2015 YELLOW-BILLED CUCKOO SURVEY
WHITLOW RANCH DAM, DEVILS CANYON, AND
MINERAL CREEK, PINAL COUNTY, ARIZONA

Prepared for: Resolution Copper Mining, LLC

Prepared by: WestLand Resources, Inc.

Date: November 23, 2015

Project No.: 807.98-14-8741

TABLE OF CONTENTS

TABLES

FIGURES
(*follow text*)

APPENDICES

1. INTRODUCTION AND BACKGROUND

At the request of Resolution Copper Mining, LLC (Resolution), WestLand Resources, Inc. (WestLand) conducted survey in 2015 for the yellow-billed cuckoo (YBCU; *Coccyzus americanus*) at four sites in the vicinity of the Resolution Copper Project (the Project), a proposed underground mine and ore processing operation with associated facilities and infrastructure near Superior, Arizona. Survey was conducted at the Whitlow Ranch Dam, two portions of Devils Canyon, and one segment of Mineral Creek, all in Pinal County, Arizona (Survey Areas; ***Figure 1***). The objective of the 2015 YBCU survey was to determine the presence and abundance of YBCU, based on habitat conditions considered most likely to support YBCU, in the vicinity of the Resolution Project.

The YBCU was petitioned to be listed as endangered under the Endangered Species Act (ESA) in 1998 (CBD 1998). In 2001, the US Fish and Wildlife Service (USFWS) issued a finding that the petitioned action was warranted, but was precluded by higher listing priorities, and added the YBCU to its list of candidate species (USFWS 2001). On October 3, 2014, the USFWS published a final rule to list the western distinct population segment (DPS) of the YBCU as threatened under the ESA (USFWS 2014a). On August 15, 2014, the USFWS proposed the designation of critical habitat, totaling approximately 546,335 acres (ac; 221,094 hectares [ha]) across Arizona, California, Colorado, Idaho, Nevada, New Mexico, Texas, Utah, and Wyoming. No critical habitat has been proposed within Resolution's facilities. The closest proposed critical habitat unit to Resolution's facilities is Unit 40 (Pinto Creek South), approximately 6.7 miles (10.8 kilometers [km]) northeast of the proposed East Plant Site. The YBCU is also considered a Sensitive species by Region 3 of the US Forest Service (USFS 2013).

In the following sections, we provide a brief natural history of the YBCU (***Section 2***), a description of how the survey areas were selected and a description of each area (***Section 3***), a description of the survey methods (***Section 4***) and results (***Section 5***). References cited within the text are provided in ***Section 6***.

2. NATURAL HISTORY OF YELLOW-BILLED CUCKOO

The YBCU is a medium-sized neotropical migrant that winters in South America and migrates to portions of the United States (US), Canada, Mexico, and the Caribbean Islands to breed. USFWS currently recognizes YBCUs in the western United States, Canada, and Mexico as a DPS, inclusive of all breeding YBCUs west of the Rocky Mountains (USFWS 2014a)[1]. In the U.S., USFWS recognition of the western DPS of YBCU covers portions of Washington, Oregon, Idaho, Montana, Wyoming, Colorado, New Mexico, Texas, Arizona, Utah, Nevada, and California. These areas also represent the known breeding range of the species, with the exception of Montana, Oregon, and Washington (USFWS 2014a). Within Arizona, YBCUs can be found in the largest numbers in the southern and central portions of the state, but have been documented in all counties in the state (AGFD 2011).

The description of suitable habitat for the western DPS of YBCUs provided in the Proposed Rule (USFWS 2014b) focuses primarily on riparian woodlands dominated by cottonwoods (*Populus* spp.) and willows (*Salix* spp.). The ruling identifies optimal YBCU breeding habitat as habitat patches greater than 325 ft

[1] For the purposes of this document references to the YBCU are limited to the western DPS.

(100 m) in width and 200 ac (81 ha) in extent with an above average canopy closure, adequate prey base, and a cooler, more humid environment than the surrounding riparian and upland habitats, and adds that the species does not use narrow, steep-walled canyons. (USFWS 2014b). Halterman et al. (2015) state that YBCUs have not been found nesting in isolated riparian patches of less than 1-2 ac (0.4-0.8 ha) or in linear patches less than 33-66 ft (10-20 m) in width, and that they rarely use riparian patches of less than 49 ac (20 ha) in size. A typical minimum size for cuckoo occupancy is 12 ac (5 ha) (Halterman et al. 2015). There is evidence, however, that the species also uses habitats strikingly different than those described by the USFWS (2014b) and Halterman et al. (2015). In Arizona, YBCUs have often been documented in areas of upland-associated vegetation and in drainages dominated by oaks (*Quercus* spp.) and junipers (*Juniperus* spp.) (WestLand 2013, 2014, 2015) that do not contain the large blocks of cottonwoods and willows described by USFWS (2014a, 2014b) as the habitat necessary to support YBCUs.

3. SURVEY AREAS DETERMINATION AND DESCRIPTION

WestLand used YBCU habitat characteristics described by USFWS (2014b) and Halterman et al. (2015), aerial photography, and observations made during previous field studies in the Project vicinity to select areas within which to survey[2]. In assessing areas of riparian vegetation for YBCU survey, we recommended survey in all areas of riparian habitat with a high level of canopy closure covering 12 ac (5 ha) or greater, and in which prominent trees in the riparian community included at least some of the following species: Goodding's willow (*Salix gooddingii*), Fremont's cottonwood (*Populus fremontii*), Arizona alder (*Alnus oblongifolia*), velvet ash (*Fraxinus velutina*), Arizona sycamore (*Platanus wrightii*), netleaf hackberry (*Celtis reticulata*), Arizona walnut (*Juglans major*), and saltcedar (*Tamarix* spp.). Areas of dense mesquite (*Prosopis* spp.) with no or only scattered individuals of the above tree species were not recommended for survey.

We used a conservative approach, recommending survey in some areas that did not fully meet the above criteria. This primarily included drainage channels in which the canopy cover was very narrow and/or the drainage was within a narrow, steep-walled canyon.

The areas we recommended for survey included Mineral Creek, Devils Canyon in two areas (Middle and Lower), all of which WestLand had previously surveyed for YBCU (WestLand 2011, 2013a), and Queen Creek in the vicinity of Boyce-Thompson Arboretum and at Whitlow Ranch Dam, which had not previously been surveyed for YBCU. WestLand conducted survey in all of those locations except Queen Creek at Boyce-Thompson Arboretum, which was surveyed by Audubon Arizona. Resolution also had Audubon Arizona survey a portion of Queen Creek between the Highway 60 tunnel, an area we did not include in our survey recommendation, and along Arnett Creek, which was outside the area we assessed for survey. The Audubon Arizona surveys did not detect any cuckoos (***Appendix A***).

[2] The selected survey areas include areas that approach or meet the minimum acreage and/or width requirements of riparian vegetation identified as suitable for YBCUs (USFWS 2014b).

3.1. WHITLOW RANCH DAM AREA

The Whitlow Ranch Dam survey area is located along Queen Creek upstream of the Whitlow Ranch Dam, approximately 10 miles west of Superior (***Figure 1***). The survey area is approximately 2,000 ft long and up to approximately 1,200 ft wide with the eastern portion managed by the USFS and the western portion managed by the Bureau of Land Management (***Figure 2***). Six parallel survey transects were established to cover the approximately 45 acres of lands.

Elevation in the survey area is roughly 2,085 feet (ft; 636 m) above mean sea level (amsl) and contains riparian vegetation typical of the Sonoran Riparian Scrubland community as described by Brown (1994). Exotic saltcedar is the dominant overstory species, though Goodding's willow and Fremont's cottonwood are also present, particularly along the Queen Creek channel, along with many large, dead willows and cottonwoods. The understory, often dense, includes species such as baccharis (*Baccharis* spp.), lupine (*Lupinus* spp.), and unidentified grasses. Trees charred in the June, 2012 Comet Fire are still prevalent, the majority of which are saltcedar, many of them regenerating. In general, the entire survey area supports living trees.

