

# WALKER BASIN RESTORATION PROGRAM 2010 – 2015 PROGRAM REPORT





# THE NATIONAL FISH AND WILDLIFE FOUNDATION

Chartered by Congress in 1984, NFWF directs public conservation dollars to the most pressing environmental needs and matches those investments with private contributions. Over the last three decades, NFWF has funded more than 4,000 organizations and committed more than \$2.9 billion to conservation projects.

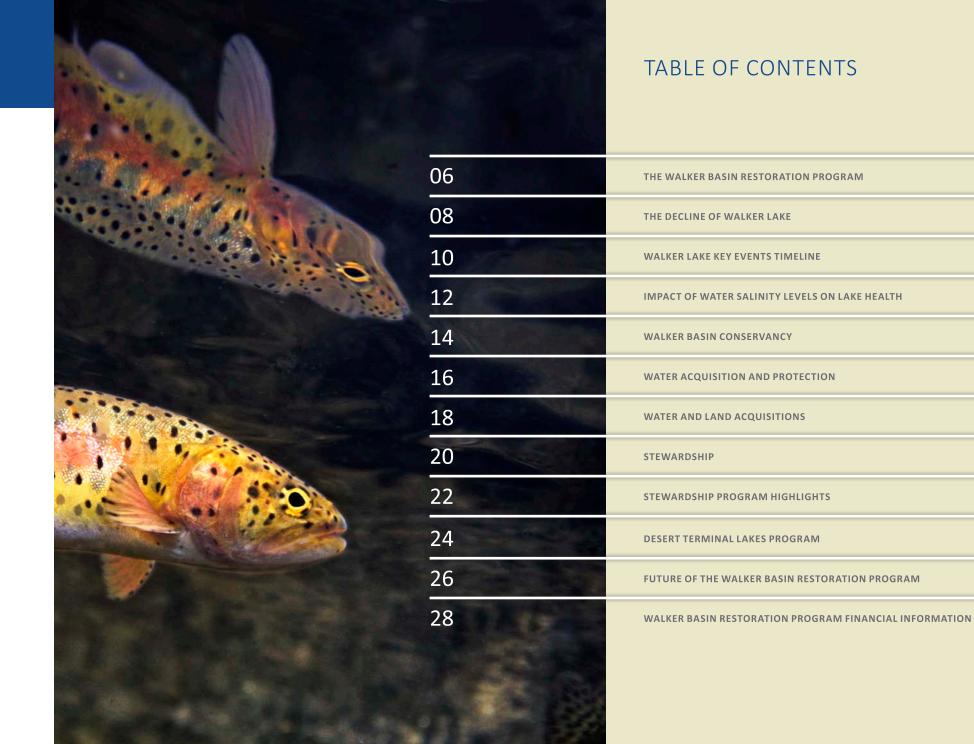


#### **Mission Statement**

The National Fish and Wildlife Foundation is dedicated to sustaining, restoring and enhancing the nation's fish, wildlife, plants and habitats for current and future generations.

NFWF will advance its mission through innovative public and private partnerships, and by investing financial resources and intellectual capital into science-based programs designed to address conservation priorities and achieve measurable outcomes.

**LEFT PHOTO** The Clark's grebe, an historical inhabitant of Walker Lake **RIGHT PHOTO** A Lahontan cutthroat trout



# THE WALKER BASIN RESTORATION PROGRAM

The Walker Basin Restoration Program was established by Public Law 111-85 (2009) for the primary purpose of restoring and maintaining Walker Lake, and to protect agricultural, environmental and habitat interests in the Walker Basin consistent with that primary purpose.



