

# RECLAMATION

*Managing Water in the West*

## Draft Environmental Assessment

# Expansion and Modernization of the Aquatic Research and Conservation Center

Arizona Game and Fish Department  
Yavapai County, Arizona



U. S. Department of the Interior  
Bureau of Reclamation  
Phoenix Area Office

April 2015

## **Mission Statements**

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

## TABLE OF CONTENTS

ACRONYMS AND ABBREVIATIONS .....	iii
CHAPTER 1 – PURPOSE AND NEED .....	1
1.1 INTRODUCTION .....	1
1.2 BACKGROUND .....	1
1.3 PURPOSE AND NEED.....	2
1.4 PROJECT LOCATION .....	3
1.5 DECISION FRAMEWORK.....	3
1.6 PUBLIC INVOLVEMENT AND NOTIFICATION .....	3
CHAPTER 2 – DESCRIPTION OF THE ALTERNATIVES .....	6
2.1 NO ACTION.....	6
2.2 PROPOSED ACTION.....	6
2.2.1 Expansion and Modernization of ARCC .....	6
2.2.2 Operation and Maintenance .....	12
CHAPTER 3 – ENVIRONMENTAL CONSEQUENCES .....	13
3.1 BIOLOGICAL RESOURCES.....	14
3.1.1 Affected Environment – Vegetation.....	14
3.1.2 Environmental Consequences – Vegetation .....	15
3.1.3 Affected Environment – Terrestrial Wildlife.....	15
3.1.4 Environmental Consequences – Terrestrial Wildlife .....	16
3.1.5 Affected Environment – Federally Listed and Candidate Species .....	16
3.1.6 Environmental Consequences – Federally Listed and Candidate Species.....	18
3.2 SOILS .....	20
3.2.1 Affected Environment.....	20
3.2.2 Environmental Consequences.....	20
3.3 AIR QUALITY .....	21
3.3.1 Affected Environment.....	21
3.3.2 Environmental Consequences.....	22
3.4 CULTURAL RESOURCES .....	22
3.4.1 Affected Environment.....	22
3.4.2 Environmental Consequences.....	23
CHAPTER 4 – CONSULTATION AND COORDINATION .....	25
CHAPTER 5 – LIST OF PREPARERS .....	27
CHAPTER 6 – RELATED ENVIRONMENTAL LAWS/DIRECTIVES.....	28
CHAPTER 7 – LITERATURE CITED .....	32

**LIST OF FIGURES**

Figure 1. Project location..... 4

Figure 2. General location of proposed project. .... 5

Figure 3. Plan view of the current layout of the ARCC, showing which features will be removed during the expansion project. The cage building houses the 24 circular raceways..... 7

Figure 4. Typical layout of linear raceways (blue) and associated sumps. Behind the linear raceways (to the west) is the cage building that houses 24 circular raceways..... 8

Figure 5. Aerial image/schematic of ARCC showing the proposed expansion/modernization features..... 9

**LIST OF TABLES**

Table 1. Effects determination for specified environmental issues ..... 13

Table 2. Compilation of federally-listed species that occur within five miles of the project location..... 17

Table 3. Critical habitat..... 18

## ACRONYMS AND ABBREVIATIONS

ADEQ	Arizona Department of Environmental Quality
ARCC	Aquatic Research and Conservation Center
AZGFD	Arizona Game and Fish Department
AZPDES	Arizona Pollutant Discharge Elimination System
BO	biological opinion
CAA	Clean Air Act
CAP	Central Arizona Project
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CWA	Clean Water Act
DOI	Department of the Interior
EA	Environmental Assessment
EO	Executive Order
ESA	Endangered Species Act
FONSI	Finding of No Significant Impact
ft	feet
GHG	greenhouse gas
NAAQ	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOI	Notice of Intent
PM <sub>2.5</sub>	particulate matter with a diameter of 2.5 microns or less
PM <sub>10</sub>	particulate matter with a diameter less than 10 microns
Program	Reclamation's Gila River Native Fishes Conservation Program
RCRA	Resource Recovery and Recovery Act
Reclamation	Bureau of Reclamation
SHPO	State Historic Preservation Office
SWPPP	Storm Water Pollution Prevention Plan
T&E	threatened and endangered
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
µm	micrometer or micron

# CHAPTER 1 – PURPOSE AND NEED

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## 1.1 INTRODUCTION

The Bureau of Reclamation (Reclamation) has prepared this environmental assessment (EA) to analyze the potential effects of a proposed hatchery modernization project on physical, biological, and cultural resources. The proposed action includes expansion of the hatchery facility footprint; construction of new fish housing/rearing ponds and an office/research/feed storage building; installation of new stream raceways, sumps, and an artesian well; upgrading of electrical and aeration systems; and other relatively minor modifications. The hatchery is owned by the Arizona Game and Fish Department (AZGFD). The project would be implemented pursuant to sections 7(a)(1) and 7(a)(2) of the Endangered Species Act (ESA) and the Colorado River Basin Project Act.

The EA was prepared in accordance with the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations implementing NEPA (40 CFR parts 1500-1508), and Department of the Interior (DOI) NEPA regulations (43 CFR part 46). Reclamation is the lead Federal agency and the U.S. Fish and Wildlife Service (USFWS) and AZGFD are cooperating agencies as defined in 43 CFR §§ 46.225 and 46.230.

## 1.2 BACKGROUND

A series of biological opinions (BO) issued to Reclamation on transportation and delivery of Central Arizona Project (CAP) water to the Gila River basin concluded the CAP would import nonnative fishes and other nonindigenous aquatic organisms from its origin on the Colorado River to waters of the Gila River basin in Arizona and New Mexico and negatively impact federally threatened and endangered (T&E) native fishes. These BOs<sup>1</sup> resulted in development of the Gila River Native Fishes Conservation Program (Program) that assists with the conservation and recovery of native fishes by implementing existing and future recovery plans for those fishes. An increasingly important component of the Program is development and refinement of a hatchery facility designed to house and propagate rare populations of native fishes as insurance against extinction, and to serve as a source to replicate populations into the wild.

AZGFD's Bubbling Ponds State Hatchery was selected as the site to develop a native fish hatchery because of its centralized location within the Gila River basin, ownership by AZGFD, and because its water source is artesian and therefore does not require unreliable electrical transmission to pump water. An artesian well was drilled to initially provide water to a propagation research building, and then to a series of circular raceways that housed and propagated native fishes. Over time, makeshift stream raceways and small concrete ponds were added to the hatchery to expand its holding, propagation, and rearing capabilities. This dedicated native fish hatchery was recently renamed the

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<sup>1</sup> The 1994, 2001, and 2008 biological opinions on CAP water transfers to the Gila River basin are available at <http://www.fws.gov/southwest/es/arizona/biological.htm>.

Aquatic Research and Conservation Center (ARCC)<sup>2</sup> to distinguish it from the older, established Bubbling Ponds State Hatchery that serves other fish management objectives. The ARCC has operated since 1997.

The ARCC has the primary purpose of holding and propagating two of the rarest endemic (found nowhere else) fishes of the Gila River basin, spinedace (*Meda fulgida*) and loach minnow (*Tiaroga cobitis*). Both of these minnow species are classified as endangered under the ESA. Spinedace and loach minnow are stream-dwelling species, where most of their life history functions are carried out in swiftly-flowing waters. For this reason, an artificial holding and propagation facility must maintain that essential characteristic (flowing water) or risk genetic selection for traits over time that may not be adaptive in the wild. The upgraded ARCC therefore would rely primarily upon flowing raceways in which to hold and propagate loach minnow and spinedace. Other federally-listed Gila River basin native fishes such as chubs of the Genus *Gila* are more pool-oriented and thus can be held and propagated in artificial ponds.

The increasing importance of the ARCC to the Program has been steadily outgrowing its capabilities. Additional species are expected to be brought to the hatchery in the immediate future, which will require expansion of the facility's footprint to accommodate more ponds and raceways. In addition, there is a strong need to modernize the facility to upgrade its raceways, plumbing, and biosecurity capabilities, as well as add a water quality enhancement and monitoring system.

### **1.3 PURPOSE AND NEED**

The purpose of the proposed action is to expand and modernize the ARCC to enhance its utility in assisting the Program in meeting its goals to conserve and recover federally-listed native fishes in the Gila River basin. Highest priorities of the Program, as described in its 2013-2017 Strategic Plan (USFWS et al. 2013), are to prevent extinction and stabilize T&E populations in the wild, and replicate populations in the wild. By holding and propagating wild populations, a functional ARCC serves as insurance against extirpation from the wild. The hatchery refuge populations also serve as sources from which to replicate new or repatriate lost populations to the wild without having to further deplete wild populations. Finally, ARCC facilitates the development and refinement of propagation techniques for these poorly-studied species, thereby further enhancing its utility towards implementing recovery goals. Implementation of the proposed action is needed to meet one of the key conservation measures of the CAP biological opinions to fund activities to recover native fishes.

