

## **Chapter 1**

## **Purpose of and Need for Action**



# Chapter 1 Purpose of and Need for Action

This Revised Walker River Basin Acquisition Program Draft Environmental Impact Statement (Revised DEIS) has been prepared for informational purposes rather than a National Environmental Policy Act (NEPA) analysis for federal agency decision making. The Revised DEIS includes responses to public comments on the Acquisition Program DEIS released for public review in July 2009. The Revised DEIS has been updated to include changes as determined appropriate from public comment as well as new data, analysis, and legislation regarding the Acquisition Program.

The Bureau of Reclamation (Reclamation) does not have decision-making authority over the Acquisition Program analyzed in the document and has determined NEPA compliance is not required. This determination was previously explained in the July 2009 DEIS, in mailings and news releases for the DEIS, and at the August 2009 DEIS public hearings.

Additional comments regarding the Acquisition Program are not being solicited on this Revised DEIS. A formal Notice of Cancellation of the EIS has been submitted to the *Federal Register*. A Final EIS (FEIS) and Record of Decision (ROD) will not be issued.

## Introduction

Reclamation has prepared this Revised DEIS for the Walker River Basin Acquisition Program. The Revised DEIS examined a No Action Alternative and three acquisition alternatives for implementation of the Acquisition Program to acquire water for Walker Lake, an imperiled desert terminal lake in Nevada. The purpose of the Acquisition Program is to support efforts to preserve Walker Lake while protecting agricultural, environmental, and habitat interests in the Walker River Basin.

Reclamation's role related to the Acquisition Program is to provide funding through Reclamation's Desert Terminal Lakes Program, established in 2002 by Public Law (PL) 101-171. Reclamation has provided funding to the University of Nevada System of Higher Education (University) for the Acquisition Program and research as authorized in PL 109-103. Under PL 111-85, enacted in October 2009, the funding can also be provided to the National Fish and Wildlife Foundation (NFWF) for activities related to the Acquisition Program; the law also allocates additional funds to NFWF and other entities for related activities in the Walker River Basin.

NFWF and the University entered into an Assignment and Delegation Agreement on December 24, 2009 (Appendix 1A). Under this agreement the University

assigned to NFWF all of the University's rights, interests, and obligations for the Walker River Basin Acquisition Program. This includes all the option and purchase agreements previously entered into by the University. NFWF's role going forward will be to further develop and implement the Acquisition Program. The University's role will be to support such efforts through associated research, modeling, monitoring, and evaluation.

In accordance with PL 111-85, NFWF submitted a proposed scope of work to Reclamation that lays out its intent in administering the Acquisition Program. To facilitate explanations and analysis in this Revised DEIS, Reclamation includes discussions of their understanding of NFWF's intentions with regard to several aspects of the Acquisition Program implementation based on the information contained in NFWF's proposed scope of work. However, all discussions in this Revised DEIS regarding NFWF's intentions should be regarded as preliminary and subject to revision as NFWF continues to develop their implementation planning process for the Acquisition Program.

The Revised DEIS includes analysis based on assumptions related to ongoing unresolved details of the Acquisition Program that will occur as the program is developed and implemented. The Revised DEIS recognizes that the Acquisition Program funding, existing litigation, and other factors are part of a dynamic process that will likely continue to change over time and affect the analysis as currently displayed in this Revised DEIS. The Revised DEIS has value as an informational document that describes impacts of the Acquisition Program as they are known at this time and incorporates the results of the process that allowed public opinion to be heard, documented for, and considered in the analysis.

## **Authorizing Legislation**

Since 2002, Congress has passed eight pieces of desert terminal lakes legislation related to the Walker River Basin (Appendix 1B). Pertinent portions of the primary public laws related to the Acquisition Program are discussed below. These public laws, together with the deteriorated environment of Walker Lake, provide the foundation for the Purpose and Need statement for this Revised DEIS.

- PL 107-171 (Farm and Rural Security Investment Act enacted in 2002) Section 2507 provided \$200 million to Reclamation to provide water to at-risk natural desert terminal lakes with the provision that the funds not be spent to purchase or lease water rights.
- PL 108-7 (Omnibus Appropriations Bill enacted in 2003) Section 207 clarified that the money provided in PL 107-171 could only be used for Pyramid, Summit, and Walker Lakes in Nevada.
- PL 109-103 (2006 Energy and Water Development Appropriations Act enacted in 2005), Title II, Section 208(a) established the purposes for which

\$70 million in funds provided through Reclamation are to be used by the University, as follows:

- (a) (1) Using amounts made available under section 2507 of the Farm and Security Rural Investment Act of 2002 (43 U.S.C. 2211 note; Public Law 107-171), the Secretary [of the Interior] shall provide not more than \$70,000,000 to the University of Nevada–*
    - (A) to acquire from willing sellers land, water appurtenant to the land, and related interests in the Walker River Basin, Nevada; and*
    - (B) to establish and administer an agricultural and natural resources center, the mission of which shall be to undertake research, restoration, and educational activities in the Walker River Basin relating to–*
      - (i) innovative agricultural water conservation;*
      - (ii) cooperative programs for environmental restoration;*
      - (iii) fish and wildlife habitat restoration; and*
      - (iv) wild horse and burro research and adoption marketing.*
  - (2) In acquiring interests under paragraph (1)(A), the University of Nevada shall make acquisitions that the University determines are the most beneficial to–*
    - (A) the establishment and operation of the agricultural and natural resources research center authorized under paragraph (1)(B); and*
    - (B) environmental restoration in the Walker River Basin.*
- PL 110-246 (Food, Conservation, and Energy Act of 2008) amended PL 107-171 to provide an additional \$175 million to benefit at-risk natural desert terminal lakes along with specific authority for water leasing and the purchase of land, water, and related interests to achieve that purpose.
- PL 111-85 (2010 Energy and Water Development Appropriations Act enacted in 2009) Sections 206 through 208 includes new legislation for the Desert Terminal Lakes Program and makes additions and modifications to previous desert terminal lakes public laws. Specific changes of relevance to the Walker River Basin include the following:
  - additional amendments to PL 107-171, which authorize funding “for efforts consistent with researching, supporting, and conserving fish, wildlife, plant, and habitat resources in the Walker River Basin”, and