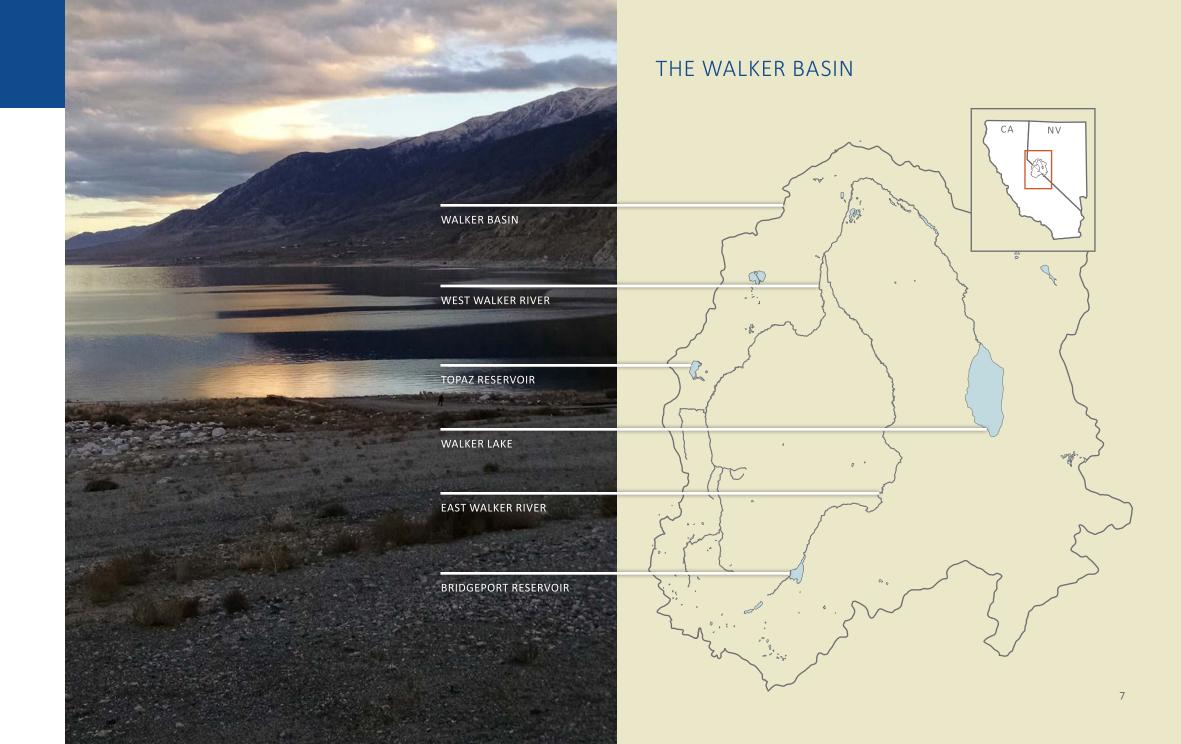
NFWF administers the Program with Desert Terminal Lake grant funds provided by the U.S. Bureau of Reclamation and with Reclamation's Desert Terminal Lakes Program.

The Program works in partnership with local communities, private landowners, water managers, tribes, and a variety of public agencies. It supports voluntary sale and lease of water and related interests from willing sellers, as well as associated conservation, stewardship and research activities.

Over a century and a half of reduced freshwater inflows have resulted in significant declines of the lake level and increases in lake salinity, which today threaten to cause Walker Lake's complete ecological collapse.

The health of Walker Lake is critical to recovery of the threatened Lahontan cutthroat trout, and the lake has long been an important stopover for common loons and other migratory waterfowl.

**LEFT PHOTO** Flood irrigation in the Walker Basin **RIGHT PHOTO** Sunset on Walker Lake



# THE DECLINE OF WALKER LAKE

Ongoing loss of freshwater flows to Walker Lake has caused its elevation to drop over 150 feet and lose about 90 percent of its volume over the past century and a half, greatly affecting nearby communities and habitats, alike.



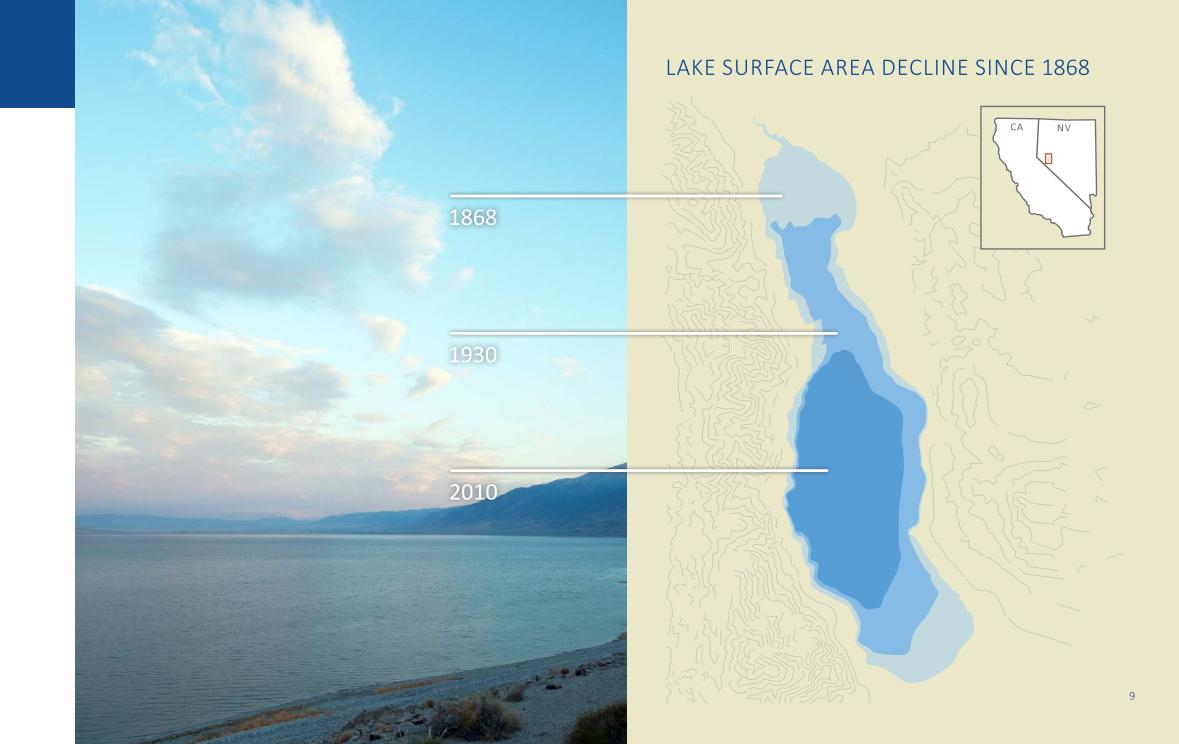
During the last quarter of the 19th century, farmers and cattlemen established communities in the Walker River Basin, part of the ancestral home of the Northern Paiute people.