3.2. MIDDLE AND LOWER DEVILS CANYON TRANSECTS

Devils Canyon is a steep-walled, north-south trending canyon located approximately 4 miles east of Superior (***Figure 1***). Survey transects were located on State Trust Lands managed by the ASLD. Upland vegetation in the vicinity of the two transects is an ecotone of the Arizona Upland subdivision of Sonoran Desertscrub and Interior Chaparral biotic communities (Brown 1994). Dominant upland species include scrub live-oak (*Quercus turbinella*), jojoba (*Simmondsia chinensis*), point-leaf manzanita (*Arctostaphylos pungens*), wait-a-minute bush (*Mimosa biuncifera*), saguaro (*Carnegiea gigantea*), cholla (*Cylindropuntia* spp.), agave (*Agave* spp.), and velvet mesquite (*Prosopis velutina*).

The Middle Devils Canyon transect is approximately 1.1 miles (1.8 km) in length (***Figure 3***). Surface water is perennial and present throughout the majority of the length of the transect. Elevations in this portion of the canyon range from roughly 3,600 ft (1,097 m) amsl at the northern end of the transect to approximately 3,500 ft (1,067 m) amsl at the southern end. Riparian vegetation typical of the Interior Riparian Deciduous Forest biotic community (Brown 1994) lines the canyon bottom, ranging from approximately 70-280 ft (21-85 m) in width, with small extensions up several side canyons. The canopy closure is fairly consistent within this stretch, with few small areas of open canopy. Dominant species include Arizona alder (*Alnus oblongifolia*), velvet ash (*Fraxinus velutina*), Arizona sycamore (*Platanus wrightii*), and buttonbush (*Cephalanthus occidentalis*). Goodding's willow, Fremont's cottonwood, netleaf hackberry (*Celtis reticulata*), baccharis and poison ivy (*Toxicodendron* spp.) are also present.

The Lower Devils Canyon transect is approximately 2.1 miles (3.4 km) in length (***Figure 4***) and includes several large, perennial pools. Elevations in this portion of the canyon range from approximately 3,200 ft (975 m) amsl at the northern end of the transect to approximately 2,500 ft (762 m) amsl at the southern end. Vegetation typical of the Interior Riparian Deciduous Forest biotic community (Brown 1994) is also present in this portion of the canyon, though it is much less dense than upstream. The band of riparian vegetation in this stretch ranges from approximately 40-300 ft (12-91 m) in width. The canopy closure is much more

fragmented in this stretch than in Middle Devils Canyon. Dominant riparian species include Arizona sycamore, Fremont's cottonwood, velvet ash, buttonbush, and baccharis. Goodding's willow, Arizona alder, and Arizona walnut (*Juglans major*) are also present.

3.3. MINERAL CREEK TRANSECT

Mineral Creek is a largely perennial creek that flows south from the Pinal Mountains and joins Devils Canyon at the Big Box Dam site in Pinal County, Arizona (***Figure 1***). The Mineral Creek transect is approximately 2.8 miles (4.5 km) in length, and is located on State Trust Lands managed by the ASLD (***Figure 5***). Elevations range from roughly 2,800 ft (853 m) amsl at the northern end of the transect to approximately 2,400 ft (732 m) amsl at the southern end. Relatively dense riparian vegetation typical of the Interior Riparian Deciduous Forest biotic community (Brown 1994) is present throughout most of the transect, with widths up to 240 ft (73 m) between canyon walls except in areas where the creek is constricted by steep canyon walls to as little as approximately 30 ft (9 m). Dominant species include velvet ash, Goodding's willow, Fremont's cottonwood, and Arizona sycamore. Velvet mesquite, Arizona walnut, baccharis, and Arizona alder are also present. Upland vegetation surrounding the Mineral Creek transect is characteristic of the Arizona Upland Subdivision of Sonoran Desertscrub vegetation biotic community (Brown 1994). Species observed include: saguaro, prickly pear, cholla, agave, catclaw acacia (*Senegalia greggii*), and ocotillo (*Fouquieria splendens*).

Habitat summary forms and representative photographs of vegetation along each transect are provided in ***Appendix B*** and ***Appendix C***, respectively.

4. METHODS

4.1. SURVEY VISITS AND TIMING

Following the general outline for timing of YBCU surveys provided by Halterman et al. (2015), WestLand visited each Survey Area a total of four times to survey for YBCUs during the 2015 survey season. Survey visits were conducted during three survey periods between mid-June and mid-August; the first and third survey period requiring one visit each, and the second survey period requiring two visits (***Table 1***).

Table 1. 2015 Yellow-Billed Cuckoo Survey Dates Whitlow Ranch Dam, Middle Devils Canyon, Lower Devils Canyon, and Mineral Creek, Pinal County, Arizona

Survey Periods[1]	Survey Visit	Survey Dates(s) by Location			
		Whitlow Ranch Dam	Middle Devils Canyon	Lower Devils Canyon	Mineral Creek
Period 1 – June 15 to June 30 (One survey required)	Visit 1	June 22	June 22	June 23-24	June 23-24
Period 2 – July 1 to July 31 (Two surveys required)	Visit 2	July 8	July 8	July 9-10	July 9-10
	Visit 3	July 22	July 22	July 23-24	July 23-24
Period 3 – August 1 to August 15 (One survey required)	Visit 4	August 4	August 4	August 5-6	August 5-6

[1] Halterman et al. 2015

4.2. SURVEY METHODS

WestLand biologists conducted surveys for YBCU following the methods described in the 2015 YBCU survey protocol (Halterman et al. 2015) under WestLand's USFWS Permit No. TE-834782-3 and Arizona Game Fish Department (AGFD) Scientific Collecting License No. SP705995.

Survey points were spaced approximately 328 ft (100 m) apart along each of the transects. Halterman et al. (2015) suggest conducting parallel transects (also referred to as a survey grid or a block survey) through areas exceeding 656 ft (200 m) in width. Riparian vegetation throughout the Middle Devils Canyon, Lower Devils Canyon, and Mineral Creek Survey Areas was less than 656 ft (200 m), allowing for coverage with a single survey transect (***Figures 3 through 5***). The Whitlow Ranch Dam survey area exceeded 200m in width (***Figure 2***), thus requiring a six parallel transects to ensure complete coverage.

Survey efforts generally began at sunrise and continued until the survey was completed, or until 11:00 AM, whichever occurred first. Surveys were not conducted in inclement weather conditions including temperatures of 104 ºF (40 ºC) or greater. At each survey point, surveyors broadcast a series of recorded YBCU contact calls[3]. Following a 1-minute listening period, five YBCU contact calls were broadcast at 1-minute intervals, while surveyors listened and watched for YBCU. Surveyors also actively listened for YBCU while walking between calling points. If YBCU was detected spontaneously or in response to the playback, the next broadcast-point was moved approximately 984 ft (300 meters) from the estimated location of the detected bird[4] to reduce the risk of drawing it away from a potential nesting area. Therefore, the total number of calling points differed among survey periods.

4.3. INTERPRETING SURVEY RESULTS

Halterman et al. (2015) describe methods for interpreting survey detection data to estimate the number of different YBCU detected during each day of survey, the breeding status of YBCUs detected, and the number of possible, probable, and confirmed breeding territories in an area; however, they do not quantify the dimensions for an area containing repeat detections. WestLand used a buffer of 984 ft (300 m) to determine if detections in successive surveys were in sufficient proximity to be indicative of a breeding territory. Definitions of the breeding territories (Halterman et al. 2015) followed by WestLand's interpretation are provided below.

Number of different YBCUs detected on a single day: If cuckoos are located greater than 300 m apart on the same survey, they are considered separate detections

Possible breeding territory: "Two or more total detections in an area during two survey periods and at least 10 days apart. For example, within a certain area, one detection made during Survey Period 2 coupled with another cuckoo detection made 10 days later, also during Survey Period 2, warrants a possible breeding territory designation." WestLand's interpretation is that possible breeding territories are areas where two or more total detections occurred during two survey visits (rather than survey periods), that were at least 10 days apart.

[3] The YBCU contact/"kowlp" call consists of a variable number of "kuk" notes followed by a variable number of "kowlp" notes.
[4] If YBCU call was heard from the opposite direction of which the surveyor was traveling, the next broadcast-point was moved 300 m from the point at which the detection was made, rather than from the estimated location of the bird.