- modifications to PL 109-103 Section 208 to include NFWF as well as the University:
  - (1) *OPROVISION OF FUNDS-*
    - (A) *IN GENERAL.-Using amounts made available under section 2507 of the Farm and Security Rural Investment Act of 2002 (43 U.S.C. 2211 note; Public Law 107-171), the Secretary [of the Interior] shall provide not more than \$70,000,000 to the University of Nevada or the National Fish and Wildlife Foundation*
- modifications to PL109-103 to add that, in addition to acquisitions and research, funding may be used:
  - (iii) *to design and implement conservation and stewardship measures to address impacts from activities carried out---*
    - (I) *to acquire from willing sellers land, water appurtenant to the land, and related interests in the Walker River Basin, Nevada; and*
    - (II) *in conjunction with willing landowners.*
- adds NFWF to the provision that the University will implement acquisitions that it determines to be most beneficial as follows:
  - (2) *In acquiring interests under.... paragraph (1)(A) (i), the University of Nevada **or the National Fish and Wildlife Foundation** shall make acquisitions that the University **or the Foundation** determines to be the most beneficial to—*
    - (A) *the establishment and operation of the agricultural and natural resources research center ...; and*
    - (B) *environmental restoration in the Walker River Basin.*
- includes new funding for NFWF under Section 208 and specifies what the funding is to be used for:
  - (a) *Of the amounts made available under section 2507 of the Farm Security and Rural Investment Act of 2002 (43 U.S.C. 2211 note; Public Law 107-171), the Secretary of the Interior, acting through the Commissioner of Reclamation, shall—*
    - (1) *provide, subject to subsection (b), \$66,200,000 to establish the Walker Basin Restoration Program for the primary purpose of restoring and maintaining Walker Lake, a natural desert terminal lake in the State of Nevada, consistent with protection of the ecological health of the Walker River and the riparian and*

*watershed resources of the West, East, and Main Walker Rivers;  
and*

*(b)(1) The amount made available under subsection (a)(1) shall be--*

*(A) used, consistent with the primary purpose set forth in subsection (a)(1), to support efforts to preserve Walker Lake while protecting agricultural, environmental, and habitat interests in the Walker River Basin; and*

*(B) allocated as follows:*

*(i) \$25,000,000 to the Walker River Irrigation District, acting in accordance with an agreement between that District and the National Fish and Wildlife Foundation--*

*(I) to administer and manage a 3-year water leasing demonstration program in the Walker River Basin to increase Walker Lake inflows; and*

*(II) for use in obtaining information regarding the establishment, budget, and scope of a longer-term leasing program.*

*(ii) \$25,000,000 to advance the acquisition of water and related interests from willing sellers authorized by section 208(a)(1)(A)(i) of the Energy and Water Development Appropriations Act, 2006 (Public Law 109-103; 119 Stat. 2268).*

*(iii) \$1,000,000 for activities relating to the exercise of acquired option agreements and implementation of the water leasing demonstration program, including but not limited to the pursuit of change applications, approvals, and agreements pertaining to the exercise of water rights and leases acquired under the program.*

*(iv) \$10,000,000 for associated conservation and stewardship activities, including water conservation and management, watershed planning, land stewardship, habitat restoration, and the establishment of a local, nonprofit entity to hold and exercise water rights acquired by, and to achieve the purposes of, the Walker Basin Restoration Program.*

*(v) \$5,000,000 to the University of Nevada, Reno, and the Desert Research Institute--*

- (I) for additional research to supplement the water rights research conducted under section 208(a)(1)(A)(ii) of the Energy and Water Development Appropriations Act, 2006 (Public Law 109-103; 119 Stat. 2268);*
  - (II) to conduct an annual evaluation of the results of the activities carried out under clauses (i) and (ii); and*
  - (III) to support and provide information to the programs described in this subparagraph and related acquisition and stewardship initiatives to preserve Walker Lake and protect agricultural, environmental, and habitat interests in the Walker River Basin.*
- (vi) \$200,000 to support alternative crops and alternative agricultural cooperatives programs in Lyon and Mineral Counties, Nevada, that promote water conservation in the Walker River Basin.*

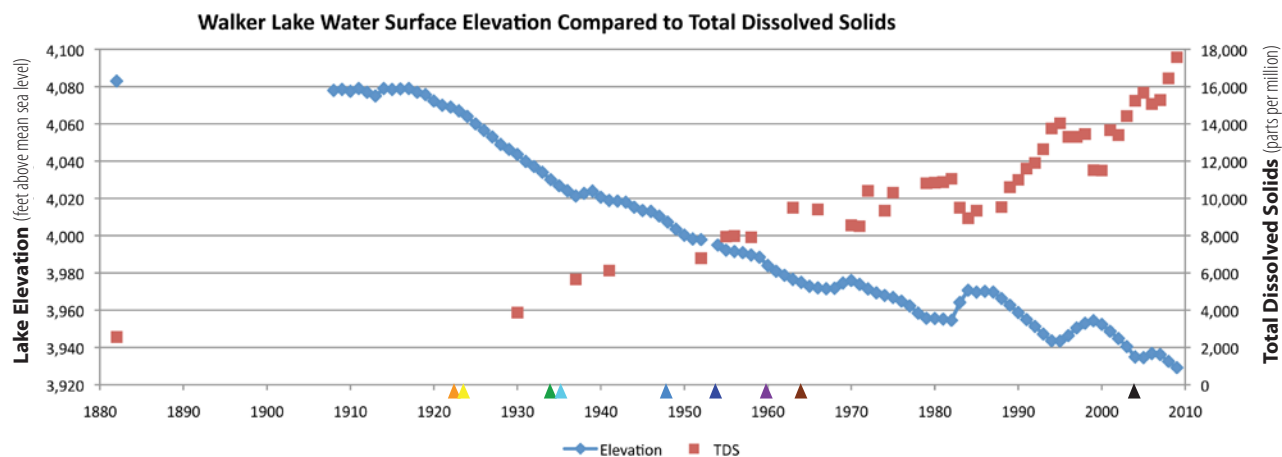
## Background

Walker River originates in the eastern portion of the Sierra Nevada in California, flows into eastern Nevada, and empties into Walker Lake. Walker Lake is a terminal lake; i.e., it has no outlet. The lake is located in a watershed that supports significant agriculture activity.