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<sup>2</sup> The facility was formerly known as the Bubbling Ponds Native Fish Conservation Facility.  
*Environmental Assessment*  
*Expansion/Modernization of Aquatic Research and Conservation Center*

## **1.4 PROJECT LOCATION**

The ARCC is located within the southern portion of the Bubbling Ponds State Hatchery near Cornville in Yavapai County, Arizona (Figures 1 and 2). The facility is in Section 23 of Township 16 North, Range 4 East of the Gila and Salt River Baseline and Meridian. UTM (NAD 83) coordinates of the facility are N 041813, E 3847431.

## **1.5 DECISION FRAMEWORK**

The Responsible Official for Reclamation (Area Manager of the Phoenix Area Office) must make a determination regarding the environmental effects of the proposed project. If the EA demonstrates that there are no significant environmental effects, the Area Manager would record this determination in a Finding of No Significant Impact (FONSI). AZGFD would construct the proposed upgrades to the ARCC utilizing Reclamation funds transferred to USFWS under the native fish Program (see section 2.2).

## **1.6 PUBLIC INVOLVEMENT AND NOTIFICATION**

The lead agency is ultimately responsible for determining the scope of issues considered in an environmental document (36 CFR § 46.235). During scoping, program specialists helped define the range of resource issues that are addressed in this EA. Issues that were identified are directly or indirectly caused by implementing the proposed action for which a cause and effect relationship has been identified. No issues identified within the scope of the project were of sufficient concern to drive the development of other action alternatives.

Two key environmental issues were identified as a result of scoping:

- Effects of construction on biological resources. See section 3.1.
- Effects of construction on cultural resources. See section 3.2.

Two non-key environmental issues were also identified:

- Effects of construction on soils. See section 3.3.
- Effects of construction on air quality. See section 3.4.

A notice of availability regarding the draft EA has been distributed to the public and agencies for a 30-day public comment period. The EA is available for viewing or downloading at <http://www.usbr.gov/lc/phoenix/>.

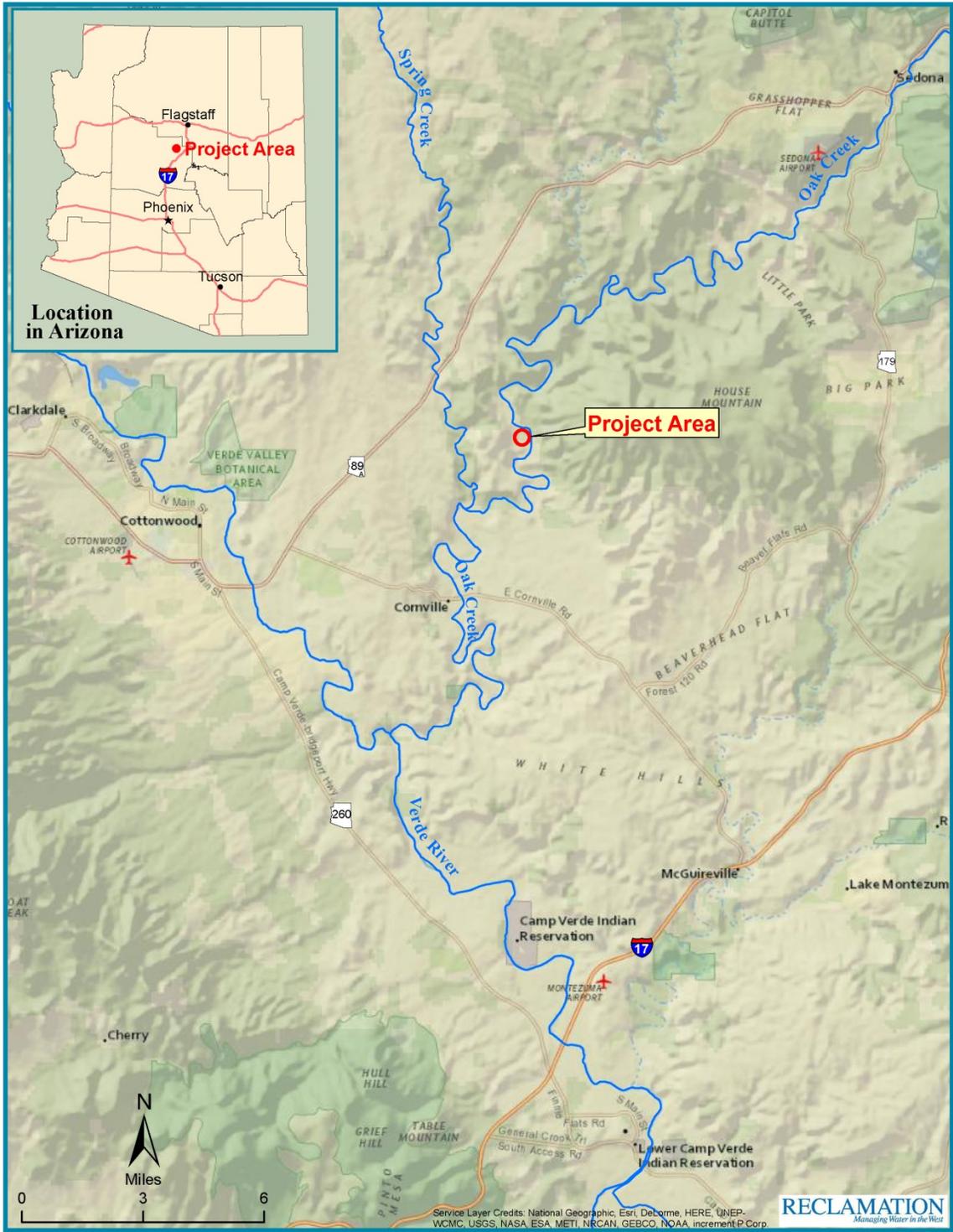
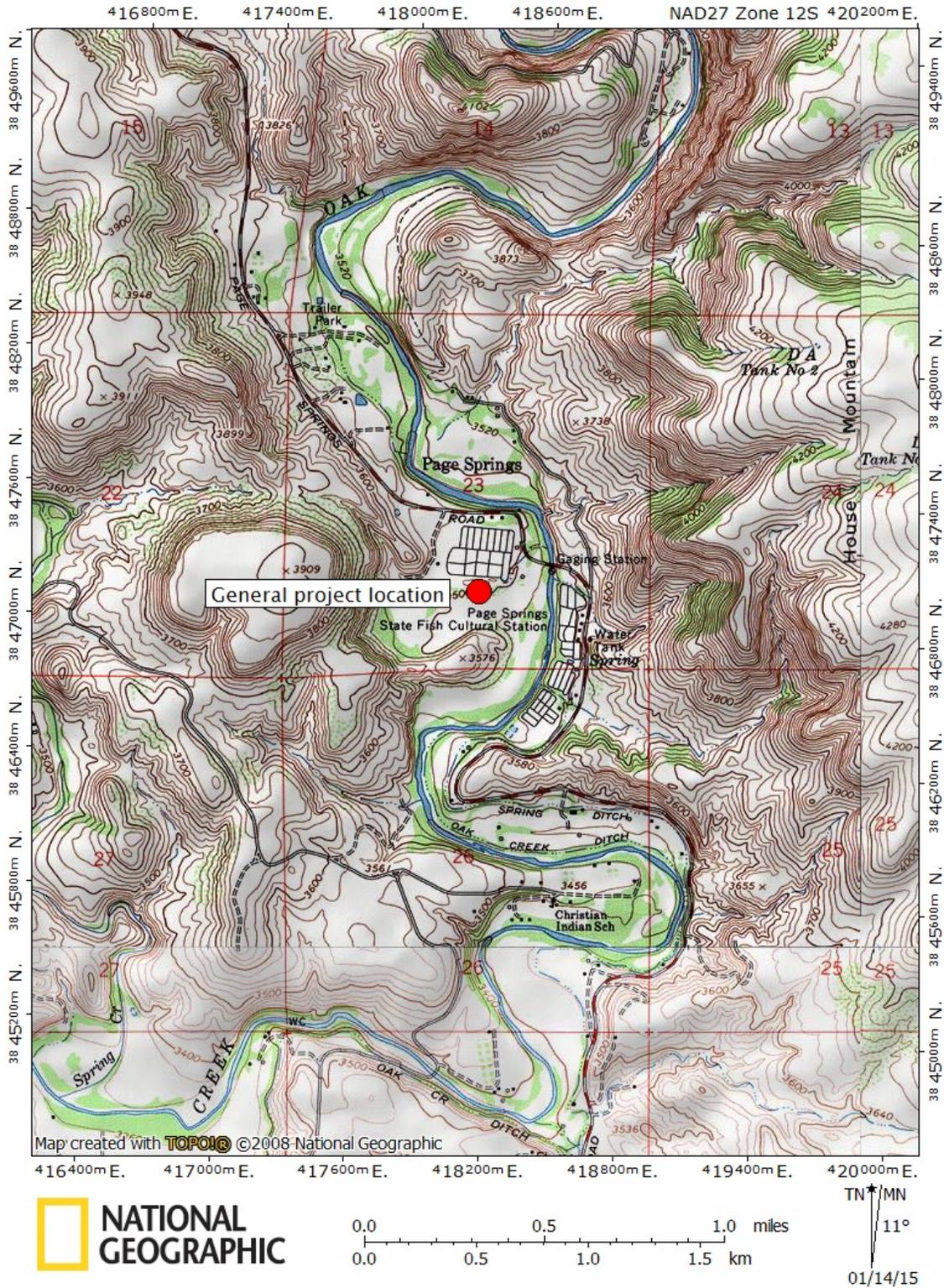


Figure 1. Project location.