Probable breeding territory: "Three or more total detections in an area during at least three survey periods and at least 10 days between each detection. Possible breeding territory plus YBCUs observed carrying food (single observation), carrying a stick (single observation), traveling as a pair, or exchanging vocalizations." WestLand's interpretation is that probable breeding territories are areas where three or more total detections have occurred during at least three survey visits (rather than survey periods), with at least 10 days between each detection. A possible breeding territory coupled with at least one of the previously stated observations also qualifies an area as a probable breeding territory.

Confirmed breeding territory: "Observation of copulation, stick carry to nest, carrying food (multiple observations), distraction display, nest, or fledgling." WestLand's interpretation is that confirmed breeding territories are areas where at least one of these observations has been made.

5. RESULTS

A total of five YBCU detections were recorded during the 2015 survey: one from the Middle Devils Canyon transect and four from the Mineral Creek transect (***Figures 3 and 5; Appendix B***). The YBCU at Middle Devils Canyon was detected during the first survey (June 22). At Mineral Creek, three different YBCUs were detected during the third survey, on July 23, including two different YBCUs at one calling station and the third YBCU approximately 2,400 ft (732 m) up the canyon. The fourth detection at Mineral Creek was during the fourth survey (August 6), more than 1 mile down the canyon from the two that were detected together.

The estimated locations of YBCUs detected during the surveys are presented in ***Figures 3 and 4***. Additional information about the detections, including transect name, survey period, visit number, date, number of detections, estimated YBCU coordinates, and detection type, is included in ***Table 2***.

WestLand did not observe any YBCU breeding behavior to confirm breeding or the presence of breeding territories during this survey. Using the method of inference described in Halterman et al. (2015), there were also no *possible* or *probable* breeding territories within the Survey Area (***Appendix B***).

Table 2. 2015 Yellow-Billed Cuckoo Detections Whitlow Ranch Dam, Middle Devils Canyon, Lower Devils Canyon, and Mineral Creek, Pinal County, Arizona

Survey Period	Survey Visit	Date of Survey	Number of YBCU Detections	Estimated Location of YBCU (NAD83 UTM Zone 12S)		Detection Type (A,V,B)[1]
				Easting	Northing	
Whitlow Ranch Dam						
1	1	June 22	0	-	-	-
2	2	July 8	0	-	-	-
	3	July 22	0	-	-	-
3	4	August 4	0			
Middle Devils Canyon						
1	1	June 22	1	[redacted]	[redacted]	A
2	2	July 8	0	-	-	-
	3	July 22	0	-	-	-
3	4	August 4	0	-	-	-
Lower Devils Canyon						
1	1	June 23-24	0	-	-	-
2	2	July 9-10	0	-	-	-
	3	July 23-24	0	-	-	-
3	4	August 5-6	0	-	-	-
Mineral Creek						
1	1	June 23-24	0	-	-	-
2	2	July 9-10	0	-	-	-
	3	July 23-24	3	[redacted]	[redacted]	B
				[redacted]	[redacted]	A
				[redacted]	[redacted]	A
3	4	August 5-6	1	[redacted]	[redacted]	B

[1] Detection types are: A – audio, V – visual, and B – both

6. REFERENCES

Arizona Game and Fish Department (AGFD). 2011. Yellow-billed Cuckoo (*Coccyzus americanus*). Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. 6 pp. Available at internet site: http://www.azgfd.gov/w_c/edits/documents/Coccamoc.fi.pdf. Accessed August 2015.

Brown, D.E. (ed). 1994. Biotic Communities of the American Southwest: United States and Mexico. Desert Plants 4(1-4):1-342. University of Utah Press. Salt Lake City.

Center for Biological Diversity (CBD). 1998. Petition to list the yellow-billed cuckoo *Coccyzus americanus* as a Federally Endangered Species. Available at internet site: http://web.biologicaldiversity.org/species/birds/yellow-billed_cuckoo/pdfs/petition.pdf. Accessed August 2015.

Halterman, M., M.J. Johnson, J.A. Holmes, and S.A. Laymon. 2015. A Natural History Summary and Survey Protocol for the Western Distinct Population Segment of the Yellow-billed Cuckoo. Final Draft April 2015.

US Forest Service (USFS). 2013. USFS R3 Regional Forester's Sensitive Species: Animals-2013. Available at http://www.fs.usda.gov/detail/r3/plants-animals/?cid=FSBDEV3_022105. Accessed August 2015.

U.S. Fish and Wildlife Service (USFWS). 2001. Endangered and Threatened Wildlife and Plants; 12-Month Finding for a Petition to List the Yellow-billed Cuckoo (*Coccyzus americanus*) in the Western Continental United States. Federal Register 66(143): 38611–38626

_____. 2014a. Endangered and Threatened Wildlife and Plants; Determination of Threatened Status for the Western Distinct Population Segment of the Yellow-billed Cuckoo (*Coccyzus americanus*); Final Rule. Federal Register 79(192): 59992–60038.

_____. 2014b. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Western Distinct Population Segment of the Yellow-Billed Cuckoo; Proposed Rule. Federal Register 79(158): 48548–48652.

WestLand Resources, Inc. (WestLand). 2011. 2011 Western Yellow-billed Cuckoo Survey Devils Canyon and Mineral Creek. Prepared for Resolution Copper Company. December, 2011.

_____. 2013. 2013 Survey for Yellow-billed Cuckoo (*Coccyzus americanus*) in the Patagonia Mountains, near Harshaw, Arizona. Prepared for Arizona Minerals, Inc. December 2013.

_____. 2013a. 2012 Western Yellow-billed Cuckoo Survey Devils Canyon and Pinto Creek. Prepared for Resolution Copper Mining, LLC. March 2013.

_____. 2014. 2013 Yellow-billed Cuckoo (*Coccyzus americanus*) Survey: Rosemont Copper Project. Prepared for Rosemont Copper Company. July 2014.

_____. 2015. 2014 Yellow-billed Cuckoo (*Coccyzus americanus*) Survey: Rosemont Copper Project. Prepared for Hudbay. February 2015.

FIGURES

APPENDIX A

WESTERN YELLOW-BILLED CUCKOO (COCCYZUS AMERICANUS OCCIDENTALIS) 2015 YELLOW-BILLED CUCKOO SURVEYS ON QUEEN AND ARNETT CREEKS, AUDUBON ARIZONA

Audubon ARIZONA Resolution Copper Mining

Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)

2015 yellow-billed cuckoo surveys on Queen and Arnett Creeks

Audubon Arizona
3131 S. Central Avenue
Phoenix, AZ 85040

Recommended Citation:

Prager, S and Wise, C. 2015. 2015 yellow-billed cuckoo surveys on the Queen and Arnett Creeks. Audubon Arizona, Phoenix, Arizona.

Photo Credit: George Andreko, Arizona Game and Fish Department

Acknowledgements:

Audubon Arizona thanks Resolution Copper Mining for funding this effort and for providing logistical help in the field. Our thanks also goes out to our field surveyors Brian Pacheco, Jacob Weinberg, Daniel Hite, Luis Gutierrez, and Carlos Goday. Lastly, we thank Audubon Arizona volunteer Terry Michl for helping us organize and enter all of the data collected this season.

Executive Summary:

In October 2013, the United States Fish and Wildlife Service proposed listing the yellow-billed cuckoo in western portions of the United States, Canada, and Mexico (the western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)) as a threatened distinct vertebrate population segment under the Endangered Species Act of 1973, as amended in 1998 (Federal Register, October 3, 2013). The final rule designating this population segment was published on October 3, 2014 and went into effect in November (Federal Register, October 3, 2014). Over five-hundred thousand acres of critical habitat have been proposed for this population segment across Arizona, California, Colorado, Idaho, Nevada, New Mexico, Texas, Utah and Wyoming, with the majority of habitat within Arizona (Federal Register, August 15, 2014).

Probable factors contributing to the birds' population decrease are the loss, alteration and fragmentation of native riparian habitats (Franzreb 1987 and Milhous, 1994). In 2015, Audubon Arizona organized and conducted standardized surveys on three reaches of Queen and Arnett creeks near Superior, Arizona in order to document yellow-billed cuckoo occurrence and abundance and to provide a basis for management recommendations. Results of the 2015 survey efforts are summarized in this report.