From 1882 to present, diversions from the river, primarily for upstream irrigated agriculture, have resulted in an approximate 150-foot drop in the lake's surface elevation and a corresponding reduction in volume from about 10 million acre-feet (af) to less than 2 million af of water (Figure 1-1). The river is over-allocated, meaning that not all demands on the river can be met, even in normal water years, and irrigated agriculture consumes a significant part of the river upstream. As a result, in most years and over time, inflow to Walker Lake is not sufficient to offset Lake surface evaporation demands, and the lake surface elevation continues to decline.

Consequent changes in Walker Lake over time have resulted in extremely poor water quality, with very high total dissolved solids (TDS), alkaline pH, and major ion chemistry (University of Nevada, Reno and Desert Research Institute 2009). The decline in lake elevation has caused the TDS concentration to increase from approximately 2,500 milligrams per liter (mg/L) in 1882 to approximately 17,500 mg/L in 2009. Walker River has very low TDS, and increased river inflow over a sufficiently long period of time should lower Walker Lake TDS (University of Nevada, Reno and Desert Research Institute 2009).





Year	Event
1852	Irrigation begins
▲ 1922	Topaz Reservoir completed
▲ 1923	Bridgeport Reservoir completed
▲ 1934	Weber Reservoir completed
▲ 1936	C-125 issued
▲ 1948	Carp die out
▲ 1953	C-125 adopted; Lahontan cutthroat trout (LCT) stocked
▲ 1960	Designated groundwater
▲ 1963	Perch die out
▲ 2004	100% mortality of acclimated stocked LCT, tui chub unable to spawn 2004

Source: Sharpe et al. 2008

**Figure 1-1**  
**Timeline for Walker Lake from 1882 to 2008**



The high TDS concentration in Walker Lake has threatened the lake's viability as a fishery and has far-reaching impacts on the health of the lake and its associated ecosystems. Some members of the public and others entities have expressed concern over the declining lake elevation and subsequent impacts on the water quality and ecology of the lake. This concern has led to Congressional legislation intended to address the lake's problems, as described above in the Introduction section of this chapter.

Under the language of PL 109-103 Section 208 (a) and PL 111-85 Section 206 and 208, Reclamation is directed by Congress to provide funding to the University or NFWF for the Acquisition Program and research. Reclamation anticipated that the Acquisition Program could have significant impacts in the Walker River Basin and began preparation of an Environmental Impact Statement (EIS) with public review and comments to provide for full public disclosure of potential adverse and beneficial impacts. The scope of the analysis in this Revised DEIS is limited to reflect the specific direction given Reclamation in the public laws (to fund acquisitions from willing sellers and to fund research). A range of acquisition alternatives that meet the public law direction were developed for analysis.

The legislation directs Reclamation to provide the funding to the University or NFWF for activities related to the Acquisition Program. To date the University has implemented extensive research studies in the Walker River Basin and entered into 10 option agreements with willing sellers for potential acquisition of water. As previously discussed, under agreement with the University, NFWF will be developing and implementing the Acquisition Program going forward, including disposition of the option agreements entered into by the University.

Administration of the Acquisition Program will involve all aspects of program implementation, including but not limited to negotiating and exercising acquisition agreements, seeking all necessary water rights change approvals and agreements, and making decisions about the utilization of acquired water rights. The University's role will be to support acquisition efforts and decisions through associated research, modeling, monitoring and evaluation. Many other potential entities could also be involved in implementation efforts, such as NFWF grantees, agency partners, a local nonprofit established to hold and exercise acquired water rights, the University and Desert Research institute (DRI) for research and monitoring, and entities like the Walker River Irrigation District (WRID) under future amended authorities. The potential impacts of the Acquisition Program are expected to be the same with NFWF's administration of the program instead of the University.

## Purpose and Need Statement

The requirements of an EIS Purpose and Need statement are that “the statement shall briefly specify the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action.”

Reclamation developed the following Purpose and Need statement for this Revised DEIS responding to direction in the applicable desert terminal lakes public laws:

*The purpose of the Walker River Basin Acquisition Program is to provide water to Walker Lake, an at-risk natural desert terminal lake in Nevada, by acquiring, from willing sellers, land, water appurtenant to the land, and related interests in the Walker River Basin in Nevada; and to make acquisitions that are the most beneficial to environmental restoration in the Walker River Basin. The Acquisition Program is needed to implement section 208(a) of PL. 109-103 and Sections 206-208 of PL 111-85 in accordance with section 2507 of PL 101-171 (as amended) and section 207(a)(1) of PL 108-7.*

## EIS Process

The involvement of state, local, and federal agencies; the public; tribes; and Cooperating Agencies in the development and review of the Revised DEIS is discussed in detail in Chapter 16, Consultation and Coordination.

The steps involved in this EIS process are described briefly below.

- **Step 1: Notice of Intent**—The Notice of Intent (NOI) to prepare an EIS was published in the *Federal Register* in September 2007 (Appendix 1C).
- **Step 2: Public Scoping**— Agencies, tribes, and the public were asked to comment on the Acquisition Program and alternatives to be analyzed in the EIS. Four scoping meetings were held at the beginning of the process and three additional public meetings were held after draft alternatives were developed.
- **Step 3: Impact Analysis**—An analysis of the acquisition alternatives and No Action Alternative was developed and adverse and beneficial impacts were disclosed. An Administrative DEIS was circulated to Cooperating Agencies for review and comment.

**Mitigation:** Mitigation measures for adverse impacts were not developed for the Acquisition Program because the legislation does not give Reclamation decision-making authority for developing and implementing the Program; therefore, the impacts described in the Revised DEIS are the

impacts that would occur without any mitigation. Including mitigation in the analysis of impacts would be speculative because it is unknown what mitigation measures would be considered and implemented by NFWF.

However, the new funding provided to NFWF under PL 111-85 is expressly authorized for the primary purpose of restoring and maintaining Walker Lake consistent with “protecting agricultural, environmental, and habitat interests in the Walker River Basin.” PL 111-85 includes \$10 million for associated conservation and stewardship activities (including land stewardship, water conservation, and establishment of a local nonprofit entity), and separately authorizes NFWF to work with willing landowners to design and implement measures to address impacts from activities carried out under the Acquisition Program. Details of likely mitigation measures have not yet been formulated by NFWF. PL 111-85 also included \$200,000 to support alternative crops and alternative agricultural cooperatives programs in Lyon and Mineral Counties that promote water conservation in the Walker River Basin. There is potential in the future for additional desert terminal lakes funding for these types of conservation and stewardship activities.