**Figure 2. General location of proposed project.**

## **CHAPTER 2 – DESCRIPTION OF THE ALTERNATIVES**

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This chapter describes in detail the alternatives considered for modernization of the ARCC. These consist of the proposed action and no action, which are analyzed in Chapter 3.

### **2.1 NO ACTION**

Section 102(2)(E) of NEPA requires that no action must be considered as an alternative in an environmental review whenever there are unresolved conflicts about the proposed action with respect to alternative uses of available resources. A description of no action is also customarily used in an EA to provide the baseline for comparison of environmental effects of the action alternatives against reasonably foreseeable conditions that are representative of the status quo. As considered in this EA, if no action is taken, AZGFD would not expand and modernize the ARCC using funds provided by Reclamation. In that case, the contributions of the ARCC for conservation and recovery of native fishes would remain near current levels, and the facility would not be able to adequately meet the challenges of holding and propagating populations of newly-listed fishes. No action would undoubtedly delay progress toward recovery of those species until other facilities could be developed to accommodate their hatchery needs. In addition, recovery progress for the species already held at the ARCC would be hindered somewhat, as the proposed project would expand propagation capabilities for those species as well.

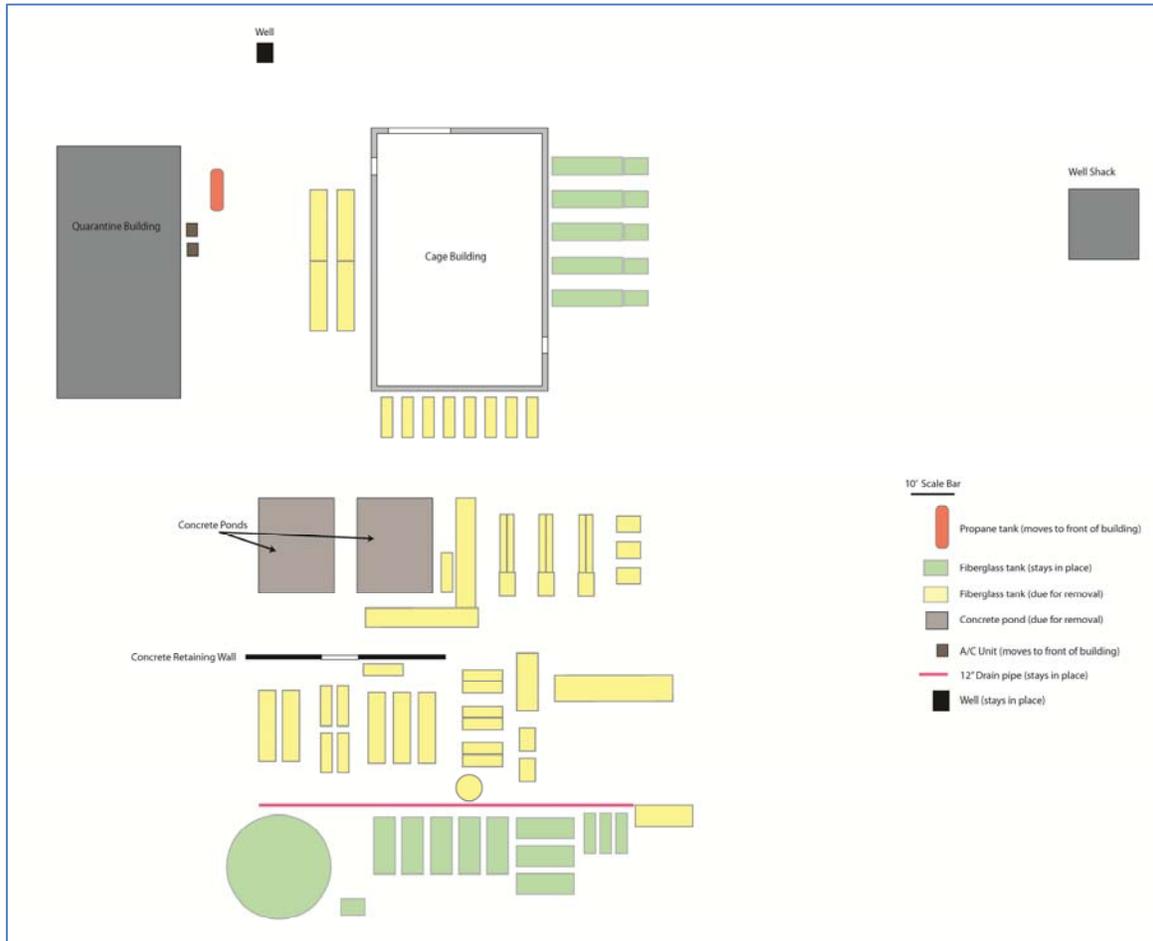
### **2.2 PROPOSED ACTION**

In cooperation with AZGFD and USFWS, the following action is being designed and would be funded by Reclamation to meet the purpose and need stated in section 1.3. An existing interagency agreement between Reclamation and USFWS is used to routinely transfer funds to USFWS for the purposes of implementing aspects of the CAP biological opinions, and would be used for funds transfer for this project. If the proposed action is approved, USFWS would then transfer funds to AZGFD under their existing cooperative agreement for AZGFD to acquire project components (fish raceways, etc.) and bid and award a construction contract with a private contractor. The contractor will perform the bulk of the major earthwork aspects of the project. AZGFD will make the final plumbing connections of the raceways to the main supply and drain lines, and complete certain other project functions. Reclamation will be responsible for inspection of the construction process.

#### **2.2.1 Expansion and Modernization of ARCC**

***The Existing Facility.*** The ARCC is currently supplied by a single artesian well that provides pathogen-free water to a series of 24 circular raceways, several dozen makeshift linear raceways and sumps, and two concrete-lined ponds. A research/prophylaxis (quarantine) building with a separate water supply is used to isolate and manage diseases and pathogens that may accompany new fish stocks that arrive at the hatchery. The

quarantine building also provides some office space and fish research capabilities. The quarantine building dimension is 30 ft x 60 feet. Various other linear raceways and circular tanks of variable dimensions are temporarily situated at the ARCC to accommodate new research projects and other unanticipated short-term aquaculture needs. The layout of the existing facility is shown in Figure 3.



**Figure 3. Plan view of the current layout of the ARCC, showing which features would be removed during the expansion project. The cage building houses the 24 circular raceways.**

The well provides approximately 60 gallons per minute of artesian flow for the hatchery, but also houses a pump that can supplement artesian flows. The pump pushes water into a pressure bladder that provides pressurized water to the quarantine building and the rest of the hatchery.

Twenty four 6-ft diameter circular raceways (500 gallon capacity) were installed within a fenced and roofed area on the site (cage building). Outdoor linear raceways and connected sumps are of variable dimensions and capacities, and typically house recirculating pumps to increase flow rates within the raceways (Figure 4). The sumps

accumulate larval fishes that drift out of the upstream linear raceways. All tank outflows have screens of appropriate size to prevent fish from escaping into the drain.



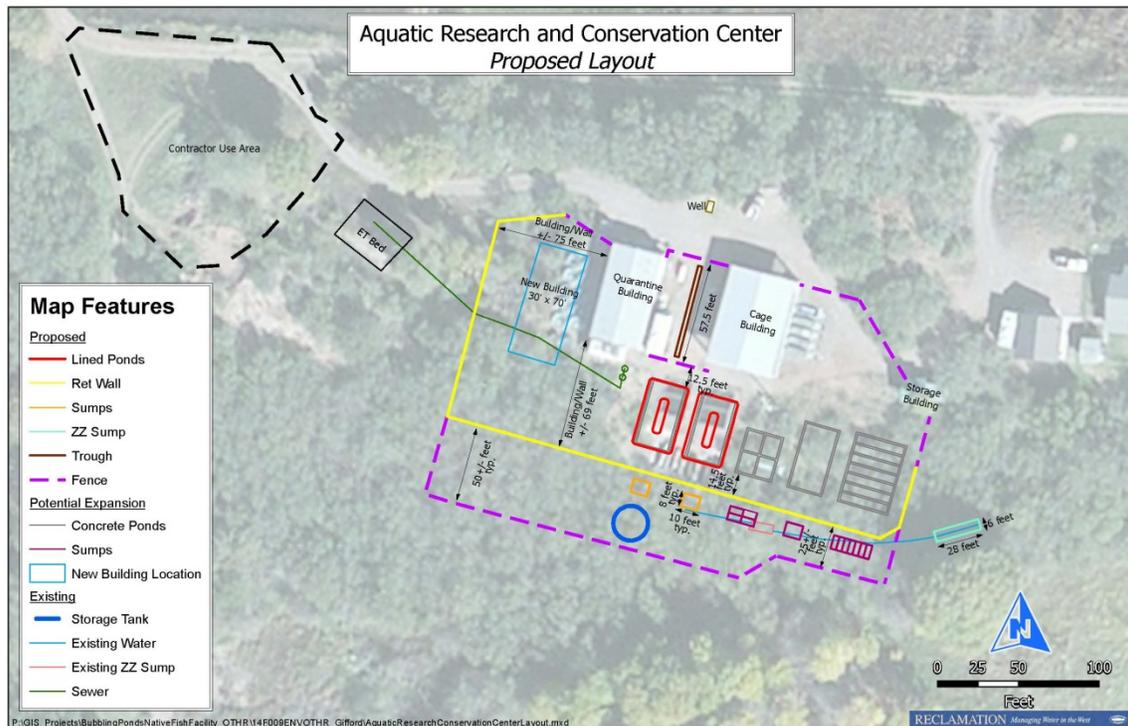
**Figure 4. Typical layout of linear raceways (blue) and associated sumps. Behind the linear raceways (to the west) is the cage building that houses 24 circular raceways and several small linear raceways.**