Yellow-billed cuckoo detections and habitat:

No cuckoos were detected on any of the three Arnett or Queen Creek transects during the 2015 survey season. The narrowness of these drainages largely excludes mesquite bosque habitat and limited surface water allows for only short stringers of native broad-leaf riparian forest. [redacted]

Forty-four other species were encountered during the 2015 survey season including Abert's towhee which is listed as "Sensitive" by the US Forest Service and as a 'Species of Greatest Conservation Concern" by the Arizona Game and Fish Department.

Management Recommendations:

In the areas identified as having the highest potential for breeding yellow-billed cuckoo, activities that encourage the recruitment of native-broad leaf trees and adjacent mesquite bosque habitat should be supported. Similarly, activities that prevent the recruitment and survivorship of native broad-leaf trees and adjacent mesquite bosque habitat should be avoided. In addition, due to the presence of Abert's towhee along these drainages, activities that would alter the understory vegetation along Queen and Arnett Creeks should be avoided.

Table of Contents:

Introduction:

The U. S. Fish and Wildlife Service (USFWS) petitioned to list the western yellow-billed cuckoo (*Coccyzus americanus occidentalis*; hereafter cuckoo) as an endangered species in 1998, but the bird was precluded due to other priority species. In October 2013, the cuckoo population in the western portions of the United States, Canada, and Mexico was proposed to be listed as a threatened distinct vertebrate population segment (Federal Register, October 3, 2013). The final rule designating this population segment was published on October 3, 2014 and went into effect in November (Federal Register, October 3, 2014). Over five-hundred thousand acres of critical habitat have been proposed for this population segment across Arizona, California, Colorado, Idaho, Nevada, New Mexico, Texas, Utah and Wyoming, including over three thousand acres on the Agua Fria River (Federal Register, August 15, 2014).

In Arizona, the cuckoo was historically widespread and locally common. Although western populations have precipitously declined, Arizona still contains the largest remaining cuckoo population among the States west of the Rocky Mountains (Federal Register, October 3, 2013). The decline of cuckoo populations throughout the western United States has been largely attributed to habitat destruction (Franzreb 1987), inappropriate grazing, and lowered water tables (Milhous 1994). Current information on the distribution and abundance of cuckoos is necessary for the proper management of the species and its preferred habitats.

Audubon has not conducted cuckoo surveys on Queen or Arnett Creek in the past. 2015 surveys were conducted to answer several questions about the cuckoo on these drainages: Are cuckoos using these drainages, when are they present, what is their distribution, and what features support or exclude them?

Natural History:

The American Ornithological Union (AOU) recognizes two subspecies of cuckoos in North America (AOU 1998). The subspecies found in Arizona is the western yellow-billed cuckoo, and this bird's current breeding range includes portions of Arizona, California, western New Mexico, western Texas, southern Utah, and the Mexican states of Sonora and Zacatecas (Russell and Monson 1998). This aligns with the range proposed by the USFWS for the western distinct population of yellow-billed cuckoo (Federal Register, October 3, 2013).

Cuckoos are riparian obligates found primarily in cottonwood-willow associations. In southern Arizona however, the birds have been found breeding in mesquite bosques and in areas dominated by non-native tamarisk (Corman and Magill 2000). Cuckoos arrive on their Arizona breeding grounds in mid-June, after most other neotropical migrants. As a result, cuckoos nest later than most other birds, typically from July 6 through early August (Hamilton and Hamilton 1965, Corman and Magill 2000, Corman 2005). Nesting activities continue through August and into September, especially in southeastern Arizona

Cuckoos have an accelerated breeding cycle, with young able to climb from the nest at one week of age, and fledging within 12 days post hatch (Hamilton and Hamilton 1965). This trait makes nest-finding difficult, as the birds spend relatively little time in the natal area and tend to be secretive at the nest. Cuckoo surveyors must typically revisit study areas several times to verify the birds' presence.

Methods:

Audubon Arizona conducted surveys along three reaches – one on Arnett Creek, one on Queen Creek upstream of Superior and one on Queen Creek between Superior and Boyce Thompson Arboretum (Table 2 & Appendix A). Surveys were conducted starting on June 24, 2015 and ending on August 4, 2015. Surveyors followed the protocol described by Halterman et al. and released by the USFWS in June of 2015 (Halterman et al., 2015). The protocol instructs surveyors to use taped playback calls to elicit responses. The protocol requires that playback calls are played at 100 meter intervals unless a detection is made. If a cuckoo is detected, surveyors travel 300 meters to avoid double-counting. The protocol also requires surveyors to make four visits to predetermined sites in three prescribed survey windows. The first window is from June 15 to June 30, the second, during which two surveys are conducted, is from July 1 to July 31, and the third is from August 1 to August 15. (Table 1). Surveys must be conducted at least 10 days apart. For a site to be designated "occupied", surveyors must detect cuckoos two or more times during two or more survey periods. Areas can be further designated as containing possible, probably, and confirmed breeding cuckoos (Table 3) (Halterman et al., 2015).

In addition to surveying for cuckoos, surveyors kept an all-species list. Surveyors added species to the list both at call points and while in transit between points. Individual birds were not tallied.

Results/Discussion:

No cuckoos were detected on any of the three Arnett or Queen Creek transects during the 2015 survey season.

These drainages do not contain suitable cuckoo breeding habitat. While stretches of riparian forest dominated by native broad-leaf trees such as Goodding's willow, Freemont cottonwood, and Arizona ash exist, these stringers are too short to support breeding cuckoos. This is likely due to a very limited amount of surface water. In addition, the majority of the habitat along these drainages is confined within narrow canyons rarely exceeding 200 meters in width. The steep canyon walls result in a rapid transition from riparian habitat to upland Sonoran desert scrub and leaves little room for adjacent mesquite bosque. This arrangement results in habitat patches that are much smaller than the 80 hectare patches in which cuckoos are typically found (Halterman et al., 2015). While cuckoos can be found in patches as small as 20 hectares (Halterman et al., 2015), the patches would have to exhibit extremely robust insect productivity to support them and this level of productivity was not encountered.

[redacted]

Forty-four other species were encountered during the 2015 survey season. Species detected were great blue heron, turkey vulture, Cooper's hawk, common black-hawk, Gambel's quail, white-winged dove, mourning dove, greater roadrunner, great horned owl, black-chinned hummingbird, Anna's

hummingbird, Gila woodpecker, ladder-backed woodpecker, northern flicker, black phoebe, ash-throated flycatcher, brown-crested flycatcher, Cassin's kingbird, western kingbird, Bell's vireo, common raven, verdin, Bewick's wren, rock wren, canyon wren, cactus wren, black-tailed gnatcatcher, northern mockingbird, Lucy's warbler, yellow warbler, yellow-breasted chat, western tanager, summer tanager, northern cardinal, blue grosbeak, Abert's towhee, canyon towhee, black-throated sparrow, song sparrow, hooded Oriole, Scott's oriole, brown-headed cowbird, house finch, and lesser goldfinch. One of these species, the Abert's towhee, is listed as "sensitive" by the US Forest Service and as a 'Species of Greatest Conservation Concern" by the Arizona Game and Fish Department.

Table 1: Recommended number and timing of visits during each survey period for yellow-billed cuckoo surveys (Halterman et al, 2015)

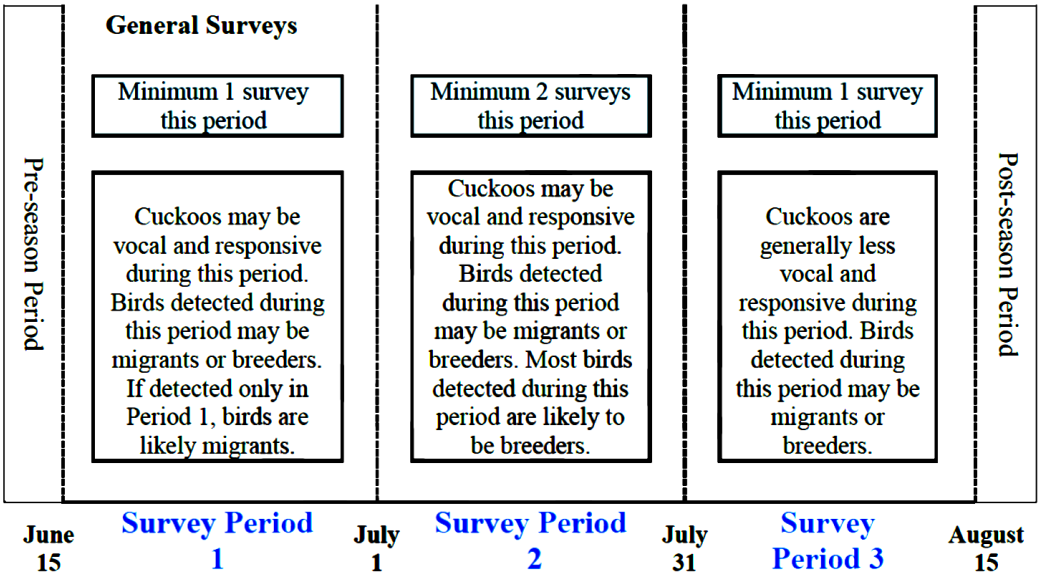

Table 2: 2013 Yellow-billed Cuckoo Transects on Queen and Arnett Creeks

Transect	UTM Start	UTM End
Arnett Creek	[redacted]	[redacted]
Lower Queen Creek	[redacted]	[redacted]
Upper Queen Creek	[redacted]	[redacted]

