

Work Task E14: Imperial Ponds Conservation Area

FY16 Estimate	FY16 Actual Obligations	Cumulative Expenditures Through FY16	FY17 Approved Estimate	FY18 Proposed Estimate	FY19 Proposed Estimate	FY20 Proposed Estimate
\$1,500,000	\$403,637.91	\$10,008,947.04	\$1,450,000	\$1,450,000	\$350,000	\$350,000

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Start Date: FY05

Expected Duration: FY55

Long-Term Goal: Habitat creation

Conservation Measures: BEVI1, BLRA1, BONY2, CLRA1, ELOW1, GIFL1, GIWO1, LEBI1, RASU2, SUTA1, VEFL1, WIFL1, WRBA2, WYBA3, YBCU1, and YWAR1

Location: Reach 5, Imperial National Wildlife Refuge, River Mile 59, Arizona

Purpose: To create and manage a mosaic of native land cover types for LCR MSCP covered species

Connections with Other Work Tasks (Past and Future): Vegetation, species research, and monitoring is being conducted under Work Tasks C25, D9, and F1–F5. Fishery-related research is conducted under Work Task C25.

Project Description: The Imperial Ponds Conservation Area is an integrated mosaic of native land cover types, including disconnected backwaters, cottonwood-willow (*Populus fremontii*-*Salix gooddingii*), and marsh. It is situated within the Martinez Lake Management Unit (previously identified as an Intensive Management Area) of the Imperial National Wildlife Refuge, an area of focused management for sensitive wildlife species, including native fishes, marsh birds, neotropical migratory birds, and migratory waterfowl.

Previous Activities:

Backwaters: Six backwaters have been constructed to provide approximately 80 surface acres of habitat for bonytail (*Gila elegans*) and razorback suckers (*Xyrauchen texanus*). Lower Colorado River water was supplied to the backwaters by a pump fitted with a wedge wire screen system. The screen had a slot size of 0.05 millimeter that was designed to prevent passage of fish eggs and larvae into the backwaters. An in situ evaluation of the screen was completed

under Work Task G3. The results indicated that fish eggs and larvae of multiple species were passing through the screen. In response to the results, the pump was shut off in summer 2009, and water was supplied to all the backwaters using a single groundwater well. A water management study was initiated in May 2011 and was completed in 2013 to evaluate the water quality in Pond 1 (where regular water management was continued) and Ponds 2–6 (without a managed water supply). A trends analysis from the physico-chemical profiles indicated that the temperature was increasing over time in all six ponds; however, it appeared to be increasing at a slightly higher rate in Pond 1. The pH levels also appeared to increase over time, with differences being observed among ponds. The values of pH commonly exceeded a set standard of 9.0 in Ponds 2–6 in the summers of 2011 and 2012. The pH levels were lowest in Pond 1. Dissolved oxygen levels did not appear to be a cause for concern in an absence of water management. Specific conductivity levels showed a gradual increase over time in all ponds. A second well was installed onsite to supply water to the ponds in FY14. The new well both increased the volume of water that could be delivered to the ponds and provided redundancy in case one well became inoperable.

Annual maintenance and management of the ponds: Two groundwater wells supply water to all six ponds. Each pond receives approximately 8.50 acre-feet per month, except during July through September when the water volume increases to 17 acre-feet of water per month, for a total of 773 acre-feet for the year. Annual costs included those for electricity for the well, maintenance of the pumps and valves to direct water delivery, and boat ramp maintenance.

Riparian: Field leveling and irrigation system installation for the area were completed in FY08. Soil salinity is managed through irrigation of a cover crop.

Marsh: A 12-acre marsh unit was created at Field 18 in the southeast corner of the Imperial National Wildlife Refuge. This field was cleared in winter of 2007–08 and was converted into a bulrush-dominated marsh managed for rail species. The irrigation cycle is based on an adjacent field, Field 16, which was created and is managed for Yuma clapper rails (*Rallus longirostris yumanensis* [also known as Yuma Ridgway's rail = *R. obsoletus yumanensis*]) and California black rails (*Laterallus jamaicensis coturniculus*). The marsh has been managed for LCR MSCP covered species since 2008, and both Yuma clapper rails and California black rails have been detected on Field 18.

Annual maintenance and management of marsh and cottonwood-willow: Irrigation water for both the riparian area as well as the managed marsh complex is received from a pump platform, which is located in the Martinez Lake inlet channel. Annual costs associated with operation and maintenance of these areas include costs associated with the electrical power utility bill, pump maintenance, invasive and non-native weed control, road maintenance, and the labor to open and close the gates along the canal.

