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Southwestern Willow Flycatcher Surveys along the Las Vegas Wash, Clark County, Nevada, 2015



October 2015



SOUTHERN NEVADA
WATER AUTHORITY

Las Vegas Wash

Coordination
Committee



**Southwestern Willow Flycatcher Surveys along the Las
Vegas Wash, Clark County, Nevada, 2015**

**SOUTHERN NEVADA WATER AUTHORITY
Las Vegas Wash Project Coordination Team**

Prepared for:

**U.S. Fish and Wildlife Service
Southern Nevada Field Office**

and

Las Vegas Wash Coordination Committee

Prepared by:

**Deborah Van Dooremolen
Southern Nevada Water Authority
Las Vegas Wash Project Coordination Team
P.O. Box 99956
Las Vegas, Nevada 89193-9956**

October 2015

ABSTRACT

The Las Vegas Wash Coordination Committee (LVWCC), a 29-member stakeholder group, is working to stabilize and enhance the Las Vegas Wash (Wash), the channel that drains flows from the Las Vegas Valley to Lake Mead at Las Vegas Bay. The Wash also flows through the 2,900-acre Clark County Wetlands Park (Wetlands Park). As a result of informal Section 7 consultation with the U.S. Fish and Wildlife Service, the Southern Nevada Water Authority the lead agency of the LVWCC, began annual surveys to determine the occurrence of the southwestern willow flycatcher (*Empidonax traillii extimus*) within the Wetlands Park. These surveys were conducted by permitted consultants from 1998 through 2009 (Southwest Wetlands Consortium 1998; SWCA 1999, 2000, 2001, 2002, 2003, 2005, 2006, 2007, 2008, 2009a, 2009b). Permitted staff from the Las Vegas Wash Project Coordination Team, the implementation arm of the LVWCC, have performed the surveys since (Van Dooremolen 2010, 2011, 2012, 2014a, 2014b). The surveys are conducted using the standard protocol (Sogge et al. 2010), and follow the five-survey protocol recommended for projects.

Surveys for 2015 began May 20 and were completed July 15. A total of six migrant willow flycatchers were detected: one during the first survey, four during the second survey, and one during the third survey. No birds were detected during the fourth and fifth surveys.

The reduction in the number of migrants detected in 2015 compared to the past few years may be timing related. The surveys may have simply missed the migrant wave this year. The decline may also be the result of habitat reduction. Approximately eight fewer acres were surveyed in 2015 compared to 2014, a reduction of more than 10%. The decline was largely to native habitat that was cleared in preparation for weir construction and expansion, although these projects are now on hold. More than eight acres were cleared during this work, but due to changes in beetle defoliation, more tamarisk habitat was surveyed in 2015 than in 2014. Habitat quality was also reduced in the study area, with the exception of Route 1 (the Wetlands Park Nature Preserve), which currently offers the highest quality habitat in the study area. In addition, approximately 60 acres of tamarisk were cleared within and adjacent to the project area. Although this habitat was considered unsuitable or of poor quality, the loss, combined with the reduction in native vegetation, may have impacted the occurrence of migrants.

When surveys first began in 1998, potentially suitable nesting habitat was dominated by tamarisk (*Tamarix ramosissima*) and the hydrology was poor. It is now dominated by native riparian species, due to the tamarisk removal, revegetation and hydrological changes associated with the stabilization project. While southwestern willow flycatchers nest in both tamarisk- and native-dominated riparian habitats if the conditions are right, tamarisk-dominated habitat in the Colorado River watershed is under threat by the spread of the tamarisk leaf beetle (*Diorhabda* spp.). The continued defoliation of tamarisk at the Wash is evidence of this. With the decline in tamarisk-dominated nesting habitat, native-dominated habitats, such as the Wash, may see increased use by the species. However, the reduction in native habitat that has occurred may lessen the Wash's appeal.

Annual surveys for southwestern willow flycatchers should continue in order to comply with informal Section 7 consultation measures.

ACKNOWLEDGEMENTS

I thank the Bureau of Reclamation for providing partial funding to the Southern Nevada Water Authority for this project under assistance agreement number R09AP30017. I also extend my thanks to Nicholas Rice, Timothy Ricks, Keiba Crear, Jason Eckberg, Signa Gundlach, Nathan Harper, Rachel Beckworth, Richard Lyman, and David Syzdek for assisting with surveys. Finally, I thank the Las Vegas Wash Coordination Committee for their continued support for wildlife monitoring and the implementation of the Las Vegas Wash Comprehensive Adaptive Management Plan and the Las Vegas Wash Wildlife Management Plan. These activities have been conducted by Deborah Van Dooremolen under permit no. TE-148556-3 (expires May 24, 2018), Nicholas Rice under permit no. TE-64580A-0 (expires August 31, 2015; renewal in process) and Timothy Ricks under permit no. TE-67397A-0 (expires August 30, 2015; renewal in process) as issued by the U.S. Fish and Wildlife Service, Sacramento, California.

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1.0 BACKGROUND

The Las Vegas Wash (Wash) is the primary drainage channel for the Las Vegas Valley carrying highly treated wastewater, urban runoff, shallow groundwater, and storm runoff into Lake Mead at Las Vegas Bay (Figure 1). Although originally an ephemeral stream, the Wash began supporting perennial flows in the 1950s when the discharge of treated wastewater into the channel was initiated. At first these perennial flows created a lush wetland along the channel. However, the volume of flows in the Wash continued to increase with the increasing urban population, and erosion from the increased flow and from storm events began to drain the wetlands and carry thousands of tons of sediment to Lake Mead. By the late 1990s, headcutting had deeply incised the channel and reduced the wetlands by approximately 90% from their peak extent, leaving less than 200 acres.