Table 3: Interpretation of results to estimate yellow-billed cuckoo breeding status (Halterman et al. 2015. Originally from Holmes et al. 2008 and McNeil et al. 2013)

Estimation Type	Term	Definition
Breeding Territory Estimation	Possible breeding territory (PO)	Two or more total detections in an area during two survey periods and at least 10 days apart. For example, within a certain area, one detection made during Survey Period 2 coupled with another cuckoo detection made 10 days later, also during Survey Period 2, warrants a PO territory designation.
	Probable breeding territory (PR)	Three or more total detections in an area during at least three survey periods and at least 10 days between each detection. PO territory plus YBCUs observed carrying food (single observation), carrying a stick (single observation), traveling as a pair, or exchanging vocalizations.
	Confirmed breeding territory (CO)	Observation of copulation, stick carry to nest, carrying food (multiple observations), distraction display, nest, or fledgling.
Population estimation	Minimum breeding territory	The observed number of confirmed breeding territories (CO).
Occupancy estimation	Site occupancy	Occupancy is based on two or more total survey detections during two or more survey periods and at least 10 days apart. Multiple detections in an area over an extended period of time suggest that the area may have been used for breeding.

Management Recommendations:

While much of Queen and Arnett Creeks is too canyon bound to support habitat for breeding cuckoos, multiple areas are wide enough. In these areas, specifically the eastern most portion of the Arnett Creek transect at the mouth of the canyon, the eastern portion of the Upper Queen Creek transect through the area referred to by Superior locals as "the Jungle" and the western portion of the Upper Queen Creek transect after exiting the canyon, activities that encourage the recruitment of native-broad leaf trees and adjacent mesquite bosque habitat should be supported. Similarly, activities that prevent the recruitment and survivorship of native broad-leaf trees and adjacent mesquite bosque habitat should be avoided.

Though much of the habitat surveyed does not support cuckoos, forty-four additional species were encountered including Abert's towhee – a species listed as "sensitive" by the US Forest Service and as a 'Species of Greatest Conservation Concern" by the Arizona Game and Fish Department. For this reason, activities that would alter the understory vegetation along Queen and Arnett Creeks should be avoided.

Literature Cited:

Corman, Troy E. 2005. Yellow-billed Cuckoo. In: Arizona Breeding Bird Atlas. Edited by Troy E. Corman and Cathryn Wise-Gervais. Pp. 202-203

Corman, T. E and R. T. Magill. 2000. Western yellow-billed cuckoo survey report for the 1998 and 1999 field seasons. Nongame and endangered Wildlife Program Technical Report 150. Arizona Game and Fish Department, Phoenix, Arizona.

Franzreb, K. E. 1987. Perspectives on managing riparian ecosystems for endangered bird species. Western Birds 19:3-9.

Hamilton, W.J. and M.E. Hamilton. 1965. Breeding characteristics of yellow-billed cuckoos in Arizona. Pages 405-432 in Proceedings of the California Academy of Sciences. Fourth Series.

Halterman, M.D., M.J. Johnson, J.A. Holmes and S.A. Laymon. 2015. A Natural History Summary and Survey Protocol for the Western Distinct Population Segment of the Yellow-billed Cuckoo: U.S. Fish and Wildlife Techniques and Methods, 45 p.

Milhous, R. T. 1994. Instream flows and cottonwood establishment in the Bosque del Apache reach of the Rio Grande. In: Effects of human-induced changes on hydrologic systems. Proceedings of the Annual Summer Symposium of the American Water Resources Association. Edited by R. A. Marston and V. R. Hasfurther. Pp. 535-544

Russell, S. M. and G. Monson. 1998. The Birds of Sonora. The University of Arizona Press, Tucson.

U.S. Fish and Wildlife Service. 2013. Proposed Threatened Status for the Western Distinct Population Segment of the Yellow-billed Cuckoo (Coccyzus americanus); proposed rule. October 3, 2013, Federal Register 78 (192); 61622 – 61666

U.S. Fish and Wildlife Service. 2014. Endangered and Threatened Wildlife and Plants; Determination of Threatened Status for the Western Distinct Population Segment of the Yellow-billed Cuckoo (Coccyzus americanus); final rule. October 03, 2014, Federal Register 79 (192); 59991-60038.

U.S. Fish and Wildlife Service. 2014. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Western Distinct Population Segment of the Yellow-billed Cuckoo (Coccyzus americanus); proposed rule. August 15, 2014, Federal Register 79 (158); 48458-48652.

APPENDIX B

YELLOW-BILLED CUCKOO SURVEY FORMS

Yellow Billed Cuckoo Survey Form

Site Name: **Whitlow Ranch Dam** County: **Pinal** State: **AZ**

USGS Quad Name: **Florence Junction** Elevation: **635 m**

Creek, River, Wetland, or Lake Name: **Queen Creek**

Site Coordinates: Start: E [redacted] N [redacted] UTM Zone: [redacted]

Stop: E [redacted] N [redacted] Datum: [redacted]

Ownership: **BLM X** Reclamation NPS USFWS **USFS X** Tribal State Private Other (Municipal/County)

Was site surveyed in previous year? Yes / No X / Unknown If yes, what site name was used?

Survey # Observer(s) (Last Name, First Initial)	Date (m/d/y) Survey, Time, Total Hours	Total Number of YBCUs detected	Time Detected (AM):	Detect Type: I=Incidental P=Playback A=aural V=visual B=both	Voc Type: CN=Contact CO=coo AL=alarm OT=other (describe)	Playback #: Number of times 'Kowlp' call played before YBCU responded	Behavior code	Surveyor Detection Coordinates		Distance (m)	Bearing	Cuckoo #	Corrected Coordinates	
								UTM E	UTM N				UTM E	UTM N
Survey Period #1	Date: 6/22/2015													
Observer(s):	Start: 5:05 AM													
B Jacoby, J Charest	Stop: 10:28 AM													
	Total hrs: 5 4	Total: 0												
Survey Period #2	Date: 7/8/2015													
Observer(s):	Start: 5:10 AM													
B Jacoby, G Tinsley	Stop: 10:20 AM													
	Total hrs: 5 2	Total: 0												
Survey Period #3	Date: 7/22/2015													
Observer(s):	Start: 5:17 AM													
M Blais, G Berthelette	Stop: 8:44 AM													
	Total hrs: 3 5	Total: 0												
Survey Period #4	Date: 8/4/2015													
Observer(s):	Start: 6:30 AM													
M Blais, J Gilligan	Stop: 10:00 AM													
	Total hrs: 3 5	Total: 0												
Survey Period #5	Date:													
Observer(s):	Start:													
	Stop:													
	Total hrs:	Total:												

Survey Summary: Total	# Det	#PO	#PR	#CO	#Nests found	Total Survey Hours:
YBCUs*	0	0	0	0	0	17 60

Notes (refer to Cuckoo # associated with individual detections)

*Include justification for these designations

Behavior Codes: AN = at nest, BI = brooding or incubating, CF = adult carrying food, CN = carrying nest material, COP = copulation, CP = catches prey, DD = distraction displays/defense of nesting area, EF = eats food, FL = recently fledged young of species incapable of flight, FLY = flying, FO = foraging, FS = adult carrying a fecal sac, FY = adults feeding nestlings, JUV = juvenile, NB = nest building, NE = active nest with unbroken eggs in it, NY = nest with young seen or heard in it, ON = occupied nest, PR = preening, SI = sitting, US = used, inactive nest with blue-green eggshells