Drainage water from the quarantine building lavatories and bathroom enters a septic tank and then an evapotranspiration bed to the west of the facility (Figure 5). Drainage from the common floor drain that collects water from the various raceways in the quarantine building is released to an open field to the south of the hatchery. This discharge may form a temporary puddle with a diameter of 15-30 ft before sinking into the ground. Such drainage is irregular and occurs only when draining raceways (i.e., water in the tanks are normally recirculated). Quarantine building raceways all have screens inside them to prevent fish escapement, supplemented by screening the outflows as backup in the event the internal screens are disabled.

Drainage from the rest of the ARCC is collected into a single sump that has one ½-in mesh screen and three 500 µm screens. The sump also has PVC drains between each screen that can empty directly to the ground. These drains are plumbed so that if one screen becomes clogged, water passes over it to the next screen. This system ensures that all water either passes through 500 µm screens or drains to the ground, where it is

absorbed within 15-30 ft. As additional backup, the drainage system also allows for addition of chlorine and sodium thiosulfate that will kill all organisms in the event of screen failures.

**Expansion of the Hatchery Footprint and Site Preparation.** Topography of the existing hatchery site has limited the footprint of the ARCC due to its location on top of a small terrace approximately 900 ft west of Oak Creek. In order to accommodate the need for more pond and raceway capacity and a new building that will provide additional office, storage, and research lab space, as well as a refrigerated feed storage room, the area of level terrace would be expanded by emplacing retaining walls along the southern and western edges of the site (Figure 5). The area behind these walls would be backfilled and leveled. Approximately 0.4 acre would be backfilled. Fill material would be acquired from a commercial source. The project area including the construction contractor use area encompasses approximately 1.6 acres. Standard construction vehicles such as excavators, backhoes, and compactors will be required for this work.



**Figure 5. Aerial image of ARCC showing the proposed rehabilitation/modernization features. The new linear raceways would be placed between the existing quarantine and cage buildings.**

**Demolition.** Vegetation would be removed from the area between the proposed alignments of the perimeter fence and retaining wall, and the buildings. Two existing concrete-lined ponds in poor condition and a retaining wall at the south end of the site would be demolished and removed from the terrace site by AZGFD prior to initiation of construction (Figure 3). This construction debris would be temporarily moved to the

contractor use area until disposed at an approved landfill by the contractor. Most of the existing fiberglass raceways and sumps that lie to the south and west of the existing caged circular raceway compound would be disassembled and similarly removed from the construction site (Figure 3). Any unnecessary pipes and plumbing encountered during construction work would also be removed.

**Construction.** After demolition is completed, the western and southern edges of the terrace would be trenched in preparation for setting the footings of the new retaining walls. Maximum height of the retaining wall above the existing ground surface is approximately 10 ft. The reinforced earth-block retaining walls would accommodate supply and drainage pipe passages as necessary to integrate the hatchery plumbing. After the walls are constructed, the ground behind (to the north and east of the south and west walls, respectively) would be backfilled with structurally-appropriate fill material obtained from a commercial source, compacted, and leveled. Storm water from the filled area would be discharged to a small retention basin that would be construction immediately outside the retaining wall near the southwest corner of the facility.

Two new geotextile-lined ponds, each measuring 25 ft wide by 42 ft long by 5 ft deep, would be constructed near the southern end of the site that would be used primarily for housing and propagation of rare populations of native chubs (*Gila* spp.). The ponds would be supplied with artesian water from either the existing well at the north end of the site, or from the new well to be drilled near the eastern edge of the site. Drainage would discharge through the southern retaining wall into newly-constructed sumps (Figure 5).

Three steel-reinforced concrete drain collection sumps would be constructed south of the southern retaining wall to collect flow-through water from the raceways (see below) and ponds (Figure 5). The sumps would also serve as larval fish collection sites that may be transported out of their propagation raceways or ponds in the drainage water.

A main drain line for the expanded raceway system (see below) would be constructed in the space between the existing circular raceway cage and the quarantine building (Figure 5). This line would be connected to one or more of the sumps south of the southern retention wall.

A new building pad and exterior shell would be constructed to enclose offices, feed storage, and research lab space. This building would be approximately 30 ft x 70 ft, and would be situated near the northwestern corner of the site (Figure 5). Funds to complete the internal layout of the building and fully equip it have not yet been identified, and are not a part of the proposed action.

A new artesian well would be drilled near the eastern edge of the site and plumbed appropriately to expand the water supply available for the refurbished facility. The entire ARCC would be enclosed within a chain-link fence to prevent access by unauthorized personnel and animals, as shown in Figure 5.

Placement of the new geotextile-lined ponds would necessitate the relocation of an existing power pole at the site. Electrical and phone lines would be moved to the north of the road on the northern edge of the site. A portion of this new electrical route may be buried underground.

Construction is scheduled to begin in late August 2015, and is expected require up to four month to complete. The only firm deadline to avoid interference with spring 2016 spawning of hatchery fish stocks is to have all of the new raceways installed and plumbed by March 1, 2016.

***Equipping the facility.*** Twenty-six new linear fiberglass raceways would be purchased, installed, and plumbed into the supply/drain system in the space between the existing circular raceway cage and the new quarantine building (Figure 5). Each would be approximately 3-ft wide by 15-ft long by 3-ft deep. Companion fiberglass sumps would be installed immediately “downstream” of each raceway to collect larvae and house recirculating pumps, and prevent discharge of fishes into the drain system.

A total of 28, single speed, ¼-horsepower, low-amperage recirculating pumps would be purchased for the primary purpose of enhancing flow rates in the linear raceways to better mimic stream conditions where the native fishes live and reproduce. Three, 1-horsepower regenerative blowers would also be purchased and fitted to the raceways and ponds to ensure they will receive adequate oxygen. These would be fitted with valves and diffusers for fine adjustments to air flow. Some funds would be provided to AZGFD for their oversight of the construction process and assistance with some of the post-construction plumbing and electrical hookups.

***Final enhancements.*** The refurbished facility with new raceways, ponds, pumps, blowers, and building shell would be plumbed and wired to complete the project. The majority of this work would be performed by AZGFD.

***Management of hatchery stock during construction.*** The ARCC currently maintains refuge populations of spiketail (three lineages), loach minnow (four lineages) and roundtail chub (three lineages), as well as thousands of fish for research purposes. During construction all raceways except those in the cage and quarantine buildings might be unavailable for holding or propagation of fishes.

All spiketail and loach minnow populations are routinely moved into the cage building during winter to provide secure housing and winter low water temperatures. Roundtail populations typically stay in pond and tank systems.

Prior to the onset of construction, all brood stock populations would be moved and held in raceways in the cage building. Progeny ready for translocation to the wild or retained for grow-out would be held either in cage tanks or in temporary outdoor tanks. Research animals will be held in the quarantine building or in temporary outdoor tanks, or in the cage building as space allows.

During construction of the main hatchery sump, the effluent water from the cage building either would be diverted into Pond 6 of the Bubbling Ponds State Hatchery (currently empty of fish) or diverted through temporary pipes to drain onto the ground or into the main hatchery effluent pipe. Screens would be added to the cage building outflow to prevent fish escapement from the cage building.

### **2.2.2 Operation and Maintenance**

The refurbished facility would be operated and maintained by AZGFD, with funding provided by the Program and other sources.

## CHAPTER 3 – ENVIRONMENTAL CONSEQUENCES

Resource areas of primary concern during implementation of the proposed project include biological and cultural resources, soils, and air quality. Land use, surface water resources, Indian Trust assets, and low-income or minority populations defined under environmental justice are not expected to be affected and are not discussed in Chapter 3 of this EA. There are no wildlife refuges, parks, special aquatic sites, wetlands, prime or unique farmlands, sole source aquifers, wilderness areas, unique ecological areas, or other unique or rare characteristics of the land that occur in the project area; consequently, there would be no impact to these resources. Other environmental issues for which Reclamation has made a no effect determination are listed in Table 1.