Natural flows from the Walker River were diverted to support hay, pasture and other irrigated crops. In the 1920s, the newly formed Walker River Irrigation District built a pair of dams on the east and west forks of the Walker River to store winter and early-spring runoff for use later in the season when natural flows could not sustain the needs of irrigated agriculture.

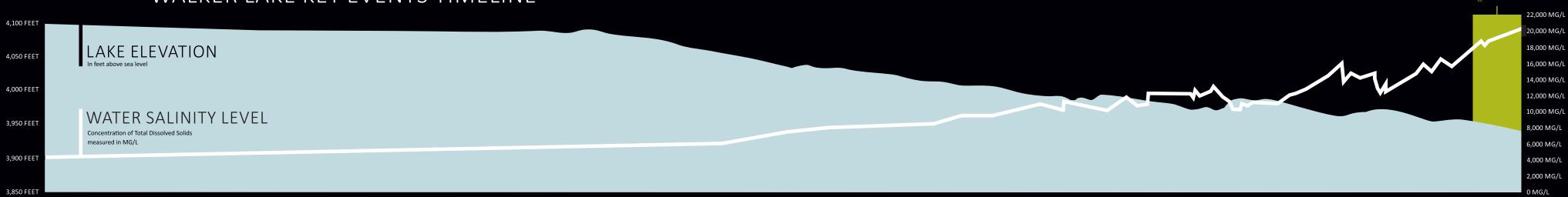
Additionally, in 1935 the U.S. Bureau of Indian Affairs (BIA) built Weber Dam on the lower Walker River to capture surplus flows for irrigation on the Walker River Paiute Tribe's Reservation.

For decades, diversions from the river have sustained a strong agricultural economy but produced an unintended consequence: dramatically reduced freshwater inflows to Walker Lake, a natural desert lake at the terminus of the Walker River in Nevada.

**LEFT PHOTO** The effects of the ongoing loss of freshwater to Walker Lake have become increasingly apparent. **RIGHT PHOTO** Walker Lake



# WALKER LAKE KEY EVENTS TIMELINE



1868 Lake Elevation 4,089 to 4,108 feet 1880s Irrigated agriculture

Mason Valley.

Lake Elevation

4.080 to 4.086 feet

Walker River Irrigation District (WRID) constructs East Walker River and Topaz Reservoir on West Walker River.

1920s

1935

Bureau of Indian Affairs completes construction of Weber Reservoir on Reservation reach of the lower Walker River.

As a result of declining water levels, Total Dissolved Solids (TDS) in Walker Lake have increased dramatically to the point that the lake can no longer support its native fish and wildlife populations. The primary purpose of the Walker Basin Restoration Program is to acquire water from willing sellers to restore and maintain Walker Lake.



NFWF completes the first of three water acquisitions

Lake Elevation TDS Levels

NFWF opens Yerington Program office.

(#80700) to the Nevada State Engineer's Office to instream for Walker Lake.

2013 1,600 acres of land are donated to the State of Nevada's Mason Valley Wildlife Management Area, including 3.5 miles of the Walker River, All open

for public access.

1988

2014 Nevada State Engineer

2009-2015

Establishment of Walker Basin

Restoration Program

issues Ruling #6271 application #80700 subject to negotiated stipulations with WRID and the Walker River Paiute Tribe.

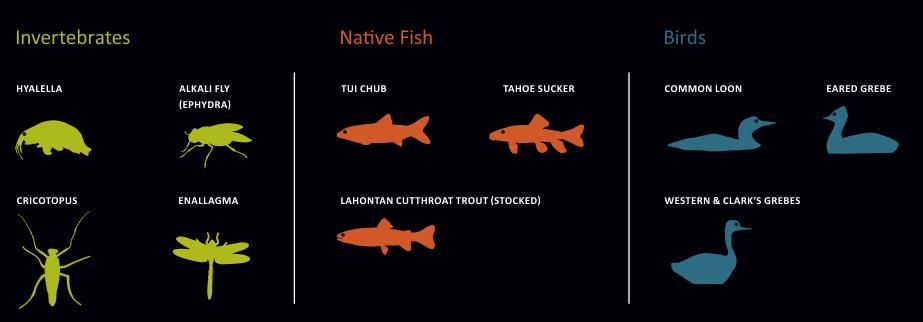
NFWF closes on 11th acquisition, which was the largest water acquisition to date: nearly 14 cfs of decreed water rights.