In addition, many of the University and DRI Walker River Basin studies were specifically designed to inform implementation of the Acquisition Program to assist in the development of projects that sustain the economy, ecosystem, and lake. These studies are discussed below under Related Research Projects. Examples of such research include studying low-water-use alternative crops, re-establishing desirable vegetation on lands that may no longer be irrigated for agriculture, and formulating economic development actions that could help mitigate potential adverse economic impacts.

- **Step 4: July 2009 DEIS—** Even though Reclamation determined that NEPA compliance was not required, a DEIS was provided for public review and comment. Four DEIS Public hearings were held to provide information and solicit comments on the Acquisition Program. A Notice of Availability was issued in the *Federal Register* (Appendix 1C) for the DEIS with notification of the public hearings and a 45-day comment period. The comment period was extended upon request allowing for an approximate 73-day public comment period.
- **Step 5: Revised DEIS -** Under NEPA an FEIS and ROD are usually issued after preparation of a DEIS. However, Reclamation has determined that since the agency does not have discretion for implementation or control over expenditures of the Acquisition Program by the recipient, an FEIS and ROD will not be issued.

Reclamation decided it was appropriate to issue a Revised DEIS with responses to public comments made on the July 2009 DEIS. All comments provided in writing and at the public hearings were considered and evaluated and changes were made to the DEIS if determined appropriate by

Reclamation. The comments and responses are located in Volume 2 of this Revised DEIS. The Revised DEIS was also updated to include new data, legislation, and analysis.

- **Step 6: Notice of Cancellation of EIS** in the *Federal Register* – An FEIS and ROD will not be issued and additional comments are not being sought on the Revised DEIS. A Notice of Cancellation of the EIS has been submitted to the *Federal Register*

## Determination that NEPA is Not Required

In 2008, DOI revised its regulations for implementing NEPA (43 Code of Federal Regulations [CFR] Part 46 Implementation of the NEPA of 1969 Final Rule); the rule was finalized on November 14, 2008. Section 46.100 (a) of these regulations states in part:

*“A bureau proposed action is subject to the procedural requirements of NEPA if it ... is subject to bureau control and responsibility (40 CFR 1508.18). The determination of whether a proposed action is subject to the procedural requirements of NEPA depends on the extent to which bureaus exercise control and responsibility over the proposed action and whether Federal funding or approval are necessary to implement it. **If Federal funding is provided with no Federal agency control as to the expenditure of such funds by the recipient, NEPA compliance is not necessary.**”*

Reclamation does not exercise control or responsibility over the Acquisition Program, is not approving the action, and does not have control over the expenditure of federal funds by the recipient. NEPA compliance is therefore not required because the Acquisition Program and funding of the program is not a federal agency discretionary action by Reclamation. Reclamation does not have decision-making authority for the Acquisition Program, does not have an ability to meaningfully influence the action, and is only the funding conduit for the entity that does. There are no environmental consequences that result from a federal agency decision.

A ROD is usually the final step in the NEPA process for an EIS. The ROD is the federal decision made on the range of alternatives addressed in the EIS. The authorizing legislation directs that NFWF (and formerly the University) determines how the Acquisition Program is to be developed and implemented. Reclamation’s directed role is to provide funding to the University or NFWF for those purposes. Reclamation has no authority to issue a ROD making decisions on the Acquisition Program. NEPA compliance, including issuing a ROD, is not required.

Reclamation determined that while NEPA compliance is not required, there was value in issuing a Revised DEIS. The Revised DEIS discloses impacts as they are known at this time and incorporates the results of the process that allowed public opinion to be heard, documented for public availability, and considered in the analysis. The Revised DEIS was completed to provide the public and NFWF current data and other information on the Walker River Basin and on analysis of beneficial and adverse impacts expected from implementation of the Acquisition Program.

Additional language in PL 111-85, enacted in October 2009, further limits Reclamation's role in the Acquisition Program and directs the Secretary (through Reclamation) to provide the funding in an advance payment to NFWF as shown below:

*(B) NATIONAL FISH AND WILDLIFE FOUNDATION-*

- (i) DATE OF PROVISION- The Secretary shall provide funds to the National Fish and Wildlife Foundation pursuant to subparagraph (A) in an advance payment of the available amount--*
  - (I) on the date of enactment of the Energy and Water Development and Related Agencies Appropriations Act, 2010; or*
  - (II) as soon as practicable after that date of enactment.*

## **Geographic Scope and Setting of the Acquisition Program**

The Walker River Basin encompasses approximately 4,050 square miles in east-central California and west-central Nevada (Lopes and Smith 2007) (Figure 1-2 and Figure 1-3). The basin is situated in five counties: Mono County in California; and Douglas, Lyon, Mineral, and Churchill Counties in Nevada. The Walker River consists of the West Walker River (the larger fork), East Walker River, and mainstem Walker River, which flows into Walker Lake. Water diversions from the Walker River, primarily for irrigation, sustain the agricultural economies and communities in the basin.

The project area as described in the Revised DEIS refers to the Nevada portion of the Walker River Basin. The California portion of the basin accounts for 25% of the basin area (Lopes and Smith 2007), and is not part of the project area or included in the Acquisition Program. No land in California, water appurtenant to that land, or related interests would be acquired through the Acquisition Program; however, WRID's rights to stored water in California, which are appurtenant to and used on lands in Nevada, may be included in the Acquisition Program if offered by willing sellers. The 3-year WRID demonstration water leasing program authorized separately by PL 111-85 will be funded through a grant agreement with NFWF. WRID's pilot project may or may not be different from the Leasing

Alternative analyzed in this Revised DEIS. The pilot project is not formally part of the Acquisition Program being analyzed in this Revised DEIS. This Revised DEIS addresses the environmental setting and environmental impacts for Lyon, Mineral, and Douglas Counties in Nevada. Churchill County would not be affected by the Acquisition Program alternatives; no acquisitions are expected in Douglas County but it is included in the analysis because part of the Walker River and one of the reservoirs are located in Douglas County.

### **West Walker River and Valley**

The West Walker River originates in the Sierra Nevada in Antelope Valley near the town of Walker in Mono County, California. From its headwaters it flows north and then east past Topaz Lake Reservoir, an off-stream reservoir that straddles the California-Nevada state line. From there it flows across the southern corner of Douglas County, Nevada, and then into Hoyo Canyon in Lyon County. The West Walker River enters Smith Valley near the towns of Smith and Wellington (Yardas 2007).