**Table 1. Effects determination for specified environmental issues.**

Environmental Issue	No	Yes	Uncertain
This action would have an effect on public health or safety.	X		
This action or group of actions would have highly controversial environmental effects or involve unresolved conflicts concerning alternative uses of available resources.	X		
This action would have highly uncertain environmental effects or involve unique or unknown environmental risks.	X		
This action would establish a precedent for future actions or represent a decision in principle about future actions with potentially substantial effects.	X		
This action would violate Federal, State, local, or tribal law or requirements imposed for protection of the environment.	X		
This action would have substantive socioeconomic effects, or have disproportionately high and adverse effects on low income or minority populations.	X		
This action would limit access to and ceremonial use of Indian sacred sites on Federal lands by Indian religious practitioners or substantially adversely affect the physical integrity of such sacred sites.	X		
This action would contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area or result in actions that may promote the introduction, growth, or expansion of the range of such species.	X		

Potential construction-related effects to biological and cultural resources, soils, and air quality are discussed in sections 3.1 through 3.4.

## 3.1 BIOLOGICAL RESOURCES

### 3.1.1 Affected Environment - Vegetation

#### Vegetation

The Project area encompasses two primary vegetation communities: 1) Semidesert Grassland and 2) Sonoran Riparian Deciduous Forest and Woodlands. A description is provided below and follows Brown (1994).

#### Semidesert Grassland

Semidesert grassland has been described by others as desert savanna, mesquite grassland, desert plains grassland, desert shrub grassland, grassland transition, and desert grassland. It is potentially a perennial grass-scrub dominated landscape positioned above desertscrub and below evergreen woodland, chaparral, or plains grassland. While generally associated with the Chihuahuan desert, it is also found in portions of west-central Arizona. Annual precipitation ranges between 9.8 to 17.7 inches, with over 50 percent falling from April to September in areas outside of west-central Arizona. Perennial grass production is dependent on precipitation during this period. Originally the grasses were perennial bunch grasses that formed clumps at the ground that were separated by intervening bare ground. Heavy grazing in some areas has reduced the bunched grasses and increased low growing sod grasses. Commonly found species include black grama (*Bouteloua eriopoda*), slender grama (*B. filiformis*), chino grama (*B. breviseta*), and hoe grass (*Muhlenbergia porter*).

#### Sonoran Riparian Deciduous Forest and Woodlands

Along the banks of Oak Creek is tropic-subtropic subspecies of willow (*Salix gooddingii* var. *variabilis*), cottonwood (*Populus fremontii* var. *macdougalii*), and velvet mesquite (*Prosopis velutina*). Desert riparian communities are found along perennial stream and river systems and are considered the most productive ecosystem in North America (Zaines et al. 2007). Mesquite bosques inhabit old dissected and secondary flood plains above the river channel. In the southwest United States, riparian communities are found on less than 2% of the total land area with only an estimated 113,000 hectares found in Arizona (Pase and Layser 1977; Ffolloitt et al. 2004). While they cover such a small portion of the landscape, 80% of all vertebrates rely on riparian ecosystems at some stage of their life (DeBano et al. 2003). They serve a variety of important roles such as: 1) act as movement corridors and habitat for wildlife, 2) enhance fish habitat, 3) filter and retain sediments and nutrients from runoff and floods, 4) stabilize stream banks, 5) store water and recharge subsurface aquifers, and 6) reduce runoff (DeBano et al. 2003; Zaines et al. 2007).

#### Impacted Area

The ARCC is located approximately 900 feet west of Oak Creek and within the southern portion of the Oak Creek watershed. The focus of the facility renovation falls within a project area of approximately 1.6 acres. Most of the area has been previously disturbed

from the construction and placement of structures and fish pools used for day-to-day hatchery operations. In-between the structures and fish pools, the ground is covered by gravel, broken pieces of concrete, and a mix of grasses and forbs. As part of the renovation, the facility would be expanded south and west and would require the removal of up to 0.7 acres of velvet mesquite.

### **3.1.2 Environmental Consequences – Vegetation**

#### **No Action**

Under the no action alternative, there would be no direct impact to vegetation, since no project would be implemented. Existing vegetation would continue to persist within the proposed project area for the foreseeable future.

#### **Proposed Action**

Up to 0.7 acre of velvet mesquite would be removed as a result of hatchery upgrades and expansion. Historically mesquites bosques, or forests, were the most abundant riparian plant community in the southwest due to their large ecological range (Stromberg et al. 1992). While they have declined in size to pre-settlement bosques, they are still common and easily establish into new areas because of high seed production and dispersal. The loss of up to 0.7 acre would leave a mostly continuous bosque of approximately 7.5 acres along the east, south, and southwest portion of the project area. Bordering the bosque to the south is a floodplain grassland that offers potential for natural recruitment of mesquite because of greater accessibility to water from its lower elevation.

#### **Cumulative Effects – Vegetation**

The loss of velvet mesquite from the proposed project would be cumulative to land development, agriculture, and other human influences that have resulted in their decline within the floodplain of Oak Creek and further upland. The loss of 0.7 acres is relatively inconsequential for the area because of the abundance of other sizeable bosques located nearby and elsewhere along the creek.

### **3.1.3 Affected Environment – Terrestrial Wildlife**

Neotropical migrants that may be observed in riparian habitat near the project area include the summer tanager (*Piranga rubra*), Bell's vireo (*Vireo bellii*), common yellowthroat (*Geothlypis trichas*), and yellow warbler (*Dendroica petechia*). Birds of prey that can be found in the area include the red-tailed hawk (*Buteo jamaicensis*), turkey vulture (*Cathartes aura*), cooper's hawk (*Accipiter cooperii*), and American kestrel (*Falco sparverius*).

The area also exhibits a wide diversity of mammal species such as the black bear (*Ursus americanus*), collared peccary (*Tayassu tajacu*), bobcat (*Felis rufus*), gray fox (*Urocyon cinereoargenteus*), coyote (*Canis latrans*), and mule deer (*Odocoileus hemionus*). Other mammals include the ringtail (*Bassariscus astutus*), mountain lion (*Puma concolor*), and bobcat (*Lynx rufus*).

Common lizards found in the area include the greater earless lizard (*Cophosaurus texanus*), side-blotched lizard (*Uta stansburiana*), and plateau lizard (*Sceloporus tristichus*). Small mammals of the area provide an abundant prey source for snakes such as the ground snake (*Sonora semiannulata*), ring-necked snake (*Diadophis punctatus*), and black-tailed rattlesnake (*Crotalus molossus*). Amphibians known to the area include the Mexican spadefoot (*Spea multiplicata*), red-spotted toad (*Bufo punctatus*), and Woodhouse's toad (*Bufo wodhousii*).

### **3.1.4 Environmental Consequences – Terrestrial Wildlife**

#### **No Action**

Under the no action alternative, there would be no direct effect to terrestrial wildlife because no project would be implemented. Ongoing hatchery operation and maintenance activities could create minor disturbances to mammals, reptiles, amphibians, and birds that enter the ARCC. There would be no impact to the bosque.

#### **Proposed Action**

The proposed project would directly impact up to 0.7 acre of an 8.2-acre bosque that is used by different species of wildlife. Mesquite bosques are only second to cottonwood-willow forests for supporting high densities of breeding birds in the southwest (Stromberg 1993). Bosques have also shown high use by other taxa as well. The removal of mesquite habitat by heavy equipment and vehicles could harm or kill small and less mobile mammals, reptiles, and amphibians. There would also be temporary noise-related disturbances associated with construction activity that could disrupt the behavior of nearby wildlife. Construction activities are scheduled to begin late summer, which would avoid direct impacts to breeding birds. Indirect effects of the proposed project include the displacement of wildlife from the loss of foraging, nesting, and cover habitat.

#### **Cumulative Effects – Terrestrial Wildlife**

The effects of the proposed project on mesquite habitat and wildlife would be cumulative to land development, agriculture, and other human influences affecting the area along Oak Creek.

### **3.1.5 Affected Environment – Federally Listed and Candidate Species**

A compilation of federally listed species that occur within a 5-mile radius of the project location was obtained from AZGFD's Arizona Environmental Online Review Tool Report, dated January 14, 2015 (Table 2). Of the 15 species with occurrence records, only the northern Mexican gartersnake is likely to be found in the wild near the project location. Several species of federally-listed fish, however, are housed and propagated at ARCC. These species (loach minnow, spikedace, roundtail chub, and Gila topminnow) will be transferred to circular raceways in the caged building prior to the onset of construction, where they will be unaffected by construction activities (see section 2.2.1). Section 7 of the ESA requires consideration of only listed and proposed species.