Lake Elevation TDS Levels 3,918 feet 21,800 MG/L

# IMPACT OF WATER SALINITY LEVELS ON LAKE HEALTH AS MEASURED BY TOTAL DISSOLVED SOLIDS (TDS)

As part of understanding the overall condition of Walker Lake, it is important to identify key categories of "indicator species." As salinity levels of the lake fluctuate with rising or falling lake elevation, the health of indicator species can be used to determine the overall condition of the lake ecosystem.

# Indicator Species



"The U.S. Fish and Wildlife Service will resume stocking [of Lahontan Cutthroat Trout] when [Walker Lake's] TDS level drops below 16,000 mg/L."

Walker Lake Ecosystem Research and Monitoring Summary Report 2006-2013

U.S. Fish and Wildlife Service, Lahontan National Fish Hatchery Complex, November 201

# Presence of Indicator Species Relative to TDS Level

EAR 2013 EVELS	TDS ABOVE 20,000	Significant declines in most insect populations, with an increase in alkali flies and birds such as the eared grebe, which rely on this fly as a food source. A complete loss of the tui chub in Walker Lake is also likely when TDS levels near the 20,000 mg/L threshold.	1_
EAR 2005 EVELS	TDS BELOW 15,000	Allows for acceptable survival rates of acclimated stocked Lahontan cutthroat trout and the return of some invertebrate food sources for trout.	41 L J
EAR 2003 EVELS	TDS BELOW 14,000	Tui chub would be expected to breed again, which in turn would provide a food source for birds such as the common loon and western and Clark's grebes. Stocked LCT would grow bigger and survive longer as TDS levels continue to drop.	
EAR 1988 EVELS	TDS BELOW 10,000  DESIRED TDS	A diverse community of aquatic invertebrates would exist in the lake, and these would support the native fish and birds that would use the lake under conditions most similar to what the lake would be today without upstream diversions.	

## WALKER BASIN CONSERVANCY

"I am thrilled to be part of an organization that is tasked with the long-term management of the physical and natural resources that the Program has acquired, and feel fortunate to be part of a highly capable staff that will maximize the value of these resources." — Elmer Bull, Executive Director, Walker Basin Conservancy



The Walker Basin Conservancy (WBC) was established to oversee the conservation and stewardship initiatives associated with the Program within the Walker River Basin. Funding and authority for establishment of the nonprofit was part of the Program's original enabling legislation and central to NFWF's commitments to agricultural and watershed interests.

WBC is responsible for the on-the-ground operations associated with the Program, including: land management, oversight of revegetation activities, farm leases, public access, and day-today operations and oversight of physical assets located in the Walker Basin (land, structures and water rights).

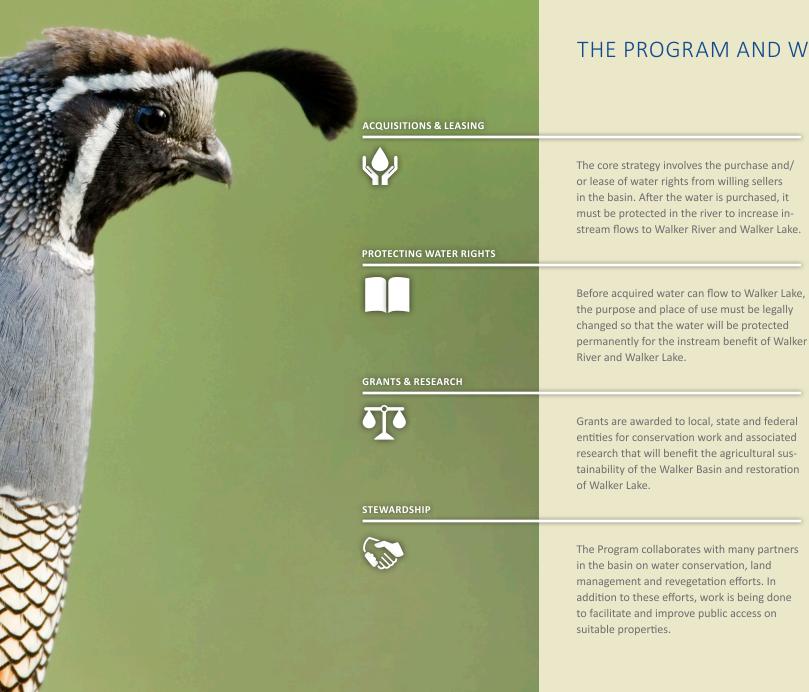
WBC assists the Program with the management of acquired water resources and other assets by interacting with the Walker River Irrigation District, the U.S. Board of Water Commissioners and various ditch companies, and through outreach to the general public, various government agencies and other landmanagement entities.

WBC was established in 2014 and became operational in 2015. employing a full-time staff to oversee all stewardship activities. The Walker Basin Conservancy is funded by a grant from NFWF.



**LEFT PHOTO** Mule deer and pronghorn both inhabit the Walker Basin.

**RIGHT PHOTO** The precious freshwater flows of the Walker Basin support a range of wildlife, including California quail.