Fill in the following information completely

Name of Reporting Individual: **Jim Tress** Date Report completed: **August 27, 2015**

Affiliation: **WestLand Resources, Inc** Phone #: [redacted] Email: **jtress@westlandresources.com**

USFWS Permit #: **TE-834782-3** State Permit: **SP705995**

Site Name: **Whitlow Ranch Dam**

Length of area surveyed: **45 acres** (in kilometers = km)

Did you survey the same general area during each visit to this site this year? **Yes X / No** If no, summarize in comments below

If site was surveyed last year, did you survey the same general area this year? **Yes / No / NA** If no, summarize in comments below

Overall Vegetation Characteristics: Overall, are the species in tree/shrub layer at this site comprised predominantly of (check one):

Native broadleaf plants (>75% native)		Mixed native and exotic plants (mostly native 51%-75%)	
Exotic/introduced plants (>75% exotic)		Mixed native and exotic plants (mostly exotic 51%-75%)	X

Average height of canopy (m): **5** (specify units)

Estimated Canopy Cover (percent): **65%**

Overstory Vegetation: (provide percent estimate of the following dominant species) Use <1%; 10%, 25%, 50%, 75%, 90%, 100%

<1%	Cottonwood	**10%**	Goodding's Willow		Coyote Willow		Other (specify)
90%	Tamarisk		Russian Olive		Other (specify)		Other (specify)

Average height of understory canopy (m): **1.5** (specify units)

Estimated Understory Cover (percent): **50%**

Understory Vegetation: (provide percent estimate of the following dominant species) Use <1%; 10%, 25%, 50%, 75%, 90%, 100%

	Cottonwood		Goodding's Willow		Coyote Willow	**90%**	Other (specify)	**Unknown Grass**
10%	Tamarisk		Russian Olive	**<1%**	Other (specify) **Lupine**		Other (specify)	
<1%	Baccharis		New Mexico Olive					

Was surface water or saturated soil present at or adjacent to site within 300 meters? **Yes X / No** (circle one)

Was surface water or saturated soil present at or adjacent to all patches surveyed? **Yes / No X** (circle one)

Comments. Please provide comments regarding differences between the survey patches within the site For example, if the average canopy for this site is 30% cover, but within one patch it is 60% cover - please note Also, please note significant differences between dominant overstory and understory vegetation among the patches Document these differences with photographs whenever possible Make sure to reference comments to photo number whenever available

Surveyors noted water on east side of Whitlow Ranch Dam during the first two visits.

Please provide USGS 7 5 minute quad (or similar)showing survey area to each survey form

Yellow Billed Cuckoo Survey Form

Site Name: **Lower Devils Canyon** County: **Pinal** State: **AZ**

USGS Quad Name: **Superior and Teapot Mountain** Elevation: **870 m**

Creek, River, Wetland, or Lake Name: **Devils Canyon**

Site Coordinates: Start: E [redacted] N [redacted] UTM Zone: [redacted]

Stop: E [redacted] N [redacted] Datum: [redacted]

Ownership: BLM Reclamation NPS USFWS USFS Tribal State X Private Other (Municipal/County)

Was site surveyed in previous year? Yes / No X / Unknown If yes, what site name was used?

Survey # Observer(s) (Last Name, First Initial)	Date (m/d/y) Survey, Time, Total Hours	Total Number of YBCUs detected	Time Detected (AM):	Detect Type: I=Incidental P=Playback A=aural V=visual B=both	Voc Type: CN=Contact CO=coo AL=alarm OT=other (describe)	Playback #: Number of times 'Kowlp' call played before YBCU responded	Behavior code	Surveyor Detection Coordinates		Distance (m)	Bearing	Cuckoo #	Corrected Coordinates	
								UTM E	UTM N				UTM E	UTM N
Survey Period #1	Date:													
	6/23/15- 6/24/15													
Observer(s):	Start:													
	5:39 AM/ 5:22 AM													
	Stop:													
M Blais, P Mette	9:45AM/ 8 06 AM													
	Total hrs:	Total:												
	6 8	0												
Survey Period #2	Date:													
	7/9/15- 7/10/15													
Observer(s):	Start:													
	6:00AM/ 6 05 AM													
	Stop:													
M Blais, J Gilligan	11:12 AM/ 8:22 AM													
	Total hrs:	Total:												
	7 5	0												
Survey Period #3	Date:													
	7/23/15- 7/24/15													
Observer(s):	Start:													
	5:55 AM/ 6:00 AM													
	Stop:													
B Jacoby, J Charest	10:32 AM/ 8:05 AM													
	Total hrs:	Total:												
	6 7	0												
Survey Period #4	Date:													
	8/5/15- 8/6/15													
Observer(s):	Start:													
	5:49 AM/ 6:19 AM													
	Stop:													
B Jacoby, A Chambers	10:46 AM/ 8:00 AM													
	Total hrs:	Total:												
	6 6	0												
Survey Period #5	Date:													
Observer(s):	Start:													
	Stop:													
	Total hrs:	Total:												

Survey Summary: Total	# Det	#PO	#PR	#CO	#Nests found	Total Survey Hours:
YBCUs*	0	0	0	0	0	27 60

Notes (refer to Cuckoo # associated with individual detections): **WestLand surveyed for YBCU along portions of the Lower Devils Canyon transect in 2011 and 2012.**

*Include justification for these designations

Behavior Codes: AN = at nest, BI = brooding or incubating, CF = adult carrying food, CN = carrying nest material, COP = copulation, CP = catches prey, DD = distraction displays/defense of nesting area, EF = eats food, FL = recently fledged young of species incapable of flight, FLY = flying, FO = foraging, FS = adult carrying a fecal sac, FY = adults feeding nestlings, JUV = juvenile, NB = nest building, NE = active nest with unbroken eggs in it, NY = nest with young seen or heard in it, ON = occupied nest, PR = preening, SI = sitting, US = used, inactive nest with blue-green eggshells

Fill in the following information completely

Name of Reporting Individual: **Jim Tress** Date Report completed: **August 27, 2015**

Affiliation: **WestLand Resources, Inc** Phone #: [redacted] Email: **jtress@westlandresources.com**

USFWS Permit #: **TE-834782-3** State Permit: **SP705995**

Site Name: **Lower Devils Canyon**

Length of area surveyed: **3.4 km** (in kilometers = km)

Did you survey the same general area during each visit to this site this year? **Yes X** / No If no, summarize in comments below

If site was surveyed last year, did you survey the same general area this year? Yes / No / **NA** If no, summarize in comments below

Overall Vegetation Characteristics: Overall, are the species in tree/shrub layer at this site comprised predominantly of (check one):

Native broadleaf plants (>75% native)	X	Mixed native and exotic plants (mostly native 51%-75%)	
Exotic/introduced plants (>75% exotic)		Mixed native and exotic plants (mostly exotic 51%-75%)	

Average height of canopy (m): **15** (specify units)

Estimated Canopy Cover (percent): **25%**

Overstory Vegetation: (provide percent estimate of the following dominant species) Use <1%; 10%, 25%, 50%, 75%, 90%, 100%

25%	Cottonwood	**10%**	Goodding's Willow		Coyote Willow	**25%**	Other (specify)	**Arizona sycamore**
	Tamarisk		Russian Olive	**25%**	Other (specify **Velvet ash**	**10%**	Other (specify)	**Arizona walnut**

Average height of understory canopy (m): **2** (specify units)

Estimated Understory Cover (percent): **15%**

Understory Vegetation: (provide percent estimate of the following dominant species) Use <1%; 10%, 25%, 50%, 75%, 90%, 100%

10%	Cottonwood	**10%**	Goodding's Willow		Coyote Willow	**10%**	Other (specify)	**Velvet ash**
	Tamarisk		Russian Olive	**50%**	Other (specify **Buttonbush**	**<1 %**	Other (specify)	**Arizona alder**
25%	Baccharis		New Mexico Olive					

Was surface water or saturated soil present at or adjacent to site within 300 meters? **Yes X** / No (circle one)

Was surface water or saturated soil present at or adjacent to all patches surveyed? Yes / **No X** (circle one)

Comments. Please provide comments regarding differences between the survey patches within the site For example, if the average canopy for this site is 30% cover, but within one patch it is 60% cover - please note Also, please note significant differences between dominant overstory and understory vegetation among the patches Document these differences with photographs whenever possible Make sure to reference comments to photo number whenever available

Please provide USGS 7 5 minute quad (or similar)showing survey area to each survey form

Yellow Billed Cuckoo Survey Form

Site Name: **Middle Devils Canyon** County: **Pinal** State: **AZ**

USGS Quad Name: **Superior** Elevation: **1,080 m**

Creek, River, Wetland, or Lake Name **Devils Canyon**

Site Coordinates: Start: E [redacted] N [redacted] UTM Zone: [redacted]

Stop: E [redacted] N [redacted] Datum: [redacted]

Ownership: BLM Reclamation NPS USFWS USFS Tribal State X Private Other (Municipal/County)

Was site surveyed in previous year? Yes / No X / Unknown If yes, what site name was used?