FY16 Accomplishments:

Maintenance/restoration/management: Materials needed for future infrastructure upgrades were procured. A hydraulic model was developed and tested to assist in the replacement of the existing canal system. Two replacement designs have been developed and are expected to be presented to the Imperial National Wildlife Refuge in FY17. Expenditures were less than approved due to the delay in the canal replacement project.

Backwaters: No native fishes were stocked into the backwaters. Mosquitofish (*Gambusia affinis*) were observed in Pond 5, and one was captured in a light trap.

A water management schedule has been established that recommends approximately 773 acre-feet of water be delivered to the ponds. Approximately 755 acre-feet were delivered to the ponds in FY16.

Riparian: Irrigation was supplied from February through September to maintain a cover crop to manage salinity. No additional restoration or monitoring was performed on the 34 acres of the future cottonwood-willow field.

Monitoring:

Backwaters: Post-renovation fish monitoring was reduced to quarterly sampling, as indicated in the post-renovation monitoring plan, and concluded at the end of FY16. The 2 years of monitoring included 112 trammel net nights, 403 hoop net sets, 874 minnow trap sets, and 162 larval light trap sets. Mosquitofish were captured in Pond 5, but no other fish species has been detected in any of the Imperial ponds since the renovation.

Water chemistry and water quality data, as well as zooplankton and phytoplankton samples, were collected on a quarterly basis. Water quality probes were deployed to record water quality parameters at 6-hour intervals, including temperature, pH, dissolved oxygen, and specific conductivity. All water quality parameters remained within the ranges of acceptability for native fishes. Submersible passive integrated transponder (PIT) tag detection antennas were purchased and installed to support fish stockings.

A native fish stocking plan was prepared that includes a stocking timeline and potential research questions to be addressed for the Imperial ponds.

Marsh: Marsh bird surveys were conducted by the U.S. Fish and Wildlife Service at the ponds and on Field 18. Yuma clapper rails were detected during both surveys in April on Field 18, and California black rails were detected on Field 18 during the last survey in April. No covered marsh birds were detected at the ponds.

Riparian: Small mammal trapping was conducted near Field 18 as part of system-wide monitoring. In March, a Yuma hispid cotton rat (*Sigmodon hispidus eremicus*) was captured.

Vegetation data were collected in FY16 using light detection and ranging (LiDAR) remote sensing techniques.

FY17 Activities:

Maintenance/restoration/management: Onsite maintenance, utility payments, and water management for the site will continue. The design for the replacement of the concrete-lined canal for the delivery of water into the fields will be selected. The funding set aside for the canal improvements will not be obligated in FY17.

Electrical power system upgrades will be completed in FY17. The upgrades will provide 50-ampere, 110-volt service to each pond. The power will allow for future automation of valves, electronic flow meters, improved water quality monitoring, and automated PIT tag scanning.

Backwaters: Water will be supplied to the ponds following the water management schedule. Electric will be run to each pond for the installation of a permanent submersible PIT tag antenna. Post-renovation monitoring is being completed under Work Task C25.

Riparian: The fields will be irrigated to manage salinity in the soils. A Restoration Development and Monitoring Plan for the 34 acres of riparian habitat will be updated.

Marsh: The 12-acre marsh created in Field 18 will continue to be managed for marsh covered species.

Monitoring: Monitoring will continue in FY17 similar to previous efforts for fishes and marsh birds. Vegetation data will be collected in FY17 using LiDAR remote sensing techniques.

Proposed FY18 Activities:

Maintenance/restoration/management: Onsite maintenance, utility payments, and water management for the site will continue. Replacement of the concrete-lined canal for the delivery of water into the riparian fields and marsh complex will begin.

Backwaters: Boat ramps and riprap shorelines will be maintained. The automated watering schedule for all six ponds will continue to be used.

Riparian: Trees will be purchased for planting following replacement of the irrigation canal. The fields will be planted once the irrigation canal is replaced and soil salinity monitoring is completed.

Marsh: The 12-acre marsh created in Field 18 will continue to be managed for marsh covered species.

Monitoring: Monitoring will continue in FY18 similar to previous efforts for fish and marsh birds. MacNeill's sootywing skipper (*Pholisora graciellae* = *Hesperopsis graciellae* [MacNeill]) surveys will be conducted in spring and summer if riparian habitat is created. Information from LiDAR vegetation data collected during FY14–17 will be used to determine the schedule for vegetation monitoring data collection for FY18 and beyond.

Pertinent Reports: The *2016 Imperial Ponds Conservation Area Annual Report* will be posted on the LCR MSCP Web site once integration of the data collected throughout the calendar year is complete.