

5.01 PUBLIC USE

5.02 MANAGEMENT PRIORITIES

5.03 ACCOMPLISHMENTS AND NEXT STEPS

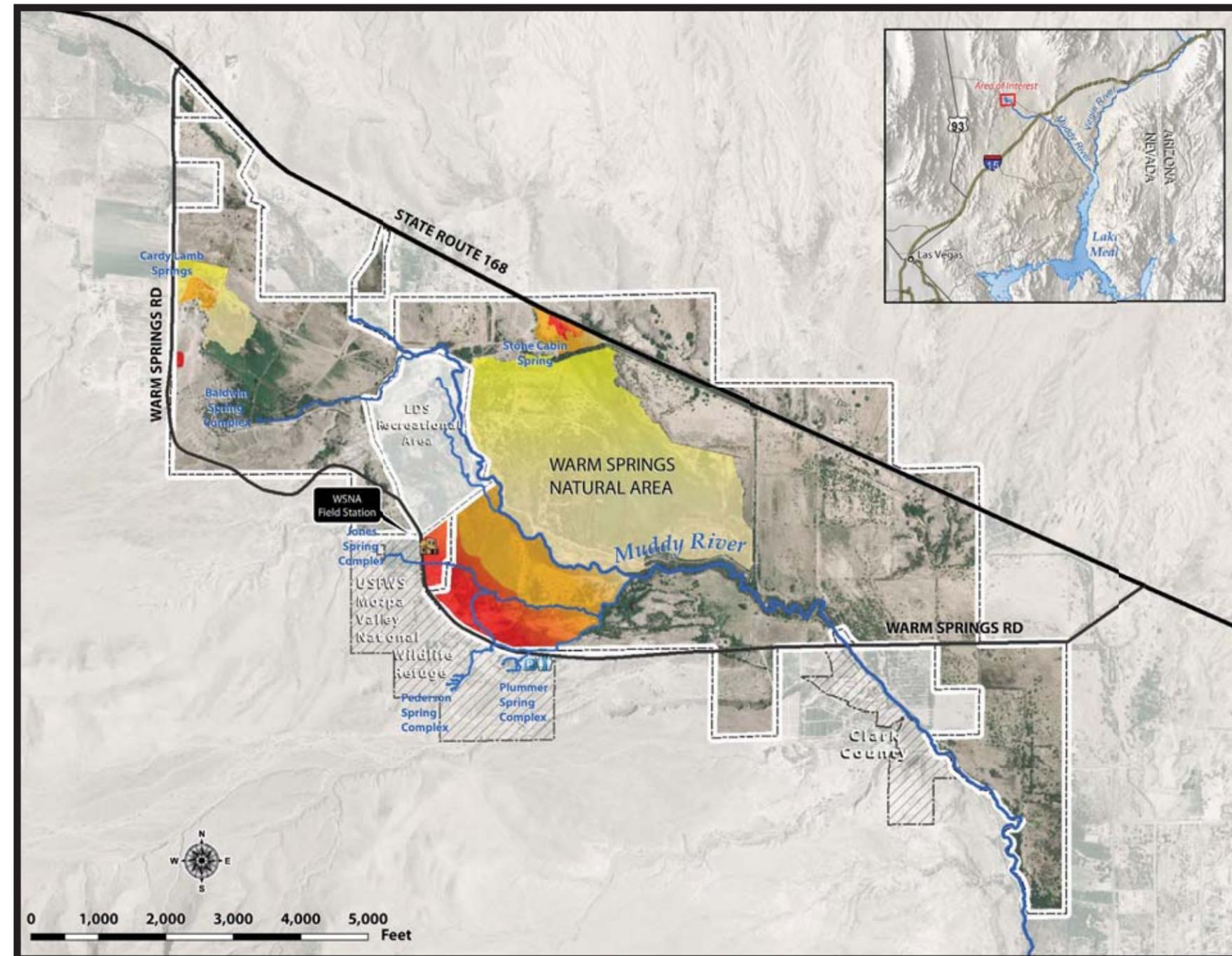
5



IMPLEMENTATION AND NEXT STEPS

5.01 PUBLIC USE

CONCEPTUAL PLAN



Public Sites

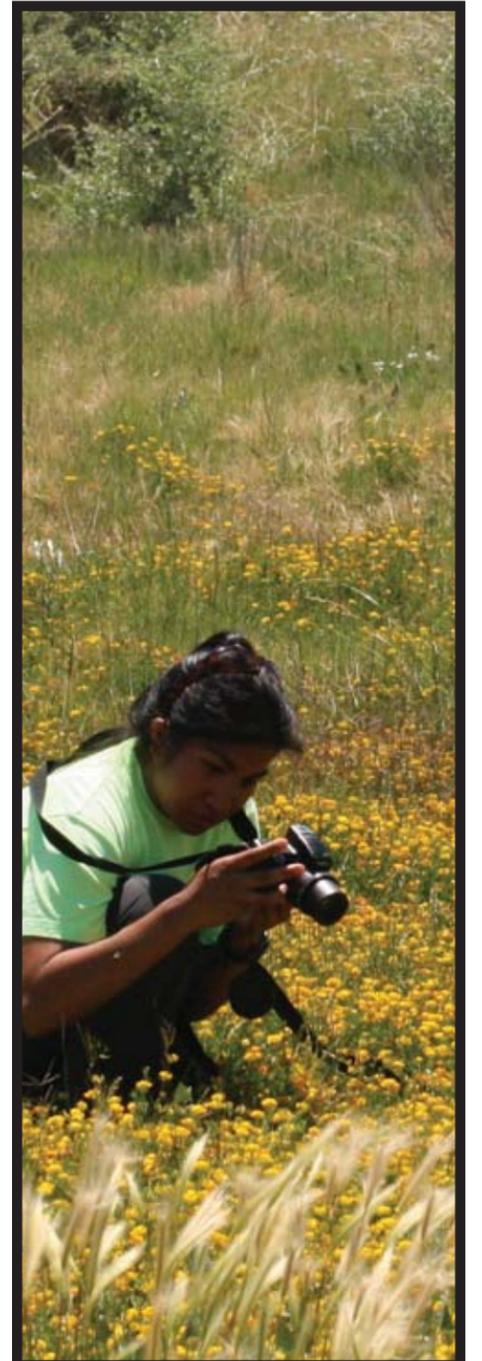
Type

- WSNA Field Station
- Parking Area
- Restrooms

Interpretive Zones

Usage

- High Interpretive Zone
- Medium Interpretive Zone
- Low Interpretive Zone



Public Use

The Warm Springs Natural Area is an expansive and unique oasis resting in the Mojave Desert, yet the adjacent neighbors surrounding the property serve as a critical link to maintaining the important ecosystems on site. The biological and cultural diversity of this place is not limited or defined by the property boundaries, therefore the neighbors serve as important partners in the public use of the property. Since the establishment of the Moapa Valley National Wildlife Refuge (Refuge) in 1979, area residents have expressed a strong desire to see the area open for public use. Plans for the Refuge include a program of environmental education showcasing the uniqueness of the springs' fauna and ecology. Visitor access on the Warm Springs Natural Area would reflect the goals of the public use of the Refuge. The Refuge theme of protecting thermal springs and their associated endemic fish and invertebrate species would be expanded on Warm Springs Natural Area to include the ecology of the fingerling tributaries - formed from the spring outflows - as they traverse the Natural Area and form the headwaters of the Muddy River. In addition to the thermal dependent species on the property, a key theme to be interpreted for visitors to the Warm Springs Natural Area would include viewing the abundant and diverse variety of bird species inhabiting the riparian corridor, mesquite forests and retired pasture land.