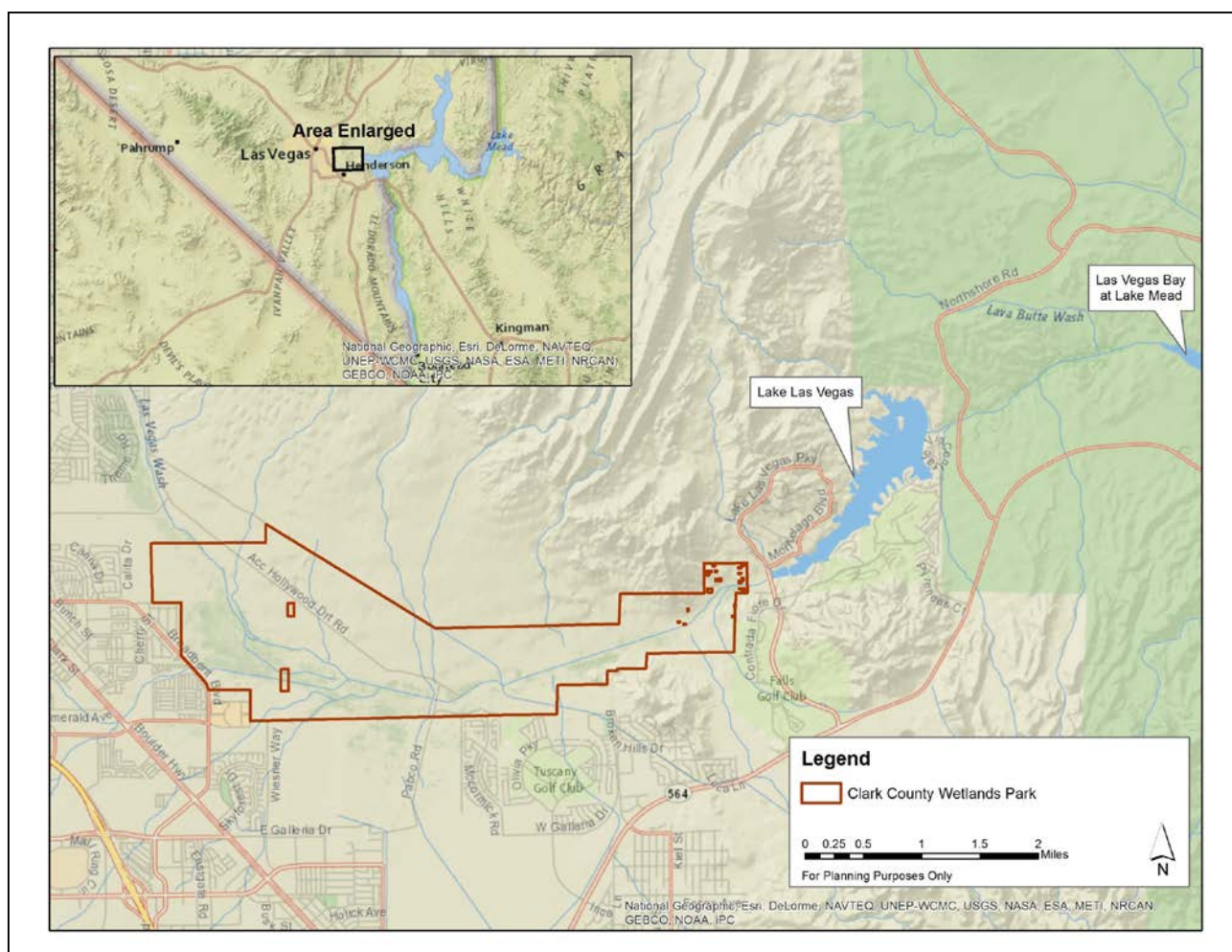


Figure 1. Las Vegas Wash location and general study area map.

In 1998, the Las Vegas Wash Coordination Committee (LVWCC), a now 29-member community stakeholder group, was created to address the degradation of the Wash. The group developed and is implementing the Las Vegas Wash Comprehensive Adaptive Management Plan to stabilize the Wash and restore its ecological functions. Stabilization and enhancement

activities, which include the construction of 21 erosion control structures (weirs) and extensive revegetation, will help deter further erosion and reduce the amount of sediment being deposited in Lake Mead. As of May 2015, 18 permanent weirs were in place.

Weir construction impacts habitat in the Wash. Vegetation must be cleared from each site to allow for vehicle access and for the footprint of the weir itself. Especially in the early years of the project, much of the vegetation present at each site was non-native tamarisk (*Tamarix ramosissima*). Once construction is over, a variety of wetland, riparian, and upland revegetation occurs. The weirs create more favorable conditions for riparian and wetland vegetation along the Wash, so the short-term habitat loss created by construction generally leads to long-term gains. The Wash flows through the 2,900-acre Clark County Wetlands Park (Wetlands Park), and Clark County is also removing tamarisk and planting riparian and wetland vegetation within the study area as it develops park facilities.

The southwestern willow flycatcher (*Empidonax traillii extimus*) is a small songbird that breeds in riparian habitat in the Southwest, and is a federally endangered subspecies of the willow flycatcher. It historically preferred dense willow (*Salix* spp.) habitat throughout its range, but as this habitat declined in the twentieth century, the southwestern willow flycatcher adapted to the non-native tamarisk that had largely replaced its preferred habitat.

As a result of informal Section 7 consultation with the U.S. Fish and Wildlife Service on the proposed development of the park and associated erosion control structures, the Southern Nevada Water Authority (SNWA), the lead agency of the LVWCC, began annual surveys to determine the occurrence of the southwestern willow flycatcher within the Wetlands Park. SNWA contracted with permitted consultants to conduct these surveys from 1998 through 2009 (Southwest Wetlands Consortium 1998; SWCA 1999, 2000, 2001, 2002, 2003, 2005, 2006, 2007, 2008, 2009a, 2009b). Permitted staff from the Las Vegas Wash Project Coordination Team (the implementation arm of the LVWCC) have performed the surveys since (Van Dooremolen 2010, 2011, 2012, 2014a, 2014b). This document reports the results from the 2015 surveys for southwestern willow flycatcher along the Wash.

2.0 METHODS

2.1 Study Area

The general study area consists of the Wetlands Park and an approximately seven-mile reach of the Wash contained within its boundaries. Select areas located immediately adjacent to the park's boundaries are also included if permission to survey is obtained from the landowner. Only potentially suitable nesting habitat is surveyed. For the purposes of this study, potentially suitable nesting habitat is defined as areas with dense to moderately dense riparian vegetation, either bordering or containing surface water or saturated soils. Riparian vegetation in the study area consists of both native and non-native species. Native species primarily include Goodding willow (*S. gooddingii*), sandbar willow (a.k.a. coyote willow; *S. exigua*), cottonwood (*Populus fremontii*), and seep willow (*Baccharis salicifolia*). Tamarisk is the dominant non-native species.

Four survey routes were established to cover all potentially suitable habitat within the Wash (Figure 2). The routes are adjusted each year to accommodate changes in habitat and access due to construction and other factors. In 2015, Route 1 encompassed the Wetlands Park Nature Preserve (Nature Preserve). A portion of Monson Channel bordering the preserve was also included, as was a small patch upstream of Upper Diversion Weir. The route covered 20 acres. The Nature Preserve includes constructed wetland ponds and small streams lined with mostly native riparian vegetation. Vegetation on Monson Channel is dominated by tamarisk. Route 2 is located on the north bank of the Wash, and begins upstream of Pabco Road Weir and continues downstream to the Lake Las Vegas mitigation wetlands. In 2015, it covered 18 acres of habitat. Route 3 is located on the south bank of the Wash; it begins near the eastern boundary of the Wetlands Park at Powerline Crossing Weir and continues upstream to Pabco Road Weir, covering 11 acres of habitat in 2015. Both Routes 2 and 3 are located in the largely stabilized portion of the Wash, where several weirs have been constructed and significant revegetation has occurred. Route 4 is also on the south bank and in 2015, included two revegetation sites just above Pabco Road Weir and two patches of tamarisk north of Sam Boyd Stadium; it covered 12 acres of habitat.

2.2 Survey Protocol

Surveys were conducted using the standard protocol developed by Sogge et al. (2010). Surveys began in the hour before sunrise and were completed by 10:30 a.m. Call-playback was used to elicit responses from any nearby willow flycatchers. Surveyors broadcast the species' song (fitz-bew) and calls with MP3 players attached to portable speakers. They walked through potentially suitable nesting habitat broadcasting the vocalizations approximately every 100-130 feet following a period of silent listening. Vocalizations were broadcast for approximately 20 seconds at each stop, followed by 1-2 minutes of listening for a response. Broadcasts were conducted from inside habitat patches where possible, but occasionally had to occur from the habitat edge due to concerns regarding safe access (e.g., adjacency to steep cliffs, etc.).

Each route was surveyed by a team of 2-3 people. Each team was composed of a minimum of one of the following permitted individuals: Deborah Van Dooremolen (TE-148556-3), Nicholas Rice (TE-64580A-0), or Timothy Ricks (TE-67397A-0). The five-survey protocol for projects was used

Survey Period	1st Survey	2nd Survey
First (May 15-31)	May 20/21	n/a
Second (June 1-24)	June 3/4	June 17/18
Third (June 25-July 17)	July 6/7	July 14/15

Table 1. Southwestern willow flycatcher survey dates for the study area in 2015.

(Sogge et al. 2010), which includes one survey in the first survey period, two surveys in the second survey period and two surveys in the third survey period (Table 1). During all periods, Route 2 was surveyed on the first day, and Routes 1, 3 and 4 were surveyed on the second day. Route 4 was either completed consecutively with Route 1 or Route 3 or was split between them, with the crew completing surveys for Route 3 covering the two revegetation sites and the crew performing surveys for Route 1 surveying the patches of tamarisk. The route is still reported separately for consistency with prior years.