**Table 2. Compilation of federally-listed species that occur within five miles of the project location, based on the Arizona Environmental Online Review Tool Report, January 14, 2015. E = endangered, T = threatened, C = candidate.**

Species	Federal Status	Habitat	Occupancy Determination/Explanation
<b>MAMMALS</b>			
Black-footed ferret ( <i>Mustela nigripes</i> )	E	Grassland plains generally found in association with prairie dogs.	Unlikely to occur. The project area does not provide suitable habitat and appropriate prey.
Ocelot ( <i>Leopardus pardalis</i> )	E	In Arizona, desert scrub in association with dense cover.	Unlikely to occur. The project area does not provide suitable habitat and appropriate prey.
Jaguar ( <i>Panthera onca</i> )	E	In Arizona, desert scrub up through subalpine conifer forest, usually near water.	Unlikely to occur. The project area does not provide suitable habitat and appropriate prey.
<b>BIRDS</b>			
Mexican spotted owl ( <i>Strix occidentalis lucida</i> )	T	Nests in canyons and dense forests with multilayered foliage structure.	Unlikely to occur. The project area does not provide suitable habitat.
Southwestern willow flycatcher ( <i>Empidonax traillii extimus</i> )	E	Cottonwood/willow and tamarisk vegetation communities along rivers and streams.	Unlikely to occur. The project area does not support cottonwood/willow and tamarisk vegetation.
Yellow-billed cuckoo ( <i>Coccyzus americanus</i> )	T	Large blocks of cottonwood, willow, or tamarisk galleries.	Unlikely to occur. The project area does not support cottonwood/willow and tamarisk vegetation.
<b>FISH</b>			
Apache trout ( <i>Oncorhynchus apache</i> )	T	High elevation mountain streams	Unlikely to occur. There is no aquatic habitat in the project area.
Gila chub ( <i>Gila intermedia</i> )	E	Pools, springs, cienegas, and streams.	Unlikely to occur. There is no aquatic habitat in the project area.
Gila topminnow ( <i>Poeciliopsis occidentalis</i> )	E	Small streams, springs, and cienegas.	Unlikely to occur. There is no aquatic habitat in the project area.
Razorback sucker ( <i>Xyrauchen texanus</i> )	E	Riverine and lacustrine areas, generally not in fast moving water and may use backwaters.	Unlikely to occur. There is no aquatic habitat in the project area.
Roundtail chub ( <i>Gila robusta</i> )	C	Cool to warm waters of rivers and streams, often occupy the deepest pools and eddies of large streams.	Unlikely to occur. There is no aquatic habitat in the project area.
<b>AMPHIBIANS and REPTILES</b>			
Narrow-headed gartersnake ( <i>Thamnophis rufipunctatus</i> )	T	Clear, rocky streams using predominantly pool and riffle habitat that includes cobbles and boulders.	Unlikely to occur. Nearest records far upstream in Oak Creek.
Northern Mexican gartersnake ( <i>Thamnophis eques megalops</i> )	T	Cienegas, stock tanks, large-river riparian woodlands and forests, streamside gallery forests.	Likely present. Species has numerous recent records in the project area.
<b>PLANTS</b>			
Arizona cliffrose ( <i>Purshia subintegra</i> )	E	White limestone soils derived from tertiary lakebed deposits.	Unlikely to occur. There are no limestone deposits within the project area. Nearest record is 4.3 mi southwest of project area.
<b>INVERTEBRATES</b>			
Page springsnail ( <i>Pyrgulopsis morrisoni</i> )	C	Permanently saturated cienegas, firm substrate like cobble, gravel, woody debris, and aquatic vegetation.	Unlikely to occur. There are no cienegas or aquatic habitat in the project area.

**Table 3. Critical habitat.**

Species	Presence of Critical Habitat in Project Area
Spikedace	Project area located outside designated critical habitat.
Loach minnow	Project area located outside designated critical habitat.
Northern Mexican gartersnake	Project area located outside of proposed critical habitat.
Narrow-headed gartersnake	Project area located outside of proposed critical habitat.
Yellow-billed cuckoo cuckoo	Project area located outside of proposed critical habitat.

**Northern Mexican gartersnake** - This subspecies was listed as threatened on July 8, 2014 (USFWS 2014), with proposed critical habitat in 14 subunits in central and southern Arizona and southwestern New Mexico (USFWS 2013a). Seventy to eighty percent of its range is in Mexico in the Sierra Madre Occidental and Mexican Plateau south to Oaxaca. Northern Mexican gartersnake typically is found along well-vegetated margins of cienegas, springs, streams, rivers, lakes, and ponds at elevations ranging from 130 to 6,150 ft. Presently, more than 80% of the known localities in the U.S. are considered extirpated or likely not viable due to low population densities (USFWS 2014). The primary cause of decline of northern Mexican gartersnake appears to be replacement of soft-rayed native fish prey with spiny-rayed nonnative fishes that create a choking hazard (USFWS 2014). The introduced bullfrog (*Lithobates catesbeianus*) also is a major predator on northern Mexican gartersnake, and has been suspected to be the primary cause for its extirpation from some areas (Rosen and Schwalbe 1988).

Northern Mexican gartersnake is diurnally-active, and feeds mostly on native leopard frogs and fishes, but also toads, treefrogs, earthworms, deer mice, lizards, and leeches (summarized in USFWS 2014). Onset of sexual maturity of this viviparous species occurs at 2-3 years (Rosen and Schwalbe 1988); longevity is unknown. Mating usually occurs in late spring, with birth of between 7 and 38 newborns in July and August (Rosen and Schwalbe 1988, Nowak and Boyarski 2012).

The ARCC area is occupied by a large and stable population of northern Mexican gartersnake that serves as a source population for satellite populations along Oak Creek (Jeff Servoss, USFWS, personal communication, 1/14/2015). This is despite the presence of a large bullfrog population as well as presence of nonnative largemouth bass (*Micropterus salmoides*) in ponds at Bubbling Ponds State Hatchery, and other nonnative fishes in nearby Oak Creek. Based on radio telemetry data gathered by AZGFD, northern Mexican gartersnakes at the ARCC are generally moving toward overwintering sites in late October and are mostly in their hibernacula by November 1. None of the telemetered gartersnakes overwintered within the footprint of the ARCC.

Although critical habitat for the snake has been proposed for lower Oak Creek, the project area falls outside of proposed critical habitat as it is located beyond the proposed 600-ft lateral boundary extending from either side of bank-full stage (the site is approximately 900 ft west of Oak Creek)(USFWS 2013a).

### **3.1.6 Environmental Consequences – Federally Listed and Candidate Species**

Except for northern Mexican gartersnake, the proposed action would not affect federally-listed and candidate species that occur near the project area because suitable habitat is absent in the project area, or the current ranges for the species are outside the project area. The northern Mexican gartersnake, which is the only federally-listed species that occurs in the project area, is discussed below.

#### **No Action**

Under the no action alternative, there would be no direct effect to the federally-threatened northern Mexican gartersnake because no project would be implemented. There would be no loss of or disturbance to the species other than from routine operation and maintenance of the existing fish hatchery. Vehicle operation over hatchery roads has resulted in occasional gartersnake mortality.

#### **Proposed Action**

Northern Mexican gartersnake is present in the project area. The proposed project may affect, and is likely to adversely affect, northern Mexican gartersnake because of possible lethal contact with construction equipment and/or other disturbances from project implementation activities. Driving speeds on hatchery roads are posted at 15 mph and drivers are required to monitor and stop for snakes on or near a road. However, during construction, heavy equipment would be limited to 5 mph on hatchery roads to reduce potential adverse impact on gartersnakes. The species is highly mobile so that it would be expected to move away from construction activities if disturbed, although the potential for mortality cannot be discounted. There also would be a chance of impacting hibernaculae, but they presumably would be uninhabited by gartersnakes during the proposed late summer to autumn construction schedule. Gartersnakes would be forced to find other hibernaculae if any are disturbed during construction.

In an attempt to avoid, minimize, or mitigate potential negative effects of the project to northern Mexican gartersnake, Reclamation (once permitted) or its designee would conduct a biological survey of the project area potentially affected by construction immediately prior to initiation of construction, and move any gartersnakes encountered away from the project area. During the course of construction, Reclamation or its designee will monitor for presence of northern Mexican gartersnake. If any gartersnakes are detected in the immediate project area, work would cease at the site until the individual(s) was captured and transported away from the area.

Once the project is completed, localized effects to northern Mexican gartersnake are expected to be neutral. The project area falls outside of proposed critical habitat, and therefore it will not adversely affect proposed critical habitat.

### **Cumulative Effects – Federally Listed and Candidate Species**

In December 2014, the AZGFD acquired 31.5 acres of property adjacent to the Bubbling Ponds Fish Hatchery to conserve northern Mexican gartersnake and increase native fish production capacity of the hatchery. Construction of native fish production ponds and protection of habitat for northern Mexican gartersnake on the newly acquired land would have a beneficial cumulative effect on this species. Adverse effects to northern Mexican gartersnake could occur from a number of possible actions in the area that might affect water or habitat quality, such as road maintenance or construction, land development, livestock grazing in riparian bottoms, and wildfire. These events can singularly or cumulatively affect northern Mexican gartersnake through alterations in habitat characteristics. Ultimately, the native fishes propagated at the ARCC and repatriated to the wild would enhance prey availability for northern Mexican gartersnake in portions of its range.