A well-visited Natural Area devoted to

environmental education will increase citizen awareness about the challenges of water management and land development, threats from invasive species, historic use of the Warm Springs Area to early Mormon agricultural practices, and the value of biodiversity in areas of regional spring complexes and desert riparian systems.

Adjacent access between the Warm Springs Natural Area and the Wildlife Refuge serves to manage public access cooperatively with the US Fish and Wildlife Service as identified in the "Park, Trails, and Natural Area" category of the Southern Nevada Public Land Management Act. It is also important to reconnect the local community with the resources and values of the Muddy River region. By creating opportunities for appropriate, low-impact public use, as well as the tremendous opportunities that would come from the potential to establish the property as a field research station, the education opportunities are endless.

The level of public use will be carefully evaluated by SNWA to assess the number of visitors, appropriate uses of the property, security issues, desired messaging, and minimization of long-term impacts to the property. To thoroughly evaluate these issues, it is anticipated that public use may be implemented in phases.

Nature Trail and Kiosk

The initial development of a public use component may involve a roadside kiosk,

parking area, and primitive nature trail. Interpretation may include orientation to the property and the important ecology of the system, and SNWA's plans for the Natural Area. If the approach is implemented, visitors to the Natural Area and those driving the perimeter of the property would be able to view the kiosk with roadside interpretive signage of the Natural Area to illustrate interesting aspects of the property to folks out for a Sunday drive as well as roadside tourists pulling off the highway for a rest.

This initial phase may involve opening the property to a target audience to enjoy a nature trail or limited foot trail use of the property. Target audiences could include school groups and the birding community. To date, bird watchers have traveled from the Northwestern United States hoping to access the Warm Springs Natural Area to see the vermilion flycatcher. In this scenario, school groups and tours could be accompanied by interpretive biologists able to guide students and enhance the experience.

Interpretive Zones

Conceptual zones of interpretation have been proposed to encompass projected compatible public use interests. The high interpretive zone (see map) includes easy access along Warm Springs Road and is immediately adjacent the Moapa Valley National Wildlife Refuge. This zone has abundant wildlife viewing opportunities as well as a rich history of early settlement for historical interpretation. Zones of medium and low interpretation

represent areas where visitors experience nature first-hand with minimal trailside interpretation. For lower-level interpretive zones, interpretation assistance may be provided in the form of pamphlets and trail guides obtained at trailhead kiosks. Trails in these areas will be more primitive and may be as simple as a rock lined trail or mowed path.

Future Plans

Depending on available resources, the next phase of the public use component could be implemented about five years after the initial phase. This may involve a loop trail for hiking and accessing the interior of the property. Interpretive storylines could be refined to target important interpretive elements. Themes may include the natural environment and ecology; current-day water resource use in the area; history of the property such as prehistoric use by early peoples and Native Americans, agricultural development by early settlers in the valley and historic uses of the property such as ownership by Howard Hughes.

The natural area will provide controlled public access to enjoy the abundant natural resources...
SNPLMA Objective



IMPLEMENTATION AND NEXT STEPS

5.02 MANAGEMENT PRIORITIES

Stewardship Plan

SNWA committed to join with stakeholders to develop a long-term plan for the property. The purpose of this document is to establish long-term management direction for the Warm Springs Natural Area. It is SNWA's intention that the Stewardship Plan will establish a framework for appropriate land uses that preserves the integrity of natural resources and lays a foundation for fostering stakeholder relationships. The Stewardship Plan is intended to clarify SNWA's responsibilities and management direction as they pertain to conservation on the Warm Springs Natural Area and ensures consistency with SNWA's commitments in the SNPLMA Nomination and the Muddy River Recovery Implementation Program.

While the Stewardship Plan is intended to provide guidance for SNWA management and future land uses and activities on the Warm Springs Natural Area, it is important to note that the Stewardship Plan is a conceptual document to begin dialogue and is not intended to require implementation of any specific management action. Implementation of such actions is left to the discretion of the SNWA Board of Directors through the annual budgeting process and through specific contract approvals as needed.