The southwestern subspecies is the only willow flycatcher that nests in southern Nevada. However, other non-listed subspecies of the willow flycatcher may pass through the area during migration, and the different subspecies are virtually indistinguishable in the field. Birds

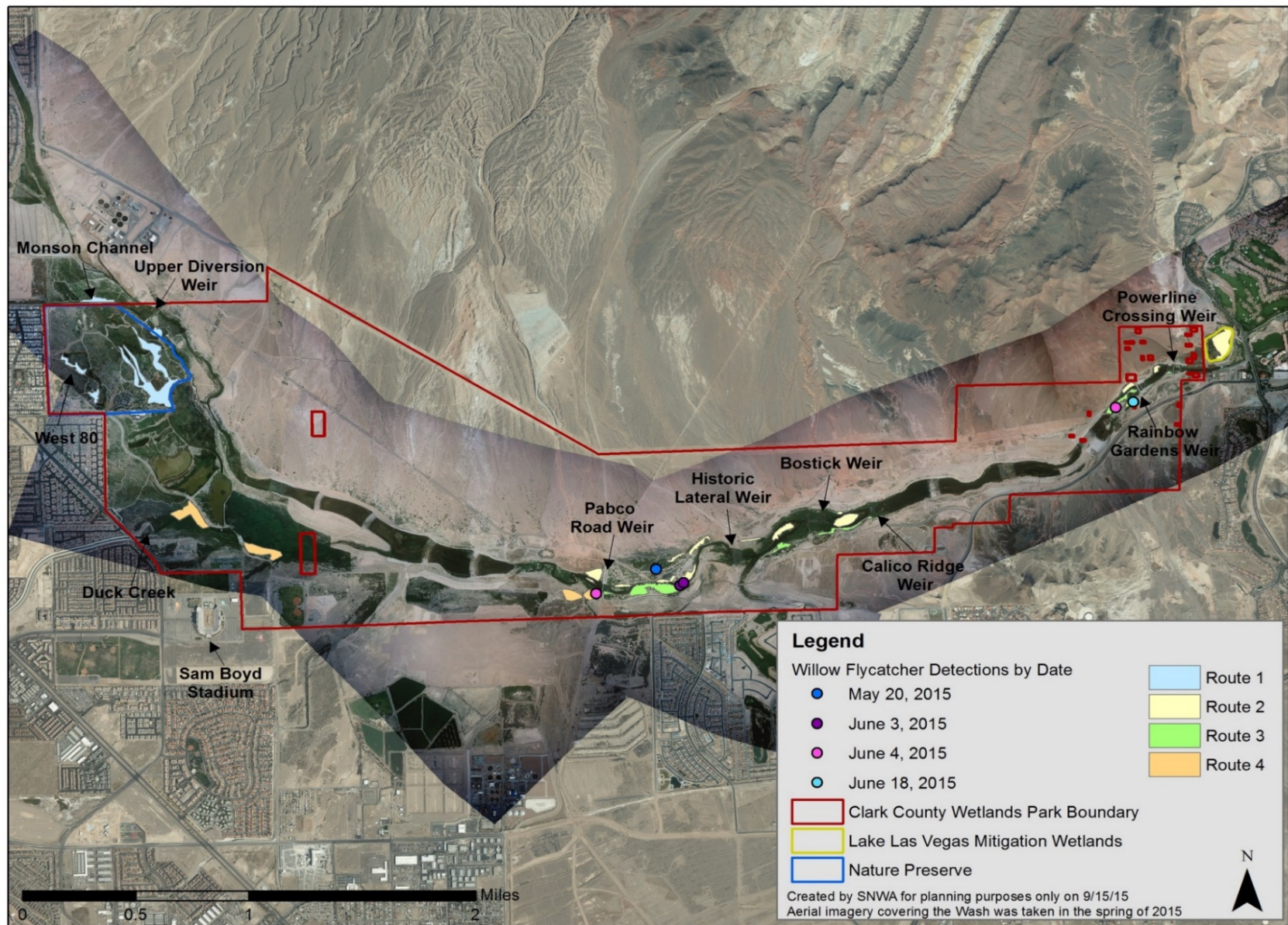


Figure 2. Survey routes and willow flycatcher detection locations.

discovered during the first and second survey periods may simply be migrating through and cannot be determined to be of the federally endangered subspecies. The third survey period (June 25-July 17) begins after the known migration period, so any willow flycatchers detected then can be considered residents, and thus of the southwestern subspecies (Sogge et al. 2010).

3.0 RESULTS

3.1 Survey Results

A total of six migrant willow flycatchers were detected in 2015: one during the first survey, four during the second survey, and one during the third survey (Table 2). None of the birds were seen so banding status could not be determined. Survey datasheets are provided in Appendix A and GPS coordinates and additional detection information are provided in Appendix B.

Route	Survey Date	Status	Location (refer to Figure 2)
2	May 20, 2015	Migrant	S111 revegetation site
2	June 3, 2015	Migrant	Upstream Historic Lateral North and South Bank revegetation sites
2	June 3, 2015	Migrant	Upstream Historic Lateral North and South Bank revegetation sites
3	June 4, 2015	Migrant	Rainbow Islands revegetation site
4	June 4, 2015	Migrant	Upstream Pabco South revegetation site
3	June 18, 2015	Migrant	Rainbow Islands revegetation site

Table 2. Willow flycatcher detections in 2015.

3.1.1 Route 1

No willow flycatchers were detected on this route.

3.1.2 Route 2

Three migrant willow flycatchers were detected on Route 2: 1 on May 20 and 2 on June 3 (Figure 2; Table 2). On May 20, a migrant willow flycatcher was detected in a patch of mesquite (*Prosopis* spp.) with some tamarisk in the S111 revegetation site. The bird fitz-bewed a few times in response to the broadcast and then was silent. Two migrants were detected in the Upstream Historic Lateral North and South Bank revegetation sites on June 3. The first was singing as the field crew approached the area, likely in response to their broadcast from the prior calling station. It fitz-bewed from a patch of Goodding willows on the south bank. Then a second bird began to sing further downstream. The two countersang for several minutes. As they did, they moved to the sandbar and Goodding willows on the north bank and then one moved back to the south bank.

3.1.3 Route 3

Two migrants were detected on Route 3: one on June 4 and one on June 18 (Figure 2; Table 2). On June 4, a willow flycatcher was found in the Rainbow Islands revegetation site. The bird responded during the broadcast and continued to fitz-bew and breed for a few minutes and then whitted for several more from a large Goodding willow with sandbar willows and common reed in the understory. On June 18, a willow flycatcher was again identified in the Rainbow Islands

revegetation site, singing from a Goodding willow approximately 300-400 feet from the detection location of the prior survey. A follow-up visit was conducted following the second detection (in addition to the remaining two surveys), but no more willow flycatcher activity was observed, so the birds were concluded to be migrants.

3.1.4 Route 4

One willow flycatcher was detected along this route on June 4. It was heard singing from the sandbar willows along the bank of the Upstream Pabco South revegetation site. The bird only fitz-bewed a few times before falling silent.

3.2 Observations on Habitat Quality

3.2.1 Route 1

Potentially suitable nesting habitat remained of moderate quality in the Nature Preserve, similar to 2014, and the overall extent of the habitat was unchanged. The site has dense sandbar willow, other shrubs and emergents in the understory, and Goodding willow and cottonwood above. The densest and widest patches occur along the small channels that feed water to a series of constructed wetland ponds. The density and width of the habitat ringing the ponds themselves is generally thinner. A few areas of tamarisk still remain, including one small stand adjacent to the lower pond (Vern's Pond) and a thin stringer along the northern border of the Nature Preserve, along Monson Channel. While other tamarisk in the study area had experienced significant defoliation by the tamarisk leaf beetle (*Diorhabda* spp.) in 2014, this tamarisk was largely unaffected during that survey season. That trend reversed in 2015, with the tamarisk of Route 1 being among the first defoliated. The habitat quality of the area along Monson Channel (Figure 2), which has always been considered suboptimal for nesting, declined further due to this defoliation. As a result, only a small portion of the channel was surveyed. The tamarisk adjacent to Vern's Pond was partially cleared earlier in the year. This, coupled with the early defoliation by the beetle and overall dryness of the stand made its quality too poor for surveys.