#### THE PROGRAM AND WBC: OVERVIEW

**O**NFWF







# WATER ACQUISITION AND PROTECTION

"With the conveyance agreement, I think we finally got something that was simple enough, but yet it protected everybody's interests. We're working to save the lake so our kids can experience what we experienced." Jon McMasters, Walker River Paiute Tribe, 2014



#### Water Acquisitions and Change Approvals

The Program's core strategy involves the purchase and lease of water rights from willing sellers in the basin. During the first six years of the Program, the Program has allocated \$77 million for closed and pending deals.

Before acquired water can flow to Walker Lake, the purpose and place of use must be changed through a process that begins with the Nevada State Engineer and ends with final approvals by the Federal Walker River Decree Court. Once the various legal approvals are complete, the water will be protected permanently for the instream benefit of Walker River and Walker Lake.

NFWF and the Walker River Irrigation District (WRID) developed a stipulation to only move the consumptive use portion of the water rights, leaving 47 percent of the acquired water upstream to avoid potential injury to other water users. "Consumptive use" is the amount of water that was previously being consumed by the irrigated crops.

**LEFT PHOTO** The Clark's grebe, an iconic bird of the Walker Basin

NFWF, the Walker River Paiute Tribe (WRPT) and the Bureau of Indian Affairs (BIA) entered into a conveyance agreement in 2013 to ensure acquired water is tracked and measured instream through the tribal reach of the river to Walker Lake.

#### Water Leasing Program

In November 2012, NFWF and WRID entered into an agreement for a three-year \$25 million storage water leasing program with associated irrigation infrastructure improvements. The goal of the grant is to improve inflows on a short-term, year-to-year basis by paying willing farmers to lease storage water rights and forgo use of the floodwater rights when applicable. Information from this demonstration leasing program will help inform the viability and effectiveness of a long-term leasing program.

Similar to NFWF, WRID is pursuing change approvals necessary for the water leasing program. Following all necessary approvals in California, Nevada and the Federal Decree Court, water leased will be protected instream to benefit the Walker River and Walker Lake.

**RIGHT PHOTO** Mountains rise around Walker Lake

# 2011 2012 2013

### INSTREAM PROTECTION TIMELINE

JUNE - JULY

#### AUGUST

40 protests filed on #80700.

NFWF begins actively working to resolve protestant issues ahead of hearing.

tect acquired water instream for Walker Lake.

**JANUARY** 

**MARCH 2011** 

Program submits first change ap-

plication (#80700) to the Nevada

State Engineer's (NSE) Office to pro-

NSE holds second pre-hearing conference on #80700.

#### **FEBRUARY**

First evidentiary exchange between the parties on #80700.

Second evidentiary exchange between the parties on #80700.

NFWF and WRID sign a stipulated agreement that allows for the non-

consumptive use portion of the water rights to be used to offset potential injury.

JUNE (CONTINUED)

#### **SEPTEMBER**

JUNE

NSE Hearing – presentation of WRID Stipulation. NSE gives parties more time to try to come to agreements with the remaining

Walker River Paiute Tribal Council votes to accept the conveyance agreement between NFWF, BIA and the WRPT.

#### **OCTOBER - NOVEMBER**

NSE Hearing for #80700. Only one remaining protestant group and a petition by the USBWC.

MARCH

JULY

NSE issues ruling 6271 approving #80700 and stipulated agreements without changes thereby overruling all remaining protests and petitions to the application.

NFWF petitions the Federal Decree Court to approve NSE ruling and modify the Walker River Decree.

JANUARY

Federal Decree Court Hearing.

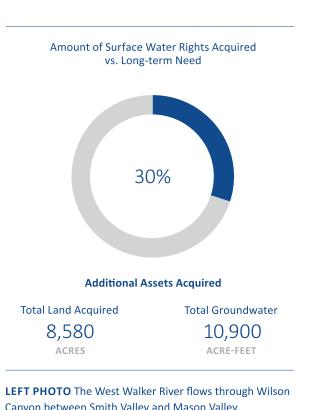
Federal Decree Court issues Order ruling Walker Lake is not within the basin, but allowing for transfer of water instream in Walker River for use to the point upstream of the lake, and remanding the transfer back to the NSE for modifications related to changes in historic use patterns of acquired water.

Nevada State Engineer's Office files notice of intent to appeal Federal Court Order to the 9th Circuit. NFWF and other parties join NSE

