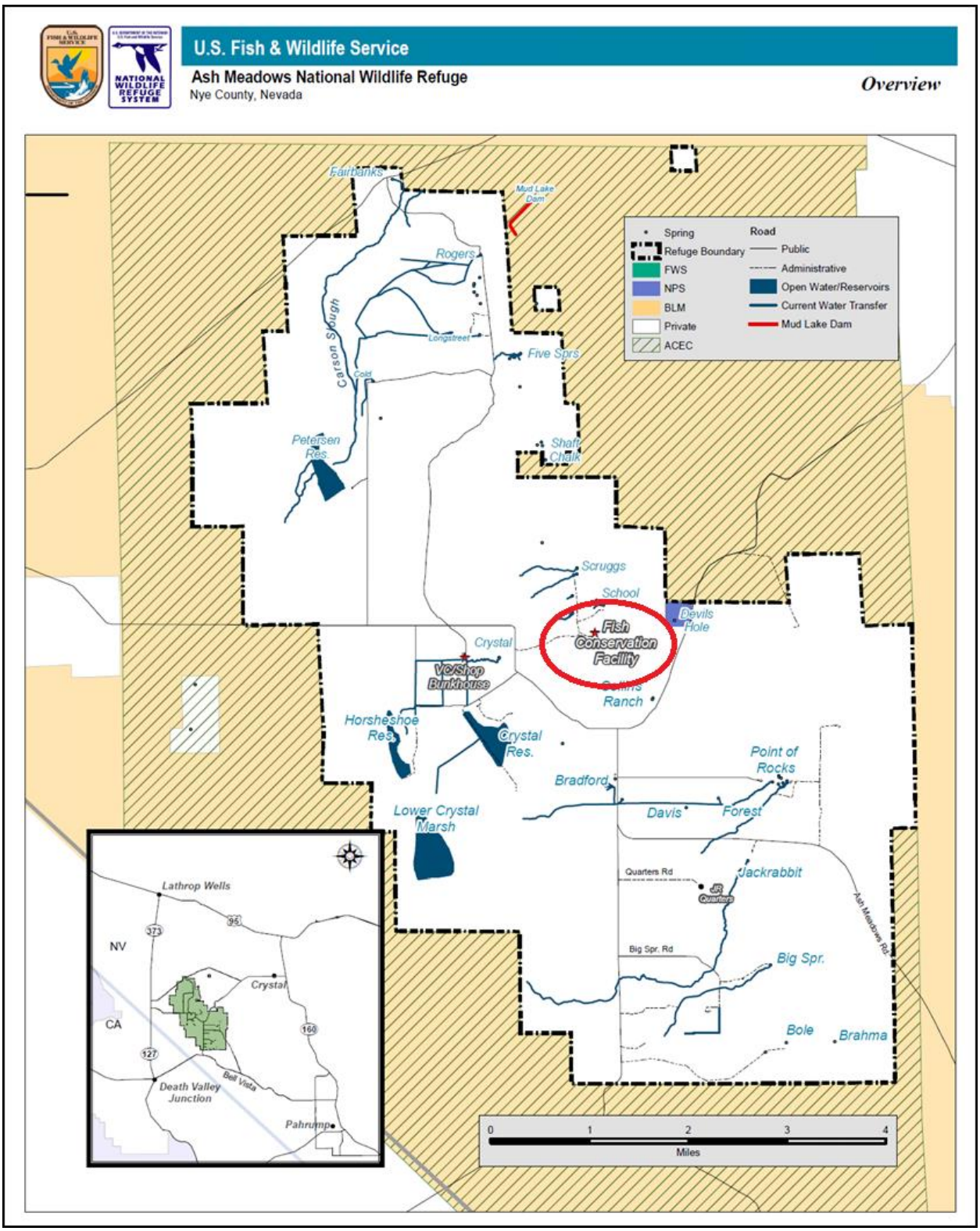

Figure 1 A map showing the location of the Ash Meadows Fish Conservation Facility, N 36° 25' 26" S 116° 18' 21", within the boundary of Ash Meadows National Wildlife Refuge.

Figure 2 Aerial photo of the Ash Meadows Fish Conservation Facility and the proposed locations of the workshop and greenhouse in relation to existing structures completed under Southern Nevada Public Land Management Act Round 6-6, (Ci23).

Figure 3 Current construction and fabrication area which is outdoors with no cover from the desert elements

Figure 4 Current storage area in outdoor conex with no climate control.

Figure 5 Only current climate controlled storage and workspace, which is in an existing conex

Figure 6 Outdoor storage for necessary pvc pipe and other supplies for facility use.

ARIZONA COOPERATIVE FISH AND WILDLIFE RESEARCH UNIT
USGS NATIONAL BIOLOGICAL SERVICE
THE UNIVERSITY OF ARIZONA
ARIZONA GAME AND FISH DEPARTMENT
U.S. FISH & WILDLIFE SERVICE
WILDLIFE MANAGEMENT INSTITUTE

325 BIOLOGICAL SCIENCES EAST
THE UNIVERSITY OF ARIZONA
TUCSON, ARIZONA 85721

(520) 621-1959

April 26, 2016

Corey W. Lee
Facility Manager/Fish Biologist
U.S Fish and Wildlife Service
Ash Meadows Fish Conservation Facility
1042 E. Warm Springs Rd.
Amargosa Valley, NV 89020

Dear Mr. Lee,

We wish to contribute $8,000 in In-Kind Services to the workshop project you are submitting for Southern Nevada Public Lands Management Act (SNPLMA) funding. One of our goals is to create a live video feed to the visitor center of Devils Hole pupfish in the Ash Meadows Fish Conservation Facility. It sounds like the work you have planned, a workshop that will have room for server space and video editing, is something to which we would like to contribute. Best wishes to you and please let us know if you have any questions about this contribution.

Sincerely,

Scott A. Bonar
Unit Leader and Professor