From Wellington the West Walker River enters Wilson Canyon and exits at the southern end of Mason Valley. From there it flows north to its confluence with the East Walker River near Yerington, which is the county seat of Lyon County (Yardas 2007).

### **East Walker River and Valley**

The East Walker River originates in the Sierra Nevada south of Bridgeport, California, and flows in a northeasterly direction through Bridgeport Valley and Bridgeport Reservoir. Downstream of Bridgeport Reservoir it flows into Lyon County in Nevada, and from there through the East Walker River Canyon to its confluence with the West Walker River in southern Mason Valley (Yardas 2007).

### **Mainstem Walker River**

From the confluence of the East and West Walker Rivers, the mainstem Walker River flows north through Mason Valley, including the Mason Valley Wildlife Management Area (WMA), to its northernmost point near the town of Wabuska. From there it turns abruptly east, then south, as it flows around the northern end of the Wassuk Range and then enters the Walker River Indian Reservation. It continues downstream into Weber Reservoir, which straddles the Lyon-Mineral County line, and then flows past Schurz to its terminus at Walker Lake near Hawthorne (Yardas 2007).

### **Walker Lake**

Walker Lake is a desert terminal lake located near Hawthorne, Nevada. It is bounded on the west by the steeply rising Wassuk Range and on the east by the



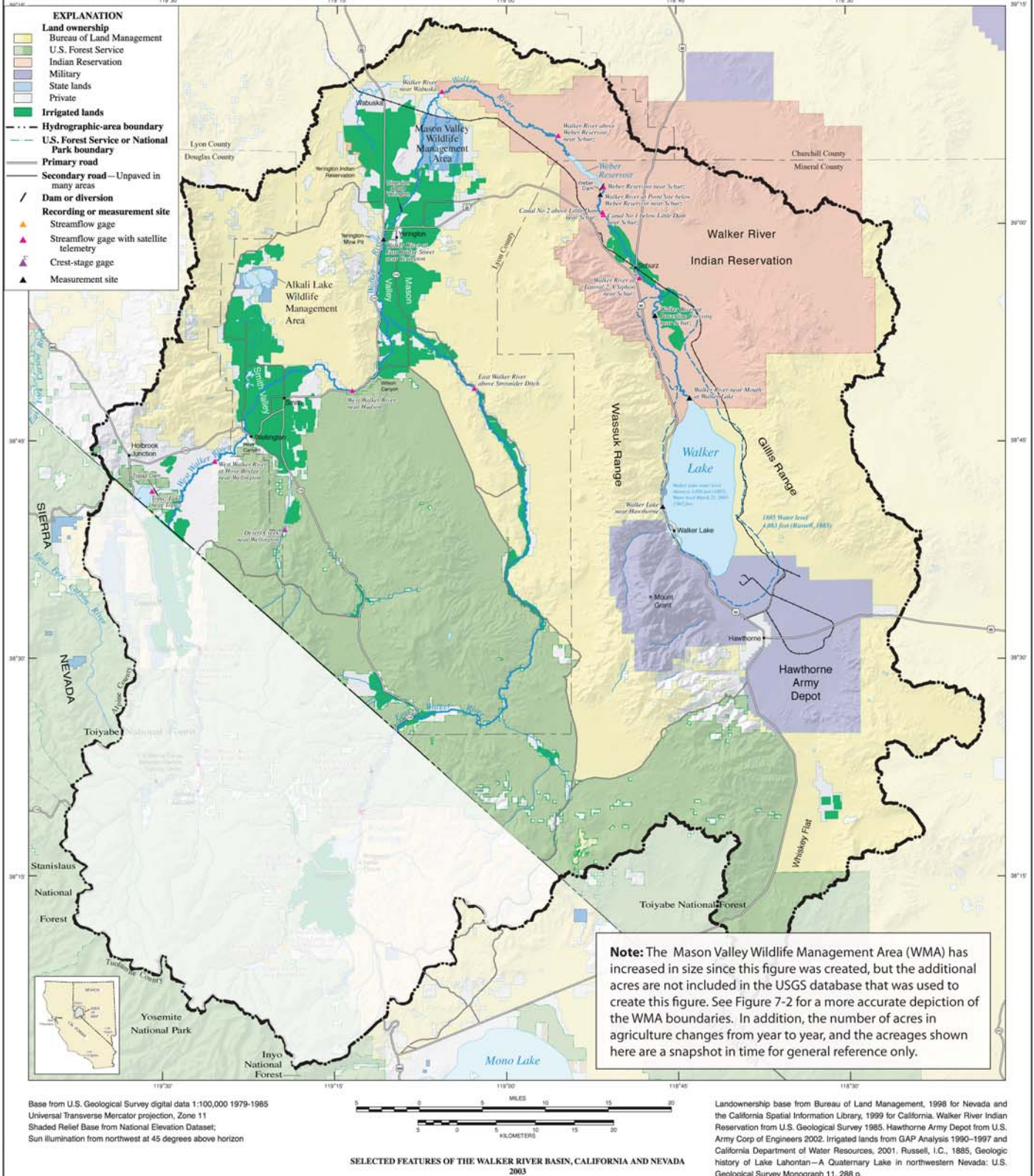
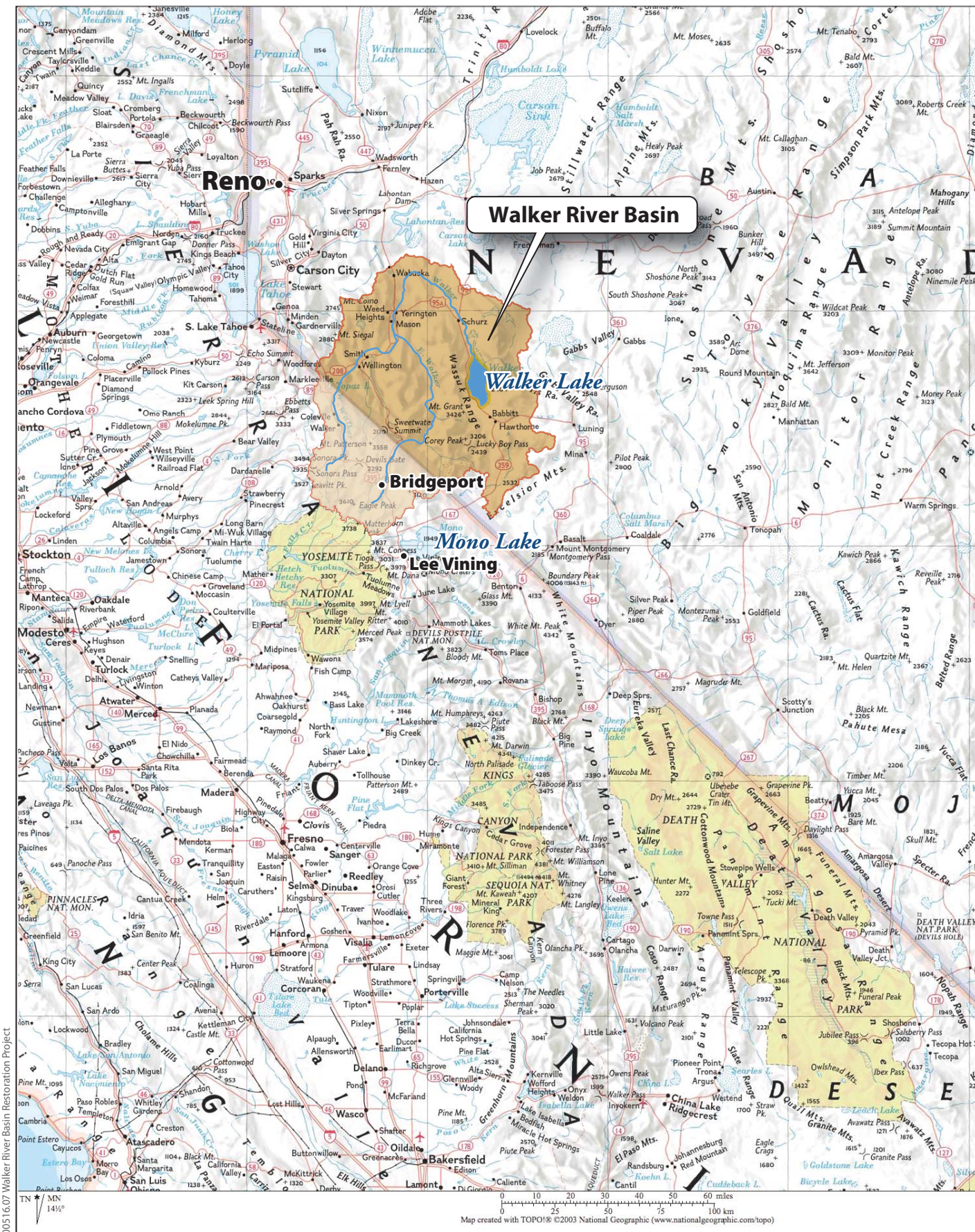