Trees and shrubs in the few acres that burned in March of 2014 were beginning to resprout, with the riparian zones showing more regrowth than the mesquites (as would be expected). None had recovered to the point where they offered suitable habitat, but should within the next few years. The burn area included the northwestern end of the patch inhabited by the resident southwestern willow flycatcher in 2013 (Van Dooremolen 2014).

Habitat along the West 80 (Figure 2) was added to the survey in 2015. The West 80 has been developed for several years now, but the habitat is just reaching maturity. Even so, the riparian zone along the feeder channel and ponds is much thinner than that in older portions of the Nature Preserve. In addition, a small native patch upstream of the Upper Diversion Weir (Figure 2) was surveyed for the first time.

3.2.2 Routes 2 and 3

Routes 2 and 3 have similar habitat, as the two routes are on opposite sides of the Wash channel. Habitat extent and quality declined in 2014. Approximately 14 fewer acres were surveyed, the majority of which was native habitat that was cleared in preparation for the expansion of the Historic Lateral Weir, which has now been put on hold. This had been some of the best quality

habitat along the two routes. The majority of the current potentially suitable nesting habitat is found in the approximately 1.5-mile reach from Pabco Road Weir to Calico Ridge Weir (Figure 2) and is dominated by natives since the reach has undergone stabilization and revegetation. The habitat is of fair to moderate quality following the loss of the cleared areas. Patch sizes are small (typically 1-5 acres) and consist of sandbar and Goodding willow, cottonwood, and some seep willow. In wetter areas, common reed (*Phragmites australis*) and cattails (*Typha domingensis*) form the understory.

Downstream of Calico Ridge Weir, habitat is largely limited to the revegetation site just above Rainbow Gardens Weir and the Lake Las Vegas mitigation wetlands (Figure 2). Willows in the revegetation site above Rainbow Gardens Weir were thinned somewhat in the winter to improve flood flow conveyance. Despite this thinning, two willow flycatchers were detected at the site, likely due to the reduction in forested habitat elsewhere along the channel. However, this habitat has been reduced even more now; the site was cleared in September of 2015 in an effort to improve hydrology around a U.S. Geological Survey gauge, and to further improve flood flow conveyance. Habitat quality at the mitigation wetlands, just east of the Wetlands Park was of moderate quality, similar to 2014. A stand of tamarisk downstream of Powerline Crossing Weir surveyed in prior years was defoliated by the tamarisk leaf beetle early in the season and did not recover while surveys were ongoing. No other stands remain along the channel.

3.2.3 Route 4

Habitat along Route 4 was of poor to fair quality, declining from 2014. However, the amount of habitat surveyed increased by approximately six acres due to changing defoliation by the tamarisk leaf beetle. Two stands of tamarisk in the Duck Creek drainage (to the north and northeast of Sam Boyd Stadium [Figure 2]) were infested with larvae but remained green enough throughout the season to merit surveying - all of the tamarisk along this route had been so extensively defoliated in 2014 that none of it was worth surveying that year. Two other stands, upstream of Pabco Road Weir, were cleared in the winter in preparation for the construction of the Sunrise Mountain Weir, but only the edges of these stands that abutted the Wash or revegetation sites had been surveyed in the past as the interiors were dry.

One of three revegetation sites upstream of Pabco Road Weir was lost: Upstream Pabco South Lower Plateau. The site was cleared as part of the preparation for the construction of the Sunrise Mountain Weir; however, that project has now been put on hold for the foreseeable future. This loss is significant; in 2008, the Upstream Pabco South Lower Plateau revegetation site hosted the first known southwestern willow flycatcher breeding territory on the Wash. (The bird was unsuccessful in attracting a mate and departed after 34 days, but had been banded beforehand.) The Upstream Pabco South Upper Plateau site exists just to the south but is dominated by mesquites and offers little to no understory. The Upstream Pabco South revegetation site, just upstream of the Pabco Road Weir (Figure 2), is small and isolated now that the Lower Plateau site has been cleared, but does have a stand of sandbar willow (there is also a small stand of tamarisk on the site, but it was defoliated by the beetle for most of the survey season). A willow flycatcher was detected in the willows in 2015.

4.0 DISCUSSION AND RECOMMENDATIONS

4.1 Discussion

With just six willow flycatchers, 2015 represents the lowest number of migrants detected since 2010 (Table 3). This reduction in numbers could be related to the loss of habitat within the study area, but it could also be timing related. Migrants can move through areas in waves. Waves of willow flycatcher migrants have been detected periodically over the years, with large numbers of detections occurring in a single survey, such as in 2011, 2012 and 2014 (Van Dooremolen 2011, 2012, 2014b). Surveys in 2015 may have simply missed the wave.

Although no territorial males were observed this year, a few residents have been recorded since 2007, showing the potential for the study area to host breeding pairs. Established nesting colonies occur within just 40 miles, at Overton, Nevada (McCleod and Pellegrini 2014), and the Wash's 2008 resident southwestern willow flycatcher was re-sighted at Overton in 2009 (McCleod and Koronkiewicz 2010), showing the potential for birds to move to different sites from season to season.

Approximately eight fewer acres were surveyed in 2015 compared to 2014, which is a reduction of more than 10%. The decline in potentially suitable nesting habitat was largely native vegetation that was cleared in preparation for weir construction and expansion, although these projects are now on hold. More than eight acres were cleared during this work, but due to changes in beetle defoliation from 2014, more tamarisk habitat was surveyed in 2015. Habitat quality was also reduced, with the exception of Route 1 which currently offers the highest quality habitat in the study area.

It should also be noted that in addition to the clearing of select areas of native habitat, approximately 20 acres of tamarisk were cleared within the project area (primarily just above Pabco Road Weir) and about 40 acres were cleared by the Clark County Water Reclamation District (CCWRD) just upstream of the Wetlands Park boundary, on their property. Only a few acres of the stands near Pabco had been surveyed in recent years and the CCWRD stand had not been surveyed since 2012. These areas were considered poor to unsuitable habitat for nesting southwestern willow flycatchers as their interiors were dry, and only a small portion of the stands bordered the Wash. In addition, had the stands remained in place, they may very well have been defoliated by the tamarisk leaf beetle, as they were in 2014, providing even less habitat value.

Year	Migrants	Residents
1998	2	0
1999	0	0
2000	7	0
2001	0	0
2002	2	0
2003	2	0
2004	16	0
2005	0	0
2006	2	0
2007	0	1
2008	7	1*
2009	3	0
2010	1	0
2011	15	1
2012	13	0
2013	10	1*
2014	25	0
2015	6	0

* bird on breeding territory for >30 days

Table 3. Summary of survey results, 1998-2015. Migrants (subspecies undetermined) were detected during the first and/or second survey period. Residents were detected during the third survey period and are considered to be of the endangered southwestern subspecies.

The point is raised because, between the native vegetation and the tamarisk, more than 70 acres of treed habitat were cleared from within and immediately adjacent to the study area. The overall loss of forested habitat may have impacted the occurrence of migrant willow flycatchers. While no residents had ever been detected in the cleared tamarisk, a few migrants had been over the years: two in a stand on the south bank upstream of Pabco Road Weir (SWCA 2000 and 2005) and one in the CCWRD stand (SWCA 2007). It is unknown at this time how much of the cleared areas will be revegetated with riparian trees and shrubs in the future.

When southwestern willow flycatcher surveys first began in the study area in 1998, potentially suitable nesting habitat was dominated by tamarisk and the hydrology was poor. It is now dominated by native riparian species, due to the tamarisk removal, revegetation and hydrological changes associated with the stabilization project. This shift appears to have positively impacted willow flycatcher occurrence when compared with the early years of these surveys. In the past ten years, there have been no zero-detection surveys, two southwestern willow flycatchers established breeding territories in native-dominated sites, and two other detections occurred that were concluded to be residents of the endangered subspecies (Table 3).