## **3.2 SOILS**

### **3.2.1 Affected Environment**

The Oak Creek watershed is geographically located within the Arizona Transition Zone which lies between the Basin and Range and Colorado Plateau provinces. This transition zone is delineated by an escarpment of rugged mountains and valleys that extends from northwestern to east-central Arizona and into New Mexico. Known locally as the Mogollon Rim, this escarpment represents the eroded edge of the Colorado Plateau.

Soils within the project area are classified as Swisshelm soils and Urban land, 0 to 3% slopes (NRCS 2015). These soils are excessively drained, very deep (> 80 inches), and consist of fine sandy loam. Runoff potential is very low.

The ground surface is flat within the contractor use area and on top of the terrace where the cage building, quarantine building, and two concrete ponds are situated. A crushed rock aggregate covers the ground surface on levels portions of the terrace adjacent to raceways and within the cage building. The retaining wall and portions of the perimeter fence would be constructed on sloped terrain along the margins of the terrace. New infrastructure would be constructed mostly on existing flat or backfilled and mechanically leveled portions of the terrace. Terrain situated between the project area and Oak Creek is relatively flat with broad floodplain development. The project area is outside the 100-year floodplain of Oak Creek.

### **3.2.2 Environmental Consequences**

#### **No Action**

Under the no action alternative, there would be no direct impact to soils within the project area because no project would be implemented. Existing impacts are limited chiefly to operation and maintenance activities performed by hatchery personnel.

### **Proposed Action**

Demolition and construction activities would include clearing vegetation, removing obsolete infrastructure, excavating soil, placing fill, leveling backfilled areas, and installing new waterlines and fish rearing features within a 0.9-acre area. Compaction of imported soils could alter the site's ability to absorb and retain storm water, which could increase runoff and cause release of sediment. As mentioned in section 2.2.1, a storm water basin would be constructed to receive runoff from backfilled portions of the facility. Sediment captured by the basin would be retained onsite. In addition, erosion control measures would be implemented if erosion becomes problematic. Those measures could include emplacement of silt fences, straw bales, seeding, or mulching. Vegetation clearing would be limited to those areas that are required for facility improvements and expansion.

The contractor use area would be used primarily for laydown of construction materials and vehicle parking. Soil compaction and crushing of herbaceous vegetation are possible impacts on this relatively flat 0.3-acre site. Runoff potential is low.

### **Cumulative Effects – Soils**

The proposed project would not add substantially to the cumulative impacts of other past, present, or reasonably foreseeable future actions on soil and erosion in the project area because of the limited scope of the proposal (short implementation duration and relatively small area affected) and application of appropriate erosion and/or storm water runoff controls.

## **3.3 AIR QUALITY**

### **3.3.1 Affected Environment**

Air quality is determined by the ambient concentrations of pollutants that are known to have detrimental effects on public health and the environment. In accordance with Section 109 of the Clean Air Act (CAA), the U.S. Environmental Protection Agency has promulgated National Ambient Air Quality Standards (NAAQS) for six criteria pollutants: carbon monoxide, nitrogen dioxide, particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>), ozone, sulfur dioxide, and lead. Areas with air quality that do not meet the standards are designated as “nonattainment areas.” Designation of nonattainment submits an area to regulatory control of pollutant emissions so that attainment of the NAAQS can be achieved within a designated time period. The area encompassing lower Spring Creek is in attainment for all regulated NAAQS.

The CAA provides special protection for visibility and other air quality related values in specially designated Class 1 areas where the cleanest and most stringent protection from air quality degradation is considered important. These areas include National Parks and Wilderness Areas which have been specifically designated Class 1 under Section 162(a) of the CAA. Class 1 designation allows almost no degradation in air quality. The closest

Class 1 airshed is associated with the Sycamore Canyon Wilderness approximately 11 miles northwest of the project area.

Climate change refers to significant change in measures of climate (particularly temperature and precipitation) that occur over long periods of time. Gases that trap heat in the atmosphere are referred to as greenhouse gases (GHGs). The CEQ (2010) defines GHGs as carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Globally, sources of human-induced emissions of GHGs include mainly burning of fossil fuels for power generation and transportation, with significant contributions from clearing of forests, agricultural practices, and other similar activities. In the study area, principal local sources of GHGs include combustion emissions from vehicles used in construction and personal and commercial transportation.

The potential for adverse air quality impacts on sensitive receptors is correlated to the intensity and duration of exposure. Air quality impacts typically associated with construction activities are transient; therefore, an adverse impact is most likely to occur when a sensitive receptor is acutely exposed to emissions. Acute exposure may result from a single high emission source or the additive emissions of multiple sources. Receptors that are particularly sensitive to poor air quality include children, the elderly, and people with illnesses or chronic diseases. Sensitive receptor locations include hospitals, schools, convalescent facilities, and residential areas such as the one that abuts the project area.

### **3.3.2 Environmental Consequences**

#### **No Action**

Under the no action alternative, there would be no direct impact to air quality because no project would be implemented. Existing ambient air quality would persist into the foreseeable future.

#### **Proposed Action**

The release of fugitive dust from construction would have a minor transient effect on ambient air quality in the project area. Minor amounts of fugitive dust would be emitted from soil moving activities at the project site. These emissions would be highly localized and sporadic, persisting in low levels only during periods of active earth moving and vehicle operation. Low travel speeds on unpaved hatchery roads would limit the emission of fugitive dust from operation of vehicles used in haulage of construction materials. There would be no impact on sensitive receptors to airborne dust and no substantive effect to air quality in the project or nearby wilderness areas.

The operation of equipment to construct the project and the operation of vehicles to deliver construction material, equipment, and crews would generate minor amounts of engine combustion products such as nitrogen and nitrous oxides, carbon dioxide, and reactive organic gases. These emissions would not produce measurable changes in ambient concentrations of regulated pollutants or result in a change in attainment status

for the air quality region. Emission of GHGs from project implementation actions would be below levels considered relevant to global processes that affect climate change.

### **Cumulative Effects – Air Quality**

Particulate and gaseous exhaust emissions (including GHGs) from the proposed project would be cumulative to pollutants emitted from other human and natural sources into the atmosphere. The small quantities of pollutants released during construction would have a negligible, short-term cumulative effect on local air quality or global processes that lead to climate change. There would be no measurable direct, indirect, or cumulative effect on Class 1 airsheds or nonattainment areas.

## **3.4 CULTURAL RESOURCES**

### **3.4.1 Affected Environment**

Three previous archaeological surveys have been completed within the Bubbling Ponds hatchery property including the area of potential effect for the proposed ARCC modernization project. Based on the negative finding of those surveys, there are no known cultural resources located within the APE of the proposed project. However, there are eight recorded archaeological sites in the surrounding vicinity dispersed along both sides of Oak Creek, both north and south of the project area. Oak Creek is a perennial stream running through the surrounding arid environment and prehistoric Native Americans such as the Southern Sinagua, as well as historic settlers, would have been drawn to areas that are contiguous with this water body.

The ground surface in undeveloped portions of the APE is covered with thick vegetation, both in the form of grasses as well as a thick mesquite bosque. Evidence of any past human activity could be obscured by this vegetation cover. Additionally, previous ground disturbing actions resulting from hatchery construction and maintenance may have obscured any surface evidence of prehistoric or historic human use of the area.

No cultural resources have been identified in the APE; consequently, no cultural resource mitigation plan is necessary. However, an intensive archaeological survey could not be completed due to ground cover and previous ground disturbance. To ensure any unknown subsurface cultural resources are identified and mitigated, if necessary, construction monitoring would be required. This recommendation was agreed to in a discussion with the Arizona State Historic Preservation Office (SHPO) in January 2015.

### **3.4.2 Environmental Consequences**

#### **No Action**

Under the no action alternative, there would be no direct impact to cultural resources because no project would be implemented. Operation and maintenance of existing fish hatchery infrastructure would have a low probability of affecting intact cultural resources

because of extensive ground disturbances that have modified the hatchery grounds from a pre-development condition.

**Proposed Action**

Construction monitoring by a qualified archaeologist, either Reclamation or a designated contractor, would be required during all ground disturbing actions for the proposed project. Engineering and construction personnel would ensure that the project archaeologist is well informed in advance of all planned actions. The on-site project archaeologist would then determine specific monitoring needs.

If cultural resources are identified by the on-site project archaeologist, all construction actions would be halted immediately, and the resources assessed. If the cultural resources are significant, as determined by the archaeologist, work would not be resumed at the site of the discovery until the resources are assessed, eligibility is determined, and a mitigation plan is developed in consultation with the SHPO and interested tribes. After the eligible cultural resource is mitigated work may resume in the discovery area. Construction personnel may continue work in other areas of the project, provided archaeological monitoring is continued in those locations.