Survey # Observer(s) (Last Name, First Initial)	Date (m/d/y) Survey, Time, Total Hours	Total Number of YBCUs detected	Time Detected (AM):	Detect Type: I=Incidental P=Playback A=aural V=visual B=both	Voc Type: CN=Contact CO=coo AL=alarm OT=other (describe)	Playback #: Number of times 'Kowlp' call played before YBCU responded	Behavior code	Surveyor Detection Coordinates		Distance (m)	Bearing	Cuckoo #	Corrected Coordinates	
								UTM E	UTM N				UTM E	UTM N
Survey Period #1	Date: 6/22/2015		5:12 AM	2 A	CN	1		[redacted]	[redacted]	75	180	1	[redacted]	[redacted]
Observer(s): M Blais, P Mette	Start: 5:10 AM													
	Stop: 9:35 AM													
	Total hrs: 4 4	Total: 1												
Survey Period #2	Date: 7/8/2015													
Observer(s): M Blais, J Gilligan	Start: 5:54 AM													
	Stop: 10:34 AM													
	Total hrs: 4 7	Total: 0												
Survey Period #3	Date: 7/22/2015													
Observer(s): B Jacoby, J Charest	Start: 5:21 AM													
	Stop: 8:53 AM													
	Total hrs: 3 5	Total: 0												
Survey Period #4	Date: 8/4/2015													
Observer(s): B Jacoby, A Chambers	Start: 5:56 AM													
	Stop: 9:45 AM													
	Total hrs: 3 8	Total: 0												
Survey Period #5	Date:													
Observer(s):	Start:													
	Stop:													
	Total hrs:	Total:												

Survey Summary: Total	# Det	#PO	#PR	#CO	#Nests found	Total Survey Hours:
YBCUs*	1	0	0	0	0	16 40

Notes (refer to Cuckoo # associated with individual detections): **WestLand surveyed for YBCU along portions of the Middle Devils Canyon transect in 2011 and 2012.**

*Include justification for these designations

Behavior Codes: AN = at nest, BI = brooding or incubating, CF = adult carrying food, CN = carrying nest material, COP = copulation, CP = catches prey, DD = distraction displays/defense of nesting area, EF = eats food, FL = recently fledged young of species incapable of flight, FLY = flying, FO = foraging, FS = adult carrying a fecal sac, FY = adults feeding nestlings, JUV = juvenile, NB = nest building, NE = active nest with unbroken eggs in it, NY = nest with young seen or heard in it, ON = occupied nest, PR = preening, SI = sitting, US = used, inactive nest with blue-green eggshells

Fill in the following information completely

Name of Reporting Individual: **Jim Tress** Date Report completed: **August 27, 2015**

Affiliation: **WestLand Resources, Inc** Phone #: [redacted] Email: **jtress@westlandresources.com**

USFWS Permit #: **TE-834782-3** State Permit #: **SP705995**

Site Name: **Middle Devils Canyon**

Length of area surveyed: **1.8 km** (in kilometers = km)

Did you survey the same general area during each visit to this site this year? **Yes X** / No If no, summarize in comments below

If site was surveyed last year, did you survey the same general area this year? Yes / No / **NA** If no, summarize in comments below

Overall Vegetation Characteristics: Overall, are the species in tree/shrub layer at this site comprised predominantly of (check one):

Native broadleaf plants (>75% native)	X	Mixed native and exotic plants (mostly native 51%-75%)	
Exotic/introduced plants (>75% exotic)		Mixed native and exotic plants (mostly exotic 51%-75%)	

Average height of canopy (m): **15** (specify units)

Estimated Canopy Cover (percent): **75%**

Overstory Vegetation: (provide percent estimate of the following dominant species) Use <1%; 10%, 25%, 50%, 75%, 90%, 100%

<1 %	Cottonwood	**<1 %**	Goodding's Willow		Coyote Willow	**10%**	Other (specify)	**Arizona Sycamore**
	Tamarisk		Russian Olive	**75%**	Other (specify **Arizona Alder**	**10%**	Other (specify)	**Velvet Ash**

Average height of understory canopy (m): **2.5** (specify units)

Estimated Understory Cover (percent): **75%**

Understory Vegetation: (provide percent estimate of the following dominant species) Use <1%; 10%, 25%, 50%, 75%, 90%, 100%

	Cottonwood	**<1 %**	Goodding's Willow		Coyote Willow	**25%**	Other (specify)	**Arizona alder**
	Tamarisk		Russian Olive	**50%**	Other (specify **Buttonbush**	**10%**	Other (specify)	**Velvet ash**
<1 %	Baccharis		New Mexico Olive			**<1%**	Other (specify)	**Netleaf hackberry**
						<1%	Other (specify)	**Toxicodendron spp.**

Was surface water or saturated soil present at or adjacent to site within 300 meters? Yes **X** / No (circle one)

Was surface water or saturated soil present at or adjacent to all patches surveyed? Yes **X** / No (circle one)

Comments. Please provide comments regarding differences between the survey patches within the site For example, if the average canopy for this site is 30% cover, but within one patch it is 60% cover - please note Also, please note significant differences between dominant overstory and understory vegetation among the patches Document these differences with photographs whenever possible Make sure to reference comments to photo number whenever available

Please provide USGS 7 5 minute quad (or similar)showing survey area to each survey form

Yellow Billed Cuckoo Survey Form

Site Name: **Mineral Creek** County: **Pinal** State: **AZ**

USGS Quad Name: **Pinal Ranch and Hot Tamale Peak** Elevation: **800 m**

Creek, River, Wetland, or Lake Name: **Mineral Creek**

Site Coordinates: Start: E [redacted] N [redacted] UTM Zone: [redacted]

Stop: E [redacted] N [redacted] Datum: [redacted]

Ownership: BLM Reclamation NPS USFWS USFS Tribal State X Private Other (Municipal/County)

Was site surveyed in previous year? Yes / No X / Unknown If yes, what site name was used?

Survey # Observer(s) (Last Name, First Initial)	Date (m/d/y) Survey, Time, Total Hours	Total Number of YBCUs detected	Time Detected (AM):	Detect Type: I=Incidental P=Playback A=aural V=visual B=both	Voc Type: CN=Contact CO=coo AL=alarm OT=other (describe)	Playback #: Number of times 'Kowlp' call played before YBCU responded	Behavior code	Surveyor Detection Coordinates		Distance (m)	Bearing	Cuckoo #	Corrected Coordinates	
								UTM E	UTM N				UTM E	UTM N
Survey Period #1	Date:													
	6/23/15- 6/24/15													
Observer(s):	Start:													
	5:19 AM/ 6:35 AM													
	Stop:													
B Jacoby, J Charest	9:20 AM/ 8:50 AM													
	Total hrs:	Total:												
	6 3	0												
Survey Period #2	Date:													
	7/9/15- 7/10/15													
Observer(s):	Start:													
	6:40 AM/ 5:19 AM													
	Stop:													
B Jacoby, G Tinsley	9:47 AM/ 10:47 AM													
	Total hrs:	Total:												
	8 6	0												
Survey Period #3	Date:		7 07 AM	2 B	CN	1		[redacted]	[redacted]	20	260	1	[redacted]	[redacted]
	7/23/15- 7/24/15		7:49 AM	2 A	CN	2		[redacted]	[redacted]	50	190	2	[redacted]	[redacted]
Observer(s):	Start:		7:49 AM	2 A	CN	2		[redacted]	[redacted]	75	190	3	[redacted]	[redacted]
	5:45 AM/ 7:20 AM													
	Stop:													
M Blais, G Berthelette	9:42 AM/ 9:42 AM													
	Total hrs:	Total:												
	6 3	3												
Survey Period #4	Date:		8 56 AM	2 B	CN	1		[redacted]	[redacted]	75	45	4		
	8/5/15- 8/6/15													
Observer(s):	Start:													
	6:15 AM/ 6:30 AM													
	Stop:													
M Blais, J Gilligan	11 03 AM/ 9:57 AM													
	Total hrs:	Total:												
	8 3	1												
Survey Period #5	Date:													
Observer(s):	Start:													
	Stop:													
	Total hrs:	Total:												

Survey Summary: Total YBCUs*	# Det	#PO	#PR	#CO	#Nests found	Total Survey Hours:
	4	0	0	0	0	29 50

Notes (refer to Cuckoo # associated with individual detections)

WestLand surveyed for YBCU along the Mineral Creek transect in 2011.