While southwestern willow flycatchers nest in both tamarisk- and native-dominated riparian habitats if the conditions are right, tamarisk-dominated habitat in the Colorado River watershed is under threat by the spread of the tamarisk leaf beetle. The Wash is evidence of this; the beetle first appeared in the study area in 2012, and since 2014, widespread defoliation has occurred along the channel each summer (Van Dooremolen 2012, 2014b). With the decline in tamarisk-dominated nesting habitat, native-dominated habitats, such as the Wash, may see increased use by the species. However, the reduction in native habitat that has occurred may lessen the Wash's appeal.

As in previous years, it should be noted that although the Wash has the potential to host breeding pairs, it could become a population sink as brown-headed cowbirds are among the most common birds in the study area during the breeding season (Appendix C). The species is a known brood parasite of the southwestern willow flycatcher. While brown-headed cowbirds are no longer considered to be a significant threat, they can still impact flycatcher nest success, "especially at small and isolated breeding sites" (Sogge et al. 2010), such as the Wash would likely be.

4.2 Recommendations

Given the continued detections of migrants, recent detections of residents and the close proximity of established breeding colonies, annual surveys for southwestern willow flycatchers should continue in order to better determine the occurrence of the species within the study area and comply with informal Section 7 consultation measures.

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Appendix A

Survey Datasheets

Willow Flycatcher (WIFL) Survey and Detection Form (revised April, 2010)

Site Name: Las Vegas Wash, Route 1 State: NV County: Clark
 USGS Quad Name: _____ Elevation: 496 (meters)
 Creek, River, or Lake Name: Las Vegas Wash

Is copy of USGS map marked with survey area and WIFL sightings attached (as required)? Yes X No _____
 Survey Coordinates: Start: E 678148 N 3997000 UTM Datum: NAD83 (See instructions)
 Stop: E 677734 N 3997012 UTM Zone: 11N

If survey coordinates changed between visits, enter coordinates for each survey in comments section on back of this page.

****Fill in additional site information on back of this page****

Survey # Observer(s) (Full Name)	Date (m/d/y) Survey Time	Number of Adult WIFLs	Estimated Number of Pairs	Estimated Number of Territories	Nest(s) Found? Y or N If Yes, number of nests	Comments (e.g., bird behavior; evidence of pairs or breeding; potential threats [livestock, cowbirds, <i>Diorhabda</i> spp.]). If <i>Diorhabda</i> found, contact USFWS and State WIFL coordinator.	GPS Coordinates for WIFL Detections (this is an optional column for documenting individuals, pairs, or groups of birds found on each survey). Include additional sheets if necessary.			
							# Birds	Sex	UTM E	UTM N
Survey # 1 Observer(s): Deborah Van Dooremolen & Timothy Ricks	Date: 5/21/2015	0	0	0	N					
	Start: 7:27									
	Stop: 10:05									
	Total hrs: 2.6									
Survey # 2 Observer(s): Nicholas Rice & Timothy Ricks	Date: 6/4/2015	0	0	0	N					
	Start: 4:52									
	Stop: 9:24									
	Total hrs: *4.5									
Survey # 3 Observer(s): Timothy Ricks & Nathan Harper	Date: 6/18/2015	0	0	0	N					
	Start: 4:26									
	Stop: **9:30									
	Total hrs: *5.1									
Survey # 4 Observer(s): Deborah Van Dooremolen & Rachel Beckworth	Date: 7/7/2015	0	0	0	N					
	Start: 4:45									
	Stop: 8:40									
	Total hrs: 3.9									
Survey # 5 Observer(s): Nicholas Rice & Jason Eckberg	Date: 7/15/2015	0	0	0	N					
	Start: 4:36									
	Stop: 8:25									
	Total hrs: *3.8									
Overall Site Summary Totals do not equal the sum of each column. Include only resident adults. Do not include migrants, nestlings, and fledglings. Be careful not to double count individuals. Total survey hrs: *19.9		Total Adult Residents	Total Pairs	Total Territories	Total Nests	Were any WIFLs color-banded? Yes _____ No _____ Unknown If yes, report color combination(s) in the comments section on back of form and report to USFWS.				
		0	0	0	0					

Reporting Individual: Deborah Van Dooremolen Date Report Completed: 8/27/2015
 US Fish & Wildlife Service Permit #: TE148556-3 State Wildlife Agency Permit #: n/a

Submit form to USFWS and State Wildlife Agency by September 1st. Retain a copy for your records.

Fill in the following information completely. Submit form by September 1st. Retain a copy for your records.

Reporting Individual Deborah Van Dooremolen Phone # 702-822-3370
Affiliation Southern Nevada Water Authority E-mail debbie.vandooremolen@snwa.com
Site Name Las Vegas Wash, Route 1 Date report Completed 8/27/2015
Was this site surveyed in a previous year? Yes X No Unknown
Did you verify that this site name is consistent with that used in previous yrs? Yes x No Not Applicable
If name is different, what name(s) was used in the past?
If site was surveyed last year, did you survey the same general area this year? Yes x No If no, summarize below.
Did you survey the same general area during each visit to this site this year? Yes x No If no, summarize below.
Management Authority for Survey Area: Federal x Municipal/County x State Tribal Private
Name of Management Entity or Owner (e.g., Tonto National Forest) Bureau of Reclamation and Clark County

Length of area surveyed: 1.0 (km)

Vegetation Characteristics: Check (only one) category that best describes the predominant tree/shrub foliar layer at this site:

x Native broadleaf plants (entirely or almost entirely, > 90% native)
 Mixed native and exotic plants (mostly native, 50 - 90% native)
 Mixed native and exotic plants (mostly exotic, 50 - 90% exotic)
 Exotic/introduced plants (entirely or almost entirely, > 90% exotic)

Identify the 2-3 predominant tree/shrub species in order of dominance. Use scientific name.

Salix spp. (gooddingii & exigua), Populus fremontii

Average height of canopy (Do not include a range): 6 (meters)

Attach the following: 1) copy of USGS quad/topographical map (REQUIRED) of survey area, outlining survey site and location of WIFL detections;
2) sketch or aerial photo showing site location, patch shape, survey route, location of any detected WIFLs or their nests;
3) photos of the interior of the patch, exterior of the patch, and overall site. Describe any unique habitat features in Comments.

Comments (such as start and end coordinates of survey area if changed among surveys, supplemental visits to sites, unique habitat features.
Attach additional sheets if necessary.

*Total time surveyed includes time spent surveying portions or all of Route 4 as the routes or portions thereof were run consecutively and the field crew did not enter separate start and stop times.

**Estimate

Territory Summary Table. Provide the following information for each verified territory at your site.

Territory Number	All Dates Detected	UTM E	UTM N	Pair Confirmed? Y or N	Nest Found? Y or N	Description of How You Confirmed Territory and Breeding Status (e.g., vocalization type, pair interactions, nesting attempts, behavior)

Attach additional sheets if necessary

Willow Flycatcher (WIFL) Survey and Detection Form (revised April, 2010)

Site Name: Las Vegas Wash, Route 2 State: NV County: Clark
 USGS Quad Name: _____ Elevation: 467 (meters)
 Creek, River, or Lake Name: Las Vegas Wash

Is copy of USGS map marked with survey area and WIFL sightings attached (as required)? Yes X No _____
 Survey Coordinates: Start: E 681269 N 3995676 UTM Datum: NAD83 (See instructions)
 Stop: E 685809 N 3997363 UTM Zone: 11N

If survey coordinates changed between visits, enter coordinates for each survey in comments section on back of this page.

