Work Task E12: Butler Lake

FY06 Estimates	FY06 Actual	Cumulative Accomplishment Through FY06	FY07 Approved Estimate	FY08 Proposed Estimate	FY09 Proposed Estimate	FY10 Proposed Estimate
$140,000	$32,151	$109,717	$120,000	$0	$0	$0

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Start Date: FY04

Expected Duration: FY07

Long-term Goal: Restoration Research

Conservation Measures: BONY2, RASU2, LEBI1, CLRA1

Location: Reach 5, Imperial NWR, River Mile 61, AZ

Purpose: Evaluate potential lower-cost alternatives to dredging such as aeration, in situ bioremediation, or temporarily opening the backwater to the river, while meeting the needs of the LCR MSCP to provide habitat for covered native fish.

Connections with Other Work Tasks (past and future): This work task was previously included in the FY04 Work Tasks as Butler Lake, Imperial National Wildlife Refuge (D5). Species monitoring is being addressed under F2 and F4.

Project Description: Backwaters are an expensive land cover type to create. Studies are being conducted on this backwater to develop technology to effectively restore existing backwaters to levels of sustainable backwater habitat. Butler Lake, and other existing backwaters, contain many of the components required to sustain native fish, but suffer from poor water quality. This research project will evaluate the water quality of the lake by conducting seasonal sampling, identify options to improve water quality in the eutrophic backwater, and develop a range of alternatives for improving water quality.

Located on Imperial NWR, Butler Lake is a 43-acre disconnected floodplain lake with an approximate mean depth of 3 feet. This backwater is seepage-driven, with no known surface connection to the Colorado River, or any other body of water. The lack of freshwater flushing has caused the lake to become hypereutrophic (an advanced state of nutrient enrichment) to the extent that, in its present condition, Butler Lake provides little benefit to fish or wildlife.

During FY06, the U of A initiated their limnological assessment of Butler Lake. The purpose of this assessment is to address the uncertainty related to restoring an eutrophic backwater system and identify whether any of the alternatives to dredging would be feasible in this situation. This

agreement was executed at the end of FY05; therefore, all the work funded out of FY05 was completed during FY06.

Previous Activities: In FY05, Reclamation completed a preliminary assessment report, based on limited data collection during FY04, which evaluated conditions at Butler Lake, and proposed various restoration alternatives. Because of the uncertainty related to experimental treatments, Reclamation, in consultation with Imperial NWR, decided to collect additional data prior to selecting a restoration approach.

FY06 Accomplishments: A limnological assessment of Butler Lake was initiated. The purpose of this assessment is to address the uncertainty related to restoring a eutrophic backwater system and identify whether any of the alternatives to dredging would be feasible in this situation. This agreement was executed at the end of FY05; therefore, all the work funded out of FY05 was completed during FY06.

A monitoring protocol was developed to address the concerns regarding uncertainty and includes data collection on major and minor ions, nutrients, metals, sediment chemistries, algal toxins, zooplankton, and macro-invertebrates. This will provide Reclamation with an increased understanding of the ecological dynamics of the system, as well as a solid baseline from which to measure the effectiveness of any proposed restoration activities.

A larger, graded and graveled boat ramp was originally planned; however, the decision was made in consultation with Imperial NWR to scale back site access to provide minimal boat access only. In-house staff from Reclamation and Imperial NWR cooperatively cleared vegetation and made minor improvements to a restricted-access road to provide access for small boats to create site access for sampling purposes.

Three sampling trips in FY06 were conducted and a preliminary report of initial impressions after the first site visit was submitted.

Two marsh bird surveys were conducted at Butler Lake on April 18 and May 9, 2006. Two points were surveyed at either end of the lake, and two least bitterns were detected during the first survey period and one was detected during the second. No other marsh bird or LCR MSCP covered species were detected.

FY07 Activities: A full year of quarterly sampling trips have been completed. The year-end report will include recommendations for the best course of action to restore the backwater for native fish. Preliminary findings indicated that only through large-scale restoration could Butler Lake be made suitable for native fish.

After a review of the final report, Reclamation will decide, in consultation with the Imperial NWR, whether to pursue the project.

Because a large-scale restoration technique such as dredging or excavation of an inlet/outlet channel is likely to be required, Reclamation will evaluate this site relative to all other candidates included in the Backwater Site Selection (E15) for reaches 5 and 6. Under this scenario, no

further activity would occur under this work plan in FY07, which would reduce expenditures for FY07 below the current estimate.

Proposed FY08 Activities: At this time, no activities are planned at Butler Lake in FY08. This site will be evaluated relative to all other candidates included in the Backwater Site Selection (E15) for reaches 5 and 6.

Pertinent Reports: *Butler Lake Native Fish Refugium, Preliminary Assessment* is posted to the LCR MSCP Web site. *Limnological Survey and Assessment of Butler and McAllister Lakes* will be posted to the LCR MSCP Web site.