Figure prepared for Bureau of Reclamation by U.S. Geological Survey





**Figure 1-3**  
**Project Vicinity**



Gillis Range. The lake is formed by a depression in a broad north-northwest trending fault zone called Walker Lane (Lopes and Smith 2007).

The lake's elevation was 3,927 feet above mean sea level (msl) in November 2009, compared to 4,083 feet above msl in 1882 (Sharpe et al. 2008). Decreased lake volume and depth have adversely affected the Walker Lake ecosystem, while increased TDS concentration, increased water temperature, and decreased dissolved oxygen have contributed to changes in nutrient cycling, biotic communities, and the extent and quality of fish habitat (Sharpe et al. 2008). Walker Lake currently supports stocked populations of Lahontan cutthroat trout (LCT) (*Oncorhynchus clarkii henshawi*), a federally listed threatened fish species once native to the lake and the Walker River system. There is a self-sustaining resident population of Lahontan tui chub (*Gila bicolor*), a critical food source for the lake's LCT population and for migratory fish-eating birds like the common loon (*Gaver immer*) and white pelican (*Pelicanus erythrophynchos*) (Sharpe et al. 2008). If conditions continue to decline, neither LCT nor tui chub will be able to survive in Walker Lake, and eventually the lake could become like Mono Lake, hosting brine flies and brine shrimp (Sharpe et al. 2008).

## Related Research Projects

Several agencies are conducting research related to the Acquisition Program and the Walker River Basin's ecology and economy. These research projects are described below. Other projects occurring in the Walker River Basin that are not primarily research are described in the Chapter 14, Cumulative Impacts.

### Desert Research Institute and University of Nevada, Reno

A large-scale integrated research program was established by DRI and the University in order to enact an ecologically and economically sustainable program of water acquisitions. The \$11 million research program was funded by the Reclamation Desert Terminal Lakes Program. The goal of this Walker River Basin research was to provide the hydrologic, ecologic, economic, and agricultural data needed to inform decisions related to water acquisitions (University of Nevada, Reno and Desert Research Institute 2009).

The research program was developed in response to direction provided in the federal legislation. Specifically, DRI and the University were funded to 1) develop a method to optimize the purchase of water rights in the Walker River Basin, 2) evaluate options for practicing alternative agricultural practices, and 3) evaluate the impacts that water removal from crop-irrigated lands would have on the spread of invasive plants, aquatic and terrestrial ecosystems, and the local economy.

A brief summary of the research conducted by DRI and the University under the Walker Basin Project is provided below.

- Health of Walker River and Lake—Evaluate and establish a benchmark for the environmental and ecological health of Walker Lake and Walker River and develop decision tools to analyze the efficacy of different water acquisitions.
- Alternative Agriculture and Vegetation Management—Identify the economic potential and cultural practices necessary for low-water-use crops and evaluate methods to re-establish desirable vegetation on lands that may no longer be irrigated.
- Plant, Soil, and Water Interactions—Assess responses by soils and vegetation to changes in water application and use. Information will aid managers in the preservation of air and water quality adjacent to and within the river and lake itself.
- Project Historical Account—Provide an overview of the political and historic context for the acquisition of land and associated water rights for ecosystem restoration in the Walker River system.
- Health of River Channel and Lake Water with Increased Flows—Develop recommendations to minimize further sediment and salt loading to Walker Lake and degradation to the lower Walker River under increased water flows.
- Water Flow Model—Develop a decision-support model as a tool to evaluate the effectiveness of acquisition of water rights from willing sellers to increase water delivery to Walker Lake.
- Water Conservation Practices for Agriculture Producers—Determine the most economically effective use of water on agricultural lands and provide producers with an estimate of the potential amount of water rights they may be able to offer to the market for lease or sale.
- Economic Impact and Strategies—Develop estimates of the economic impacts projected to occur from the acquisition of water rights and changes in agricultural production and land use and formulate economic development actions to mitigate the projected economic impacts.
- GIS Database Development—Develop a geographic information system (GIS) framework for linking water rights with water distribution networks and points of diversion for the Walker River Basin. The GIS database includes properties, businesses, and local demographics close to the Walker River and its tributaries.