****Fill in additional site information on back of this page****

Survey # Observer(s) (Full Name)	Date (m/d/y) Survey Time	Number of Adult WIFLs	Estimated Number of Pairs	Estimated Number of Territories	Nest(s) Found? Y or N If Yes, number of nests	Comments (e.g., bird behavior; evidence of pairs or breeding; potential threats [livestock, cowbirds, <i>Diorhabda</i> spp.]). If <i>Diorhabda</i> found, contact USFWS and State WIFL coordinator.	GPS Coordinates for WIFL Detections (this is an optional column for documenting individuals, pairs, or groups of birds found on each survey). Include additional sheets if necessary.				
							# Birds	Sex	UTM E	UTM N	
Survey # 1 Observer(s): Deborah Van Dooremolen, Nicholas Rice & Timothy Ricks	Date:	1	0	0	N						
	Observer(s):						5/20/2015	1		681746	3995707
	Start:						4:57				
	Stop:						9:22				
	Total hrs:						4.4				
Survey # 2 Observer(s): Deborah Van Dooremolen, Nicholas Rice & Timothy Ricks	Date:	2	0	0	N						
	Observer(s):						6/3/2015	1		681916	3995584
	Start:						4:38	1		681943	3995605
	Stop:						9:41				
	Total hrs:						5.0				
Survey # 3 Observer(s): Nicholas Rice & Timothy Ricks	Date:	0	0	0	N						
	Observer(s):						6/17/2015				
	Start:						4:28				
	Stop:						8:16				
	Total hrs:						3.8				
Survey # 4 Observer(s): Deborah Van Dooremolen & Nicholas Rice	Date:	0	0	0	N						
	Observer(s):						7/6/2015				
	Start:						4:42				
	Stop:						8:09				
	Total hrs:						3.5				
Survey # 5 Observer(s): Deborah Van Dooremolen & Signa Gundlach	Date:	0	0	0	N						
	Observer(s):						7/14/2015				
	Start:						5:15				
	Stop:						10:15				
	Total hrs:						5.0				
Overall Site Summary Totals do not equal the sum of each column. Include only resident adults. Do not include migrants, nestlings, and fledglings. Be careful not to double count individuals. Total survey hrs: <u>21.7</u>		Total Adult Residents	Total Pairs	Total Territories	Total Nests	Were any WIFLs color-banded? Yes _____ No _____ Unknown If yes, report color combination(s) in the comments section on back of form and report to USFWS.					
0	0	0	0								

Reporting Individual: Deborah Van Dooremolen Date Report Completed: 8/27/2015
 US Fish & Wildlife Service Permit #: TE148556-3 State Wildlife Agency Permit #: n/a

Submit form to USFWS and State Wildlife Agency by September 1st. Retain a copy for your records.

Fill in the following information completely. Submit form by September 1st. Retain a copy for your records.

Reporting Individual Deborah Van Dooremolen Phone # 702-822-3370
Affiliation Southern Nevada Water Authority E-mail debbie.vandooremolen@snwa.com
Site Name Las Vegas Wash, Route 2 Date report Completed 8/27/2015
Was this site surveyed in a previous year? Yes X No Unknown
Did you verify that this site name is consistent with that used in previous yrs? Yes x No Not Applicable
If name is different, what name(s) was used in the past?
If site was surveyed last year, did you survey the same general area this year? Yes x No If no, summarize below.
Did you survey the same general area during each visit to this site this year? Yes x No If no, summarize below.
Management Authority for Survey Area: Federal x Municipal/County x State Tribal Private
Name of Management Entity or Owner (e.g., Tonto National Forest) Bureau of Reclamation and Clark County

Length of area surveyed: 5.0 (km)

Vegetation Characteristics: Check (only one) category that best describes the predominant tree/shrub foliar layer at this site:

x Native broadleaf plants (entirely or almost entirely, > 90% native)
 Mixed native and exotic plants (mostly native, 50 - 90% native)
 Mixed native and exotic plants (mostly exotic, 50 - 90% exotic)
 Exotic/introduced plants (entirely or almost entirely, > 90% exotic)

Identify the 2-3 predominant tree/shrub species in order of dominance. Use scientific name.

Salix spp. (gooddingii & exigua), Populus spp.

Average height of canopy (Do not include a range): 6 (meters)

Attach the following: 1) copy of USGS quad/topographical map (REQUIRED) of survey area, outlining survey site and location of WIFL detections;
2) sketch or aerial photo showing site location, patch shape, survey route, location of any detected WIFLs or their nests;
3) photos of the interior of the patch, exterior of the patch, and overall site. Describe any unique habitat features in Comments.

Comments (such as start and end coordinates of survey area if changed among surveys, supplemental visits to sites, unique habitat features.
Attach additional sheets if necessary.

Territory Summary Table. Provide the following information for each verified territory at your site.

Territory Number	All Dates Detected	UTM E	UTM N	Pair Confirmed? Y or N	Nest Found? Y or N	Description of How You Confirmed Territory and Breeding Status (e.g., vocalization type, pair interactions, nesting attempts, behavior)

Attach additional sheets if necessary

Willow Flycatcher (WIFL) Survey and Detection Form (revised April, 2010)

Site Name: Las Vegas Wash, Route 3 State: NV County: Clark
 USGS Quad Name: _____ Elevation: *440 (meters)
 Creek, River, or Lake Name: Las Vegas Wash

Is copy of USGS map marked with survey area and WIFL sightings attached (as required)? Yes X No _____
 Survey Coordinates: Start: E 685395 N 3997171 UTM Datum: NAD83 (See instructions)
 Stop: E 681377 N 3995526 UTM Zone: 11N

If survey coordinates changed between visits, enter coordinates for each survey in comments section on back of this page.

****Fill in additional site information on back of this page****

Survey # Observer(s) (Full Name)	Date (m/d/y) Survey Time	Number of Adult WIFLs	Estimated Number of Pairs	Estimated Number of Territories	Nest(s) Found? Y or N If Yes, number of nests	Comments (e.g., bird behavior; evidence of pairs or breeding;-potential threats [livestock, cowbirds, <i>Diorhabda</i> spp.]). If <i>Diorhabda</i> found, contact USFWS and State WIFL coordinator.	GPS Coordinates for WIFL Detections (this is an optional column for documenting individuals, pairs, or groups of birds found on each survey). Include additional sheets if necessary.			
							# Birds	Sex	UTM E	UTM N
Survey # 1 Observer(s): Nicholas Rice & David Syzdek	Date:	0	0	0	N		# Birds	Sex	UTM E	UTM N
	Observer(s):									
	Start:									
	Stop:									
	Total hrs:									
Survey # 2 Observer(s): Deborah Van Dooremolen & Signa Gundlach	Date:	1	0	0	N		# Birds	Sex	UTM E	UTM N
	Observer(s):						1		685013	3996921
	Start:									
	Stop:									
	Total hrs:									
Survey # 3 Observer(s): Nicholas Rice, Keiba Crear & Rachel Beckworth	Date:	1	0	0	N		# Birds	Sex	UTM E	UTM N
	Observer(s):						1		685136	3996960
	Start:									
	Stop:									
	Total hrs:									
Survey # 4 Observer(s): Nicholas Rice & Timothy Ricks	Date:	0	0	0	N		# Birds	Sex	UTM E	UTM N
	Observer(s):									
	Start:									
	Stop:									
	Total hrs:									
Survey # 5 Observer(s): Deborah Van Dooremolen, Rachel Beckworth & Richard Lyman	Date:	0	0	0	N		# Birds	Sex	UTM E	UTM N
	Observer(s):									
	Start:									
	Stop:									
	Total hrs:									
Overall Site Summary Totals do not equal the sum of each column. Include only resident adults. Do not include migrants, nestlings, and fledglings. Be careful not to double count individuals.		Total Adult Residents	Total Pairs	Total Territories	Total Nests	Were any WIFLs color-banded? Yes _____ No _____ Unknown If yes, report color combination(s) in the comments section on back of form and report to USFWS.				
Total survey hrs:	0	0	0	0						

Reporting Individual: Deborah Van Dooremolen Date Report Completed: 8/27/2015
 US Fish & Wildlife Service Permit #: TE148556-3 State Wildlife Agency Permit #: n/a

Submit form to USFWS and State Wildlife Agency by September 1st. Retain a copy for your records.

Fill in the following information completely. Submit form by September 1st. Retain a copy for your records.