Prioritization Process

The prioritization process was formulated by the Core Team and technical experts in various fields. The Mission Statement developed by the Core Team - "To manage the property as a natural area for the benefit of native species and for the recovery of the endangered Moapa dace – consistent with the Southern Nevada Water Authority's commitments to the Southern Nevada Public Land Management Act funding of the property" – establishes prioritization of management goals and serves to frame future decision processes.

The Moapa dace has been designated as the highest management priority for consideration when restoring the property as a natural area and restoring the riparian ecosystem. This includes protecting the natural thermal springs on the property. The next highest priority is to manage for federal and state-protected species and thermal endemic species identified in the Muddy River RIP and, in general, prioritize restoration for management of the 28 sensitive species on the property. The next highest priority is to manage the property as a Natural Area – which means promoting native species and their habitats and controlling invasive species. Reducing fuel loads and establishing fire breaks to protect habitat and property is the next priority. Lastly, it is a priority to carry out SNPLMA commitments for the property for public use and scientific research.

Management Priorities

The following are management priorities for the property as determined by the interagency Core Team, biological experts, and SNPLMA commitments:

- Manage the property for the benefit and recovery of the Moapa dace. This includes restoring and protecting the thermal springs and their outflows.
- Manage the property for the benefit of federally-protected, state-protected, sensitive, and thermal endemic species.
- Manage the property as a Natural Area – which means promoting native species and their habitats and controlling invasive species.
- Reduce fuel loads and establish fire breaks on the Natural Area to protect neighbors and property.
- Carry out SNPLMA commitments for the property for controlled public access of the Natural Area.

Moapa Dace Recovery

The highest priority at WSNA is to protect and aid in the recovery of the Moapa dace. Moapa dace recovery is an important objective as a component for managing SNWA's water rights in Coyote Spring Valley and the Muddy River. Restoration activities are designed to substantially improve Moapa

dace habitat in order to increase populations and contribute to recovery of the species.

Actions that protect existing Moapa dace habitat will likely protect other sensitive aquatic species. Moapa dace "restoration" actions, however, will need to consider impacts to all other affected sensitive species both aquatic and terrestrial. The BAC has prioritized dace restoration projects by reach. Some restoration projects identified by the BAC have already been completed or are in the beginning stages of execution. The main objectives of the BAC dace restoration projects by reach are to:

- **Restore** stream thermal properties
- **Restore** stream flow dynamics
- **Eradicate** tilapia
- **Install** dace habitat features
- **Restore** stream connectivity

It is expected that controlling invasive species whether of terrestrial or aquatic origin will directly or indirectly aid in the recovery and stability of sensitive species.

Restoration falls under one of two categories:

- 1) Moapa dace recovery
- 2) Natural Area restoration

Protected Species Management

In addition to the endangered Moapa dace, other federally and state protected species live at WSNA. Managing for protected species is a priority as well as managing for rare or sensitive species (Appendix 2) which could receive protection status in the future due to habitat loss or population declines. Protected species include species protected under the Endangered Species Act of 1973, the Migratory Bird Treaty Act of 1918, the Bald Eagle Protection Act of 1940, and Nevada Revised Statutes Chapters 501 & 503 which include game species. Other species identified for management consideration include those species listed by the Nevada Natural Heritage Program, Nevada At-Risk Species Tracking List, and Nevada Plant and Animal Watch-List. Species under these categories are prime candidates for scientific research which can contribute in future status assessments.

Natural Area Management

Management of the Natural Area includes property management for all wildlife species and their habitats with an emphasis on restoring natural systems and processes. The Natural Area also consists of facilities, equipment, and support infrastructure used to carry out the management objectives for the property. Implementation of management objectives are slated to occur over several years.

Important components for managing the property as a natural area include:
1) resource protection, 2) habitat restoration, and 3) property maintenance.