At completion of the project, a cultural resources final report would be submitted to the SHPO and interested tribes for their review.

**Cumulative Effects – Cultural Resources**

No cumulative impacts to cultural resources are anticipated.

## **CHAPTER 4 – CONSULTATION AND COORDINATION**

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### **List of Agencies and Persons Contacted**

Reclamation submitted a notice of availability of the draft EA to the following entities. The names of individuals are retained in the administrative record.

#### *Cooperating Agencies:*

Arizona Game and Fish Department  
U.S. Fish and Wildlife Service

#### *Other Federal Agencies:*

USDA Forest Service (Coconino NF)

#### *County Agencies:*

Yavapai County Environmental Services Division  
Yavapai County Flood Control District

#### *Other State Agencies:*

Arizona Department of Environmental Quality  
Arizona Department of Water Resources  
Arizona State Land Department  
Arizona State Historic Preservation Office

#### *Indian Communities:*

Fort McDowell Yavapai Apache Nation  
Yavapai Apache Nation  
Pueblo of Zuni  
Prescott Yavapai  
The Hopi Tribe  
Hualapai Tribe  
Salt River Pima-Maricopa  
Yavapai-Prescott Tribe

#### *Conservation, Environmental, and Recreation Organizations:*

Center for Biological Diversity  
Sierra Club

*Other Organizations*

Central Arizona Water Conservation District  
Salt River Project

## **CHAPTER 5 – LIST OF PREPARERS**

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### **List of Preparers**

Rob Clarkson, Bureau of Reclamation, Fish Biologist  
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### **Other Contributors**

Danny Falcon, PE, Bureau of Reclamation, Civil Engineer

## **CHAPTER 6 – RELATED ENVIRONMENTAL LAWS/DIRECTIVES**

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The CEQ regulations encourage agencies to “integrate the requirements of NEPA with other planning and environmental review procedures required by law.” Coordinating NEPA procedures with those of other Federal environmental statutes and executive orders facilitates NEPA objectives by promoting efficiencies in environmental planning and development of relevant information on which to base agency decisions. This integrative approach to NEPA ensures planning, review, and compliance processes run concurrently rather than consecutively with procedures required by other environmental laws.

The following is a list of Federal laws, Executive Orders (EOs), and other directives that apply to the proposed project discussed in this EA:

The National Environmental Policy Act (NEPA) of 1969, as amended (Public Law 91-90), requires Federal agencies to evaluate the potential environmental consequences of major Federal actions. An action becomes “federalized” when it is implemented, wholly or partially funded, or requires authorization by a Federal agency. The intent of NEPA is to promote consideration of environmental impacts in the planning and decision-making process prior to project implementation. NEPA also encourages full public disclosure of the proposed action, accompanying alternatives, potential environmental effects, and mitigation. The DOI NEPA regulations are found at 43 CFR part 46.

A notice of availability of the draft EA is being distributed to the public and agencies during the 30-day public comment period. The EA was available for viewing or downloading at <http://www.usbr.gov/lc/phoenix/>.

The Endangered Species Act (ESA) of 1973, as amended (Public Law 93-205), provides protection for plants and animals that are currently in danger of extinction (endangered) and those that may become so in the foreseeable future (threatened). Section 7 of this law requires Federal agencies to ensure that their activities do not jeopardize the continued existence of threatened or endangered species or adversely modify designated critical habitat.

Reclamation prepared a biological assessment that determined the proposed project may affect, and is likely to adversely affect, northern Mexican gartersnake due to potential mortality during construction. No other federally-listed species would be adversely impacted by the project. The biological assessment was submitted to the USFWS on March 18, 2015.

The Migratory Bird Treaty Act (MBTA) of 1918, as amended (Public Law 86-732, 90-578, 91-135, 93-300, 95-616, 99-645, 105-312), implements various treaties and conventions between the United States and Canada, Japan, Mexico, and the former Soviet Union for the protection of migratory birds. The MBTA prohibits the take, possession,

import, export, transport, selling, or purchase of any migratory bird, their eggs, parts, or nests.

A late summer and autumn construction schedule would be implemented, thereby avoiding direct impacts to breeding birds. Indirect effects include slight displacement of migratory birds returning in subsequent years due to a minor loss of foraging, nesting, or cover habitat.

The Clean Air Act (CAA) of 1963, as amended (Public Law 95-95), requires any Federal entity engaged in an activity that may result in the discharge of air pollutants must comply with all applicable air pollution control laws and regulations (Federal, State, or local). It also directs the attainment and maintenance of National Ambient Air Quality Standards (NAAQS) for six different criteria pollutants including carbon monoxide, ozone, particulate matter, sulfur oxides, oxides of nitrogen, and lead. Air quality in the project area is in attainment of NAAQS.

Short-term construction emissions (particulate matter and greenhouse gasses) associated with the project would have localized and minor effects on air quality in the project area. The project is not located in a nonattainment area or Class I airshed.

The Clean Water Act (CWA) of 1977, as amended (Public Law 92-500), strives to restore and maintain the chemical, physical, and biological integrity of the nation's waters by controlling discharge of pollutants. The basic means to achieve the goals of the CWA is through a system of water quality standards, discharge limitations, and permits. The Arizona Pollutant Discharge Elimination System (AZPDES) construction general permit (Permit No. AZG2013-001) authorizes storm water discharges associated with construction activities that will disturb one or more acres of land. The operator of a construction site is required to prepare a Stormwater Pollution Prevention Plan (SWPPP), which will identify appropriate erosion controls, and submit a Notice of Intent (NOI) to the Arizona Department of Environmental Quality (ADEQ).

Construction would affect approximately 1.2 acres; consequently the contractor would be required to prepare a SWPPP and submit an NOI to ADEQ for coverage under the construction general permit. The proposed project would not impact waters of the United States including special aquatic sites. The closest jurisdictional water body is Oak Creek, approximately 900 feet east of the project area. AZGFD has an existing AZPDES permit for waste water discharges from fish rearing facilities at the hatchery.

The National Historic Preservation Act (NHPA) of 1966, as amended (Public Law 96-515), mandates all federally funded undertakings that have the potential to affect historic properties are subject to Section 106 of the NHPA. Federal agencies are responsible for the identification, management, and nomination to the National Register of Historic Places of cultural resources that could be affected by Federal actions. Consultation with the Advisory Council on Historic Preservation and the SHPO is required when a Federal action may affect cultural resources on, or eligible for inclusion on, the National Register.

The density of ground vegetation precluded a thorough survey of the project area. To ensure any previously unrecorded cultural resources are identified and mitigated, if present, construction monitoring would be required. This recommendation was agreed to in a discussion with the SHPO in January 2015.

The Resource Conservation and Recovery Act (RCRA), as amended (Public Law 94-580), establishes thresholds and protocols for managing and disposing of solid waste. Solid wastes that exhibit the characteristic of hazardous waste, or are listed by regulation as hazardous waste, are subject to strict accumulation, treatment, storage, and disposal controls.

The proposed project is not expected to generate hazardous waste as defined and regulated under RCRA. To minimize the possible impact of hazardous materials (petroleum, oil, and lubricants) used during construction, all equipment would be periodically inspected for leaks. Any substantial leaks would be promptly corrected. Nonhazardous solid waste would be disposed of in accordance with State and Federal regulations at an approved landfill. Spills and disposal of contaminated media would be managed in accordance with State and Federal requirements.

Executive Order (EO) 11988 (Floodplain Management) requires Federal agencies to avoid, where practicable alternatives exist, the short- and long-term adverse impacts associated with floodplain development. Federal agencies are required to reduce the risk of flood loss; minimize the impacts of floods on human safety, health, and welfare; and restore and preserve the natural and beneficial values served by floodplains in carrying out agency responsibility.

Installation of new infrastructure would affect portions of the terrace that are above the 100-year floodplain. There would be no effect on floodplain capacity or flood flow characteristics.

EO 11990 (Wetlands) requires Federal agencies, in carrying out their land management responsibilities, to take action that would minimize the destruction, loss, or degradation of wetlands and take action to preserve and enhance the natural and beneficial values of wetlands.

The proposed project would not impact wetlands.

EO 12898 (Environmental Justice) requires Federal agencies to identify and address, as appropriate, disproportionately high and adverse human health and environmental effects of their programs, policies, and activities on minority and low-income populations.

Construction would affect State lands administered by the AZGFD; consequently, no low-income or minority populations as defined by EO 12898 would be impacted.

Secretarial Order 3175 (incorporated into Departmental Manual at 512 DM 2) requires that if any Department of the Interior agency actions impact Indian trust assets (ITAs), the agency must explicitly address those impacts in planning and decision-making, and the agency must consult with the tribal government whose trust resources are potentially affected by the Federal action. Reclamation is committed to carrying out its activities in a manner which avoids adverse impacts to ITAs when possible, and to mitigate or compensate for such impacts when it cannot.

The project area encompasses State lands administered by AZGFD. No Indian trust assets have been identified in the project area; consequently, no impact to trust assets is anticipated.

## CHAPTER 7 – LITERATURE CITED

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