PL 111-85, enacted in October 2009, included additional funding to be provided through a Reclamation grant with NFWF for research and related efforts by the University and DRI as follows:

- (v) *\$5,000,000 to the University of Nevada, Reno, and the Desert Research Institute--*
  - (I) *for additional research to supplement the water rights research conducted under section 208(a)(1)(A)(ii) of the Energy and Water Development Appropriations Act, 2006 (Public Law 109-103; 119 Stat. 2268);*
  - (II) *to conduct an annual evaluation of the results of the activities carried out under clauses (i) and (ii); and*
  - (III) *to support and provide information to the programs described in this subparagraph and related acquisition and stewardship initiatives to preserve Walker Lake and protect agricultural, environmental, and habitat interests in the Walker River Basin.*

## **U.S. Fish and Wildlife Service Research**

The U.S. Fish and Wildlife Service (USFWS) is also conducting research related to the Walker River Basin using funding provided under PL 109.103 Section 208 (c) for the Desert Terminal Lakes Program.

- USFWS Walker River Restoration Program—USFWS is conducting research in the Walker River system to understand the current and historic ecological conditions. The research will be compiled in a biophysical assessment of the Walker River system and will help guide and prioritize future restoration actions and be used to monitor the impacts of restoration activities.
- USFWS Walker Lake Fishery Improvement Program— USFWS, Walker River Paiute Tribe (WRPT), and Nevada Department of Wildlife (NDOW) are developing and implementing a monitoring plan to understand how the lake's ecosystem and native fishery are responding to changes in lake surface elevation, river inflow, and salinity. Year three of the 5-year monitoring plan is underway.

## **U.S. Geological Survey Research**

The U.S. Geological Survey (USGS), Nevada Water Science Center, is conducting the Walker River Basin Study to develop a watershed-based understanding of the quantity and hydrology of water resources in the basin. The study is being done in two parts and is designed to constrain unknowns in the basin hydrology. A well-constrained, watershed-based understanding is necessary so that the consequences of water management alternatives for Walker Lake can be better predicted. The first part of the study, summarized in Lopes and Allander

(2009a, 2009b), focused on the lower Walker River Basin downstream from Wabuska, and:

- quantified the volume of gaged and ungaged streamflow in the Walker River Basin and determined the percentage of that streamflow by hydrographic area;
- developed an improved understanding of interactions between surface water (rivers, canals, reservoirs) and groundwater and quantified stream losses between Wabuska and Walker Lake;
- quantified evapotranspiration from natural and agricultural vegetation and Walker Lake; and
- revised water budgets for the lower Walker River Basin, including Walker Lake.

The second part of the USGS Walker River Basin Study focuses on the basin upstream from Wabuska and will be conducted from 2010 to 2014. The objectives of the second phase of the study are to:

- refine water budgets for the basin upstream from the Wabuska gage, Walker River;
- characterize seasonal, annual, and decadal changes in groundwater levels and groundwater storage;
- characterize changes in irrigated land and native vegetation; and
- characterize diurnal, seasonal, and annual changes in the quality of Walker Lake.

In addition, the USGS is developing a model of the lower Walker River Basin to simulate how changes in climate and streamflow deliveries to the Wabuska stream gage will affect the level and the salinity of Walker Lake. Objectives of the model, to be completed by 2011, are to:

- refine the hydrogeologic understanding of the aquifers surrounding Walker Lake and simulate surface water/groundwater interactions for various lake elevation and salinity objectives for Walker Lake;
- refine estimates of groundwater discharge to Walker Lake from adjacent aquifers for present day conditions;
- estimate how various water management alternatives will affect groundwater leaving the Walker River Basin through the Double Springs area; and
- estimate the volume of water that must be delivered to the Wabuska stream gage in order to achieve a desired lake elevation and salinity in Walker Lake, as well as develop water delivery strategies to the Wabuska stream gage to optimize water delivery efficiency to the lake.

## Issues Identified during Public Scoping

During the EIS scoping process, public comments were received covering many areas of issues and concerns regarding the Acquisition Program. These issues, which were used to establish the scope of the analysis in this Revised DEIS, are summarized below.

- **Groundwater Impacts**—Issues related to recharge and losses from additional streamflow, lack of recharge as a consequence of removing water from currently irrigated lands, and lack of recharge in currently used delivery canals when water is removed. These issues relate to availability of water for domestic users and farmers reliant on groundwater, already lowered water tables causing additional loss of transferred water, and impacts on the environment along unused delivery systems.
- **Economic Impacts**—Issues ranging from the impacts of decreasing agricultural production in Smith and Mason Valleys to the impacts on communities around Walker Lake from not taking action to provide water to the lake. Concerns about impacts on agriculture varied; however, most commenters asked that impacts that accrue on Mason and Smith Valley communities as a whole also be addressed. These include impacts on agricultural production as a whole, farm labor, farm equipment and related maintenance businesses, fuel businesses, power service businesses, seed and fertilizer businesses, grocery stores, other service-based businesses, county tax revenues, and community services such as police and fire protection. Comments also addressed the economic impacts on communities that rely on Walker Lake and the taxes and revenues generated from tourism and recreation that would be lost if additional inflow is not provided to the lake.
- **Ability of Acquisition Program to Meet Goals and Potential Hidden Agendas**—Issues pertaining to the questions of the usefulness of providing water to the lake, quantity of water needed to restore Walker Lake, what will happen to the acquired water if the Acquisition Program is not successful, what assurances are in place to ensure the acquired water makes it to Walker Lake once it is transferred, who will own and maintain the acquired water, and whether the water would be legally transferred under Nevada water law. Concerns regarding the ability of the Acquisition Program to account for acquired water under the existing management and water accounting structure were raised. Concerns were raised about whether short-term leasing would be more beneficial than the permanent acquisition of water rights. Concerns were raised about whether the water is really intended for Las Vegas or Los Angeles.
- **Physical Environment Issues in Mason and Smith Valleys and Lyon County**—Issues relating to increased dust and its control, increased noxious weeds, loss of wildlife habitat for wildlife using agricultural fields and irrigation ditches, water quality impacts attributable to lowering groundwater

tables, sedimentation rates and changes in channel geomorphology, changes in delivered volumes of water because of changes to number of users on a particular ditch system, changes in riparian vegetation densities and distribution, changes in hydrology and water resources, and impacts of global warming on future water availability.