Reporting Individual Deborah Van Dooremolen Phone # 702-822-3370
Affiliation Southern Nevada Water Authority E-mail debbie.vandooremolen@snwa.com
Site Name Las Vegas Wash, Route 3 Date report Completed 8/27/2015
Was this site surveyed in a previous year? Yes X No Unknown
Did you verify that this site name is consistent with that used in previous yrs? Yes x No Not Applicable
If name is different, what name(s) was used in the past?
If site was surveyed last year, did you survey the same general area this year? Yes x No If no, summarize below.
Did you survey the same general area during each visit to this site this year? Yes x No If no, summarize below.
Management Authority for Survey Area: Federal x Municipal/County x State Tribal Private
Name of Management Entity or Owner (e.g., Tonto National Forest) Bureau of Reclamation and Clark County

Length of area surveyed: 4.3 (km)

Vegetation Characteristics: Check (only one) category that best describes the predominant tree/shrub foliar layer at this site:

x Native broadleaf plants (entirely or almost entirely, > 90% native)
 Mixed native and exotic plants (mostly native, 50 - 90% native)
 Mixed native and exotic plants (mostly exotic, 50 - 90% exotic)
 Exotic/introduced plants (entirely or almost entirely, > 90% exotic)

Identify the 2-3 predominant tree/shrub species in order of dominance. Use scientific name.

Salix spp. (gooddingii & exigua), Populus fremontii

Average height of canopy (Do not include a range): 6 (meters)

Attach the following: 1) copy of USGS quad/topographical map (REQUIRED) of survey area, outlining survey site and location of WIFL detections;
2) sketch or aerial photo showing site location, patch shape, survey route, location of any detected WIFLs or their nests;
3) photos of the interior of the patch, exterior of the patch, and overall site. Describe any unique habitat features in Comments.

Comments (such as start and end coordinates of survey area if changed among surveys, supplemental visits to sites, unique habitat features.
Attach additional sheets if necessary.

*Estimate

**Total time surveyed includes time spent surveying portions or all of Route 4 as the routes or portions thereof were run consecutively and the field crew did not enter separate start and stop times.

Territory Summary Table. Provide the following information for each verified territory at your site.

Territory Number	All Dates Detected	UTM E	UTM N	Pair Confirmed? Y or N	Nest Found? Y or N	Description of How You Confirmed Territory and Breeding Status (e.g., vocalization type, pair interactions, nesting attempts, behavior)

Attach additional sheets if necessary

Willow Flycatcher (WIFL) Survey and Detection Form (revised April, 2010)

Site Name: Las Vegas Wash, Route 4 State: NV County: Clark

USGS Quad Name: _____ Elevation: 472 (meters)

Creek, River, or Lake Name: Las Vegas Wash

Is copy of USGS map marked with survey area and WIFL sightings attached (as required)? Yes X No _____

Survey Coordinates: Start: E 681347 N 3995528 UTM Datum: NAD83 (See instructions)

Stop: E 678359 N 3996190 UTM Zone: 11N

If survey coordinates changed between visits, enter coordinates for each survey in comments section on back of this page.

****Fill in additional site information on back of this page****

Survey # Observer(s) (Full Name)	Date (m/d/y) Survey Time	Number of Adult WIFLs	Estimated Number of Pairs	Estimated Number of Territories	Nest(s) Found? Y or N If Yes, number of nests	Comments (e.g., bird behavior; evidence of pairs or breeding; potential threats [livestock, cowbirds, <i>Diorhabda</i> spp.]). If <i>Diorhabda</i> found, contact USFWS and State WIFL coordinator.	GPS Coordinates for WIFL Detections (this is an optional column for documenting individuals, pairs, or groups of birds found on each survey). Include additional sheets if necessary.			
							# Birds	Sex	UTM E	UTM N
Survey # 1 Observer(s): Deborah Van Dooremolen & Timothy Ricks	Date: 5/21/2015	0	0	0	N					
	Start: 4:52									
	Stop: 7:17									
	Total hrs: 2.4									
Survey # 2 Observer(s): Nicholas Rice & Timothy Ricks; Deborah Van Dooremolen & Signa Gundlach	Date: 6/4/2015	1	0	0	N		1		681318	3995525
	Start: 4:52; 8:59									
	Stop: 9:24; 9:13									
	Total hrs: *4.8									
Survey # 3 Observer(s): Timothy Ricks & Nathan Harper; Nicholas Rice, Keiba Crear & Rachel Beckworth	Date: 6/18/2015	0	0	0	N					
	Start: 4:26; 4:26									
	Stop: **9:30; 7:15									
	Total hrs: *7.9									
Survey # 4 Observer(s): Nicholas Rice & Timothy Ricks	Date: 7/7/2015	0	0	0	N					
	Start: 4:30									
	Stop: 8:00									
	Total hrs: *3.5									
Survey # 5 Observer(s): Nicholas Rice & Jason Eckberg; Deborah Van Dooremolen, Rachel Beckworth & Richard Lyman	Date: 7/15/2015	0	0	0	N					
	Start: 4:36; 8:31									
	Stop: 8:25; 8:46									
	Total hrs: *4.1									
Overall Site Summary Totals do not equal the sum of each column. Include only resident adults. Do not include migrants, nestlings, and fledglings. Be careful not to double count individuals.		Total Adult Residents	Total Pairs	Total Territories	Total Nests	Were any WIFLs color-banded? Yes _____ No _____ Unknown _____ If yes, report color combination(s) in the comments section on back of form and report to USFWS.				
Total survey hrs: *22.7	0	0	0	0						

Reporting Individual: Deborah Van Dooremolen Date Report Completed: 8/27/2015
 US Fish & Wildlife Service Permit #: TE148556-3 State Wildlife Agency Permit #: n/a

Submit form to USFWS and State Wildlife Agency by September 1st. Retain a copy for your records.

Fill in the following information completely. Submit form by September 1st. Retain a copy for your records.

Reporting Individual Deborah Van Dooremolen Phone # 702-822-3370
Affiliation Southern Nevada Water Authority E-mail debbie.vandooremolen@snwa.com
Site Name Las Vegas Wash, Route 4 Date report Completed 8/27/2015
Was this site surveyed in a previous year? Yes X No Unknown
Did you verify that this site name is consistent with that used in previous yrs? Yes x No Not Applicable
If name is different, what name(s) was used in the past?
If site was surveyed last year, did you survey the same general area this year? Yes x No If no, summarize below.
Did you survey the same general area during each visit to this site this year? Yes x No If no, summarize below.
Management Authority for Survey Area: Federal x Municipal/County x State Tribal Private
Name of Management Entity or Owner (e.g., Tonto National Forest) Bureau of Reclamation and Clark County
Length of area surveyed: 3.0 (km)

Vegetation Characteristics: Check (only one) category that best describes the predominant tree/shrub foliar layer at this site:

 Native broadleaf plants (entirely or almost entirely, > 90% native)
 Mixed native and exotic plants (mostly native, 50 - 90% native)
x Mixed native and exotic plants (mostly exotic, 50 - 90% exotic)
 Exotic/introduced plants (entirely or almost entirely, > 90% exotic)

Identify the 2-3 predominant tree/shrub species in order of dominance. Use scientific name.

Tamarix ramosissima., Salix exigua, Prosopis spp.

Average height of canopy (Do not include a range): 4 (meters)

- Attach the following: 1) copy of USGS quad/topographical map (REQUIRED) of survey area, outlining survey site and location of WIFL detections;
2) sketch or aerial photo showing site location, patch shape, survey route, location of any detected WIFLs or their nests;
3) photos of the interior of the patch, exterior of the patch, and overall site. Describe any unique habitat features in Comments.

Comments (such as start and end coordinates of survey area if changed among surveys, supplemental visits to sites, unique habitat features.
Attach additional sheets if necessary.

*Total time surveyed includes time spent surveying Route 1 and/or Route 3 as the routes or portions thereof were run consecutively and the field crew did not enter separate start and stop times. When split between both Routes 1 and 3, names and times are separated by a semi-colon.