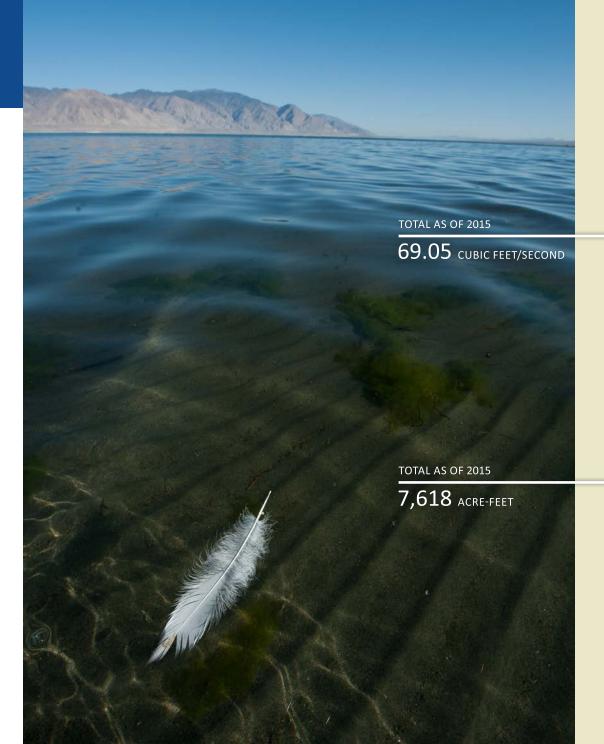
# WATER AND LAND ACQUISITIONS

To date NFWF has spent \$54 million on water and related assets to acquire about 30 percent of the water needed to restore and maintain Walker Lake in accordance with all necessary approvals.





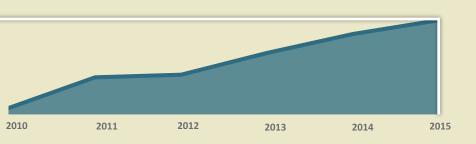
Canyon between Smith Valley and Mason Valley. **RIGHT PHOTO** A feather floats on Walker Lake.



# WATER ACQUISITION (2010-2015)

Since 2010, the program has purchased 18,000 acre-feet of surface water from willing sellers in the Walker Basin.

#### **DECREE WATER RIGHTS**



#### **RESERVOIR STORAGE WATER RIGHTS**



# STEWARDSHIP



Land stewardship is a priority and includes soil conservation and revegetation efforts on lands where water has been purchased for the benefit of Walker Lake.

This type of stewardship benefits both the community and wildlife, as it ensures that the land returns to a natural state while not creating dust or weed problems. During its first five years, the Program was responsible for revegetation initiatives and worked closely with the Mason and Smith Valley Conservation Districts to implement the revegetation efforts. Beginning in 2015 the Walker Basin Conservancy (WBC) has taken over the primary responsibility for all land stewardship activities. In the new role, the WBC continues to work with a variety of local entities, including the Mason and Smith Valley Conservation Districts.

In addition to land stewardship, the Program has focused time and funding on other conservation efforts, including reducing instream sedimentation, improving irrigation infrastructure, and investigating opportunities to reduce the overall water usage while keeping the local agricultural economy intact.

**LEFT PHOTO** California quail with chicks **RIGHT PHOTO** Walker Lake on a calm day

# **REVEGETATION ACTIONS** Over the last six years, the Program's efforts have resulted in noticeable improvements in key vegetation metrics throughout the Walker Basin. ACTIVE REVEGETATION 533 ACRES 31% 23% LIVE SEED APPLIED 5,872 POUNDS 5/8" DRIP LINE INSTALLED 25.9 MILES 55% 32% LIVE PLANT STOCK 8,825 PLANTS 45% PROPERTY NAME SOVEREIGN DCI WEIR (WILDLIFE PLOT)

## STEWARDSHIP PROGRAM HIGHLIGHTS

"Open space is extremely valuable to our family — it helps us bond and gets us out of the house, and we have so many memories already between my son, daughter and wife." — Cade Baligad, Mason Valley homeowner

#### 1,600 Acres of Land Donated to Nevada

NFWF donated nearly 1,600 acres of upland and riparian land, including more than 3 miles of the Walker River, to the state of Nevada. This land is now part of the Mason Valley Wildlife Management Area and provides upland wildlife habitat in perpetuity, as well as public access for hunting, fishing and general recreation.

# Improved Sediment Management (City of Yerington/Farr West)

Dredged excess sediment from the Walker River behind the Yerington Weir to reduce upstream flood concerns and improve flow to Walker Lake. Began evaluating opportunities to redesign weir and improve ditch operations.

#### Flood Forbearance Program

In 2011 following a winter with above-average snowpack, this demonstration program paid willing landowners to leave "excess flood waters" in the river throughout the spring snowmelt

season. With roughly two-thirds of the District's 80,000 eligible acres enrolled in the program, a significant amount of flood water remained in the river, resulting in a nearly 4-foot rise in Walker Lake by the end of July. There is the potential for a future version of the forbearance program if the necessary hydrologic conditions are present.

# Sustainable Agriculture Pilot Project: Desert Pearl Farms

As part of a Sustainable Agriculture Program agreement with Peri & Sons Farm and landholding subsidiary Desert Pearl Farms LLC (DPF), NFWF sold 360 acres of land as well as primary groundwater rights for continued agricultural use. Fields will be converted from alfalfa and irrigated pasture to organic vegetable crops (e.g., onion, broccoli, cauliflower and a variety of leafy greens) over a five- to seven-year period. In return, NFWF will have access to the financials to look at the economic impacts of crop conversion to help determine future opportunities to support the agricultural economy while reducing the acreage farmed.