- **Physical Environment Issues near Walker Lake and in Mineral County**—Issues relating to declining environmental conditions for fish in the Walker River and Walker Lake and migratory waterfowl that depend on Walker Lake, worsening conditions from windblown dust at Walker Lake as the lake elevation decreases, and worsening water quality in Walker Lake.
- **Impacts in California**—Issues related to impacts that might occur in California if the distribution of water rights were changed.
- **Statutory Authority**—Issues regarding statutory authority focused on the need to address all desert terminal lakes legislation as amended in a more comprehensive manner. This included analyzing all of PL 109-103 Section 208, rather than just the Acquisition Program, including establishment and operation of an agricultural and natural resource center. In addition, commenters asked that Reclamation clarify who is in charge of the Acquisition Program and its relation to NEPA. Additional comments asked that Reclamation define environmental restoration as included in PL 109-103, and questioned the development of the Purpose and Need statement and authority for water-only acquisitions versus land and water acquisitions.
- **Consider Other Sources than Acquiring Agricultural Water or other Methods to Provide Water or Improve Conditions of Walker Lake**—Issues related to other means of improving the ecology of Walker Lake, including importing groundwater from other basins (e.g., Whiskey Flats, Rawhide Flats), importing surface water (e.g., Cottonwood Canyon), using wastewater or geothermal or mining effluent, leasing water upstream in California, incorporating water acquisitions from Ammunition Depot, acquiring water rights in the Hawthorne area only, allowing private purchase, including all communities in the Walker River Basin, including California water, considering WRID's lease/water bank alternative, rotating fields and letting fields fallow every 7 years, developing a water market using a local/state/water contractors partnership to enhance management of water, developing reservoirs for capturing flood event flows for future use, implementing water conservation measures, upgrading the delivery system to prevent loss to groundwater, installing a dike across a portion of the lake to create a salinity barrier, enforcing and monitoring all water diversions and wells and provide saved water to Walker Lake, cementing the riverbed, implementing water harvesting techniques such as desalination and cloud seeding, mandating that WRPT share water, creating an outlet to Walker Lake so the lake can clean itself, and oxygenating Walker Lake.



- **Miscellaneous Issues Raised**—Comments suggested mandating two federal water masters rather than one and locating them in an office other than WRID, defining restoration as water for WMAs and wetlands, mandating that farmers who will not share water live at Walker Lake for 4 years, declaring emergency status for addressing the Walker Lake surface elevation, excluding bed and banks from going back to WRPT, adding pipeline to Las Vegas, and reducing lake elevation.

## Organization of Revised DEIS

The organization of this Revised DEIS is outlined below.

### Volume 1

- The **Executive Summary** provides background information about the project, describes the EIS process, explains the determination that NEPA compliance is not required, provides a description of the alternatives, and summarizes the primary environmental impacts of each resource.
- **Chapter 1, Purpose of and Need for Action** provides background information, explains the roles of the entities involved in the Acquisition Program, lists authorizing public laws, describes the EIS process, and defines the Purpose and Need for the Acquisition Program alternatives. The chapter also lists related research and identifies public scoping issues.
- **Chapter 2, Alternatives** describes the No Action Alternative, the Purchase Alternative (Alternative 1), the Leasing Alternative (Alternative 2), and the Efficiency Alternative (Alternative 3). This chapter also lists the alternatives eliminated from further consideration and identifies why they were eliminated. The assumptions related to analysis of impacts are outlined in this chapter. Chapter 2 describes the Walker River Decree and the process for acquiring water rights in the Walker River Basin.
- **Affected Environment and Environmental Consequences** Impacts are described for each resource section in the chapters below:
  - Chapter 3, Water Resources
  - Chapter 4, Biological Resources—Vegetation and Wetlands
  - Chapter 5, Biological Resources—Fish
  - Chapter 6, Biological Resources—Wildlife
  - Chapter 7, Land Use and Agriculture
  - Chapter 8, Air Quality
  - Chapter 9, Cultural Resources
  - Chapter 10, Socioeconomics

- Chapter 11, Recreation
- Chapter 12, Indian Trust Assets
- Chapter 13, Environmental Justice
- **Chapter 14, Cumulative Impacts** describes the incremental impacts of the action alternatives when added to past, present, or reasonably foreseeable future projects.
- **Chapter 15, Climate and Climate Change** addresses the potential impacts of climate and climate change on implementation of the acquisition alternatives, and the impacts of these action alternatives on climate change.
- **Chapter 16, Consultation and Coordination** lists the tribal and Cooperating Agencies' consultations, and describes the public scoping process.
- **Chapter 17, References** lists the references that have been cited in this Revised DEIS.
- **Chapter 18, List of Preparers** provides the names and contributions of the people who were primarily responsible for the preparation of this Revised DEIS.
- The **Glossary** defines technical and unique terms used in this Revised DEIS.
- The **Index** provides a list of topics with corresponding page numbers and is located at the very end of this Revised DEIS.
- **Acronyms and Abbreviations** are defined in the Table of Contents.
- The **Appendices** provide additional technical information used in the analysis.
  - Appendix 1A provides the Assignment and Delegation Agreement between the University and NFWF.
  - Appendix 1B summarizes legislation directly addressing desert terminal lakes.
  - Appendix 1C provides the *Federal Register* Notice of Intent and Notice of Availability.
  - Appendix 1D summarizes all federal, state, and local regulations governing the resources addressed in Chapters 3 through 13.
  - Appendix 2A describes the water and water rights option and purchase agreements that the University negotiated with individual willing sellers through July 2009.
  - Appendix 2B describes the estimated yield and associated funding of the acquisition alternatives.

- Appendix 4A describes the vegetation communities and cover types in the project area.
- Appendix 4B lists the plants identified as noxious weeds in Nevada.
- Appendix 15A provides technical information supporting the analysis of climate and climate change.

## **Volume 2**

Volume 2 includes public comments and questions on the July 2009 DEIS and Reclamation's responses to each comment. All comments provided in writing and at the public hearings were considered and evaluated, and changes were implemented in the Revised DEIS if determined appropriate by Reclamation.