**Estimate

Territory Summary Table. Provide the following information for each verified territory at your site.

Territory Number	All Dates Detected	UTM E	UTM N	Pair Confirmed? Y or N	Nest Found? Y or N	Description of How You Confirmed Territory and Breeding Status (e.g., vocalization type, pair interactions, nesting attempts, behavior)

Attach additional sheets if necessary

Appendix B

GPS Coordinates for 2015 Willow Flycatcher Detections

Species	Location	Habitat*	Date	Easting**	Northing	Comments
Willow Flycatcher	S111 revegetation site	native	20150520	681746	3995707	~65ft north of point, in mesquite
Willow Flycatcher	Upstream Historic Lateral North and South Bank revegetation sites	native	20150603	681916	3995584	Countersang with below, in Goodding and sandbar willows
Willow Flycatcher	Upstream Historic Lateral North and South Bank revegetation sites	native	20150603	681943	3995605	Countersang with above, in Goodding and sandbar willows
Willow Flycatcher	Rainbow Islands revegetation site	native	20150604	685013	3996921	In large Goodding willow
Willow Flycatcher	Upstream Pabco South revegetation site	native	20150604	681318	3995525	In sandbar willow on bank
Willow Flycatcher	Rainbow Islands revegetation site	native	20150618	685136	3996960	~100ft northwest of point, in Goodding willow

*The presence of common reed was ignored for determination of native/non-native habitat

**Datum - NAD83

Appendix C

List of All Bird Species Detected during 2015 Surveys
with Presumed Status and Relative Abundance

The following table includes all bird species identified in the study area during the 2015 southwestern willow flycatcher surveys. Presumed status comes from field observations. Relative abundance categories are modified after Phillips et al. (1964); abundance of a given species is based on field observations. Species names and taxonomic order follow the American Ornithologists' Union's *Check-list of North American Birds* (AOU 1998) and subsequent revisions. Adapted from Appendix A in SWCA (2009b).

Common Name	Scientific Name	Presumed Status	Relative Abundance
Canada goose	<i>Branta canadensis</i>	R	U
Gadwall	<i>Anas strepera</i>	R	R
American wigeon	<i>Anas americana</i>	M	R
Mallard	<i>Anas platyrhynchos</i>	R	C
Gambel's quail	<i>Callipepla gambelii</i>	R	C
Pied-billed grebe	<i>Podilymbus podiceps</i>	R	R
Eared grebe	<i>Podiceps nigricollis</i>	R	R
Double-crested cormorant	<i>Phalacrocorax auritus</i>	R	U
American white pelican	<i>Pelecanus erythrorhynchos</i>	M	R
Least bittern	<i>Ixobrychus exilis</i>	R	R
Great blue heron	<i>Ardea herodias</i>	R	U
Great egret	<i>Ardea alba</i>	R	U
Snowy egret	<i>Egretta thula</i>	R	U
Green heron	<i>Butorides virescens</i>	R	FC
Black-crowned night-heron	<i>Nycticorax nycticorax</i>	R	U
White-faced ibis	<i>Plegadis chihi</i>	M	FC
Turkey vulture	<i>Cathartes aura</i>	R	R
Osprey	<i>Pandion haliaetus</i>	R	R
Northern harrier	<i>Circus cyaneus</i>	R	R
Cooper's hawk	<i>Accipiter cooperii</i>	R	U
Red-tailed hawk	<i>Buteo jamaicensis</i>	R	R
Common gallinule	<i>Gallinula galeata</i>	R	FC
American coot	<i>Fulica americana</i>	R	FC
Killdeer	<i>Charadrius vociferous</i>	R	R
Black-necked stilt	<i>Himantopus mexicanus</i>	R	U
American avocet	<i>Recurvirostra americana</i>	R	U
Spotted sandpiper	<i>Actitis macularius</i>	R	U
Caspian tern	<i>Hydroprogne caspia</i>	M	R
Eurasian collared-dove	<i>Streptopelia decaocto</i>	R	U
White-winged dove	<i>Zenaida asiatica</i>	R	FC

Common Name	Scientific Name	Presumed Status	Relative Abundance
Mourning dove	<i>Zenaida macroura</i>	R	FC
Greater roadrunner	<i>Geococcyx californianus</i>	R	U
Great horned owl	<i>Bubo virginianus</i>	R	R
Lesser nighthawk	<i>Chordeiles acutipennis</i>	R	U
White-throated swift	<i>Aeronautes saxatalis</i>	R	R
Black-chinned hummingbird	<i>Archilochus alexandri</i>	R	FC
Anna's hummingbird	<i>Calypte anna</i>	R	FC
Costa's hummingbird	<i>Calypte costae</i>	R	FC
American kestrel	<i>Falco sparverius</i>	R	U
Western wood-pewee	<i>Contopus sordidulus</i>	M	FC
Willow flycatcher	<i>Empidonax traillii</i>	M	R
Western-type flycatcher	<i>Empidonax difficilis</i>	M	R
Black phoebe	<i>Sayornis nigricans</i>	R	FC
Say's phoebe	<i>Sayornis saya</i>	R	FC
Western kingbird	<i>Tyrannus verticalis</i>	R	U
Loggerhead shrike	<i>Lanius ludovicianus</i>	R	R
Bell's vireo	<i>Vireo bellii</i>	R	R
Warbling vireo	<i>Vireo gilvus</i>	M	R
Common raven	<i>Corvus corax</i>	R	R
Northern rough-winged swallow	<i>Stelgidopteryx serripennis</i>	R	C
Cliff swallow	<i>Petrochelidon pyrrhonota</i>	R	U
Verdin	<i>Auriparus flaviceps</i>	R	C
Canyon wren	<i>Catherpes mexicanus</i>	R	R
Bewick's wren	<i>Thryomanes bewickii</i>	R	C
Marsh wren	<i>Cistothorus palustris</i>	R	C
Black-tailed gnatcatcher	<i>Polioptila melanura</i>	R	C
Northern mockingbird	<i>Mimus polyglottos</i>	R	U
Crissal thrasher	<i>Toxostoma crissale</i>	R	FC
Cedar waxwing	<i>Bombycilla cedrorum</i>	M	R
Lucy's warbler	<i>Oreothlypis luciae</i>	R	FC
Common yellowthroat	<i>Geothlypis trichas</i>	R	C
Yellow warbler	<i>Setophaga petechia</i>	R	C
Wilson's warbler	<i>Cardellina pusilla</i>	M	U
Yellow-breasted chat	<i>Icteria virens</i>	R	C
Abert's towhee	<i>Melospiza aberti</i>	R	C
Song sparrow	<i>Melospiza melodia</i>	R	C

Common Name	Scientific Name	Presumed Status	Relative Abundance
Western tanager	<i>Piranga ludoviciana</i>	M	R
Black-headed grosbeak	<i>Pheucticus melanocephalus</i>	M	U
Blue grosbeak	<i>Passerina caerulea</i>	R	C
Indigo bunting	<i>Passerina cyanea</i>	R	U
Red-winged blackbird	<i>Agelaius phoeniceus</i>	R	C
Great-tailed grackle	<i>Quiscalus mexicanus</i>	R	C
Brown-headed cowbird	<i>Molothrus ater</i>	R	C
Bullock's oriole	<i>Icterus bullockii</i>	R	R
House finch	<i>Haemorhous mexicanus</i>	R	FC
Lesser goldfinch	<i>Spinus psaltria</i>	R	R

Presumed Status

Resident (R)	Species is present in the area throughout the summer nesting season.
Migrant (M)	Species passes through the area during migration.

Relative Abundance

Abundant (A)	Species is easily detected in large numbers (>50) on a daily basis.
Common (C)	Species is easily detected on a daily basis, but not in large numbers (5–50).
Fairly Common (FC)	Species regularly detected in small numbers (2–4) on a daily basis.
Uncommon (U)	Species regularly detected in very small numbers, although not necessarily every day.
Rare (R)	Species detected irregularly in very small numbers.