#### Yerington Farmers' Market

A weekly summer farmers' market in Yerington was established via NFWF grant to the Western Nevada College to provide a way to sell locally produced vegetables and other goods.

#### Rafter 7 Ranch Opens to Public, June 2015

This property was purchased in 2013 by NFWF and will provide recreational opportunities including fishing, hiking and wildlife viewing.

# California Acquisition/Leasing Analysis (Mono County Grant)

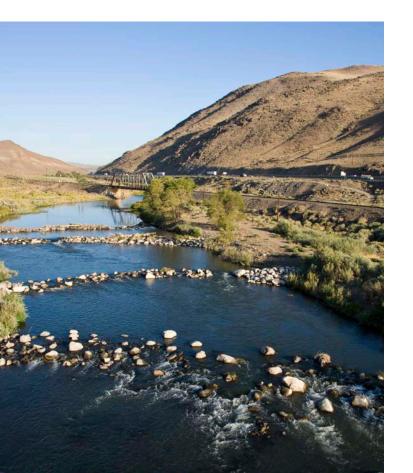
Conducted feasibility study and CEQA (California Environmental Quality Act) compliance for the possibility of leasing or purchasing water in the Walker River Basin in California for the benefit of Walker Lake.

**RIGHT PHOTO** An example of vegetable farming in Mason Valley



# DESERT TERMINAL LAKES PROGRAM

A terminal lake is formed at the end point of a closed watershed. These lakes have no outlets and, therefore, are greatly affected by variations in inflow caused by upstream diversions of surface water, groundwater pumping and changes in the hydrologic cycle.



Desert Terminal Lakes (DTL) funding was originally established by Public Law 101- 171 in 2002 to provide water to a unique collection of at-risk natural desert terminal lakes in the Great Basin. Subsequent legislative amendments made clear that the freshwater lakes of concern include Pyramid, Summit and Walker lakes in Nevada and their associated watersheds (i.e., the Carson, Truckee and Walker River basins in Nevada/California, and the Summit Lake basin in Nevada).

All Walker Program funds are administered directly by NFWF under a program grant agreement with the U.S. Bureau of Reclamation. Most other DTL grant funds are administered directly by Reclamation, although the agreement with Reclamation provides both limited funding and authority for NFWF to work in partnership with Reclamation to support conservation investment in other DTL basins. NFWF's conservation investments in the broader DTL geography include the Lahontan cutthroat trout recovery programs, as well as the acquisition and restoration of Sierra Nevada wet meadows.

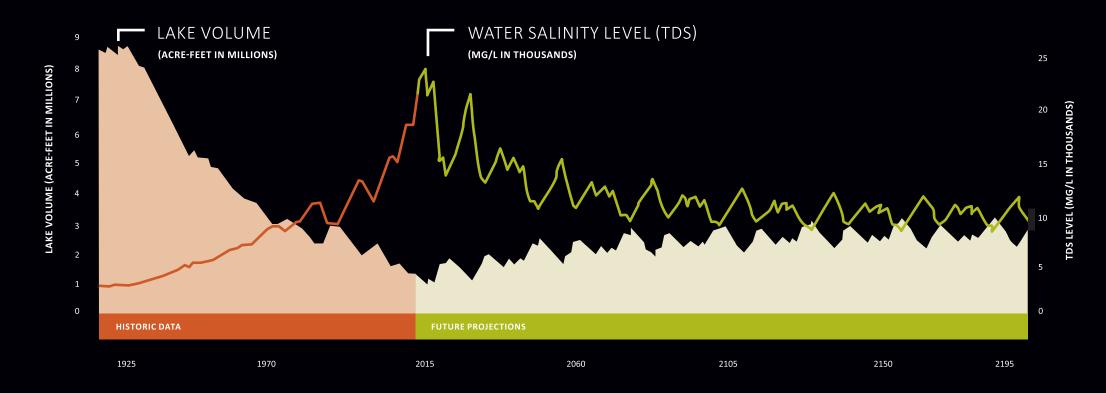
**LEFT PHOTO** Sunset on the Truckee River **RIGHT PHOTO** Pyramid Lake, a terminal lake in the

Truckee Basin



# FUTURE OF THE WALKER BASIN RESTORATION PROGRAM

2015	Walker Basin Conservancy established and staffed.	Begin opening specific properties managed by the WBC for public access.			
2016 - 2025	Increase pace of acquisitions on an annual basis.	Continue to work through legal process to protect water instream for the benefit of Walker River and Walker Lake.	Additional change applications to protect water instream will be submitted to the NSE.	Water protected instream, lake level begins to rise.	Monitor protected water instream to the lake.
2025 +	Active management and monitoring of instream water rights.	Lake TDS hits 16,000 mg/L for the first time in 2025 and remains below this level after 2043.*	Continue legal protection of existing water rights as necessary.	WBC continues long-term stewardship activities.	Lake TDS drops below 12,000 mg/L by 2050 and by 2090 it stabilizes around a long-term



# PROGRAM PROJECTIONS - KEY RESULTS

20-25 percent

Amount of all surface water rights in the Walker River Basin that the Program will need to acquire from willing sellers in CA and NV to meet long-term restoration objectives.