Resource Protection: It is more cost-effective to protect existing quality habitat from degradation than to restore quality habitat after it has been lost. Noxious and nuisance weeds have the ability to stress ecosystem health and even displace native plant communities. Weeds also contribute to the buildup of fine fuels, which in combination with natural plant decadence can contribute to catastrophic wildfires. Wildfires can in turn impact Moapa dace habitat and alter plant community composition trajectories in favor of invasive species and novel plant communities. Implementation of proactive management strategies to accomplish weed control and fuels reduction is an imperative long-term management requirement at WSNA. Long-term natural resource monitoring is also an important management component for assessing biological trends and measuring progress. Cultural resources are also important property facets that require careful management consideration and protection.

Habitat Restoration: The goal in habitat restoration is to advance the recovery of native species by encouraging diversity in species, habitat structure, and ecological processes. The current condition in habitat quality varies across the property. Methods to enhance habitat need to be identified and evaluated based on individual site characteristics and available resources.

The property overall lacks a native herbaceous component across the alluvial floodplain. Floodplain soils were used for intensive crop production or in combination with grazing. Bermudagrass was widely planted as a forage species and still persists over much of the property. Restoring the native herbaceous cover will require a long-term commitment, entailing reintroduction of lost native forbs and a gradual replacement of bermudagrass with saltgrass (*Distichlis spicata*), alkali sacaton (*Sporobolus airoides*), and scratch grass (*Muhlenbergia asperifolia*). To preserve the genetic integrity of local germplasm, revegetation material should be sourced from the property or from the same drainage system. A plant nursery may be utilized to grow native plant material and store transplant material for revegetation projects.

Property Maintenance: Capital assets such as the manager's residence, field station, sheds, equipment, etc., have ongoing maintenance needs with associated costs. Roads and fences traversing the property also require routine management attention. As with all properties owned by SNWA, property maintenance is an ongoing commitment and may be conducted by both internal staff and outside services. Maintaining property infrastructure is an important element for effective, sustainable management of the natural area over time.

Fire Management

Of highest priority is protection of neighbors, life, and property from wildfire. Protecting species requires protecting their habitat. Implementing a fire management program can be helpful in protecting neighbors and habitat from catastrophic wildfires. Fire management as addressed under special management (Section 4.02) will include a fuels reduction plan and the establishment of appropriate fuel breaks.

Public Use

Objectives identified in the SNPLMA Financial Assistance Agreement for public use are detailed in Section 5.01. Implementation of actions facilitating the controlled public access component identified in the SNPLMA Objective is projected to begin in about 2012. The extent of limited public use is in part dependent upon funding availability from grants and budgeting processes and may be implemented over time. Initially, primitive trails with nominal interpretive features may be installed. The public interpretive component of the Natural Area would focus on natural features with low impact on the natural environment. To that end, trail development features could emphasize trailhead entrances, trail quality, and interpretation, while maintaining a primitive look and feel. Trail maintenance will be a continuous management commitment.

MANAGEMENT PRIORITIES

Manage the property for the benefit and recovery of the **Moapa dace**. This includes restoring and protecting the thermal springs and their outflows.

Manage the property for the benefit of **protected species**: federal, state, sensitive and thermal endemic species.

Manage the property as a **Natural Area** – which means promoting native species and their habitats and controlling invasive species.

Reduce fuel loads and establish fire breaks on the Natural Area to protect neighbors and property.

Carry out SNPLMA commitments for controlled **public access** of the Natural Area.

5.03 ACCOMPLISHMENTS AND NEXT STEPS

Accomplishments to Date

As a ranch for the last one hundred years, Warm Springs Natural Area underwent an identity change when SNWA took possession of it in Fall of 2007. Lands that had been watered via a spiderweb of irrigation ditches for growing crops and grazing over 800 head of roping steers in the winter, were committed to transition back to the native vegetation that once grew there. Years of buildup of weighty palm trees - knocked back only when wildfire fire ripped through the property - were slated to be trimmed or removed to reduce the fire hazard or to improve Moapa dace habitat.