All three detections during the third visit occurred on 7/23/15

Detection during fourth visit occurred on 8/6/15

* Include justification for these designations

Behavior Codes: AN = at nest, BI = brooding or incubating, CF = adult carrying food, CN = carrying nest material, COP = copulation, CP = catches prey, DD = distraction displays/defense of nesting area, EF = eats food, FL = recently fledged young of species incapable of flight, FLY = flying, FO = foraging, FS = adult carrying a fecal sac, FY = adults feeding nestlings, JUV = juvenile, NB = nest building, NE = active nest with unbroken eggs in it, NY = nest with young seen or heard in it, ON = occupied nest, PR = preening, SI = sitting, US = used, inactive nest with blue-green eggshells

Fill in the following information completely

Name of Reporting Individual: **Jim Tress** Date Report completed: **August 27, 2015**

Affiliation: **WestLand Resources, Inc** Phone #: [redacted] Email: **jtress@westlandresources.com**

USFWS Permit #: **TE-834782-3** State Permit: **SP705995**

Site Name: **Mineral Creek**

Length of area surveyed: **4.5 km** (in kilometers = km)

Did you survey the same general area during each visit to this site this year? **Yes X** / No If no, summarize in comments below

If site was surveyed last year, did you survey the same general area this year? Yes / No / **NA** If no, summarize in comments below

Overall Vegetation Characteristics: Overall, are the species in tree/shrub layer at this site comprised predominantly of (check one):

Native broadleaf plants (>75% native)	X	Mixed native and exotic plants (mostly native 51%-75%)	
Exotic/introduced plants (>75% exotic)		Mixed native and exotic plants (mostly exotic 51%-75%)	

Average height of canopy (m): **15** (specify units)

Estimated Canopy Cover (percent): **80%**

Overstory Vegetation: (provide percent estimate of the following dominant species) Use <1%; 10%, 25%, 50%, 75%, 90%, 100%

10%	Cottonwood	**25%**	Goodding's Willow		Coyote Willow	**10%**	Other (specify)	**Arizona sycamore**
	Tamarisk		Russian Olive	**50%**	Other (specify) **Velvet ash**	**<1%**	Other (specify)	**Arizona walnut**
						<1%	Other (specify)	**Arizona alder**

Average height of understory canopy (m): **3.5** (specify units)

Estimated Understory Cover (percent): **60%**

Understory Vegetation: (provide percent estimate of the following dominant species) Use <1%; 10%, 25%, 50%, 75%, 90%, 100%

<1%	Cottonwood	**<1%**	Goodding's Willow		Coyote Willow	**<1%**	Other (specify)	**Arizona sycamore**
	Tamarisk		Russian Olive	**90%**	Other (specify) **Velvet ash**		Other (specify)	
<1%	Baccharis		New Mexico Olive					

Was surface water or saturated soil present at or adjacent to site within 300 meters? **Yes X** / No (circle one)

Was surface water or saturated soil present at or adjacent to all patches surveyed? **Yes X** / No (circle one)

Comments. Please provide comments regarding differences between the survey patches within the site For example, if the average canopy for this site is 30% cover, but within one patch it is 60% cover - please note Also, please note significant differences between dominant overstory and understory vegetation among the patches Document these differences with photographs whenever possible Make sure to reference comments to photo number whenever available

The first ~1/3 of the transect is narrow, and generally surrounded by steep canyon walls. The drainage botton in this area consists of mostly bedrock and contains little riparian vegetation. The remainder of the transect is more open and contains relatively dense riparian vegetation.

Please provide USGS 7 5 minute quad (or similar)showing survey area to each survey form

APPENDIX C

PHOTOGRAPHS OF REPRESENTATIVE VEGETATION AND HABITAT

Photo 1.

Photograph taken along dirt road within the Whitlow Ranch Dam survey area. Exotic saltcedar *(Tamarix* spp.*)* is the dominant overstory species. Interspersed Goodding's willow (*Salix gooddingii*) and Fremont's cottonwood (*Populus fremontii*).

Photo 2.

Photograph depicting relatively dense stand of saltcedar within the Whitlow Ranch Dam survey area. Unidentified grass species and saltcedar are the dominant understory species throughout the site, though baccharis (*Baccharis* spp.) and Lupine (*Lupinus* spp.) are also present.

Photo 3.

Photograph taken along the Queen Creek drainage within the Whitlow Ranch Dam survey area where Goodding's willow, saltcedar, and Fremont's cottonwood are the dominant species.

Photo 4.

Photograph taken along the Middle Devils Canyon transect. Arizona alder (*Alnus oblongifolia*), Arizona sycamore (*Platanus wrightii*), velvet ash (*Fraxinus velutina*), and buttonbush (*Cephalanthus occidentalis*) are the dominant species.

Photo 5.

Photograph of alder grove taken along the Middle Devils Canyon transect.

Photo 6.

Photograph of relatively dense riparian vegetation lining the Middle Devils Canyon drainage.

Photo 7.

Photograph taken along the Lower Devils Canyon transect. Arizona sycamore, Fremont's cottonwood, velvet ash, buttonbush, and baccharis are the dominant species.

Photo 8.

Photograph of riparian vegetation along the Lower Devils Canyon transect. Arizona sycamore is the dominant species in this area.

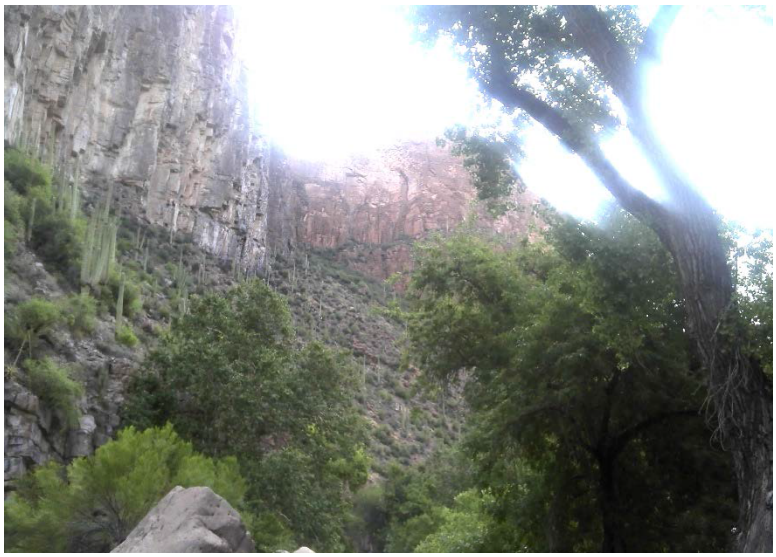

Photo 9.

Photograph taken along the Lower Devils Canyon transect. Upland vegetation and steep canyon walls shown in background.

Photo 10.

Photograph of riparian vegetation along the Mineral Creek transect. Velvet ash, Goodding's willow, Fremont's cottonwood, and Arizona sycamore are the dominant species. Velvet mesquite, Arizona walnut, baccharis, and Arizona alder are also present.

Photo 11.

Photograph of riparian vegetation along dry portion of the Mineral Creek transect.

Photo 12.

Photograph of relatively dense riparian vegetation lining the Mineral Creek transect.