54,000

Approximate average for total additional flows needed at the USGS Wabuska gage after program is fully implemented.

41,000 acre-feet/year

Approximate average for total additional flows at Walker Lake including losses.

16,000 milligrams/liter

The TDS level that the lake reaches (and fluctuates around) starting in 2025 and remains below after 2043.\*

2090 milestone

Year that TDS stabilizes around a long-term average of 10,000 mg/L. TDS previously dropped below 12,000 mg/L in 2050. \*

<sup>\*</sup> BASED ON CURRENT MODELING ASSUMPTIONS

# WALKER BASIN RESTORATION PROGRAM FINANCIAL INFORMATION

Walker Basin Restoration
Program Funds Expended
Within The Walker Basin
FY10 - FY15

		TOTAL	\$5,086,750
		SUBTOTAL	\$413,750
	Office Rental		\$62,500
	Computer and Office Services		\$17,000
	Catering/Room Rental/Tour Supplies		\$2,250
	Pest Control		\$4,000
	Utilities and Fuel		\$38,750
	Farm Operating Costs (Supplies and Repairs)		\$133,000
	Reveg Expenses		\$57,000
	Vehicles/Registration Fees		\$53,250
LOCAL EXPENSES	Land Surveys and Local Acquisition Support		\$46,000
		SUBTOTAL	\$103,000
LYON COUNTY	Property Taxes		\$103,000
CONSERVATIVE DISTRICTS		SUBTOTAL	\$640,000
MASON & SMITH VALLEY	Revegetation Grants and Contracts		\$640,000
		SUBTOTAL	\$1,022,500
CITY OF YERINGTON	Grant for Dredge		\$1,022,500
		SUBTOTAL	\$2,907,500
LOCAL WATER AGENCIES	Ditch Assessments		\$45,500
DISTRICT (WRID) & OTHER	Water Assessments		\$424,500
WALKER RIVER IRRIGATION	Leasing Program (Flood Water Forbearance and Phase I)		\$2,437,500

# WALKER PROGRAM EXPENDITURES & COMMITMENTS FY10 - FY15 \$0 \$3,049,250 \$2,525,000 \$2,668,500 \$3,345,250 \$8,738,250 **\$20,326,250** \$6,946,000 \$16,953,250 \$694,750 \$13,110,500 \$9,552,750 \$8,078,750 **\$55,336,000** TRANSACTIONS ADMINISTRATION & \$917,750 \$1,358,750 \$1,415,500 \$1,696,750 \$2,267,000 \$2,068,500 **\$9,724,250** CONTRACTUAL SERVICES ASSESSMENTS, TAXES & FEES \$71,500 \$117,250 \$130,000 \*\$177,500 \$573,250 TOTAL EXPENDITURES \$7,872,750 \$21,429,250 \$4,706,750 \$17,593,000 \$15,295,000 \$19,063,000 **\$85,959,750** \* Paid by WBC through NFWF grant COMMITMENT DISTRIBUTION Acquisitions / Transactions Administration & Contractual Services Lighter Areas Represent Additional Funding Commitments Taxes & Fees \$ Millions





#### FOR ADDITIONAL INFORMATION ABOUT THE WALKER BASIN RESTORATION PROGRAM, PLEASE EMAIL US AT: WALKERBASIN@NFWF.ORG OR VISIT OUR WEBSITE AT: WWW.WALKERBASIN.ORG

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#### **SPECIAL THANKS TO:**

U.S. Bureau of Reclamation, Desert Terminal Lakes Program\*

Office of U.S. Senator Harry Reid & Staff

Bruce Aylward, Ecosystem Economics, LLC

Jamie Morin, Mentor Law Group, PLLC

Harry Seely, Westwater Research

#### **GRANTEES, STAKEHOLDERS & PARTICIPANTS**

**American Rivers** 

Bureau of Indian Affairs

**Bureau of Reclamation** 

California Trout

City of Fernley

City of Yerington

**Dayton Valley Conservation District** 

Desert Research Institute

Great Basin Land and Water

Lyon County

Mason Valley Conservation District

Mineral County

Mono County

Mono County Resource Conservation District

Nevada Department of Wildlife

Nevada Division of Water Resources

Nevada Land Trust

Pyramid Lake Paiute Tribe

**River Partners** 

**Smith Valley Conservation District** 

Summit Lake Paiute Tribe

The Nature Conservancy

The Trust for Public Land

**Trout Unlimited** 

Truckee Donner Land Trust

Truckee River Watershed Council

University of Nevada, Reno

U.S. Board of Water Commissioners

U.S. Fish and Wildlife Service

U.S. Geological Survey

Walker Basin Conservancy

Walker Lake Working Group

Walker River Irrigation District

Walker River Paiute Tribe

Western Nevada College - Specialty Crop Institute

Yerington Paiute Tribe

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**DESIGN:** RIPE, WASHINGTON, D.C.

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