Staff Assigned

SNWA sought important advice from neighbors and resource agencies and then set in motion some basic plans. With the new land responsibility, SNWA hired a caretaker to look after its acquisition. In 2008, SNWA hired a manager for the Warm Springs Natural Area to further protect the property, live on site, and interface with the citizens of the Moapa Valley. SNWA biologists and hydrologists were dedicated to the property and surrounding region.

Inventories Completed

SNWA also set out to inventory what it had acquired.

Boundary surveys as well as rights-of-way crisscrossing the property were defined before purchase. Resource inventories on site were lacking since the property had been previously held in private ownership. Access for

Moapa dace surveys was now guaranteed. Next, SNWA contracted cultural surveys to identify archeological and historic sites (HRA, 2008, 2009).

Bird surveys were conducted by the Great Basin Bird Observatory, San Bernardino County Museum, and Nevada Department of Wildlife. As expected in a sensitive setting, abundant varieties of birds were found, including an endangered bird, a candidate bird, and other birds considered sensitive (Appendix 2).

Aquatic invertebrates were surveyed on the property (Albrecht et al., 2008). This was a valuable characterization of the other thermal dependent species inhabiting the spring outflows over this previously-ranched property. Four of these species are included in the 1996 *USFWS Recovery Plan for the Rare Aquatic Species of the Muddy River Ecosystem*.

Pollinators and their habitat affinities relative to habitat quality were studied in 2009 (Nelson, 2009).

A floral inventory was completed in 2010 by Dr. Robert L. Johnson, the Warm Springs Natural Area Manager (Appendix 5). Bat species on the property were described previously by Williams and O'Farrell (2004) and Williams, O'Farrell and Riddle (2006). In addition, the Warm Springs Area Hydrologic Monitoring Network is established for the area (Appendix 6).

All in all, the Warm Springs Natural Area was found to be home to 28 Sensitive Species (Appendix 2) and a host of other native species drawn to the warm springs oasis. At the time of acquisition, a number of the species were not known to occur on the property, but will be important to the development of regional resource management strategies for the Muddy River Recovery Implementation Program.

Maintenance Accomplished

Upon acquisition, SNWA began management of the property. Clean-up of trash, a dump site, and an abandoned building were undertaken. Weeds were mapped and treated by Tri-County Weed Control. Weed treatments are being continued to date to reduce persistent weed problems. The Muddy River Regional Environmental Impact Alleviation Committee (MRREIAC) treated tamarisk along the Sim Road property boundary in 2009. Palm trees were trimmed along Warm Springs Road and the Refuge Stream in 2009, and stimulus funding provided for fuels reduction in 2010. SNWA acquired equipment and tractors to maintain the property. Mowing weeds in abandoned agricultural fields is an ongoing job.

Stream Restoration Work

Upon the recommendations of the Muddy River Biological Advisory Committee, SNWA funded construction of the Lower Pederson Stream channel in 2008. This reconnected the thermal springs on the Refuge to the lower

Apcar stream thereby providing contiguous Moapa dace habitat and allowing for movement upstream for spawning. The investment has proven profitable in dace numbers, as they have significantly climbed in the Lower Pederson Stream since the restoration.

MOA Accomplishments

A number of conservation actions required by the 2006 MOA were implemented and have contributed toward recovery of the Moapa dace. They include:

- Improvement and restoration of Moapa dace habitat on the Apcar Unit of the Moapa Valley National Wildlife Refuge.
- Development of the Muddy River Recovery Implementation Program.
- Funding for development of an Ecological Model for the Moapa dace by the USGS.
- Construction of a fish barrier in the South Fork of the Muddy River.
- Funding for eradication of non-native fish in the South Fork of the Muddy River.
- Formation of a technical committee, the Hydrological Review Team.



Next Steps

The Stewardship Plan is intended to be an overarching umbrella document to guide the future of Warm Springs Natural Area. It establishes property commitments, documents accomplishments, and sets a course for the future. By no means does it encompass the details of how all will be accomplished.

Step-down Plans

It is envisioned that there will be step-down plans to further formulate critical components and guide resource management. For example, step-down plans may include a Restoration Plan, a Public Use Plan, and a Fire Management Plan. A Restoration Plan provides the roadmap for a rich, viable Natural Area with local, native species replacing areas claimed by weeds. A Public Use Plan directs limited public uses which are compatible with the Refuge and with a Natural Area. The Fire Management Plan insures the property is managed for protection of neighbors' property and to insure safety. These plans would be implemented as directives from SNPLMA documents and as directed by the SNWA Board of Directors.

Process Forward

As a template for the Stewardship Plan process, it has been successful to enlist the help of property stakeholders to advise and provide important information and feedback. Management of the property will benefit with this kind of cooperative effort forward. It is envisioned that stakeholders would continue

to include the US Fish and Wildlife Service, Nevada Department of Wildlife, The Nature Conservancy, the Executive Committee of the Muddy River Recovery Implementation Program, the Biological Advisory Committee, Clark County, the Moapa Town Advisory Board, the Moapa Valley Town Advisory Board, and technical experts, as needed.

Fuels Reduction

Reducing the fire hazard and build-up of fuels will be an on-going management responsibility. Progress has been made and will continue. SNWA is blading fire breaks adjacent to neighboring properties; reducing palm-tree fuel loads; cutting fire breaks between palm trees; eliminating tamarisk; and reducing other vegetation that is known to transmit fire across properties. These are continuing maintenance activities associated with the Warm Springs Natural Area. SNWA contracted a company with technical fire expertise to compile a fire management plan after the 2010 fire.

Restoration Forward

Progress has been made since 2002 when restoration for Moapa dace habitat was first initiated on the Moapa Valley National Wildlife Refuge. Much of the Refuge has been restored. And as discussed on the previous page, reaches have also been restored and reclaimed on the Warm Springs Natural Area. The Biological Advisory Committee identified a plan for stream reaches that still need to be restored as high priority reaches.

SNWA is looking to restore additional reaches on the Warm Springs Natural Area as part of the Muddy River Recovery Implementation Program (RIP). Restoration of Moapa dace habitat for the major thermal spring systems identified in the 1996 *Recovery Plan for Rare Aquatic Species of the Muddy River Ecosystem* is feasible to be accomplished under the RIP. As new streams are restored on the Refuge and on the Warm Springs Natural Area, they will require maintenance, weeding aquatic invasive plants, and trapping and removal of invasive fish.

Natural Area restoration is a gradual and long-term process. It will continue to be accomplished and worked at over time. As habitats for sensitive species are restored, often grants are readily available to do so. Funding will be sought to augment native habitat replenishment and the Natural Area restoration through time.

Public Use

Careful planning is essential to shape the limited public use component of the property. It will be a delicate balance to provide an enjoyable experience for the public that respects the sensitive environment. SNPLMA funding is being sought to provide for a public use component that would potentially include a primitive nature trail, a shade structure or a bird-viewing platform. Providing meaningful interpretation for the public will also be important.

Management Components	
HABITAT RESTORATION	
	Hydrological data collection
	Stream restoration
	Stream maintenance
	Invasive aquatic control
	Terrestrial habitat restoration
	Restoration nursery
LIMITED PUBLIC USE	
	Public use planning
	Trail establishment
	Interpretive elements
RESOURCE PROTECTION	
	Noxious weed eradication
	Fuels reduction
	Biological monitoring
	Hydrological monitoring
	Cultural resource inventory
	Property access issues/security
	Perimeter fencing
	Property acquisition
PROPERTY MAINTENANCE	
	Equipment maintenance
	Maintenance shed
	Field station maintenance
	Facility maintenance
	Property interior fence removal
	Residence maintenance
	Road/trail maintenance

